Lucent Technologies
Bell Labs Innovations

MERLIN LEGEND®
Communications System
Release 5.0
Feature Reference

Notice

Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change. See Appendix A, "*Customer Support Information*," for important information.

Your Responsibility for Your System's Security

Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party, for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf. Note that there may be a risk of toll fraud associated with your telecommunications system, and if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

You and your System Manager are responsible for the security of your system, such as programming and configuring your equipment to prevent unauthorized use. The System Manager is also responsible for reading all installation, instruction, and system programming documents provided with this product in order to fully understand the features that can introduce risk of toll fraud and the steps that can be taken to reduce that risk. Lucent Technologies does not warrant that this product is immune from or will prevent unauthorized use of common-carrier telecommunication services or facilities accessed through or connected to it. Lucent Technologies will not be responsible for any charges that result from such unauthorized use. For important information regarding your system and toll fraud, see Appendix A, "Customer Support Information."

Federal Communications Commission Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense. For further FCC information, see Appendix A, "Customer Support Information."

Canadian Department of Communications (DOC) Interference Information

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A préscrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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Call:	Lucent Technologies Fulfillment Center
	Voice 1 800 457-1235 International Voice 765 361-5353
	Fax 1 800 457-1764 International Fax 765 361-5355
Write:	Lucent Technologies Fulfillment Center
	P.O. Box 4100
	Crawfordsville, IN 47933
Order:	Document No. Lucent Technologies 555-650-110, Issue 1, June 1997, Comcode: 108005794

For more information about Lucent Technologies documents, refer to the section entitled .

Support Telephone Number

In the continental U.S., Lucent Technologies provides a toll-free customer helpline 24 hours a day. Call the Lucent Technologies Helpline at **1 800 628-2888** or your Lucent Technologies authorized dealer if you need assistance when installing, programming, or using your system. Consultation charges may apply. Outside the continental U.S., contact your local Lucent Technologies authorized representative.

Lucent Technologies Fraud Intervention

If you *suspect you are being victimized* by toll fraud and you need technical support or assistance, call BCS National Service Assistance Center at **1 800 628-2888**.

Warranty

Lucent Technologies provides a limited warranty on this product. Refer to "Limited Warranty and Limitation of Liability" in Appendix A, "*Customer Support Information*."

Heritage Statement

Lucent Technologies—formed as a result of AT&T's planned restructuring—designs, builds and delivers a wide range of public and private networks, communications systems and software, consumer and business telephone systems, and microelectronic components. The world-renowned Bell Laboratories is the research and development arm for the company.

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IMPORTANT SAFETY INSTRUCTIONS

The exclamation point in an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

When installing telephone equipment, always follow basic safety precautions to reduce the risk of fire, electrical shock, and injury to persons, including:

■ Read and understand all instructions.

■ Follow all warnings and instructions marked on or packed with the product.

■ Never install telephone wiring during a lightning storm.

■ Never install a telephone jack in a wet location unless the jack is specifically designed for wet locations.

■ Never touch uninsulated telephone wires or terminals unless the telephone wiring has been disconnected at the network interface.

■ Use caution when installing or modifying telephone lines.

■ Use only Lucent Technologies-manufactured MERLIN LEGEND Communications System circuit modules, carrier assemblies, and power units in the MERLIN LEGEND Communications System control unit.

■ Use only Lucent Technologies-recommended/approved MERLIN LEGEND Communications System accessories.

■ If equipment connected to the analog extension modules (008, 408, 408 GS/LS) or to the MLX telephone modules (008 MLX, 408 GS/LS-MLX) is to be used for in-range out-of-building (IROB) applications, IROB protectors are required.

■ Do not install this product near water, for example, in a wet basement location.

■ Do not overload wall outlets, as this can result in the risk of fire or electrical shock.

■ The MERLIN LEGEND Communications System is equipped with a 3-wire grounding-type plug with a third (grounding) pin. This plug will fit only into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace the obsolete outlet. Do not defeat the safety purpose of the grounding plug.

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- The MERLIN LEGEND Communications System requires a supplementary ground.

- Do not attach the power supply cord to building surfaces. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.

- Slots and openings in the module housings are provided for ventilation. To protect this equipment from overheating, do not block these openings.

- Never push objects of any kind into this product through module openings or expansion slots, as they may touch dangerous voltage points or short out parts, which could result in a risk of fire or electrical shock. Never spill liquid of any kind on this product.

- Unplug the product from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use cleaners or aerosol cleaners.

- Auxiliary equipment includes answering machines, alerts, modems, and fax machines. To connect one of these devices, you must first have a Multi-Function Module (MFM).

- Do not operate telephones if chemical gas leakage is suspected in the area. Use telephones located in some other safe area to report the trouble.

⚠ **WARNING:**

- *For your personal safety, DO NOT install an MFM yourself.*

- *ONLY an authorized technician or dealer representative shall install, set options, or repair an MFM.*

- *To eliminate the risk of personal injury due to electrical shock, DO NOT attempt to install or remove an MFM from your MLX telephone. Opening or removing the module cover of your telephone may expose you to dangerous voltages.*

SAVE THESE INSTRUCTIONS

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New Features and Enhancements

Release 4.1 Enhancements

Release 4.1 includes all Release 4.0 functionality, plus the enhancements listed below. There are no hardware changes in Release 4.1.

Coverage Timers Programmed for Individual Extensions

Beginning with Release 4.1, coverage timers, which control the duration of the delay before calls are sent to each level of coverage, are changed as follows:

- The Group Coverage Ring Delay (1–9 rings) is programmed on individual extensions and replaces the Coverage Delay Interval programmed systemwide in previous releases.

- The Primary Cover Ring Delay (1–6 rings) and Secondary Cover Ring Delay (1–6 rings), programmed on individual extensions, replace the Delay Ring Interval programmed systemwide in previous releases.

These enhancements allow the system manager to customize coverage call delivery to match individual extensions' call-handling requirements.

Night Service with Coverage Control

Beginning with Release 4.1, a system manager can enable the Night Service Coverage Control option to automatically control the status of telephones programmed with Coverage VMS (voice messaging system) Off buttons, according to Night Service status.

When Coverage Control is enabled and the MERLIN LEGEND Communications System is put into Night Service, all programmed Coverage VMS Off buttons are automatically turned off (LED is unlit) and all eligible outside calls are sent to the assigned voice messaging system calling group with normal ringing delay. When Night Service is deactivated during the day, all programmed Coverage VMS Off buttons are automatically turned on (LED is lit) and voice mail coverage is disabled for outside calls.

Users can override the Coverage VMS Off button status at any time by pressing the programmed Coverage VMS Off button to turn the LED on or off.

Night Service Group Line Assignment

Beginning with Release 4.1, a system manager can assign lines to Night Service groups to control handling of after-hours calls received on individual lines. This capability replaces the automatic assignment to Night Service groups of only those lines that ring on the Night Service operator console. To receive Night Service treatment, an outside line must be assigned to a Night Service group.

With this enhancement, Night Service can be activated and deactivated on lines that do not appear on operator consoles (for example, personal lines), and lines appearing at operator positions can be excluded from Night Service.

Forward on Busy

Beginning with Release 4.1, the Forward, Follow Me, and Remote Call Forward features are enhanced to remove the requirement that a call be ringing at an extension before it can be forwarded. With the Forward on Busy enhancement, a call to an extension with no available **SA** (System Access) or **ICOM** (Intercom) buttons is forwarded immediately to the programmed destination, preventing the caller from hearing a busy signal from the intended call recipient's extension.

Maintenance Testing for BRI Facilities that Are Part of Multiline Hunt Groups (MLHGs)

Beginning with Release 4.1, the NI-1 BRI (National Integrated Services Digital Network-1 Basic Rate Interface) Provisioning Test Tool is enhanced to include testing for BRI facilities that are part of Multiline Hunt Groups (MLHGs).

The NI-1 BRI Provisioning Test Tool is used by Lucent Technologies maintenance personnel on MERLIN LEGEND Communications Systems that include a 800 NI-BRI module. Technicians use the tool during system installation and maintenance to test the functionality of the BRI lines and to report analyzed results.

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Release 4.2 Enhancements

Release 4.2 includes all Release 4.1 functionality, plus the enhancements listed below. There are no hardware changes for Release 4.2.

Additional Network Switch and Services Options for ISDN Primary Rate Interface (PRI)

Release 4.2 of the system supports connectivity to MCI® or local exchange carrier (LEC) PRI services and to the following central office switch types (in addition to the 4ESS™ and 5ESS® switch types that carry for AT&T® Switched Network services):

- NORTEL® DMS™-100 BCS 36 for local exchange carrier services

- NORTEL DMS-250 generic MCI07 serving the MCI network

- Digital Switch Corporation DEX600E generic 500-39.30 serving the MCI network

Beginning with Release 4.2, the following MCI PRI and PRI local exchange carrier (LEC) services (along with AT&T Switched Network Services) can be provided to users of the MERLIN LEGEND Communications System:

- MCI Toll Services for DMS-250 or DEX600E switch type:

  — MCI Prism® service for domestic outgoing long-distance and international voice calls; for domestic outgoing 56-kbps restricted, 64-kbps unrestricted, and 64-kbps restricted circuit-switched data calls

  — MCI VNet® service for incoming and outgoing domestic and voice calls; for 56-kbps restricted, 64-kbps restricted, and 64-kbps unrestricted circuit-switched data calls

  — MCI 800 for domestic, toll-free, incoming voice calls

  — MCI 900 service numbers

- LEC services for DMS-100 switch types:

  — DMS Virtual Private Network service for calls between the MERLIN LEGEND Communications System and another communications system (such as another MERLIN LEGEND Communications System)

  — DMS INWATS (Inward Wide Area Telephone Service) for domestic toll-free incoming voice calls

  — DMS OUTWATS (Outward Wide Area Telephone Service) for domestic outgoing long-distance voice calls

  — DMS FX (foreign exchange) to provide local call rating for calls from the local exchange to the area serviced by the foreign exchange

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— DMS tie trunk service to provide private exchange call rating for calls placed on a dedicated central office facility between the MERLIN LEGEND Communications System and another communications system (such as another MERLIN LEGEND Communications System)

Improvements to Station Message Detail Recording (SMDR) and Support for MERLIN LEGEND Reporter Application

The SMDR feature is enhanced to provide more details about calling group agent activities and to help system managers assess the effectiveness of call centers in terms of both agent performance and the adequacy of facilities to handle inbound calls. These improvements apply to calling groups that are programmed as Auto Login or Auto Logout type. The SMDR and MERLIN LEGEND Reporter features listed are programmable:

- **TALK Field.** For Auto Login and Auto Logout calling groups, the TALK field records the amount of time a calling group agent spends on a call.

- **DUR. (DURATION) Field.** For Auto Login and Auto Logout calling groups, call timing begins when a call arrives at the MERLIN LEGEND Communications System and not after a preset number of seconds. Call timing ends when the call is disconnected because either the caller or the agent hangs up. This allows the system manager to determine how long a caller waited for an agent's attention.

- **Coding of Calls on Reports.** An asterisk (*) appears in the call record when:

  — A call is not answered by an Auto Login or Auto Logout calling group agent and is abandoned while waiting for an agent.

  — The call is answered by someone who is not a member of an Auto Login or Auto Logout calling group.

  An exclamation point (!) signals that an Auto Login or Auto Logout agent handled a call that was answered by someone who was not a member of that Auto Login or Auto Logout group. An ampersand (&) in the call record indicates that the group's overflow receiver answered the call.

MERLIN LEGEND Reporter

MERLIN LEGEND Reporter provides basic call accounting system reports for all
incoming calls to Auto Login or Auto Logout type calling groups. MERLIN
LEGEND Reporter assists in determining the effectiveness of calling group
agents, assessing the level of service provided to callers, and ascertaining
whether adequate incoming phone lines and agents are available to handle
peak-call load.

MERLIN LEGEND Reporter support is provided via a programmable option. The
default is Off, in which case the Release 4.0 SMDR reports are available. If the
option is set to On, the following new reports are provided:

- Organization Detail Report
- Organization Summary and Trends Report
- Selection Detail Report
- Account Code Report
- Traffic Report
- Extension Summary Report
- Data Report
- Talk and Queue Time Distribution Report
- Time of Day Report
- ICLID Call Distribution Report
- Facility Grade of Service Report

Maintenance Enhancements

Change to Permanent Error Alarm

Beginning with Release 4.2, the most recent permanent error alarm is not shown
on the System Error Log menu screen but is available as an option from that
screen. For details, refer to the Maintenance section of the technician guide,
Installation, Programming, and Maintenance.

Enhanced Extension Information Report

Beginning with Release 4.2, the Extension Information Report includes the
Extension Status (ESS) and supervisory mode of each extension.

Release 5.0 Enhancements

Release 5.0 includes all Release 4.2 functionality, plus the enhancements listed
below.

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Computer Telephony Integration (CTI)

Beginning with Release 5.0, a PassageWay® Telephony Services CTI link from the MERLIN LEGEND Communications System to a LAN server running Novell® NetWare® software allows Lucent Technologies-certified telephony applications to control and monitor MLX and analog multiline telephone (BIS only) operations. The physical connection for the CTI link is an MLX port on a 008 MLX or 408 MLX module on the MERLIN LEGEND Communications System control unit and ISDN link interface card plugged into the customer's server. The feature is available for Hybrid/PBX mode systems only.

> **NOTES:**
> 1. The NetWare server software version must be 3.12, 4.1, or 4.11.
>
> 2. The 008 MLX and 408 MLX modules must have firmware vintage other than 29. If the module has firmware 29, programming a CTI link on the module is prevented. An earlier or later vintage firmware is supported.

Basic Call Control

A CTI link application on a user's computer can assume basic call control of the user's analog multiline or MLX telephone's **SA** buttons. Basic call control includes:

- Answering calls arriving on an **SA** button

- Making calls from an **SA** button

- Hanging up calls

- Hold and retrieving a call on hold at the user's extension

  > **NOTE:**
  > Transfer and 3-way conference, when handled through a CTI link application, provide the original caller's calling number information or other information to the transfer receiver or new conference participant, if the user has screen-pop capability.

Screen Pop

Screen pop occurs when the calling number, called number, or other user-defined identifier (such as account code that a voice-response unit prompts the caller to dial) is used to display a screen associated with the far-end party. For example, Caller ID services can be used to support screen pop on a system that includes a CTI link; using the calling party number as a database key code, information about a caller automatically appears on the user's computer screen when the call arrives at the extension. Depending on the application, screen pop may be available for calls that arrive on line buttons other than **SA** buttons and/or calls that are answered manually at the telephone rather than by the application.

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Screen pop can occur on incoming calls from the following sources:

- Calling group distribution

- ISDN PRI Routing by Dial Plan

- An extension on the MERLIN LEGEND Communications System

- Remote access

  $\Longrightarrow$ **NOTE:**
  In the case of remote access calls, the only information that the application can collect about the caller is the remote telephone number.

- A transfer of a call that was answered by a voice response unit

- A transfer, redirection, or conference of a call that was answered at a DLC or at a QCC

$\Longrightarrow$ **NOTES:**
1. DLCs (Direct-Line Consoles) may use CTI applications. If they do, they perform the same way as other extensions. A DLC assigned to use a CTI link application is a *monitored* DLC. When a DLC is a regular operator console and is not using a CTI link extension, it is *unmonitored*.

2. Calls to a QCC or unmonitored DLC do not initiate screen pop at the operator position, but when an operator directs a call to an extension using a CTI application, caller information does initiate screen pop. If the DLC is unmonitored, screen pops can occur after the DLC releases the call.

3. Calls transferred from Cover buttons on unmonitored DLCs do not initiate screen pop at the destination extension.

HotLine Feature

The Release 5.0 HotLine feature is designed for retail sales, catalogue sales, and other types of businesses and organizations and is available in all three modes of system operation. It allows a system manager to program a single-line telephone extension connected to an 008 OPT, 012, or 016 module as a HotLine. When a user lifts the handset at the HotLine extension, the telephone automatically dials the inside extension or outside telephone number programmed as the first Personal Speed Dial number (code #01) for the extension. The system does not permit calls to be transferred, put on hold, or conferenced. (A user can press the telephone's **Hold** button, if it has one, to put a call on local hold, but the call cannot be redirected in any way. Switchhook flashes are ignored.)

Personal Speed Dial codes can be programmed from the extension prior to HotLine assignment (a system programming function). Alternatively, a Personal Speed Dial code can be programmed from the single-line telephone after HotLine

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operation is assigned. However, because of security considerations, this is a one-time opportunity. Once the Personal Speed Dial number is programmed, any changes to it or any other extension programming must be performed using centralized telephone programming.

Any type of inside or outside line that is normally available to a single-line telephone can be assigned to a HotLine extension. Generally, the HotLine telephone does not receive calls, and its lines should be set to No Ring.

⚠ SECURITY ALERT:

If a HotLine extension accesses a loop-start line, that line should provide reliable disconnect and be programmed for reliable disconnect. Otherwise, a user at the extension may be able to stay on the line after a call is completed and then make a toll call.

Group Calling Enhancements

Release 5.0 and later systems include Group Calling features that enhance group calling operations.

Most Idle Hunt Type

In addition to the Circular (factory setting) and Linear hunt types supported in earlier releases, a third hunt type distributes calling group calls in an order based on which agent has waited the longest since transferring or hanging up on an incoming calling group call. For some applications, this hunt type is more efficient than the circular type because it takes into account the varying duration of calls. The system distributes calls based on when an agent last completed a call, not on when he or she last received one. This hunting method ignores non-calling group calls. For example, if an agent transfers a call that arrived on a line not assigned to the calling group, the calling group member's most-idle status is unaffected.

Delay Announcement Devices

The system manager can designate as many as ten primary delay announcement devices per group rather than the single device for each group that is available in Release 4.2 and earlier systems. Furthermore, an additional secondary delay announcement device can be specified, for a total of ten primary device extensions and one secondary device extension per group.

A primary delay announcement device operates in the same fashion as a single delay announcement device, playing once, as soon as it is available, for the caller who has waited the longest for a calling group agent and has not heard a primary delay announcement. If a secondary announcement device is used, it can use the factory setting, which plays the announcement once, or it can be set to repeat the announcement after a certain amount of time. The system manager programs the time (0–900 seconds) between announcements. This setting controls both the

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interval between primary and secondary announcements and the interval between repetitions of the secondary announcement if it is set to repeat.

The primary and secondary announcement options, when used together, allow an initial message to play for callers, followed by a repeating announcement that, for example, urges callers to stay on the line and wait for a calling group member.

Two or more groups may share an announcement device.

A primary delay announcement device can be administered as a secondary delay announcement device.

Enhanced Calls-in-Queue Alarm Thresholds

Three Calls-in-Queue Alarm thresholds can be set to more clearly indicate the real-time status of the calls waiting in the queue according to the behavior of programmed Calls-in-Queue Alarm buttons. In earlier releases, only one Calls-in-Queue Alarm Threshold setting is available to activate the LEDs at programmed Calls-in-Queue Alarm buttons for a calling group.

Using all three levels, the system manager sets Threshold 3 to the highest value, Threshold 2 to a middle value, and Threshold 1 to the lowest value. A Calls-in-Queue Alarm button indicates the severity of the alarm condition in the following ways:

- If the number of waiting calls is less than the value programmed for Threshold 1 or drops below that level, the LED is unlit.

- If the number of waiting calls is greater than or equal to the Threshold 1 value but less than the Threshold 2 value, the LED flashes.

- If the number of waiting calls is greater than or equal to the Threshold 2 value but less than the value for Threshold 3, the LED winks.

- If the number of waiting calls is greater than or equal to the highest value, Threshold 3, the LED lights steadily.

> **NOTE:**
> A DSS (Direct Station Selector) button that is used as a Calls-in-Queue Alarm button can only indicate two threshold levels, either by flashing or by lighting steadily. If a calling group must use this type of Calls-in-Queue Alarm button, only two threshold levels should be programmed.

If all three thresholds are set to the same value, the result is one threshold only with LED state either off or on (steady). If two values are the same, then the result is two alarm levels (flash, steady). The factory setting is one call for all three thresholds with LED states of off and steady.

An external alert only signals when the number of calls in the queue meets or exceeds the programmed Threshold 3 value.

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MLX-5 and MLX-5D Telephones

MLX-5™ nondisplay and MLX-5D™ display telephones are compatible with all system releases. The display telephone includes a 2-line by 24-character display, and both telephones come with 5 line buttons. In systems prior to Release 5.0, the MLX-5 and MLX-5D telephones are treated as MLX-10 and MLX-10D telephones respectively. As of Release 5.0, the system recognizes the MLX-5 and MLX-5D telephones as 5-button telephones.

If these telephones are connected to communications system releases prior to 5.0 they are recognized by the communications system as 10-button telephones.

Prior Releases: Features and Enhancements

Release 3.1 Enhancements

Release 3.1 includes all Release 3.0 functionality, plus the enhancements listed below.

Call Restriction Checking for Star Codes

Beginning with Release 3.1, a system manager can add star (*) codes to Allowed and Disallowed Lists to help prevent toll fraud. Star codes, typically dialed before an outgoing call, enable telephone users to obtain special services provided by the central office (CO). For example, in many areas, a telephone user can dial *67 before a telephone number to disable central office-supplied caller identification at the receiving party's telephone. You must contract with your telephone service provider to have these codes activated.

When users dial star codes, the system's calling restrictions determine whether the codes are allowed. If they are allowed, the system's calling restrictions are reset and the remaining digits that the users dial are checked against the calling restrictions.

Trunk-to-Trunk Transfer Set for Each Extension

This enhancement to the Transfer feature enables the system manager to allow or disallow trunk-to-trunk transfer on a per-extension basis. In Release 3.1 and later systems, the default setting for all extensions is restricted.

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Programmable Second Dial Tone Timer

The system manager can assign a second dial tone timer to lines/trunks, in order to help prevent toll fraud (for example, when star codes are used). After receiving certain digits dialed by a user, the CO may provide a second dial tone, prompting the user to enter more digits. If this second dial tone is delayed, and the user dials digits before the CO provides the second dial tone, there is a risk of toll fraud or misrouting the call. The second dial tone timer enables the system manager to make sure that the CO is ready to receive more digits from the caller.

Security Enhancements

The sections below outside security measures that are implemented in Release 3.1 and later systems.

Disallowed List Including Numbers Often Associated with Toll Fraud

A factory-set Disallowed List 7 contains default entries, which are numbers frequently associated with toll fraud. By default, Disallowed List 7 is automatically assigned to both generic and integrated VMI (voice messaging interface) ports used by voice messaging systems. The system manager can manually assign this list to other extensions.

Default Pool Dial-Out Code Restriction for All Extensions

The default setting for the pool dial-out code restriction (Hybrid/PBX mode only) is restricted. No extension or remote access user with a barrier code has access to pools until the restriction is removed by the system manager.

Default Outward Restrictions for VMI Ports

Ports assigned for use by voice messaging systems (generic or integrated VMI ports) are now assigned outward restrictions by default. If a voice messaging system must be allowed to call out (for example, to send calls to a user's home office), the system manager must remove these restrictions.

⚠ SECURITY ALERT:
Before removing restrictions, it is strongly recommended that you read Appendix A, "Customer Support Information."

Default Facility Restriction Level (FRL) for VMI Ports

The default Automatic Route Selection (ARS) FRL for VMI ports is 0, restricting all outcalling.

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Default for the Default Local Table

The default Automatic Route Selection (ARS, Hybrid/PBX mode only) FRL has changed to 2 for the Default Local table. System managers can easily change an extension default of 3 to 2 or lower in order to restrict calling. No adjustment to the route FRL is required.

New Maintenance Procedure for Testing Outgoing Trunks

Technicians must enter a password in order to perform trunk tests.

⚠ SECURITY ALERT:
The enhancements in Release 3.1 help increase the security of the MERLIN LEGEND System. To fully utilize these security enhancements, be sure to read and understand the information in these upgrade notes and in the relevant system guides.

Release 4.0 Enhancements

Release 4.0 includes all Release 3.1 functionality, plus the enhancements listed below.

Support for Up to 200 Extensions

An expanded dial plan supports up to 200 tip/ring devices.

Support for National ISDN BRI Service

This service (Hybrid/PBX and Key modes) provides a low-cost alternative to loop-start and ground-start lines/trunks for voice and digital data connectivity to the central office. Each of the two B-channels (*bearer channels*) on a BRI line can carry one voice and one data call at any given time. The data speeds on a B-channel are up to 28.8 kbps for analog data and up to 64 kbps for digital data, which is necessary for videoconferencing and other high-speed applications. Release 4.0 supports the IOC Package "S" (basic call handling) service configuration and Multiline Hunt service configuration on designated CO switches.

New Control Unit Modules

Release 4.0 supports a new NI-BRI line/trunk module and a higher-capacity tip/ring module.

800 NI-BRI Module

This new module connects NI-BRI trunks to the MERLIN LEGEND system for high-speed data and video transmission.

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016 Tip/Ring Module

This new module supports a 200-extension dial plan by providing 16 ports for tip/ring devices. Applications that use a tip/ring interface can connect to this board. All 16 ports can ring simultaneously. Four touch-tone receivers (TTRs) are included on the module as well. The module's ringing frequency (default 20 Hz) can be changed through programming to 25 Hz for those locations that require it.

Downloadable Firmware for the 016 and NI-BRI Modules

The Personal Computer Memory Card International Association (PCMCIA) technology introduced in Release 3.0 continues to support these two new boards for installation and upgrade in Release 4.0. A Release 3.0 or later processor is required for PCMCIA technology.

Support for 2B Data Applications

A Lucent Technologies-certified group and desktop video application can use two B-channels to make video/data calls when connected to a single MLX extension jack programmed for 2B data. The 2B data devices must be equipped with ISDN-BRI interfaces. NI-1 BRI, PRI, or T1 Switched 56 facilities support 2B data communications at 112 kbps (using two 56-kpbs channels) or 128 kbps (using two 64-kbps B-channels). This feature is available for Hybrid/PBX and Key modes only.

Support for T1 Switched 56 Digital Data Transmission

For Hybrid/PBX and Key mode systems, Release 4.0 expands support of T1 functionality by providing access to digital data over the public switched 56-kbps network, as well as to digital data tie-trunk services. Users who have T1 facilities for voice services can now use them for video or data calls at rates of 56 kbps per channel (112 kbps for video calls using 2B data). The Release 4.0 offering also includes point-to-point connectivity over T1 tie trunks, allowing customers to connect two MERLIN LEGEND Communications Systems or a MERLIN LEGEND Communications System with a Lucent Technologies DEFINITY® G1.1 Communications System or DEFINITY Enterprise Communications Server. The two communications systems can be co-located or at different sites.

Forwarding Delay Option

Each user can program a Forwarding Delay setting for the Forward, Remote Call Forwarding, or Follow Me features. The forwarding delay is the number of times that a call rings at the forwarding extension before the call is sent to the receiver. The delay period gives the original call recipient time to answer or to screen calls by checking the displayed calling number (if available). The delay can be set at 0 up to 9 rings. The factory setting for the forwarding delay is 0 rings (no delay).

Voice Announce on Queued Call Console (QCC)

The system manager can enable the fifth **Call** button on a QCC console
(Hybrid/PBX mode only) to announce a call on another user's speakerphone
(providing the destination telephone has a voice announce-capable **SA** button
available). A QCC cannot receive voice-announced calls; they are received as
ringing calls. The factory-set status for the fifth **Call** button is Voice Announce
disabled.

Time-Based Option for Overflow on Calling Group

Release 4.0 has added a *time* limit for calls in queue in addition to the previous
number of calls limit. If the Overflow Threshold Time option is set to a valid
number between 1 and 900 seconds, calls that remain in the calling group queue
for the set time are sent to the overflow receiver. If the overflow threshold time is
set to 0, overflow by time is turned off. The factory-set time limit is 0 seconds (off).

Single-Line Telephone Enhancements

The following changes enhance the performance of single-line telephones:

- **Disable Transfer.** Through centralized telephone programming, the
  system manager can disable transfer by removing all but one **SA** or **ICOM**
  button from the extension.

- **No Transfer Return.** When a handset bounces in its cradle, the system
  interprets this as a switchhook flash and attempts to transfer a call. When
  the transfer attempt period expires, the user's telephone rings. Release 4.0
  eliminates this unintended ringing by disconnecting the call in situations
  where a switchhook flash is followed by an on-hook state and a dial tone is
  present.

- **Forward Disconnect.** All ports on 012 and 016 modules now send forward
  disconnect to all devices connected to them when forward disconnect is
  received from the CO. This enhancement prevents the trunk/line from
  being kept active when one end disconnects from the call. If an answering
  machine is connected to the port, it does not record silence, busy tones, or
  other useless messages. This operation is not programmable.

Seven-Digit Password for SPM

Release 4.0 has increased system security by requiring a 7-digit password for
system managers or technicians who use SPM to perform programming or the
Trunk Test procedure. This password is for use in addition to a remote access
barrier code.

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About This Book

The MERLIN LEGEND Communications System is an advanced digital switching system that integrates voice and data communications features. Voice features include traditional telephone features, such as Transfer and Hold, and advanced features, such as Group Coverage, Direct Voice Mail, and Park. Data features allow both voice and data to be transmitted over the same system wiring.

Intended Audience

This book provides detailed information about system features, extension features, and system applications in Release 5.0 of the MERLIN LEGEND Communications System. It is intended as a reference for anyone needing such information, including support personnel, sales representatives, system managers, and account executives. It is also intended for technicians who are responsible for system installation, maintenance, and troubleshooting.

How to Use This Book

The section entitled "Index of Feature Names" on page -2 is provided to help you to find the appropriate feature name for the function that you want described. You can then quickly find the description of the feature or features using the page numbers provided. If you do not know the name of a feature that interests you, the "Index to Features by Activity" on page -14 provides a list of functions and the features that provide them, along with the page numbers where you can find descriptions.

Each entry in the guide explains a feature or set of features in great detail.

"At a Glance," a boxed table at the beginning of each feature description, summarizes, as applicable, the following aspects of the feature or feature group:

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- **Users Affected.** Shows what category of users is affected by a feature. For example, "Auto Dial" lists telephone users and Direct-Line Console (DLC) operators as those affected by the feature. (From this you can conclude that Queued Call Console (QCC) operators *cannot* use Auto Dial.)

- **Reports Affected.** Cites the Station Message Detail Recording (SMDR) reports in which you can find information relating to the feature.

- **Modes.** Lists the system operating mode or modes in which the feature is used.

- **Telephones.** Tells you which telephones can use the feature.

- **Programming Code(s).** As appropriate, lists the programming code(s) used to program the feature on a button or to turn it on or off.

- **Feature Code(s).** Lists the feature code(s) you can use to activate the feature or turn it off.

- **MLX Display Label(s).** Lists the name as it appears on the MLX-20L and/or other MLX telephones.

- **System Programming.** If applicable, summarizes the system programming procedure(s) that control the feature.

- **Maximum**(s). If applicable, tells you what maximum numbers apply to the feature.

- **Factory Setting**(s). Shows you the default programming, that is, how the system sets the feature when no one programs it.

Following each "At a Glance" table is a full description of the feature or feature group, telling you how it works for those who have different types of equipment or programmed positions. Following the description, feature entries include (as applicable) each of these sections:

- **Considerations and Constraints.** An explanation of exceptions and unusual conditions pertaining to the feature. This section can help you troubleshoot a problem with the feature.

- **Mode Differences.** An explanation of variations in the use of the feature in the different modes supported by the system.

- **Telephone Differences.** An explanation of variations in the use of the feature with different telephones.

- **Feature Interactions.** A list of issues and considerations to be aware of when using another feature in conjunction with the main feature described. The list is arranged alphabetically by feature.

provides a complete list of system documentation together with ordering information.

In the USA only, Lucent Technologies provides a toll-free customer Helpline 24 hours a day. Call the Helpline at 1 800 628-2888 (consultation charges may

apply), or call your Lucent Technologies representative, if you need assistance when installing, programming, or using your system.

Terms and Conventions Used

The terms described here are used in preference to other, equally acceptable terms for describing communications systems.

Lines, Trunks, and Facilities

Facility is a general term that designates a communications path between a telephone system and the telephone company central office. Technically, a *trunk* connects a switch to a switch, for example, the MERLIN LEGEND Communications System to the central office. Technically, a *line* is a loop-start facility or a communications path that does not connect switches, for example, an intercom line or a Centrex line. However, in actual usage, the terms *line* and *trunk* are often applied interchangeably. In this guide, we use *lines/trunks* and *line/trunk* to refer to facilities in general. Specifically, we refer to digital *facilities*. We also use specific terms such as *personal line*, *ground-start trunk*, *DID trunk*, and so on. When you talk to your local telephone company central office, ask about the terms they use for the specific facilities they connect to your system.

Some older terms have been replaced with newer terms. The following list shows the old term on the left and the new term on the right.

Old	**New**
trunk module	line/trunk module
trunk jack	line/trunk jack
station	extension
station jack	extension jack
analog data station	modem data workstation
7500B data station	ISDN terminal adapter data workstation
analog voice and analog data station	analog voice and modem data workstation
digital voice and analog data station	MLX voice and modem data workstation
analog data-only station	modem data-only workstation
7500B data-only station	ISDN terminal adapter data-only workstation
MLX voice and 7500B data station	MLX voice and ISDN terminal adapter data workstation

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Typographical Conventions

Certain type fonts and styles act as visual cues to help you rapidly understand the information presented:

Example	Purpose
It is *very* important that you follow these steps. You *must* attach the wristband before touching the connection.	Italics indicate emphasis.
The part of the headset that fits over one or both ears is called a *headpiece.*	Italics also set off special terms.
If you press the **Feature** button on an MLX display telephone, the display lists telephone features you can select. A programmed Auto Dial button gives you instant access to an inside or outside number.	The names of fixed-feature, factory-imprinted buttons appear in bold. The names of programmed buttons are printed as regular text.
Choose `Ext Prog` from the display screen.	Plain constant-width type indicates text that appears on the telephone display or PC screen.
To activate Call Waiting, dial `*11`.	Constant-width type in italics indicates characters you dial at the telephone or type at the PC.

Product Safety Labels

Throughout these documents, hazardous situations are indicated by an exclamation point inside a triangle and the word *CAUTION* or *WARNING*.

⚠ **WARNING:**

Warning indicates the presence of a hazard that could cause death or severe personal injury if the hazard is not avoided.

⚠ **CAUTION:**

Caution indicates the presence of a hazard that could cause minor personal injury or property damage if the hazard is not avoided.

Security

Certain features of the system can be protected by passwords to prevent unauthorized users from abusing the system. You should assign passwords wherever you can and limit knowledge of such passwords to three or fewer people.

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Nondisplaying authorization codes and telephone numbers provide another layer of security. For more information, see Appendix A, "Customer Support Information."

Throughout this document, toll fraud security hazards are indicated by an exclamation point inside a triangle and the words *SECURITY ALERT*.

⚠ SECURITY ALERT:

Security Alert indicates the presence of toll fraud security hazard. Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party (for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf). Be sure to read "Your Responsibility for Your System's Security" on the inside front cover of this book and "Security of Your System: Preventing Toll Fraud" in Appendix A, "Customer Support Information."

Related Documents

In addition to this book, the documents listed below are part of the documentation set. Within the continental United States, these can be ordered from the Lucent Technologies GBCS Publications Fulfillment Center by calling 1 800 457-1235.

Document No.	Title
	System Documents
555-650-118	*System Manager's Guide*
555-650-111	*System Programming*
555-650-112	*System Planning*
555-650-113	*System Planning Forms*
555-650-116	*Pocket Reference*
	Telephone User Support
555-650-122	*MLX-5D™, MLX-10D®, MLX-10DP®, MLX-16DP®, MLX-28D®, and MLX-20L® Display Telephones User's Guide*
555-630-150	*MLX-10D Display Telephone Tray Cards (5 cards)*
555-630-155	*MLX-16DP Display Telephone Tray Cards (5 cards)*
555-630-152	*MLX-28D and MLX-20L Telephone Tray Cards (5 cards)*
555-650-124	MLX-10® and MLX-5™ Nondisplay Telepho*ne User's Guide*
555-630-151	*MLX-10 and MLX-5 Nondisplay Telephone Tray Cards (6 cards)*
555-650-120	*Analog Multiline Telephones User's Guide*
555-650-126	*Single-Line Telephones User's Guide*
555-650-138	*MDC 9000 and MDW 9000 Telephones User's Guide*
	System Operator Support
555-650-134	*MLX Direct-Line Consoles Operator's Guide*
555-650-132	*Analog Direct-Line Consoles Operator's Guide*
Document No.	**Title**
555-650-136	*MLX Queued Call Console Operator's Guide*

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	Miscellaneous User Support
555-650-130	*Calling Group Supervisor's Guide*
555-640-105	*Data/Video Reference*
555-025-600	*BCS Products Security Handbook*
	Documentation for Qualified Technicians
555-650-140	*Installation, Programming, & Maintenance (IP&M) Binder*
	Includes: *Installation, System Programming & Maintenance (SPM), and Maintenance & Troubleshooting*
555-650-111	*System Programming*
555-650-112	*System Planning*
555-650-113	*System Planning Forms*

How to Comment on This Book

We welcome your comments, both positive and negative. Please use the
feedback form on the next page to let us know how we can continue to serve you.
If the feedback form is missing, write directly to:

Documentation Manager
Lucent Technologies
211 Mount Airy Road, Room 2W226
Basking Ridge, NJ 07920

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Features

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Features

This book provides both summary and detailed information about the features of the MERLIN LEGEND Communications System. For each feature, the following types of information are provided, as applicable:

- **At a Glance.** Summary information about the feature, including, for example, users affected, telephones supported, programming code(s), and factory settings.

- **Description.** A detailed description of the functions and typical uses of the feature.

- **Considerations and Constraints.** An explanation of exceptions and unusual conditions pertaining to the feature.

- **Mode Differences.** An explanation of variations in the use of the feature in the different modes supported by the communications system.

- **Telephone Differences.** An explanation of variations in the use of the feature with different telephones.

- **Feature Interactions.** A list of issues and considerations that you should know about when using one feature in conjunction with another.

For easy reference, features are covered in alphabetical order. The "Index of Feature Names" on page 2 shows where information can be found about features and other system components that may have been renamed or reorganized in this release of the communications system and related products. The "Index to Features by Activity" on page 14 lists features according to tasks typically performed with the system. Use these, or the index at the back of the book, when you are not sure which entry you should consult.

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Administration	Programming (p. 480). See also *System Programming.*
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Alarm Clock	Alarm Clock (p. 32)
Allowed Lists	Allowed/Disallowed Lists (p. 34), Night Service (p. 398)
Area Code Tables	Automatic Route Selection (p. 63)
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Voice messaging systems	Integrated Administration (p. 328), Appendix I (p. I–7)

Index to Features by Activity

The index in this section lists system features according to the activities that people typically perform. Operator features are not covered exhaustively here because they are described in detail in the entries: "Direct-Line Console" on page 191, "Direct Station Selector: MLX" on page 199, and "Queued Call Console (QCC)" on page 488. This index lists features according to the following categories:

- ■ Basic Calling and Answering
    - — Answering calls
    - — Conferencing and joining calls
    - — Dialing
    - — Paging
    - — Putting a call on hold
    - — Using the system from an outside phone
- ■ Covering Calls or Having Calls Covered
    - — When you are covering calls
- ■ Timekeeping
- ■ Calling Privileges and Restrictions
    - — To prevent people from making calls
    - — To allow calls
    - — Other calling privileges
- ■ Messaging
- ■ System Manager Features
- ■ Special Operator and Calling Supervisor Features

Look for an activity in the first column. In the second column, find out who performs the activity. The third column tells you where to find more information.

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Conferencing inside and outside parties where the inside parties do not share a line	All	Conference (p. 129)
Basic Calling and Answering	**For**	**Feature Name**
Conferencing and joining calls (continued)		

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Joining calls of inside parties who share a line	All	System Access/Intercom Buttons (p. 573) Personal Lines (p. 421) Centrex Operation (p. 120)
Preventing others from joining your calls	All except QCC	Privacy (p. 477)
Joining a caller and the extension he or she wants to reach	All except operators	Transfer (p. 601)

Dialing

An inside call	All	System Access/Intercom Buttons (p. 573) Centrex Operation (p. 120)
An outside call	All	System Access/Intercom Buttons (p. 573) Pools (p. 435) Personal Lines (p. 421) Centrex Operation (p. 120)
An inside or outside number with one touch	All except single-line and QCC	Auto Dial (p. 50)
An inside or outside number with one touch	Operators with MLX phones or System Display Consoles only	Direct Station Selector (p. 199)
An inside or outside number by lifting the handset of a single-line telephone	Single-line only (Release 5.0 and later systems)	HotLine (p. 320)
A call from anther extension, using your own calling privileges	All	Authorization Code (p. 40)
An inside call to anyone in a group of people	All	Group Calling (p. 281)
An Account Code, for billing to a project or client, during or before a call	All	Account Code Entry/Forced Account Code Entry (p. 25)
By entering a 3-digit code for a party that people in your company call often	All	Speed Dial (p. 550)
By entering a 2-digit code for a party you call often (phones with 10 or fewer buttons)	All	Speed Dial (p. 550)
By selecting a name from the display	All	Directories (p. 218)
A person who has left a message on your display, with one touch	Display phones only	Messaging (p. 374)
Outside of normal office hours	All	Night Service (p. 398)
A number you dialed before	All except QCC	Last Number Dial Saved Number Dial

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Basic Calling and Answering	For	Feature Name
Dialing (continued)		
A busy extension to reach it when it is available	All except QCC	Callback (p. 97) Camp-On (p. 117)
A busy line to have your call placed when the line is available	All except QCC (and single-line and cordless or wireless, for Line Request)	Callback (p. 97) Line Request (p. 372)
When you want to interrupt a call at a busy extension or one with Do Not Disturb on	Operators only	Barge-In (p. 78)
Using a special long-distance service to which your company subscribes, such as MEGACOM® WATS	System managers (to set up)	Primary Rate Interface (p. 441) Pools (p. 435) Automatic Route Selection (p. 63)
A voice mail box	All	Direct Voice Mail
Change the Extension Directory to accommodate new or changed extensions.	System managers only	Labeling (p. 360)
Change the System Directory to accommodate business needs.	System managers only	Labeling (p. 360)
Paging		
One person at your company who has a speakerphone and is not a QCC operator or at a single-line phone	All	System Access/Intercom Buttons (p. 573)
Several people at your company who have speakerphones and are not QCC operators or at single-line phones	All	Paging (p. 408) Pickup (p. 429)
All the people at your company who have speakerphones and are not QCC operators or at single-line phones	All	Paging (p. 408) Pickup (p. 429)
Over your company's loudspeaker system	All	Paging (p. 408) Pickup (p. 429)
Prevent voice-announced calls from coming in over your speakerphone, or allow them	Analog multiline and MLX	Voice Announce to Busy (p. 615)
Putting a call on hold		
At your own extension, so that you can pick it up	All except single-line	Hold (p. 312)
At your own extension, so that you can pick it up	Single-line	Recall/Timed Flash (p. 511)
At your own extension, so that you or someone who shares a line can pick it up	All	Hold (p. 312) System Access/Intercom Buttons (p. 573) Personal Lines (p. 421) Centrex Operation (p. 120)

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Basic Calling and Answering	For	Feature Name
Putting a call on hold (continued)		
At your own extension, so that you or someone who shares a line can pick it up	All	Hold (p. 312) System Access/Intercom Buttons (p. 573) Personal Lines (p. 421) Centrex Operation (p. 120)
At your own extension, to put an outside call on hold automatically in order to transfer to another extension with a shared line or button	All	Transfer (p. 601)
At your own extension, so that anyone can pick it up after you page them	All except QCC	Park (p. 416)
At one of several reserved extensions, so that anyone can pick it up after you page them	Operators only	Park (p. 416)
Automatically	DLC operators only	Hold (p. 312) Direct-Line Console (p. 191)
Using the system from an outside phone		
To gain access to the system as if you were on an inside extension	N/A	Remote Access (p. 522)
To receive calls that come to your system extension	N/A	Forward/Follow Me (p. 265)
Covering Calls or Having Your Calls Covered		
When you are covering calls		
As an operator	DLC and QCC operators only	Direct-Line Console (p. 191) Queued Call Console (p. 488) Direct Station Selector (p. 199)
As a calling supervisor for people covering calls	DLC and QCC operators only	Direct-Line Console (p. 191) Queued Call Console (p. 488) Direct Station Selector (p. 199) Group Calling (p. 281) Extension Status (p. 256)
As a member of a group	All	Group Calling (p. 281) Coverage (p. 139)
And you want to adjust the ringing at the button where calls come in	All except single-line	Coverage (p. 139) Ringing Options (p. 533)
When your calls are being covered		
By someone who shares a line	All	System Access/Intercom Buttons (p. 573)
Occasionally	All	Forward/Follow Me (p. 265)
By voice mail	All	Coverage (p. 139)
Regularly	All	Coverage (p. 139)
And you want to adjust or remove the ringing at the button(s) where covered calls arrive	All except single-line	Coverage (p. 139) Ringing Options (p. 533)
Timekeeping	**For**	**Feature Name**
To set others' phones to ring at a certain time as a reminder	DLC operators only	Reminder Service (p. 518)

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To set your own phone to ring at a certain time as a reminder	All	Reminder Service (p. 518)
To set the alarm clock on your telephone	Display telephones only	Alarm Clock (p. 32)
To set the time at your telephone	Display telephones only	Alarm Clock (p. 32)
To set the timer for calls or other activities	Display telephones only	Alarm Clock (p. 32)
To set the systemwide time	System manager only	See *System Programming.*

Calling Privileges and Restrictions

To prevent people from making calls

To your extension	All except operator	Privacy (p. 477) Do Not Disturb (p. 251)
To your extension when your phone is too busy to take any more calls or you must be away from your phone	QCC only	Queued Call Console (p. 488)
To outside numbers	System manager only	Calling Restrictions (p. 110) Toll Type (p. 596)
To toll numbers	System manager only	Calling Restrictions (p. 110) Automatic Route Selection (p. 63) Pools (p. 435) Toll Type (p. 596)
To certain numbers or area codes	System manager only	Allowed/Disallowed Lists (p. 34)
Outside of normal business hours	System manager only	Night Service (p. 398)
On certain outside lines in a Hybrid/PBX system	System manager only	Automatic Route Selection (p. 63) Pools (p. 435) Toll Type (p. 596)

To allow calls

To certain numbers or area codes	System manager only	Allowed/Disallowed Lists (p. 34) Speed Dial (System Speed Dial) (p. 550)
Outside of normal business hours	System manager only	Night Service (p. 398)

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Calling Privileges and Restrictions	**For**	**Feature Name**
Other calling privileges		
To use your own calling privileges at others' extensions	All	Authorization Code (p. 40)
To enter your password for off-hours calls	All	Night Service (p. 398)
Messaging		
Leaving messages		
Turn an extension's Message light on or off to indicate that you have a message for the party.	Operators only	Messaging (p. 374) (Send/Remove Message)
Call and let a co-worker with a display phone know that you have called.	All	Messaging (p. 374) (Leave Message)
Let a co-worker with a display phone know that you wish to speak with him or her, without calling.	All except QCC	Messaging (p. 374) (Leave Message) Signal/Notify (p. 547)
Let a co-worker with a multiline phone know that you wish to speak with him or her, without calling.	All except QCC	Signal/Notify (p. 547)
Post a specific message (such as, OUT TO LUNCH) for co-workers who have display phones.	All except single-line	Messaging (p. 374) (Posted Messages)
Cancel a message left for a co-worker who has a display phone.	All	Messaging (p. 374) (Leave Message)
Receiving messages		
Read messages.	Display phones only	Messaging (p. 374)
Turn off Message light.	All	Messaging (p. 374)
Delete messages.	Display phones only	Messaging (p. 374)
Return a call from a co-worker who has left a message.	Display phones only	Messaging (p. 374)
Controlling messaging		
Change the posted messages that users can choose from.	System manager only	Labeling (p. 360)
Change the extension information that appears on display telephones that have messages.	System manager only	Labeling (p. 360)
Set up voice messaging system to take calls.	System manager only	Group Calling (p. 281)
Set up extensions to receive messages from a fax machine that has a delivery for them.	System manager only	Messaging (p. 374)
Set up calling groups to receive messages from co-workers.	System manager only	Messaging (p. 374)

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System Manager Features	For	Feature Name
Customizing the system		
Set up account codes so that calls can be billed or tracked to a specific client or project.	N/A	Account Code Entry/Forced Account Code Entry (p. 25)
Set up which line is selected when a user lifts the handset or presses the **Speaker button.**	All telephones	Automatic Line Selection and Ringing/Idle Line Preference (p. 56)
Change extension numbers for extensions, adjuncts, lines, telephones, ranges of extensions on a DSS, Automatic Route Selection, calling groups, Idle Line Access, Listed Directory Number, paging groups, park zones, Pools, or Remote Access.	All	System Renumbering (p. 583)
Change the overall system numbering plan; for example, change to 2-, 3-, or a variable number of digits for extension numbers.	All	System Renumbering (p. 583)
Modify the line buttons (**SA** or **ICOM**) available on a user's telephone: change, add, or delete.	All except single-line	System Access/Intercom Buttons (p. 573)
Set up a single-line telephone so that it dials a specific inside extension or outside number as soon as someone lifts the handset.	For single-line only (Release 5.0 and later)	HotLine (p. 320) Speed Dial (p. 550)
Adjust the ringing at an extension, including one with a single-line phone or MFM.	For single-line/ MFM	Ringing Options (p. 533) Coverage (p. 139)
Set up special phones to be used for incoming and outgoing calls during a commercial power failure.	N/A	Power-Failure Transfer (p. 440)
Adjust the system dial tone to accommodate a voice messaging system or modem.	N/A	Inside Dial Tone (p. 324)
Control what a caller hears while waiting for the system (during transfer, while on hold, or during other operations where the caller must wait).	N/A	Music On Hold (p. 395)
Set up an adapter connected to an MLX extension to support a fax machine, modem, or other device.	N/A	Multi-Function Module (p. 386)
Change the language (English, French, or Spanish) used in System Programming and Maintenance (SPM) software.	System manager or programmer	Labeling (p. 360)
Change the language (English, French, or Spanish) used in Station Message Detail Recording (SMDR) and programming reports.	N/A	Labeling (p. 360)
Set up the Transfer feature for one-touch Transfer or automatic Hold.	All	Transfer (p. 601)
Control extensions with software running on an associated worktop PC, on a local area network (LAN) running Novell NetWare® 3.12, 4.1, or 4.11.	MLX and analog multiline	CTI Link (p. 173)

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System Manager Features	**For**	**Feature Name**
Directories		
Change a user's Personal Directory listings.	MLX display phones only	Labeling (p. 360)
Change the Extension Directory to accommodate new or changed extensions.	N/A	Labeling (p. 360)
Change the names listed with System Directory entries to accommodate business needs.	N/A	Labeling (p. 360)
Getting reports		
Get a report on incoming and outgoing calls, including account codes, if programmed.	N/A	Station Message Detail Recording (p. 557)
Get a report on the way the system is programmed.	N/A	Station Message Detail Recording (p. 557)
Lines and trunks		
Take an outside line out of service when there is a problem with it.	N/A	Automatic Maintenance Busy (p. 62)
In Hybrid/PBX mode, assign lines that can be answered without operator involvement.	All telephones	Personal Lines (p. 421)
In Behind Switch mode, allow **Conference**, **Transfer**, and **Drop** buttons to access host features.	N/A	Recall/Timed Flash (p. 511)
Messages		
Change the language used (English, French, or Spanish) systemwide or at an extension; this also changes the clock, which is 12-hour for English and 24-hour for French or Spanish.	MLX display phones only	Language (p. 364)
Change the posted messages that users can choose from.	N/A	Labeling (p. 360)
Change the extension information that appears on display telephones with inside calls and messages.	N/A	Labeling (p. 360)
Operators		
Allow a QCC operator to join callers and extensions more rapidly.	N/A	Queued Call Console (p. 488)
Find out about the **Alarm** button on operator consoles or set up a special light or bell to signal a system problem.	Operator consoles	Alarm (p. 30)
Set up a group of fax machines to take calls.	N/A	Group Calling (p. 281)
Set up voice messaging system to take calls.	N/A	Group Calling (p. 281)
Prevent DLC operators from accidentally disconnecting callers.	N/A	Hold (p. 312) Direct-Line Console (p. 191)
Find out what to do when callers on hold are being disconnected.	N/A	Hold (p. 312)

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System Manager Features	For	Feature Name
Troubleshooting		
Make your system more secure from toll fraud.	N/A	Calling Restrictions (p. 110) Remote Access (p. 522) Forward/Follow Me (p. 265) Automatic Route Selection (p. 63) Group Calling (p. 281)
Correct problems that users are having with the switchhook, **Recall**, or **Flash** button.	N/A	Recall/Timed Flash (p. 511)
Special Operator and Supervisor Features		
Join a caller and the extension he or she wants to reach.	Operator consoles	Direct-Line Console (p. 191) Queued Call Console (p. 488)
Find out about the **Alarm** button that signals a system problem.	Operator consoles	Alarm (p. 30)
Find out about the **Alarm** button that signals too many calls waiting in line for your attention or your group's attention.	Operator consoles	Group Calling (p. 281) Auto Dial (p. 50)
Activate Night Service for system use outside of normal business hours.	Operator consoles	Night Service (p. 398)
Set up the way calls are distributed to calling group members.	System manager only	Group Calling (p. 281)
Monitor others' calls.	N/A	Direct-Line Console (p. 191) Queued Call Console (p. 488) Direct Station Selector (p. 199) Extension Status (p. 256) Group Calling (p. 281)
Set up a device to answer calls when a group is unavailable to take them.	System manager only	Group Calling (p. 281)
Log a calling group member in or out.	Operator consoles	Group Calling (p. 281) Extension Status (p. 256)
Log a delay announcement device for a group in or out.	Operator consoles	Group Calling (p. 281)
Allow DLC operators to place calls on hold automatically.	System manager only	Hold (p. 312) Direct-Line Console (p. 191)
Turn an extension's Message light on or off to indicate that you have a message for the party.	Operators only	Messaging (p. 374) (Send/Remove Message)
Understanding and Customizing Your Telephone		
Give your phone its own distinctive ring.	All	Ringing Options (p. 533)
Change the way your phone rings when you're already on a call.	All	Ringing Options
Delay or remove the ring from an outside, **SA**, or **ICOM** line button.	All except single-line	Ringing Options (p. 533)

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Understanding and Customizing Your Telephone

	For	Feature Name
Change the volume levels for ringing, conversations on the handset, and conversations on the speakerphone.	MLX only	Volume (p. 618)
Change the language used (English, French, or Spanish) at your extension; this also changes the clock, which is 12-hour for English and 24-hour for French or Spanish.	MLX display phones only	Language (p. 364)
Learn about the display on your telephone.	Display telephones	Display (p. 225)
Set contrast on your telephone.	Display telephones except BIS-22D	Display (p. 225)
Use the line buttons on your telephone.	All	System Access/Intercom Buttons (p. 573) Personal Lines (p. 421) Pools (p. 435) Centrex Operation (p. 120)
Program buttons.	Multiline telephones	Programming (p. 480)
Change the ringing sound on your telephone.	All	Personalized Ringing (p. 533)
Change the number of times calls ring.	All	Ringing Options (p. 533)
Use the display to screen incoming calls.	MLX display phones only	Inspect (p. 325)
See what features are programmed on telephone buttons.	MLX display phones only	Inspect (p. 325)
For noisy environments: turn off the microphone at an MLX telephone (except a QCC) so that a user can hear voice announcements but must lift the handset to respond.	System manager only	Microphone Disable (p. 386)

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Account Code Entry/Forced Account Code Entry

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Abbreviated Ring

See .

Account Code Entry/Forced Account Code Entry

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Extension Directory, Extension Information, SMDR
Modes	All
Telephones	All touch-tone telephones
Programming Code	*82
Feature Code	82
MLX Display Label	Account Code [Acct]
System Programming	Enter extensions required to use account codes before making an outside call:
	• Extensions→Account
Hardware	Printer for SMDR Reports or PC and printer equipped with Lucent Technologies CAS software needed for Account Code Reports
Maximum	16 characters (0–9, *)
Factory Setting	Forced Account Code not assigned to any extensions

Description

Use Account Code Entry to enter account codes (developed by accounting or administrative personnel) for outside calls, both incoming and outgoing. These codes appear on Station Message Detailed Recording (SMDR) reports, along with other call information, and are used for billing or cost accounting to identify outgoing calls with a project, client, or department. You can enter an account code before or during a call or not at all. You can also change, correct, or cancel an account code while the call is in progress.

Forced Account Code Entry is similar, but affects only outgoing calls and requires a caller to enter an account code before placing an outside call. You can change or correct an account code while a call is in progress, but you cannot cancel it.

To enter, change, or correct an account code during a call, activate the feature and enter the account code. Only the person who enters the account code hears the tones generated by dialing the account code number. To cancel an account code (when permitted), activate the feature and exit without entering a code.

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Forced Account Code Entry, when activated for an extension, has the following effects:

- If you select an outside line on an **SA** button (by dialing a dial-out code) or on an **ICOM** button (by dialing the Idle Line Access code) without entering an account code, the call is blocked. Depending on the type of telephone used, this may be indicated by the programmed Account Code Entry button flashing, the **SA** button going to the off/idle state, or an intercept tone.

- If you try to make an outside call on a personal line or **Pool** button without entering an account code, there is no dial tone.

Considerations and Constraints

If SMDR is set to record outgoing calls only, you cannot enter an account code for incoming calls.

The system does not validate account codes; it checks only the number of characters entered (maximum of 16) and for completion (dialing # or pressing a programmed Account Code Entry button).

Account codes can be no more than 16 characters in length, and only the digits 0–9 and the character * can be used.

Forced Account Code Entry allows you to enter account codes for incoming calls and for incoming calls added to a conference call by using the Account Code Entry feature. Account codes are not mandatory in these situations. (Outgoing, outside calls added to a conference must have an account code.)

You cannot change an account code entered from another extension.

An incoming caller cannot hear tones as account codes are entered during a call.

An Account Code Entry button only activates and completes the account code entry. It does not automatically enter an account code. A separate outside Auto Dial button can be programmed with an account code number.

In Release 2.0 and prior systems, a user at an extension programmed with Forced Account Code Entry must enter an account code to use Loudspeaker Paging. In Release 2.1 and later systems, users at extensions programmed with Forced Account Code Entry do not need to enter an account code to use Loudspeaker Paging.

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Mode Differences

Behind Switch Mode

In Behind Switch mode, single-line telephones must be programmed through Idle Line Preference to select an **SA** or **ICOM** button when the user lifts the handset to make an outgoing call.

Telephone Differences

Queued Call Consoles

To make an outgoing call from a QCC, activate Account Code Entry by selecting the feature from the Home screen or by pressing the **Feature** button and selecting the Account Code Entry feature from the display. After the account code is dialed, complete the entry by dialing #. Then select a personal line, **SA**, or **Pool** button on which to make the call.

Normally, you cannot enter account codes when you answer a Group Coverage call at a Group Cover button programmed on a multiline telephone. However, when the QCC queue is programmed as the receiver for a coverage group, Cover buttons are not required and the QCC system operator can enter account codes. Those account codes appear on the SMDR printout. In this case, the Account Code Entry feature must be activated from the display and cannot be activated by dialing the feature code.

Other Multiline Telephones

An MLX telephone user can program account codes either individually, on outside Auto Dial buttons, or as an entry in the Personal Directory (MLX-20L® telephones). Enter an account code by pressing the **Feature** button and selecting `Account Code` from the display.

On all other multiline telephones, activate Account Code Entry by pressing a programmed Account Code Entry button or by pressing the **Feature** button and dialing *82*. After dialing the account code, complete the entry by pressing a programmed Account Code Entry button or dialing #. On MLX display telephone user can also activate and complete the feature by pressing the **Feature** button and selecting the feature from the display. Once the entry is complete, select a personal line, **SA**, or **Pool** button, lift the handset, and make the call.

> $\Longrightarrow$ **NOTE:**
> Account codes cannot be entered with System Speed Dial or Personal Speed Dial because pressing # to activate speed dial completes account code entry.

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If Account Code Entry is assigned to a button, the LED flashes when you lift the handset and attempt an outside call. On MLX display telephones, the feature name appears on the display. Enter the account code and press the programmed Account Code Entry button; the green LED goes from flashing to on. Then select the outside line and proceed with the call.

Single-Line Telephones

Single-line telephones in Behind Switch mode by default cannot use Account Code Entry or Forced Account Code Entry. If this feature is to be used, the single-line telephone must be programmed through Idle Line Preference to select an **SA** or **ICOM** button so that the user hears inside dial tone when the handset is lifted for an outgoing call.

Single-line telephones must have touch-tone dialing to use the Account Code Entry feature.

When a single-line telephone user hears inside dial tone, the user can activate the feature by dialing *#82*.

Single-line telephone users cannot enter account codes by using System Speed Dial or Personal Speed Dial because these features are activated by dialing *#*. Pressing *#* completes the entry of an account code and cannot also be used to activate the Speed Dial features.

Feature Interactions

Authorization Code	If an account code is not entered, the ACCOUNT field of the SMDR printout contains the authorization code used to obtain restriction privileges. If an account code is entered at any time during a call, the account code is stored in the SMDR record.
Auto Dial	Frequently used account code numbers can be programmed onto outside Auto Dial buttons.
Automatic Line Selection	A single-line telephone user can enter account codes only if Automatic Line Selection is programmed to select an **SA** or **ICOM** button when the user lifts the handset.
Automatic Route Selection	When ARS is used on the system, enter an account code before or after dialing the telephone number. If Forced Account Code Entry is assigned, enter the code before dialing the ARS dial-out code.
Callback	Enter an account code before activating Callback. Otherwise, the account code cannot be entered until after the call connects. Account codes cannot be entered while the call is queued.
Conference	Enter a separate account code for each outside call added to a conference. An account code does not carry over to other calls made at the same time.

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Coverage	When answering calls on a programmed Primary Cover, Secondary Cover, or Group Cover button, a receiver cannot enter an account code. An account code must be entered from the sender's telephone (if the receiver tries to enter an account code, no error tone sounds, but the account code does not appear on the SMDR printout). Because Cover buttons are not required when the Queued Call Console (QCC) queue is programmed as a receiver for a coverage group, a QCC system operator can enter account codes, when then appear on the SMDR printout.
Digital Data Calls	Account codes can be entered for calls made by digital data workstations and by video systems that support the use of # for feature codes. The account code must be entered before the telephone number.
Directories	An MLX-20L telephone user can program an account code as a listing in a Personal Directory. Enter the account code from the display by activating Account Code Entry and selecting the directory entry containing the actual account code.
Display	When the Account Code Entry feature is activated, the ACCT: message on the display prompts the user to enter the account code. The account code digits are shown next to the prompt as they are dialed.
Forward and Follow Me	Extensions assigned Forced Account Code Entry can forward calls only to extensions and not to outside numbers. The user hears a fast busy signal if he or she tries to forward a call to an outside number.
HotLine	HotLine extensions (Release 5.0 and later systems) cannot use Account Code Entry.
Personal Lines	When Forced Account Code Entry is assigned to an extension and the user tries to dial an outside call on a personal line button without entering the account code, the call does not go through.
Pools	When Forced Account Code Entry is assigned to an extension and the user tries to dial an outside call on a **Pool** button without entering the account code, the call does not go through.
Primary Rate Interface (PRI) and T1	At an extension assigned to a PRI line, either enter an account code before the call is made or during the call. Forced account codes must be entered before the call is made. An account code entered before a call is treated as a restriction code for all the outgoing calls placed over the PRI line.
Remote Access	Account codes cannot be entered on calls made using Remote Access.
SMDR	The account code is printed in the ACCOUNT field of the SMDR record. If SMDR is programmed for outgoing calls only, an account code cannot be entered for an incoming call.
Speed Dial	Personal Speed Dial or System Speed Dial cannot be used to dial account codes because the # used to access the speed dialing signals an exit from the Account Code Entry feature.
Transfer	When a call is transferred, the destination extension cannot change an account code entered at the originating extension.

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Administration

See "Integrated Administration" on page 328 and "Programming" on page 480.

Alarm

At a Glance

Users Affected	Operators
Reports Affected	Extension Information
Mode	All
Telephones	System operator consoles only (QCC or DLC)
Programming Code	*759
MLX Display Label	Alarm [Alarm]
System Programming	AuxEquip→MaintAlarms
Hardware	Alert device (bell or strobe) for Maintenance Alert

Description

Alarms provide either a visible or audible indication when the system detects a problem that needs immediate attention.

- **Alarm Button.** A programmed button on Direct-Line Consoles (DLCs) and a factory-set button on Queued Call Consoles (QCCs) that alerts an operator to system problems. The red LED next to the **Alarm** button on the operator console turns on when the system detects a problem (such as a problem with one of the lines/trunks or some other system error) that requires immediate attention. It remains on until the problem is corrected.

- **Maintenance Alert.** An alert device such as a bell or strobe light connected to the line or trunk designated as a maintenance alarm jack. The device rings or lights when the system detects a problem.

  The red LED on the processor module turns on when the system detects a problem that requires immediate attention. It remains lit until the problem is corrected.

  The red LED on some modules turns on when the system detects a module-related problem, for example, a loss of service on a 100D module.

Considerations and Constraints

As soon as the system detects a problem, the red LED next to the **Alarm** button turns on and/or the maintenance alert sounds or flashes.

All system operator consoles with an **Alarm** button receive the indication.

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Telephone Differences

Alarm buttons can be programmed only on system operator consoles.

Direct-Line Consoles

An **Alarm** button is factory-assigned on an analog DLC but not on an MLX DLC.

An operator at an MLX DLC can use the Inspect feature to display the number of alarms; an analog DLC operator cannot use Inspect.

On a system with fewer than 29 lines, an **Alarm** button is factory-assigned to analog DLCs with 34 or more buttons. On a system with more than 29 lines, **Alarm** is replaced with line 30.

The **Alarm** button is not a fixed feature and can be assigned to any available button on an analog or MLX DLC.

Queued Call Consoles

Alarm buttons can be programmed only on system operator consoles.

An **Alarm** button is a fixed feature on a QCC.

A QCC operator can use the Inspect feature to display the number of alarms.

Feature Interactions

Automatic Maintenance Busy	The red LED turns on next to the **Alarm** button on system operator consoles, and the designated maintenance alert device sounds or flashes when more than 50 percent of the lines/trunks in the pool are in a maintenance-busy state.
CTI Link	When a CTI link is reset (called a *broadcast reset*), any programmed Alarm buttons on operator consoles or connected alarm devices go on.
Inspect	Inspect can be used on an MLX DLC or a QCC to display the number of alarms. Inspect cannot be used on an analog DLC.
Night Service	A line/trunk jack programmed as a maintenance alarm port cannot be assigned to a Night Service group.
Personal Lines	A line/trunk jack used for a maintenance alarm cannot be assigned as a personal line.
Pools	A line/trunk jack used for a maintenance alarm cannot be assigned to a pool (Hybrid/PBX mode only).

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Alarm Clock

At a Glance

Users Affected	Telephone users, operators
Reports Affected	None
Modes	All
Telephones	MLX display and analog multiline telephones
MLX Display Label	`AlarmClk [Alarm]`

Description

If you have a display phone, you can use it as an alarm clock and set it to beep at a particular time to remind you of an appointment, meeting, or other important event. Until canceled, the alarm sounds every day at the set time.

Each MLX telephone and analog multiline display telephone has a timer to time calls, meetings, breaks, or other events. When activated, the timer appears at the top of the display, next to the date, and starts counting. It counts to 59 minutes and 59 seconds, then resets to zero and continues counting.

To Set the Alarm

To set the alarm on an MLX display telephone, follow the procedure below:

1. Press the **Menu** button.

2. Select `Alarm Clock` [`AlClk`]. If this feature is not displayed, press the **More** button. The display shows the alarm status (On/Off) and the time set.

3. For English-language operation, dial a 4-digit time from 0100 to 1259 and select `am/pm` to switch the displayed time from A.M. to P.M. or back again. For French- or Spanish-language operation, dial a 4-digit time from 0000 to 2359. If you make an error, select `Reset` and redial.

4. Select `On`.

5. Press the **Home** button. A bell appears on the Home screen.

To set the alarm on an analog multiline telephone, follow the procedure below:

1. Press the **Set** button. `ALARM Off` begins to flash.

2. Press the **Fwd** button. `ALARM On` begins to flash.

3. Press **Set**. `Hour` and `am/pm` begin to flash.

4. Press **Fwd** or **Rev** until the setting you want appears on the display.

5. Press **Set**. `Minutes` begins to flash.

6. Press **Fwd** or **Rev** until the setting you want appears on the display.

7. Press the **Exit** button. A bell appears on the display next to the date.

To Cancel the Alarm

To cancel the alarm on an MLX display telephone, follow the procedure below:

1. Press the **Menu** button.

2. Select Alarm Clock [AlClk]. If this feature is not displayed, press the **More** button.

3. Select Off.

4. Press the **Home** button. The bell disappears from the Home screen.

To cancel the alarm on an analog multiline telephone, follow the procedure below:

1. Press the **Set** button. ALARM On begins to flash.

2. Press the **Fwd** button. ALARM Off begins to flash.

3. Press the **Exit** button. The bell disappears from the display.

Feature Interactions

Language Choice   Enter the time settings for Alarm Clock in accordance with the language
                        selection governing the extension. If the language selection is English,
                        the time setting for Alarm Clock must be entered in 12-hour format
                        (0100–1259), followed by either a 2 *(A)* for a.m. or a 7 *(P)* for p.m. If the
                        governing language selection is French or Spanish, the time setting must
                        be entered in 24-hour format (0000–2359).

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Allowed/Disallowed Lists

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Access to Allowed Lists, Access to Disallowed Lists, Allowed Lists, Disallowed Lists, Remote Access (DISA) Information
Modes	All
Telephones	All
System Programming	Establish, change, or remove Allowed/Disallowed Lists:
	• Tables→AllowList/Disallow
	Assign or remove Allowed/Disallowed Lists for individual extensions:
	• Tables→AllowTo/DisallowTo
	Assign or remove Allowed/Disallowed Lists for non-tie lines/trunks used for Remote Access:
	• LinesTrunks→RemoteAccss→Non-TIE Lines→ Allow List/DisallowLst
	Assign or remove Allowed/Disallowed Lists for tie trunks used for Remote Access:
	• LinesTrunks→RemoteAccss→TIE Lines→ Allow List/DisallowLst
	Assign or remove Allowed/Disallowed Lists for each remote access barrier code:
	• LinesTrunks→RemoteAccss→Barrier Code→ Allow List/DisallowLst
Maximums	6 digits for each number (plus leading 1, if required)
Allowed Lists	10 numbers for each list. Release 3.1 and later systems may also have an asterisk (*, star) preceding a leading star code.
	8 lists for each system
	8 lists for each extension
Disallowed Lists	11 digits for each number (plus wildcard)
	10 numbers for each list
	8 lists for each system
	8 lists for each extension
Factory Settings	
Second Dial Tone Timer	0 ms (range: 0–5,000 ms, increments of 200, entries rounded down if not increments of 200)
Default Disallowed List	Disallowed List 7
Entries	0, 10, 11, 1809, 1700, 1900, 976, 1*ppp*976, * (*p*=any digit)
Assigned to	All VMI ports

Description

Used in conjunction with calling restrictions (outward and toll), an Allowed List is a

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list of numbers that the caller is allowed to dial, despite restrictions. For example, an Allowed List assigned to an outward-restricted extension can allow calls to specific local numbers, such as (911) or toll numbers. For toll-restricted extensions, an assigned Allowed List can allow calls to specific area codes and/or exchanges needed for daily tasks.

A Disallowed List is a list of local or toll numbers that the extension user is not allowed to dial, even if the extension is otherwise unrestricted. Disallowed Lists can be used as an alternative to or in conjunction with calling restrictions.

Both Allowed Lists and Disallowed Lists are assigned to individual extensions.

Allowed and Disallowed Lists can also be used in conjunction with Remote Access to restrict calls made through the system from remote locations. In this case, Allowed and Disallowed Lists can be assigned to either specific remote access barrier codes or (if barrier codes are not used) to specific types of lines/trunks (all tie/DID and all non-tie/non-DID trunks).

When an Allowed List is assigned to a barrier code or remote access lines/trunks, the remote access user using that code can dial specific numbers included in the list. When a Disallowed List is assigned to a barrier code, the remote access user using that code cannot reach the specific numbers included in the list.

If barrier codes are not used for remote access, then Allowed and Disallowed Lists for remote access users can be assigned to all tie/DID trunks and all non-tie/non-DID trunks.

A Night Service Allowed List can be programmed with up to 10 numbers that anyone can dial without having to enter a Night Service password. For additional information, see .

Star Codes and Allowed/Disallowed Lists

In some instances, after a person dials a *star code* (a star digit followed by a 2- or 3-digit number), the central office provides a second dial tone as a prompt for the dialer to enter more digits. Generally, this second dial tone is immediate. However, in cases when the second dial tone is delayed, calls can be misrouted or dishonest users may be able to circumvent communications system dialing restrictions.

In Release 3.1 and later systems, the system manager can enter the star digit (*) in Allowed List and Disallowed List entries. The communications system can also be programmed with a delay period (see) during which no dialing is allowed while the central office dial tone returns. If dialing is attempted, the call is treated as though it had violated calling restrictions and is not completed.

The star codes that the system recognizes are as follows:

■ 2-digit codes: *(00–19, 40–99)

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■   3-digit codes: *(200–399)

Restrictions are reset after leading star codes. This means that any star codes that are not included in an Allowed or Disallowed List are not considered. The digits that follow the star code are then compared again to the lists. If a caller dials *67280*, the Allowed/Disallowed List feature acts as though *280* were dialed. In this case, star codes do not need to be placed into an Allowed or Disallowed List to restrict calls to specific exchanges or area codes.

The programmed delay is also activated when the rotary telephone equivalent of a star code is dialed (for example, *1170*). Multiple leading star codes (such as *67*70*) are also handled by the system because the dialed number is checked against Allowed and Disallowed Lists after each star code is detected.

Following are examples of how to set table entries to achieve specific results:

■   Disallow calls preceded by *67*, but allow all other calls: Enter *67* as a Disallowed List entry.

■   Disallow calls preceded by all star codes, but allow all other calls: Enter * as a Disallowed List entry.

■   Disallow calls preceded by *67* or *69*, but allow all other calls: Enter *67* as a Disallowed List entry, and enter *69* as a separate entry.

■   Disallow calls preceded by *67*, calls to 900 numbers and 411, but allow all other calls: Enter *67*, *900*, and *411* as separate Disallowed List entries.

Following are examples of specific results that cannot be achieved through programming the system:

■   Disallow *67* when dialing a specific exchange.

■   Disallow *67* only when it is followed by *69*.

Default Disallowed Lists

In Release 3.1 and later systems, the system is factory-set with a default Disallowed List (List 7), which includes the following entries: 0, 10, 11, 1809, 1700, 1900, 976, 1*ppp*976, *, (*p*=any digit). This list is automatically assigned to any port programmed as a VMI port.

⚠ SECURITY ALERT:

The system manager should assign this list to any extension that does not need access to the numbers in the list.

Disallowed Lists and VMI Ports

In Release 3.1 and later systems, ports assigned as Generic VMI or Integrated VMI are assigned the default Disallowed List.

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> ⚠️ **SECURITY ALERT:**
> *If the system manager wants to allow access to the voice messaging system Outcalling feature, any entries in the default Disallowed List apply to Outcalling calls. Any changes to the default Disallowed List entries and other restrictions must be considered carefully in order to minimize the potential for toll fraud.*

If the system manager changes a port to a non-VMI port, the default Disallowed List is not removed from the port. If the default Disallowed List should be removed, the system manager must remove it from the port through system programming.

Considerations and Constraints

A Disallowed List takes precedence over an Allowed List. If a telephone number is on both an Allowed List and a Disallowed List assigned to an individual extension, the caller cannot complete a call to that number.

If a zero (0) is programmed as the first digit of an Allowed List entry, any toll restriction assigned to an extension is removed for calls placed through a toll operator.

Individual Allowed and Disallowed Lists are numbered 0 through 7. Within each list, there are 10 entries numbered 0 through 9.

The Pause character (entered by pressing the **Hold** button) can be used as a wild card character in Disallowed Lists, for example, to indicate that calls to a given exchange are restricted in every area code. The Pause character is shown on the planning form as **p**. Wild card characters are not permitted in Allowed List entries. The Pause character does not act as a wild card for the ∗ character.

When used in conjunction with Remote Access, Allowed and Disallowed Lists are assigned to specific barrier codes or to types of lines/trunks: all tie/DID trunks, or all non-tie/DID trunks. Allowed and Disallowed Lists cannot be assigned to trunks on an individual basis.

When used with Automatic Route Selection (ARS), Allowed and Disallowed Lists are not applied until the caller dials the ARS code and a pool is selected.

Because restrictions imposed by a Disallowed List apply to the extension used to initiate a call to an outside number, a user with a restricted extension can circumvent restrictions by asking an operator with an unrestricted console to connect an outside call.

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Feature Interactions

Auto Dial	A user with a restricted extension cannot dial a restricted number (outside or toll) by using an Auto Dial button unless the number is on the Allowed List for that extension. A user cannot dial an outside number by using an Auto Dial button if the number is on a Disallowed List.
Automatic Route Selection	Automatic Route Selection (ARS) checks Allowed and Disallowed Lists before choosing the route for a call. This prevents users with restricted extensions from dialing numbers that are not on an Allowed List. ARS also prevents a user from dialing numbers on a Disallowed List.
Calling Restrictions	When used with calling restrictions, Allowed Lists can permit the dialing of specific numbers, such as emergency numbers, from an outward- or toll-restricted extension.
Conference	A user with a restricted extension cannot add a participant (outside or toll) to a conference call unless the participant's number is on the Allowed List for that extension.
	A user cannot add an outside number to a conference call if the number is on a Disallowed List.
Directories	A user with a restricted extension cannot use the System Directory to dial a restricted number unless the System Speed Dial number is marked or the number is on the Allowed List for that extension.
Forward and Follow Me	A user with a restricted extension cannot forward calls to a restricted (outside or toll) number unless the number is on the Allowed List for that extension. If the number is on the Disallowed List for that extension, the call cannot be forwarded. When activating Forward, a user with a restricted extension does not hear an error tone, but when a call is received, the Forward is denied if the number is not on the Allowed List.
HotLine	Allowed and Disallowed Lists can be assigned to HotLine extensions (Release 5.0 and later systems).
Night Service	A Night Service Emergency Allowed List can be programmed with up to 10 numbers that any user can dial without having to enter the Night Service password. For additional information, see "Night Service" on page 398.
Personal Lines	A user with a restricted extension cannot dial a restricted number (outside or toll) on a personal line button unless the number is on the Allowed List for that extension. If the number is on a Disallowed List, the user cannot dial it.
Recall/Timed Flash	If Recall is used on a personal line or **Pool** button—or, in Release 2.0 and later systems, on an **SA** or **ICOM** button—to access an outside loop-start line, the accessed line is kept, the user hears outside dial tone, and calling restrictions are reapplied.

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Remote Access   Both Allowed and Disallowed Lists are assigned as items of the class of
                      restriction (COR) for the Remote Access feature. When barrier codes are
                      not used, Allowed and Disallowed Lists are assigned to lines/trunks
                      systemwide. When barrier codes are used, Allowed and Disallowed Lists
                      are assigned to individual barrier codes.

Speed Dial   When a marked System Speed Dial number (the dialed number is
                      suppressed from the display) is used to dial a number, calling restrictions
                      (such as toll or outward restrictions, or Allowed and Disallowed Lists)
                      assigned to that extension are overridden. When an unmarked System
                      Speed Dial or a Personal Speed Dial number is used to dial a restricted
                      number, the call cannot be completed unless the number is on the
                      Allowed List for that extension.

Toll Type   When lines/trunks with different toll types are connected to the system
                      (for example, basic lines/trunks and PRI facilities), a toll prefix (*0* or *1*)
                      may be required for toll calls on some lines/trunks but not on others. In
                      this case, two Disallowed List entries are required to restrict users from
                      dialing specific area codes and/or telephone numbers. For example, to
                      restrict users from dialing calls in the 505 area code on both toll types,
                      one entry must be 1505 and the other entry must be 505. When the
                      Disallowed List is assigned to an extension, the 505 entry restricts users
                      from making calls to the 505 area code on lines/trunks that do not require
                      a toll prefix, and the 1505 entry restricts users from making calls
                      (including local calls) to the 505 area code on lines/trunks that *do* require
                      a toll prefix. The same rules apply to Allowed Lists.

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Authorization Code

At a Glance

Users Affected	Telephone users, data users
Reports Affected	Extension Information, Authorization Code Information, SMDR
Modes	All
Telephones	All (touch-tone telephones except QCC)
Programming Code	*80
Feature Code	80
MLX Display Label	Auth Code [Auth]
System Programming	Assign or remove Authorization Code for an extension: • Extension→**More**→Auth Code→Enter Assign home extension in SMDR Report: • Options→SMDR→Auth Code→Home Extension Number Assign actual authorization code in SMDR Report: • Options→SMDR→Auth Code→Authorization Code To print a report on all authorization codes on a system: • **More**→Print→Auth Code

Maximums
  Number of Digits in
  Authorization Code
	11 (range 2–11) (digits 0–9, *)

Factory Settings
  SMDR Report
  Authorization codes
	Home Extension Number
	Not assigned to any extensions

Description

The Authorization Code feature allows you to pick up someone else's telephone, enter your authorization code, and complete a call with the restrictions that apply to your own telephone (*home extension*). This includes toll restrictions, outward restriction, Facility Restriction Level (FRL), Allowed Lists, Disallowed Lists, Forced Account Code Entry, Night Service Exclusion List, and dial access to pools. All other functions on the telephone are those of the extension you are using, not your home extension.

Each entry of an authorization code provides restriction privileges for a single phone call. If you put the first call on hold and start to make an outside call, the Authorization Code button's green LED goes off. If you wish to make another call, you must reactivate the Authorization Code feature in order to obtain the restriction privileges of the home extension. Authorization codes can also be used for call control and call accounting through the SMDR printout. SMDR may be programmed so that when no account code is entered, either the home extension

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number or the authorization code is recorded in the ACCOUNT field. The factory setting lists the home extension number in the ACCOUNT field.

An authorization code can range from 2 to 11 characters and must be unique across the system. However, more than one user can use an authorization code simultaneously. Authorization codes do not have a set, systemwide length.

Through system programming, the system manager can assign one authorization code for each extension. One Authorization Code button can be programmed on any MLX or analog multiline telephone (except QCCs). A button with an LED is a good idea.

If a user does not have a physical telephone, a phantom extension may be programmed as a home extension to allow the user to use restricted telephones and for call control and accounting purposes.

The Authorization Code feature can be activated by modems, fax machines, and other devices that can dial or enter *#80* and then the authorization code followed by a *#*.

Activating an Authorization Code

You can pick up any telephone (except a QCC) in the system and use an authorization code. You obtain home extension calling privileges by entering your home extension's authorization code. Do this in one of the following ways:

- Press a programmed Authorization Code button and then enter the assigned authorization code.

- Press the **Feature** button on an MLX display telephone and then select Auth Code.

- Press the **Feature** button on an MLX telephone or analog multiline telephone and dial *80*.

- Press *#80* while off hook on an **SA/ICOM** button.

If you activate the feature while on hook, the feature selects an **SA/ICOM** button and turns on the speakerphone, if present.

After you activate the feature, the green LED (if present) next to a programmed Authorization Code button starts to flash slowly to indicate that you may enter the code's digits. An MLX display telephone shows Auth:, and an analog multiline display telephone shows Auth?.

Entering an Authorization Code

While you enter the assigned authorization code, you hear inside dial tone. If you do not enter the code within 15 seconds, the feature is deactivated.

If a telephone with a display is used, the display shows asterisks instead of the entered digits.

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To complete entry of the authorization code, either press a programmed
Authorization Code button again or dial a # to signify the end of the code. If the
entered authorization code matches an assigned code, you continue to hear
inside dial tone and can start dialing the telephone number.

The green LED associated with a programmed Authorization Code button
becomes steady to indicate that an authorization code has been successfully
entered. The LED remains steady as long as the Authorization Code feature
remains active.

If the authorization code is not valid, you hear an error tone (a high tone followed
by a low tone). The green LED associated with a programmed Authorization Code
button goes off to indicate that the Authorization Code feature is not active. An
MLX display telephone shows the message Auth Code Not Valid, and an
analog multiline display telephone shows the message Error.

Deactivating an Authorization Code

Each entry of an authorization code is good for only one phone call. After
completing a call, the current extension loses home extension privileges. It also
loses privileges for subsequent calls after putting a call on hold or after initiating
Recall, Headset Hang Up, or Park features. If a far-end disconnect is not received
from the central office, you must hang up or select another outside line to
deactivate the Authorization Code feature.

After the feature is deactivated, the green LED next to the Authorization Code
button (if present) turns off.

Considerations and Constraints

An authorization code can be entered only while hearing inside dial tone.

Incoming calls are not affected by an authorization code.

There is no limit to the number of users who can use the same authorization code
simultaneously.

Authorization codes cannot contain a # or begin with a *.

HotLine extensions cannot use authorization codes.

An authorization code must be no fewer than 2 and no more than 11 digits long.

An authorization code must be unique across the system.

Telephone Differences

Queued Call Console

The Authorization Code feature cannot be activated on a QCC.

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Analog Multiline Telephones

At an analog multiline telephone with a General Purpose Adapter connected to it and set for Auto operation, you must lift the handset before activating Authorization Code. Do not use the **Spkrphone** button.

Single-Line Telephones

On single-line telephones, entry of an authorization code is activated by dialing *#80*. The entry is completed by dialing *#*. Single-line telephones must have touch-tone dialing and must be programmed through Idle Line Preference (using centralized telephone programming) to select an **SA/ICOM** button when the user picks up the handset or activates the speakerphone.

On a single-line telephone, an authorization code must be entered before accessing an outside line.

Single-line telephone users cannot enter authorization codes by using a System Speed Dial or Personal Speed Dial code because these features are activated by dialing *#*. Pressing # completes the entry of an authorization code. Therefore, it cannot also be used to activate speed dial features.

Feature Interactions

Account Code Entry	If an account code is not entered, the ACCOUNT field of the SMDR printout contains the authorization code or the home extension used to obtain restriction privileges. If an account code is entered at any time during a call, the account code is stored in the SMDR record.
	If the extension used to make a call is assigned Forced Account Code Entry, the caller is not forced to enter the account code while using the Authorization Code feature.
	If the home extension is assigned Forced Account Code Entry, the caller must enter an account code before entering an authorization code.
Automatic Route Selection	An authorization code must be entered before dialing the ARS access code.
Conference	Enter an authorization code before each outside call for a conference. You may enter different authorization codes for different outside calls, which is useful if different privileges are needed for different outside calls.
Digital Data Calls	Data calls can use authorization calls. If Account Code Entry is also used, the authorization code must be entered after the account code.
	Authorization codes can be used by video systems that allow the use of # for feature codes.
Headset Options	Pressing the Headset Hang Up button deactivates the Authorization Code feature.
Hold	Initiating hold after entering an authorization code deactivates the Authorization Code feature for subsequent calls.

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Last Number Dial	For security reasons, an authorization code is not saved by the Last Number Dial feature.
	Authorization Code does not affect Last Number Dial on the extension you are using or on your home extension. You can retrieve the last number dialed on the phone you are using.
Night Service	An authorization code can be used when Night Service is activated.
Park	Initiating Park after entering an authorization code deactivates the Authorization Code feature. An authorization code does not need to be entered to pick up a parked call.
Remote Access	A caller cannot enter an authorization code on a remote access call.
Saved Number Dial	For security, the authorization code is not saved by the Saved Number Dial feature.
	Authorization Code does not affect Saved Number Dial on the extension you are using or your home extension. You can retrieve the saved number on the phone you are using.
SMDR	Outgoing calls made using an authorization code are recorded in the SMDR record.
	If an account code is not entered, the ACCOUNT field of the SMDR printout contains the authorization code used to obtain either restriction privileges or the home extension number, depending on how SMDR is programmed. If an account code is entered at any time during a call, the account code is stored in the SMDR record instead.
Speed Dial	Users cannot enter authorization codes by using a System Speed Dial or Personal Speed Dial code because these features are activated by dialing #. Pressing # completes the entry of an authorization code and cannot also be used to activate speed dial features.
System Renumbering	If extensions are renumbered, authorization codes remain with the logical IDs where they were originally assigned. System Renumbering also removes all phantom extensions and their authorization codes.
Transfer	If a user wants to transfer a call to an outside number, the authorization code must be entered at the beginning of the transfer to obtain home extension privileges. In this case, one-touch Transfer does not work.

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Auto Answer All

At a Glance

Users Affected	Telephone users, DLC operators, data users
Reports Affected	Extension Information
Modes	All
Telephones	Analog multiline
Programming Code	*754
MLX Display Label	AutoAns All (in centralized telephone programming)
Hardware	General Purpose Adapter (GPA) needed to connect answering device to analog multiline telephone; 502C headset adapter needed for headset options.

Description

Auto Answer All is used on analog multiline telephones only, including analog Direct-Line Consoles (DLCs) with a modem, answering machine, or other answering device connected through a General Purpose Adapter (GPA) to answer both inside and outside calls when the user is not available.

To activate Auto Answer All, slide the switch on the GPA to Auto and press the Auto Answer All button. The green LED next to the button turns on, and incoming calls are answered automatically.

To deactivate the feature, either slide the switch on the GPA to Basic or press the Auto Answer All button. If the button is pressed to deactivate the feature, the green LED next to the button turns off. In either case, the telephone returns to normal operation.

Auto Answer All can also be used with a headset adapter to allow an analog multiline telephone user or analog DLC operator with a headset to be connected automatically to ringing calls. A tone heard through the headset signals an incoming call.

A programmed button activates and deactivates Auto Answer All. Select the lines to be answered by the device by programming Immediate Ring or Delay Ring as the ringing option. Lines that are not to be answered should be programmed as No Ring.

Telephone Differences

Queued Call Consoles

Auto Answer All cannot be used on a QCC.

Other Multiline Telephones

Auto Answer All cannot be used on MLX telephones, cordless telephones, or wireless telephones.

Single-Line Telephones

Auto Answer All cannot be used on single-line telephones. This includes single-line telephones with speakerphones.

Some single-line telephones (such as the 8110) have their own telephone-based Auto Answer feature, which can be used with a Release 4.0 or later MERLIN LEGEND Communications System.

Considerations and Constraints

When Auto Answer All is used, all voice announcements (including Voice Announce to Busy) should be disabled because the device connected to the GPA cannot answer voice-announced calls.

Auto Answer All cannot be used with a Hands-Free Unit (HFU).

Occasionally a second alert (or zip) tone may sound on incoming or intercom calls. This is normal.

Auto Answer All should be used instead of Auto Answer Intercom to allow an answering device to answer intercom calls. Auto Answer Intercom can cause intercom calls to be dropped.

Feature Interactions

Auto Answer Intercom	Both Auto Answer All and Auto Answer Intercom can be programmed on the same extension, but they cannot be used at the same time. Auto Answer Intercom should not be used with answering devices.
Auto Dial	At an analog multiline telephone with a General Purpose Adapter (GPA) connected and set for Auto operation, you must lift the handset before pressing an Auto Dial button. Do not use the **Spkrphone** button.
Coverage	Auto Answer All is used when a receiver with an analog multiline telephone wants Individual or Group Coverage calls to be answered by an answering machine connected to the extension.
Forward and Follow Me	An answering device connected to an analog multiline telephone can answer forwarded calls when Auto Answer All is activated.

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Group Calling	Members in a calling group with analog multiline telephones can use Auto Answer All when answering machines are connected to their extensions. When the feature is activated, all incoming calls ringing on the calling group member's extension—both calls for the calling group and calls to the member's own extension—are answered automatically by the answering machine.
Ringing Options	An analog multiline telephone user selects the lines to be answered by programming them for Immediate or Delay Ring and selects the lines not to be answered by programming them for No Ring. If the device is to answer only inside calls, all personal lines (outside lines assigned to buttons on the telephone) must be programmed for No Ring.
System Access/ Intercom Buttons	When Auto Answer All is activated, all calls received at an **SA Ring**, **ICOM Ring**, **SA Voice**, or **ICOM Voice** button can be answered automatically by the device connected to the GPA. If Shared **SA** buttons are assigned, only the principal extension should be programmed for Immediate Ring to prevent the call from being answered at the principal extension and at extensions with the Shared **SA** button.
Voice Announce	Voice-announced calls received at an analog multiline telephone are not answered by a device connected through a GPA because ringing current is not sent to the device.

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Auto Answer Intercom

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Extension Information
Modes	All
Telephones	Analog multiline
Programming Code	*753
MLX Display Label	AutoAnsIcom (in centralized telephone programming)
Hardware	Hands-Free Unit (HFU) is used to answer inside calls.

Description

Some older models of analog multiline telephones do not have built-in speakerphones. People with these telephones can still answer inside calls without lifting the handset by using Auto Answer Intercom with an optional Hands-Free Unit (HFU).

⟹ **NOTE:**
MLX telephone users can automatically answer calls on their speakerphones if the Hands-Free Answer on Intercom button (HFAI) is activated.

To activate Auto Answer Intercom, press the Auto Answer Intercom button. The green LED next to the button turns on. The HFU turns on automatically when an inside call is received.

To deactivate the feature, press the Auto Answer Intercom button again. The green LED turns off, and the HFU does not automatically turn on when an intercom call is received.

Mode Differences

When Auto Answer Intercom is activated in Hybrid/PBX mode and a call is received on an **SA** button, the HFU turns on, even if the button is programmed for Delay Ring or No Ring.

Telephone Differences

Queued Call Consoles

Auto Answer Intercom cannot be used on a QCC.

Other Multiline Telephones

Auto Answer Intercom cannot be used on MLX telephones, cordless telephones, or wireless telephones.

Single-Line Telephones

Auto Answer Intercom cannot be used on single-line telephones, whether or not they have speakerphones.

Some single-line telephones (such as the 8110) have their own telephone-based Auto Answer feature, which can be used with a Release 4.0 or later MERLIN LEGEND Communications System.

Considerations and Constraints

Auto Answer All should be used instead of Auto Answer Intercom to allow an answering device to answer intercom calls. Auto Answer Intercom can cause intercom calls to be dropped.

When Auto Answer Intercom is activated in Hybrid/PBX mode and a call is received on an **SA** button, the HFU turns on, even if the button is programmed for Delay Ring or No Ring.

Feature Interactions

Auto Answer All	Both Auto Answer All and Auto Answer Intercom can be programmed on the same telephone, but they cannot be used at the same time.
Coverage	Auto Answer Intercom does not allow a receiver with an analog multiline telephone to use an HFU to answer calls received on a Primary Cover, Secondary Cover, or Group Cover button.
Primary Rate Interface (PRI) and T1	Incoming calls on a line that is a member of a B-channel group programmed for routing by dial plan are not eligible for answer by Hands-Free Answer on Intercom (HFAI).
System Access/ Intercom Buttons	When Auto Answer Intercom is activated, the Hands-Free Unit (HFU) answers inside calls received on an **SA** button. The HFU does not answer calls on a Shared **SA** button.

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Auto Dial

At a Glance

Users Affected	Telephone users, DLC operators, data users
Reports Affected	Extension Information
Modes	All
Telephones	All except QCC and single-line telephones
Programming Codes	
Inside	*22 + *ext. no.*
Outside	*21 + *number*
MLX Display Labels	Auto Dial, Inside [AutoD,In]
	Auto Dial, Outside [AutoD,Out]
Maximums	28 digits, including special characters

> ⚠ **CAUTION:**
> *Before testing emergency numbers, call the regular number for the organization(s) the emergency number reaches. Find out the correct procedure for testing an emergency number without disrupting emergency operations.*

Description

Use Auto Dial buttons for one-touch dialing of frequently called telephone numbers. You can program types of Auto Dial buttons:

■ **Inside Auto Dial.** This button automatically dials any extension or group extension in the system such as a co-worker, calling group, fax machine, or voice mail system. An operator can also program inside Auto Dial buttons for park zone extension numbers.

When an inside Auto Dial button is programmed, the user can see the status of the extension associated with the button; the green LED next to the button is on when a person at the extension is on a call, when Do Not Disturb is on, or when the extension is forced idle for centralized telephone programming or system programming.

■ **Outside Auto Dial.** This button automatically dials frequently called telephone numbers, as well as account codes, long-distance company access codes, bank access codes, or emergency contact numbers.

Considerations and Constraints

When an Auto Dial button is used to make a call, the green LED next to the button does not turn on.

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Only company extension numbers should be programmed on inside Auto Dial buttons. Account codes, long-distance company access codes, and outside telephone numbers should be programmed on outside Auto Dial buttons.

If a user tries to program an incomplete extension number on an inside Auto Dial button, the system provides an error tone and the button remains as programmed.

If numbers are dialed incorrectly by outside Auto Dial, it is possible that the digits are being dialed before a central office dial tone is received. In this case, a Pause character should be programmed as the first digit of the dialed number in Key mode and the digit after the dial-out code in Hybrid/PBX mode.

To enter special characters in a telephone number programmed on an outside Auto Dial button, use **Conf** for the Flash character, **Drop** for the Stop character, and **Hold** for the Pause character (see Table 1). These special characters cannot be programmed on inside Auto Dial buttons. If the Stop character is the last character in the number, it has no effect on how the Auto Dial button functions.

Table 1.   Special Characters for Outside Auto Dial

Press	See[1]	Means
Drop[†]	s	**Stop.** Halts dialing within a sequence of automatically dialed numbers. For example, an outside Auto Dial button may be programmed with a password and a Stop, followed by a telephone number. To use Auto Dial with a Stop in the sequence, press the button to dial the password, listen for the dialing and connection, and press the button again to dial the telephone number.
Hold	p	**Pause.** Inserts a 1.5-second pause in the dialing sequence. Multiple consecutive pauses are allowed.
Conf[†]	f	**Flash.** Sends a switchhook flash. Must be the first entry in the dialing sequence.
##	#	**End of Dialing** (for extension programming only). Use at the end of a dialing sequence to indicate that you have finished dialing or to separate one group of dialed digits from another, such as account code and number dialed.
#	#	**End of Dialing.** Use at the end of a dialing sequence to indicate that you have finished dialing or to separate one group of dialed digits from another.

1.   Display phones only.
†   Not available on MLC-5 cordless telephones.

In Release 2.1 and later systems, when a call is forwarded to a multiline telephone that has an inside Auto Dial button programmed for the forwarding telephone, the green LED next to the Auto Dial button does not flash.

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Mode Differences

Hybrid/PBX Mode

In Hybrid/PBX mode, the system automatically turns on the speakerphone and selects an **SA** button when you press an inside or outside Auto Dial button before lifting the handset.

Key Mode

In Key mode, the system automatically turns on the speakerphone and selects an outside line button when you press an outside Auto Dial button without lifting the handset. When you press an inside Auto Dial button without lifting the handset, the system automatically turns on the speakerphone and selects an **ICOM** button.

Behind Switch Mode

In Behind Switch mode, the system automatically selects the prime line button and turns on the speakerphone whenever the user presses an outside Auto Dial button. If the Automatic Line Selection sequence has been changed to select the **ICOM** button, press the prime line or outside line button before pressing an outside Auto Dial button. Pressing an inside Auto Dial button without lifting the handset turns on the speakerphone; the system automatically selects an **ICOM** button but not an outside line.

Telephone Differences

Direct-Line Consoles

Inside Auto Dial can be programmed onto available buttons on a DLC. Use the buttons to transfer a call, make an inside call, or determine availability of the extension.

Queued Call Consoles

Use the Personal or System Directory instead of outside Auto Dial buttons, which cannot be programmed on the Queued Call Console (QCC). The Extension Directory or DSS buttons can be used instead of inside Auto Dial buttons.

Other Multiline Telephones

All multiline telephone users can program and use Auto Dial buttons. When using an MLX-20L telephone, use Personal Directory in place of Auto Dial. On an MLX display telephone, select the feature from the display to program it.

At an analog multiline telephone with a General Purpose Adapter (GPA) connected to it and set for Auto operation, you must lift the handset before pressing an Auto Dial button. Do not use the **Spkrphone** button.

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Single-Line Telephones

Single-line telephone users cannot program Auto Dial buttons.

Feature Interactions

Account Code Entry	You can program frequently used account code numbers onto outside Auto Dial buttons.
Allowed/ Disallowed Lists and Calling Restrictions	A user with a restricted extension cannot dial a restricted number (outward or toll) using an Auto Dial button unless the number is on the Allowed List for that extension.
	You cannot dial an outside number using an Auto Dial button when the number is on a Disallowed List assigned to the extension.
Automatic Route Selection	You cannot program Automatic Route Selection (ARS) dial-out codes on inside Auto Dial buttons. You can program an ARS dial-out code on an outside Auto Dial button.
Conference	Press the **Conf** button to enter the Flash special character in a telephone number programmed on an outside Auto Dial button. Press the **Drop** button to enter the Stop special character in a telephone number programmed on an outside Auto Dial button.
Digital Data Calls	A terminal adapter can make a call using an Auto Dial button by dialing the virtual number of the Auto Dial button (for example *#01*). A video system that supports the use of # for entering feature codes can use Auto Dial in the same fashion.
Display	When you press a programmed Auto Dial button, the digits appear on the display as if you were dialing them from the dialpad, and the number is automatically dialed. An MLX telephone user can select Auto Dial from the display only during programming.
Do Not Disturb	When you activate Do Not Disturb, the green LED turns on next to all inside Auto Dial buttons programmed at your extension.
Forward and Follow Me	When a call is forwarded to a multiline telephone that has an Auto Dial button programmed for the forwarding telephone, the green LED next to the Auto Dial button does not flash.
Group Calling	The Calls-in-Queue-Alarm button for a calling group is assigned on a multiline telephone by programming an inside Auto Dial button with the calling group's extension number. When a DSS is not available, the group supervisor uses Auto Dial buttons programmed with each calling group member's extension to monitor group member availability.
Headset Options	If headset operation is activated on the telephone or console, select a line button before using Auto Dial to dial an extension or an outside number.
Hold	The **Hold** button is used to enter the Pause special character in a telephone number programmed on an Auto Dial button.

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Last Number Dial	A number you dial by pressing a programmed outside Auto Dial button is saved for Last Number Dial as if you dialed it with the dialpad, but special characters do not work. An extension dialed when you press a programmed inside Auto Dial button is not saved for Last Number Dial.
Microphone Disable	When an MLX telephone user's microphone is disabled, pressing an Auto Dial button turns on the speakerphone so the user can hear the number being dialed. However, the user must lift the handset to talk once the call is answered.
Paging	You can program an extension for a speakerphone paging group on an inside Auto Dial button.
Park	An operator can program park zone codes on inside Auto Dial buttons. An inside Auto Dial button can also be programmed with a user's or system operator's own extension number and can be used to park calls. When the system is programmed for one-touch Hold with manual completion, you hear a busy signal when parking a call at your own extension number and must complete the transfer by hanging up or pressing the **Transfer** button.
Personal Lines	Only an outside Auto Dial button—not an inside one—can be used on a personal line.
Pools	Pool dial-out codes cannot be programmed on inside Auto Dial buttons. A pool dial-out code can be programmed on an outside Auto Dial button when a telephone number is also included.
Recall/Timed Flash	The **Conf** button is used to enter the Flash special character, which simulates pressing the **Recall** button, in a telephone number programmed on an Auto Dial button.
	If Recall is used during an inside call made on an Auto Dial button, the call is disconnected and the user hears inside dial tone.
Saved Number Dial	A number you dial by pressing a programmed outside Auto Dial button can be saved for Saved Number Dial by pressing the programmed Saved Number Dial button.
Signal/Notify	You cannot program a Signal button and an Auto Dial button for the same extension. Attempting to program both types of buttons for one extension causes the system to erase the button that has been programmed first.
SMDR	All numbers dialed on an outside call using Auto Dial are recorded on the SMDR report.
System Access/ Intercom Buttons	When you press an inside Auto Dial button, the system automatically selects an **SA** or **ICOM** button and turns on the speakerphone. When you press an outside Auto Dial button, the system automatically selects an outside line button in Key mode, a prime line button in Behind Switch mode, or an **SA** button in Hybrid/PBX mode.

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Transfer   To transfer calls, you can press inside Auto Dial buttons instead of dialing extension numbers. To use the One-Touch Transfer option, you must program inside Auto Dial buttons for extensions to which you transfer calls. When an operator transfers a call and it returns unanswered, the green LED next to the Auto Dial button flashes to indicate the extension from which the call is returning. Only system operators receive this indication.

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Automatic Line Selection and Ringing/Idle Line Preference

At a Glance

Users Affected	Telephone users, operators, data users		
Reports Affected	Extension Information		
Modes	All		
Telephones	All		
Programming Codes			
Ringing/Idle Line Preference			
On	*343		
Off	*344		
ALS sequence	(centralized telephone programming only for single-line telephones)		
Begin button sequence	*14		
End button sequence	**14		
MLX Display Labels	Line Prefer [LnPrf]		
	AutoLineSel (centralized telephone programming only)		
Maximums			
Buttons for each extension in ALS sequence	8		
Factory Settings			
Ringing/Idle Line Preference	On		
ALS Sequence by Mode	Hybrid/PBX	Key	Behind Switch
MLX Telephone	3 **SA**	8 personal lines	1 prime line
Analog Multiline Telephones	3 **SA**	8 personal lines	1 prime line
Single-Line Telephones	3 **SA**	2 **ICOM**	1 prime line
Direct-Line Consoles	2 **SA** + 6 personal lines	8 personal lines	1 prime line + 7 personal lines
Queued Call Consoles	5 **Call** (fixed)		

Description

Automatic Line Selection (ALS) and Ringing/Idle Line Preference are two closely related features. Ringing/Idle Line Preference directs the system to automatically select a specific line button for making or answering a call, while ALS specifies the order in which buttons should be selected.

Ringing/Idle Line Preference

Ringing/Idle Line Preference is a single option that controls two aspects of an extension's behavior: selection of a line when a call arrives and selection of a line when a user hangs up. Turn this option on or off for each extension through either

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extension programming or centralized telephone programming, using the display or programming codes. When Ringing/Idle Line Preference is on for an extension, the system selects a line button automatically, as follows:

- **Ringing Line Preference.** Selects a ringing outside line, **SA** or **ICOM** button, or Cover button; that is, the red LED turns on next to the button with the ringing call. If you lift the handset or press the **Speaker** button, you are automatically connected to the ringing call.

   The button must be programmed for Immediate Ring or Delay Ring. The red LED next to a button programmed for No Ring does not turn on unless you press that button to select that line. See "Ringing Options" on page 533 for additional information.

- **Idle Line Preference.** Selects an available outside line, **SA**, or **ICOM** button for an outgoing call. If you lift the handset or press the Speaker button when no call is ringing, the red LED turns on next to an available line button, and you are automatically connected to that line.

On is the factory setting for Ringing/Idle Line Preference for all extensions. If Ringing/Idle Line Preference is turned off for an extension, no line button at that extension is ever selected automatically. The red LED is never on until you press the line button with a ringing call (flashing green LED) or an available line button (green LED off) to make a call.

Automatic Line Selection

When Ringing/Idle Line Preference is turned on at an extension, the system uses the programmed ALS sequence to select an idle **SA** or **ICOM** button or outside line button for originating a call. When you lift the handset or press the **Speaker** button without selecting a line button, the red LED next to the first button in the programmed sequence turns on and you are connected to that line. If the first line is busy, the system selects the second button in the sequence, and so on.

For example, if you normally make toll calls, a WATS line assigned to the extension can be programmed as the first line in the sequence, and local lines as the second, third, and so on. When you lift the handset or press the **Speaker** button, the WATS line, if available, is selected automatically.

On a multiline telephone, override ALS by pressing the desired line button before you lift the handset or press **Speaker**. The red LED next to the button goes on.

Up to eight line buttons (except on single-line telephones) can be programmed in the ALS sequence for an extension, either through centralized telephone programming or through extension programming, using programming codes only.

⟹ NOTE:
Your current Automatic Line Selection table is deleted immediately after you press *14. There is no way to cancel the operation. You must program new selections and then press **14 to end the operation.

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Table 1 shows the factory-set ALS sequence for each kind of telephone according
to operating mode. When Ringing/Idle Line Preference is on, buttons are selected
in the order shown. For multiline telephones, including operator consoles, the
factory-set sequence begins with the lower left button, moves up in the first
column of buttons, then moves to the bottom of the next column on the right, and
finally moves up until the maximum of eight buttons is included in the sequence.
When outside line buttons are part of the sequence, they are selected in numeric
order (by default, 801, 802,…), up to the maximum number of lines shown.

Table 2.   Factory-Set Automatic Line Selection Sequence

	Mode				
Telephone	**Hybrid/PBX**		**Key**		**Behind Switch**	
Multiline (MLX or Analog)	3. **SA O** 2. **SA V** 1. **SA R**		3. Line 3 2. Line 2 1. Line 1	8. Line 8 7. Line 7 6. Line 6 5. Line 5 4. Line 4	1. Prime line	
Single-Line	3. **SA O** 2. **SA R** 1. **SA R**		2. **ICOM R** 1. **ICOM R**		1. Prime line	
Direct-Line Consoles (MLX or Analog)	5. Line 3 4. Line 2 3. Line 1 2. **SA V** 1. **SA R**	8. Line 6 7. Line 5 6. Line 4	3. Line 3 2. Line 2 1. Line 1	8. Line 8 7. Line 7 6. Line 6 5. Line 5 4. Line 4	3. Line 3 2. Line 2 1. Prime line	8. Line 8 7. Line 7 6. Line 6 5. Line 5 4. Line 4
Queued Call Console	5. **Call 5** 4. **Call 4** 3. **Call 3** 2. **Call 2** 1. **Call 1**					

SA R, **ICOM R** = **SA Ring**, **ICOM Ring**

SA V, **ICOM V** = **SA Voice**, **ICOM Voice**

SA 0, **ICOM 0** = **SA Originate Only**, **ICOM Originate Only**

Considerations and Constraints

Outside line buttons and **SA** or **ICOM** buttons can be included in the ALS
sequence. However, inside and outside lines should not be interleaved. A typical
sequence would consist of all desired **SA** or **ICOM** buttons, followed by all desired
outside line buttons.

When personal line or **Pool** buttons are assigned to a single-line telephone or
other tip/ring device (such as a fax machine) connected to a 012 module, a 016
module, or a Multi-Function Module (MFM), the buttons are automatically added
to the ALS sequence.

When a user or system manager enters ALS programming, the system clears the
current ALS sequence for the extension. If the person programming the extension

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exits without selecting any buttons, the extension has no ALS sequence. The effect is as if Idle Line Preference is turned off: no line is selected automatically when the user lifts the handset to place a call.

Mode Differences

Hybrid/PBX Mode

The factory-set ALS sequence for multiline and single-line telephones includes only **SA** buttons. Make outside calls by dialing the main pool dial-out code (usually *70*) or Automatic Route Selection code (usually *9*).

In Release 3.0 and earlier systems, the factory setting gives users access to pools. In Release 3.1 and later systems, the factory setting restricts access to pools or Automatic Route Selection. In order for a user to access the main pool, the system manager must use system programming to remove the restriction for the specific extension.

Key Mode

The factory-set ALS sequence for multiline telephones (including DLCs) includes only personal line buttons. Users can make inside calls by pressing an available **ICOM** button before dialing.

The factory-set ALS sequence for single-line telephones includes only **ICOM** buttons. Users can make outside calls by dialing the Idle Line Access code (usually *9*).

Behind Switch Mode

The factory-set ALS sequence includes only the prime line. The sequence can be changed to an **ICOM** line followed by the prime line or outside lines. This allows a single-line telephone user to use system features and to select the prime line and/or outside lines by dialing the Idle Line Access code (usually *9*).

Telephone Differences

Queued Call Consoles

The ALS sequence on a QCC starts at the lowest **Call** button and moves upward, and Ringing/Idle Line Preference is on. Neither can be changed.

Other Multiline Telephones

The ALS sequence is assigned either through extension programming, using programming codes only, or through centralized telephone programming.

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Single-Line Telephones

The ALS sequence for a single-line telephone can be changed only through centralized telephone programming. It cannot be changed by the telephone user.

The ALS sequence for single-line telephones and other tip/ring equipment connected to 012 modules, 016 modules, 008 OPT modules, or Multi-Function Modules is factory-set to include only **SA** or **ICOM** buttons. As outside lines or pools are assigned to the extension, they are automatically added to the ALS sequence.

In Key mode, if the ALS sequence for a single-line telephone is changed to include only outside lines, the user cannot use system features except through pressing and releasing the **Recall** or **Flash** button. (If the telephone does not have positive disconnect, the user can press and release the switchhook.)

In Behind Switch mode, the factory setting for the ALS sequence is the prime line. The sequence can be changed to an **ICOM** button followed by the prime line or outside lines. This allows a single-line telephone user to use system features and to select the prime line and/or outside lines by dialing the Idle Line Access code.

Feature Inter1

actions

Account Code Entry	A single-line telephone user can enter account codes only when ALS is programmed to select an **SA** or **ICOM** button when the user lifts the handset.
Coverage	When Ringing/Idle Line Preference is on for an extension, the system automatically selects a Primary Cover, Secondary Cover, or Group Cover button with a ringing call. However, these buttons cannot be programmed in an ALS sequence because they cannot be used to make calls.
Headset Options	When an MLX telephone or console is in headset operation, Ringing/Idle Line Preference is off automatically. Select a line manually to make a call. If Headset Auto Answer is off, manually select a ringing line to answer the call.
Multi-Function Module	When an MFM is installed in an MLX telephone, the ALS sequence for the MFM should be set to select **SA Ring** or **ICOM Ring**, then **SA Originate Only** or **ICOM Originate Only**, then outside lines (or the prime line in Behind Switch mode) assigned to the MFM. Ringing/Idle Line Preference should be on for an MFM.
Ringing Options	Even when Ringing/Idle Line Preference is on, the system does not automatically select an outside line, **SA**, **ICOM**, or Cover button programmed for No Ring. If a call is coming in on such a button, select the button manually to answer. The green LED flashes when the call arrives; the red LED turns on when the button is pressed.

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System Access/ Intercom Buttons	**SA** (including Shared **SA**) or **ICOM** buttons can be programmed in an ALS sequence. Different button types (personal line, **Pool**, **ICOM**, **SA**, or Shared **SA** buttons) should not be interleaved in an ALS sequence.
Transfer	ALS does not apply when the **Transfer** button is pressed.

Automatic Maintenance Busy

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	System Information (SysSet-up)
Mode	Hybrid/PBX
System Programming	System→MaintenBusy

Description

When Automatic Maintenance Busy is enabled, a malfunctioning loop-start, ground-start, or tie line/trunk is automatically put in a maintenance-busy state, preventing outside calls from being made on that line/trunk. Incoming calls are never blocked.

In general, the two reasons for putting an outside line in a maintenance-busy state are as follows:

- Faulty or delayed signaling between the system and the central office. To avoid busying out lines because of slow telephone company central office responses rather than faulty lines/trunks, four consecutive occurrences of faulty or delayed signaling are required before the line/trunk is put in maintenance-busy state.

- Central office failure to disconnect (make the line/trunk available for use) after a user hangs up. The line/trunk is put in maintenance-busy state after two occurrences of a failure to disconnect.

When a line/trunk is put in maintenance-busy state, an error is recorded on the internal error log. The log indicates which type of error occurred: faulty or delayed signaling, or central office failure to disconnect.

Once a line/trunk is in maintenance-busy state, the three ways to clear the condition and put the line/trunk back into service are as follows:

- Periodic testing of the line/trunk by the system's internal maintenance software to verify proper functioning

- Manual clearing of the error from the error log

- Manual seizure of the line/trunk at an operator console or through maintenance dial codes

Considerations and Constraints

Incoming calls are received and processed normally on lines/trunks in a maintenance-busy state.

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Direct Inward Dial (DID) trunks (Hybrid/PBX mode only) are not affected by Automatic Maintenance Busy because these trunks only can receive calls and are not pooled.

100D (DS1) modules configured as ground-start, loop-start, or tie lines/trunks are monitored and maintained by Automatic Maintenance Busy.

No more than 50 percent of the lines/trunks in a pool can be placed in maintenance-busy state at one time, *except* when the central office has failed to disconnect a line/trunk (preventing its use) or when an entire line/trunk module is manually taken out of service (called a *user-imposed* maintenance-busy state). In the case of the 100D module, any failure in the DS1 link causes the module to generate a loss-of-service alarm, and the entire module is taken out of service.

Mode Differences

Hybrid/PBX Mode

To provide optimal performance, Automatic Maintenance Busy should be enabled when a Hybrid/PBX system includes pools.

Key and Behind Switch Modes

Automatic Maintenance Busy is not available in Key and Behind Switch modes.

Feature Interactions

Alarm	The red LED next to the **Alarm** button on system operator consoles turns on, and the designated maintenance alarm alert device sounds or flashes when more than 50 percent of the lines/trunks in a pool are in a maintenance-busy state.
Automatic Route Selection	When Automatic Route Selection (ARS) is used to make an outside call, the system does not select lines/trunks that are in maintenance-busy state.
Pools	To provide optimal performance, Automatic Maintenance Busy should be enabled when a Hybrid/PBX system includes pools.

Automatic Route Selection

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Automatic Route Selection, Extension Directory, Extension Information, Remote Access (DISA) Information

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Mode	Hybrid/PBX only
Telephones	All
System Programming	Specify the type of table (6-digit, area code, local exchange, or 1 + 7) and the area codes and/or exchanges to be included in the table:
	• Tables→ARS→ARS Input
	Specify that 1 + 7 tables should be searched when a leading 1 is dialed:
	• Tables→ARS→ARS 1 + 7Dial
	Specify time of day when calls are routed by using Subpattern A or B routing information:
	• Tables→ARS→Sub B Start/Stop
	Identify the pools (up to six) on which calls are to be routed:
	• Tables→ARS→Sub A Pools/Sub B Pool
	Assign or remove the FRL associated with each route:
	• Tables→ARS→Sub A FRL/Sub B FRL
	Specify the number of digits that need to be absorbed by the system when it routes calls on an identified route:
	• Tables→ARS→Sub A Absorb/Sub B Absorb
	Specify the digits or special characters that must be added by the system to the number dialed by a user when calls are routed on an identified route:
	• Tables→ARS→Sub A Digit/Sub B Digit
	Specify the Facility Restriction Level (FRL) and/or digits that must be added when people dial emergency numbers in the Special Numbers (N11) table:
	• Tables→ARS→**More**→SpeclNumber→ARS FRL/ARS Digit
	Specify the pool routing, FRL, and digits or special characters that must be added by the system to the number dialed by a user when calls are routed on the Dial 0 table:
	• Tables→ARS→**More**→Dial 0→ARS Pool/ARS FRL/ARS Digits
	Specify whether a route is to be used for voice, data, or both on a T1, BRI, or PRI call:
	• Tables→**More**→Sub A Data/Sub B Data

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At a Glance - *Continued*

System Programming continued	Allow or restrict remote access users (without barrier codes) from using selected lines/trunks:
	• LinesTrunks→RemoteAccss→Non-TIE/TIE Lines→ARS Restrct
	Allow or restrict remote access users (with barrier codes) from using selected lines/trunks:
	• LinesTrunks→RemoteAccss→BarrierCode→ARS Restrct
	Assign or restrict extensions from using selected lines/trunks:
	• Extensions→ARS Restrct
Maximums	
Programmable Routing Tables	16 (1–16)
Entries for each table	100
Factory-set tables	4: Dial 0 (table 19), Special Numbers (N11, table 20), Default Toll (table 17), Default Local (table 18)
Subpatterns	2 for each programmable table
Routes	6 (1–6) for each subpattern
Absorbed digits	11 (0–11) for each route
System-prefixed characters	20 (0–9,*, and Pause) for each route
Factory Settings	
ARS dial-out code	9
FRL (routes assigned to Default Toll table)	3 (0–6; 0 least restrictive, 6 most restrictive)
FRL (routes assigned to Default Local table)	2 (0–6; 0 least restrictive, 6 most restrictive)
FRL (extensions)	3 (0–6; 0 most restrictive, 6 least restrictive)
FRL (Remote Access barrier codes and trunks)	0 (0–6; 0 most restrictive, 6 least restrictive)
Time to Start	00:00 (midnight, both Subpattern A and B)
System-prefixed characters	None
Absorbed digits	0
1 + 7 dialing requirements	Not within area code
Data	Voice only

Description

Automatic Route Selection (ARS) is available only in Hybrid/PBX mode. ARS allows outgoing calls to be dynamically routed over selected facilities after dialing an ARS access code (usually *9*). This enables the system to select the least expensive route for each call.

Programmable lists, called *tables*, indicate the desired routes (line/trunk facilities) for specified area codes and/or exchanges. There is a different ARS table for each type of call (local, toll, special number, and so on). The tables are chosen according to the telephone number digits that are dialed by a user. Each ARS table has a particular pool to which it routes calls.

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A table contains some or all of the following types of information:

- **Table Type.** Indicates how to interpret the information in the table. Table types are Area Code, Local Exchange, 6-Digit, 1 + 7, Dial 0, Special Numbers (N11), Default Toll, and Default Local. Details for each table type are discussed later in this section.

- **Digit Strings.** Table includes 3-digit entries, usually area codes or exchanges. Dialed digits are compared to the stored digits. A match should occur in only one table and cause selection of the routes in that table.

- **Subpattern.** An array of up to six routes. There are two subpatterns for all tables except the Special Numbers (N11) and Dial 0 tables. The subpattern selected depends on the time of day that the call is made and the start time associated with each subpattern. (The start time for Subpattern A is specified as the stop time for Subpattern B.)

  The Special Numbers (N11) Table always uses the main pool and thus has neither subpatterns nor routes. The Dial 0 Table has no subpatterns and only one route.

- **Routes.** A structure that defines possible lines/trunks to be used in a preferred order, usually based on lowest cost and the extension user's privilege level or Facility Restriction Level (FRL). Routes cannot be programmed for the Special Numbers (N11) Table. A route contains the following types of information.

  — **Pool.** A group of lines/trunks that are to be used for this route. A pool must be programmed before any other route information.

    $\implies$ **NOTE:**
    If you are using data in your system, program pools, including the default pool, for the proper data type. For example, a pool with T1 data-only lines cannot be used for voice calls. Loop-start, ground-start, T1 voice, and some PRI lines support only voice calls, while BRI lines and other PRI lines support both voice and data calls.

  — **Facility Restriction Level** (FRL). A value from 0 to 6 associated with the route. For routes, 0 is the least restrictive and 6 the most restrictive value. In order to use a route, a caller (according to extension or remote access barrier code/trunk) must have an FRL that is equal to or greater than the FRL of the route.

  — **Absorbed Digits.** The number (0–11) of user-dialed digits that ARS absorbs (does *not* dial out) on this route. Digits are absorbed starting with the first user-dialed digit, after any leading star codes.

  — **System-Prefixed Digits.** A string of up to 20 digits (0–9, *****, and Pause) that ARS dials out on this route *before* dialing any remaining user-dialed digits but after dialing any user-dialed leading star codes.

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ARS allows up to 16 programmable tables, each of which may contain one of the following types of information:

- **Area Code Tables.** These tables are lists of 3-digit area codes. Area code tables are useful when just one type of line/trunk (for example, a regional WATS trunk) is used for all calls to each area code on the list.

- **Local Exchange Tables.** These tables list 3-digit exchanges within the local area code. They can be used to route calls over in-state WATS lines.

- **6-Digit Tables.** If the cost of calls to another area code varies according to the exchange, this table can be used to route calls on different pools, depending on both the area code and the exchange.

    In a 6-Digit Table, an area code is the first entry. The remaining 99 entries are exchanges within the area code. The system scans the first six digits of the user-dialed number (area code and exchange) to route the call.

- **1 + 7 Tables.** In some areas, callers must dial a *1* and a 7-digit number to call certain exchanges, even though the call is within the local area code. A 1 + 7 Table contains a list of local area code exchanges that require dialing a *1* but *not* an area code before the 7 digits.

In addition to the fully programmable tables, ARS has four factory-set tables:

- **Dial 0 Table.** This factory-set table routes calls to numbers that start with 0. The international dialing code, 011, is treated as a special case and can be put into a programmable table. If 011 is not specified in a programmable table, international calls are routed through the Dial 0 Table. Programming of this table is limited to a single pool, its FRL, and system-prefixed digits.

- **Special Numbers (N11) Table.** This factory-set table routes calls to the special numbers 411, 611, 811, and 911. The main pool is always used. This table is not programmable.

- **Default Toll Table.** This factory-set table routes toll calls to numbers that do not match entries in any of the area code, 6-digit, or 1 + 7 digits. This table has two subpatterns of up to six routes each, but neither absorbed digits nor system-prefixed digits are used.

- **Default Local Table.** This factory-set table routes local calls to numbers that do not match entries in the local exchange tables. This table has two subpatterns of up to six routes each, but neither absorbed digits nor system-prefixed digits are used. In Release 3.1 and later systems, routes assigned to the default local table are factory-set with a Facility Restriction Level of 2.

The system can have up to 20 tables, 16 of which are fully programmable. The Dial 0, Special Numbers (N11), Default Toll, and Default Local tables are factory-set and allow limited programming.

Each table (where appropriate) can have two subpatterns (A and B) with an associated start time. The start time for Subpattern A is specified as the stop time for Subpattern B. One subpattern or the other is selected based on the time of day

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and the subpattern start time (if both subpatterns have 00:00 start time, Subpattern A is selected). Each subpattern can contain up to six routes, listed in order of preference or cost effectiveness.

In addition, each route has a Facility Restriction Level (FRL) associated with it. The FRL is used to refine the route selection process further. Each extension or remote access barrier code or remote access is assigned an FRL from 0 through 6. Each route is also assigned an FRL from 0 through 6. For extensions, 0 is the most restrictive and 6 is the least restrictive level. For lines/trunks, 6 is the most restrictive and 0 is the least restrictive level. An extension can use a route only if its FRL is greater than or equal to the route's FRL.

Other digits or special characters may be required so the system can route a call on a particular pool. For example, some companies use an alternate toll call carrier that requires dialing the number with Pause characters and access codes. Each ARS route may have up to 20 characters that are automatically prefixed when a user dials a number. The allowed characters are the digits 0 through 9, *, and Pause.

ARS also provides an absorb (ignore) digit capability for each route. For example, if the CO does not require 1 before an area code, the system can be programmed to ignore that first digit. Up to 11 characters can be automatically absorbed when a user dials a number. For 10-digit toll calls, the prefix 1 *must* be dialed to signal a toll call to ARS. If the central office does not require the prefix 1 for toll calls, the digit absorption feature may be used to eliminate the prefix as the number is dialed. Initially, all 20 tables are available for the call.

Star Codes and Automatic Route Selection

In some instances, after a user dials a star code (a star character followed by a 2- or 3-digit number) the central office provides a second dial tone as a prompt for the dialer to enter more digits. Usually, this second dial tone is immediate. However, in cases when the second dial tone is delayed, calls can be misrouted or dishonest users may be able to circumvent communications system dialing restrictions. (For more information about using Allowed and Disallowed Lists to restrict star codes, see "Allowed/Disallowed Lists" on page 34.)

In Release 3.1 and later systems, ARS processes star codes at the beginning of a dialed number and sends the digits to the CO before any other digit analysis occurs. Any programmed prepended digits are added after the star code and before the rest of the telephone number.

Automatic Route Selection cannot route calls that consist only of a star code with no additional digits (such as *44 for voice-activated dialing) because the user has not dialed any digits that the system can use to choose a route.

Dialing calls with star codes using ARS can cause dropped or misrouted calls when prepended digits are used to select facilities other than regular central office lines/trunks. It is recommended that ARS calls containing star codes not be used

in configurations where the MERLIN LEGEND Communications System is behind another switch or is used to select nonstandard facilities.

ARS Restrictions for VMI Ports

In Release 3.1 and later systems, any port programmed as a VMI port is programmed with a Facility Restriction Level (FRL) of 0. If the system manager wants to allow access to the voice messaging system Outcalling feature, the FRL applies to Outcalling calls.

If the system manager changes a VMI port to an non-VMI port, the FRL is not reassigned on the port. If the default FRL should be changed, the system manager must change it through system programming.

⚠ SECURITY ALERT:

Any changes to the FRL and other restrictions of these ports must be considered carefully in order to minimize the potential for toll fraud.

How ARS Works

A user hears inside dial tone on an **SA** button and dials the ARS access code (usually a *9*) to connect to ARS, then dials a call. If the extension is restricted or toll-restricted and the number dialed is not on the Allowed List, or if the number dialed is on the Disallowed List, the user receives a system error tone. Otherwise, ARS compares the number dialed with information in the tables. All tables are available for use at first. Tables are then eliminated from possible use on the call, one by one, until the best table is selected.

Once the table is selected, ARS chooses the appropriate subpattern and checks restrictions, eliminating from consideration any routes with restriction levels higher than the extension's. Any remaining eligible routes are scanned from the beginning of the list. The first eligible route that is not busy is selected.

Table Selection

411, 611, 811, 911, or 10*xx* (Equal Access Code)

If the caller dials one of these N11 or equal access numbers, the call is routed over the main pool, using the factory-set Special Numbers (N11) Table.

Area Code Tables	Local/Disallowed Exchange Tables	6-Digit Tables	1+7 Tables
Dial 0 Table	Special No. (N11) Table	Default Toll Table	Default Local Table

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First Digit Not a 1, N11, or Equal Access Code

All but the Local Exchange, Default Local, and Dial 0 Tables are eliminated.

Area Code Tables	Local Exchange Tables	6-Digit Tables	1+7 Tables
Dial 0 Table	Special No. (N11) Table	Default Toll Table	Default Local Table

Next, ARS examines the entries in the Local Exchange Tables:

- If ARS finds only one match, it selects that Local Exchange Table.

- If ARS finds more than one match, it selects the lowest-numbered Local Exchange Table.

- If ARS finds no match and the first digit is 0, it selects the Dial 0 Table.

- If ARS finds no match and the first digit is not 0, it chooses the Default Local Table.

First Digit a 1 (Not an Equal Access Code)

ARS eliminates the Default Local, Dial 0, Special Number, and Local Exchange Tables and proceeds as described below.

Area Code Tables	Local Exchange Tables	6-Digit Tables	1+7 Tables
Dial 0 Table	Special No. (N11) Table	Default Toll Table	Default Local Table

If only a 1 and seven digits have been dialed and there is one 1+7 Table that matches, it is chosen. If more than one table matches, the lowest-numbered table is chosen. If there are no 1+7 Tables that match, ARS picks the Default Toll Table.

If more than seven digits have been dialed after the 1, the 1+7 Tables are eliminated. The next three digits following the 1 are compared to the 3-digit area codes in the Area Code Tables and the first three digits of the 6-Digit Tables; any unmatching tables are eliminated. If there are no matches, the Default Toll Table is selected.

If there are matching tables, the next three digits are compared to the second through ninety-ninth entry in the remaining 6-Digit Tables. If there is only one match, that 6-Digit Table is used. If there is more than one match, the lowest 6-Digit Table is used. If there are no matches and there are no area code tables left, the Default Toll Table is selected. If there are no matches and there are Area Code Tables that have not been eliminated, one of the Area Code Tables is chosen. If there is one table left, it is used. If there is more than one table, the lowest one is used.

is a flowchart that shows how a table is selected.

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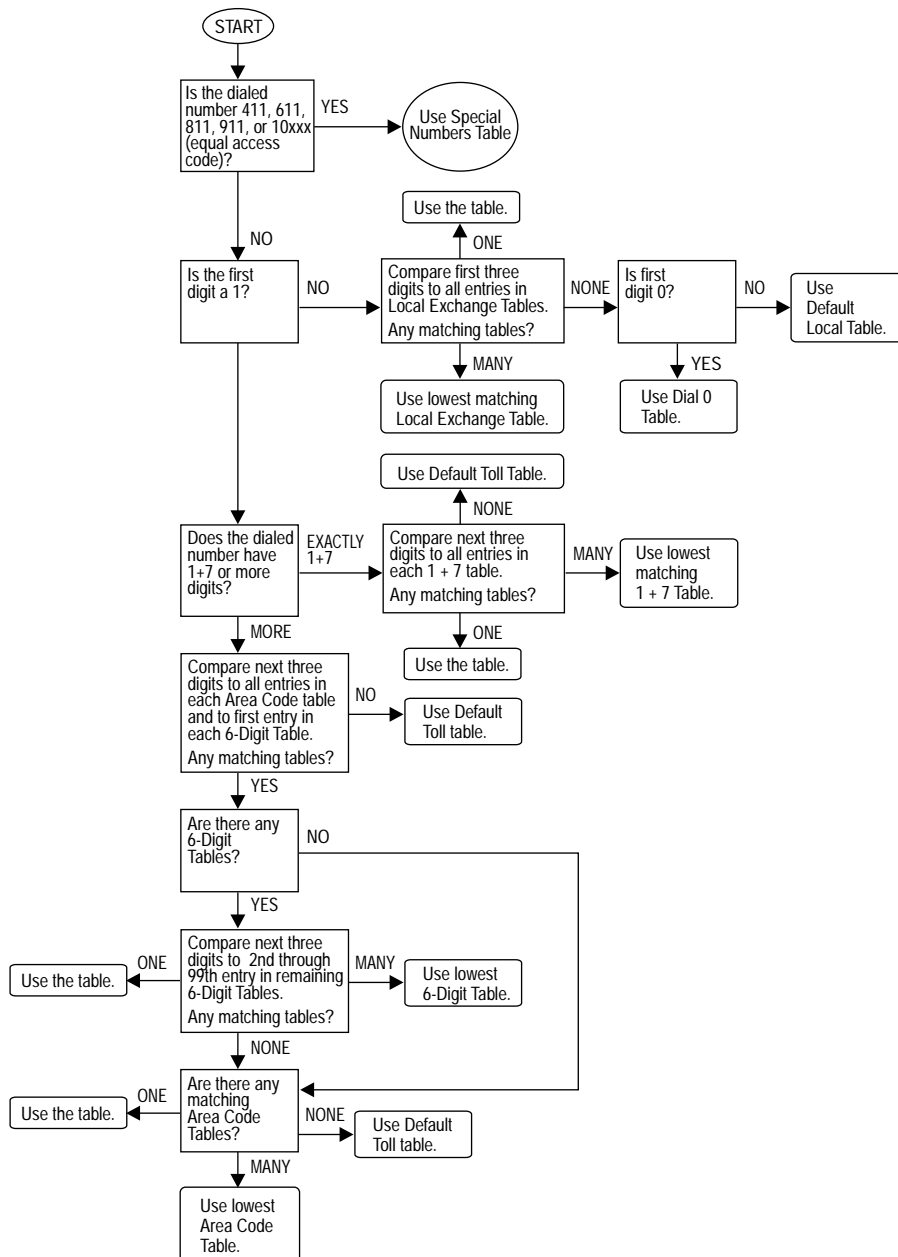
Figure 1.   ARS Table Selection

Route Selection within the Table

Once the table is selected, ARS checks the subpatterns within the table (if applicable) and the restrictions on the routes.

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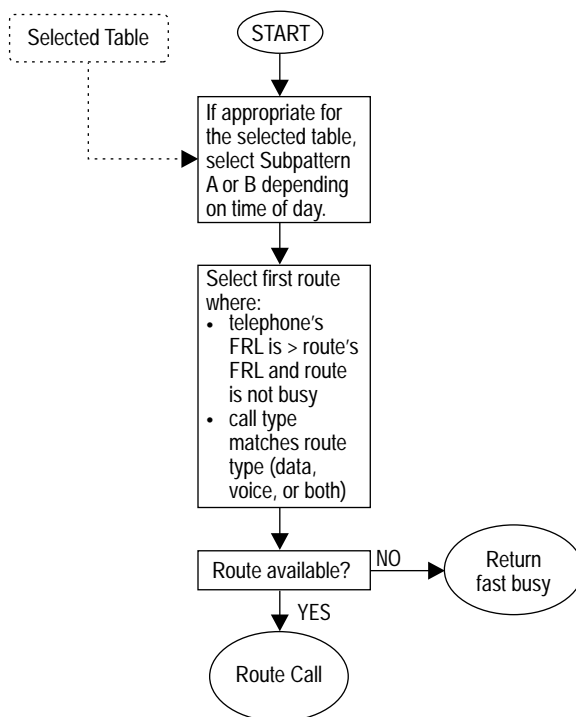
Figure 2.   ARS Route Selection within a Table

Subpatterns

Depending on the time of the call, one of two subpatterns (each with up to six different routes) is chosen for each table [except the Special Numbers (N11) and Dial 0 Tables]. The time of day is compared to the start and stop times of Subpatterns A and B (the start time for Subpattern A is the stop time for Subpattern B). If the time of the call is between the Subpattern B start time and stop time, then Subpattern B is selected; otherwise Subpattern A is selected. If both Subpatterns have 00:00 start times, Subpattern A is selected. (See .)

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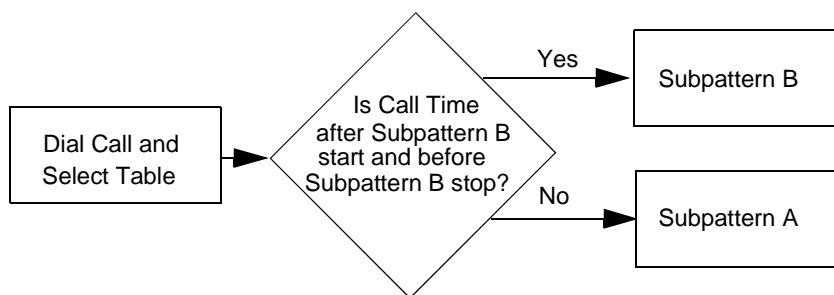
Figure 3.   Subpattern Selection

Restrictions

If the extension's Facility Restriction Level (FRL) is equal to or greater than the
FRL of any of the routes in the selected subpattern, those routes are eligible for
selection. Table 3 shows how FRLs are used to decide whether a route is allowed.

Table 3.   Facility Restriction Levels

Extension FRL	Route FRL	Allowed
0	0 only	Yes
0	1 and up	No
1	0 and 1	Yes
1	2 and up	No
2	0–2	Yes
2	3 and up	No
3	0–3	Yes
3	4 and up	No
4	0–4	Yes
4	5 and up	No
5	0–5	Yes
5	6	No
6	Any	Yes

For a PRI or BRI call, any route that does not match the call type (voice or data) is
eliminated from eligibility. Each route may be specified as voice, data, or both.

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$\Longrightarrow$ **NOTE:**
> If a voice call is queued for callback on a digital pool, it can get stuck in an infinite loop of queuing. The caller hears a continuous stutter tone and cannot get rid of it. To avoid this situation, be certain to correctly program the voice and/or data capabilities of pools of PRI and BRI facilities in the ARS tables.

Any remaining eligible routes are scanned from the beginning of the list. The first eligible route that is not busy is selected. If all eligible routes are busy, the user hears fast busy and can use Callback to queue the call *for the first route only.*

Emergency numbers must be on an Allowed List to be called from a restricted extension.

Considerations and Constraints

ARS restrictions (FRLs) operate independently of dial-access-to-pool restrictions, providing greater flexibility in assigning the type of usage an extension is allowed.

The international dialing code (011) can be included in any fully programmable table. If this is done, calls beginning with 011 are routed according to the table on which 011 is entered, and not according to the Dial 0 Table.

The wild card character (Pause) cannot be used in system programming to enter area codes and/or exchanges in ARS tables.

Calls made to the equal access code (10*xxx*) are always routed immediately over the main pool, whether or not they appear in other ARS tables. People who are restricted from using a particular ARS route hear a high-low error tone, indicating that the call cannot be completed.

Even if the local telephone company does not require it, callers must dial *1* before any 10-digit telephone number so that ARS can determine whether a call is toll or local. If the 1 is not required by the local central office, the system may be programmed to ignore it.

Some central offices still require the prefix 1 for dialing certain exchanges. If the 1 + 7-Digit Dialing Requirements option is programmed as Within Area Code, the system expects either dial time-out or a *#* (end of dialing) to indicate whether a 1 + 7-digit or a 1 + 10-digit number has been dialed (this may result in delays while the user waits for time-out). To avoid time-out delays, 1 + 7-Digit Dialing Requirements can be programmed as Not Within Area Code, but all exchanges requiring a system-prefixed 1 must be listed in a local exchange table, and the 1 must be specified as a character to be prefixed. In this case, users must not dial the *1* before dialing those exchanges.

Area Codes 800 and 900 are treated as entries in programmable tables. They may be programmed as either area codes or as exchanges.

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Mode Differences

ARS is available only in Hybrid/PBX mode.

Feature Interactions

Account Code Entry	When ARS is used on the system, an account code can be entered before or after dialing the telephone number.
	If Forced Account Code Entry is assigned to the extension, the caller must enter the code before dialing the ARS dial-out code.
Allowed/ Disallowed Lists	Automatic Route Selection (ARS) checks Allowed and Disallowed Lists before choosing the route for a call. This prevents users with restricted extensions from dialing numbers that are not on an Allowed List. ARS also prevents a user from dialing numbers on a Disallowed List.
Authorization Code	An authorization code can be entered before dialing the ARS access code. After dialing the ARS access code, you can enter an authorization code only if a **Feature** button or programmed Authorization Code button is used.
Auto Dial	The ARS code can be programmed before a telephone number on an Auto Dial button.
Automatic Maintenance Busy	If ARS is used to make an outside call, the system selects another line/trunk in the pool when the first line/trunk is in maintenance-busy state.
Callback	When a call is made using ARS and all possible line/trunk routes are busy, the call can be queued only for the first route in the pattern. However, if the FRL for the extension does not allow the call to be made over the route, the call is not queued.
	If a voice call is queued for callback on a digital line/trunk pool, it can get stuck in an infinite loop of queuing. The caller hears a continuous stutter tone and cannot get rid of it. To avoid this situation, be certain to correctly program the voice and/or data capabilities of pools of PRI and BRI facilities in the ARS tables.
Calling Restrictions	The use of ARS does not allow callers to avoid calling restrictions. The system checks for outward or toll restrictions assigned to the extension or barrier code before it selects the best route for making the call.
Calling Restrictions *continued*	ARS and the dial-access-to-pools restriction function independently of each other. If ARS restrictions are programmed to allow access to a pool, a user may seize a pool that the extension is not normally allowed to use with pool dial-access restrictions.
Digital Data Calls	Data calls can be made using ARS. To make calls using ARS, terminal adapters and video systems simply dial the ARS dial out code (usually *9*) followed by the telephone number. The data calls *must* be routed through ARS pools that have only PRI, NI-1 BRI, and/or Switched 56 T1 data lines. To make a 2B data call, a user must access two separate lines.

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Direct Station Selector	The LED next to a DSS button for the ARS code is always off.
Directories	System Directory and Personal Directory (MLX-20L telephones only) numbers can include the ARS dial-out code.
Display	Only the ARS dial-out code and the dialed number are displayed. Digits added by ARS before the dialed number and digits ignored by ARS are not displayed. The digit 9 is replaced with OUTSIDE when ARS selects a line.
Forward and Follow Me	When the ARS code is dialed before the telephone number, ARS can select the facility on which to forward calls to an outside telephone number. The FRL for the call is that of the extension from which calls are being forwarded.
HotLine	HotLine extensions (Release 5.0 and later systems) can use the ARS access code if it is programmed into their Personal Speed Dial number.
Night Service	When Night Service with Outward Restriction is programmed, enter the password before dialing the ARS dial-out code, unless either the extension is assigned to an Exclusion List or the number is on the Night Service Emergency Numbers List.
Pools	ARS ensures appropriate and cost-effective use of pools. ARS and the dial-access-to-pools restriction function independently of each other. If ARS restrictions are programmed to allow access to a pool, a user may seize a pool that the extension is not allowed to use under existing pool dial-access restrictions.
Primary Rate Interface (PRI) and T1	An incoming call can access Automatic Route Selection (ARS) only through Remote Access, transferring, or Remote Call Forwarding through ARS. A PRI line can be a member of a pool accessed through ARS. Before ARS routes a call to a pool, it checks whether one or more member lines in that pool are available. If not, it selects an alternative pool so that the call is not blocked. Even if a B-channel is available when ARS selects a pool with an available line, there may be none available when it is time to send a setup message to the network. Or, after the setup message is sent, the network may determine that the B-channel proposed by the system is not available. In either case, the call fails and fast busy tone is heard.
Recall/Timed Flash	In systems prior to Release 2.0, Recall cannot be used to hold an outside line if ARS has been used to make the call. In Release 2.0 and later systems, Recall can be used with calls made through ARS.
Remote Access	Remote access users can make calls using ARS by dialing into the system, entering a barrier code if required, and dialing the ARS code while listening to the system dial tone. Facility Restriction Levels (FRLs) can be assigned to restrict the routes that remote callers can use. When barrier codes are not used, FRLs are assigned to all remote access lines/trunks. When barrier codes are used, FRLs are assigned to individual barrier codes.
Saved Number Dial	The ARS dial-out code is saved with the telephone number dialed.

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SMDR	SMDR reports for systems with ARS show all the digits dialed by a user in the CALLED NUMBER field, including any absorbed (ignored) digits, and the facility used to make the call. The reports do not include the ARS dial-out code or any digits added by ARS.
Speed Dial	Personal Speed Dial and System Speed Dial numbers can include the ARS code.
System Access/ Intercom Buttons	The ARS FRL assigned to the extension being used to make the call applies to calls made on both **SA** and Shared **SA** buttons.
System Renumbering	The ARS access code can be renumbered (factory setting is 9).
Toll Type	In certain areas, the local telephone company requires the prefix 1 for certain exchanges. In these cases, the exchanges can be assigned to a 1 + 7 table; the 1 + 7-Dialing Requirements must be set to Within Area Code so that people calling numbers in other exchanges do not have to dial *1*.

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Barge-In

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Extension Information
Modes	All
Telephones	All except single-line telephones
Programming Code	*58 (centralized telephone programming only)
QCC Display Label	Barge In

Description

Barge-In allows a caller to contact a co-worker in an emergency or when the caller has been given special instructions to interrupt. If the extension is busy, Barge-In includes the user in the call. If Do Not Disturb is activated, Barge-In overrides the feature and makes the telephone ring.

On multiline telephones, except QCCs, the caller interrupts a call or overrides Do Not Disturb by calling the extension number and then pressing the programmed Barge-In button. On a QCC, an operator presses the **Feature** button and selects Barge In from the display.

A tone, heard by the user and the people on the call, signals that the user has joined a conversation in progress. Ringing indicates that Do Not Disturb is on at the extension.

Considerations and Constraints

Barge-In does not override Privacy.

If Caller A is in the process of dialing and Caller B uses Barge-In to reach Caller A, the touch tones generated by dialing cancel the Barge-In tone. As a result, Caller A may not be aware that someone else is joining the call.

If a caller presses the Barge-In button while calling an MLX telephone, an extra ring occurs on the MLX telephone. A Barge-In button can be programmed only through centralized telephone programming.

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Telephone Differences

Direct-Line Consoles

If a DLC operator uses Barge-In to reach someone with Coverage or Forwarding (including Remote Call Forwarding) on, the call from the operator is not directed to the destination (receiver's) extension. The call is directed to the extension on which Barge-In is used.

Queued Call Consoles

A QCC operator can use Barge-In only by selecting the feature from the display. Barge-In can be used to join an inside call to a QCC operator only if the user dials the *caller's* extension instead of the QCC operator's number. If a user tries to activate Barge-In after dialing a QCC system operator's extension and waiting in the QCC queue, the feature has no effect and the user hears an error tone. If the error tone times out while the call is still in the QCC queue, the call is disconnected. However, if a QCC system operator becomes available before the error tone times out, the error tone is removed and the call is delivered to the operator normally.

Single-Line Telephones

Single-line telephones cannot use Barge-In, but other telephone users can use Barge-In to interrupt or monitor calls on single-line telephones.

Feature Interactions

Basic Rate Interface	Barge-In can be used for a voice calls on a BRI line, but not on BRI data calls.
Callback	If Callback is used to request a busy extension or pool and the user is waiting on the line for the callback call, Barge-In cannot interrupt.
Conference	Barge-In can interrupt conference calls; all participants hear the Barge-In tone. Barge-In does not connect the user to a conference call if the conference already has the maximum number of participants. If Barge-In is used to connect to a conference call that involves an outside line/trunk and the person on the outside line/trunk hangs up, the person using Barge-In is also dropped.
Coverage	Barge-In can be used for Individual or Group Coverage calls answered at any receiver's extension. However, if an operator uses Barge-In to reach an extension with Coverage, the call from the operator is not directed to the receiver's extension.
Digital Data Calls	Data calls cannot be barged into.
Direct Station Selector	After making a call to an extension by using a DSS button on a DLC, activate Barge-In by pressing a programmed Barge-In button. QCC operators select the feature from the display.

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Display	Barge-In appears on the display as a feature choice only on QCC operator consoles. On an MLX display telephone receiving a Barge-In call, the message Barge In and either the name or extension number of the person joining the call remains on the display until the receiving telephone user hangs up. If Barge-In is denied because Privacy has been activated, no error message is displayed on the calling telephone to indicate that the attempt has been unsuccessful.
Do Not Disturb	If Do Not Disturb is activated, Barge-In overrides the feature and makes the telephone ring.
Forward and Follow Me	If an operator uses Barge-In to call an extension with Forwarding or Remote Call Forwarding turned on, the call from the operator is not directed to the destination extension. When a forwarded call is answered at the destination extension, Barge-In can be used to join the call only by dialing the extension number for the destination extension (not the number for the originating extension). Barge-In cannot be used to join a call forwarded to an outside telephone number.
Group Calling	Barge-In can be used for calling group members, but the member's extension must be used instead of the calling group extension. If a user tries to use Barge-In after dialing the calling group extension number and waiting in the queue, the feature has no effect. If a person uses Barge-In to reach another user who is waiting in a calling group queue, the call is removed from the queue, and both people and the delay announcement (if programmed) are connected. If a person uses Barge-In for the delay announcement extension and the device is playing a message to a caller, the call is removed from the queue, and both people and the delay announcement are connected.
	In Release 5.0 and later systems when the Most Idle agent hunt type is used, if a supervisor or operator barges in on a calling group call and hangs up before the agent does, then Most Idle status is not affected. If the agent hangs up first, he or she moves to the end of the Most Idle queue.
Headset Options	If Barge-In is used to contact a user with Headset Auto Answer, the call is automatically answered.
HotLine	HotLine (Release 5.0 and later systems) calls can be barged into.
Messaging	If Barge-In is used to contact a user with a posted message, the caller's telephone does not display the posted message.
Paging	Barge-In cannot be used to join speakerphone or loudspeaker paging calls.
Privacy	Barge-In does not override Privacy. The caller hears a busy signal.
	All VMI ports always have Privacy on. Barge-In cannot be used to join calls to VMI ports.

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Recall/Timed Flash   In Release 2.0 and later systems, Recall can be used by a user who has joined a call with Barge-In, as well as by the user who has been interrupted.

In Release 1.0 and 1.1 systems, Recall cannot be used with Barge-In because Barge-In is used on an **SA** or **ICOM** button.

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Basic Rate Interface (BRI)

At a Glance

Users Affected	Telephone users, operators, digital data users
Reports Affected	System Information (SysSet-up), BRI Information
Modes	Key, Hybrid/PBX
Telephones	All (display support on MLX telephones only)
System Programming 800 NI-BRI Module	Specify 800 NI-BRI modules that provide primary, secondary, and tertiary clock synchronization and source of clock synchronization; also activate/deactivate clock:
	• LinesTrunks→**More**→ClockSync
	Assign telephone numbers (SPID and DN) to BRI lines:
	• LinesTrunks→**More**→BRI→SPID/DN→ SPID→Enter→ DN→Enter
	Specify BRI timer settings:
	• LinesTrunks→**More**→BRI→Timers
Maximums	
BRI modules	5
Factory Settings Systemwide Clock Synchronization Source	Loop (not definable by system manager)
Primary Clock	First port in service on an 800 NI-BRI module or first 100D module in service in control unit
Clock	Active
BRI	
Service Profile Identifier (SPID) assigned to BRI line	0 digits
Directory Number (DN) assigned to BRI line	0 digits
Timer and counter thresholds for all BRI ports in system	
T200 Timer	1000 ms (range 500–5,000 ms, increments of 500 ms)
T203 Timer	33 seconds (range 10–255 seconds, increments of 1 second)
T303 Timer	4 seconds (range 2–10, increments of 1 second)
T305 Timer	30 seconds (range 2–60, increments of 1 second)
T308 Timer	4 seconds (range 2–10, increments of 1 second)

Description

Basic Rate Interface (BRI), like Primary Rate Interface (PRI), is a standard protocol for accessing Integrated Services Digital Network (ISDN) services. By using BRI, the MERLIN LEGEND Communications System can connect its users to the speed and accuracy of ISDN services. National ISDN-1 (NI-1) BRI service is available for MERLIN LEGEND Communications Systems Release 4.0 and later systems only.

BRI lines offer the capability of voice, high-speed data, local area network (LAN) interconnection, and video transmission. BRI lines (along with PRI and T1 Switched 56) also allow you to take advantage of the 2B Data feature for videoconferencing systems with ISDN-BRI interfaces. The 2B Data feature allows one application (such as a desktop video system or a high-speed digital communications device) to use two B-channels for data transfer rates up to 128 kbps. For more information, see "Digital Data Calls" on page 183.

The following benefits are provided by NI-1 BRI service:

- **Speed.** Data calls to outside destinations can be established on the same B-channels used for voice calls if the service allows; Modems and dedicated, conditioned lines/trunks are not needed. By supporting high-speed digital data transmission, BRI provides the capability for videoconferencing and Group IV (G4) fax using existing wiring. Each B-channel supports up to 64 kbps throughput.

- **Improved Toll Restriction.** The ways that toll restriction can be bypassed are limited on BRI lines/trunks. Specifically, three types of toll fraud are eliminated with BRI service:

  — Because dialing is in the form of out-of-band messages that must be generated by the system, a person cannot use a touch-tone generating device, such as a pocket dialer, to send dialed digits directly through the system to the line/trunk.

  — Without BRI service, toll restriction can be deceived by dialing digits on a loop-start line before the far-end switch applies dial tone. These initial digits may indicate a local call to the system's toll-restriction checking while the subsequent digits, those actually recognized by the far-end switch, may produce a toll call. This is not possible with BRI service because every dialed digit is screened by the system's toll-restriction check.

  — A BRI line's far-end disconnect signal provides a reliable indication when a call ends, and a new call cannot be initiated until the line has been released from the prior call on both ends. This prevents a person, waiting off hook for the restoration of dial tone after a previous call, from placing a second call before toll restriction is reapplied.

- **Reliable Indication of Far-End Disconnect.** This prevents an incoming call from being blocked because a line/trunk has not been released when a call is ended.

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Terminology

Lines/Trunks

In this section on BRI, *lines* are the representations that appear on extensions or are put into pools. *Trunks* are the facilities that link switches. For all trunks except DS1 (T1 or PRI) and BRI, inside line numbers have a one-to-one correspondence to line/trunk jacks. Because there are two transmission channels, or bearer channels (called *B-channels*), for each BRI connection, two inside line numbers are assigned for each BRI port. B-channels are present for each Digital Subscriber Line (DSL); therefore 16 inside lines are assigned for each module used.

A B-channel is used to carry user information, such as the voice or data content of a call, between the system and the far-end switch.

Digital Subscriber Line (DSL)

Digital Subscriber Line (DSL) is used to refer to the facility from the central office that supports BRI service. A Digital Subscriber Line provides full-duplex service on a single twisted-pair wire (2-wire) at a rate sufficient to support ISDN Basic Rate Access.

Directory Number (DN)

In general, the *Directory Number* is the telephone number that is dialed to reach a destination. When an incoming call arrives on a BRI line, the central office presents the Directory Number as the Called Party Number. Only one call to a particular Directory Number is accepted at any one time. The Directory Number is usually a subset of the Service Profile Identifier The DNs for each BRI are still subsets of the SPIDs. Only the DN for the hunt group are unrelated to the SPIDs.

ISDN Ordering Code (IOC))

The *ISDN Ordering Code (IOC)* is defined by Bellcore as part of the National ISDN Package. The IOC defines a number of capabilities for the BRI connection, which are aimed at different user applications. The MERLIN LEGEND Communications System supports the IOC capability package S. IOC package S supports circuit-switched voice and data calls over both B-channels with a Calling Party Number identifier.

Multiline Hunt Group

A multiline hunt group can be programmed at the central office to send calls to a number of separate Directory Numbers (DNs) that are grouped together.

A multiline hunt group consists of a group of BRI lines with one main telephone number (Directory Number). When this number is dialed by an outside caller, the CO tries to deliver the call to one of the BRI lines in the hunt group. If the BRI line is busy, the central office directs the call to the next available idle line.

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In order to know the available options of Multiline Hunt Group and to set it up correctly, you must find out what type of switch your CO uses.

For the different switches, Multiline Hunt Group has the following capabilities:

- **5ESS®.** Multiline Hunt is available for voice-only and digital data-only applications. Multiline Hunt capability is provided under a switch feature called *Series Completion*. Do not use the 5ESS feature named *Multiline Hunt Group*. For alternate voice and digital data applications, special CO features, for example, call forwarding, are also required in the line provisioning. As a result, this configuration may not be supported by some of the RBOCs (Regional Bell Operating Companies) or other local carriers.

- **DMS-100.** Multiline Hunt is available for voice-only, digital data-only, and alternate voice and digital data applications.

- **EWSD.** Multiline Hunt capability is provided under a switch feature called *Series Completion*. However, it is limited to six DSLs (Digital Subscriber Lines) in a group, and may not be supported by some central offices. Do not use the EWSD feature named *Multiline Hunt Group*. Multiline Hunt is available for voice-only and digital data-only applications. Alternate voice and digital data applications are not supported.

> **NOTE:**
> Multiline Hunt is not part of the IOC package S. If Multiline Hunt is needed, you must order the appropriate feature and inform the central office of the switch settings (see Appendix H of *System Planning*) that you need.

Called Party Number (CdPN)

In general, the term *Called Party Number (CdPN)* denotes a telephone number that has been dialed to reach a destination. However, while routing the call, the network can change the Called Party Number to make routing easier. In either case, the network sends the Called Party Number to the system when a call arrives at the system. The called party number is usually displayed on the second page of the MLX display.

Calling Party Number (CPN)

The *Calling Party Number (CPN)* provides incoming calling party number information that identifies the originator of a call in the call-handling displays of MLX telephones. If the owner of the MERLIN LEGEND Communications System subscribes to this BRI feature, each incoming call to the system over a BRI line can be accompanied by the CPN or by the billing number of the calling party supplied by the network.

> **NOTE:**
> If the calling party subscribes to the central office Directory Number Privacy feature, no number is received.

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Service Profile (SP)

A *Service Profile (SP)* defines the interface on a BRI line between the central office and an ISDN terminal. It specifies the parameters and their values necessary to provide services to the terminal.

Service Profile Identifier (SPID)

A *Service Profile Identifier (SPID)* is a unique identifier used by the central office to associate an ISDN terminal with a Service Profile. It is provided by the central office at subscription time. The system manager must program the SPID for each BRI line to bring the BRI line into service (activate). If dial tone is received, then the correct SPID has been programmed.

Clock Synchronization

Clock synchronization is an arrangement where digital facilities operate from a common clock. Whenever digital signals are transmitted over a communications path, the receiving end must be synchronized with the transmitting end in order to receive the digital signals without errors.

The system synchronizes itself by extracting the timing signal from the incoming digital stream. If the system has one 100D module, that module provides its own primary synchronization. If the system has at least one 800 NI-BRI module, more than one 100D module, or a combination of 100D modules and 800 NI-BRI modules, then one of the connections provides primary clock synchronization for all 800 NI-BRI and 100D module ports and for the system's *time-division multiplexing (TDM)* bus. The primary clock synchronization source must be identified during system programming. The factory setting is the first 100D module in service or the first port in service on the first 800 NI-BRI module in the carrier. This can be changed through system programming.

In the event of a maintenance failure of primary synchronization, backup synchronization can be provided by secondary and tertiary clock synchronization.

In addition, the source of synchronization is factory-set to Loop Clock Reference Source, so that the clock is synchronized to the outside source. With a 100D module, it can be set to Local Clock Reference Source so that the clock is free-running. However, this is not recommended for most permanent installations and systems with Primary Rate Interface (PRI). This setting must be made for the primary, secondary, and tertiary synchronization sources.

On a frigid start (System Erase), the first 100D or BRI port in service is the default primary loop clock source.

The following lists the options for primary, secondary, and tertiary clock synchronization sources in order of preference:

1. The clock sources on BRI ports with DSLs in service. If at all possible, all three clock sources should be on the same 800 NI-BRI module.

2. The loop clock source on any 100D module.

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3. The loop clock source on any 100D module in T1 mode emulating tie trunks.

4. The local clock source on any 100D module.

⟹ **NOTE:**

Ports that are not in service should never be programmed as clock sources.

Clock Switching

When the primary clock source is not able to provide the system clock, the secondary clock source is used, if it exists and is capable of providing the system clock. If the secondary clock source is incapable of providing the system clock, the tertiary clock source is used. If none of these is capable of providing the system clock, the communications system selects a system clock.

The system searches 800 NI-BRI and 100D modules for a clock source, starting from the first module in the system and ending with the last module. The clock is chosen with the following order of preference.

1. Loop clock source on an 800 NI-BRI or 100D module.

2. Local clock source on an 800 NI-BRI or 100D module.

3. Local clock source on the processor module.

Timers and Counters

This option sets the timer and counter thresholds. The factory settings for thresholds are standard and rarely need to be changed (see "At a Glance" in this section for factory settings and valid ranges). When no response is received from the network before the duration of the timer setting, the communications system takes the appropriate corrective action.

The programmable timers and counters are as follows:

- **T200 Timer.** Times the minimum time that the link layer waits for an acknowledgment of link establishment, information, or polling supervisory frames sent from the communications system to the network before resending the frames.

- **T203 Timer.** Maximum time that the link layer can remain inactive.

- **T303 Timer.** Times the delay in network response when the communications system sends a setup message to initiate an outgoing call.

- **T305 Timer.** Times the delay in network response when the communications system sends a disconnect message to clear a call.

- **T308 Timer.** Times the delay in network response when the communications system sends a release message to clear a call.

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Other timers and counters used by the system are not programmable.

- **N200 Counter.** Counts the number of times the communications system can transmit a message on a D-channel because no link layer acknowledgment is received from the network. The value for this counter is 3.

- **N201 Counter.** Counts the maximum number of Layer 3 bytes the system can send or receive in a single D-channel message. The value for this counter is 260.

- **N202 Counter.** Counts the maximum number of times that Layer 2 should retransmit TEI-REQUEST frames before notifying Layer 3. The value of this counter is 3.

- **K Counter.** Counts the number of Layer 3 unacknowledged messages sent from the communications system to the network on a D-channel. The value for this counter is 1.

- **T202 Timer.** Minimum time Layer 2 must wait for an acknowledgment of a TEI-REQUEST frame before initiating retransmission. The value of this timer is 2 seconds.

- **T309 Timer.** Times the duration of a D-channel data link failure (a loss of signaling for the entire BRI connection). The value of this timer is 90 seconds.

- **T310 Timer.** Times the network delay following the receipt of a call preceding message on an outgoing call. The value of this timer is 60 seconds.

- **T313 Timer.** Times the delay in network response when the communications system sends a connect message that indicates the completion of an incoming call. The value of this timer is 4 seconds.

> ⚠️ **CAUTION:**
> *After initial installation, these timers rarely if ever should be changed.*

Call Processing

An explanation of incoming and outgoing call processing follows.

Incoming Calls

BRI calls can be received on personal line or **Pool** buttons, or by calling groups or the QCC Queue. Incoming calls appear to a user just as those on other types of lines do.

Display Operation. The display provides call-related information about incoming BRI calls delivered over the B-channel, if available. If calling party information is available and the receiving telephone is an MLX telephone, the information is displayed on the telephone. Called party information is usually displayed on the second screen of the MLX display.

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Hyphens are inserted between the digits on incoming calls, for example, 555-1234 for a 7-digit display and 123-555-1234 for a 10-digit display. Any other number of digits appears without hyphens.

A brief description of the display support provided in Release 4.0 and later systems follows. Refer to for additional details.

> **NOTE:**
> BRI display support for Release 4.0 and later systems applies to MLX display telephones only. There is no BRI-specific display support for analog multiline telephones.

- **Incoming BRI Calls** (Non-Group Calling). When the calling party information is available from the network, the Calling Party Number (CPN) appears on the user's display. Pressing the **More** button shows the Called Party Number on the second screen of the display. If the Called Party Number is more than 15 characters in length, the digits at the end are dropped.

- **Group Calling.** The MLX display of a calling group member shows the original Called Party Number. Pressing the **More** button shows the Calling Party Number on the second screen of the display.

- **Transfer without Consultation.** In Release 4.0 and later systems, pressing the **More** button on an MLX display telephone that is a transfer destination shows the original Called Party Number.

Outgoing Calls

Outgoing calls on BRI lines can be made using one of three methods:

- **Personal Line.** When an idle personal line that represents a BRI line is accessed, the communications system sets up a call to establish a connection to the central office. The status light turns green and dial tone is provided by the central office. As digits are dialed, they are transmitted to and processed by the central office.

- **Pool Button.** Like any other type of line/trunk, a BRI line can be accessed via a **Pool** button or by using an **SA** button and dialing a pool access code.

- **Automatic Route Selection.** Like any other type of line/trunk, a BRI line can be accessed by using an **SA** button and dialing the Automatic Route Selection (ARS) access code. ARS processing may modify the dialed number through standard digit deletion and addition processing. ARS can also take advantage of the distinction between voice and data calls for routing purposes when making outbound calls over BRI lines. For example, if data is frequently sent to a particular number in another area of the country, ARS can route calls to that number over high-speed data lines.

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Considerations and Constraints

Because the 391A, 391A1, and 391A2 power supplies have limited capacity, when one of these power supplies is used, the total number of 800 NI-BRI modules and 100D modules in a single carrier cannot exceed three. When using these power supplies with more than three modules, you must install the fourth and any additional 800 NI-BRI or 100D modules in an expansion carrier. The 391A3 power supply eliminates this restriction.

A Directory Number (DN) is busy when no extension is available to answer or cover the call. An extension may be unavailable when one of the following conditions applies: no **SA** button (aside from Originate Only buttons) is available; Do Not Disturb is activated; the extension is being programmed; the extension is forced idle; or, the extension alarm clock is being set. The caller hears a busy tone, or the call receives coverage, if programmed.

For BRI lines, the SMDR format should be set to ISDN format.

In Release 4.1 and prior systems, an SMDR record is not recorded for a BRI facility call that is shorter than the programmed SMDR call length. Usually, the SMDR call length is programmed to compensate for connection and ringing time of calls on non-ISDN facilities before they are answered. In systems where most lines are ISDN lines, the call length should be programmed for one (1) second.

In Release 4.2 and later systems with the SMDR Talk TIme option enabled, call timing for incoming calls to Auto Logout or Auto Logout calling groups begins when the system detects the call.

Feature Interactions

Account Code Entry	At an extension assigned to a BRI line, either enter an account code before the call is made or during the call. Forced account codes must be entered before the call is made.
	If the SMDR feature is not enabled to record incoming calls, the system does not accept Account Code Entry information for incoming calls.
Barge-In	Barge-In can be used for voice calls on a BRI line, but not data calls.
Call Waiting	Call Waiting is provided on BRI lines at extensions so programmed. The call-waiting tone is not blocked from BRI at an extension.

Conference	Calls on BRI lines can be part of a conference call processed by the MERLIN LEGEND Communications System, not by the central office (CO). The MERLIN LEGEND Communications System determines the number of active parties on the call.
	The MERLIN LEGEND Communications System supports up to five people on a conference: two within the system, two outside the system, and the call originator.
	If a MERLIN LEGEND Communications System user is part of a conference established by an outside party through the central office conference feature, the MERLIN LEGEND Communications System may play Music On Hold (if so programmed) when the MERLIN LEGEND Communications System user puts the call on hold.
Hold	An active call on a BRI line can be placed on hold by using the MERLIN LEGEND Communications System Hold feature. All call appearances (such as LEDs) are the same as for other non-BRI lines.
Recall	Recall is not recognized by the central office (CO) on BRI lines. Therefore, the CO ignores the press of a telephone's Recall button.
Remote Access	A BRI line may be used for remote access.
SMDR	The number of a BRI line is shown in the LINE field of the SMDR report.
	Outgoing call timing begins when a call is answered. Therefore, calls that are not answered at the far end are not reported.
	In Release 4.1 and prior systems, call timing for incoming calls begins when the call is answered. In Release 4.2 and later systems with the Talk Time option enabled, timing for incoming calls to Auto Login or Auto Logout calling groups begins when the system detects the call.
Transfer	Calls on BRI lines are available for the system Transfer feature. The central office-based transfer feature is not supported by the MERLIN LEGEND Communications System.

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Call Waiting

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Information
Modes	All
Telephones	All except QCC
Programming Codes	
On	*11
Off	**11
Feature Code	87 (for call-waiting pickup)
MLX Display Labels	CallWaiting,On [CWait,On]
	CallWaiting,Off [CWait,Off]
Factory Setting	Off

Description

When an extension is programmed with Call Waiting, a user hears a tone when his or her extension is busy, the user is off hook, and another call is arrives. For an inside call, the user hears one beep; for an outside call, the user hears two beeps. MLX display telephone users also see Call Waiting on the display. The caller hears a special ringback to indicate that the extension is busy and that the call-waiting tone has been sent.

A multiline telephone is considered busy when no **SA** or **ICOM** button is available for incoming calls and, if Coverage is programmed, all coverage points are busy.

When the called party frees an **SA** or **ICOM** button and there is a call waiting, the caller hears dequeuing tone and the waiting call appears on the free **SA** or **ICOM** button of the called party.

A single-line telephone is considered busy when a call rings on the telephone or the user lifts the handset and, if Coverage is programmed, all coverage points are busy.

Each extension can be programmed with Call Waiting on or off. The default is Call Waiting off.

The user hears a call-waiting tone for the following types of calls that ring on an **SA** or **ICOM** button:

- An inside call

- A call received on a Direct Inward Dial (DID) trunk

- A call from a remote access user

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- A call received on an automatic dial-in tie trunk

- A call transferred to the extension

- The user does not hear a call-waiting tone for a call received on a personal line unless the business subscribes to call-waiting service from the local telephone company.

The person receiving the call-waiting tone has these options:

- Ignore the new call and continue with the current call; the caller continues to hear the special ringback.

- Complete the current call, hang up, and answer the waiting call when it rings; the caller hears normal ringback.

- On a multiline telephone, put the current call on hold and answer the new call using an **ICOM Originate Only** or **SA Originate Only** button (if one is available) by using call-waiting pickup. Call-waiting pickup is activated on an **ICOM Originate Only** or **SA Originate Only** button by pressing the **Feature** button followed by *87* or by dialing *#87*.

- On a single-line telephone, put the current call on hold by pressing and releasing the switchhook or the **Flash** or **Recall** button. Dial *#87* to answer the waiting call.

Considerations and Constraints

A user can have more than one call waiting. If there is more than one call waiting, then a user who activates call-waiting pickup answers the individual calls on a first-come, first-served basis.

Call Waiting is not activated if a line button of the appropriate type (such as **ICOM** or **SA**) is available to receive a call.

An extension programmed as a fax extension can activate Call Waiting so that callers can wait until a fax machine is available. To prevent disruption of a fax message in progress, a call-waiting tone is not sent to a fax extension.

If a person with Call Waiting on is in the process of dialing and receives a call, the touch tones generated while dialing cancel the call-waiting tone. As a result, the person may not be aware that a call is waiting.

Telephone Differences

Queued Call Consoles

Call Waiting cannot be used on Queued Call Consoles (QCCs); the calls are already queued. The operator releases a call to a busy extension either by selecting Camp On from the display or by pressing the **Release** button. If Camp-On is used, the call does not return to the QCC queue until the Camp-On return

interval expires. If the operator presses the **Release** button, the extension being called receives the call-waiting tone (not Camp-On), and the call returns to the QCC queue when the transfer return interval expires.

If the system is programmed for Automatic Extended Call Completion, a QCC operator must press the **Start** button to use Camp-On, then dial the extension manually, activate Camp-On, and press **Release**. If the operator presses a DSS button, the transfer is automatically completed and Camp-On cannot be used.

Other Multiline Telephones

If a multiline telephone does not have an **SA Originate Only** or **ICOM Originate Only** button assigned or available, the user cannot pick up the waiting call. To pick up the call, the user presses an available **SA Originate Only** or **ICOM Originate Only** button, presses the **Feature** button, and dials *87*.

If either Transfer or Camp-On is used to transfer a call to a busy extension, the call is placed in the call-waiting queue and the caller hears the call-waiting tone, whether or not the extension has the Call Waiting feature activated.

Single-Line Telephones

If a single-line telephone user presses and releases the **Recall** or **Flash** button— or on a telephone without positive disconnect, presses and releases the switchhook—after picking up a waiting call, the picked-up call is disconnected and the user is reconnected to the original call. If the user hangs up after picking up a waiting call, the picked-up call is disconnected and transfer is initiated for the first call; the original call goes on hold and transfer return applies.

Feature Interactions

Basic Rate Interface	Call Waiting is provided on BRI lines at extensions so programmed. The call-waiting tone is not blocked from BRI at an extension.
Callback	When Automatic Callback is used to queue a call at an extension that has Call Waiting, Callback overrides Call Waiting. The user with Call Waiting does not hear the call-waiting tone, and the call is queued until the extension becomes available.
Callback *continued*	When Selective Callback is used to queue a call at an extension that has Call Waiting, the user with Call Waiting hears the call-waiting tone and the call is queued until the extension becomes available.
Camp-On	A user with no available buttons to receive a transferred call hears the call-waiting tone when a co-worker uses Camp-On to transfer a call, even if Call Waiting is not activated.

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Conference	A call-waiting tone is heard only by the person receiving the call and not by other conference participants. If the conference originator reaches a busy extension, hears the call-waiting special ringback, and tries to add the call to the conference, the system returns a busy tone. To drop the busy tone from the conference, the originator presses the **Drop** button and then the line button used to call the busy extension.
Coverage	A call to a sender with Call Waiting activated goes to Individual and/or Group Coverage first. If all coverage points are busy, the sender hears the call-waiting tone.
	Changing the status of Coverage On/Off to On after hearing the call-waiting tone does not force the waiting call to coverage receivers but sends subsequent calls to coverage.
Digital Data Calls	Call Waiting does not work with data calls. The call appears to wait but does not return to the extension when it becomes available. This feature should be disabled at video systems and data extensions.
	At a passive-bus MLX telephone, Call Waiting requires one of the B-channels needed for a 2B video call and should be used only when the video system is not active on, or receiving, a call.
Display	When a user has a call waiting, Call Waiting is shown on the display.
Forward and Follow Me	Call Waiting does not apply to forwarded calls because the system tries the destination extension instead of the forwarding extension. However, if the call is not forwarded for any reason (for example, the line/trunk selected is an unreliable loop-start line), Call Waiting functions normally.
	In Release 4.1 and later systems, a user with no **SA** or **ICOM** buttons available and with Forward or Follow Me turned on does not hear the call-waiting tone when a call is forwarded using the Forward on Busy enhancement. Instead, the caller hears ringback.
Group Calling	Calls made to a calling group are not eligible for Call Waiting because the calls ring into the calling group's queue. However, Call Waiting can be used for calls to individual members of the calling group.
Hold	A person with all calls on hold cannot hear the call-waiting tone.
HotLine	Call Waiting can be activated for a HotLine extension, but the telephone cannot put the current call on hold and pick up a waiting call. Instead, the user must hang up the current call and wait for the call-waiting call to ring.
Paging	Call Waiting cannot be used for Group Paging calls to busy extensions.
Personal Lines	A user does not hear a call-waiting tone for a call received on a personal line unless the business subscribes to a call-waiting service from the local telephone company.
Pickup	Pickup features cannot be used to answer a waiting call at another extension.

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Primary Rate Interface (PRI) and T1	Call Waiting is provided on PRI lines at extensions so programmed. The call-waiting tone is not blocked from PRI at an extension. Until the call is answered, answer supervision is not returned to the network and the caller hears regular ringback instead of call-waiting ringback.
	Call Waiting does not work with data calls.
Recall/Timed Flash	If Recall is used while a user is hearing special ringback, the call is disconnected and the user hears inside dial tone.
Reminder Service	Reminder calls are not eligible for Call Waiting.
SMDR	In Release 4.1 and prior systems, SMDR does not begin measuring the duration of a call-waiting call until the call is answered. In Release 4.2 and later systems with the Talk Time option enabled, timing for calls to Auto Login and Auto Logout calling groups starts as soon as the system detects the calls.
System Access/ Intercom Buttons	An extension is considered busy when all **SA** or **ICOM** buttons (excluding **SA Originate Only** or **ICOM Originate Only**) are in use. A multiline telephone user can dial the Call Waiting feature code to pick up a waiting call only when an **SA Originate Only** or **ICOM Originate Only** button is available.
Transfer	A user with no available buttons to receive a transferred call hears the call-waiting tone when a co-worker uses the Transfer feature to transfer a call, even if Call Waiting is not activated.
	A call received by using call-waiting pickup can be transferred only if an **SA** or **ICOM** button on which to transfer the call becomes available.

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At a Glance

Users Affected	Telephone users, DLC operators, data users
Reports Affected	Extension Information, Remote Access (DISA) Information, System Information (SysSet-up)
Modes	All
Telephones	All except QCC
Programming Codes	
Auto on	*12
Auto off	**12
Selective	*55
Feature Codes	
Selective	55
Cancel request	*55 (single-line telephones, data equipment)
MLX Display Label	Cback Auto,On [CbckA,On]
	Cback Auto,Off [CbckA,Off]
	Cback Sel [CbckS]
System Programming	Specify the number of rings to the callback originator before the system cancels a callback request:
	• Options→Callback
	Enable or disable the use of Callback for busy pools for remote access users:
	• LinesTrunks→RemoteAccss→AutoQueuing
Maximums	
Dialed digits for each queued call	40
Queued calls in the system	64
Factory Settings	
Automatic Callback rings	3 before system cancels callback request (range 1–6)
Automatic Callback	Off

Description

Callback provides an easy way to complete calls to busy extensions and, in Hybrid/PBX mode, to outside numbers when all lines/trunks are busy in the pool through which calls are made. (See "Line Request" on page 372 for information about busy lines in Key and Behind Switch modes.)

Two types of Callback can be programmed for an extension:

■ **Automatic.** Callback is activated automatically whenever the caller reaches a busy extension or when all lines/trunks in a pool are busy. This feature is set to On or Off for each extension.

- ■ **Selective.** Callback is activated only when a caller chooses it by dialing a feature code or, on multiline telephones, by pressing a programmed Selective Callback button. On MLX display telephones, a caller can also select the feature from the display.

When Automatic Callback is on and a caller reaches a busy extension or pool, he or she hears the queuing tone (five short beeps) instead of the busy tone. The tone indicates that the system is putting the call into the callback queue.

When a caller wishes to use Selective Callback for a call and reaches a busy extension, he or she must activate Callback while listening to the busy signal. If the caller tries to make a call by using a pool in which all lines/trunks are busy, he or she hears a fast busy signal immediately after dialing the pool dial-out code. After activating Callback, the caller receives dial tone; after all digits are dialed, the caller hears the queuing tone and the call is added to the callback queue.

With both types of Callback, a caller can either stay on the line until the call is completed or hang up.

- ■ If the caller stays on the line, the red and green LEDs are on next to the line button used to make the call. When the busy extension or pool is available, the caller hears the out-of-queue tone (three short beeps) and the call is completed automatically.

- ■ If the caller hangs up, the green LED flashes next to the line button, indicating that the button is being held for the queued call. When the busy extension or pool is available, the caller hears a priority ring (four bursts of ring on an MLX telephone and three bursts of ring on an analog multiline or single-line telephone). If the user does not answer the callback call within the number of rings programmed for the system (1–6), the callback request is canceled.

For inside and outside calls, the caller hears ringback when the extension is available, but the system does not make the call until the caller picks up.

Considerations and Constraints

Callback cannot be used for personal lines assigned to buttons on a telephone. See for additional information. If more than one call is waiting for the same extension or pool, the call that has been queued the longest is connected first.

When a call is waiting in queue for an extension, no new calls are sent to the extension until after the queued call is completed.

When the queue contains 64 calls (system limit), additional calls sent to the queue result in a busy signal.

No more than 40 dialed digits can be included in a queued call.

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In order to use Callback with pools consisting of loop-start lines, the loop-start lines must be programmed for reliable disconnect.

Mode Differences

Hybrid/PBX Mode

Callback can be used for busy extensions and for outside calls on pools where all lines/trunks are busy.

Key and Behind Switch Modes

Callback can be used only for busy extensions. Line Request is used for busy outside lines that are assigned to line buttons.

Telephone Differences

Queued Call Consoles

A QCC operator cannot use Callback.

Other Multiline Telephones

On all other multiline telephones, Selective Callback is activated by pressing a programmed Callback button or by pressing the **Feature** button and dialing *55*. On MLX display telephones, Selective Callback is also activated by pressing the **Feature** button and selecting the feature from the display. If the user is on another call when the system tries to call back, he or she hears an abbreviated ring.

A multiline telephone user can queue more than one call to the same extension.

On a multiline telephone, cancel a callback request by pressing the **SA** or **ICOM** button used to make the call, lifting the handset, pressing the **Drop** button, and pressing the **SA** or **ICOM** button again. The red and green LEDs next to the button go off, and the request is canceled.

Single-Line Telephones

A single-line telephone user can make and receive other calls while waiting for the call to be completed. The request remains in the queue until the user who initiated the request is available. Queued calls ring at a single-line telephone in the order in which they were queued.

A single-line telephone can queue only one call at a time. If a single-line telephone user who has already queued one call tries to transfer a second call to a busy pool, the transferred caller hears a fast busy tone. The system considers the transfer complete, and the call is not returned to the single-line telephone user who transferred the call.

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Cancel a callback request by lifting the handset and dialing `#*55` while listening to inside dial tone. The system sends a confirmation tone to indicate that the request is canceled.

A single-line telephone user cannot use Callback if another call is on hold. A waiting outside call rings at a single-line telephone before any calls queued for that extension.

Feature Interactions

Account Code Entry	An account code should be entered before activating Callback. If it is not, wait until after the call is connected before entering the account code. Account codes cannot be entered while the call is queued.
	A forced account code must be entered before Callback is activated. If not, the user hears a busy tone.
Automatic Route Selection	When a call is made using Automatic Route Selection (ARS) and all possible line/trunk routes are busy, the call can be queued for the first route in the pattern. However, if the Facility Restriction Level (FRL) for the extension does not allow the call to be made over the route, the call is not queued.
Barge-In	If Callback is used to request a busy extension or pool and the caller is waiting on the line for the callback call, Barge-In cannot be used.
Calling Restrictions	In Hybrid/PBX mode, a person with a restricted extension can use Callback for a busy pool because restrictions are based on the specific line/trunk being used to make the call. When a line/trunk in the busy pool is available, the system checks for restrictions assigned to the extension. If the extension is restricted, a fast busy signal indicates that the call is not dialed.
Call Waiting	When Automatic Callback is used to queue a call at an extension that has Call Waiting, Callback overrides Call Waiting. The user with Call Waiting does not hear the call-waiting tone, and the call is queued until the extension becomes available.
Call Waiting *continued*	When Selective Callback is used to queue a call at an extension that has Call Waiting, a user with Call Waiting hears the call-waiting tone and the call is queued until the extension becomes available.
Conference	With Automatic Callback, the call is automatically queued; however, if a person tries to add the queued call to the conference, the system returns a busy tone. With Selective Callback, the system also returns a busy tone. To drop the busy tone from the conference, the originator presses the **Drop** button and then the line button used to call the busy extension.
Coverage	The sender and all coverage receivers must be busy before a call to the sender can be queued. The call is sent to coverage before it is put in the callback queue. Once a call is in the callback queue, it is not sent to coverage again. The callback call indicating that a busy extension or pool is available is not eligible for Individual or Group Coverage.

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Digital Data Calls	Videoconferencing systems that can dial feature codes using # can use Selective Callback. When a pooled line becomes available or the busy video system is idle, the queued call is made, one B-channel at a time. When the second B-channel becomes available, it can be used for the connection as well, providing the video system supports this capability.
	Although video systems can use either off-hook or on-hook Callback, you should use only off-hook Callback for 2B data connections. If you use on-hook Callback, the returning callback call is connected using only one B-channel.
	Automatic Callback should be disabled for digital data and videoconferencing extensions. It can be used at an MLX passive-bus extension at a desktop video workstation.
Display	When a call is queued by Automatic Callback on a multiline telephone or by Selective Callback on an analog multiline telephone, the display shows a feedback message. When an MLX telephone user activates Selective Callback, the display prompts the user to enter the telephone number. When the queued call rings the user's telephone, the display indicates that it is a returning callback call.
Do Not Disturb	Calls to extensions that are using Do Not Disturb are not eligible for callback queuing. If a callback originator is using Do Not Disturb, the system overrides the feature and the telephone rings when the busy extension or line/trunk is available.
Extension Status	In Hotel mode, an extension in Extension Status 1 or 2 cannot use Callback to request busy pools.
Forward and Follow Me	If a user queues a call and then uses Forward, Remote Call Forwarding, or Follow Me, the call does not ring back at the destination extension or telephone number; the callback call returns only to the forwarding telephone.
Forward and Follow Me *continued*	If a forwarding extension is busy when a user calls, the user can queue the call for callback. Callback is completed when the forwarding extension is no longer busy. If the forwarding extension and the forwarded-to extension are available, the call rings at both extensions. If the forwarded-to extension is not available, the call rings at the forwarding extension only.
	If an inside caller using Automatic Callback calls an extension with Remote Call Forwarding on and no pools are available, the caller hears queuing tone, but the call queues for the extension only, not for the remote number. When the extension becomes available, dequeuing tone sounds and the call is placed to the extension (not the Remote Call Forwarding number) if the user has stayed on the line. If the caller has hung up, priority ring is heard as the callback call is dispensed to the caller.

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In a case where no pools are available and an inside caller is not using Automatic Callback, a call to an extension with Remote Call Forwarding follows the extension's coverage path. If there is no coverage and the inside caller activates Selective Callback while listening to the busy signal, the call queues for the extension but not for the Remote Call Forward number.

Group Calling   Calls made to a calling group are not eligible for Callback because the calls ring into the calling group's queue. However, Callback can be used for calls to individual calling group member extensions or to delay announcement devices. Calling group calls are not sent to a group member when the member has used Callback for a busy extension or pool, or if another person used Callback to reach the member and the callback call is ringing on the member's telephone.

Headset Options   Callback calls are answered automatically by using Headset Auto Answer, but a user hears the out-of-queue tone instead of the zip tone. When both calling and receiving users have headsets with Headset Auto Answer activated (MLX telephones only), the person being called hears the zip tone when the callback call is completed; the callback originator does not hear zip tone or dequeuing tone.

Hold   Pressing the **Hold** button while waiting for a callback call is similar to hanging up. The green LED flashes next to the line button, indicating that the button is being used for the queued call.

HotLine   Callback is not intended for HotLine extensions (Release 5.0 and later systems). However, Automatic Callback may be used, if programmed, for inside and ARS (Hybrid/PBX mode only) calls. Selective Callback is also available.

Line Request   Returning callback calls cancel Line Request.

Multi-Function Module   Both Automatic and Selective Callback can be used from an MFM; however, a callback call cannot be manually canceled because the MFM does not recognize the switchhook flash produced by pressing the **Drop** button.

Music On Hold   An outside caller waiting in the callback queue hears Music On Hold if it is programmed.

Paging   Callback cannot be used for calls to a speakerphone paging group. A voice-announced inside call that is queued using Callback automatically becomes a ringing call. Systems with Loudspeaker Paging can be set up to allow calls to be queued for the Loudspeaker Paging system by placing the Loudspeaker Paging jack in its own pool and having users access the paging system through the pool. When the pool is busy, the call can be queued.

Park   Calls waiting in a callback queue cannot be parked.

Personal Lines   The Callback feature cannot be used to request a busy personal line. See .

Pickup   A callback request cannot be picked up at another extension.

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Pools	In Hybrid/PBX mode, Callback can be used to complete calls to an outside number only when all lines/trunks in the pool are busy.
Primary Rate Interface (PRI) and T1	Callback cannot be used to request a busy PRI line assigned as a personal line, but it can be used to request a line from a pool of PRI lines. An idle PRI line is not considered an available pool member unless a check determines that it is associated with an available B-channel. Even if a B-channel is available when the pool selects a line for a queued call, there may be none available when it is time to send a setup message to the network. Or, after the setup message is sent, the network may determine that the B-channel proposed by the system is not available. In either case, the call fails and a fast busy tone is applied.
	Some applications (such as video systems) that use data lines may work improperly when releasing data facilities requested by Callback.
Recall/Timed Flash	If Recall is used while a user is off hook with a queued callback request, the call is disconnected and the user hears dial tone.
Reminder Service	Reminder calls cannot be queued by using Callback.
Remote Access	Remote access users can use Callback if the system is programmed for remote access Callback (Autoqueuing). The user cannot hang up but must wait on the line until the extension or pool is available. The caller hears Music On Hold if it is programmed.
SMDR	SMDR begins measuring the duration of a callback call when the call is completed.
Speed Dial	When a Stop character is programmed as part of a Speed Dial number, stay on the line, wait for the callback call, and then reactivate Speed Dial. This signals the system to continue dialing the digits following the Stop character.
System Access/ Intercom Buttons	Callback can be used on **SA** and **ICOM** buttons. When Callback is used on an **SA** button, the call rings and the green LED next to the button flashes only at the telephone that originated Callback. If a user other than the person originating the callback call selects the flashing **SA** button with the callback call and lifts the handset, he or she hears the queuing tone and the green LED on the originator's telephone goes from flashing to steady. If the second person hangs up, the green LED on the originator's telephone goes back to flashing and the system directs the callback call to the originator. If the second person stays on the line, the system directs the call to the second person and not to the callback originator.
	Selective Callback can be used from an **SA** or Shared **SA** button. The green LED next to the button at the telephone that originated Callback and all those next to other related **SA** and **SSA** buttons remain on.

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Transfer   A queued callback call cannot be transferred, but calls transferred to busy extensions are eligible for Callback. When a user reaches a busy extension while transferring a call, he or she can use Automatic Callback or Selective Callback to queue the call before completing the transfer. The caller hears ringback or Music On Hold, if programmed, as with any transfer. When the extension is available, the call is transferred to the extension automatically. If the extension is not available before the transfer return interval expires, the call is removed from the callback queue and returned to the transfer originator.

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Caller ID

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	SMDR, System Information (`SysSet-up`), GS/LS/Trunk Information
Modes	All
Telephones	MLX Display only
System Programming	`LinesTrunks→More→LS-ID Delay→Entry Mode`
Special Services	Custom Local Access Signaling System (CLASS^SM) Caller Identification
Hardware	800 GS/LS-ID circuit module
Factory Setting	LS-ID Delay option off
Type of Facility	Loop-start

Description

Beginning with Release 3.0, the system supports Caller ID. This feature is part of local telephone companies' Custom Local Access Signaling Service (CLASS). It provides a user with calling party number information from the central office (CO) when a call rings on a loop-start line connected to an 800 GS/LS-ID module. This information appears on MLX display telephones, much like the Primary Rate Interface (PRI) Automatic Number Identification (ANI).

> **⟹ NOTE:**
> Calling number identification is not available in all areas or jurisdictions. Check with your local telephone company. The availability of caller identification information may also be limited by the local-serving (caller's) jurisdiction, availability, or central office equipment.

800 GS/LS-ID Circuit Module

The 800 GS/LS-ID circuit module provides eight analog loop-start or ground-start line/trunk jacks, with each port capable of processing Caller ID information (over loop-start lines only). It also provides two touch-tone receivers (TTRs) and can have updated firmware downloaded to it through a PCMCIA card inserted in the processor module.

The module may be programmed through the MLX-20L or through the PC-based System Programming and Maintenance (SPM) interface. It is stored with other system information about the PCMCIA memory card. Beginning with Releases following 3.0, this module is upgradable through the memory card. (For information about system programming, see "Programming" on page 480.)

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> **NOTE:**
> Lines/trunks used for incoming Caller ID service should not have any
> equipment other than the 800 GS/LS-ID module port connected to them.

LS-ID Delay Option

Caller ID information is sent from the central office during the first silent interval of
ringing. Because it is possible to answer a call before this information arrives, you
can turn on the LS-ID Delay option, which suppresses ringing until the Caller ID
information arrives. This option can be programmed for each line. The factory
setting is Off.

On telephones with personal lines, users see the green LED flash next to the
personal line button when a call arrives on the line. The red LED lights and the
telephone rings after a 6-second delay or when Caller ID information arrives,
whichever occurs first. Other telephones do not receive the call until after the
6-second delay or Caller ID information arrives.

> **NOTE:**
> The caller may hear one or two extra bursts of ringback if LS-ID Delay is
> programmed while the person receiving the call has not yet heard a ring.

When the option is programmed on a 2-way trunk, the system does not seize a
trunk from the pool for an outgoing call while that trunk is receiving an incoming
call.

The differences between LS-ID Delay and Delay Ring are that Delay Ring
provides a fixed delay for all calls that arrive on the button programmed for Delay
Ring. LS-ID Delay affects calls that are received on lines connected to an
800 GS/LS-ID module. LS-ID Delay causes a variable delay in ringing at every
extension throughout the system on incoming calls to 800 GS/LS-ID modules.
The call is delayed only until Caller ID information is received from the central
office (on loop-start lines).

Facilities

The interface to Caller ID is provided by the 800 GS/LS-ID line/trunk module. This
module supports loop-start lines and ground-start trunks but supports Caller ID
only on loop-start lines.

Lines/trunks used for incoming Caller ID service should not have any equipment
other than the 800 GS/LS-ID module port connected to them.

Display Operation

Caller ID information is displayed on MLX display telephones only.

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The display shows `No Caller ID` when the call is answered before the Caller ID data arrives, when the Caller ID data is corrupted, or when no Caller ID data is sent from the central office.

`Private` may appear if the caller has subscribed to a central office service that blocks call identification. The phrase `Out of Area` appears on the display when the call originates from a line or caller area without Caller ID or caller information, or sometimes from areas run by local service companies other than your own.

Hyphens are inserted between the digits, for example, `555-1234` for a 7-digit telephone number and `916-555-1234` for a 10-digit number.

See for more information.

Normal Incoming Call

When a call comes in on a personal line or Shared **SA** button, the calling party number information appears at the principal owner's extension. Incoming call information is displayed on Line 1 of the first and second screens.

Group Calling

Caller ID information appears in the PRI Automatic Number Identification (ANI) format without called party information.

Transferring a Call

The phone receiving the transfer displays standard incoming call identification information until the transfer is completed. The second screen shows call transfer information. Caller ID information appears on the display.

Calls returned after the transfer return interval expires also display standard incoming call identification information.

Mode Differences

Behind Switch Mode

If a customer subscribes to both Caller ID and a CO's call-waiting service on the same line, Caller ID information for the first incoming call is transmitted and appears at the display. However, the communications system does not provide the Caller ID information for the second (call-waiting) call.

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Considerations and Constraints

General

An organization must subscribe to the Caller ID service in order for incoming calls through the 800 GS/LS-ID port module to receive Caller ID information (loop-start lines only).

Caller ID/PRI ANI Comparison

Caller ID information arrives between the first and second ring at an extension.

PRI ANI uses the second screen of the telephone display to show the called party number, while Caller ID generally uses this page to display the facility number.

Feature Interactions

Conference	The number of participants is shown on Line 1 of the display. The conference originator can view call information associated with any participant by pressing the **Inspct** button and the button the caller is on.
Coverage	Caller ID information is available to users receiving coverage calls.
Display	No Caller ID is displayed if the call is answered before the Caller ID data arrives. Calling Party Number information appears in the PRI ANI format. However, outgoing calling information is not displayed.
Do Not Disturb	Caller ID information is not displayed when a user turns on Do Not Disturb.
	If a user turns on Do Not Disturb while receiving Caller ID information, the information remains on the display.
Forward and Follow Me	The systemwide LS-ID delay, if programmed, is in addition to the Forwarding Delay. The total delay is the LS-ID delay plus the Forwarding Delay.
Group Calling	Caller ID information appears on the display. Outgoing call information is not displayed.
Headset Options	When using Headset Auto Answer, program the LS-ID Delay option to avoid loss of Caller ID information.
Night Service	Caller ID information appears on the display whether or not Night Service has been activated.
Personal Lines	Caller ID information appears on the display of shared personal lines. Outgoing call information is not displayed.
Pools	Collisions are avoided on 2-way trunks. Trunks programmed with the LS-ID Delay option are not seized from a pool for outgoing calls if a call is coming in on that trunk.
Remote Access	Caller ID information is not retrieved on remote access lines/trunks unless LS-ID Delay is programmed for the line/trunk because the calls are answered too quickly.

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Ringing Options	LS-ID Delay or Delay Ring can be used to delay the ringing on lines answered automatically so Caller ID information is not lost. If a line/trunk has LS-ID Delay, Delay Ring gives an additional delay.
System Access/ Intercom Buttons	Calls ringing on both **SA** and Shared **SA** buttons display Caller ID information on Line 1 of the first display screen. The information remains on the answering extension's display only. If another person picks up on that extension, he or she sees In Use on the display and the answering extension shows Shared Line: Ext Alpha/# of the other extension on Line 2 of the first display screen.
SMDR	Use the ISDN format if you subscribe to Caller ID, whether or not your company subscribes to PRI. The calling party number of an incoming call appears in the NUMBER field. Also, an I appears in the CALL TYPE field. If no information has been received from the CO, the word IN appears in the NUMBER field and a C appears in the CALL TYPE field.
	If you do not use any type of delay option and are using a device with automatic pickup or if you manually pick up the call before the Caller ID information arrives, IN appears in the NUMBER field and a C appears in the CALL TYPE field.
Transfer	If Caller ID information is available, the caller's telephone number is shown on Line 1 of the first screen. Outgoing call information is not displayed. The extension that initiated the transfer is shown on Line 1 of the second screen. Caller ID information is also displayed when a call returns from transfer.

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Calling Restrictions

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Extension Directory, Extension Information, Remote Access (DISA) Information
Modes	All
Telephones	All
System Programming	Assign or remove outward/toll restriction for individual extensions:
	• Extensions→Restriction
	Assign or remove pool dial-out code restriction for individual extensions:
	• Extensions→Dial OutCd
	Assign or remove outward/toll restriction from non-tie trunks used for Remote Access:
	• LinesTrunks→RemoteAccss→Non-TIE Lines→ Restriction
	Assign or remove outward/toll restriction from tie trunks used for Remote Access:
	• LinesTrunks→RemoteAccss→TIE Lines→ Restriction
	Assign or remove outward/toll restriction for each remote access barrier code:
	• LinesTrunks→RemoteAccss→BarrierCode→Restriction
	Assign or remove the ARS FRL for individual extensions:
	• Extensions→**More**→ARS Restrct
	Assign or remove the ARS FRL associated with each route:
	• Tables→ARS→Sub A FRL or Sub B FRL
	Assign or remove the ARS FRL associated with non-tie trunks used for Remote Access:
	• LinesTrunks→RemoteAccssNon-TIE→ARS Restrct
	Assign or remove the ARS FRL associated with tie trunks used for Remote Access:
	• LinesTrunks→RemoteAccss→TIE Lines→ARS Restrct
	Assign or remove the ARS FRL for each remote access barrier code:
	• LinesTrunks→RemoteAccss→BarrierCode→ARS Restrct

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Factory Settings	
Extensions	
Outward/Toll Restriction	Unrestricted
ARS FRL	3 (range 0–6)
Pool Dial-Out Code	No access to any pool
VMI Ports	
Outward/Toll Restriction	Outward
ARS FRL	0 (range 0–6)
Disallowed List	Default Disallowed List (List 7)
ARS FRL for ARS Table	
Local	2 (range 0–6)
Toll	3 (range 0–6)
Remote Access Trunks/ Barrier Codes	
Outward/Toll Restriction	Unrestricted
ARS FRL	3 (range 0–6)
	See "Allowed/Disallowed Lists" on page 34, "Remote Access" on page 522, and "Night Service" on page 398 for additional calling restrictions.

Description

The Calling Restrictions features are used to control outgoing calls from individual extensions, specific pools, types of lines/trunks used for Remote Access, or specific lines/trunks associated with individual barrier codes. When used in conjunction with Automatic Route Selection, calling restrictions can be used to apply ARS Facility Restriction Levels on specific extensions, routes, types of lines/trunks used for Remote Access, and specific lines/trunks associated with individual barrier codes (incoming calls are never restricted). Through calling restrictions, users at individual extensions can be restricted from making certain types of calls, as described in the following sections.

Outward and Toll Restrictions

An extension cannot be used to make toll calls if toll-restricted and cannot be used to make any outside calls if outward-restricted.

If the restrictions are too limiting, an Allowed List can be used in conjunction with calling restrictions. An Allowed List is a list of telephone numbers (such as emergency numbers) that a user with an outward- or toll-restricted extension can dial. If no calling restrictions are assigned to an extension or to supplement calling restrictions, a Disallowed List can be used. A Disallowed List is a list of telephone numbers (for example, 900 numbers) that cannot be dialed from an extension. See "Allowed/Disallowed Lists" on page 34 for additional information.

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Outward Restriction for VMI Ports

In Release 3.1 and later systems, any port programmed as a VMI port is programmed with outward restriction on.

If the system manager wants to allow access to the voice messaging system Outcalling feature, the outward restriction applies to Outcalling calls.

⚠ SECURITY ALERT:

Any changes to the restrictions of these ports must be considered carefully in order to minimize the potential for toll fraud.

If the system manager changes a VMI port to an non-VMI port, the outward restriction of the port is not turned off for the port. If outward restriction should be turned off, the system manager must change it thorough system programming.

Pool Dial-Out Code Restriction (Hybrid/PBX Only)

A restricted extension cannot dial specific pool dial-out codes. This restricts outgoing calls from specific pools and can be used to reserve pools for special purposes, for example, data communications.

In Release 3.1 and later systems, the factory setting is for all extensions to be restricted from using any pool.

Facility Restriction Level (Hybrid/PBX Only)

The Automatic Route Selection (ARS) Facility Restriction Level (FRL) is used to restrict the extension to certain routes. When ARS is used, an FRL is assigned to control or restrict access to specific routes in an ARS table. There are seven FRLs assigned to routes, ranging from 0 to 6, where 0 is the least restricted and 6 is the most restricted.

FRLs from 0 to 6 are also assigned to extensions and are used to determine whether callers have permission to use the routes. To use a route, an extension must have an FRL equal to or greater than the route's FRL. Therefore, the restrictions of the FRL assigned to an extension are the opposite of the restrictions of an FRL assigned to a route. In other words, an extension with an FRL of 0 has the fewest ARS privileges (routes with levels 1 through 6 cannot be used), and an extension with an FRL of 6 has the most privileges (any route may be used). See for additional ARS information.

Restrictions for VMI Ports

In Release 3.1 and later systems, any port programmed as a VMI port is factory-set with a Facility Restriction Level (FRL) of 0.

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If the system manager wants to allow access to the voice messaging system Outcalling feature, the FRL applies to Outcalling calls.

⚠ SECURITY ALERT:

Any changes to the FRL and other restrictions of these ports must be considered carefully in order to minimize the potential for toll fraud.

If the system manager changes a VMI port to a non-VMI port, the FRL is not reassigned on the port. If the default FRL should be changed, the system manager must change it through system programming.

Remote Access

Outward/toll and FRL calling restrictions can also be applied to remote access users. These calling restrictions can be applied to each individual barrier code (up to 16) or, if barrier codes are not used, to all remote access tie/DID trunks and all remote access non-tie/non-DID trunks. See for additional information.

Night Service

Other calling restrictions can be applied when Night Service is activated. Night Service can be set up to require a password to be dialed before a non-emergency number. When the correct password is entered, the system then checks for calling restrictions assigned to each extension before allowing calls to outside numbers.

A Night Service Exclusion List can be created to exempt specific extensions from the password requirement. However, normal calling restrictions (if any) assigned to the extension are still in effect. A Night Service Emergency Allowed List can also be created, which can contain up to 10 numbers that can be dialed without entering the Night Service password. See for additional information.

Considerations and Constraints

In Hybrid/PBX mode, an outward-restricted extension cannot be used to make an ARS call except to emergency numbers. See for additional information.

Only outgoing calls are affected; users can receive inside, local, and toll calls on restricted extensions and can join any type of call in progress.

When a user with an outward-restricted extension presses the dialpad while on a call, the call is disconnected, the user hears a fast busy signal, and the line/trunk is released. The system assumes that the user is trying to make an outside call, which is not allowed because of the outward restriction assigned to the extension.

Users with **Pool** buttons on their telephones can use the pool even if the pool dial-out restriction is assigned to the extension.

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Outward and toll restriction do not work with tie trunks or with T1 lines emulating tie trunks which are set to tie-PBX. Automatic Route Selection or pool dial-out codes should be used to restrict these types of line/trunks.

Because calling restrictions apply to extensions used to initiate a transfer to an outside number, a user with a restricted extension can circumvent restrictions by asking an operator with an unrestricted console to connect an outside call.

When a marked System Speed Dial code is used to dial a number, the System Speed Dial number overrides calling restrictions (such as outward or toll restrictions).

If Centrex service is used, any calling restrictions for the extension must be programmed by the telephone company at the central office.

Mode Differences

Hybrid/PBX Mode

In Hybrid/PBX mode, all calling restrictions can be assigned.

Key and Behind Switch Modes

In Key and Behind Switch modes, outward and toll restrictions can be assigned, while pool dial-out code restrictions and ARS FRL cannot be assigned.

Feature Interactions

Allowed/ Disallowed Lists	When used with calling restrictions, Allowed Lists can permit the dialing of specific numbers (such as emergency numbers) from an outward- or toll-restricted extension.
	Disallowed Lists can prevent the dialing of specific numbers from an unrestricted or toll-restricted extension.
	A Disallowed List takes precedence over an Allowed List.
Auto Dial	A user with a restricted extension cannot dial a restricted number (outward or toll) by using an Auto Dial button unless the number is on the Allowed List for that extension.
Automatic Route Selection	ARS does not allow users to avoid calling restrictions. The system checks for outward or toll restrictions assigned to the extension before it selects the best route for making the call. If the ARS FRL assigned to the extension restricts use of the route, a user hears an error tone and the call does not go through. Because FRL assignment determines pools selected in each route, a user may be allowed to select a pool using ARS even if the extension is restricted from the pool dial-out code.

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Callback	In Hybrid/PBX mode, a user with a restricted extension can use Callback for a busy pool because restrictions are based on the specific line/trunk being used to make the call. When a line/trunk in the busy pool is available, the system checks for restrictions assigned to the extension. If the extension is restricted, the user hears a fast busy signal to indicate that the call is not allowed.
Centrex Operation	Centrex users should not be assigned calling restrictions because the calling restrictions should be assigned through the CO.
Conference	A user with an outward/toll-restricted extension cannot add an outside/toll participant to a conference unless the participant's number is on an Allowed List for that extension.
Coverage	In Release 2.1 and later systems, users answering calls on Cover buttons can generate touch tones (for example, dialing a *1* to accept a collect call) if their extensions are not outward- or toll-restricted. If the telephone is outward- or toll-restricted, the user hears the touch tones, but the tones are not sent out over the line.
Directories	Using a marked System Directory listing to dial a number overrides any calling restrictions (such as toll or outward restrictions) assigned to the extension.
Display	Call Denied appears on an MLX display when a call is denied because of calling restrictions. The message is not shown on an analog multiline display telephone.
Extension Status	To allow users in the Hotel configuration of Extension Status to dial emergency or other selected numbers when the extension is in Status 1 or 2, the extension must be assigned to an Allowed List.
Forward and Follow Me	A user with an outward- or toll-restricted extension cannot forward calls to a number (outward or toll) unless the number is on an Allowed List for that extension. No error tone sounds when a user with a restricted extension activates the Forward feature; however, when a call is received at the extension, the system checks restrictions and denies the forward if the number is not on the Allowed List.
HotLine	Calling restrictions can be applied to HotLine extensions (Release 5.0 and later systems).
Night Service	For Night Service with outward restriction, a Night Service Emergency Allowed List must be created; it consists of emergency numbers that can be dialed from any extension without dialing the password (10 emergency numbers, 9 digits each). Any restrictions assigned to an extension on the Night Service Exclusion List are in effect when Night Service is activated.
Personal Lines	A user at an outward-restricted extension cannot dial a restricted number (outward or toll) on a personal line unless the number is on an Allowed List for that extension.
Pools	Specific pools can be restricted from being used for outgoing calls by assigning a pool dial-out code restriction to extensions.

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Primary Rate Interface (PRI) and T1	Outward and toll restrictions do not work with T1 lines emulating tie trunks when the lines are set to Tie-PBX or Tie Switched 56 Data. Use Automatic Route Selection or pool dial-out codes instead.
Recall/Timed Flash	If Recall is used on a personal line or **Pool** button—or, in Release 2.0 and later systems, on an **SA** or **ICOM** button—to access an outside loop-start line, the accessed line is kept, the user hears outside dial tone, and calling restrictions are reapplied.
Speed Dial	A user with an outward- or toll-restricted extension cannot dial a restricted number by using Personal Speed Dial or System Speed Dial (excluding a marked System Speed Dial code), unless the number is on an Allowed List for that extension.
System Access/ Intercom Buttons	For Shared **SA** buttons, calling restrictions apply to the extension with the **SSA** button, not to the principal user.

Camp-On

At a Glance

Users Affected	Telephone users, operators
Reports Affected	System Information (`SysSet-up`)
Modes	All
Telephones	All except single-line telephones and data equipment
Programming Code	`*57`
Feature Codes	`57`
	`87` (Call Waiting Pickup)
MLX Display Label	`Camp On [Camp]` + *caller's extension label*
System Programming	Change the amount of time before a camped-on call returns to originator:
	• `Options`→`CampOn`
Factory Setting	
Return Interval	90 seconds (range 30–300, in increments of 10 seconds)

Description

Camp-On allows you to complete a transfer to a busy extension. The call is put on hold until the extension can receive a call; then it rings automatically. While the call is on hold, the caller (inside or outside) hears special ringback. The person at the busy extension hears a call-waiting tone to indicate that a call is waiting. If the call is not answered within the programmed Camp-On return interval (30–300 seconds), the call returns to the originator. The originator hears a priority ring (one ring and two beeps) to indicate a returning Camp-On call.

Camp-On can also be used to complete a transfer to an extension that is not busy. This can increase the amount of time before the call returns to the originator because the return call is timed according to the Camp-On return interval (30–300 seconds) instead of the transfer return interval (1–9 rings). Camp-On can be activated by using either a programmed button or a feature code.

Considerations and Constraints

A Camp-On return interval of 30 to 300 seconds in increments of 10 seconds can be programmed. The factory setting is 90 seconds.

A person at a destination telephone hears a call-waiting tone when a call is camped on even if Call Waiting is not programmed on the destination extension.

Multiple calls can be camped-on to individual extensions.

To use Camp-On, the feature must be activated while the person is listening to ringing, a busy tone, or call-waiting ringback. Camp-On cannot be activated at

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other times, and no error tone sounds when a caller unsuccessfully tries to use Camp-On at an inappropriate time.

Camp-On cannot be used on a system that includes a voice messaging system.

Telephone Differences

Direct-Line Consoles

When a Direct-Line Console (DLC) system operator uses Camp-On to transfer a call to a busy extension, the call is placed in the call-waiting queue; the caller hears the call-waiting tone whether or not the user has the Call Waiting feature activated.

If the system is programmed for one-touch Transfer with automatic completion, an operator uses Camp-On by pressing the **Transfer** button, dialing the extension manually, and activating Camp-On.

If an operator presses an Auto Dial or DSS button, the transfer is automatically completed and Camp-On cannot be used.

Queued Call Consoles

A Camp-On button cannot be programmed on a QCC. Instead, the operator makes a call to a busy extension by selecting Camp On from the display. The call does not return to the QCC queue until the Camp-On return interval expires. If the operator presses the **Release** button, the extension being called receives the call-waiting tone and the call returns to the QCC queue when the transfer return interval expires.

To use Camp-On when the system is programmed for automatic extended call completion, a QCC operator must press the **Start** button, dial the extension manually, activate Camp-On, and either press **Release** or hang up. If the operator presses a DSS button, the transfer is automatically completed and Camp-On cannot be used.

Other Multiline Telephones

Camp-On can be used when a multiline telephone user hears ringing, a busy tone, or call-waiting ringback while transferring a call. To use Camp-On to complete the transfer, press a programmed **Camp-On** button or press the **Feature** button and dial 57. On MLX display telephones, a user can also press the **Feature** button and select Camp On from the display.

Single-Line Telephones

Calls can be camped on to single-line telephones, but single-line telephone users cannot use Camp-On.

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Feature Interactions

Call Waiting	A user with no available buttons to receive a transferred call hears the call-waiting tone when a caller uses Camp-On to transfer a call, even if Call Waiting is not activated.
Coverage	All individual and/or Group Coverage points must be busy before a call can be camped-on to a coverage sender's extension. Coverage calls answered by a receiver can be camped-on to another user.
Digital Data Calls	Data and video calls cannot be camped on.
Direct Station Selector	When Camp-On is used to complete a transfer and the call returns, the DSS button for the extension to which the call has been transferred goes off and does not flash as it does for a transfer return or Park return.
Display	After Camp-On is activated, the display on an MLX display telephone shows Camp On: and the caller's extension label.
Do Not Disturb	A Camp-On call does not ring when Do Not Disturb is activated.
Group Calling	A user can transfer a call to a calling group by using Camp-On, but the call does not return to the originating extension, even if it is not answered within the programmed Camp-On return interval.
HotLine	HotLine (Release 5.0 and later systems) calls can be camped onto but a HotLine extension cannot camp on to calls.
Line Request	Returning Camp-On calls cancel Line Request.
Music On Hold	When Camp-On is used to complete the transfer of an outside call, the waiting caller hears either Music On Hold or ringing, depending on the Transfer Audible setting.
Paging	Camp-On cannot be used for calls to busy speakerphone paging groups.
SMDR	If an incoming call is camped on but not picked up by the called extension, the extension of the user who activated Camp-On is shown in the STN (station, that is, extension) field of the SMDR report. If an incoming call is camped on and picked up by the destination extension, the destination extension is shown in the STN field.
System Access/ Intercom Buttons	A user can pick up a camped-on call by using an idle **SA Originate Only** or an idle **SA** button.
Transfer	A transfer can be completed by using the Camp-On feature, whether or not the destination extension is busy. When the feature is used, the Camp-On return interval is used instead of the transfer return interval. If a user wishing to transfer a call to an outside number activates Camp-On, the call to the outside number is disconnected. The original call, waiting for transfer, remains on hold.

Centrex Operation

At a Glance

Users Affected	Telephone users, operators
Reports Affected	System Information (`SysSet-up`)
Modes	All
Telephones	All touch-tone telephones
System Programming	Specify mode of operation:
	• `SysProgram`→`System`→`Mode`
	For additional programming requirements, see "Recall/Timed Flash" on page 511.

Description

Centrex is an optional telephone service that business customers can obtain from telephone companies. A Centrex line/trunk provides access to telephone features similar to those available from a PBX switch located on the customer's premises. Basic Centrex features often include the following:

- Transfer

- Three-way conference

- Drop

- Hold

- Recall

- Call forwarding

- Call waiting

- Call pickup

- Group pickup

- Automatic callback

⇒ NOTE:
The term *communications system* here refers to the MERLIN LEGEND Communications System, as distinguished from the Centrex system provided by the central office.

Additional features, such as speed dialing and night service, may also be available from some telephone companies. Centrex features other than those specifically discussed in this section are accessed by sending a switchhook flash and dialing the appropriate feature code. These codes are not intercepted or interpreted by the communications system.

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To use the features available through Centrex, dial a Centrex feature code from a touch-tone telephone or analog data device. Some features must be programmed for customers by the telephone company at the central office (CO). The system can be configured for either full or limited Centrex service.

> **NOTE:**
> The system supports Centrex on loop-start lines only, not on ground-start or ISDN facilities.

Full Centrex

Full Centrex requires that each extension have a direct Centrex line/trunk (*prime line*) to the CO. Full Centrex can also be used when only some extensions have prime lines, but the extensions without prime lines have limited ability to use Centrex features. Prime lines can be shared between extensions.

The prime line allows users to dial outside numbers directly after dialing an access code (usually *9*). For this reason, any calling restrictions for the extension must be programmed by the telephone company.

The prime line is also used to call other 4-digit Centrex extension numbers that may be located at different sites served by the same telephone company. The communications system's intercom lines are used to dial other extensions in the communications system.

With full Centrex, users can send a switchhook flash using the **Recall** or **Flash** button. The fixed-function buttons (**Hold**, **Drop**, and **Transfer**) control Centrex features rather than communications system features (additional buttons can be programmed for communications system use). The communications system does not intercept or respond to Recall or fixed-function button signals. See ''Recall/Timed Flash'' on page 511 for additional information.

For full Centrex operation, the system must be in Behind Switch mode. A full Centrex configuration operates on three levels, as shown in Figure 4 on page 122. The extension user must be aware of the level where he or she is when making a call or activating a feature.

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Figure 4.   Full Centrex Service

Limited Centrex

With limited Centrex service, users depend principally on the communications system's features, but a limited number of prime lines can be used to access the CO Centrex. There are two cases that are particularly suitable for limited Centrex:

- Centrex lines/trunks may be less expensive than other lines.

- Different users may have different needs for telephone service, so that some users benefit more from Centrex while other users benefit more from direct use of the communications system.

In the limited Centrex configuration, some extensions may have prime lines while other extensions access the prime lines through a pool. Extensions can also be assigned ground-start, tie, or DID lines, which is not possible in full Centrex. Telephones without prime lines can use a **Pool** button to access Centrex facilities or may use an **SA** button to access pooled facilities by dialing an access code. Once connected to a pool, users may dial other Centrex extensions or dial an access code for outside calls. Outside calls made by using an **SA** button to access a pool require two access codes for outside calls, one for the pool and one for outside lines on Centrex.

For limited Centrex operation, the communications system must be in Key or Hybrid/PBX mode. The total system operates on three levels, as shown in

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Figure 5. The extension user must be aware of the level where he or she is when making a call or activating a feature.
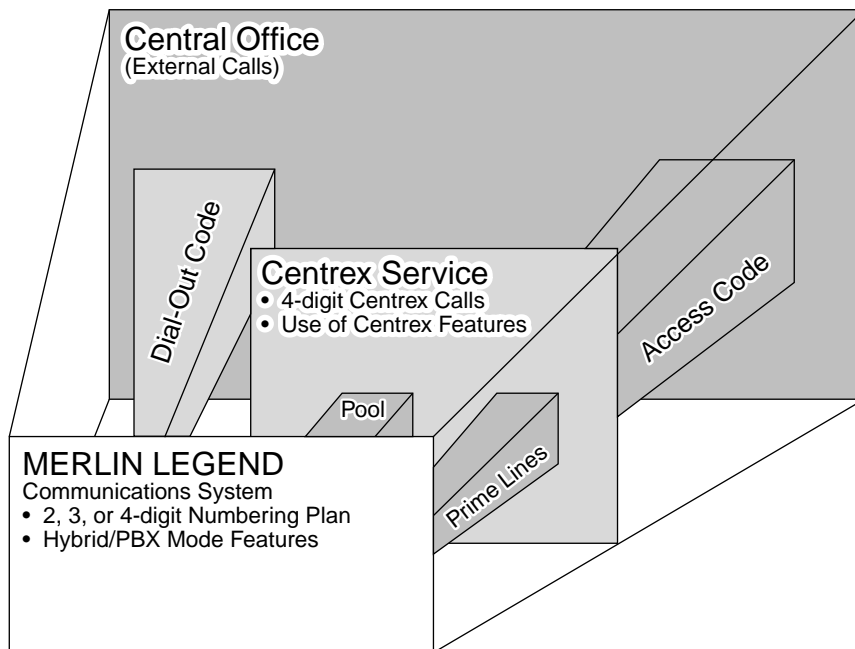
Figure 5.   Limited Centrex Service
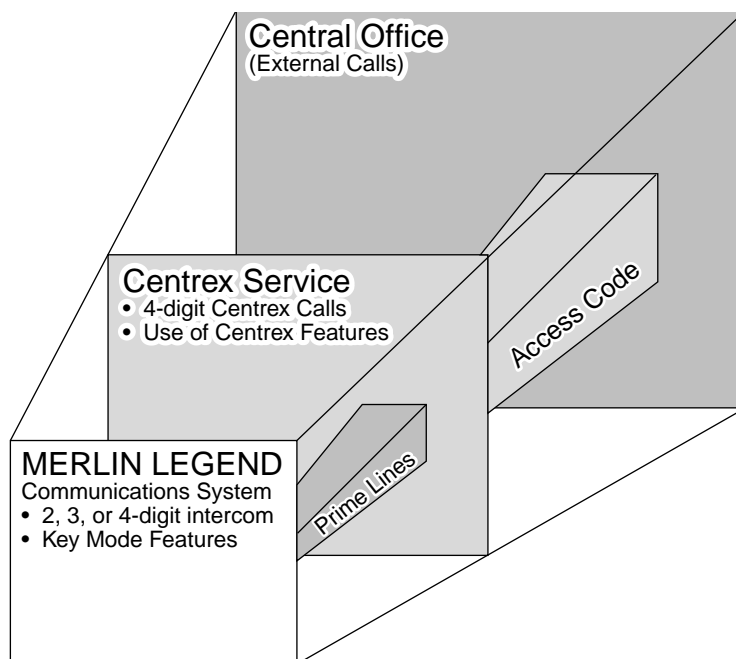
Differences between Full and Limited Centrex

Full Centrex and limited Centrex differ in where and how PBX functions are provided:

- In full Centrex, the Centrex service provides PBX services to all extensions.

- In limited Centrex, the Centrex service provides PBX services to extensions making calls at the Centrex level on prime lines, while other services are provided by the communications system, acting as a switch for calls between extensions and calls that do not require Centrex features.

In full Centrex service:

- The communications system operates in Behind Switch mode.

- Calls can be made between Centrex extensions at separate sites served by the same Centrex.

- Key mode features are provided by the communications system.

- Intercom calls can be made between communications system extensions.

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■ A switchhook flash, feature access code, or **Feature** button-press is interpreted as intended for the Centrex service.

In limited Centrex service:

■ The communications system operates in Key or Hybrid/PBX mode.

■ Intercom calls can be made between communications system extensions.

■ Calls to Centrex extensions require access to a prime line.

■ A switchhook flash, feature access code, or **Feature** button-press activates the communications system feature, not the Centrex feature.

■ Outside calls using Centrex service are made through individual prime lines or pooled prime lines.

■ Other types of lines (tie, DID, and T1) can also be used for outside calls without using Centrex service.

Considerations and Constraints

To prevent user confusion, extension numbers in the communications system should reflect the ending digits of the Centrex prime line number. For example, an extension with a Centrex prime line number of 4322 should have an extension number of 4322 in a 4-digit (Set Up Space) numbering plan, 322 in a 3-digit numbering plan, or 22 in a 2-digit numbering plan. "System Renumbering" on page 583 provides information about numbering plans.

Centrex service supports only touch-tone telephones.

With full Centrex, the **Recall** or **Flash** and fixed-function buttons (**Conf**, **Transfer**, and **Drop**) control Centrex functions. Corresponding communications system functions can be programmed on buttons if any are available (see "Recall/Timed Flash" on page 511 for additional information). With limited Centrex, the **Recall** or **Flash** and fixed-function buttons control communications system functions. In either case, some Centrex functions can be programmed on the Directory and on Auto Dial buttons, but not on other unused feature buttons.

Centrex service is supported only on loop-start lines. Some central offices offer Centrex features on ground-start trunks; however, the MERLIN LEGEND Communications System does not support Centrex features on ground-start trunks or ISDN facilities. Centrex service on T1 trunks with loop-start emulation is also not supported.

Full Centrex (Behind Switch mode) does not support data communications.

During high-traffic periods, the loop-start lines used by Centrex can cause *glare* when multiple calls access the same line simultaneously. Loop-start lines also have higher cable losses than ground-start lines/trunks and cannot guarantee secure toll restriction.

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With limited Centrex in Hybrid/PBX mode, DID, tie, WATS, and T1 lines/trunks can be used. In Key mode, tie, WATS, and T1 lines/trunks can be used. These lines/trunks cannot be used with full Centrex in Behind Switch mode.

With limited Centrex, outside calls made by using an **SA** button to access a pool require two access codes for outside calls: one code for the pool, and one for outside lines on the Centrex service.

Centrex users should not be assigned calling restrictions because the system prevents an extension with calling restrictions from sending a switchhook flash to the central office. Calling restrictions should be placed through the Centrex service.

Once a call connection is made to Centrex service, the communications system cannot detect additional calls that are initiated following a Centrex switchhook flash. Therefore, the SMDR and systems such as Call Accounting System (CAS), Integrated Solution II (IS II), Integrated Solution III (IS III), and Call Accounting Terminal (CAT) do not report the additional calls.

Users who have access to both Centrex and communications system features must be aware of which they are connected to when they attempt to use a feature. Use of Centrex buttons when connected to the communications system, or of communications system buttons when connected to Centrex service, causes misdialed calls.

If a Multi-Function Module (MFM) is not being used on an MLX telephone, the second extension should be removed, in order to reduce the number of Centrex lines. The automatic assignment of two extension numbers to each MLX telephone may mean the installer must renumber the system because the removed numbers are not automatically reassigned and their removal leaves empty places in the sequential numbering of extensions. See "System Renumbering" on page 583 for additional information.

Beginning with Release 3.0, companies may use the 800 GS/LS-ID module to capture calling number identification information (subscribed to from the CO on loop-start lines only, if available) and MLX display telephones in these systems to show the number of an outside call received on a line connected to the module. However, if the customer also subscribes to call waiting through Centrex, the number of the waiting call is not shown on the MLX display. For more information, see "Caller ID" on page 105.

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Mode Differences

Hybrid/PBX Mode

Hybrid/PBX mode can be used only in a limited Centrex configuration. In Releases prior to 2.0, a switchhook flash can be sent to the Centrex service only when the prime line is terminated either on a personal line or, when prime lines are shared, on a **Pool** button. Accessing a prime line through an **SA** button does not allow the switchhook flash to be sent to the Centrex service.

In Release 2.0 and later systems, Centrex lines active on an **SA** button (including a Shared **SA** button) can use Recall or switchhook flash.

Tie, WATS, and T1 lines can be used in pools. They can be used only as personal lines with Centrex service in Key and Behind Switch modes.

Key Mode

Key mode can be used only in a limited Centrex configuration.

Key mode avoids the requirement that each extension have a prime line or shared prime line to make Centrex calls. It allows the use of an **ICOM** button for access to Centrex lines. It also allows the use of tie, WATS, and T1 lines as personal lines.

In releases prior to Release 2.0, a switchhook flash can be sent to the Centrex service only when the line is terminated on a personal line. Accessing the same line through an **ICOM** button does not allow the switchhook flash to be sent to the Centrex service.

In Release 2.0 and later systems, Centrex lines active on an **ICOM** button can use Recall or switchhook flash.

Behind Switch Mode

For full Centrex configuration, the communications system must be in Behind Switch mode.

Behind Switch mode does not support MERLIN MAIL, MERLIN LEGEND MAIL, AUDIX Voice Power, Call Accounting System (CAS), or Call Management System (CMS). These applications are supported only in Key and Hybrid/PBX modes.

Full Centrex service supports only loop-start facilities. While lines that are not loop-start lines are not blocked by the communications system, they can cause dialing errors. Even random use of modules that are not loop-start (such as E&M modules) throws off the default line assignments. If boards other than loop-start boards must be used, they must be positioned after the last loop-start line module, or prime lines on later modules may be assigned incorrectly. If a DS1 module is used, it must be placed after all other loop-start boards on the system so that

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default line assignments on the communications system are not affected. Digital facilities are not supported in Behind Switch mode.

In Behind Switch mode, during periods of high telephone traffic, users may experience delays in obtaining dial tone from the Centrex system. This could cause misdialing when using System or Personal Speed Dial.

Calls to calling groups in a system set up in Behind Switch mode follow the communications system ring pattern, not the central office ring pattern.

Telephone Differences

Multiline Telephones

MLX Telephones

On MLX telephones, special ringing patterns are used to differentiate various call types. If personalized ringing is used, the personalized ring comes before the distinctive pattern.

- Centrex intercom calls are indicated by the personalized ring followed by a beep.

- Centrex special or priority calls are indicated by the personalized ring followed by three short rings.

- Outside calls are indicated by the personalized ring followed by two short rings.

- Centrex special signaling is indicated by the facility-tracking tone.

Adjuncts connected to a Multi-Function Module (MFM) cannot send a switchhook flash to the Centrex line. (Whenever possible, such adjuncts should be attached to a 012 module or a 016 module.)

Analog Multiline Telephones

On analog multiline telephones, special ringing patterns differentiate various call types. If personalized ringing is used, the personalized ring comes after the distinctive pattern.

- Centrex intercom calls are indicated by a beep followed by the personalized ring.

- Centrex special signaling is indicated by the facility-tracking tone.

- Centrex special or priority calls are indicated by two short rings followed by the personalized ring.

- Outside calls are indicated by one short ring followed by the personalized ring.

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Single-Line Telephones

When single-line telephones are used in Behind Switch mode, a prime line is assigned automatically to the extension.

Centrex service supports only touch-tone telephones.

When single-line telephones are connected directly to a prime line, they have limited functionality because they cannot access communications system features or make intercom calls. They can, however, use all the Centrex features by dialing the proper access codes.

If a single-line telephone has the Idle Line Preference programmed for an **ICOM Ring** button, the user has complete use of all communications system features. Access to Centrex lines and features is gained by dialing the Centrex access code. However, a single-line telephone cannot use the communications system's Conference, Transfer, or Drop because the switchhook flash goes directly to the Centrex line and is not intercepted or interpreted by the communications system.

Single-line telephones should be connected using a 012, 016, or OPT module. If a single-line telephone is connected to an MFM, it cannot send a switchhook flash.

In Hybrid/PBX mode, special ringing patterns are used on single-line telephones to differentiate various call types (personalized ringing is not available):

- Centrex intercom calls are indicated by 2-burst ringing.

- Centrex special or priority calls are indicated by 3-burst ringing.

- Outside calls are indicated by 3-burst ringing.

- Centrex special signaling is not indicated.

Feature Interactions

Caller ID	In Release 3.0 and later systems, companies may use the 800 GS/LS-ID module to capture calling number identification information (subscribed to from the central office on loop-start lines only, if available). MLX display telephones in these systems show the number of an outside call received on a line connected to the module. However, if the customer also subscribes to call waiting through Centrex, the number of the waiting call is not shown on the MLX display.
Calling Restrictions	Centrex users should not be assigned calling restrictions because the calling restrictions should be assigned through the CO.
Conference	In Behind Switch mode, the fixed-function **Conf** button applies to Centrex operation and is not recognized by the communications system. A button can be programmed for communications system Conference.
Drop	In Behind Switch mode, the fixed-function **Drop** button applies to Centrex operation and is not recognized by the communications system. A button can be programmed for communications system Drop.

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Group Calling	Calls to calling groups in a system set up in Behind Switch mode follow the communications system ring pattern, not the central office ring pattern.
Recall/Timed Flash	In Behind Switch mode, a Recall button should be programmed to send switchhook flash to activate Centrex features. The system supports the use of a Recall button only on loop-start lines.
Speed Dial	During periods of high traffic, users may experience a delay in obtaining dial tone from the Centrex service. This could cause misdialing when using System Speed Dial or Personal Speed Dial. Pause characters can be programmed as part of the Speed Dial number after entering the access code.
Transfer	In Behind Switch mode, the fixed-function **Transfer** button applies to Centrex transfers and is not recognized by the communications system. A button can be programmed for communications system Transfer.

Conference

At a Glance

Users Affected	Telephone users, operators
Reports Affected	System Information (SysSetup)
Modes	All
Telephones	MLX telephones and analog multiline telephones except MLC-5 cordless telephone.
Programming Codes	
Conference	*772
Drop	*773
MLX Display Label	Conference [Conf]
	Drop [Drop]
System Programming	Assign host system conference dial code:
	• Options→More→BehndSwitch→Conference
	Assign host system drop dial code:
	• Options→**More**→BehndSwitch→Drop
Maximums	
Multiline telephones	5 participants (originator + 2 inside, 2 outside)
Single-line telephones	3 participants (originator + 2)

Description

Conference allows conference calls that include people on inside lines, outside lines, or both.

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> ⟹ **NOTE:**
> **Conference** and **Drop** buttons are available in all modes; they are programmable only in Behind Switch mode.

Adding Conference Participants

A user can consult privately with each participant before adding the person to the conference. Anyone who shares a personal line or Shared **SA** button with the originator can join the conference on that button and is counted as a participant.

Dropping Conference Participants

By using the **Drop** button, a multiline telephone user can selectively drop conference participants while the conference is in progress. However, a QCC operator cannot selectively drop participants from a conference. When a QCC operator presses the **Drop** button, only the most recently added participant is dropped. Single-line telephone users can drop the most recently added participant from the conference by issuing a switchhook flash.

Leaving a Conference

The conference originator can leave the conference by pressing the **Hold** button (the conference continues). If a conference originator (excluding a QCC operator) leaves a conference by either hanging up or selecting another line, the entire conference is disconnected.

Considerations and Constraints

Transmission quality may vary during the conferencing of outside lines.

A call to a busy number cannot be added to a conference.

Pressing the **Drop** button and the line button for a participant also disconnects a participant who joined the conference by using a shared personal line or an **SA** or **ICOM** button.

When a conference originator puts the conference on hold, Music On Hold is not activated.

In Release 1.1 and later systems, the system automatically selects an **SA** or **ICOM** button when a user presses the **Conf** button. In Release 1.0 systems, the system does not automatically select an **SA** or **ICOM** button; the user must select the line manually.

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In addition, beginning with Release 1.1, prompts help MLX display telephone users set up conference calls. Pressing the **Conf** button causes one of the following to happen:

■ If the system is in Hybrid/PBX mode and the user has available **SA** buttons, the system automatically selects one, in the following order of preference:

— **SA Originate Only** (Ring)

— **SA Originate Only** (Voice)

— **SA Ring**

— **SA Voice**

■ If the system is not in Hybrid/PBX mode or a user has no available **SA** button, the prompt Select a Line appears on Line 2 of the display on an MLX display telephone.

After the system selects an **SA** button or the originator selects a line, Line 2 displays the prompt Dial. The originator can either dial a number or select another line. Line 1 shows call-handling information, such as dialed digits, while Line 2 is unchanged. The originator should then press **Conf** to connect all parties. The prompt on Line 2 is replaced by the date and time. Line 1 displays the number of parties in the conference.

⚠ SECURITY ALERT:

If the system selects a voice button, the caller hears a beep instead of ringing. If a person does not answer at the destination extension and the originator completes the conference, the conversation of the other parties is broadcast on that extension's speaker. The originator must be sure to drop the unanswered destination extension on a voice button to prevent this from happening. If people often use the Conference feature, the system manager should consider using the Transfer Type setting of Ring rather than Voice, to avoid this problem.

If the conference originator presses the **Conf** button, selects a line button, dials a number, and presses the **Conf** button again before the person being called answers, all conference participants hear ringback, which may cause voices to cut in and out. If the conference originator calls a co-worker and presses the **Conf** button, and the co-worker while on hold for the conference presses a **Hold**, **Conf**, or **Transfer** button, the call is disconnected.

If a conference participant (excluding the originator) who is included on a conference call on an **SA** or **ICOM** button leaves the conference temporarily by putting the call on hold and then rejoins the conference on a shared personal line or Shared **SA** button, the person is connected to the conference. However, the LED for the original conference call line on the **SA** or **ICOM** button turns off.

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In Release 2.1 and later systems, a call on hold at a programmed Cover button can be added to a conference by an originator with a personal line for the call.

Mode Differences

Behind Switch Mode

The fixed **Conf** button on multiline telephones activates conference from the host system. The dial codes for the host system for conference and drop must be system-programmed. A multiline telephone user can program a Conference or Drop button to use the communications system's Conference or Drop features as described above.

A single-line telephone user cannot use the Conference feature in Behind Switch mode.

Telephone Differences

Queued Call Consoles

To arrange a conference call using a Queued Call Console (QCC), the operator presses the **Conf** button after receiving a call or dialing the first outside number or extension. The green LED next to the **Call** button flashes to indicate that the person is on hold for the conference. An outside participant hears Music On Hold if it is programmed; an inside participant hears nothing. Then the operator dials the next number and presses the **Conf** button again; all participants are connected.

To add another person, the operator presses the **Conf** button again. The green LED next to the **Call** button flashes, indicating a call on hold, and the participants can converse. The operator adds more participants by dialing their numbers and pressing the **Conf** button until up to two outside lines and three extensions (including the operator, the originator) are added. The operator can converse privately with each participant before pressing the **Conf** button to join other participants (this is called *Conference with consultation*).

Calls to busy numbers cannot be added to a conference. To disconnect a call to a busy number, the operator presses the **Call** button with the conference call and then continues adding participants, if desired.

All conference participants are connected together on one **Call** button. This allows the operator to put the conference on hold and have other **Call** buttons available to make or receive other calls. However, because all participants are on one **Call** button, by first pressing the **Drop** button and then the **Call** button used to originate the conference, the operator can drop only the last party added to the conference.

To rejoin a held conference call, a QCC operator presses the **Call** button with the conference participant. To end the conference, the operator joins the conference

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and presses the **Forced Release** button; all participants are disconnected. If instead of pressing the **Forced Release** button, the operator hangs up, the conference is put on hold. When the operator arranges a 3-participant conference (the operator and two other participants) and then presses the **Release** button or hangs up, the operator is released from the call and the other two participants remain connected. If the operator arranges a 3- or 4-participant conference, pressing the **Release** button has no effect; however, if the operator hangs up, the conference is put on hold.

Other Multiline Telephones

To arrange a conference call using a multiline telephone, press the **Conf** button after receiving a call or dialing the first outside number or extension. The green LED next to the button used to make the call flashes, indicating that the person is on hold for the conference. While on hold for a conference, an outside participant hears Music On Hold, if programmed; and an inside participant hears nothing. To add another participant, select another line button, dial the next number, and press the **Conf** button again. Pressing the **Conf** button a second time connects all participants, including you.

To add another person, press the **Conf** button again. The green LEDs next to the line buttons flash, but the participants can converse. Then select a line or dial a number, and press the **Conf** button again. Repeat the process for other conference participants. Up to two outside lines and three extensions, including yours, can be in the conference. You can converse privately with each participant before pressing the **Conf** button to join other participants. This is called *Conference with consultation*.

Calls to busy numbers cannot be added to a conference. An originator who reaches a busy number can press any of the line buttons associated with the conference call to disconnect the call to the busy number before continuing to add participants.

To selectively drop a participant, press the **Drop** button followed by the line button for the participant to be dropped. To leave the conference call temporarily without disconnecting the call, press the **Hold** button. To rejoin a held conference call, press any line button representing a conference participant. To end the conference, hang up; all participants are disconnected.

A **Drop** button is automatically assigned to Line 6 on MDC 9000 and MDW 9000 telephones.

Single-Line Telephones

A total of three participants can be included on a conference call originated from a single-line telephone. To arrange a conference call using a single-line telephone, press and release either the **Recall** or **Flash** button or the switchhook after receiving a call or dialing the first outside number or extension. The participant automatically goes on hold. While on hold, an outside participant hears Music On Hold, if programmed, and an inside participant hears nothing. To add the next

participant, dial another number and press and release either the **Recall** or **Flash**
button or the switchhook again. All participants are connected on the conference
call.

You can converse privately with each participant before pressing and releasing
either the **Recall** or **Flash** button or the switchhook to join other participants. This
is called *Conference with consultation*.

Calls to busy numbers cannot be added to a conference. If you reach a busy
number, you can press and release either the **Recall** or **Flash** button or the
switchhook to drop the outside line.

A single-line telephone user can drop the most recently added participant from the
conference by pressing and releasing either the **Recall** or **Flash** button or the
switchhook.

If a single-line telephone with a timed or positive disconnect (for example, Lucent
Technologies model 2500YMGK, 2500MMGK, or 8110M) is used, pressing the
switchhook disconnects the call. With this type of telephone, the **Recall** or **Flash**
button must be used instead of the switchhook to add a conference participant or
drop the most recently added conference participant. The 8100M telephone must
have positive disconnect programmed on the telephone, as described in its user
guide.

Feature Interactions

Account Code Entry	A separate account code must be entered for each outside call added to the conference.
Allowed/ Disallowed Lists	A user with an outward-restricted extension cannot add an outside participant to a conference unless the participant's number is on an Allowed List assigned to the extension. A user with a toll-restricted extension cannot dial a toll number to add a participant unless the participant's number is on an Allowed List assigned to the extension.
	You cannot add an outside number to a conference if the number is on a Disallowed List assigned to your extension.
Authorization Code	Enter an authorization code before each outside call for a conference is made.
	You may enter a different authorization code for different outside calls if you wish. This may be useful if different restriction privileges are required for different outside calls for the conference.
Auto Dial	When programming an Auto Dial button, press the **Conf** button to enter the Flash special character in a telephone number programmed on an Auto Dial button. Press the **Drop** button to enter the Stop special character in a telephone number programmed on an Auto Dial button.

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Barge-In	Barge-In can be used to interrupt conference calls; all participants hear the Barge-In tone. Barge-In, however, does not connect the user to a conference call if the conference already has the maximum number of participants. If Barge-In is used to connect to a conference call that involves an outside line/trunk and the person on the outside line/trunk hangs up, the person using Barge-In is also dropped.
Basic Rate Interface	Calls on BRI lines can be part of a conference call that is processed by the MERLIN LEGEND Communications System rather than by the central office (CO). The MERLIN LEGEND Communications System determines the number of active parties on the call.
Basic Rate Interface *continued*	The MERLIN LEGEND Communications System supports up to five people on a conference: two within the system, two outside the system, and the call originator.
	If a MERLIN LEGEND Communications System user is part of a conference established by an outside party through the central office conference feature, the MERLIN LEGEND Communications System may play Music On Hold (if so programmed) when the MERLIN LEGEND Communications System user puts the call on hold.
Call Waiting	A call-waiting tone is heard only by the person receiving the call and not by other conference participants. If the conference originator reaches a busy extension, hears the call-waiting special ringback, and tries to add the call to the conference, the system returns a busy tone. To drop the busy tone from the conference, the originator must press the **Drop** button and then press the line button used to call the busy extension.
Callback	A queued call cannot be part of a conference. With Automatic Callback, the call is automatically queued; however, if you try to add the queued call to the conference, the system returns a busy tone. If you use Selective Callback to queue a call while setting up a conference, the system returns a busy tone. Press the **Drop** button and the line button with the queued call to drop the busy tone from the conference.
Caller ID	The conference originator can view Caller ID information associated with any participant by pressing the **Inspct** button and the button the caller is on.
Calling Restrictions	A user with an outward-restricted extension cannot add an outside participant to a conference unless the participant's number is on an Allowed List assigned to the extension. A user with a toll-restricted extension cannot dial a toll number to add a participant unless the participant's number is on an Allowed List assigned to the extension.
	You cannot add an outside number to a conference if the number is on a Disallowed List assigned to your extension.
Coverage	You can originate a conference call from a Cover button only when you press the **Transfer** button, dial the number for another person, and then press the **Conf** button to complete the transfer. In this case only, instead of the call being transferred, a conference call with three participants (including the originator) is established.

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CTI Link	CTI link applications can control 3-way conferences, including those where one or two parties are outside the system. Screen pop occurs at participating screen-pop-capable extensions.
	When a conference is initiated manually at the telephone of an extension using a CTI application, screen pop is not initiated at screen-pop capable destinations, even when the application is used to complete the conference.
CTI Link *continued*	When performed by a QCC operator or unmonitored DLC operator, the Conference feature generates screen pop at screen-pop-capable destinations.
Digital Data Calls	Conference does not function with data calls.
	Video application conference features do not function with the system.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold for conferencing at a passive-bus MLX telephone when a 2B call comes in, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Directories	The Extension, Personal, and System Directory features can be used to set up conference calls. Press the **Conf** button to enter the Flash special character in a Directory listing telephone number. Press the **Drop** button to enter the Stop special character.
Display	As with any other call, the dialed digits appear on Line 1 of the display as you set up a conference call. On MLX telephones, Line 1 of the display shows the number of conference participants. In addition, the MLX telephone display prompts you each time you press the **Conf** button. The display also prompts you to drop a conference participant after you press the **Drop** button; then it shows the updated conference information on Line 1 and on Line 2 shows which line or extension has been dropped.
	Beginning with Release 1.1, if the system is not in Hybrid/PBX mode or you have no available **SA** or **ICOM** button, the prompt Select a Line appears on Line 2 of the display. After the system selects an **SA** or **ICOM** button line or the originator selects a line, Line 2 displays the prompt Dial. After dialing a number or selecting another line, the prompt on Line 1 changes to show call-handling information, such as dialed digits. Then press **Conf** to connect all parties. The prompt on Line 2 is replaced by the date and time, while Line 1 displays the number of parties active on the call.
Fax Extension	If an extension is programmed as a fax extension, the telephone at that extension is unable to use the Conference feature.
Forward and Follow Me	When calls received on a personal line are forwarded to an outside telephone number, another user who shares the personal line and the line/trunk selected to forward the call can join the in-progress call by pressing the personal line button. In this case, the person joining the call is considered the conference originator, and the forwarded call can be conferenced. If the person joining the call hangs up, all participants on the conference call are disconnected.

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Group Calling	Calls waiting in the calling group queue or ringing at a calling group member's extension cannot be added to a conference call. A user must be connected to a calling group member before the call can be added to the conference.
Headset Options	Headset Auto Answer is disabled and must be activated manually while an MLX telephone user with a headset is setting up a conference.
Hold	The conference originator receives the hold reminder tone when a conference is on hold for more than one minute because the originator is pressing the **Hold** button or adding other participants. If Direct-Line Console (DLC) operator automatic Hold is programmed and used by a DLC operator setting up a conference, the entire conference goes on hold.
	Both sides of an inside call cannot be put on hold. Therefore, if a user presses the **Hold** button while waiting on hold for a conference initiated by another user (an inside call) or if a user presses the **Conf** button while waiting on hold on an inside call, all participants are disconnected.
HotLine	Conference is not available at HotLine extensions (Release 5.0 and later systems),
Inspect	If a user presses the **Conf** button while Inspect is activated, Inspect is canceled and the system tries to activate the Conference feature.
	When a user joins a conference by using a shared outside line or Shared **SA** button, the QCC display reflects the correct number of participants. However, if the QCC operator uses the Inspect feature to verify the number of participants, the number shown on the display does not include participants joining the conference on a shared button.
Multi-Function Module	The Conference feature cannot be used on the MFM because the system ignores the switchhook flash sent by the MFM.
Music On Hold	If the first participant put on hold for a conference is an outside call, the caller hears Music On Hold until the second participant is added. When a conference originator puts the conference on hold, Music On Hold is not activated.
Paging	Speakerphone and loudspeaker paging calls cannot be added to a conference.
Park	Conference calls cannot be parked.
Pickup	A conference call cannot be picked up at another extension. A conference originator can, however, pick up a call and add it to the conference.
Recall/Timed Flash	A single-line telephone user with a **Recall** or **Flash** button adds a participant to a conference call and connects all participants by using the **Recall** or **Flash** button. In addition, the **Recall** or **Flash** button can be used either to drop the most recently added participant or to drop a busy number.
Remote Access	An inside user can initiate a conference with the callers involved in a remote access call by selecting the active remote access line/trunk.
Signal/Notify	Signaling can be used during a conference.

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SMDR	When a conference call includes inside and outside participants, records are generated only for outside participants. When a call is dropped from a conference call, it is considered a completed call and is sent to the SMDR print queue.
Speed Dial	Press the **Conf** button to enter the Flash special character in a Personal Speed Dial or System Speed Dial telephone number. Press the **Drop** button to enter the Stop special character.
System Access/ Intercom Buttons	Calls on **SA** and **ICOM** buttons (including Shared **SA** buttons) can be included in a conference call. If a user involved in a conference call on an **SA** or **ICOM** button also has an **SSA** button for one of the conference participants, the call is active at the **SA** or **ICOM** button and not at the **SSA** button for the other participant.
Transfer	A conference call with three or more participants, including the conference originator, cannot be transferred. However, if the conference originator has one person on hold for the conference and decides to transfer the call after dialing the number for the next participant, the originator can press the **Transfer** button to transfer the call instead of conferencing it.

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Coverage

At a Glance

Users Affected	Telephone users, DLC operators, data users
Reports Affected	Direct Group Calling Information, Extension Information, Group Coverage Information, Operator Information System Information (`SysSet-up`)
Modes	All
Telephones	
Individual sender	All except QCC
Individual receiver	All multiline telephones except QCC
Group member (sender)	All except QCC
Group receiver	Multiline telephones, QCC queue, calling group (if calling group, no others)
Programming Codes	
Sender buttons	
Coverage Off	`*49`
Coverage VMS Off	`*46`
Receiver buttons	
Primary Cover	`*40` + sender's ext. no.
Secondary Cover	`*41` + sender's ext. no.
Group Cover	`*42` + sender's group no.
Coverage Inside Off	`**48` (send outside calls only)
Coverage Inside On	`*48` (send inside and outside calls)

MLX Display Labels	`CoverageOff [CvOff]`
	`CoverInside,Off [CvIns,Off]`
	`CoverInside,On [CvIns,On]`
	`Coverage VMS off [Cvvms,off]`
	`Coverage,Primary [Cover,Prmry]`
	`Coverage,Secondary [Cover,Secnd]`
	`Coverage,Group [Cover,Group]`

System Programming	Assign extensions to a coverage sender group: • `Extensions`→**More**→`Group Cover` Assign a calling group as a Group Coverage receiver: • `Extensions`→**More**→`Grp Calling`→`GrpCoverage` In releases prior to 4.1, change number of rings before call is sent to Group Coverage receivers: • `Options`→**More**→`Cover Delay` In Release 4.1 and later systems, change number of rings before call is sent to Group Coverage receivers: • `Extensions`→**More**→**More**→`Cover Delay`→ `Group Cover`→sender's ext. no.→`Enter`→no. of rings (1–9)

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System Programming continued	In releases prior to 4.1, change delay for Cover button programmed for Delay Ring; change additional delay before call is sent to Group Coverage receivers:
	• Options→Delay Ring
	In Release 4.1 and later systems, change the delay for Primary Cover buttons programmed for Delay Ring; change additional delay before a call is sent to Group Coverage receivers when Primary or Secondary Coverage Receivers are available:
	• Extensions→**More**→**More**→Cover Delay→ Primary→sender's ext. no.→Enter→no. of rings (1–6)
	In Release 4.1 and later systems, change the delay for Secondary Cover buttons programmed for Delay Ring:
	• Extensions→**More**→**More**→Cover Delay→ Secondary→sender's ext. no.→Enter→no. of rings (1–6)
	Assign or remove principal user of a personal line (calls follow coverage pattern of principal user only):
	• LinesTrunks→**More**→PrncipalUsr
	Assign QCC queue as receiver for specific coverage groups and assign QCC Queue Priority for Group Coverage calls:
	• Operator→Queued Call→Call Types→GrpCoverage→ Priority
	Assign QCC operator to receive calls for a coverage group:
	• Operator→Queued Call→Call Types→GrpCoverage→ Operator
Maximums	
Individual Coverage receivers for each extension (sender)	8
Group Coverage receivers for each coverage group (senders)	8 (not counting QCC queue)
Group memberships for each extension (sender)	1
Cover buttons for each multiline telephone (receiver)	8
Coverage groups	30
Members for each coverage group	Unlimited
Coverage groups sending to one calling group *or* QCC queue	30

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Factory Settings	
Extensions	
Coverage	On
Coverage Inside	On (inside and outside calls covered)
Coverage VMS	On (inside and outside calls covered by VMS)
Group Coverage Ring Delay (4.1 and later systems)	3 rings (range 1–9 rings)
Primary Cover Ring Delay (4.1 and later systems)	2 rings (range 1–6 rings)
Secondary Cover Ring Delay (4.1 and later systems)	2 rings (range 1–6 rings)
Systemwide	
Delay Ring Interval (4.0 and prior systems)	2 rings (range 1–6 rings)
Coverage Delay Interval (4.0 and prior systems)	3 rings (range 1–9 rings)
Secondary Coverage Delay Interval	2 rings (fixed)
Retry Timing Interval	5 seconds (fixed)
Operator	
QCC Queue Priority for coverage group	4 (range 1–7)
QCC operator to receive calls for coverage group	Primary system operator

Description

Coverage allows a call ringing at one extension (a *sender*) to ring at another extension (a *receiver*) at the same time and to be answered at either extension. It is not necessary for the sender and receiver to have shared personal lines or Shared **SA** buttons. A coverage sender, whose calls are covered, can be an individual extension (*Individual Coverage*) or a group of extensions (*Group Coverage*).

An extension becomes a sender and has its calls covered in *either or both* of the following ways:

- An Individual Cover button is programmed for the sender on the multiline telephone of a receiver.

- The sender is made a part of a coverage group through system programming. A receiver for the group is programmed in any of the following ways:

  — A Group Cover button is programmed for the group on a multiline telephone (a receiver).

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— The Queued Call Console (QCC) queue is programmed to be a receiver for the group.

— A calling group is programmed to be a receiver for the group (this option can be used to provide voice mail coverage for a coverage group).

An individual multiline telephone can have any combination of up to eight Individual Cover and Group Cover buttons.

Several timers, summarized in Table 4, affect the delivery of a call to coverage and/or how a covered call rings. In Release 4.1 and later systems, additional settings allow system managers to customize coverage delays on an extension-by-extension basis, rather than specifying delay intervals for all extensions on the system. The Coverage Delay Interval and Delay Ring Interval systemwide settings are replaced by these extension timers. Explanations of these timers are included in the descriptions of Individual Coverage and Group Coverage later in this section.

Individual Coverage

An Individual Coverage receiver, who covers calls for a sender, has a programmed button that corresponds to the sender's extension. A given sender can have up to eight Individual Coverage receivers covering calls. A receiver, who must have a multiline telephone, can have separate buttons for up to eight senders, but can have only one button to provide Individual Coverage for a given sender.

A button for Individual Coverage can be programmed as either Primary Cover or Secondary Cover. The Secondary option provides a 2-ring delay, the Secondary Coverage Delay Interval, to allow the sender to answer before the receiver; in system releases prior to 4.1, the Primary option does not provide this delay.

In Release 4.1 and later systems, the system manager sets additional ring delays for each extension, rather than programming only systemwide settings. The Secondary Cover Ring Delay is applied in addition to the fixed systemwide Secondary Coverage Delay Interval; it does not affect Secondary or Group Coverage call delivery. The Primary Cover Ring Delay option also permits extension-by-extension control of ring delays on Primary Cover buttons programmed for Delay Ring. The Group Coverage Ring Delay option allows the system manager to control the delay before a given sender's covered calls are sent to Group Coverage receivers, whether or not Group and Individual Coverage are combined.

Table 4 summarizes the systemwide and extension-by-extension (Release 4.1 and later systems only) settings that the system manager programs. In addition, a user or system manager can program Cover buttons with Ring Timing options: Immediate Ring, Delay Ring, or No Ring (see Table 5).

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Table 4.   Ring Delays Affecting Coverage

Timer	Factory Setting	Range	Description
Coverage Delay Interval*	3 rings	1–9 rings	Release 4.0 and prior systems, set systemwide. Delay before sending calls to Group Coverage, when:
			■ Sender also has Individual Coverage and receiver is available.
			■ Sender does not have Individual Coverage or receiver is not available, and Group Coverage receiver is calling group only or QCC queue only (no Group Cover buttons on multiline telephones).
Group Coverage Ring Delay	3 rings	1–9 rings	Release 4.1 and later systems, programmable for each extension. Delay before sending calls to Group Coverage, when:
			■ Sender has Individual Coverage and receiver is available (in addition to Primary Cover Ring Delay).
			■ Sender does not have Individual Coverage or receiver is not available, and Group Coverage receiver is calling group only or QCC queue only (no Group Cover buttons on multiline telephones).
Primary Cover Ring Delay	2 rings	1–6 rings	Release 4.1 and later systems, programmable for each extension. This timer sets:
			■ The delay before a Primary Cover button programmed for Delay Ring begins to ring audibly.
			■ The delay, in addition to the Group Coverage Ring Delay, before calls are sent to Group Coverage when the sender has Individual Coverage and any receiver is available.

---

*   In Release 4.1 and later systems, this setting is replaced by the Group Coverage Ring Delay.

Table 4.   *Continued*

Timer	Factory Setting	Range	Description

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Secondary Cover Ring Delay	2 rings	1–6 rings	Release 4.1 and later systems, programmable for each extension. In addition to the fixed Secondary Coverage Delay Interval (2 rings), this timer sets the delay before a Secondary Cover button programmed for Delay Ring begins to ring audibly. This setting does not affect Primary or Group Coverage call delivery.
Secondary Coverage Delay Interval	2 rings	Fixed	Delay before sending Individual Coverage calls to a Secondary Cover button programmed for Immediate Ring, when sender also has Individual Coverage to a Primary Cover button.
			In Release 4.1 and later systems, the delay (in addition to the Secondary Cover Ring Delay setting for the sender) before a Secondary Cover button programmed for Delay Ring begins to ring audibly.
Retry Timing Interval	5 sec	Fixed	Repetition interval for trying to send calls to group coverage when no receivers are available; continues until call is answered by sender or receiver (or caller hangs up)

Ring Timing Options, summarized in Table 5, are programmable on any buttons, including programmed Cover buttons on multiline telephones.

Table 5. Ring Timing Options

Option	Factory Setting	Range	Description
Immediate	—	—	—
Delay Ring	2 rings	1–6 rings on Cover buttons	Delay before sending calls to Group Coverage (in addition to Coverage Delay Interval) when sender also has Individual Coverage *and* receiver is available
No Ring	—	—	On sender (covered) telephone, prevents calls from going to coverage

Regardless of how these options are programmed, the green LED next to the Cover button on the receiver's telephone flashes immediately when a call begins ringing at the sender's telephone. The receiver's telephone rings audibly as shown in Table 6. Both telephones continue to ring as programmed. The green LED on both telephones continues to flash until the call is answered either by the sender or by the receiver or the caller hangs up.

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Table 6.   Ringing on Individual Coverage (Receiver) Buttons

Ringing Option	Primary Cover	Secondary Cover
Immediate Ring	Immediately	After sender's telephone rings 2 times (*SC*, fixed)
Delay Ring	After sender's telephone rings 1–6 (*DR* or *PRD*) times	After sender's telephone rings 2 times (*SC*) + 1–6 (*DR* or *PRD*) times
No Ring	Does not ring	Does not ring

DR = Delay Ring Interval (Release 4.0 and prior systems)

PRD = Primary Cover Ring Delay (Release 4.1 and later systems)

SC = Secondary Coverage Delay Interval

Group Coverage

Up to 30 coverage groups can be programmed for the system. Group Coverage is an arrangement in which senders are organized into *coverage groups,* and calls received by any unavailable group member are sent to one or more receivers. There is no limit to the number of members in a group, but a given extension can be a member of only one group. Any telephone except a QCC can be a member of a coverage group.

Three types of receivers can be assigned to cover calls for coverage groups:

■ A multiline telephone can have a Group Cover button for a specific coverage group, assigned through either extension programming or centralized telephone programming. The button is usually labeled with the name of the group, for example *Sales*. A given coverage group can send its calls to up to eight Group Cover buttons; all eight can be programmed on one multiline telephone or can be distributed on as many as eight telephones.

Each Group Cover button can be programmed for Immediate Ring, Delay Ring, or No Ring as illustrated in Table 6.

A single-line telephone cannot be programmed individually as a Group Coverage receiver. However, it can be a member of a calling group that is a receiver.

■ The QCC queue can be assigned through system programming as a receiver for up to 30 coverage groups, with up to 4 QCC operators (the maximum allowed number of QCCs) assigned to receive calls for each coverage group. A QCC cannot have programmed Group Cover buttons. The QCC queue can be the only receiver or can be used in addition to Group Cover buttons on multiline telephones. If both are used, the QCC queue is not counted in the 8-receiver maximum for the group. Because QCC calls are queued, an operator cannot distinguish a coverage call from any other type.

- A calling group can be assigned through system programming as a receiver for up to 30 coverage groups.

  When a calling group is programmed as a receiver for a coverage group, a call to a coverage group member enters the calling group queue and waits for an available calling group member. When the call rings at an available member's telephone, it stops ringing at the sender's telephone and the sender's green LED turns off. Because calling group calls are queued, a calling group member cannot distinguish a coverage call from any other type.

  Group Coverage by a calling group is used to provide coverage by a voice messaging system (VMS).

  In Release 4.1 and later systems, the system manager can control the delay before calls are sent from each sender's extension to Group Coverage receivers. When Individual and Group Coverage are combined, the Primary Cover Ring Delay controls the interaction between Group and Individual Coverage for each extension. Table 4 on page 143 summarizes the ways that these options work together as well as with fixed systemwide settings. Further information about interactions between Group and Individual Coverage is included later in this section, in the topic "Interaction of Individual and Group Coverage" on page 148.

  ⊵ **NOTE:**
  > If a calling group is assigned to take calls for a coverage group, no other types of receivers—multiline telephones with Group Cover buttons or the QCC queue—can be assigned for that coverage group.

Selective Coverage

When an extension has calls covered, all of its eligible calls are covered unless the sender uses one of the following coverage options:

- **Coverage Off** turns off all coverage. (If a Group Coverage sender uses Coverage Off, other telephone users can use Group Pickup to answer the sender's calls; however, they cannot use Individual Pickup.)

  To turn coverage off or on, the sender must have a programmed **Coverage Off** button.

- **Coverage Inside** prevents or allows coverage of inside calls:

  — With **Coverage Inside Off**, only outside calls are covered.

  — With **Coverage Inside On**, inside and outside calls are covered.

  To use Coverage Inside Off/On, the sender must use the programming code or select it from the display of a display telephone (using `ListFeature`) in extension programming. It cannot be programmed on a button.

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■ **Coverage VMS Off** prevents outside calls from being sent to voice mail. With Coverage VMS Off, only inside calls are covered by the assigned voice mail system (VMS) calling group. Outside calls go to any other points of coverage. Coverage VMS Off is available only in Release 2.0 and later systems. To use this feature, the sender must have a programmed Coverage VMS Off button.

In Release 4.1 and later systems, the system manager can set the Night Service feature to control the active/inactive status of programmed Coverage VMS Off buttons at extensions in a Night Service group. When the system is put into Night Service operation, all Coverage VMS Off buttons are automatically deactivated, so that the assigned voice messaging system (VMS) calling group can cover eligible calls with the normal ringing delay. When normal business-hours operation resumes and Night Service operation ceases, the programmed Coverage VMS Off buttons are automatically turned on; inside calls are sent to voice mail and outside calls go to any other coverage receivers.

A person at an extension can override Night Service control of Coverage VMS Off buttons by pressing the Coverage VMS Off button at the extension. However, at the next transition into or out of Night Service, the Coverage VMS Off button follows Night Service status (inactive during Night Service operation, active during normal business-hours operation). Consider the following example where a Coverage VMS Off button has been manually pressed when Night Service with Coverage Control goes on (see for more information):

— If the Coverage VMS Off button is active and lit, the Night Service with Coverage Control option turns it off.

— If the Coverage VMS Off button is already inactive and unlit, it remains so.

■ **Do Not Disturb.** Calls go to coverage, if programmed.

Eligibility for Coverage

Not all calls are eligible for coverage. Eligibility is determined by the type of call and how the sender's telephone is set up. Table 7 shows which calls at the sender's telephone are eligible for coverage.

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Table 7. Calls Eligible and Calls Ineligible for Coverage

Call Rings on...	Eligible	Ineligible
SA or **ICOM** buttons programmed for Immediate or Delay Ring		
Inside calls	✓	
DID trunk calls	✓	
Inside or outside transferred calls	✓	
Calls forwarded from another extension		✓
Calls on Shared **SA** buttons		✓
Calls on Cover buttons		✓
Voice-announced calls		✓
Transfer return calls		✓
Returning parked calls		✓
Reminder service calls		✓
Personal line buttons programmed for Immediate or Delay Ring		
Sender is principal user	✓	
Someone else is principal user		✓
No principal user is assigned	✓	
Pool buttons programmed for Immediate or Delay Ring	✓	
Any button programmed for No Ring		✓

$\Longrightarrow$ **NOTES:**

1. In Release 2.0 and later systems, when a coverage receiver calls a coverage sender, the call can be sent to coverage. If a receiver calls a sender for whom he or she is covering and the sender is busy or unavailable, the call proceeds to other points of coverage. It does not come back to the receiver who originated the call.

    In Release 1.0 and 1.1 systems, a call from a receiver to a sender is not sent to coverage.

2. If a sender sets the Ring Timing option for No Ring on any personal line, **Pool**, **SA**, or **ICOM** buttons, calls arriving on those buttons do not go to coverage.

Interaction of Individual and Group Coverage

Group Coverage can be used alone or with Primary and/or Secondary Individual Coverage. When both Individual Coverage and Group Coverage are used, the interactions between them follow this principle: If possible, a caller should always get personal attention from someone with a Cover button for the sender—going first to an Individual Coverage receiver, then to a multiline telephone with a Group Cover button. In these cases, the receiver can answer with either the name of the individual or the name of the group for whom he or she is covering. Only when

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these types of receivers are unavailable or not programmed does the call go to another, more impersonal type of Group Coverage—either the QCC queue or a calling group (including a voice messaging system calling group).

A call to a sender that is also ringing on Primary Cover, Secondary Cover, and/or Group Cover buttons rings until answered (or the caller hangs up). When the call is answered, the ringing and flashing green LED are removed from all other telephones providing coverage for the sender. However, when a calling group is programmed as the receiver for a coverage group, the ringing and flashing green LED are removed from the sender's telephone as the call leaves the calling group queue and is sent to an available calling group member. (A call on a personal line button on the sender's telephone is an exception. The ringing and flashing green LED remain on that button until answered, either by the sender or by a receiver.)

⇒ NOTE:

The duration of the ringback heard by an outside caller is shorter than the actual ring heard at an MLX or analog multiline telephone. Therefore, an outside caller hears one or two rings and may also hear the number of rings programmed for the Coverage Delay Interval plus the number of rings programmed for the Delay Ring interval. For example, if the Coverage Delay Interval is programmed for one ring and the Delay Ring interval is programmed for two rings, an outside caller hears four rings before the call begins ringing at receivers' telephones. If both intervals are set to their maximum values, the caller can hear up to two additional rings.

A call goes to Group Coverage depending on the following conditions:

- Whether the sender is available or unavailable

- Whether the sender has Individual Coverage (Primary Cover or Secondary Cover buttons programmed on other extensions) and, if so, whether an Individual Coverage receiver is available

- The type of Group Coverage receivers programmed:

  — Only Group Cover buttons on multiline telephones

  — Both Group Cover buttons and the QCC queue

  — Only the QCC queue

  — Only a calling group

- In Release 4.1 and later systems, the Group Coverage Ring Delay is set for each sender's extension. When Group Coverage is used in conjunction with Individual Coverage, calls should ring at receivers for Individual Coverage first. Consider the following factors before setting the Group Coverage Ring Delay for an extension:

  — If a sender has only Primary Coverage and any receiver's Primary Cover buttons are set to Delay Ring, make sure that the value for the Group Coverage Ring Delay is higher than the Primary Cover Ring Delay value for each sender.

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— If a sender has both Primary and Secondary Coverage and all the receivers' Cover buttons are set for Immediate Ring, the Group Coverage Ring Delay should be set higher than the Primary Cover Ring Delay or the 2-ring fixed Secondary Cover Delay Interval.

— If both Primary and Secondary Cover buttons are programmed for a sender and any receiver's Primary and/or Secondary Cover buttons are programmed for Delay Ring, make the value higher than whichever of the following is greater:

□ The Primary Cover Ring Delay

□ The fixed Secondary Cover Delay Interval (two rings) plus the Secondary Cover Ring Delay

■ In Release 4.1 and later systems, the system manager uses system programming to set a Primary Cover Ring Delay (1–6 rings) for each sender.

■ In releases prior to 4.1, a systemwide value is set for the Coverage Delay Interval through system programming (1–9 rings). When used in combination with Delay Ring, make sure that this value is higher than the Delay Ring interval.

$\Longrightarrow$ **NOTE:**
In releases prior to 4.1, the value set for the Delay Ring Interval (1–6 rings) through system programming affects Individual Coverage only. This setting is replaced in Release 4.1 and later systems.

A sender is considered unavailable (his or her telephone does not ring) under the following conditions:

■ The sender has turned on Do Not Disturb.

■ All **SA** or **ICOM** buttons are in use on the sender's telephone.

■ The sender is using extension programming or testing the telephone.

■ The sender has an MLX display telephone and is using an Alarm Clock or Directory feature.

■ The sender's telephone is forced idle for system programming or centralized telephone programming.

■ The sender's telephone is not responding (for example, not connected).

■ The sender has activated Remote Call Forwarding.

A receiver is considered unavailable (his or her telephone does not ring) under the following conditions:

■ The receiver has turned on Do Not Disturb (in this case, the sender can call the receiver).

■ Another call is ringing or answered on the receiver's Cover button for that sender.

■ The receiver is in extension programming or is testing the telephone.

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- The receiver with an MLX display telephone is using the Alarm Clock or Directory feature.

- The receiver's telephone is forced idle for system programming or centralized telephone programming.

- The receiver's telephone is not responding (for example, not connected).

If a call is sent to Group Coverage and no receiver is available, the system continues trying to send the call every five seconds until a Group Coverage receiver becomes available. This repeated attempt to send the call is call *retry timing*. The 5-second retry timing interval cannot be changed.

Table 8 shows when a call goes to Group Coverage receivers in Release 4.0 and prior systems. Table 9 shows when a call goes to Group Coverage receivers in Release 4.1 and later systems. In both tables, the rules for sending calls to Group Coverage apply *after* the calls first go to any available Individual Coverage receivers (as described in Table 6 on page 145).

See Figures 6 through 9, pages 154 through 157, for examples of LED and ringing patterns in Release 4.0 and prior systems and in Release 4.1 and later systems. Figures 6 and 7 show examples of what happens when only Group Coverage is used or when all Individual Coverage receivers are unavailable. Figures 8 and 9 show examples of what happens when both Individual Coverage (Primary and Secondary) and Group Coverage are programmed for an individual sender.

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Table 8.   Group Coverage Call Delivery Rules (Release 4.0 and Prior Systems)

Receiver Type	Sender Status	Individual Coverage Receiver Status	Call Delivered to Group Coverage after...
Group Cover button(s) only or Group Cover button(s) and QCC queue	Available	Available Unavailable or unassigned	*CD + DR** Immediate*
	Unavailable	Available Unavailable or unassigned	*CD + DR** Immediate*
QCC Queue only or Calling group only	Available	Available Unavailable or unassigned	*CD + DR** *CD*
	Unavailable	Available Unavailable or unassigned	*CD + DR** Immediate*

CD = Coverage delay interval

DR = Delay Ring interval

*   Ringing is delayed an additional *DR* after the green LED turns on at a Group Cover button programmed for Delay Ring on a multiline telephone.

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Table 9.   Group Coverage Call Delivery Rules (Release 4.1 and Later Systems)

Receiver Type	Sender Status	Primary Coverage Receiver Status	Secondary Coverage Receiver Status	Sent to Group Coverage after...
Group Cover button(s) only or Group Cover button(s) and QCC queue	Available	Available	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD + PRD*
		Unavailable or unassigned	Available	*GCD + PRD*
			Unavailable or unassigned	Immediate
	Unavailable	Available	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD + PRD*
		Unavailable or unassigned	Available	*GCD + PRD*
			Unavailable or unassigned	Immediate
QCC Queue only	Available	Available	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD + PRD*
		Unavailable or unassigned	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD*
	Unavailable	Available	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD + PRD*
		Unavailable or unassigned	Available	*GCD + PRD*
			Unavailable or unassigned	Immediate
Calling group only	Available	Available	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD + PRD*
		Unavailable or unassigned	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD*
	Unavailable	Available	Available	*GCD + PRD*
			Unavailable or unassigned	*GCD + PRD*
		Unavailable or unassigned	Available	*GCD + PRD*
			Unavailable or unassigned	Immediate

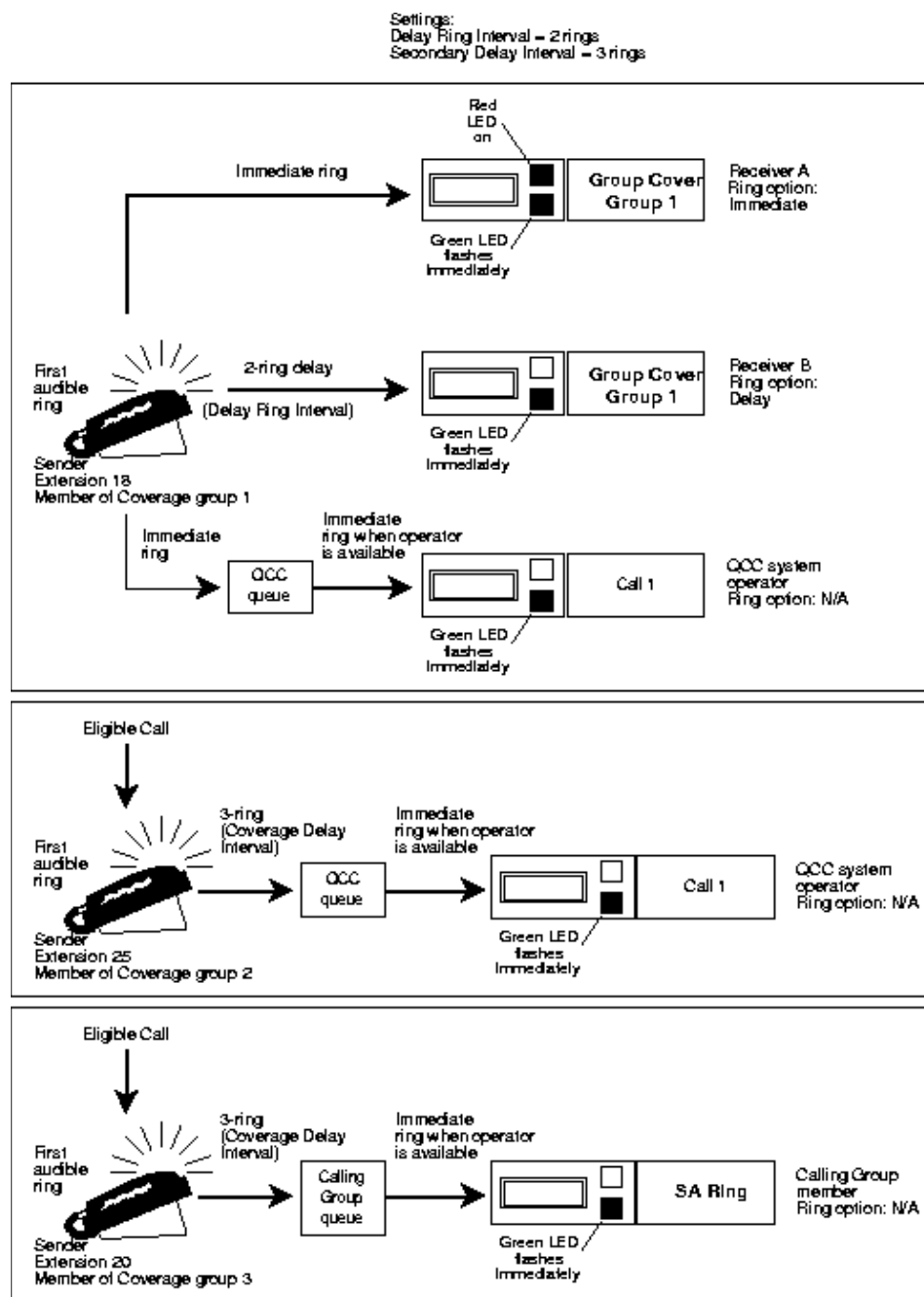GCD = Group Coverage Ring Delay
PRD = Primary Cover Ring Delay

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Settings:
Delay Ring Interval = 2 rings
Secondary Delay Interval = 3 rings

Figure 6. **Group Coverage Only or All Individual Coverage Receivers Unavailable (Release 4.0 and Prior Systems)**

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Settings:
Primary Cover Ring Delay = 2 rings
Secondary Cover Ring Delay = 2 rings
Group Coverage Ring Delay = 3 rings
Sender is available
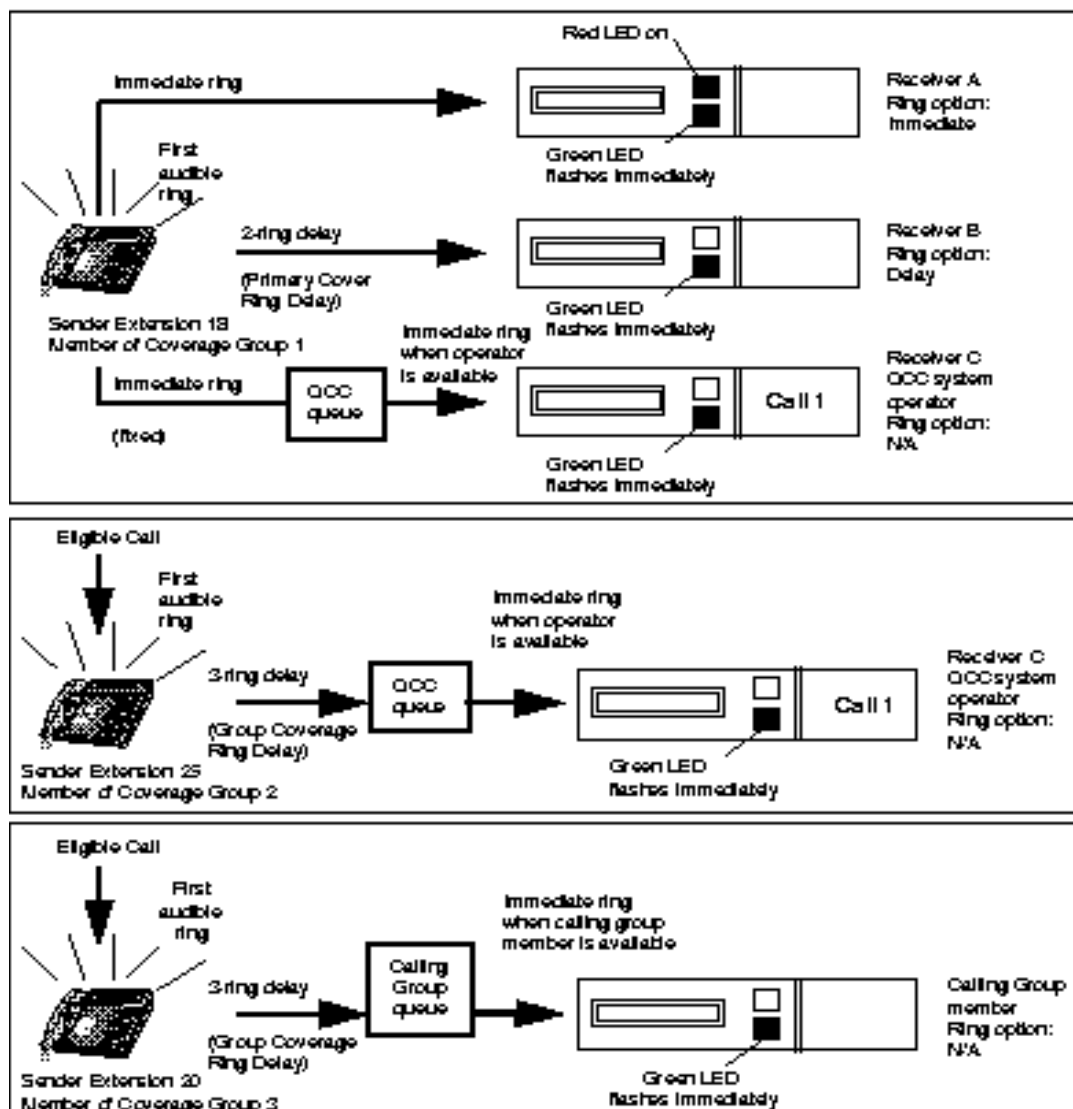
**Figure 7.   Group Coverage Only or All Individual Coverage Receivers Unavailable
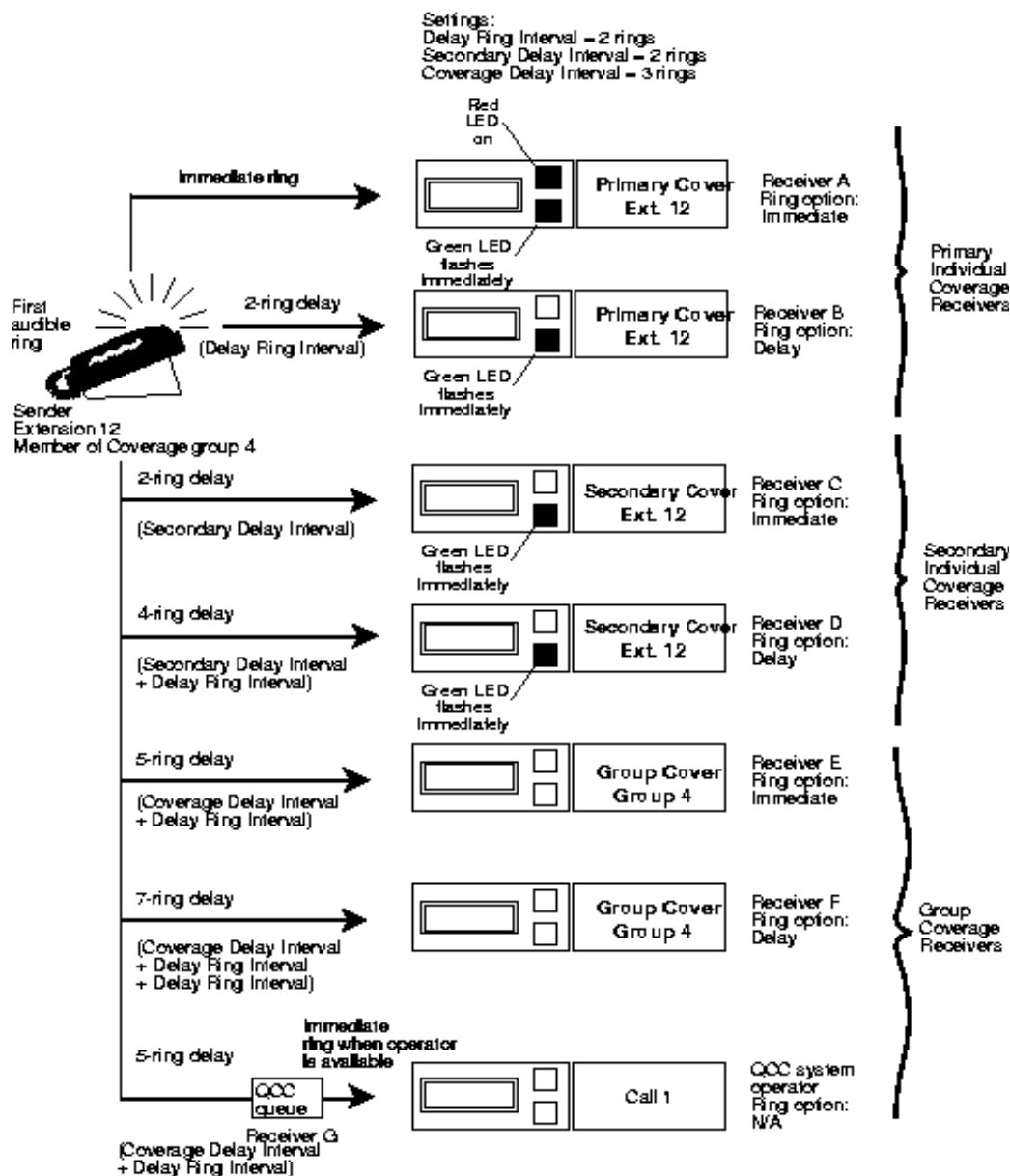(Release 4.1 and Later Systems Only)**

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Figure 8. **Individual (Primary and Secondary) and Group Coverage Ringing Patterns (Release 4.0 and Prior Systems)**

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Settings:
Primary Cover Ring Delay = 2 rings
Secondary Cover Ring Delay = 2 rings
Group Coverage Ring Delay = 3 rings
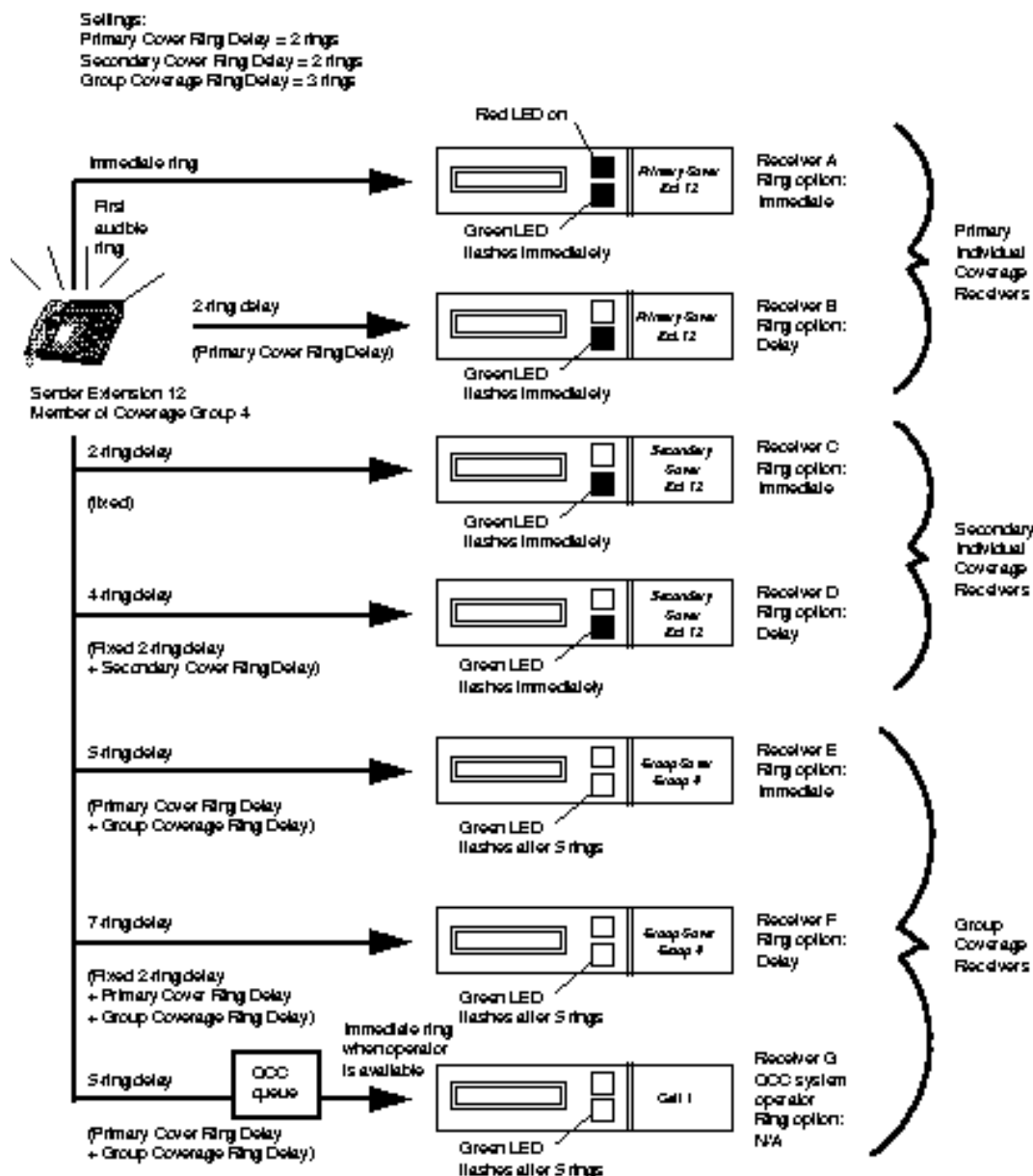
Figure 9.   Individual (Primary and Secondary) and Group Coverage Ringing Patterns (Release 4.1 and Later Systems Only)

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Cover to Voice Mail with Escape to System Operator

When DID or Auto Attendant is used, users receive calls directly, without the intervention of an operator. In these situations, the telephone should have voice mail coverage instead of coverage by a receptionist (operator). The caller then has the option to leave a message or press *0* in order to talk to the receptionist. If after talking to the receptionist, the caller wants to leave a message, the receptionist can transfer the call back to voice mail using the Direct Voice Mail feature.
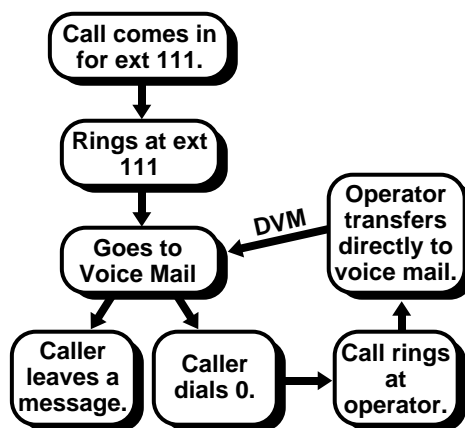

Figure 10.   Cover to Voice Mail with Escape to System Operator

This configuration is usually the best solution for coverage to voice mail because of the following advantages:

- It reduces the burden on the receptionist or operator.

- It allows the caller to make the choice whether to leave a message or speak to an operator.

- It allows the caller to leave a message without waiting for the receptionist to answer.

Cover to System Operator before Voice Mail

If calls must go to a receptionist, coverage can be set up using one of the following methods:

- Primary Coverage (eight or fewer extensions)

- Phantom calling groups (30 or fewer extensions)

- Phantom extensions (30 or more extensions)

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Primary Coverage

If eight or fewer extensions require coverage to the system operator, use delayed Primary Coverage or Secondary Coverage to allow calls to be covered by the operator. When a caller dials the user's number, the call is covered by the operator, and the operator can then send the call to voice mail using the Direct Voice Mail feature. If the operator does not answer, the call may or may not go to coverage, depending on the status of the user's Coverage VMS Off button. If the Coverage VMS Off button is not selected (the light is off), the call goes to voice mail. If the Coverage VMS Off button is selected (the light is on), the call continues to ring at the extension.

To set up Primary Coverage to the operator before going to voice mail, do the following:

- Assign an extension to a coverage group. Assign the coverage group to calling group 770 (Voice Mail).

- Program a Primary Cover button for the extension on the operator's Direct-Line Console (cannot be a QCC). Set it for Delay Ring.

- If you want to keep calls from going to voice mail when the operator does not pick up, program a Coverage VMS Off button on the extension.
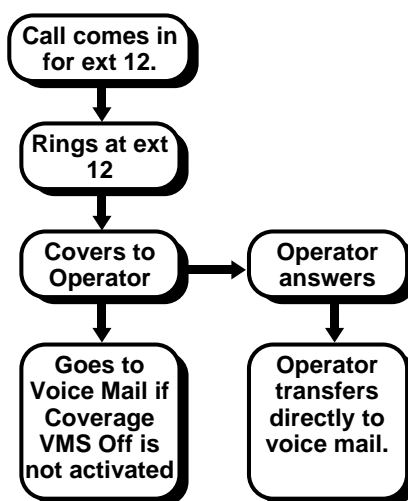

Figure 11.   Primary Coverage

With the primary coverage configuration, a caller dials a DID number, for example. The extension for the DID number (in the Figure 11 example, Extension 12) rings several times. If the telephone is not answered, an operator gets the call. If the operator fails to answer, the call either goes to voice mail or keeps ringing, depending on the Coverage VMS Off status on the extension for the DID number. When the operator answers and the caller asks to leave a message, the operator

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uses Direct Voice Mail to transfer the caller to the extension's voice mail. The caller leaves a message and the extension's message LED goes on.

Phantom Calling Groups

If fewer than 30 extensions require coverage to the main operator, phantom calling groups can be used to provide a second extension number for each user's voice mail. The actual extension covers to the operator (Group Coverage) and the calling group covers to voice mail. When someone dials the user's number, the call covers to the operator, who can then transfer the call to the voice mail extension.

To set up phantom coverage to the operator before voice mail coverage, do the following:

- Assign an extension (in the Figure 12 example, 101) to a coverage group. Assign a Group Cover button to the operator (if a DLC), or assign the coverage group to ring at the QCC.

- Renumber a calling group (for example, change 771 to 201) to a number that is easy to associate with the sender extension. You may have to renumber an existing 201 first.

- Assign the calling group (in the Figure 12 example, 201) to overflow to calling group 770 (voice mail) with a threshold of 1. Assign 101 as the message receiver for calling group 770.

With the phantom calling groups coverage configuration, a caller dials a DID number (for example 555-5101). The extension for the DID number (in the example, Extension 101) rings several times. If the telephone is not answered, the call is covered by an operator. The operator answers the call, and the caller asks to leave a message. The operator transfers the call to 201, and the call goes to voice mail. The Message light goes on at the extension for the DID number (in the example, 101).

$\Longrightarrow$ NOTE:

A user can give out a regular telephone number (555-5101) and a voice mail number (555-5201). This way, callers can leave a message without ringing the telephone. This is necessary to receive messages outside of office hours. Callers cannot leave messages after hours unless they know the second DID number.
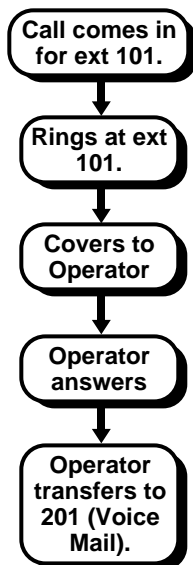
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Figure 12.   Phantom Calling Groups

Phantom Extensions

If more than 30 extensions require coverage to the operator, phantom extensions can be used after the maximum number of phantom calling groups is reached. This setup is slightly different from the previous two scenarios. In this case, the published DID number is the number for the phantom extension. The actual telephone has Shared **SA** buttons with the phantom extension as principal user, so the call rings at the telephone with the **SSA** button. The operator covers the phantom extension and can use the Direct Voice Mail feature to send calls to the original extension's voice mail.

To set up phantom coverage to the operator before going to voice mail, do the following:

- Assign the extension (in the Figure 13 example, 114) to a coverage group. Assign a Group Cover button to the operator if a DLC, or assign the coverage group to ring at the QCC.

- Assign a phantom extension to a number (in the Figure 13 example, 214). You may have to renumber the extension first. If the extension does not have an adjunct, using the adjunct extension number helps avoid confusion (see "System Renumbering" on page 583 for details about adjunct extension numbers).

- Assign Shared **SA** buttons for the phantom extension to the real extension (in the example, assign **SSA** buttons for 214 to 114) and remove all but one **SA** button for the real extension. You may want to make this a No Ring

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button and move it to a virtual button that is not actually on the physical telephone. This conserves buttons and prevents accidental calls to 114 from ringing at the extension.

■ Assign the extension (in the Figure 13 example, Extension 114) to coverage group 1. Assign coverage group 1 to the voice mail calling group, 770.
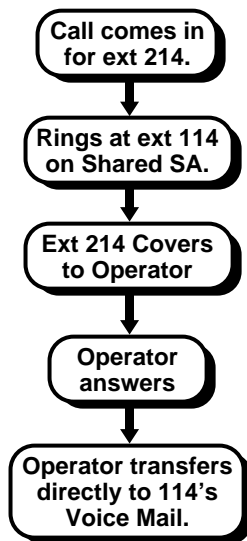
Figure 13.   Phantom Extensions

With the phantom extensions coverage configuration, a caller dials the DID number. In the Figure 13 example, this might be `555-5214`. Extension 114 rings several times on a Shared **SA** button. If the call is not answered, it is covered by an operator, and the display shows `Cover ext 214`. The operator answers the call and the caller asks to leave a message. The operator transfers the caller to the extension's voice mail, Extension 114, using Direct Voice Mail. The caller leaves a message for the person at the extension, and the Message light goes on.

$\Longrightarrow$ NOTE:
A user can give out a regular telephone number (in this example, 555-5214) and a voice mail number (555-5114). This way, callers can leave a message without ringing the telephone. This is necessary to receive messages outside of office hours. Callers cannot leave messages after hours unless they know the second DID number.

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Cover to Personal Secretary before Voice Mail

If you need coverage by a personal secretary who is not a system operator at an operator console, then Primary Coverage can be used on the secretary's telephone. The secretary can use Direct Voice Mail to transfer the call back to the user's voice mail. If the secretary is out, calls can either continue to ring or go to voice mail, depending on the status of the user's Coverage VMS Off button.

To set up Primary Coverage to a personal secretary before going to voice mail, do the following:

- Assign the extension to a coverage group. Assign the coverage group to calling group 770 (Voice Mail).

- Program a Primary Cover button for the extension on the secretary's telephone. Program it for Delay Ring.

- If you want to keep calls from going to voice mail when the secretary does not pick up, program a Coverage VMS Off button on the extension.
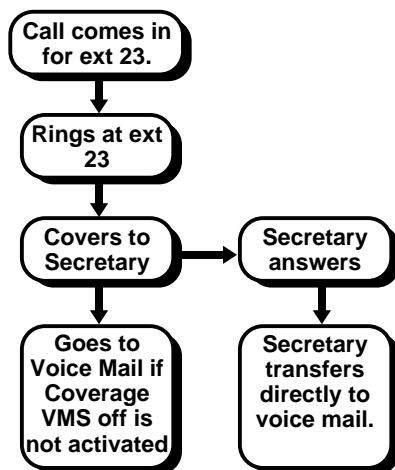

Figure 14.   Coverage and Direct Voice Mail

A caller dials the DID number. In the Figure 14 example, this might be 555-5523. Extension 23 rings several times. The covering secretary answers, and the caller asks to leave a message. The secretary uses the Direct Voice Mail feature to transfer the call to the extension's voice mail. The caller leaves a message, and the extension's Message light goes on. If the operator fails to answer, the call either goes to voice mail or keeps ringing, depending on the Coverage VMS Off status at the extension for the DID number.

Considerations and Constraints

In Release 2.0 and later systems, if a receiver calls a sender for whom he or she is covering and the sender is busy or unavailable, the call proceeds to other points of coverage. It does not come back to the receiver who originated the call. In Release 1.0 and 1.1 systems, a call from a receiver to a sender is not covered.

A maximum of eight Primary Cover and Secondary Cover buttons can be assigned to provide Individual Coverage for a given sender. Only one Cover button for each sender can be programmed on a multiline telephone.

A maximum of eight Group Cover buttons can be assigned to provide Group Coverage for each coverage group. All eight can be programmed on one multiline telephone, or the Group Cover buttons can be distributed on as many as eight multiline telephones.

A receiver with a multiline telephone can have as many as eight Cover buttons, which can be programmed for any combination of Group and Individual Coverage.

If a receiver has both a Primary Cover or Secondary Cover button for a sender and a Group Cover button for the group of which the sender is a member, a call for the sender rings only at the receiver's Primary Cover or Secondary Cover button. This prevents multiple deliveries of the same call to the same receiver.

Each coverage group can have any number of members, from none to all the extensions in the system.

Each sender can be a member of only one coverage group.

If a sender without Individual Coverage is a member of a coverage group and no receivers are assigned for the group, a caller hears ringback instead of a busy tone when the sender is unavailable.

If a calling group is assigned as a receiver for a coverage group, it is the only receiver for that group; no other types of Group Coverage receivers can be programmed. However, individual members of the coverage group can be senders to Individual Coverage receivers.

A calling group can be a receiver for up to 30 coverage groups.

A receiver with a Group Cover button can also be a member of the coverage group for which the button is programmed. Calls to that receiver are sent to all other receivers programmed for the group.

When both the QCC queue and multiline telephones are programmed as receivers for a coverage group, the QCC queue is not counted in the 8-receiver maximum for the group.

A QCC cannot be a coverage sender.

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When Group Coverage is the only type of coverage programmed for a sender, the QCC queue should not be programmed along with Group Cover buttons on multiline telephones. Because the QCC cannot be programmed for Delay Ring, eligible calls ring immediately both at the sender's telephone and at the QCC queue. This may not allow the sender enough time to answer the call before a QCC operator answers.

If a call is sent to coverage because the sender does not have a button available to take the call, the call does not return to the sender's telephone, even if a button becomes available while the call is ringing at a coverage receiver's telephone.

An inside voice-announced call made on an **SA Voice** or **ICOM Voice** is not covered. If it is converted to a ringing call—for example, because the sender's speakerphone is in use—the ringing call is sent to coverage.

No type of Cover button can be used to make calls.

When the sender also has Individual Coverage and an Individual Coverage receiver is available, the Delay Ring interval is used as an delay in addition to the Coverage Delay Interval before a call goes to Group Coverage.

When no principal user is assigned for a personal line, calls received on the personal line cannot be forwarded to outside telephone numbers. Calls follow the Individual Coverage patterns of all senders who share the line and the Group Coverage pattern of the extension with the lowest logical identification number (lowest numbered jack on the module).

In Release 4.1 and later systems, coverage delay settings affect the ability of Integrated Administration to program some Coverage options for AUDIX Voice Power. See "Integrated Administration" on page 328 for details.

In Release 4.1 and later systems only, Night Service Coverage Control, when enabled through system programming (factory setting is Disabled), controls voice messaging system (VMS) coverage only and has no effect on Individual Coverage (Primary or Secondary) or on other types of Group Coverage. When disabled, the feature has no effect whatsoever on coverage.

In Release 4.1 and later systems only, in a system with Night Service Coverage Control enabled, Night Service transitions do not toggle the programmed Coverage VMS Off button to the opposite status. Instead, when Night Service goes on or off after a user has manually pressed the button, the button follows Night Service status just as other programmed Coverage VMS Off buttons do. The status of programmed Coverage VMS Off buttons is always set to match the *most recent* user press or transition into or out of Night Service operation. For more information about Night Service, see "Night Service" on page 398.

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Telephone Differences

Direct-Line Consoles

A DLC can be both an Individual or Group Coverage receiver and a member of a coverage group.

Queued Call Consoles

The Queued Call Console (QCC) cannot be a sender for either Individual or Group Coverage. The QCC queue can be a Group Coverage receiver for up to 30 coverage groups. Because Cover buttons cannot be programmed on the QCC, the queue is not counted in the 8-receiver maximum allowed for each coverage group. The QCC cannot be an Individual Coverage receiver.

The QCC queue priority and the individual QCC operator to receive calls for each coverage group are assigned independently for each group.

If a line/trunk is programmed to ring in to the QCC queue and also appears as a personal line on a telephone that is a member of a coverage group covered by the QCC queue, a call on that line/trunk does not appear as a coverage call at the QCC.

If Group Cover buttons are programmed for a coverage group in addition to the QCC queue and all QCC operators are in Position-Busy mode, a Group Coverage call goes to all receivers except the QCC queue.

When Group Coverage is the only type of coverage programmed for a sender, the QCC queue should not be programmed in addition to Group Cover buttons on multiline telephones. Because the QCC cannot be programmed for Delay Ring, eligible calls ring immediately both at the sender's telephone and at the QCC queue. This may not allow the sender enough time to answer the call before a QCC operator answers.

When the QCC queue is assigned as a receiver for a coverage group and a call transferred to a group member is not answered, the call returns to the queue as follows:

- If the QCC return ring interval is shorter than the Coverage Delay Interval (releases prior to 4.1) or the Group Coverage Delay setting (Release 4.1 and later systems), the call returns as a returning transfer call.

- If the QCC return ring interval is longer than the Coverage Delay Interval (releases prior to 4.1) or the Group Coverage Delay setting (Release 4.1 and later systems), the call returns as a Group Coverage call.

Other Multiline Telephones

Any type of multiline telephone can be a sender and/or receiver for either Individual Coverage or Group Coverage and can have up to eight Cover buttons.

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Single-Line Telephones

A single-line telephone can be a sender for either Individual or Group Coverage. A single-line telephone can be a receiver for Individual Coverage. It can be a receiver for Group Coverage only when it is a member of a calling group assigned as a receiver for a coverage group.

Transferred calls to a busy single-line telephone are not eligible for coverage unless Coverage Inside is on. A transferred call to a busy single-line telephone with Group Coverage and Coverage Inside off camps on at the single-line telephone and returns to the originator if not answered before the transfer return interval expires.

Feature Interactions

Account Code Entry	When answering calls on a programmed Primary Cover, Secondary Cover, or Group Cover button, a receiver cannot enter an account code. When attempting to enter an account code, the receiver hears no error tone, but the account code does not appear on the SMDR report.
	Because Cover buttons are not required when the QCC queue is assigned as a receiver for a coverage group, a QCC operator can enter an account code, and the account code appears on the SMDR printout.
Auto Answer All	A sender or receiver at an analog multiline telephone can use Auto Answer All to have calls answered by an answering machine connected to the telephone.
Auto Answer Intercom	Auto Answer Intercom prevents a receiver on an analog multiline telephone from using a Hands-Free Unit (HFU) to answer calls received on a Primary Cover, Secondary Cover, or Group Cover button.
Automatic Line Selection	Primary Cover, Secondary Cover, and Group Cover buttons cannot be programmed in an ALS sequence because they cannot make calls.
Barge-In	Barge-In can be used to join an Individual or Group Coverage call answered at any receiver telephone, but not at a VMI port. VMI ports always have Privacy on.
Callback	The sender and all receivers must be busy before a call to a sender is eligible for Callback. The call is sent to coverage before it is put in the callback queue. Once a call is in the callback queue, it is not sent to coverage again. A callback call indicating that a busy extension or pool is now available is not sent to coverage.
Caller ID	Caller ID information is available to users receiving coverage calls.
Calling Restrictions	In Release 2.1 and later systems, users answering calls on Cover buttons can generate touch tones (for example, by dialing a *1* to accept a collect call) if their telephones are not outward- or toll-restricted. If the telephone is outward- or toll-restricted, the user hears the touch tones, but the tones are not sent out over the line (and the user cannot, for example, accept collect calls by dialing a *1*).

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Call Waiting	A call to a sender with Call Waiting turned on goes to Individual and/or Group Coverage first. If all coverage points are busy, the sender receives the call-waiting tone.
Camp-On	Coverage calls answered by any receiver can be camped on to another user.
Conference	Conference calls can be originated from a Cover button only when the user with a caller on the Cover button presses the **Transfer** button, dials the number for another person, and then presses the **Conf** button to complete the transfer. In this case only, instead of the call being transferred, a conference call with three participants (including the originator) is established.
CTI Link	When an extension is programmed as a CTI link, it is removed from membership in coverage groups.
	When a call is transferred from a programmed Cover button on a unmonitored DLC, screen pop is not initiated at the destination extension, even if it is using a CTI application.
Digital Data Calls	Individual Coverage is not recommended for 2B data calls. Because a coverage receiver can have only one Cover button for each coverage sender, only a 1B data call arrives at the receiver. The second call of a 2B call continues to ring at the coverage sender.
	Coverage delays do not apply to data calls. Calls ring immediately.
	Coverage is not recommended for video extensions. However, an MLX passive-bus telephone can be covered during 2B video calls (when both B-channels are busy), but it must have a programmed Do Not Disturb button. The user at the telephone activates Do Not Disturb during 2B calls.
	A passive-bus MLX telephone can be a coverage receiver, but this gives the user little control when B-channels must be available for 2B data.
Direct Station Selector	When a system operator transfers an Individual or Group Coverage call and the call returns, the red LED next to the DSS button for the sender does not flash as it does for a transfer return for calls received on other types of line buttons.
Direct Voice Mail	Direct Voice Mail overrides coverage-inhibiting features such as Coverage Off, Coverage VMS Off, and Coverage Inside Off.
Display	When an Individual or Group Coverage call is answered by a receiver with a display telephone, Cover is shown for the call type, followed by the sender's name, if programmed, or extension number. The display also shows the reason why the call went to coverage: No Ans, Busy, or DND. On an MLX telephone, other reasons why calls are sent to coverage are also shown: Invalid/unknown DID number or Invalid/unknown Remote Access number. The receiver sees the caller information by pressing the **More** button.

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Do Not Disturb	When a sender turns on Do Not Disturb, Individual Coverage or Group Coverage receivers for that sender can call the sender. All other calls to the sender go to coverage.
	When a receiver turns on Do Not Disturb, he or she does not receive coverage calls. However, a sender whose calls are set to be covered by the receiver can call that receiver, despite Do Not Disturb.
	If both a sender and all receivers have Do Not Disturb on, the sender's calls do not go to coverage and the caller hears a busy signal. On a personal line, the caller hears ringback and the green LED flashes, but the telephone does not ring.
Forward and Follow Me	In Release 3.0 and prior systems (or if the Forwarding Delay is programmed to 0 rings), when a coverage sender forwards, calls are forwarded and sent to coverage at the same time. Calls received on any type of Cover button are not forwarded.
	If a coverage receiver has activated Remote Call Forwarding, calls sent to that extension through Coverage are not forwarded to the remote location.
	n Release 4.0 and later systems, if both coverage and forwarding are on and the Forwarding Delay is more than 0, one of the following occurs:.

- A call that is sent to Group Coverage before the Forwarding attempt is not forwarded.

- A call that is remote call-forwarded before any coverage is not covered.

- A call that is remote call-forwarded while Primary and/or Secondary Coverage extensions are alerting is removed from those coverage points and is not sent to Group Coverage.

Forward and Follow Me *continued*	■ If a call is sent to Group Coverage after forwarding, the call is removed from the called extension, the forwarded-to extension, and any Primary and Secondary Coverage buttons.
Group Calling	A calling group can be a receiver for up to 30 coverage groups. A calling group cannot be a receiver for Individual Coverage. A coverage group can have only one calling group as a receiver, but members of the coverage group can also have Individual Coverage receivers.
	As soon as a Group Coverage call is sent from the calling group queue to a calling group member, ring and LED flashing are removed from the sender's telephone, except for outside calls received on personal lines.
	A calling group cannot be a sender, but an individual calling group member can be a sender for Individual Coverage and/or a member of a coverage group. When a call to the calling group extension number is sent from the queue to the calling group member, it goes only to the member's Individual Coverage receivers and not to the member's Group Coverage receivers. Calls to the member's individual extension go to both Individual and Group Coverage receivers.

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Hold	Coverage calls answered by any type of receiver can be put on hold. The hold timer or operator hold timer applies to a coverage call on hold.
HotLine	Coverage features are not recommended for HotLine extensions (Release 5.0 and later systems).
Integrated Administration	AUDIX Voice Power and private fax extensions are automatically assigned to coverage group 30, which is covered by the AUDIX Voice Power calling group. This assignment can be changed on the Application Switch Defaults screen.
	If the Automated Attendant service is configured for delayed call handling, a backup (phantom) extension should be assigned. Integrated Administration sets up coverage for it.
	The total of the values programmed for the systemwide Coverage Delay Interval (Release 4.0 and prior systems) or extension-by-extension coverage delay settings (Release 4.1 and later systems) plus Delay Ring should be less than either the transfer return time or the VMS transfer return interval. In Release 4.1 and later systems, coverage delay settings affect the ability of Integrated Administration to program some Group Calling options for AUDIX Voice Power. See for details.
Multi-Function Module	A Multi-Function Module (MFM) can be a sender or a receiver for Individual or Group Coverage. This allows an MLX telephone user to screen calls by using an answering machine connected to the MFM or to supplement ringing with an external alert connected to the MFM. A sender can use Coverage Off to prevent calls from being sent to an answering machine.
Night Service	When a system manager enables the Night Service with Coverage Control option, a transition into Night Service operation (by the press of a Night Service button or automatically through the Time Set option) automatically deactivates Coverage VMS Off buttons (LEDs are unlit) at Night Service group extensions. When the system resumes normal business-hours operation (by the press of a Night Service button or automatically through the Time Set option), the feature automatically activates Coverage VMS Off buttons (LEDs are lit) at Night Service group extensions. When the option is disabled, Night Service has no effect on programmed Coverage VMS Off buttons.
Park	A returning parked call is not eligible for coverage. A call answered on a Primary Cover, Secondary Cover, or Group Cover button cannot be parked on that button. To park calls received on a Cover button at your extension, press the **Transfer** button, dial your own extension, and press the **Transfer** button again to complete parking the call.

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Personal Lines	When a principal user is assigned a personal line, calls arriving on the personal line follow that user's coverage pattern, if any. Calls received on personal line buttons on senders' telephones other than the principal user's do not go to coverage.
	If no principal user is assigned, calls received on the personal line are sent to all available Individual Coverage receivers for all senders sharing the line and to the Group Coverage receivers programmed for the sender whose telephone is connected to the lowest jack in the lowest-numbered slot in the control unit.
	In Release 2.1 and later systems, calls received on personal lines with Do Not Disturb on go immediately to coverage instead of waiting for any coverage delay.
	In Release 2.1 and later systems, a call answered on a personal line using a Cover button can be picked up by anyone with a button for that personal line. However, the picked-up call cannot be transferred because it is still considered to be on hold at the covering extension. In systems prior to Release 2.1, once a receiver answers a call received on a personal line using a Cover button and puts the call on hold, the sender and any other user who shares the personal line cannot pick up the call by pressing the personal line button. For proper handling, the receiver should transfer the call to the sender.
Pickup	A coverage sender or receiver can be a member of a Pickup group. This allows Pickup to be used to answer a ringing Individual or Group Coverage call. If a sender who is a member of a Pickup group uses Coverage Off to stop calls from going to Individual or Group Coverage receivers, his or her calls can be picked up by using the Individual Pickup feature. However, calls cannot be picked up by using the Group Pickup feature. When a coverage call is answered using Pickup, the call is removed from other extensions in the coverage arrangement.
Pools	Calls received on a sender's **Pool** button programmed for Immediate or Delay Ring are eligible for Individual or Group Coverage.
Recall/Timed Flash	Recall has no effect on a call answered on any Cover button.
	In Release 2.0 and later systems, Recall can be used on a Group Coverage call answered by a member of a calling group. In Release 1.0 and 1.1 systems, Recall cannot be used on a call of this type because it is answered on an **SA** or **ICOM** button.
Reminder Service	Reminder calls are not eligible for Individual or Group Coverage.

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Ringing Options	Calls received on line buttons programmed for No Ring are not sent to coverage.
	Primary Cover, Secondary Cover, and Group Cover buttons can be programmed for Immediate Ring, Delay Ring, or No Ring. If an Individual or Group Coverage receiver is on a call when a coverage call is received, the receiver hears an abbreviated ring (if abbreviated ringing is enabled).
	Calls received on a Primary Cover, Secondary Cover, or Group Cover button ring with the receiver's (not the sender's) personalized ringing pattern.
	In Release 4.1 and later systems, the ringing at a programmed Primary or Secondary Cover button, set for Delay Ring, is controlled by the Primary or Secondary Ring Delays set for the sender's extension. The systemwide Secondary Ring Delay Interval (fixed at two rings) also augments ringing on Secondary Cover buttons set for Delay Ring. For more information, see Figure 7 on page 155 and Figure 9 on page 157.
SMDR	The extension number answering an Individual or Group Coverage call is shown on the SMDR report.
	In Release 4.2 and later systems, when an Auto Login or Auto Logout calling group is programmed as a Group Coverage receiver and the SMDR Talk Time option is enabled, calls are reported following the same rules that apply to other incoming calling group calls. This is true even if a call is transferred from an operator to a Group Coverage sender before being directed to the calling group.
System Access/ Intercom Buttons	A covered call remains on the sender's **SA** or **ICOM** button until it is answered at the receiver's telephone.
	A call received on a Shared **SA** button is not eligible for any coverage.
	If a receiver programs a Primary Cover, Secondary Cover, or Group Cover button for a sender and also has an **SSA** button associated with the sender, the green LEDs next to both the Cover button and the Shared **SA** button flash. The red LED stays on at the Shared **SA** button, but does not go on at the Cover button.
Transfer	A call answered on any Cover button can be transferred.
	Calls transferred to a sender are eligible for Individual and/or Group Coverage. However, the sender hears a call-waiting tone if he or she is using Coverage Off to prevent calls from going to coverage and does not have an available **SA** or **ICOM** button to receive a transferred call.
	With one-touch Transfer, a call answered on a Cover button can be transferred by using a DSS button, but not by using an Auto Dial button.
	Transfer returns are not eligible for coverage
Voice Announce to Busy	If the sender's speakerphone is available, a voice-announced call is answered as soon as it is made. If the sender's speakerphone is in use, the call is converted to a ringing call and sent to coverage.

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CTI (Computer Telephony Integration) Link

At a Glance

Users Affected	MLX and analog multiline telephone users at companies with LANs (local area networks) running Novell NetWare
Reports Affected	System Information (`SysSet-up`), Extension Information
Mode	Hybrid/PBX
Telephones	MLX telephones and analog multiline telephones
MLX Display Label	`CTILINK`
System Programming	First, follow the instructions in the *System Manager's Guide* to busy-out the module for the CTI link. If there is only one MLX module on the system, you must use System Programming and Maintenance (SPM) software to program the link. Then to assign the CTI link extension:
	• `AuxEquip`→`CTI Link`→Dial extension number

Description

Release 5.0 and later systems support the use of an MLX port as a Computer Telephony Integration (CTI) link on Hybrid/PBX mode systems. The CTI link feature allows CTI applications to interact with the MERLIN LEGEND Communications System over a local area network (LAN). The CTI link is the system's hardware and software interface to the Lucent Technologies PassageWay Telephony Services product, which supports the Windows® 95, Windows NT, Windows 3.1, Windows 3.11 for Workgroups, Apple® Macintosh® OS and UNIX® systems platforms on the client side. CTI link circuitry connects to an MLX port on the system and to a LAN server using Novell NetWare (releases 3.12, 4.1, and 4.11) software.

$\Rightarrow$ NOTE:
The Apple Macintosh and some of the UNIX client libraries for Telephony Service do not support MERLIN LEGEND Communications System private data. They only support standard TSAPI call services and events. For details, regarding this issue, see the *PassageWay Telephony Services Network Manager's Guide*.

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Software using the CTI link can perform the following actions on a user's computer:

- ■   Screen pop

- ■   Power dial

- ■   Basic call control

CTI link applications can control functions at extensions with MLX or analog multiline telephones.

Following are brief descriptions of the platform requirements for a CTI link as well as the features listed above. For more detailed information about these features, see the *PassageWay Telephony Services Network Manager's Guide*.

Platform Requirements

A CTI link requires the following equipment and software:

- ■   MERLIN LEGEND Communications System Release 5.0 or later, in Hybrid/PBX mode

- ■   A standalone LAN telephony server with an Intel® i386, i486, or Pentium® class central processing unit and at least 16 megabytes of RAM (more memory may be needed; see *PassageWay Telephony Services Network Manager's Guide* for details).

- ■   Novell NetWare version 3.12, 4.1, or 4.11

  ⇒ **NOTE:**
  For a NetWare version 3.12 installation, additional files must be obtained from Novell's web site. For details, see *PassageWay Telephony Services Network Manager's Guide*.

- ■   5 megabytes of available disk space in the system volume

- ■   PassageWay Telephony Services for NetWare software, Release 2.21 or later

- ■   Eicon/G. Diehl SCOM circuit board with an available 8- or 16-bit ISA slot, to link the communications system and the telephony server

- ■   An MLX line/trunk or extension module, with a free extension jack (not the first or fifth or any port programmed as an operator or programming console), installed in the communications system control unit. The firmware vintage should be 28 or later, *not including* vintage 29.

  ⇒ **NOTE:**
  If the MLX module for the CTI link is the only MLX module in the system, SPM software, version 5.01 or later, is also required in order to program the CTI link.

For more information about these requirements and about installing a CTI link, see *PassageWay Telephony Services Network Manager's Guide*.

Screen Pop

Screen pop occurs when a CTI application takes inside or outside caller information, queries a database, and displays caller information on a user's PC screen. Screen pop requires that an identifying number or code be available to identify the outside calling party. This number may be a telephone number provided by Caller ID, Automatic Number Identification (ANI), or another network service.

Screen pop can also occur when the caller enters an identifying code after connecting to a voice response unit in the system. The voice response unit, MERLIN LEGEND MAIL for example, may prompt the caller to dial a social security number, account number, customer number, or other database index code. These *collected digits* are used to initiate screen pop of database information (for more information, see the next topic, "Collected Digits").

Screen pop can occur on incoming voice calls from the following sources:

- Calling group distribution

- ISDN PRI routing by dial plan

- An extension on the MERLIN LEGEND Communications System

- Remote access

    $\Longrightarrow$ **NOTE:**
    In this case, the only information that the application can collect about the caller is the remote telephone number.

- A transfer of a call that has been answered by a voice response unit

- A transfer or conference of a call that has been answered at a DLC or at a QCC

    $\Longrightarrow$ **NOTES:**
    1. Some CTI applications can initiate screen pop from the called number on a BRI (Basic Rate Interface) or PRI (Primary Rate Interface) line. To find out whether this feature is available, check your application's documentation.

    2. To obtain calling party information on a loop-start line, your organization must subscribe to Caller ID services, if available, from the local telephone company. An 800 LS-ID line/trunk module is also required, and the system must be programmed for Caller ID (see "Caller ID" on page 105). On BRI and PRI lines, calling party identification services may be available from a network service provider. For more information, see "Basic Rate

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Some CTI applications allow screen pops either on demand or when a call is answered. These applications may initiate screen pops for all calls, even those answered at the telephone on a line button other than an **SA** button. However, if a call does not come in on an **SA** button, screen pop does not occur when the call is ringing, only after it is answered. In addition, when a call does not arrive on an **SA** button, the CTI application cannot handle a transfer, conference, hold, or other activity for that call. The user must perform these actions manually, using the telephone.

When an outside call is answered initially by a voice response unit that prompts for caller information (such as a customer number), that information is passed on to the person receiving the call, assuming that the receiver has screen-pop capability and that the application uses transfer with consultation. As a result, screen pop occurs at the destination.

$\Longrightarrow$ **NOTE:**
In a transfer or conference with consultation, available on inside calls only, the user initiating the transfer or conference calls the destination extension and speaks to the person at that extension before completing the transfer.

The Transfer and Conference features, when activated manually (using the telephone) at a non-operator extension do *not* provide the original caller's information (telephone or extension number or information) to the recipient who has screen-pop capability. For example, if a user manually presses the **Transfer** button, instead of using the application, then dials an extension and has the application complete the transfer, original caller information is not sent to the receiver.

Collected Digits

As noted in the previous section, another method of using the screen-pop capability is to display a screen based on information entered directly by the caller, rather than on the caller's telephone number. This requires a voice messaging system capable of collecting the caller's input.

When the voice messaging system answers a call, it plays a message instructing the caller to enter additional digits, such as a social security number, zip code, or customer account number. These additional digits are referred to as *collected digits* or *prompted digits*.

Based on the caller's input, the voice messaging system transfers the call to the MERLIN LEGEND Communications System switch, which then routes the call to the proper destination. When the call arrives at the monitored extension, the switch passes the digits to the CTI application, which, in turn, passes these digits to the customer's existing database. The database searches its records for

information relating to the collected digits, and returns a screen displaying the data it found.

The system manager programs the voice messaging system to collect a specific number of digits (the maximum is 32) and creates the message instructing the caller to enter the digits with a pound sign (#) at the end (the pound sign hastens the processing of the call). Refer to the voice messaging system documentation for instructions on installing and programming the collected digits feature.

Release 5.0 and later systems support the collected digits feature on voice messaging systems whose ports are programmed as a calling group of type VMI. See *System Programming* for instructions about programming the VMI port.

If you plan on using a second voice messaging system with the one that collects digits, you must program two voice mail user databases.

- In the voice messaging system that collects the digits, the "transfer to subscribers only" option must be active and the extensions must be allowed to transfer calls. To do this in MERLIN LEGEND MAIL systems, program the extensions as Class of Service 20.

- In the second voice messaging system, program regular voice mailboxes as normal cover answer mailboxes.

Power Dial

Power Dial is an application feature where software on a user's computer initiates a voice call on a specified telephone to an inside or outside number. It is generally used by people who must make a large volume of calls to individuals whose telephone numbers are stored in a customer or client database. For example, Power Dial is often appropriate for telemarketers and fundraisers.

Basic Call Control

A CTI application on your PC can control an extension's **SA** button operations. No other buttons (for example, personal lines) are monitored by applications or allowed to perform the CTI services. Basic call control includes:

- Answering calls arriving on an **SA** button

- Making calls from an **SA** button

- Hanging up calls

- Hold and retrieving a call on hold at the user's extension

- Inside transfer

- Three-party conference, including those conferences where one or two parties are outside the system

CTI applications vary in how they use the system's features. The list of basic call control activities includes the functions that a CTI application *may* control; a given application does not *necessarily* use these system features.

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DLC operator extensions can use CTI applications, although QCCs cannot. If a DLC's **SA** button operations are controlled by a CTI application, caller information is passed on to a 3-way conference or transfer destination, as long as the operator uses the application to perform the transfer or conference (the DLC extension works as any other screen-pop-capable extension does). If a DLC operator's **SA** calls are *not* controlled by a CTI application, then caller information for transferred or conferenced calls is also passed on to a screen-pop-capable extension, just as with a QCC. The only exception occurs when a call is transferred from a Cover button on a DLC. In this case, there is no screen pop at the destination extension.

Programming a CTI Link

System Programming includes complete information about programming a CTI link. When you program a CTI link, ensure that no telephone, fax, videoconferencing system, or digital communications equipment is connected to the MLX port. A working or potential system programming or operator position extension cannot be programmed as a CTI link; therefore, a CTI link cannot be programmed on the first or fifth extension jack of an MLX module. A CTI Link can be programmed on port 2, 3, 4, 6, 7, or 8 of the MLX module.

In order to program a new CTI link, or remove an existing one, you must first busy-out the slot where the MLX module for the CTI link is located or where you plan to install it. For this reason, if you program the CTI link using an MLX-20L telephone programming console, that console must *not* be connected to the same MLX module where you have installed or plan to install the CTI link. (See for more information about programming options. For details about busying-out a slot in the control unit, see the *System Manager's Guide*.)

$\Rightarrow$ **NOTE:**
> If your system includes only one MLX extension module, you must use a PC and System Programming and Maintenance (SPM) software to program the CTI link.

⚠ **CAUTION:**
> *The Maintenance procedures that you use to busy-out and restore a module are normally reserved for Lucent Technologies technicians only.*

When you add a CTI link, the system performs the following actions:

- Reverts button programming to the default for a non-operator MLX telephone

- Informs you when there are programmed Cover buttons for the CTI link extension on other extensions in the system. These Primary and/or Secondary Cover buttons are not removed from the associated extensions. To identify these extensions and remove the Cover buttons, consult the

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Extension Information Report for the system, or refer to the relevant
system planning forms for extensions and groups (for example, Form 4d,
MLX Telephone and Form 7c, Group Coverage). Appendix D includes
instructions for removing button programming.

- Deactivates forwarding to the extension

- Removes the extension from membership in calling groups

- Removes the extension from membership in coverage groups

- Changes the Extension Directory label for the extension to CTILINK

- Sets the Alarm feature to the default setting (on) for a CTI link

- Restricts dial access to pools for the extension

- If the jack is programmed for 2B data, renders the 2B data programming
  nonfunctional. The 2B data programming is not removed from the main or
  adjunct extension. If you want to use 2B data, reassign the feature to
  another port. See *System Programming* for information about removing or
  assigning 2B data.

Mode Differences

Key and Behind Switch Modes

A CTI link cannot be used with communications systems operating in Key mode
or Behind Switch mode.

Considerations and Constraints

The Transfer and Conference features, when activated manually (using the
telephone) at a non-operator extension do *not* provide the original caller's
information to the recipient who has screen-pop capability.

Some CTI applications may initiate screen pops for all calls, even those answered
at the telephone on a line button other than an **SA** button. Screen pop, in this
case, occurs only after a call is answered. In addition, if a call does not come in on
an **SA** button, the CTI application cannot handle basic call control for that call. The
user must perform these actions manually, using the telephone.

When a DLC is not using a CTI application, calls transferred from a DLC's
programmed Cover button do not initiate screen pop, even when the destination is
a screen-pop-capable extension

CTI link extensions cannot be programmed on tip/ring or analog multiline
telephone module ports. You must choose an extension that is on an MLX port
module (008 MLX or 408 MLX).

You cannot program the first or fifth port on an MLX module as the CTI link
extension, because these ports are reserved for operator positions.

If you program a CTI link for a jack that is already programmed for 2B data, the CTI programming overrides the 2B data programming, and a 2B data device that you later connect to the jack will not function as such. For more information about 2B data, see .

You cannot use a system programming port as the CTI link extension.

You cannot program a port as a CTI link if it has a telephone or other device connected to it. However, the port may have the CTI link hardware plugged in.

You cannot program a CTI link port on an MLX module with firmware vintage 29. Use an earlier or later vintage.

Because CTI link programming requires that you busy-out the control unit slot where the MLX module with the CTI link is being added or removed, either you must use SPM software to program the CTI link, or the link must be located on a different module from the one where the system programming MLX-20L console is connected. The busy-out programming procedure is available from the system's Maintenance menu. For details about busying-out a slot in the control unit, see the *System Manager's Guide*.

An extension programmed as a CTI link should not be used as a phantom extension—an extension that does not serve equipment plugged into the system but used for a special purpose, for example, coverage by a voice messaging system.

Telephone Differences

Queued Call Consoles

A call to a QCC does not initiate screen pop at the operator position, which cannot use a CTI application. It can initiate screen pop at a screen pop capable-extension either when an operator transfers a call immediately, or during consultation when the operator talks to the system user before transferring a call. The screen pop shows calling party identification information, if available.

Direct-Line Consoles

A DLC can function either as an operator and *unmonitored* extension or it can use a CTI application and function as a *monitored extension*. An unmonitored extension uses the telephone to transfer or conference a call.

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A monitored DLC position functions like any other MLX or analog multiline extension that is using a CTI application. An outside call to the position initiates screen pop at the DLC extension. When a monitored DLC manually transfers or conferences a call, only the DLC extension number is passed to the destination extension(s).

In most respects, unmonitored DLCs operate like QCCs where screen pop is concerned. Calls to unmonitored DLCs do not initiate screen pop at the operator extension but when transferred or conferenced do initiate screen pop at a destination extension using a CTI application. However, calls transferred from a DLC's programmed Cover button do not initiate screen pop, even when the destination is a screen-pop-capable extension.

Single-Line Telephones

Single-line telephone extensions cannot take advantage of CTI applications.

Feature Interactions

Alarm	When a CTI link is reset (called a *broadcast reset*), any programmed Alarm buttons on operator consoles or connected alarm devices go on.
Conference	CTI link applications can control conferences of up to three parties, including those where one or two parties are outside the system.
	When performed by a QCC operator or unmonitored DLC operator, the Conference feature generates screen pop at screen-pop-capable destinations.
Conference *continued*	When a conference is initiated manually at the telephone of an extension using a CTI application, screen pop is initiated for inside parties only (not initiated for outside parties) at screen-pop-capable destinations, even when the application is used to complete the conference.
Coverage	When an extension is programmed as a CTI link, it is removed from membership in coverage groups.
	When a call is transferred from a programmed Cover button on an unmonitored DLC, screen pop is not initiated at the destination extension, even if it is using a CTI application.
Digital Data Calls	If you program a CTI link for an extension that is already programmed for 2B data, the 2B data programming is overwritten. The 2B data programming should be removed from the extension.
Directories	The extension that is programmed as a CTI link can have its label changed through system programming.
Forward and Follow Me	When an extension is programmed as a CTI link, forwarding to the extension is deactivated.

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Group Calling	When an extension is programmed as a CTI link, the extension is removed from membership in calling groups.
	To ensure that calling group overflow calls initiate screen pop at destination extensions, set all personal lines at calling group overflow receivers to No Ring. For example, if a unmonitored DLC overflow receiver has only a personal line—set to Immediate Ring—available for a calling group overflow call, the call arrives on the personal line button. Therefore, caller information is not sent to the destination extension when the DLC operator transfers the call.
Hold	A CTI link application can put an **SA** button call on hold.
Pools	When an extension is programmed as a CTI link, dial access to pools is removed from the extension.
Personal Lines	If an unmonitored DLC transfers a call that arrived on a personal line, the screen-pop caller information is sent to the destination extension, providing that the destination extension is using a CTI application.
System Access/ Intercom Buttons	CTI allows software applications on a worktop application to control placing a call on hold, retrieving a call from hold, inside transfer and 3-party conference, answering, and hanging up on the **SA** buttons of an extension using the application.
System Renumbering	When the dial plan changes, the applications must use the new extension number in any request. The Passageway Telephony Services security database should be updated with the dial plan changes so that permissions are set for the new extension numbers and cleared for the old extension numbers. Some settings in the CTI software applications may need to be updated as well.
Transfer	CTI link applications can control inside transfers, not transfers to outside numbers. When a CTI application is used to initiate a transfer, caller information is passed to a screen-pop-capable destination.
	When a transfer is initiated manually, using the telephone at an extension where a CTI application is installed, screen pop is not initiated at a screen-pop capable destination, even if the CTI application is used to complete the transfer.
	A transfer by a QCC or unmonitored DLC operator generates screen pop of inside or outside caller information at screen-pop-capable destinations.

Digital Data Calls

At a Glance

Users Affected	Users with digital data communications devices or videoconferencing systems only
Reports Affected	Extension Directory, Extension Information
Modes	Key, Hybrid/PBX
Factory Settings	
2B Data	Disabled
System Programming	To assign the 2B Data feature to an MLX adjunct extension:
	• **More**→Data→2xB Data→Enter adjunct extension number

Description

The MERLIN LEGEND Communications System supports many options for high-speed digital data transfer over ISDN (Integrated Services Digital Network) and T1 Switched 56 facilities, or between two extensions on the MERLIN LEGEND Communications System. To transfer data, you must have an ISDN terminal adapter or other system-compatible digital communications device connected to an MLX port.

⇒ NOTE:
A communications device may be included in a hardware and software application, for example, a video system. For more information about digital data and 2B data, see the *Data/Video Reference*.

The supported connections for making digital data calls are:

- ISDN Primary Rate Interface (PRI)

- ISDN Basic Rate Interface (BRI)

- T1 Switched 56 lines

An extension that includes a digital data communications equipment (DCE) device is called a *digital data workstation*. It may or may not include a telephone, but is always connected to at least one MLX extension jack. If the DCE includes an ISDN-BRI interface, it can use the system's 2B Data feature to combine the B-channels of a single MLX jack. Many group and desktop videoconferencing systems support 2B data, as do some DCE devices used for data only (not video) communications. 2B data is described in more detail in .

An MLX telephone can be connected to a desktop videoconferencing system that supports 2B data. This is called a *passive-bus MLX telephone*.

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If a videoconferencing system requires two B-channels but does not have an ISDN-BRI interface (some older group video systems have V.35 interfaces, for example), it may need to use the adjunct extension numbers of two different MLX extension jacks.

Primary Rate Interface (PRI)

The ISDN (Integrated Services Digital Network) Primary Rate Interface (PRI) is a standard access arrangement that can be used to connect the system to a network providing voice and digital data services.

PRI is a standard access arrangement that uses a DS1 facility (also called a *pipe)* to support twenty-three 64-kbps data connections (known as *B-channels*) and one 64-kbps connection (known as a *D-channel*) used to convey signaling information. Some PRI service allows only voice calls and does not support data. For more information, see "Primary Rate Interface (PRI) and T1" on page 441.

T1 Switched 56 Lines

A T1 facility can be connected to the MERLIN LEGEND Communications System to supply a number of data and voice services. Release 4.0 and later systems can support one Switched 56 (56 kbps) data connection on each Digital Signal Level 0 (DS0) channel of the T1 facility. There are twenty-four DS0 channels on each T1 facility. For more information, see "Primary Rate Interface (PRI) and T1" on page 441.

Basic Rate Interface (BRI)

ISDN NI-1 Basic Rate Interface (BRI) is a standard access arrangement that can be used to connect the system to a network providing voice and digital data services. BRI is supported in Release 4.0 and later systems only. BRI supports two 64-kbps data connections (known as *B-channels* or *lines*) for up to 128 kbps data throughput. For more information, see the section "Basic Rate Interface (BRI)" on page 82.

2B Data

The combination of two data-bearing channels (*B-channels*) allows ISDN-BRI devices (such as desktop and group video systems with ISDN-BRI interfaces) to connect to a single MLX port and make full 128-kbps connections using ISDN NI-1 BRI or ISDN PRI B-channels, or make 112-kbps connections when T1 Switched 56 facilities are used.

$\Longrightarrow$ **NOTE:**
   For more information about 2B data, see the *Data/Video Reference*.

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Devices used for 2B data must be connected to MLX jacks that are programmed as 2B data-capable. Devices that do not support 2B data should not be connected to ports programmed for 2B data.

The MLX extension numbers used to add 2B data capability must correspond to the adjunct extension number for the MLX telephone. By default in a 2-digit numbering plan, these adjunct extensions are numbered beginning with the digit 7. If the MLX extension is 20, its corresponding adjunct extension is 720. In a 3-digit or Set Up Space numbering plan, the adjunct extension number is, by default, the main extension number plus 200. (For details about numbering plans, see .)

Once an MLX jack is correct programmed, a 2B data-capable device properly connected to the jack should operate at the same data rate (up to 128 kbps) as an NI-1 BRI line connected directly to a central office.

2B data calls are really two calls, one for each B-channel. (Similarly, ISDN terminal adapters that connect to V.35 video systems must make and receive two calls in order to provide double the speed of a single digital call.)

$\Longrightarrow$ NOTE:
Users can use any combination of PRI, NI-1 BRI, and T1 to obtain a 2B data connection. However, data transfer speeds are slower on T1 Switched 56 lines (56 kbps on each line). Because of potential speed and other conflicts, it is best to use the same type of facility for both the calls that make up a 2B data call.

Considerations and Constraints

When a desktop video system is in passive-bus configuration (an MLX telephone is connected to it), and the connected MLX telephone is using one of the B-channels for any reason, the desktop video system can receive a call only as a 1B data call (some video systems do not support 1B data). This is called *B-channel contention* and can cause problems with features that require two B-channels, such as Voice Announce to Busy, Hold (including Hold for transfer or conferencing), Call Waiting, and Automatic Callback.

Features that redirect calls (for example, Coverage, Forwarding, Data Hunt Groups, and Night Service) can present problems for 2B data calls. For example, a video system should not be a coverage sender because another video system receiving calls for it can be assigned only one Cover button for the sending extension. Therefore, only one call of a 2B data call is sent to the receiver, and the second call continues to ring at the sending system.

See "Feature Interactions," later in this topic, for more information.

MLX modules of firmware vintage 29 are not compatible with 2B data. You must program the feature on a jack whose module is of earlier or later vintage.

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Applications

The high-speed data capabilities of the MERLIN LEGEND Communications System can be used for a number of applications, including videoconferencing, Internet access, and data transfer.

Depending upon its capabilities, a videoconferencing system may offer application-sharing, video collaboration, and data-sharing on either one or two data channels at a time (most video systems require two channels). If one channel is used, the maximum data speed is 64 kbps; if two channels are used, the maximum data speed is 128 kbps.

Telephone Differences

Queued Call Consoles

Queued Call Consoles cannot be programmed for 2B data. If a DLC is programmed for 2B data, the DLC cannot be changed to a QCC unless 2B data programming is first removed from the DLC.

Feature Interactions

Account Code Entry	Account Code Entry can be entered for calls made by digital data workstations and by video systems that support the use of # for feature codes. The account code must be entered before the telephone number.
Authorization Code	Data calls can use authorization calls. If Account Code Entry is also used, the authorization code must be entered after the account code.
	Authorization codes can be used by video systems that support the use of # for feature codes.
Auto Dial	A terminal adapter can make a call using an Auto Dial button by dialing the virtual number of the button (for example *#01*). A video system that supports the use of entering # for feature codes can use Auto Dial in the same fashion.
Automatic Route Selection	Data calls can be made using ARS. To make calls using ARS, digital devices simply dial the ARS dial-out code (usually *9*) followed by the telephone number. Data calls *must* be routed through ARS pools that access only PRI, NI-1 BRI, and/or Switched 56 T1 data lines. To make a 2B data call, a user must make two calls on different lines.
Barge-In	Data calls cannot be barged into.
Call Waiting	Call Waiting does not work on data calls. A call appears to wait but does not return to the extension when it becomes available. This feature should be disabled at video systems and data extensions.
	At a passive-bus MLX telephone, Call Waiting requires one of the B-channels needed for a 2B video call and should be used only when the video system is not active on, or receiving, a call.

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Callback	Videoconferencing systems that can dial feature codes using # can use Selective Callback. When a pooled line becomes available or the busy video system is idle, the queued call is made, one B-channel at a time. When the second B-channel becomes available, it can be used for the connection as well, providing the video system supports this capability.
	Although video systems can use either off-hook or on-hook Callback, you should only use off-hook Callback for 2B data connections. If you use on-hook Callback, the returning callback call is connected using only one B-channel.
	Automatic Callback should be disabled for digital data and videoconferencing extensions. It can be used at MLX passive-bus extensions at desktop video workstations.
Camp-On	You cannot camp onto data or video calls.
Conference	Conference does not function with data calls.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold for conferencing at a passive-bus MLX telephone when a 2B call comes in, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Coverage	Individual Coverage is not recommended for 2B data calls. Because a coverage receiver can have only one Cover button for each coverage sender, only a 1B data call arrives at the receiver. The second call of a 2B call continues to ring at the coverage sender.
	Coverage delays do not apply to data calls. Calls ring immediately.
	Coverage is not recommended for video extensions. However, an MLX passive-bus telephone can be covered during 2B video calls (when both B-channels are busy), but it must have a programmed Do Not Disturb button. The user at the telephone activates Do Not Disturb during 2B calls.
	A passive-bus MLX telephone can be a coverage receiver, but this gives the user little control when B-channels must be available for 2B data.
CTI Link	If you program a CTI link for an extension that is already programmed for 2B data, the 2B data programming is no longer functional. The 2B data programming should be removed from the extension.
Directories	Digital communications devices and videoconferencing systems cannot make use of Extension, Personal, or System Directories.
Do Not Disturb	Digital communications devices can activate Do Not Disturb by dialing the virtual button number (for example *#01*) of the Do Not Disturb button. Do Not Disturb can be activated by video systems that have the ability to dial strings and feature codes beginning with #.

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	A Do Not Disturb button should be programmed at MLX passive-bus telephones, and the feature should be activated during 2B video calls. Otherwise, voice calls ring and flash at the MLX telephone during 2B data calls, although they cannot be answered.
	The use of Do Not Disturb at a passive-bus MLX telephone allows voice calls to be covered while 2B video calls are in progress.
Forward and Follow Me	Digital communications devices can forward calls by dialing the associated feature code.
	Forward can be activated by video systems that have the ability to dial strings and feature codes beginning with #. 2B data calls are forwarded as two 1B data calls.
	Remote Call Forwarding is not available at video system extensions.
Group Calling	Lines intended for data calls should not be mixed in the same calling group with lines intended for voice calls.
	Video systems can connect only using 1B data connections (providing the video application supports 1B data) when receiving a call through a calling group (called a *Data Hunt Group* when used for data calls) because a calling group dispenses only one call to each calling group member.
Hold	Data calls cannot be put on hold.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold at a passive-bus MLX telephone when a 2B call comes in, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Last Number Dial	Terminal adapters can use Last Number Dial by dialing the Last Number Dial feature code. Last Number Dial can be activated by video systems that can dial strings and feature codes beginning with #.
Messaging	Messaging features are not available for data or video extensions, but they can be used by telephones at these workstations.
Multi-Function Module	An MFM cannot be used to connect a digital communications device or videoconferencing system.
Night Service	If a digital communications device or videoconferencing system is a member of the Night Service group, voice calls to the Night Service group do not ring at these extensions. Data or video calls do ring, and 2B data calls can be established. However, if there are two or more 2B data extensions receiving Night Service calls, the two 1B data calls that form a 2B data call may be directed to different extensions instead of the same one during Night Service operation.
Paging	Digital communications devices and videoconferencing systems can be assigned to paging groups. However, they should not be: they are not alerted if there is a call to a paging group, and they cannot make group pages.
Park	Data calls cannot be parked.

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Personal Lines	Personal lines can be assigned to digital communications devices and videoconferencing systems, which ideally should not share personal lines except with extensions at the same workstations. If they do share personal lines, the system manager should ensure that enough idle lines are available, particularly when a video system is receiving 2B data calls. Otherwise, the video system may receive only 1B data while another extension is using a second personal line.
	When a personal line is shared between a digital data device and a telephone, voice calls are directed only to the telephone and data calls are received only by the digital communications device.
	Personal lines can be shared between an MLX telephone and a desktop video system in passive-bus configuration. 2B data calls can be completed in this situation.
	Personal lines can also be shared between an MLX telephone and a digital communications device connected to the MLX adjunct extension, provided that the communications device supports this capability.
Pickup	A digital communications device can pick up a data call. Pickup is not recommended at video system extensions, although it can be used at a passive-bus MLX telephone.
Pools	If a videoconferencing system is programmed to have a single **Pool** button, two calls to that pool result in a 1B data call. However, if two separate pools are assigned to a videoconferencing system extension, then a 2B data call can be established. If a system includes two or more video systems sharing the same pools, incoming 2B data calls can be misrouted.
Privacy	Privacy is activated automatically for digital data calls.
Reminder Service	Digital communications devices and videoconferencing systems cannot receive reminder calls.
Remote Access	Data calls cannot be made into lines programmed for remote access.
Ringing Options	Personalized ringing has no effect on digital data calls.
	Some terminal adapters follow programmed ringing options and should be set to Immediate Ring.
	Videoconferencing systems are not affected by ringing options.
Signal/Notify	Signaling can be activated by video systems that have the ability to dial strings and feature codes beginning with #.
	A Notify signal can be received at a passive-bus MLX telephone, even when a 2B data or voice call is active.
Speed Dial	Personal and System Speed dial codes can be used on digital communications equipment (DCE).
	Speed Dial codes can be used only on digital video systems that have the ability to dial feature codes or number strings beginning with #.
System Access/ Intercom Buttons	Data calls cannot be presented as voice calls, although digital equipment can make calls using **ICOM** or **SA** Voice Announce buttons.

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Transfer	Data calls cannot be transferred.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold for transfer at a passive-bus MLX telephone when a 2B call arrives, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Voice Announce to Busy	Voice Announce to Busy should be disabled at digital data workstations.
	At a passive-bus MLX telephone, Voice Announce to Busy requires one of the B-channels needed for a 2B video call and should be used only when the video system is not active on, or receiving, a call.

Direct-Line Console

At a Glance

Users Affected	DLC operators only
Reports Affected	System Information (`SysSet-up`), Operator Information, Extension Information
Modes	All
Telephones	
MLX	MLX-20L, MLX-28D®
Analog Multiline	BIS-22D, BIS-34, BIS-34D, MERLIN II System Display Console
System Programming	Assign or remove an individual DLC position:
	• `Operator`→`Positions`→`Direct Line`
	Enable or disable DLC operator automatic Hold systemwide:
	• `Operator`→`DLC Hold`
	When one-touch Transfer is programmed, select either automatic or manual completion for system operators:
	• `Options`→`Transfer`→`One Touch`→`Transfer`
	Change the duration of the timer signaling a call still on hold:
	• `Operator`→`Hold Timer`
Maximums	
Operator positions (total DLCs and QCCs)	8
DLCs for each module	2
MLX Display Labels	See "Display" on page 225.
Factory Settings	
Personal Lines	
MLX DLC	Lines 1–18
Analog DLC	Lines 1–32
DLC Operator Automatic Hold	Disabled
Operator Hold Timer	60 sec (range 10–255 sec)
One-Touch Transfer with Automatic Completion	Enabled
Primary System Operator Position	First (lowest) jack on first MLX or analog extension module, fixed
Park Zone Extensions	881–888

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Description

A Direct-Line Console (DLC) is an answering position that system operators use
for the following purposes:

- Answer outside calls that are not directed to an individual user or group.

- Answer inside calls.

- Transfer inside and outside calls to an extension or an outside telephone
  number.

- Make outside calls, for example, for users with extensions restricted from
  making outside calls.

- Set up conference calls.

- Monitor system operation.

- Monitor group member or room status when used with Extension Status in
  calling group Call Management System (CMS) or Hotel mode.

A DLC operates like other multiline telephones. In all three modes of operation,
outside lines are assigned as personal lines to individual buttons on the console.
The lines assigned on an individual DLC can also be assigned to buttons on other
consoles or other extensions. Incoming calls can ring on any of the line buttons,
and several calls can ring simultaneously. The operator uses the **Transfer** button
to direct calls to other extensions or outside numbers.

When programmed systemwide, DLC operator automatic Hold puts an active call
on hold when a DLC operator presses another line button. When one-touch Hold
is programmed systemwide, pressing an Auto Dial button or DSS button also puts
an active outside call on hold. Both prevent accidental disconnection of callers
and speed call handling. A DLC operator hears an abbreviated ring as a reminder
of a call on hold every time the interval programmed for the operator hold timer
(10–255 seconds) expires.

A multiline telephone, assigned as a DLC through system programming, can use
both operator features and telephone features available for non-operator multiline
telephones to increase call-handling efficiency. The operator features that can be
assigned to buttons on the console are Alarm, Night Service, Missed Reminder,
and Send/Remove Message.

On a system with 29 or fewer lines, Alarm, Night Service, and Send/Remove
Message are assigned by default to analog DLCs on buttons 32–34. On a system
with more than 29 lines, Alarm is replaced with line 30, Night Service is replaced
with line 31, and Send/Remove Message is replaced with line 32. The first 18
lines on an MLX DLC are always factory-set as personal lines.

Each MLX DLC can have one or two Direct Station Selector (DSS) adjuncts
attached. A DSS cannot be attached to an analog DLC; however, the MERLIN II
System Display Console provides a built-in DSS.

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Inside Auto Dial buttons can also be programmed on DLCs. The operator can use these buttons to transfer a call, make an inside call, or determine whether an extension has Do Not Disturb turned on.

Considerations and Constraints

The maximum number of DLC operator positions is eight. These can be all DLCs or a mixture of DLCs and QCCs. When both DLCs and Queued Call Consoles (QCCs) are assigned, no more than four can be QCCs. In a system with both DLC and QCC positions, the *primary system operator position* must be a QCC. The primary operator position is the first (lowest) jack on the first MLX or analog extension module.

Only multiline telephones connected to the first and fifth extension jacks on an MLX or analog module can be assigned as DLCs. This includes DLC positions used for calling group supervisors and Call Management System (CMS) supervisors.

A maximum of two DLCs can be assigned for each MLX or analog extension jack module.

A DLC cannot be located off premises.

When only DLCs (and not QCCs) are assigned, the first DLC connected to the control unit is the primary system operator position. When the system is first connected, all Dial 0 calls, invalid destination calls from remote access users, and unassigned Direct Inward Dial (DID) calls are directed to this position. Call Management System equipment is connected to analog extension jacks that are assigned as DLCs. Two DLCs on the same module must be assigned for each CMS (maximum of two) connected to the system.

In Release 3.1 and later systems, if an extension is changed from a Direct-Line Console to a Queued Call Console, pool dial-out codes are disallowed on the QCC. You must use system programming to allow the use of pool dial-out codes on the QCC.

Mode Differences

Hybrid/PBX Mode

If QCCs are assigned with DLCs, a QCC must be connected to the first extension jack on the first MLX module in the first carrier as the primary system operator position.

Pool buttons cannot be assigned on a DLC; however, lines/trunks included in a pool can be assigned as personal line buttons on a DLC.

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Lines that are not assigned to buttons on the DLC can be selected by the operator only by dialing the pool dial-out code from the **SA** button or, on an MLX DLC, by selecting a DSS button for the pool dial-out code.

Lines that are not assigned to a pool cannot be selected from a DLC unless they are assigned to buttons on the console. Shared **SA** buttons cannot be assigned to DLCs.

Key and Behind Switch Modes

Only DLCs (not QCCs) are allowed in Key and Behind Switch modes.

A DLC operator cannot select lines that are not assigned to buttons on the console.

Telephone Differences

MLX Telephones

An MLX-20L assigned as a DLC can also be used for system programming by connecting it to any of the first five extension jacks on the first MLX module and designating the extension jack for system programming. The Home screens of the MLX-20L and MLX-28D are the same as those of non-operator telephones.

The built-in DSS field on the MERLIN II System Display Console corresponds to physical extension jacks in the control unit instead of specific extension numbers in the numbering plan. Therefore, DSS buttons on the MERLIN II System Display Console cannot be used to monitor the busy status of pools or calling groups.

All Dial 0 calls are directed to the QCC queue and do not ring at any DLC positions. A DLC cannot use Position Busy, which is only for QCCs. A DLC cannot be assigned as a position-busy backup for a QCC (only calling groups can provide backup for a QCC).

Analog Multiline Telephones

An analog DLC cannot be used for system programming.

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Feature Interactions

Alarm	A DLC operator uses an **Alarm** button to monitor system operation. The red LED next to the **Alarm** button on the operator console goes on when the system detects a problem that requires immediate attention. An operator with an MLX DLC can use Inspect to display the number of alarms; an operator with an analog DLC cannot use Inspect. On a system with fewer than 29 lines, an **Alarm** button is factory-assigned to analog DLCs with 34 or more buttons.
	On a system with more than 29 lines, **Alarm** is replaced with line 30. The **Alarm** button is not a fixed feature and can be assigned to any available button on an analog or MLX DLC.
Allowed/ Disallowed Lists	Allowed and Disallowed Lists can be assigned to DLCs.
Auto Dial	An inside Auto Dial button can be programmed on a DLC. A DLC operator can use the button to transfer a call, make an inside call, or determine whether or not the extension is available.
Calling Restrictions	Calling restrictions can be assigned to DLCs to prevent users with restricted extensions from bypassing restrictions by asking system DLC operators with unrestricted consoles to connect them to an outside call.
Call Waiting and Camp-On	When a DLC operator uses Camp-On to transfer a call to a busy extension, the call is placed in the call-waiting queue and the caller hears the call-waiting tone whether or not the extension has Call Waiting activated. If the system is programmed for one-touch Transfer with automatic completion, the operator uses Camp-On by pressing the **Transfer** button, dialing the extension manually, activating Camp-On, hanging up, and pressing either another line button or the **Transfer** button again. If the operator presses an Auto Dial or DSS button, the transfer is automatically completed and Camp-On cannot be used.
Coverage	A DLC can be both an Individual or Group Coverage receiver and a member of a coverage group. No more than eight Primary Cover, Secondary Cover, or Group Cover buttons can be assigned on a DLC. A DLC can also be a sender.
	When a DLC is used in a system with a CTI link and is not itself using a CTI link application (that is, the DLC is unmonitored), calls transferred from a Cover button on the DLC do not initiate screen pop, even at screen-pop-capable destinations.

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CTI Link	A DLC's **SA** calls can be controlled by a CTI application. When they are, the DLC position functions like any other MLX or analog multiline extension that is using a CTI application. An outside call to the position initiates screen pop at the DLC extension.
	Calls to unmonitored DLCs (those not using a CTI application) do not initiate screen pop at the operator extension but when transferred or conferenced—even if they arrived on the DLC's personal line button—do initiate screen pop at a destination extension using a CTI application. However, calls transferred from a DLC's programmed Cover button do not initiate screen pop, even at screen-pop-capable destinations.
Directories	An operator with an MLX DLC can use all Directory features.
Do Not Disturb	The green LED next to an Auto Dial or DSS button on a DLC turns on when a user activates Do Not Disturb. In Release 2.0 and later systems, an operator can inspect a DSS button with a red LED on to see whether the extension is busy or using Do Not Disturb. If the user at the extension has turned on Do Not Disturb, the Do Not Disturb message is posted and appears on the operator's display. The message may also mean that the user has posted the message without turning on the feature.
Extension Status	Extension Status capability can be assigned to DLCs only. In hotel configuration, only a DLC operator can change an extension to Status 0. In the Group Calling/Call Management System configuration, a calling group or CMS supervisor uses a DLC to monitor and change group member status.
Forward and Follow Me	A DLC operator can forward calls to extensions and, if the capability is assigned in system programming, to outside telephone numbers. In Key mode because outside lines are assigned as personal line buttons on the console, the ability to forward calls received on each outside line (excluding loop-start lines with unreliable disconnect) to an outside number must also be assigned in system programming; it can be assigned to only one telephone for each individual line/trunk. In addition, the DLC must be designated as the principal user. In Hybrid/PBX mode, it can be assigned to multiple telephones for each pool.
Group Calling	A DLC can be a member of a calling group and is used in the calling group supervisor position.
Hold	When programmed systemwide, DLC operator automatic Hold puts an active call on hold when a DLC operator presses another line button. When one-touch Hold is programmed systemwide, pressing an Auto Dial button or DSS button also puts an active outside call on hold. This prevents accidental disconnection of callers and speeds call handling. If a call is on hold, a DLC operator hears an abbreviated ring as a reminder each time the interval programmed for the operator hold timer (10–255 seconds) expires.

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Messaging	The Send/Remove Message feature is only for operators. It is used by a DLC operator to turn on the Message LED to indicate a waiting message. For telephones without a display, Send/Remove Message is the only way the Message LED can be turned on and off by operators. The **Send/Remove Message** button is factory-assigned to analog DLCs on button 34. The **Send/Remove Message** button is replaced with line 32 when the system has more than 29 lines. Send/Remove Message can be assigned to any available button on an analog or MLX DLC.
Multi-Function Module	An MFM cannot be assigned as a DLC position.
Night Service	A **Night Service** button is assigned only to operators and is used to activate and deactivate Night Service. It is factory-assigned to analog DLCs on button 31. On a system with more than 29 lines, the **Night Service** button is replaced with line 31. The **Night Service** button can be assigned to any available button on an analog or MLX DLC.
Paging	A line/trunk jack programmed for Loudspeaker Paging can be assigned to a button on an analog or MLX DLC for one-touch access. An MLX DLC operator can also access a loudspeaker paging system by dialing the line number (801–880) for the line/trunk jack of the loudspeaker system.
Park	Eight park zone codes (factory set extension numbers 881–888) are automatically reserved for parking calls from a DLC. These numbers cannot be assigned to the DSS buttons on a MERLIN II System Display Console. To assign park zones to a DSS connected to an MLX DLC, the numbers must be in the range programmed for the **Page** buttons. An operator can program park zone codes on inside Auto Dial buttons. An inside Auto Dial button can also be programmed with a user's or operator's own extension number and can be used to park calls.
Personal Lines	The factory setting in all modes for analog DLCs automatically assigns the first 32 lines connected to the system as personal lines. On MLX DLCs, the first 18 lines are automatically assigned as personal lines.
Pickup	A DLC can be part of a pickup group, allowing other group members to provide backup for the DLC. In turn, a DLC operator uses Pickup to answer calls on lines that are not assigned to buttons on the console.
Pools	In Hybrid/PBX mode, a **Pool** button cannot be assigned to a DLC. A DLC operator accesses a pool by dialing the pool dial-out code from an **SA** button or, on an MLX DLC with a DSS, by pressing the DSS button associated with the pool dial-out code. Lines/trunks assigned to pools can be assigned as personal lines only on a DLC.
Reminder Service	DLC operators can use Reminder Set to set or cancel reminders directed to other users. The operator can also see when a reminder has been missed, because the user did not answer the call, and then cancel the missed reminder. The Missed Reminder feature can be used only at operator positions.
Remote Access	Invalid remote access calls can be programmed to ring on an **SA** or **ICOM** button on a DLC.

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Speed Dial	System Speed Dial numbers can be programmed from the first DLC connected to the first (lowest) analog extension jack on the module in slot 01 of the control unit.
System Access/ Intercom Buttons	Shared **SA** buttons cannot be assigned to DLCs.
Transfer	A DLC operator uses transfer to direct calls to other users. See for further information.

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Direct Station Selector: MLX

At a Glance

Users Affected	Operators
Reports Affected	Operator Information
Modes	All
Telephones	MLX-20L, MLX-28D
System Programming	Assign extension numbers selected when DSS buttons are pressed:
	• SysRenumber→Single→**More**→DSS Button
Maximums	16 DSSs for each system
	2 DSSs for each console (1 for each console if 3 or more consoles in one carrier)
	150 extension numbers for each DSS (3 pages of extension numbers, 50 extension numbers for each page)
Factory Settings	
Page 1 button	Starts with Extension 0
Page 2 button	Starts with Extension 50
Page 3 button	Starts with Extension 100

Description

One or two Direct Station Selectors (DSSs) can be connected to an MLX-20L or MLX-28D telephone assigned as an operator position. The DSS enhances the call-handling capabilities of an operator with a Direct-Line Console (DLC) or a Queued Call Console (QCC). When connected to an MLX-20L telephone used as a system programming console, the DSS facilitates system programming and centralized telephone programming procedures. When used with the Extension Status feature or by a calling group or Call Management System (CMS) supervisor, the DSS allows a user to determine, at a glance, calling group or CMS group member status or room status.

The DSS provides the following call-handling capabilities or information:

- One-touch dialing of inside extensions

- One-touch Transfer

- One-touch Hold (DLC only)

- On-hook, off-hook, or Do Not Disturb status of extensions in the system

- Extension status indication (room or group member status)

- Calling group queue status

- Message-waiting LED status

- Operator park zones

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The DSS, shown in Figure 15, has an array of 50 buttons, called *DSS buttons*, with red LEDs. A maximum of two DSSs can be connected to provide a field of 100 button. Ten additional fixed-feature buttons with green LEDs are at the bottom of the DSS. The first three (from left to right) on the top row are **Page** buttons, which are used to select the range of extension numbers represented by the DSS buttons. A fourth button (lower leftmost) is the **Message Status** button, which is used to turn message status operation on and off. When you are using the Message Status feature, the LED next to each DSS button indicates whether or not a message is waiting from a system operator. The remaining six buttons on the first DSS and the 10 buttons at the bottom of the second DSS are not operable (reserved for future use), except on a QCC, where the rightmost button on the second to last row of the first DSS activates the Direct Voice Mail feature.

A page is the range of extension numbers assigned to a DSS. A single DSS can have three pages of extension numbers, with 50 extension numbers for each page, for a total of 150 extension numbers. When two DSSs are connected, each page's capacity is increased to 100 extension numbers. The two connected DSSs can have three pages of extension numbers for a total of 300 extension numbers.

The beginning number for each page is assigned through system programming. When an operator presses a **Page** button, the page of the DSS corresponds to a range of 50 (for a single DSS) or 100 (for two connected DSSs) extension numbers. The factory settings for **Page** buttons are as follows: the **Page 1** button begins with Extension 0; the **Page 2** button begins with 50; and the **Page 3** button begins with 100.

If only one DSS is attached, each **Page** button assignment sets the console for a range of 50 extension numbers. If two DSSs are attached, each **Page** button assignment sets the console for a range of 100 extension numbers. If 2 DSSs are used, the factory setting *must* be changed so that the difference between extensions assigned to the range is at least 100. For example, assign **Page 1** button to begin with Extension 100, **Page 2** button to begin with Extension 200, and **Page 3** button to begin with Extension 300.

The beginning extension number associated with each **Page** button is the same for all operator positions and cannot be programmed differently for individual operator positions.

Each **Page** button range can begin with any extension number that is a multiple of 50, in the range of 0 to 9950. However, to speed call handling, the assignments should be sequential; the range starting with the lowest extension number should be assigned to **Page 1**, the range starting with a higher extension number should be assigned to **Page 2**, and the range starting with a still higher extension number should be assigned to **Page 3**. You cannot program individual buttons on a DSS.
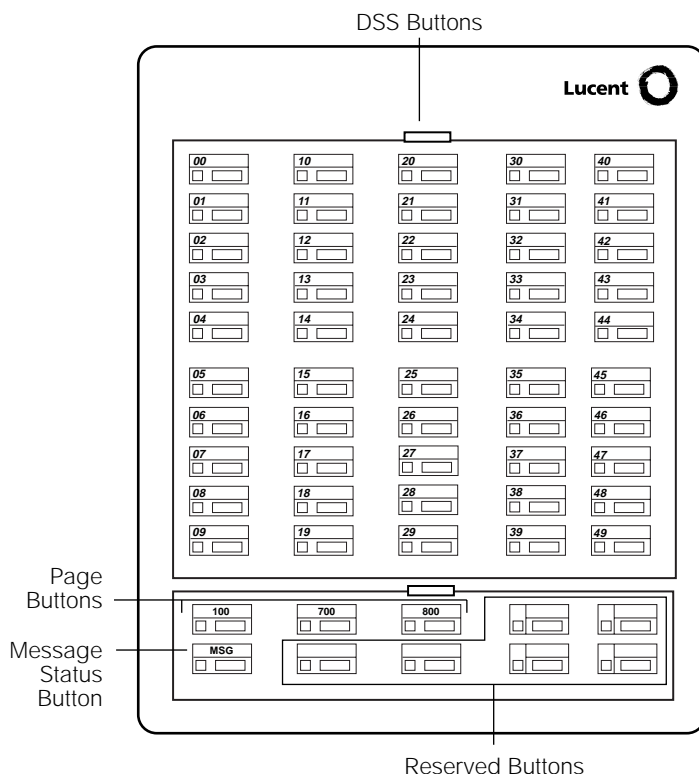
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DSS Buttons

Page Buttons

Message Status Button

Reserved Buttons

Figure 15.   Direct Station Selector

Each of the 50 DSS buttons corresponds to one of three extension numbers. The specific extension number is determined by the **Page** button that an operator presses. For example, if the first extension number for the **Page 1** button is programmed to be Extension 100, the DSS buttons and associated LEDs on a single DSS correspond to Extensions 100 to 149. The specific extensions represented by each DSS button are assigned from top to bottom, left to right, as shown in Figure 15.

A DSS button can represent one of the following:

- User extension number

- Line/trunk number (801–880)

- Pool dial-out code (Hybrid/PBX only)

- Calling group extension number

- Paging group extension number

- Operator park zone extension number

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- Access code (usually *9*) for Automatic Route Selection (ARS) or Idle Line Preference

- Remote access dial code

- Listed Directory Number (the extension for the QCC queue)

The use and definition of each DSS button's LED depend on the extension represented by the button and on whether the operator position is used for normal call handling, calling group or CMS supervisory operation, Extension Status in Hotel configuration, or message status operation. See "Extension Status" on page 256 and "Group Calling" on page 281 for additional information.

Normal Call-Handling Operation

Normal call-handling operation is active when the position is not in Message Status or Extension Status operation. The DSS buttons are used for one-touch dialing of extension numbers. When a button for a telephone extension, calling group extension, or paging group extension is pressed, the extension number is dialed automatically. In Hybrid/PBX mode, an operator can either select a specific pool or dial the Automatic Route Selection (ARS) code by pressing the DSS button for a pool dial-out code or ARS code. If, before lifting the handset, an operator presses a DSS button for any of the extensions or codes mentioned above, the speaker is turned on automatically and an **SA** or **ICOM** button is selected.

An operator can also use a DSS button to activate a feature that requires an extension number, for example, Barge-In, Conference, Send/Remove Message, Forward (including Remote Call Forward), Follow Me, Leave Message, Reminder service, and Transfer. To do this, the operator presses the **Feature** button, dials the feature code, and then presses the DSS button for the extension number.

The result of pressing a DSS button while on a call depends on the type of operator position, the type of button pressed, and whether the system is programmed for one-touch Hold or one-touch Transfer, as described in Table 10 and Table 11. For a QCC operator position, see Table 12.

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**Table 10.   Results of Pressing DSS Button while Active on a Call: DLC Position with
One-Touch Hold**

Extension Type	Result
Individual, calling group, paging group	An outside caller is put on hold, an **SA** or **ICOM** button is selected automatically, and the extension number is dialed automatically. Transfer is not completed automatically.
	An inside call is not put on hold, and transfer is not activated automatically. If the DSS button is for a user, a beep is sent to that user. If the DSS button is for a calling group or paging group, pressing the button has no effect.
Pool dial-out code, ARS code	The caller is put on hold, transfer is initiated, the pool dial-out code or ARS code is automatically dialed, and the operator can then dial the outside telephone number. Transfer completion is always manual—the operator must press another button or hang up to complete the transfer.
Park zone	The Park feature is activated, and the call is put on hold on the selected park zone to allow Pickup from any extension in the system.
Line/trunk number, Listed Directory Number, unassigned extension numbers, dial 0 calls	Ignored, no effect

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Table 11.   Results of Pressing DSS Button while Active on a Call: DLC Position with One-Touch Transfer

Extension Type	Result
Individual or calling group	The caller is put on hold, transfer is initiated, an **SA** or **ICOM** button is selected automatically, and the extension number is dialed automatically. If manual completion is programmed, an operator must press another button or hang up to complete the transfer. If automatic completion is programmed, the transfer is completed automatically.
Pool dial-out code or ARS code	The caller is put on hold, transfer is initiated, the pool dial-out code is automatically dialed, and the operator can then dial the outside telephone number. Transfer completion is always manual; the operator must press another button or hang up to complete the transfer, whether the system is programmed for manual or automatic completion.
Paging group	The caller is put on hold, an **SA** or **ICOM** button is selected automatically, and the paging group extension number is dialed automatically. Transfer is not completed automatically, whether the system is programmed for one-touch Hold or one-touch Transfer, because calls cannot be transferred to a paging group.
Park zone	The Park feature is activated and the call is put on hold in the selected park zone to allow Pickup from any extension in the system.
Line/trunk number, Listed Directory Number, unassigned extension numbers, dial 0 calls	Ignored, no effect

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Table 12.   Results of Pressing DSS Button while Active on a Call: QCC Position

Extension Type	Result
User or calling group	The caller is put on hold, the transfer is initiated, and the extension is dialed automatically. If extended call completion is programmed with the Manual option, the operator must press the **Release** button or hang up to complete the transfer. If extended call completion is programmed with the Automatic option, the transfer is completed automatically.
Pool dial-out code or ARS code	The caller is put on hold, the transfer is initiated, and the pool dial-out or ARS code is dialed automatically. The operator can then dial the telephone number. Transfer completion is always manual whether extended call completion is programmed as manual or automatic.
Paging group	The caller is put on hold, a **Call** button is automatically selected, and the paging group extension number is automatically dialed. The call transfer process is not initiated automatically because calls cannot be transferred to a paging group.
Park zone	The Park feature is activated, and the call is put on hold in the selected park zone to allow Pickup from any extension in the system.
Line/trunk number, Listed Directory Number, unassigned extension numbers, dial 0 calls	Ignored, no effect

The red LEDs for each DSS button are used to determine whether a user is on a call (off hook), has no call active (on hook), or is using Do Not Disturb. The LED indication (on) is the same for off hook and Do Not Disturb; however, in Release 2.0 and later systems, an operator can inspect the DSS button to determine whether the user is on a call or has activated Do Not Disturb.

For a calling group extension on a DSS button, the red LED indicates the status of the queue. In Release 5.0 and later systems, the DSS button flashes if the number of calls waiting in the queue is greater than or equal to Threshold 1 but fewer than Threshold 3. The LED lights steadily if the number of waiting calls is greater than or equal to Threshold 3. If three thresholds are needed, an inside Auto Dial button should be used to monitor queue status.

For a pool dial-out code on a DSS button, the red LED indicates line/trunk availability.

Table 13 shows the meanings of the red LEDs for DSS buttons while the operator position is in normal operation and message status is not active.

Table 13.　　**LED Meanings for Normal Call-Handling Operation**

LED Status	Extension Type	Meaning
Off ☐	Individual	The person is not on the telephone and is not using Do Not Disturb.
	Line/Trunk number	The line/trunk is not in use.
	Pool dial-out code	At least one line/trunk is available for making an outside call.
	Calling group	The calling group queue is below the programmed threshold (in Release 5.0 and later systems, below Threshold 1).
	Paging group	The group is available for making a group announcement.
	Operator Park Zone	A call is not parked on this park zone code.
	ARS, Remote access, Listed Directory Number	Not applicable, red LED is always off.
On ■	Individual	The person is on the telephone or has activated the Do Not Disturb feature.
	Line/trunk number	The line/trunk is in use.
	Pool dial-out code	No lines/trunks are available in this pool for outside calls.
	Calling group	The calling group queue is at or above the allowable threshold (in Release 5.0 and later systems, at or above Threshold 3).
	Paging group	An announcement is being made to a paging group.
	Operator Park Zone	A call is parked in this park zone.
	ARS, Remote Access, Listed Directory Number	Not applicable, red LED is always off.
Fast flashing ☀	Individual	The person is calling the system operator position.
Slow flashing ▬	Individual	A call transferred by the system operator to the extension is returning.
	Calling group	The group queue is at or above Threshold 1 and below Threshold 3 (Release 5.0 and later systems).
	Line/trunk number	A call is ringing on this line/trunk.

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⎯⎯> **NOTE:**
> Fast flashing is applicable only to individual extensions. Slow flashing is applicable only to individual extension types and line/trunk numbers.

Calling Group or CMS Supervisory Operation

A supervisor with a DLC switches from normal call handling to supervisor operation by pressing the **Feature** button, dialing *32*, and pressing the **Hold** button. The effect of pressing a DSS button while in supervisor operation is the same as that described for normal call-handling operation. See "Group Calling" on page 281 for additional information.

When the supervisory position is not in Message Status operation, the green LED next to the **Message Status** button is off. The red LED next to each DSS button for a calling group member's extension is used to monitor the availability of members to take calls directed to the calling group. The meaning of the red LED associated with each group member is shown in Table 14.

Table 14.   LED Meanings for Supervisor Operation without Message Status Active

LED Status	Extension Status	Meaning
Off □	0	The extension is signed out from the group, and the member is unavailable to take calls.
On ■	2	The extension is signed into the group, and calls can be sent to the member.
Slow Flashing ⎯▪⎯	1	Used for CMS only: the extension is in the after-call work state, and the group member is not available to take calls.

⎯⎯> **NOTE:**
> The LEDs next to DSS buttons for all other types of extensions are always off and have no meaning.

Extension Status Operation (Hotel Configuration)

When Extension Status is in Hotel configuration, the Extension Status feature is assigned to and removed from individual DLCs through system programming (see "Extension Status" on page 256 for details). Hotel Extension Status operation is always active unless the operator presses the **Message Status** button to use the Auto Dial or DSS buttons to see message-waiting status for each extension. Pressing a DSS button while in Hotel Extension Status operation has the same effect as for normal call-handling operations.

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When not in Message Status operation, the red LED next to each DSS button for a room extension is used to monitor room availability, and the DSS button is used to restrict the extensions when the rooms are not occupied.

The meaning of the red LED next to the DSS button for each room is shown in Table 15.

Table 15.   LED Meanings for Hotel Extension Status Operation without Message Status Active

LED Status	Extension Status	Meaning
Off □	0	The room is occupied, and the extension is in regular call-handling state.
On ■	2	The room is vacant and available for occupancy, and outside calls cannot be made from the extension.
Slow flashing	1	The room is vacant and ready for cleaning. Outside calls cannot be made from the extension.

$\Longrightarrow$ **NOTE:**
The LED next to the DSS button for all other types of extensions is always off and has no meaning.

Message Status Operation

Message Status operation activates when an operator presses the **Message Status** button (the lower left feature button on the first DSS) while in normal call-handling, calling group, CMS supervisory, or Extension Status operation. The green LED next to the **Message Status** button is on when Message Status operation is active.

While the position is in Message Status operation, the red LEDs next to the DSS buttons for user extensions indicate whether or not the Message LED has been turned on by a system operator and do not light when a Message LED has been turned on by another source, such as a fax machine or another user. An LED associated with a calling group extension or a pool dial-out code is always off while the position is in Message Status operation.

If an operator wants to turn on the message-waiting LED to indicate that a message is waiting, the operator first checks the LED next to the recipient's DSS button to determine whether or not the recipient's message-waiting LED is on. The operator's DSS or console LEDs do not light when a message-waiting LED has been turned on by another source, such as a fax machine or another user. To leave a message-waiting indication when the LED is apparently off, the operator presses the programmed Send/Remove Message button, followed by the DSS

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button or Auto Dial button for the person for whom the message is intended. The operator presses the **Message Status** button to return to normal call handling.

By pressing the **Feature** button and selecting Leave Msg from the display, MLX DLC operators can leave a message at another extension. This does not affect Message Status operation because Message Status shows only messages sent with the Send/Remove Message button. See "Messaging" on page 374 for more information about sending and receiving messages.

For calling group or CMS supervisory operation or for Hotel Extension Status in Message Status operation, the red LED next to a DSS button for a user extension indicates whether or not a message has been sent by any of the operator positions. On a button for a calling group extension number, the red LED indicates the status of the queue. When a DSS button stores a pool dial-out code, the red LED indicates line/trunk availability. The meanings of the red LEDs next to the DSS buttons while the operator position is in Message Status operation are shown in Table 16 and Table 17.

Table 16.   LED Meanings for Hotel Extension Status Operation with Message Status Active

LED Status	Extension Type	Meaning
Off ☐	Individual	A system operator has not turned on the Message LED.
On ■	Individual	A system operator has turned on the Message LED to indicate a waiting message.
Off ☐	All other types of extensions	No meaning

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Table 17.   LED Meanings for Supervisor or Hotel Extension Status Operation with Message Status Active

LED Status	Extension Type	Meaning
Off ☐	Individual	The person is not on the telephone and is not using Do Not Disturb.
	Line/trunk number	The line/trunk is not in use.
	Pool dial-out code	At least one line/trunk is available for making an outside call.
	Calling group	The calling group queue is below the programmed threshold (in Release 5.0 and later systems, below Threshold 1).
	Paging group	The group is available for making a group announcement.
	Operator park zone	A call is not parked on this park zone code.
	ARS, Remote Access, Listed Directory Number	Not applicable; the red LED is always off.
On ■	Individual	The person is on the telephone or is using Do Not Disturb.
	Line/trunk number	The line/trunk is in use.
	Pool dial-out code	No lines/trunks are available on this pool for outside calls.
	Calling group	The calling group queue is at or above the allowable threshold (in Release 5.0 and later systems, at or above Threshold 3).
	Paging group	An announcement is being made to the paging group.
	Operator park zone	A call is parked on this park zone code.
	ARS, Remote Access, Listed Directory Number	Not applicable; the red LED is always off.
Slow flashing	Calling group	The group queue is at or above Threshold 1 and below Threshold 3 (Release 5.0 and later systems).

Considerations and Constraints

One or two DSSs can be connected to an MLX-20L or MLX- 28D telephone. DSSs cannot be connected to an MLX-5, MLX-5D, MLX-10®, MLX-10DP®, MLX-10D®, MLX-16DP®, analog multiline, or single-line telephone.

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Only a DLC or QCC can have a DSS.

Operator park zone codes must be included in the extension number range specified for one of the **Page** buttons.

If an extension is busy because features are being assigned through system or centralized telephone programming, the red LED next to the associated DSS button is on to indicate the busy condition.

When a QCC is active on a call, a press of a DSS button for a line/trunk number, Listed Directory Number, or unassigned extension number is ignored.

In Release 2.1 and later systems, when a call is forwarded to a multiline telephone that has a DSS button for the forwarding telephone, the light next to the DSS button does not flash.

DSSs that are out of the building require additional local power. Any console with two DSSs requires local power.

Mode Differences

Behind Switch Mode

In Behind Switch mode, DSS buttons for operator park zones do not work.

Feature Interactions

Automatic Route Selection	The LED next to a DSS button for the ARS code is always off.
Barge-In	After making a call to an extension by using a DSS button on a DLC, activate Barge-In by pressing a programmed Barge-In button. QCC operators select the feature from the display.
Camp-On	When Camp-On is used to complete a transfer and the call returns, the LED of the DSS button associated with the extension transfer destination stays off and does not flash as it does for a transfer return.
Coverage	When an operator transfers an Individual or Group Coverage call and it returns, the red LED next to the DSS button for the sender does not flash as it does when a call received on another type of line button returns.
Direct Voice Mail	On a Queued Call Console's DSS, the Direct Voice Mail button is a fixed button, the rightmost button in the second row from the bottom.

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Display	When an operator presses a DSS button for an extension number, the extension label, if any, and the extension number show on the display while it is dialed. When an operator presses the **Inspct** button and then a **Page** button, the display shows Page, the page number selected, and the first extension number in the range. When and operator presses the **Inspct** button and then the **Message Status** button, the display shows Message Status to indicate that the DSS is in Message Status operation.
	When an operator presses a DSS button representing an extension number after pressing the **Inspct** button, the display shows the extension label, extension number, number of messages, and for Release 2.0 and later systems, any posted messages.
Do Not Disturb	In Release 2.0 and later systems, an operator can use the **Inspct** button to check the status of an extension whose red LED is on. If the user at the extension is using Do Not Disturb, the Do Not Disturb message is also posted and appears on the operator's display. (However, the message may also mean that the user has posted the message without turning on the Do Not Disturb feature.)
Extension Status	A calling group, CMS supervisor, or an operator at a DLC with Extension Status assigned can change the status of a group member or room by pressing a programmed Available or Unavailable extension status button and then pressing the DSS button for the group member or room.
Forward and Follow Me	Activate Forwarding by pressing a programmed button or using a feature code and then pressing a DSS button for the extension where calls should go. Activate Follow Me by dialing the feature code and then pressing a DSS button for the sender's extension number.
Group Calling	In releases prior to 5.0, The DSS button's LED for a calling group extension number indicates the status of calls in the calling group queue. The LED is on when calls are at or above the programmed threshold and off when the number is below the threshold.
	In Release 5.0 and later systems, a DSS button used as a Calls-in-Queue Alarm button only indicates two alarm threshold levels instead of the three that a programmed inside Auto Dial button can display. A DSS either flashes or lights steadily. The button is unlit when the number of calls in the queue drops below Threshold 1. The LED lights steadily when the number of calls in queue is greater than or equal to Threshold 3. Otherwise, it flashes. If DSS buttons are used to monitor calling group queue status, only two alarm thresholds should be set.
Hold	If one-touch Hold is programmed, only outside callers are automatically put on hold when a DSS button for a user, calling group, or paging group is pressed while another call is active. For an inside caller, pressing a DSS button for a user sends a manual signal to the user's extension; pressing a DSS button for a calling group or paging group has no effect.

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Inspect	Inspect can be used to determine the corresponding extension for each DSS button. To use Inspect, press the **Page** button for the range of extensions, press the **Inspct** button, and press each DSS button to see what it represents; the label and number of messages in the mailbox are also shown. Information is displayed on only one extension at a time. To see information for another range of extensions, press the **Home** button and repeat the process. In Release 2.0 and later systems, if a message is posted at an extension associated with a DSS button, the message is shown on Line 2 of the display when the operator inspects the DSS button.
Last Number Dial	An extension dialed by pressing a DSS button is not stored for Last Number Dial.
Messaging	When an operator presses the **Message Status** button on a DSS, the LEDs on the DSS reflect only messages left by an operator's using the Send/Remove Message or Leave Message features and not messages left by any co-worker (non-operator) using the Leave Message feature.
	In Release 2.0 and later systems, an operator can view a posted message at an extension by pressing the **Inspct** button and then the DSS button.
Paging	The DSS button for a line/trunk programmed as a loudspeaker paging jack only indicates whether or not the paging system is in use. The button cannot be used to gain access to the loudspeaker paging system. It can be used only to dial an extension for a paging group. When a DSS button for a paging group is pressed, the transfer process is not initiated, even if one-touch Transfer (DLC only) or automatic extended call completion (QCC only) is programmed for the system. Calls cannot be transferred to a paging group extension number.
Park	Park zone codes cannot be assigned to DSS buttons on MERLIN II System Display Consoles. In order for the park zones to be assigned to a DSS connected to an MLX telephone, the extension numbers must be in the range programmed for the **Page** buttons. Only DSS buttons corresponding to an operator park zone can be used to park calls; calls cannot be parked on a DSS button corresponding to any other type of extension.
	When an operator parks a call by using a park zone DSS button and the call returns, the red LED associated with the park zone where the call is parked stays off and does not flash as it does for a transfer return.
	To park a call at a park zone, an operator with a DSS presses the DSS button for the park zone while the caller is on the line. If an operator tries to park a call by pressing the **Transfer** button followed by the DSS button for the park zone, the call is put on hold for transfer and is not parked. This error can transfer a call to an outside number.
Pickup	DSS buttons associated with line/trunk numbers (801–880) cannot be used for answering calls on specific lines through individual Pickup. These DSS buttons are used only for checking the busy or not busy status of each line/trunk.

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Saved Number Dial	An extension dialed by pressing a DSS button is not stored for Saved Number Dial.
Signal/Notify	If a user presses a Signal button programmed with an operator's extension while making a call to the operator, the LED next to the DSS button associated with the user changes from flashing to on while the Signal button is held down.
System Renumbering	The beginning extension number for each page is assigned through system programming. The factory settings are as follows: **Page 1** button begins with Extension 0, **Page 2** button begins with Extension 50, and **Page 3** button begins with Extension 100.
Transfer	The Transfer option of one-touch Hold applies only to outside calls on a DLC and not to calls on a QCC. When one-touch Hold is programmed and an operator presses a DSS button with an inside caller on the line (or, in Hybrid/PBX mode, with an outside caller on an **SA** button), the call is not put on hold and a signal is sent to the extension corresponding to the DSS button pressed. When one-touch Transfer (with either manual or automatic completion) is programmed and an operator presses the DSS button while the caller is on the line and no **SA** or **ICOM** button is available to transfer the call, the call does not go on hold. If the operator hangs up, the caller is disconnected.

Transfer is always initiated and transfer completion is manual when an operator presses the DSS button corresponding to a line/trunk number, pool dial-out code (Hybrid/PBX only), or ARS access code (Hybrid/PBX only), even if one-touch Hold, one-touch Transfer with automatic completion (DLC only), or automatic extended call completion (QCC only) is programmed for the system.

When an operator transfers an Individual or Group Coverage call and the call returns, the red LED next to the DSS button for the sender does not flash as it does for a transfer return for calls received on other types of line buttons.

When an operator transfers a call to a calling group and the call returns, the red LED associated with the calling group does not flash as it does for a transfer return from a user's extension.

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Direct Voice Mail

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Extension Directory
Modes	Hybrid/PBX, Key
Telephones	All
MLX Display Label	Direct VM [DrcVM]
Programming Code	*56
Feature Code	56

Description

Direct Voice Mail allows you to place or transfer a call directly to another person's voice mail without ringing that person's telephone.

You can either transfer an active call to an extension's voice mail or place an intercom call directly to the extension's voice mail. Activating Direct Voice Mail while on hook selects the next available **SA** or **ICOM** button (at least one **SA** or **ICOM** button must be available). To activate Direct Voice Mail, do one of the following:

- Press the programmed Direct Voice Mail button and press a DSS button or Auto Dial button, or select a Directory entry for the extension.

- Press the programmed Direct Voice Mail button and dial the extension number.

- Press the **Feature** button, select Direct VM [DrcVM], and dial the extension number.

- For a single-line telephone only:

  — If active on a call, press the **Flash** or **Recall** button (or if your telephone does not have positive disconnect, press and release the switchhook). Then dial *#56* followed by the extension number.

  — If you hear dial tone, dial *#56* followed by the extension number.

On display telephones, the display shows the message Send Voice Mail to: before the extension is selected or dialed.

The green LED associated with the Direct Voice Mail button lights when the feature is activated. The LED turns off when the feature is deactivated (by pressing the Direct Voice Mail button again) or when the call or transferred call has gone to voice mail.

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If you have a programmed Direct Voice Mail button, you can also activate Direct Voice Mail while transferring or making a call by pressing the Direct Voice Mail button. The call or transferred call goes to the extension's voice mail. In this case, the green LED does not turn on.

If you activate Direct Voice Mail to transfer a call and then press the Direct Voice Mail button to deselect the feature, the original call is still on hold for transfer. You can either enter an extension number and complete the transfer to another extension (by hanging up or pressing the **Transfer** button) or press the line button to pick up the call.

Considerations and Constraints

You cannot place a call to your own voice mail by using Direct Voice Mail.

If you have an MLX display telephone and use the System or Extension Directory to select the extension to receive voice mail, the display does not show the message Send Voice Mail to:.

Mode Differences

Behind Switch Mode

Although programming a Direct Voice Mail button is allowed, the button serves no function in Behind Switch mode because no on-premises voice mail systems are supported. Direct Voice Mail does not work with a voice mail system on the host PBX or with Centrex voice mail.

Telephone Differences

Queued Call Consoles

On a Queued Call Console's DSS, the Direct Voice Mail button is a fixed button, the rightmost button in the second row from the bottom.

QCC operators may also select the feature from the display.

Single-Line Telephones

If you already hear dial tone and want to call directly to an extension's voice mail, dial *#56* followed by the extension number. Single-line telephone users must press a **Recall** or **Flash** button and dial *#56* to transfer a call to an extension's voice mail. If the telephone does not have positive disconnect, press and release the switchhook instead of pressing the **Recall** or **Flash** button.

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Feature Interactions

Coverage	Direct Voice Mail overrides coverage-inhibiting features such as Coverage Off, Coverage VMS Off, and Coverage Inside Off.
Direct Station Selector	On a Queued Call Console's DSS, the Direct Voice Mail button is a fixed button, the rightmost button in the second row from the bottom.
Forward/Follow Me	In Release 4.0 and later systems, if Forwarding is active and Delayed Forwarding is not set to 0 rings, pressing the Direct Voice Mail button at the forwarding extension while a call is ringing on a button causes the call to go directly to voice mail coverage and does not get forwarded.
	In Release 3.0 and later systems, a call that is transferred to an extension using Direct Voice Mail is not forwarded.
Headset Options	When an MLX telephone user (except for a QCC operator) transfers a call using Direct Voice Mail, Headset Auto Answer is turned off and must be turned on manually to resume using the feature.
Transfer	A user with a Direct Voice Mail button can activate Direct Voice Mail after starting to transfer a call. While a transfer is being made, press the Direct Voice Mail button to transfer the call to the extension's voice mail. Complete the transfer as usual by pressing the **Transfer** button or hanging up.

Directories

At a Glance

Users Affected	
System Directory	Telephone users
Extension Directory	MLX display telephone users
Personal Directory	MLX-20L telephone users
Reports Affected	Direct Group Calling Information, Extension Directory, Label Information, System Directory, System Information (`SysSet-up`)
Modes	All
Telephones	
System Directory	All
Extension Directory	MLX display telephones
Personal Directory	MLX-20L telephones
MLX Display Label	
System Directory	`Directory, System Dir [Dir, SysDir]`
Extension Directory	`Directory, Ext Dir [Dir, ExtDir]`
Personal Directory	`Directory, Per Dir`
System Programming	Create, change, or delete System Directory listings:
	• **More**→`Labeling`→`Directory`→`System`
	Create, change, or delete Extension Directory listings:
	• **More**→`Labeling`→`Directory`→`Extension`
	Create, change, or delete Personal Directory listings:
	• **More**→`Labeling`→`Directory`→`Personal`
	Assign outside line/trunk labels:
	• **More**→`Labeling`→`LinesTrunks`
	Assign calling group labels:
	• **More**→`Labeling`→`Grp Calling`
Maximums	
System Directory	130 listings
	3 digits for each Speed Dial field
	11 characters for each name field
	40 digits for each number field
Extension Directory	1 listing for every extension in the system
	7 characters for each name field
	4 digits for each extension field
Personal Directory	50 listings for each Personal Directory
	48 MLX-20L users
	11 characters for each name field
	28 digits for each number field

Description

The Directory feature is a built-in, interactive telephone book that stores listings of

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names and telephone or extension numbers. People with MLX display telephones can dial numbers by selecting listings from the display.

Directory listings are divided into three types:

- **System Directory.** Names and numbers of outside contacts (such as clients and suppliers). These listings are created in system programming and are assigned System Speed Dial codes to allow users with telephones other than MLX display telephones to dial these listings in the directory. See "Speed Dial" on page 550 for details.

- **Extension Directory** (MLX display telephones only). System extensions and the names of the users assigned to them. This directory can be accessed only with a name. Names are added to the directory by using the Labeling feature of system programming.

- **Personal Directory** (MLX-20L telephones only). Individual users' listings of names and numbers, that is, outside telephone numbers and extensions. This directory is accessible only at the extension where it was created or through system programming.

System Directory

System Directory listings are established and changed only through system programming using the Labeling feature. Each listing consists of a 3-digit Speed Dial number, an 11-character name field, and a 40-digit number field. Up to 130 listings are stored. Any listing can be specifically designated to suppress the display of a confidential number. When dialing a number designated or *marked* in this way, users see only the System Speed Dial code associated with the listing. A marked System Speed Dial code can be identified in the System Directory Report by an asterisk preceding the telephone number.

When a marked System Speed Dial code is used to dial a number, any calling restrictions associated with that number (such as outward or toll restrictions) are overridden. Marked System Speed Dial does not override Automatic Route Selection restrictions.

Special characters may be needed during programming of System Speed Dial codes. Each of these characters counts as one of the 40 digits allowed in the telephone number. For information about special characters and their meanings, see Appendix H, "Programming Special Characters."

Access the System Directory by lifting the handset or pressing the **Speaker** button, pressing the **Feature** button, and dialing a 3-digit System Speed Dial code. If the System Speed Dial code is associated with a telephone number that begins with a dial-out code (usually *9*), you must use an **SA** or **ICOM** button. If the associated telephone number does not begin with a dial-out code, you must use an outside line button.

Extension Directory

Extension Directory listings are established and changed only through system programming, using the Labeling feature. Each listing consists of a 7-character name field and a number field of up to four digits. There can be one listing for every extension on the system. All of the extensions in the system can be stored.

While the extension is being dialed, the display of the extension number cannot be suppressed.

Personal Directory

Personal Directory listings can be established and changed through system programming (using the Labeling feature) or by an MLX-20L user. Each listing consists of an 11-character name field and a 28-digit number field. Up to 50 listings can be included in each Personal Directory; up to 48 users of MLX-20L telephones can have Personal Directories.

For purposes of privacy or security, any listing can be *marked* to suppress the display of the telephone number during dialing. The tag, however, does not prevent the telephone number from being displayed when an MLX-20L telephone user selects Show Number to display the telephone number associated with an individual listing.

Special characters may be needed during programming of Personal Directory entries. Each of these characters counts as one of the 28 digits allowed. For information about special characters and their meanings, see Appendix H, "Programming Special Characters."

A listing cannot be used if the first character of the listing is a punctuation character such as a hyphen.

Any MLX-20L telephone user, except a Queued Call Console (QCC) operator, can display up to 16 Personal Directory listings on the Home screen, on two screens. Frequently used features, not Personal Directory listings, are displayed on a QCC operator's Home screen. A QCC operator can access the Personal Directory by selecting Directory on the Home screen.

Extension numbers can be programmed in a Personal Directory. However, in Key and Behind Switch modes, press an **ICOM** button before selecting a listing to dial a number.

Considerations and Constraints

While a Personal Directory on an MLX-20L telephone is being programmed, the user cannot receive calls (the caller hears a busy signal).

Personal Speed Dial is not related to the Personal Directory. See for additional information about Personal Speed Dial.

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In Release 2.1 and later systems, when an MLX telephone other than an MLX-20L is plugged into a port that has a Personal Directory resource allocated, and the Personal Directory does not contain any entries, the Personal Directory resource is released and can be programmed to be used by another user. (Up to 48 Personal Directories can exist on a system.)

Telephone Differences

Direct-Line Consoles

An operator with a digital Direct-Line Console (DLC) can use all Directory features.

Queued Call Consoles

To dial extensions or telephone numbers with the touch of a button, Directory features must be used. QCC operators cannot use Auto Dial.

A QCC operator can access the Personal Directory by selecting Directory on the Home screen. A QCC operator can place only 12 entries in the Personal Directory, 6 on the first page and 6 more on the second page of entries.

Directory features can be used for transferring calls. If an operator releases the call immediately after pressing the button for the listing, the caller hears the dial tone plus the touch tones for the dialed digits. If the operator waits until after dialing begins, the caller does not hear the dial tone and dialed digits.

Other Multiline Telephones

Analog Multiline, MLX-10, or MLX-5 Telephones

A user with an analog multiline telephone, MLX-10, or an MLX-5 telephone cannot use the Extension Directory feature or the Personal Directory feature but can dial the listings in the System Directory by dialing the System Speed Dial codes assigned to them.

MLX-20L Telephones

While a Personal Directory on an MLX-20L telephone is being programmed, the user cannot receive calls (the caller hears a busy signal) but can still hear the telephone ringing. In Release 1.0 systems, ringing is normal. In Release 1.1 and later systems, ringing occurs at 20-second intervals.

To use the System or Extension Directory feature on an MLX-20L telephone, press the **Menu** button, select Directory from the display, and select either type of directory from the display. Next, choose a range of letters from which to begin the search. The display shows the first seven listings that begin with the first letter in the range.

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To scroll through the listings, select either `Next Page` to display the next seven entries are shown or `Prev Page` to display the previous seven entries are shown. To display the telephone number associated with an individual listing, select `Show Number` from the display—`Show Number` is highlighted—and press the button next to the listing. To exit the Show Number function, select `Show Number` again—the highlight is removed from `Show Number`. To dial a number for a listing shown on the display, press the button next to the listing.

To use the Personal Directory on an MLX-20L telephone, press the **Home** button; a QCC operator selects `Directory` from the Home screen. If listings have been programmed to appear on the Home screen, the first eight listings (six listings for a QCC operator) are shown. To see the second eight listings (six listings for a QCC operator), select `Next Page`. To select listings by using a range of letters, select `Next Page` from the Home display *twice*. Use the same procedure to search for listings as you do for System and Extension Directories. To dial a number for a listing shown on the display, press the button next to the listing.

➡ NOTES:

1. The number for a marked Personal Directory listing is displayed when you choose `Show Number`. A marked Personal Directory listing is specifically designated during programming to suppress the telephone number from the display when the number is dialed from the display.

2. Marked System Speed Dial entries (entries that do not display) are not affected by the Second Dial Tone setting. If a marked System Speed Dial entry uses star codes and the central office does not immediately supply dial tone when a star code is entered, then the appropriate number of pauses (1.5 seconds each) must be programmed in the entry following each star code.

MLX-28D, MLX-16DP, MLX-10DP, MLX-10D, and MLX 5-D Telephones

To use the System or Extension Directory, press the **Menu** button, select `Directory` from the display, then select either type of directory from the display. To begin searching, spell the name of the directory entry by using the dialpad. For example, to spell *Wayne*, dial *92963* and select `Enter` from the display; the name with the closest match is displayed.

Scroll through the listings by selecting `Prev` (the previous listing is shown) or `Next` (the next listing is shown). To start a new search, select `New`. To dial the number for the name currently shown on the display, select `Dial`, and the number is automatically dialed. If the display of the telephone number has not been suppressed, `>` appears on the far right of the display. To see the number dialed, press the **More** button.

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Single-Line Telephones

Single-line telephone users cannot use the Extension Directory feature or the Personal Directory feature but can dial the listings in the System Directory by dialing the System Speed Dial codes assigned to the listings.

Feature Interactions

Account Code Entry	An MLX-20L telephone user can program an account code as a listing in a Personal Directory. Enter the account code from the display by activating Account Code Entry and selecting the directory entry containing the actual account code.
Allowed/ Disallowed Lists	A user with an outward- or toll-restricted extension cannot dial an outside number by using a Personal Directory or System Directory listing (excluding a marked System Directory listing), unless the number is on an Allowed List assigned to the extension.
	If a number is on a Disallowed List for an extension, it can be dialed only by using a marked System Directory listing, not a regular Personal Directory or System Directory listing.
Automatic Route Selection	In Hybrid/PBX mode, System Directory and Personal Directory numbers can include the Automatic Route Selection (ARS) dial-out code.
Calling Restrictions	Using a marked System Directory listing to dial a number overrides any calling restrictions (toll or outward restrictions) assigned to the extension.
Conference	The Extension, Personal, and System Directory features set up conference calls. Press the **Conf** button to enter the Flash special character in a Directory listing telephone number.
CTI Link	Through system programming, you can change the label of an extension programmed as a CTI link (Release 5.0 and later systems). If you change the system language, the label remains in the language assigned during the initial system programming.
Digital Data Calls	Digital communications devices and videoconferencing systems cannot make use of Extension, Personal, or System Directories.
Display	MLX display telephone users can use the Extension and System Directories. Search for stored listings on the display and automatically dial the listing by pressing the corresponding button. MLX-20L telephone users also can create a Personal Directory. When dialing a number using a Directory feature, the digits dialed are shown on Line 1 of the display.
Drop	Press the **Drop** button to enter the Stop special character in a directory listing telephone number.
Hold	Press the **Hold** button to enter the Pause special character in a directory listing telephone number.

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Labeling	Use Labeling to enter names of people, groups, and locations associated with the extensions in the system and stored as listings in the Extension Directory. You can also enter labels, such as the name of a person or a business, associated with System Speed Dial numbers by using the Labeling feature, and they are stored as listings in the System Directory.
Last Number Dial	Last Number Dial does not store a number dialed by using a Directory.
Messaging	When the Extension Directory is used to call a co-worker with a posted message, the posted message is not displayed on the caller's telephone.
Personal Lines	A System or Personal Directory can be used to dial numbers on a personal line. An Extension Directory is used only for inside calls and cannot be used to dial calls on a personal line.
Pools	When a pool dial-out code is included in the telephone number for a Personal or System Directory listing, a Pause character may be needed following the pool dial-out code, depending on the local telephone company. Pause characters are entered by pressing the **Hold** button.
Recall/Timed Flash	Press the **Conf** button to enter the Flash special character in a Directory listing telephone number.
Saved Number Dial	Saved Number Dial does not store numbers dialed by using a Directory.
Second Dial Tone Timer	Marked System Speed Dial entries, which do not display, are not affected by the Second Dial Tone setting. If the central office does not immediately supply dial tone when a star code is entered and a marked System Speed Dial entry uses star codes, then the appropriate number of pauses (each 1.5 seconds) must be programmed in the entry following each star code.
Speed Dial	System Speed Dial numbers are stored in the System Directory. MLX display telephone users can dial one by selecting the name from the display. If the number is on a marked System Directory listing, select the listing; you can dial it regardless of any calling restrictions (toll and outward) assigned to your extension.

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At a Glance

Users Affected	Telephone users, operators
Modes	All
Telephones	MLX display telephones, MERLIN II System Display Console, BIS-22D, BIS-34D
System Programming	See "Labeling" on page 360.

Description

The following display telephones can be connected to the system:

- MLX display telephones:

  — MLX-20L (7-line by 24-character display)

  — MLX-28D (2-line by 24-character display)

  — MLX-16DP (2-line by 24-character display)

  — MLX-10D (2-line by 24-character display)

  — MLX-5D (2-line by 24-character display)

- Analog multiline display telephones:

  — MERLIN II System Display Console (2-line by 40-character display)

  — BIS-34D (1-line by 16-character display)

  — BIS-22D (1-line by 16-character display)

The telephone display provides prompts, messages, and menu selections that help users handle calls, use features, and program their extensions. In addition, the display of the MLX-20L telephone supports system programming when the telephone is used as the system programming console. (For information about system programming displays, see "Programming" on page 480.)

Beginning with Release 3.0, when a number is displayed for an incoming call, it appears with hyphens inserted between the digits (for example, 555-1234 for 7-digit numbers and 908-555-1234 for 10-digit numbers). Any other number of digits appears without hyphens.

The level of support the display provides depends on the telephone:

- The displays on analog multiline telephones provide call-handling information but do not support menu-driven telephone programming, selection of features, or operation in languages other than English.

■ MLX display telephones provide menu-driven telephone programming and allow people to select and use features from the display. In Release 1.1 and later systems, MLX telephones can display information in English, French, or Spanish. (The system can be programmed to provide all displays to MLX telephones in one of these languages; each MLX telephone can be programmed to operate in English, French, or Spanish, independently of the system language.)

Table 18 shows examples of call-handling displays.

Table 18.　　Call-Handling Displays

	Sample Displays	
Making Calls	**Analog Multiline**	**MLX**
When a user makes a call, the digits appear on the display as they are dialed with the dialpad or any of the quick-dialing features (Auto Dial, Speed Dial, Directories, Last Number Dial, or Saved Number Dial).	1234	1234
If the caller dials an extension and labels are programmed, the name is displayed after all the digits are dialed. (MLX only)[1]	12	YVONNE Ext 12
If a caller dials *0* to reach a system operator or dials the Listed Directory Number (the QCC queue extension), the display identifies the number as the operator. When the call is sent immediately to a system operator without waiting in the QCC queue, the extension or label for the operator receiving the call is shown instead.	0	OPERATR 0
When a caller goes off hook on a personal line or **Pool** button, the display shows the label (if programmed) for the line or pool that is selected (MLX only). On MLX telephones, this information remains on the display. On analog multiline telephones, the line label is erased when the caller begins dialing. If the caller dials more than 15 digits on an MLX telephone or more than 16 digits on an analog multiline telephone, the remaining digits are shown on Line 2.	5551234	FX-NYC 5551234

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Table 18. *Continued*

	Sample Displays	
Receiving Calls	**Analog Multiline**	**MLX**
For inside calls, the display shows the name of the caller (if labels have been programmed) and/or the extension number. On analog multiline telephones, the display also shows whether the call is a voice call (V) or a ringing call (R).	MICHEL - Ext R	MICHEL - x1234
For outside calls, the display shows the line that the call came in on.	FX-NYC	FX-NYX
If PRI-based extension identification and/or automatic number identification are available, the number of the caller is shown on Line 1 of an MLX display. This information is also provided for transferred, forwarded, and calling group calls.	No display	FX-NYX 555-1234
For Caller ID, the number of the caller is shown on Line 1 on MLX display telephones and the information is provided for transferred, forwarded, and calling group calls.	No display	OUTSIDE 555-1234
For certain types of incoming calls, the display also shows the type:		
Transfer	Transfer Receive	Transfr
Return from Transfer	Trf Ret -	Return
Coverage	Cvr	Cover
Forwarded	Forward	Forward
Returning Callback	Callbck	Callbck
Group Calling	No display	GrpCl

1.   For calls received on tie trunks, the display shows information only if the receiver preselects the button.

MLX Display Telephones

Four types of screens appear on both the 7-line and the 2-line displays:

- ■ Home screen

- ■ Menu screens

- ■ Feature screen

- ■ Inspect screens

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> **NOTE:**
> MLX display telephones allow you to change the contrast of the screens. The method varies among the different MLX display telephones. The MLX-20L has a sliding control immediately behind the screen. The MLX 5-D, MLX-10D, MLX-10DP, MLX-16DP, and MLX-28D allow you to adjust the contrast through the Ctrst item in the Menu screen. Select Ctrst and then raise or lower the contrast by selecting Up or Down.

The display ordinarily shows the Home screen; at other times, users access the Home, Menu, Feature, and Inspect screens by pressing the corresponding fixed **Home**, **Menu**, **Feature**, or **Inspct** button.

The fixed **More** button is used to read screens that include too much information to fit on the display all at once. The availability of more information is indicated by the appearance of a > character on the right side of the screen. On the 7-line by 24-character display, in Release 2.0 and later systems, this More symbol appears on Line 1, next to the **More** button. In Release 1.0 and 1.1 systems, the More symbol appears on Line 7.

Home Screen

The Home screen, illustrated in Figures 16 and 17, is the display's home base. It remains on the display unless the user selects another screen. If the user has programmed a posted message and no call is active on the extension, Line 1 shows the posted message. When the user makes or receives a call, Line 1 is overwritten with call-handling information, such as a number being dialed, the name or number of a caller, and the type of incoming call. In Release 2.0 and later systems, the date is shown as pictured in Figures 16 and 17; in Release 1.0 and 1.1 systems, the date is shown as, for example, 3/15.


```
IN CONFERENCE
              MAR 15   12:30
```
```
  Home        Menu       Inspct       More
```
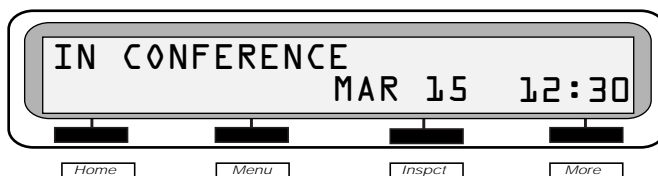
Figure 16.   2-Line Display Home Screen

When the extension is idle, Line 2 of the Home screen shows the date and time. If the timer is running or there is a programmed Alarm button, this information is also shown on Line 2.

On an MLX-20L telephone, two pages of listings from the user's Personal Directory (a total of 16 entries) can be programmed to appear on the Home screen. The Queued Call Console (QCC) does not have this capability.

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Activating features causes information on the Home screen to be replaced with prompts and feedback. In general, prompts appear on Line 1 and feedback appears on Line 2.
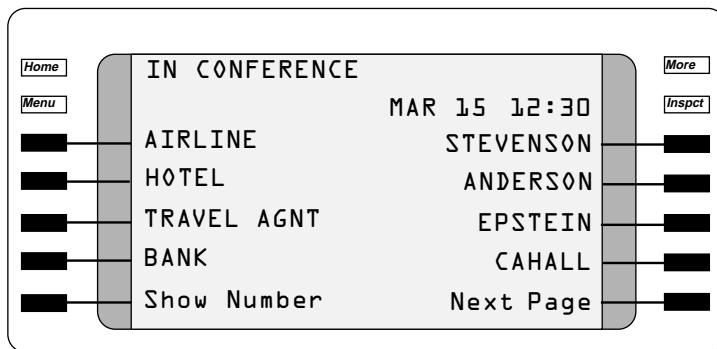

Figure 17.   7-Line Display Home Screen

Menu Screen

The Menu screen, illustrated in Figures 18 and 19, lists features and functions that are used through the display, such as Alarm Clock and Directories. For everyone with displays, except QCC operators, the Menu screen also provides access to the extension programming function used to program the extension.

Press the **Menu** button next to or below the display to access the Menu screen. To access additional menu choices on the 2-line display, press the **More** button. After you make a selection from the menu by pressing the button next to the selection on a 7-line screen or below the selection on a 2-line screen. A submenu, feature screen, or data-entry screen appears. When programming is complete, the Menu screen reappears. To exit from the Menu screen, press the **Home** button.
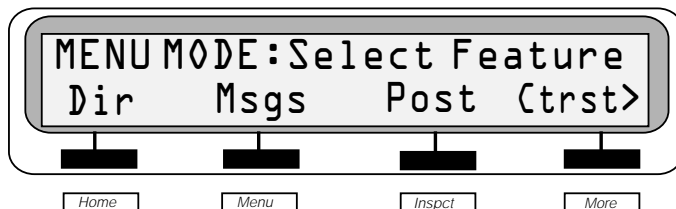
Figure 18.   2-Line Display Menu Screen

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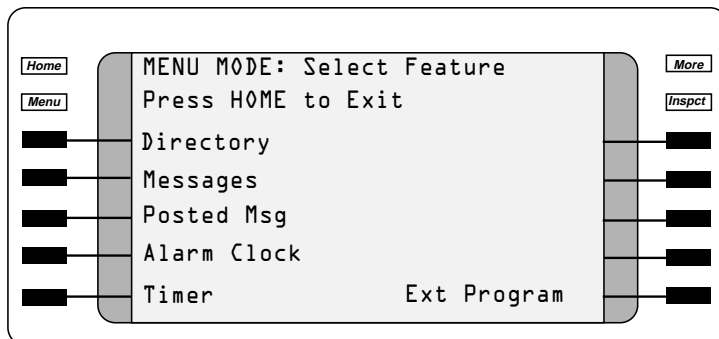
Figure 19. 7-Line Display Menu Screen

> $\Longrightarrow$ **NOTE:**
> The Menu screen on a QCC does not include the Ext Program option.

Feature Screen

The Feature screen provides quick access to commonly used features. Press the
Feature button to display one of four Feature screens with feature names. The
feature names shown depend on the current activity and how the system and the
extension are programmed, as shown in Table 19.

To select a feature, press the button next to or below its name on the Feature
screen. On a 2-line display, it may be necessary to press **More** to access the
desired feature. Once selected, the feature is activated unless more information is
required. If more information is needed, you are asked to enter it. For example, if
you choose the Account Code Entry feature, the display prompts for an account
code. Once account code entry is completed correctly, the Home screen returns.

Table 19 lists the features that users see on the Feature screen, depending on
their current calling activity.

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Table 19.   Feature Screen Options

Telephone...	Feature Options	2-by-24 Display	7-by-24 Display
Is on hook or has a dial tone on an inside line	Last Number Dial	Last#	LastNumDial
	Pickup Group*	PkupG	Pickup Grp
	Pickup	Pkup	Pickup
	Loudspeaker Page*	LdsPg	Loudspkr Pg
	Account Code	Acct	AccountCode
	Follow Me	FlwMe	Follow Me
	Authorization Code	Auth	Auth Code
	Direct Voice Mail	DrcVM	Direct VM
Has reached a busy extension	Selective Callback	CbckS	Cback Sel
	Barge-In*	Barge	Barge In
	Leave Message	LvMsg	Leave Msg
	Camp-On*	Camp	Camp On
Is ringing at an extension or connected to an inside call	Leave Message	LvMsg	Leave Msg
	Barge-In*	Barge	Barge In
	Park*	Park	Park
	Camp-On*	Camp	Camp On
	Direct Voice Mail	DrcVM	Direct VM
Is connected to an outside line	Last Number Dial*	Last#	LastNumDial
	Park*	Park	Park
	Camp-On*	Camp	Camp On
	Account Code	Acct	AccountCode
	Follow Me	FlwMe	Follow Me
	Direct Voice Mail	DrcVM	Direct VM

*   See Notes.

� **NOTES:**

1. `Pckup Grp` appears on the display only if the extension is part of a Pickup Group.

2. `Barge In` appears only on operator consoles.

3. `Loudspkr Pg` appears only if a loudspeaker paging system has been programmed.

4. `LastNumDial` and `Park` do not appear on a QCC.

5. Camp-On can be used only to complete a transfer to an inside extension.

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Inspect Screens

The Inspect screen, illustrated in Figures 20 and 21, appears when the you press the **Inspct** button and then press a line button. Two kinds of information can appear:

■ If the button is associated with a call, calling information is displayed. If you are already on a call and another call arrives, pressing **Inspct** and the line button with the new call displays information about that call, without interrupting the first call.

■ If the button is not associated with a call, the line or feature programmed on the button is displayed, with the exception of Last Number Dial and Saved Number Dial:

— In Release 2.0 and later systems, inspecting a programmed Last Number Dial or Saved Number Dial button displays the number stored on the button if the button has been used; otherwise it displays the feature name.

— In Release 1.0 and 1.1 systems, the Inspect screen shows the name of the feature on the button.

To exit from the Inspect screen, press the **Home**, **Feature**, or **Menu** button.

Figure 20.   2-Line Display Inspect Screen for Programmed Button
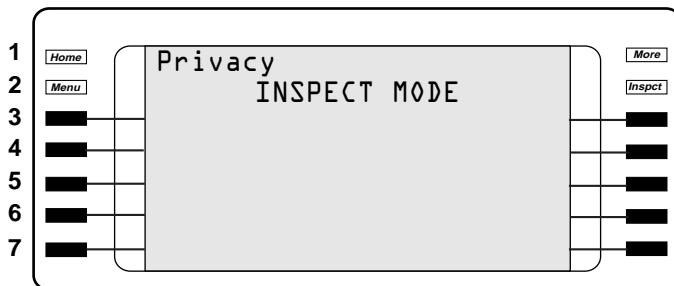
Figure 21.   7-Line Display Inspect Screen for Programmed Button

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Analog Multiline Display Telephones

The following types of information appear on the 1-line by 16-character or 2-line by 40-character display of an analog multiline display telephone:

- **Call-Handling Information.** Shows telephone numbers as they are dialed, the name or number of a caller, and the type of incoming call.

- **Feature Programming Support.** Allows a user to see what features have been programmed on buttons.

- **Prompts and Feedback.** Prompts for information such as an account code, and provides feedback, such as confirmation of feature activation.

- **Posted Message and Leave Message.** Allow a user to see messages from other telephone users and operators.

- **Timekeeping Functions.** Include an alarm clock and a built-in timer, as well as the ability to set the date and time that appear on the display.

Analog multiline display telephones do not offer menu-driven telephone programming and do not allow users to select and use features from the display.

The procedure for changing the contrast on the analog multiline display telephones varies among display telephones. The BIS-34D and the MERLIN II Display Console have dials to change the contrast of the screens. The BIS-22D has no controls for contrast.

Considerations and Constraints

The date and time shown on MLX telephones are controlled by the processor module in the control unit. When the date or time changes, the control unit sends the message to MLX telephones one at a time, which can cause a slight difference in the time and/or date displayed on each telephone.

Users with analog multiline telephones with displays must set the time and date at their individual telephones.

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Feature Interactions

Feature	Description	Sample Displays Analog Multiline	MLX
Account Code Entry	When you activate the feature, the display prompts for an account code.	`Acct:`	`Acct:`
	As the code is dialed, it appears on the screen next to the prompt.	`Acct: 123456`	`Acct: 123456`
Alarm Clock	An MLX telephone user programs the Alarm Clock feature from the Menu screen. An analog multiline telephone user sets the alarm by using the timekeeping buttons next to the display. Once the alarm is set on either type of telephone, a bell appears on the display. In Release 1.0 systems, the bell appears next to the time, not the date and, on MLX telephones, the date appears as mm/dd (`05/08`). On an MLX telephone, the ringer and the LEDs are turned off when `Alarm` is selected from the display. If you are on a call and select `Alarm`, the call is dropped.	`5-08 %`	`May 08 % 12:00`
Authorization Codes	When a display telephone user activates Authorization Code, the screen prompts for an entry.	`Auth?`	`Auth:`
Auto Dial	When you press a programmed Auto Dial button, the digits show on the display as if you were dialing from the dialpad. The number is dialed automatically (special characters for dialing strings are described in Appendix H). If the Auto Dial number includes a Stop character, press the Auto Dial button to complete dialing.	`5551234`	`5551234`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**
Automatic Route Selection	Only the ARS dial-out code and the dialed number are displayed. Digits added by ARS before the dialed number and digits ignored by ARS are not displayed. The digit 9 is replaced with OUTSIDE when ARS selects a line.	95551234 OUTSIDE 5551234	95551234 OUTSIDE 5551234
Barge-In	An MLX telephone user sees a message when using Barge-In. If Barge-In is denied, no message appears.	No display	Barge-In
	The extension receiving the call also sees a message indicating who barged in. The message remains on the display until the person hangs up.	No display	Barge In: JUANITA
Calendar	See "Date and Time" in this table.		
Callback	When a call is queued using Automatic Callback on an MLX or analog multiline telephone, or using Selective Callback on an analog multiline telephone, a feedback message appears.	Call is Queued	Queued MARIA 1234 Call is Queued
	When an MLX telephone user uses Selective Callback, the display prompts the user to dial the telephone number. After the number is dialed, the display provides the same feedback as on an Automatic Callback call.	No display	Dial Telephone Number
	When the queued call rings at the user's extension, the display indicates that the call is a returning Callback call.	Callbck 1234	Cback MARIA 1234
Calling Restrictions	When a restricted MLX telephone user tries to dial a number that is restricted, the user sees a message on the display.	No display	Call Denied

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| | | **Sample Displays** | |
Feature	**Description**	**Analog Multiline**	**MLX**
Call Waiting	When a call is waiting, a message appears.	`Call Waiting`	`Call Waiting`
Camp-On	After Camp-On is activated, the MLX display shows a feedback message.	No display	`CampOn: JORGE Ext1234`
	On the QCC only, returning camped-on calls are identified by call type and by the name and extension number of the person to whom the call was transferred. The second line of the QCC display also shows the caller information.	No display	`CampRet JORGE Ext1234` `Caller: ELAINE Ext1244`
Conference	As with any other call, dialed digits appear on Line 1 of the display as a user sets up a conference call.	`1234`	`1234`
	On MLX telephones, Line 1 shows the number of conference participants.	No display	`Conference: 4`
	If an **SA** button is not selected automatically, the MLX telephone user is prompted to select a line.	No display	`Select a Line`
	After a line is selected by the system or the user, the MLX telephone display prompts the user to dial the next participant.	No display	`Dial, then Press Conf`
	The MLX display also prompts the user to drop a conference participant after the **Drop** button is pressed and then shows the updated conference information on Line 1 and the dropped line or extension on Line 2.	No display	`Conference: 3` `MARIA Dropped`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**
Conference *continued*	During the conference, the number of participants is shown on Line 1 of the display. The conference originator can view Caller ID or ISDN calling party information, if available, associated with any participant by pressing the **Inspct** button and the button the caller is on.	No display	`Conference: 3` `OUTSIDE 555-1234`
Coverage	When a call is sent to coverage, the person who answers the call sees a message on the display, indicating for whom the call is intended and the reason why the call is being sent to coverage:		

	All telephones:
	    No Answer
	    Busy
	    Do Not Disturb on
		`Cov No A JUAN`
		`Cov Bsy JUAN`
		`Cov DND JUAN`
			`Cover JUAN No Ans`
			`Cover JUAN Busy`
			`Cover JUAN DND`

	MLX telephones (additional reasons):
	    Invalid/unknown DID number
	    Invalid/unknown remote access (DISA) number
		No display
		
		No display
			`DID#?`
			
			`DISA#?`

	MLX telephones also show the caller's information on Line 2 of the Home screen.	No display	`Caller: FX-NYC Trk825`
CTI Link	In Release 5.0 and later systems, an MLX extension programmed as a CTI link has its extension label changed.	`CTILINK`	`CTILINK`
Date and Time	An analog multiline telephone user can set the date and time on the display. On MLX telephones, the date and time are controlled by the system time.	`3:00p We 4-01`	`Apr 01 3:00`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**
Date and Time *continued*	In Release 1.1 and later systems, when the system or MLX display telephone is set for operation in French or Spanish, the date displays as *day month,* and the time uses a 24-hour clock.	`01 Apr 15:00` `01 Abr 15:00`	
	In Release 1.0 systems, the date is displayed as *month day* on an MLX display telephone.		`4/1 3:00`
Directories	When a number is dialed from a directory, the dialed digits are shown on Line 1 of the display unless the number is marked.	No display	`5551212`
Direct Station Selector	When an operator with one or two DSSs connected to an MLX telephone presses the **Inspect** button and then the **Page** button, message indicates the page number and the first extension number in the range.	No display	**Page 1:** `100`
Do Not Disturb	When a user with coverage turns on Do Not Disturb, the receiver who answers sees a message showing that the call is redirected because the sender has Do Not Disturb on.	`COV DND-AGNES`	`Cover RUBEN DNDS`
	An MLX display telephone with Do Not Disturb on shows a Do Not Disturb message on the Home screen.	No display	`DO NOT DISTURB`
	In Release 2.0 and later, an inside caller to an extension with Do Not Disturb on sees `DO NOT DISTURB`. (Analog multiline, MLX-10 and MLX-5 telephones must have a Posted Message button programmed for `DO NOT DISTURB` to be displayed automatically.)	`DO NOT DISTURB`	`DO NOT DISTURB`

		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**

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Do Not Disturb *continued*	When a user dials an extension that has Do Not Disturb activated and is covered by another extension, the display depends on the type of button the call is placed on:		
	For **SA Ring**:	`12`	`STEPHEN Ext 12`
	For **SA Voice**	`DO NOT DISTURB`	`STEPHEN Ext 12` `DO NOT DISTURB`

Extension Status	Hotel/Motel mode: When a supervisor changes a room's ES status, the supervisor is prompted to select the room.	No display	`Select Room`

	When the room has been selected and the supervisor has selected ES1, ES2, or ES3, confirmation is displayed.
	ES1 = Checked Out
	ES2 = Available
	ES3 = Occupied
		No display	`Checked Out`
			`Available`
			`Occupied`

	When the guest or housekeeper changes a room's ES status to ES1 or ES2, a confirmation is displayed.	No display	`Checked Out` `Available`

	Calling group/CMS mode:
	When the supervisor position is put into Supervisor mode, the supervisor is prompted to press **Hold**. After the supervisor presses the **Hold** button, the new status is confirmed.
		No display	`PressHold-`
			`EnterGrpCl/CMS`
			`Entered Grp/Cl/CMS`
			`Supvr`

	When the supervisor position is taken out of Supervisor mode, the supervisor is prompted to press **Drop**. After the supervisor presses the **Drop** button, the new status is confirmed.	No display	`Press`
			`Drop-ExitGrpCl/CMS`
			`Exited GrpCl/CMS Supvr`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**

Extension Status *continued*	When a supervisor changes an agent's ES status, the supervisor is prompted to select the agent.	No display	`Select Agent for ACW`
			`Select Agent to Log In`
			`Select Agent to Log Out`

	When the agent has been selected, a confirmation is displayed.	No display	`After Call Work`
			`Available`
			`Unavailable`

	If the ES status is changed at the extension, a confirmation is displayed.	No display	`After Call Work` `Available`
	When an extension logs into or out of a calling group, a confirmation is displayed.	No display	`Available` `Unavailable`
Fax Extension	On MLX display telephones, message-waiting indications received by a fax message-waiting receiver are identified as `FAX`. On analog multiline telephones, messages are indicated by `Call` *extension* or *caller's name.*	`Call 12` `Call Andre`	`FAX`

Follow Me	When Follow Me is turned on or off, MLX telephone users see a prompt, then a confirmation.	No display	`Follow from:`
			`Cancel from:`
			`Signed IN: INES`
			`Signed OUT: INES`

Forward	If the extension from which calls are being forwarded is an MLX display, a message indicates that calls are being forwarded.	No display	`Forward to: JEANNE`
	If an MLX user enters an invalid destination, the display clears. If an analog multiline user enters an invalid destination, an error message appears.	`Error`	No display

	When an MLX user turns on Forward, the display prompts the user for the extension. After entering the extension, the user sees a confirmation displayed.	No display	**Page 1:**
			`Forward to:`
			`Forward to:  Juan`

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| | | **Sample Displays** | |
Feature	Description	**Analog Multiline**	**MLX**
Forward *continued*	For outside calls, Page 2 shows the line the call came in on and, if ISDN calling party information or Caller ID is available, the caller's number.	No display	**Page 2:** No Caller ID: `Caller: OUTSIDE Trk801` With Caller ID: `OUTSIDE 555-1234`
	For inside calls, Page 2 shows the caller's name and extension.When an MLX user forwards calls to an outside number (Remote Call Forwarding), the display asks the user to enter the telephone number.	No display	`Caller: PABLO` `x1234Forward to:`
	On MLX and analog multiline telephones, the digits appear as the number is dialed.	`12015551234`	`12015551234`
	An MLX user sees confirmation.	No display	`Forward to:` `12015551234`
	A user receiving a forwarded call sees a message indicating who forwarded the call.		`Forward from HITOSHI`
Group Calling	A calling group agent with MLX telephone sees feedback messages on the display when logging in to the Available state.	No display	`Available`
	When a calling group supervisor with an MLX telephone logs an agent in or out, a message appears on the supervisor's display and on the group member's display.	No display	`Available` `Unavailable`
	After pressing either the Available or Unavailable button or dialing the feature code, a supervisor with an MLX telephone is prompted to indicate which group member to log in or out.	No display	`Select Agent to Log In` `Select Agent to Log Out`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**

Group Calling
 	
continued
	When a group member with an MLX telephone receives an outside call for the group, the type of call is shown on the display with the label for the line the call came in on. If caller identification is available, the caller's number is shown on Page 2 on MLX telephones. For ISDN calls, Page 1 shows Called Party Number (if you have the network service) instead of the line/trunk label.		**Page 1:**
			No calling group label:
			`GrpCl WATS`
			calling group label:
			`SALES WATS`
			ISDN calling party ID calls:
			`OUTSIDE 212-555-1234`
			Page 2:
			No Caller ID present:
			`Trk805`
			Caller ID present:
			`Trk805 908-555-1234`

	Analog multiline telephone users see only line information.	`WATS`	
	Any MLX telephone user can inspect the number of calls in queue by pressing the **Inspct** button and then pressing a button programmed with the calling group's extension. The display shows the label associated with the calling group and the number of calls.	No display	`Group Call SALES 12`
Hold	When an MLX telephone user or an MLX DLC operator places a call on hold, a confirmation is displayed.	No display	`Call on Hold`
	When an MLX telephone user or an MLX DLC operator has a call on hold for a longer time than the hold timer value, a message appears on the display.	No display	`Call on Hold`
	On a QCC only, when a held call returns to the queue after the second hold reminder, it is identified by call type and by the name and extension of the operator who put the call on hold. Line 2 of the QCC display also shows the caller information.	No display	`HoldRet AHMED x10` `Caller: MATHILDE x1235`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**
Inspect	An MLX telephone user can inspect the contents of programmed buttons by pressing the **Inspct** button and then pressing the programmed button. In most cases, the display shows the feature or line assigned to the button. (In Release 2.0 and later systems, inspecting a Last Number Dial or Saved Number Dial button shows the number stored on the button.)	No display	`Account Code`
	Users can also inspect incoming calls or their calls on hold. The display shows standard call information (see "Receiving Calls," in this table).	No display	`FX-NYC` (outside) `DANNY x1234` (inside)
	If a user inspects a line that someone else is using, the display shows that the line is in use.	No display	`In Use`
Last Number Dial	When a user presses a programmed Last Number Dial button, the user sees digits on the display as if dialing them from the dialpad.	`5551234`	`5551234`
	In Release 2.0 and later systems, inspecting a Last Number Dial button shows the stored number.	No display	`5551234`
Messaging	When a user sends a message to another telephone, a feedback message appears.	`Msg Sent CARLOS` `Cannot Send` `Message Box Full`	`Msg. Sent to: CARLOS` `Cannot Send Message` `Message Box Full`
	When a user tries to retrieve messages and the message box is empty, the display indicates that there are no messages.	`No Messages`	`No Messages`

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Feature	Description	Sample Displays	
		Analog Multiline	**MLX**
Messaging *continued*	When a user has a message, the display shows the name or extension of the caller and, on MLX telephones, the time and date the message was left. Messages can be sent from inside extensions, by an operator, by a fax machine, or, if the extension has voice mail, by outside callers.		
	On MLX telephones, an unread message is marked with an asterisk (*). On analog multiline telephones, an unread message is also marked with an asterisk, but no message information is shown.		
	Messages can be of the following types:		**Note:** Press the **More** button to see Page 2.
	Unread message	*	**Page 1:** `*JOSE` `10:43P>` **Page 2:** `06/15 Ext2846` `>`
	Co-worker	`Call ROSA`	**Page 1:** `ROSA` `11:03P>` **Page 2:** `06/15 Ext1625` `>`
	Voice mail message	`V`	**Page 1:** `VMS` `11:03P>` **Page 2:** `06/15 Ext1234` `>`
	System operator	`A`	**Page 1:** `ATT OPERATOR` `11:03P>` **Page 2:** `06/15 Ext1223` `>`

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	Fax	F	**Page 1:**
			`FAX`
			`11:03P>`
			Page 2:
			`06/15 Ext1236`
			`>`

Sample Displays

Feature	Description	Analog Multiline	MLX
Messaging *continued*	The type of message does not allow a calling group message-waiting receiver to distinguish between a message left for the calling group and a fax or personal message.		
	A user with a display telephone who calls an extension with a posted message sees the message on the display.	`IN A MEETING`	`IN A MEETING`
	A display telephone user posting a message sees the message displayed on the Home screen.	`AT HOME`	`AT HOME`
	When an operator using an MLX telephone sends or removes a message with the Send/Remove message feature, the operator is prompted for the number.	No display	`Dial Telephone Number:`
	After the number is dialed, a confirmation is displayed.	`Msg Sent MANUEL` `Msg Rmvd DOROTHY`	`Msg Sent to: MANUEL` `Msg Rmvd from: DOROTHY`
Night Service	When an operator with an MLX telephone uses a programmed Night Service button to turn on Night Service, a confirmation is displayed.	No display	`Night Service ON`
	If the operator must enter a password to turn Night Service on and off, the display prompts the operator for the password. No message is displayed when the operator turns on Night Service by using a feature code or when Night Service is off.	No display	`Enter Password:`

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Paging	An MLX telephone user who uses Group Paging sees a message showing the number of the paging group.	No display	Paging 793

		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**
Park	When a call is parked, a confirmation is displayed.	Parked ANITA	Parked: ANITA
	On a QCC, returning parked calls are identified by call type and the name or extension number of the operator who parked the call.	No display	ParkRet JUAN Ext1220
	Line 2 of the QCC display also shows the caller information.	No display	Caller: ANITA Ext1235
Pickup	When an MLX telephone user activates Pickup, a prompt appears on the display. (The prompt is not displayed if a button programmed for a specific line or extension is used.)	No display	Pickup Line/Ext:
	After the user enters the line or extension number to pick up the call, a confirmation message is displayed.	No display No display	Pickup: OUTSIDE Pickup: JOE
	If the call cannot be picked up, a feedback message is displayed.	Cannot Pickup	Cannot Pickup Call
Pools	When a display telephone user selects a **Pool** button and lifts the handset, the display shows the label (if programmed) for the lines in the selected pool.	OUTWATS	OUTWATS
Privacy	When an MLX display telephone user turns on Privacy, the display briefly shows the message Privacy On before returning to the Home screen or call-handling display. When the user turns off Privacy, the display briefly shows the message Privacy Off.	No display	Privacy On Privacy Off

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**

Programming	When an analog multiline telephone user enters extension programming, a confirmation appears on the display. An MLX telephone user sees the first extension programming screen.	`Program Mode`	**MLX-20L:**
			`Extension Program 10`
			
			`Press HOME to Exit`
			`Start`
			
			Other MLX:
			`Extension Program 10`
			`(HOME to Exit)`
			`Start`

	If the user presses a button that is already programmed, the name of the feature appears.	`Camp On`	`Camp On`
	If the button is not programmed, the display shows that the button is blank.	`Blank`	`Blank`
	Digits dialed while programming appear on an analog multiline telephone display.	`5551234`	No display

	Status feedback messages are shown on analog multiline telephones when features that affect telephone operation are programmed. Status messages are not shown on MLX telephones. (For more about extension programming, see Appendix D.)	`RecvVoiceAnn`
		`On/Off`
		
		`Call Waiting`
		`On/Off`
		
		`AutoCallback`
		`On/Off`
		
		`Shared SA Ring`
		`On/Off`
		
		`AbbreviateRing`
		`On/Off`
		
		`Cover Inside`
		`On/Off`
			No display

Recall/Timed Flash	When an MLX telephone user presses a programmed Recall button while on an outside line, the line information is redisplayed just as if the user had gone off hook on the line.	No display	`FX-NYC`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**
Reminder Service	When Reminder Set is activated, the extension number and either the set time or an indication that no time has been set is displayed.	`7103: 9:15a` `7103: No Rmdr Set`	`7103: 9:15a` `7103: No Reminder Set`
	If the user enters a new time, the display changes with the first digit.	`Time: 12:30p`	`Time: 12:30p`
	When the time is set, a confirmation including the extension and the time is displayed.	`7103: 12:30p`	`7103: 12:30p`
	When a reminder call alerts an extension, the display indicates a reminder call.	`Rmdr Call`	`Reminder Call`
	When an extension cancels a reminder, a confirmation is displayed.	`Rmdr Off at 7103`	`Reminder Off: JAQUES`

	When an operator sets or cancels a reminder for an extension, the MLX operator is prompted for the extension.	`Rmdr Set`
		
		`Rmdr Off`
			`Press DSS Key to Select`
			`Reminder Set`
			`Press DSS Key to Select`
			`Reminder Off`

Remote Access	A call received through remote access shows standard call information for outside calls, including the caller's number (MLX only) if network caller identification or Caller ID is available.	`WATS Trk 825`	`WATS Trk 825` `WATS 555-1234`

	If a remote access call is sent to coverage because an invalid number is dialed, an MLX telephone user who receives the call sees a message. If Caller ID or ISDN caller identification is available, pressing the **More** button shows the calling party number and facility label.	No display	**Page 1:**
			`Cover DISA#?`
			`Caller  Outside  Trk801`
			
			Page 2:
			`OUTSIDE 908-555-8989`

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Feature	Description	Sample Displays	
		Analog Multiline	**MLX**
Saved Number Dial	When an MLX telephone user presses a programmed Saved Number Dial button, a confirmation is displayed.	No display	`Number Saved`
	When a user dials a number by pressing a programmed Saved Number Dial button, the digits appear on the display as if from the dialpad.	`5551234`	`5551234`
	In Release 2.0 and later systems, inspecting a Saved Number Dial button shows the number stored on the button.	No display	`5551234`
System Access/ Intercom Buttons	If a user with a display phone calls an extension and the call is answered at a Shared **SA** button, the caller's display shows the principal extension, not the answering extension.	`1234` `Jose`	`1234` `Jose`
Timer	Display telephones have a built-in timer that allows timing of calls or other events. The timer appears on Line 2 of the display and counts to 59 minutes and 59 seconds, then resets to zero and continues counting.	`39:15`	`39:15`
Transfer	When an MLX telephone user presses the **Transfer** button, the display prompts the user to dial the extension number.	No display	`Transfer To:`
	When an MLX telephone user initiates a transfer on a voice-announce button (**SA Voice** or **ICOM Voice**), the user is asked to enter the extension.	No display	`Announce To:`
	The display shows the digits as they are dialed. When all digits are dialed, the display shows the name of the person if labels are programmed.	`1234` No display	`1234` `JOSE x1234`

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		Sample Displays	
Feature	**Description**	**Analog Multiline**	**MLX**
Transfer *continued*	On MLX telephones, when the transfer is completed, a confirmation is displayed.	No display	`Call Transferred`
	Calls returning from transfer are identified by call type and by the name and extension to which the call was transferred. Line 2 of the MLX telephone display also shows the caller information.	`TrfRet-CHARLES`	`Return CHARLES x1234` `Caller: ANNA x1235`
	When an MLX telephone user does not complete a transfer (for example, Do Not Disturb is on at the destination), the call returns to the user's telephone and call information is displayed but not the reason for the incomplete transfer.	No display	`Incomplete Transfer` `Caller: SUSAN x1235`

	When an MLX telephone user receives a transferred call, the display shows the type of call and the caller information on Line 1. When an inside call is being transferred, the extension or name is shown.	`Transfer Receive`	Transfer an inside extension:
			Page 1:
			`Transfr ANGELA`
			Page 2 (Line 2 on QCC):
			`Transfr by MIGUEL`

	When an outside call is being transferred and ISDN caller identification or Caller ID information is *not* available, the line the call came in on is shown. If ISDN caller identification or Caller ID information is available, the caller's number is shown (line/trunk information is not).		Transfer an outside call with Calling Party Number:
			Page 1:
			`Transfr 555-1212`
			Page 2 (Line 2 on QCC):
			`Transfr by MARIA`

	The transfer originator is shown on Line 2 on a QCC. On all other telephones, press the **More** button to show Page 2.		Transfer an outside call without Calling Party Number:
			Page 1:
			`Transfr OUTSIDE Trk 801`
			Page 2 (Line 2 on QCC):
			`Transfr by MARIA`

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Do Not Disturb

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Information
Modes	All
Telephones	All except QCC and single-line telephones
Programming Code	*47
MLX Display Label	DO NOT DISTURB [DND]

Description

Do Not Disturb prevents calls from ringing and prevents paging over a
speakerphone. When you turn on the feature and receive an outside call, the
caller hears ringback, but your telephone does not ring. The green LED next to the
line button with the ringing call flashes to indicate an incoming call, and, if you
choose, you can answer the call. If the feature is turned on and you receive an
inside call, the inside caller hears a busy signal. The telephone does not ring, and
the green LED next to an **SA** or **ICOM** button does not flash.

The types of priority listed below calls override Do Not Disturb and cause the
telephone to ring; the green LED also flashes.

- A call (including a transferred call) from any coverage receiver to a sender
  with Do Not Disturb on

- A Barge-In call

- A returning transferred or camped-on call, or a parked call returning to a
  Direct-Line Console (DLC) operator

- A callback call, notifying you that a call to a busy extension or to a busy
  pool (Hybrid/PBX mode only) can be completed

- A Reminder call

- In Release 2.0 and later systems, when a user turns on the feature, the
  system automatically posts the message DO NOT DISTURB. Users with
  analog multiline telephones, MLX-10, or MLX-5 nondisplay telephones
  must program a Posted Message button in order to display the message
  for callers. This message appears on the Home screen of an MLX display
  telephone with Do Not Disturb turned on, and on the screen of any inside
  caller with a display telephone who calls. When you turn off Do Not Disturb,
  the system automatically removes the message. You can also post and
  remove the message by using a programmed Posted Messages button.
  However, using this button only posts or removes the message; it does not
  turn on or turn off the Do Not Disturb feature.

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Considerations and Constraints

Do Not Disturb must be programmed onto an available button.

If you turn on Do Not Disturb while receiving a call (ringing or voice-announced), the caller continues to hear ringback (or a voice-announced caller may stay on the line), but you do not hear ringing. The Do Not Disturb feature remains on.

When the principal's Do Not Disturb is turned on, his or her calls ring at other telephones with shared personal lines or at coverage receivers but not at other telephones with Shared **SA** buttons.

Telephone Differences

Direct-Line Consoles

The green LED next to an Auto Dial or DSS button on a DLC turns on when a user turns on Do Not Disturb, indicating that the user is not available.

Queued Call Consoles

Do Not Disturb cannot be used on a QCC; Position Busy must be used instead. The green LED next to a DSS button turns on when a user turns on Do Not Disturb, indicating to the QCC operator that the user is not available.

Other Multiline Telephones

Activate Do Not Disturb on a multiline telephone by pressing the programmed Do Not Disturb button. The green LED next to the button goes on to indicate that the feature is active. To turn off the feature, press the programmed Do Not Disturb button again. The green LED next to the button turns off. Feature codes cannot be used to turn Do Not Disturb on and off.

In Release 2.0 and later systems, turning on Do Not Disturb on an analog multiline, MLX-10, or MLX-5 nondisplay telephone does not automatically post the Do Not Disturb message; program a Posted Messages button for the message to be posted automatically. In this case, when Do Not Disturb is turned on, the green LED next to the Posted Messages button lights automatically and the system posts DO NOT DISTURB. When Do Not Disturb is turned off, the system automatically turns off the green LED next to the Posted Messages button.

Single-Line Telephones

Do Not Disturb is not available on single-line telephones.

Feature Interactions

Auto Dial	When you turn on Do Not Disturb, the green LEDs next to all Auto Dial buttons programmed with your extension go on.

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Barge-In	Barge-In overrides Do Not Disturb.
Callback	Calls to a user with Do Not Disturb on are not eligible for callback queuing. If the callback originator is using Do Not Disturb, the system overrides the feature; the telephone rings when the busy extension or line/trunk is available.
Caller ID	Caller ID information is not displayed if the user turns on Do Not Disturb. If the user turns on Do Not Disturb while receiving Caller ID information, that information remains on the display.
Camp-On	A Camp-On call does not ring when the destination extension has Do Not Disturb turned on.
Coverage	When a sender turns on Do Not Disturb, calls go to Individual and/or Group Coverage receivers. Individual and/or Group Coverage calls are not sent to a receiver with Do Not Disturb turned on. If a sender and all receivers have Do Not Disturb turned on, the call is not sent to coverage and the caller hears a busy tone.
	When a sender turns on Do Not Disturb, any receivers for that sender can call the sender.
	In Release 2.1 and later systems, calls received on personal lines with Do Not Disturb on go immediately to coverage instead of waiting for the Coverage Delay Interval.
Digital Data Calls	Digital communications devices can activate Do Not Disturb by dialing the virtual button number (for example #01) of the Do Not Disturb button. Do Not Disturb can be activated by video systems that have the ability to dial strings and feature codes beginning with #.
	A Do Not Disturb button should be programmed at an MLX passive-bus telephone, and the feature should be activated during 2B video calls. Otherwise, voice calls ring and flash at the MLX telephone during 2B data calls, although they cannot be answered.
	The use of a Do Not Disturb button at a passive-bus MLX telephone allows voice calls to be covered while 2B video calls are in progress.
Direct Station Selector	In Release 2.0 and later systems, an operator can check the status of an extension whose red LED is on by using the **Inspct** button to determine whether the extension is busy or using Do Not Disturb. If the user at the extension is using Do Not Disturb, the Do Not Disturb message is also posted and appears on the operator's display. (However, the message may also mean that the user has posted the message without turning on the Do Not Disturb feature.)
Display	In Release 2.0 and later systems, when a multiline telephone user with coverage turns on Do Not Disturb and calls are sent to coverage receivers, the receiver with a display sees a message when answering the call; it shows that the call has been redirected because the sender turned on Do Not Disturb.
	If a display telephone user tries to transfer a call to a user with Do Not Disturb active, the display shows DO NOT DISTURB.

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Forward and Follow Me	Calls are not forwarded to a destination extension that has Do Not Disturb turned on; the call rings only at the forwarding telephone as described in . Turning on Do Not Disturb at the forwarding extension does not prevent the calls from being forwarded.
	In Release 4.0 and later systems, turning on Do Not Disturb at a forwarding extension causes calls to be forwarded immediately. The Forwarding Delay has no effect.
Group Calling	If a calling group member uses Do Not Disturb, calls are not sent to the group member even if he or she is logged in and available.
Headset Options	If an MLX telephone user with Headset Auto Answer uses Do Not Disturb, any calls that override Do Not Disturb (such as Barge-In calls and callback calls) are automatically answered.
Messaging	In Release 2.0 and later systems, when Do Not Disturb is turned on, the system automatically posts DO NOT DISTURB. This message appears on the Home screen of an MLX display telephone user with Do Not Disturb turned on. It also appears on the screen of any inside caller with a display telephone who calls a user with the feature turned on. The system automatically removes the message when the user turns off the feature.
	Users with analog multiline, MLX-10, or MLX-5 nondisplay telephones must program a Posted Messages button for the system to automatically post or remove the message when the feature is turned on or off. A user can post or remove a Do Not Disturb message by pressing a programmed Posted Messages button.
	Posting the DO NOT DISTURB message does not turn the feature on; removing the posted message does not turn the feature off.
Multi-Function Module	Using Do Not Disturb is not recommended because the device connected to the MFM does not have an LED to indicate when the feature is active.
Labeling	Labeling is used to enter the names of the persons or businesses associated with the System Speed Dial numbers stored as listings in the System Directory. It is also used to enter the names of people, groups, and locations associated with the extensions in the system stored as listings in the Extension Directory. Labeling is used to enter the telephone numbers and label information associated with Personal Directories on MLX-20L telephones. This information can also be programmed by the user at the extension.
Paging	Group pages cannot be made to a telephone with Do Not Disturb on.
Reminder Service	Reminder calls ring at telephones with Do Not Disturb turned on.
Signal/Notify	Signaling cannot be used when the destination telephone user turns on Do Not Disturb.
System Access/ Intercom Buttons	Do Not Disturb prevents ringing of incoming calls at **SA** or **ICOM** buttons (including Shared **SA** buttons) on the telephone where the feature is turned on. This also prevents calls received on the principal's **SA** buttons from ringing at other telephones with Shared **SA** buttons for that extension.

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Transfer	Calls transferred to telephones that have Do Not Disturb turned on are returned after the transfer return interval expires, unless the telephone has coverage and a receiver is available. In that case, the transferred call is sent to the receiver.
Voice Announce to Busy	A user with Do Not Disturb active does not receive voice-announced calls.

Drop

See .

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Extension Status

At a Glance

Users Affected	DLC operators, hotel or calling group supervisors/rooms or members, Call Management System (CMS) supervisors/members
Reports Affected	Direct Group Calling Information, SMDR, System Information (SysSet-up), Extension Information
Modes	All
Telephones	DLCs and rooms or calling group member (agent) telephones
Programming Codes	
DLCs/Supervisors	
Status 0/Unavailable	*760
Status 1/ After-call work state	*761 (hotel and CMS only)
Status 2/Available	*762
Telephones (rooms or agents)	
Status 1/ After-call work state	*45 (hotel and CMS only)
Status 2/ Log in or out	*44
Feature Codes	
Activate Extension Status/Supervisory Operation	32 + **Hold** (calling group/CMS only)
Deactivate Extension Status	32 + **Drop** (calling group/CMS only)
DLC	
Status 0/Unavailable	760 + DSS
Status 1/ After-call work state	761 + DSS (hotel and CMS only)
Status 2/ Available	762 + DSS
Telephones (rooms or agents)	
Status 0/ Unavailable	*44 (calling group/CMS only)
Status 1/ After-call work state	45 (hotel and CMS only)
Status 2/Available	44
MLX Display Labels	
Status 0/Unavailable	ES Status,ES Off [ES,ESOff]
Status 1/After-call work state	ES Status,ES1 [ES,ES1]
Status 2/Available	ES Status,ES2 [ES,ES2]

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System Programming	Designate either Hotel or Calling Group/CMS mode:
	• Options→Ext Status
	In Hotel mode, activate Extension Status on DLC:
	• Extensions→**More**→Ext Status
Hardware	Printer for reports

➡️ **NOTE:**

Description

Extension Status allows an operator or a calling group or Call Management System (CMS) supervisor with a Direct-Line Console (DLC) to monitor extensions' status. It provides alternatives to the standard call-handling LED indicators of available, busy, and Do Not Disturb. The red LEDs next to DSS buttons or the green LEDs next to Auto Dial buttons programmed with extension numbers are on, off, or flashing, depending on the extension's status. The two modes for Extension Status that can be selected during system programming are as follows:

■ **Hotel.** Employees at the front desk at a hotel or motel can use Extension Status to monitor room availability and restrict the telephones when the rooms are not occupied. Table 20 shows Extension Status 0, 1, and 2 for Hotel mode and the associated LED status for each.

Hotel mode allows different meanings to be assigned to extension statuses. The system restricts or unrestricts telephones based on the meaning assigned.

■ **Calling Group/CMS.** A calling group or CMS supervisor can use Extension Status to monitor the availability of agents who can take calls directed to the calling group. Table 21 shows Extension Status 0, 1, and 2 for the Calling Group/CMS mode and the associated LED status for each.

In either Hotel or Calling Group/CMS mode, an operator or a calling group or CMS supervisor with a DLC can change the status of an extension either by using a programmed button or by pressing the **Feature** button and dialing a code. In addition, users in either mode with any type of telephone can change to Status 1 and Status 2. In calling groups, agents do not change to Status 1. In Calling Group/CMS mode, users can change sign out of the group by changing to Status 0. In Hotel mode, an extension can be changed to Status 0 only from a DLC.

Table 20.   Extension Status for Hotel Mode

Extension Status	LED Status	Meaning
0	Off ☐	Room is occupied and telephone is in regular call-handling state.
1	Flashing ☀	Room is unoccupied and ready for cleaning; outside calls cannot be made from the telephone.
2	On ■	Room is vacant and outside calls cannot be made from the telephone.

Table 21.   Extension Status for Calling Group/CMS Mode

Extension Status	LED Status	Meaning
0	Off ☐	Telephone is logged out from the group; member is unavailable to take calls.
1	Flashing ☀	Used for CMS only. Telephone is in the after-call work state; group member is unavailable to take calls.
2	On ■	Telephone is signed into the group; calls can be sent to group member.

Considerations and Constraints

The system can be set up for either Hotel or Calling Group/CMS mode but not for both.

In Hotel mode, when DSS buttons are used to monitor status, operators can use the **Message Status** button to see whether an operator turned on message LEDs at the telephones. In Calling Group mode, message status shows busy/not busy status of the agents.

If a hotel has more than three floors and you wish to have the first digit of the extensions correspond to the floor number—for example, Floor 5 has extensions 501 through 520—then you should use a MERLIN II System Display Console with built-in DSS buttons instead of DSS adjuncts. This is because the DSS buttons on the MERLIN II System Display Console correspond to the extension jacks instead of a range of extension numbers, as on the DSS adjunct. A DSS adjunct cannot have buttons for more than three ranges of numbers. The status of the first 120 rooms is displayed. If the hotel has more than 120 rooms, Auto Dial buttons can be assigned to up to 33 line buttons on the console to be used for Extension Status and for transferring calls to the rooms.

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In Hotel mode, the MERLIN MAIL, MERLIN LEGEND MAIL, or AUDIX Voice Power outcalling feature does not work.

In Hotel mode, when Auto Dial buttons are used to monitor the status of telephones (instead of buttons on a DSS), the green LED next to the button indicates extension status (0, 1, or, 2) and the red LED indicates message status. In calling group mode, the green LED also indicates extension status, but the red LED indicates busy/not busy status.

If the system is programmed for Extension Status in Hotel mode, telephones can be changed to Status 0 (regular call handling) only from the operator console.

Extension Status cannot be changed from rotary telephones.

In Hotel mode, when the system restarts (for example, for maintenance) and the calling group type is set for Auto Logout (see "Group Calling" on page 281 for details), extensions that are assigned Status 1 are changed automatically to Status 0 and restrictions are removed. If the calling group type is changed to Auto Login, extensions assigned Status 1 are changed automatically to Status 2 and restrictions remain.

Telephone Differences

Direct-Line Consoles

Extension Status/Supervisory Operation can be assigned to DLCs only. In Hotel mode, only a DLC operator can change an extension to Status 0. In Calling Group/CMS mode, a calling group or CMS supervisor uses a DLC to monitor and change group member status.

Queued Call Consoles

Extension Status/Supervisory Operation cannot be used on a Queued Call Console (QCC), and a QCC cannot be a calling group or CMS supervisor console or a calling group member.

Multiline Telephones

Only a telephone assigned as a DLC can activate Extension Status/Supervisory Operation to see the status of telephones. In Hotel mode, the feature is assigned to the console in system programming and is always active on the console unless the operator either presses the **Message Status** button to use Auto Dial or the DSS buttons to see message-waiting status for each telephone.

To activate Extension Status/Supervisory Operation in Calling Group/CMS mode, the calling group or CMS supervisor assigned as a DLC presses the **Feature** button, dials *32*, and presses the **Hold** button. To deactivate the feature and return to normal call handling, the supervisor presses the **Feature** button, dials *32*, and presses the **Drop** button.

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To change the status of a telephone, a DLC operator or supervisor activates Extension Status (if not already active) and then presses a programmed button for Status 0, Status 1, or Status 2, and finally presses the Auto Dial or DSS button for the telephone. A DLC operator or supervisor can also change the status of telephones by pressing the **Feature** button, dialing the feature code (*760* for Status 0, *761* for Status 1, and *762* for Status 2), and pressing the Auto Dial or DSS button for the extension.

> **NOTE:**
> MLX display telephone users see only the first three characters dialed (for example, F76) when changing the status of telephones.

In either Hotel or Calling Group/CMS mode, regular multiline telephone users can change to Status 1 or Status 2 by pressing a programmed button for each state or by pressing the **Feature** button and dialing the feature code (*45* for Status 1 or *44* for Status 2). In Calling Group/CMS mode only, a user can change to Status 0 by pressing the **Feature** button and dialing **44*.

Single-Line Telephones

A single-line telephone user can change to Status 1 (CMS or Hotel only) or Status 2 by lifting the handset, which must be connected to an **ICOM** or **SA** line, and dialing either *#45* for Status 1 or *#44* for Status 2. In Calling Group/CMS mode only, a user can change to Status 0 by dialing *#*44*.

Feature Interactions

Allowed/ Disallowed Lists and Calling Restrictions	To allow users in Hotel mode to dial emergency or other selected numbers when the telephone is in Status 1 or 2, access must be assigned to an Allowed List.
Callback	In Hotel mode, an extension in Extension Status 1 or 2 cannot use Callback to request busy pools.
Direct Station Selector	A calling group or CMS supervisor or a DLC with Extension Status assigned can change the status of a group member or room by pressing a programmed Available or Unavailable button and then pressing the DSS button for the group member or room.
Display	See "Display" on page 225.
Do Not Disturb	The LED next to an Auto Dial or DSS button is on when the user activates Do Not Disturb or is busy on a call. In Release 2.0 and later systems, an MLX operator can inspect the DSS button to see if a Do Not Disturb message is posted.
Group Calling	Extension Status allows calling group supervisors to change and monitor calling group member status and to enable group members to sign in and out of the calling group.

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HotLine   Extension Status is not recommended for HotLine extensions because
                   HotLine extension cannot dial the # codes to change the Extension
                   Status.

Fax Extension

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Direct Group Calling Information, Extension Directory, Extension Information, Label Information
Modes	All
Telephones	Tip/ring for fax extension. All for message-waiting receiver.
System Programming	Identify fax extension jacks:
	● AuxEquip→Fax→Extension
	Assign fax message-waiting receivers:
	● AuxEquip→Fax→Msg Waiting
	Specify length of time before system sends fax message-waiting indication:
	● AuxEquip→Fax→Threshold
Maximums	
Fax machines using the Fax Extension feature	16
Message-Waiting Receivers programmed for each fax extension	4
Factory Setting	
Fax Message Threshold	10 seconds (range 0–30)

Description

The Fax Extension feature provides special treatment for single-line ports (ports on 012 or 016 modules) when used with a facsimile machine or fax modem. This special treatment disables those features normally provided to single-line ports but not suitable for fax machines, such as:

- Distinctive ringing
- Call Waiting
- Transfer, Hold, and Conference

In addition to the above, the Fax Extension feature also provides the ability to notify certain extensions when a fax is received by turning on the Message LED (fax message-waiting extension).

The Fax Message Threshold setting is the length of time (0–30 seconds) before the system assumes that a fax has arrived. When a fax extension answers a call, the MERLIN LEGEND Communications System waits until the fax message threshold is exceeded and then sends a message-waiting indication to the designated message-waiting extensions(s). If the message-waiting telephone has

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a Message LED, the Message LED turns on. Single-line telephone users without a Message LED hear a stutter dial tone when a message is waiting. Telephones located off premises are unable to receive message-waiting indications.

Return Call is not operable for messages received from a fax machine and cannot be used to make a call to the fax. Return Call is a feature available on MLX display telephones (including QCCs) that enables a user to automatically call an extension that left a message.

The Fax Extension feature overrides the distinctive ringing pattern for calls transferred to a fax extension. When a fax extension receives a transferred call, it provides one long ring (similar to an inside call) instead of three short rings.

$\implies$ **NOTE:**
Fax extensions only can send message-waiting indications. They cannot receive message-waiting indications.

To use the Fax Extension feature, perform the following system programming tasks for each fax machine:

1. Specify the tip/ring extension connected to the fax machine or fax modem.

2. Specify the extension(s) to receive the message-waiting indication.

3. Specify the number of seconds the system waits before it registers that a fax has arrived and sends the message-waiting indication (this is the fax message threshold, which is a systemwide parameter). The range is 0–30 seconds, with a default of 10 seconds.

$\implies$ **NOTE:**
It is recommended that the default setting (10 seconds) be used for the fax message threshold. If the fax message threshold is set to less than 10 seconds, the Message LED could be activated on a receiver's telephone every time the fax machine goes off hook to answer a call, even if a fax has not arrived. If the fax message threshold is set to more than 10 seconds, there is a greater likelihood that the Message LED will not be activated on a receiver's phone whenever short faxes (that is, fax transmissions of less than 10 seconds in duration) arrive.

Considerations and Constraints

A fax extension can send a message-waiting indication, but it cannot be assigned as a message-waiting receiver for another fax or for a calling group.

If a fax message-waiting indication is deleted by one of the four message-waiting receivers, the message is deleted from all of the telephones programmed as message-waiting receivers for the fax.

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Do not use this feature for fax machines connected to analog multiline telephones with a General Purpose Adapter (GPA). In a GPA configuration, features cannot be assigned to the fax independently of the telephone.

A maximum of 16 fax machines (tip/ring ports) can be assigned the Fax Extensions feature. Additional fax machines can be installed, but these additional fax machines cannot use the Fax Extension feature.

Feature Interactions

Conference	If an extension is programmed as a fax extension, the telephone at that extension is unable to use the Conference feature.
Display	On MLX display telephones, message-waiting indications received by a fax message-waiting receiver are identified as FAX. On analog multiline telephones, messages are indicated by Call *extension* or *caller's name.*
	The type of message indicated does not allow a calling group message-waiting receiver to distinguish between a message left for the calling group and a fax or personal message.
Group Calling	The calling group receives fax message-waiting indications directed to the calling group. The message-waiting receiver cannot distinguish between messages left for the calling group and fax or personal messages.
Hold	If an extension is programmed as a fax extension, the telephone at that extension is unable to use the Hold feature.
Messaging	Return Call is not operable for messages received from a fax machine and cannot be used to make a call to the fax.
Multi-Function Module	A single-line telephone with a Message LED connected to an MFM can receive message-waiting indications but not stutter dial tone.
Ringing Options	The Fax Extension feature overrides the distinctive ringing pattern for calls transferred to a fax extension. When a fax extension receives a transferred call, the fax extension provides one long ring (similar to an inside call) instead of three short rings.
Transfer	If an extension is programmed as a fax extension, the telephone at that extension is unable to use the **Transfer** button.

Forced Account Code Entry

See .

Forward and Follow Me

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Extension Information, Operator Information
Modes	All
Telephones	
Sending	All except QCC
Receiving	All
Programming Code	
Forward	*33
Feature Codes	
Forward On	
To inside ext.	33 + ext. no.
To outside no.	33 + dial-out code + telephone no. + #
Follow Me On	34 + sending ext no.
Forward/Follow Me Off	
At sending ext.	33 + sending ext no.
At receiving ext., for one sending ext.	*34 + sending ext no.
At receiving ext., for all sending extensions	*34*
MLX Display Labels	Forward [Forwd]
	Follow Me [FlwMe]
	CanclFollow (QCC only)
System Programming	Allow (or disallow) individual extensions to forward calls to outside telephone numbers (Remote Call Forwarding):
	• Extensions→**More**→Remote Frwd
	Assign or remove principal user of a personal line (only the principal user can use Remote Call Forwarding for calls on the personal line):
	• LinesTrunks→**More**→PrncipalUsr
	Assign the number of rings that a call rings at an extension before it is forwarded (Forwarding Delay):
	• Extensions→**More**→Delay Frwd→extension no.→ Enter→no. of rings→Enter
Factory Setting	
Forwarding Delay	0 rings (range 0–9 rings)

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Description

Forward and Follow Me provide two ways for a user to send calls to another number. Calls can be forwarded either to another inside extension (for example, when a user is temporarily working at a different desk) or to an outside number (for example, if a user is working at home). When calls are forwarded to an outside number, the feature is called Remote Call Forward.

In Release 4.0 and prior systems, an **SA** or **ICOM** line must be ringing at a forwarding extension before an inside call can be sent to the programmed destination, even when the programmed Forwarding Delay is 0 rings (factory setting). In Release 4.1 and later systems, the Forward on Busy feature enhancement forwards calls immediately when all available **SA** or **ICOM** buttons on the Forwarding extension are busy. The caller no longer receives a busy signal from the forwarding extension. This enhancement works with Forward, Follow Me, and Remote Call Forwarding.

$\Longrightarrow$ NOTE:
Calls forwarded to outside telephone numbers may vary in transmission quality.

In Release 4.0 and later systems, both Forward and Follow Me are affected by the Forwarding Delay option, which allows calls to an extension to ring for *at least* a programmed number of rings (0–9) before the call is forwarded to the receiving extension. If a call cannot be forwarded while certain conditions exist, the Delay may be greater than the programmed Forwarding Delay setting. The Forwarding Delay setting can be programmed only by the system manager through system programming.

$\Longrightarrow$ NOTE:
In Release 4.1 and later systems, **SA** or **ICOM** calls forwarded from an extension where all available lines are busy do not have the Forwarding Delay applied. They are forwarded immediately and may arrive at the destination before other forwarded calls that are ringing for the Forwarding Delay period.

Whether calls are sent using Forward or using Follow Me depends on where the feature is turned on:

■ Forward and Remote Call Forward are turned on at a user's own extension or from an outside telephone by remote access. Forward can be turned off at a user's own extension, at an extension to which the user's calls are forwarded, or from an outside telephone by remote access. (System programming is required to allow Remote Call Forwarding.)

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■ Follow Me is turned on at another inside extension to send a user's calls to that extension. It can be turned off at a user's own extension or at the extension to which calls are sent. Follow Me can be used only to send calls to an extension, not to an outside telephone number.

If several extensions are sending their calls to a user, that user can turn off Forward and Follow Me either for one extension at a time or for all extensions at once.

All users except Queued Call Console (QCC) operators can use Forward or Follow Me to forward calls to another extension. Calls cannot be forwarded to a calling group.

The factory setting for Remote Call Forward is that users are not allowed to forward calls to outside numbers. Through system programming, use of the feature can be allowed for individual extensions.

⚠ SECURITY ALERT:

The Remote Call Forwarding feature allows a user to forward an incoming call to an outside number. When a call is placed to the extension forwarding calls to an outside number, the caller can stay on the line after the call is concluded and receive another dial tone. At this point, the caller could initiate a toll call. For additional information, see Appendix A, "Customer Service Information."

Forward, Remote Call Forward, and Follow Me send the following types of calls:

■ Ringing inside calls in Release 4.0 and prior systems; when all **SA** or **ICOM** buttons are busy, all inside calls in Release 4.1 and later systems

■ Inside or outside calls transferred to the forwarding extension

■ Outside calls directed to the forwarding extension and received on a tie trunk

■ Outside calls received on a Direct Inward Dial (DID) trunk

■ Outside calls received on PRI lines with routing by dial plan

An available calling group member is automatically logged out when the member forwards his or her calls. If a calling group member logs in while calls are being forwarded, Forward or Remote Call Forward is automatically canceled.

Forward, Remote Call Forward, and Follow Me do not send the following types of calls:

■ Voice-announced inside calls

■ Calls received on a Cover button

■ Returning parked or transferred calls

■ Callback calls from the system

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- Calls received on a Shared **SA** button

- Calls received on a **Call** button on a QCC

- Calls transferred from a calling group for a voice messaging system (VMS) connected to a jack programmed as generic VMI.

- Calls forwarded from other extensions

Calls received on a personal line (an outside line assigned to a button on the telephone) are forwarded to outside numbers using Remote Call Forward only under the following circumstances:

- The extension must be assigned as the principal user of the personal line through system programming. Only one extension can be the principal user for a given line/trunk.

- If the personal line is a loop-start line, it must provide a reliable disconnect signal. A disconnect signal is the signal sent by the local telephone company to notify the system that an outside caller has hung up. Disconnect signaling is considered reliable when a disconnect signal is sent on every call when the caller hangs up. The line is considered unreliable when a disconnect signal is not sent on every call. The factory setting for loop-start lines is Unreliable Disconnect; this setting can be changed to Reliable Disconnect through system programming. Remote Call Forward cannot be used to forward calls arriving on a line programmed as unreliable.

$\Longrightarrow$ **NOTE:**
   Programming a loop-start line as reliable when, in fact, it does not provide reliable disconnect signaling leaves the line in a permanent busy condition after a call on that line has been forwarded to an outside number.

A forwarded call rings as shown in .

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Table 22.   Forwarded Call Ringing

Telephone Type	Calls forwarded to Inside Extension	Outside Number
Multiline	In Release 4.0 and prior systems, the forwarding telephone must ring once for an **SA** or **ICOM** call. If all **SA** or **ICOM** buttons are busy, the caller hears the busy tone and the call is not forwarded.	Forwarding telephone does not ring. Destination telephone rings.
	In Release 4.1 and later systems, if **SA** or **ICOM** buttons are all busy, the call is forwarded immediately, regardless of the delay setting.	
	If an **SA** or **ICOM** button is available, the green LED continues flashing; the call can still be answered.	
	The receiving telephone rings, and the green LED flashes at an available **SA** or **ICOM** button until the call is answered.	
Single-line	In Release 4.0 and prior systems, the forwarding telephone rings until the call is answered. If the **SA** or **ICOM** line is busy, the caller hears a busy tone and the call is not forwarded. In Release 4.1 and later systems, if the **SA** or **ICOM** line is busy, the call is forwarded immediately, regardless of the delay setting.	Forwarding telephone does not ring. Destination telephone rings.
	The destination telephone rings, and the green LED flashes at an available **SA** or **ICOM** button until the call is answered.	

Delayed Forwarding

In Release 4.0 and later systems, each user can program a Forwarding Delay setting for calls that are forwarded using Forward, Remote Call Forwarding, or Follow Me. The Forwarding Delay is the number of rings that a call rings at the forwarding extension before it is forwarded to the receiver. The number of rings can be set from zero to nine (0–9 rings) through system programming. Once the Forwarding Delay is programmed, it is in effect until it is reprogrammed.

The user may use this feature to screen calls during that time by checking the displayed calling number if it is available.

Do Not Disturb overrides Delayed Forwarding. Calls are immediately forwarded if Do Not Disturb is on while Forward or Follow Me is active.

In Release 4.1 and later systems, if a call arrives on an **SA** or **ICOM** line to a forwarding extension where all **SA** or **ICOM** buttons are busy, the call is sent immediately to its destination. The Forwarding Delay has no effect.

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Considerations and Constraints

On multiline telephones, Forward should be programmed on a button so that the LEDs provide a visual reminder when calls are being forwarded.

A user can forward calls to only one extension or outside telephone number.

A user can receive forwarded calls from an unlimited number of extensions.

Forward (including Remote Call Forward) and Follow Me cannot be used at the same time. When the second feature is turned on, the first one is automatically turned off.

In Release 4.0 and prior systems, an **SA** or **ICOM** call to an MLX or analog multiline telephone extension must ring once at the forwarding telephone, or according to the programmed Forwarding Delay in Release 4.0 systems. It rings until answered at an available **SA** or **ICOM** button on the destination telephone (see Table 22). In Release 4.1 and later systems, the call need not ring when all **SA** or **ICOM** buttons are busy. A call forwarded to an outside number does not ring at the forwarding telephone. A call forwarded to a single-line telephone rings until the call is answered.

A forwarded outside call rings as an inside call (one-ring burst) at the destination extension; it does not ring with the normal distinctive ring for an outside call.

The ability to use Remote Call Forward to forward calls received on a personal line to an outside number must be assigned through system programming. If this ability is assigned, only the principal user of a personal line can forward calls on that line to an outside number. If a principal user is not assigned, calls on a personal line cannot be forwarded to an outside number. When the principal user turns on Remote Call Forward, all calls received at that extension on an **SA** or **ICOM** button are forwarded to the outside number. Only one inside call at a time can be forwarded. However, multiple outside calls can be forwarded. No error tone sounds when a user with a restricted telephone uses Remote Call Forward. However, when a call eligible for forwarding is received, the system checks restrictions and denies the forward if the outside telephone number either is not on an Allowed List assigned to the restricted extension or is included on a Disallowed List assigned to the restricted extension.

If a user is off hook on an **SA** or **ICOM** button while turning on Forward, Remote Call Forward, or Follow Me, and enters an invalid destination, he or she hears an error tone. On an MLX display telephone, the display clears. If a user enters an invalid extension while turning on Forward, Remote Call Forwarding, or Follow Me at an analog multiline display telephone, the display shows Error.

Reliable disconnect cannot be programmed for a T1 channel programmed to emulate a loop-start line. When a call is received on a loop-start emulation channel and Remote Call Forward is used, the call is forwarded to the primary system operator instead of to the destination telephone number.

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A user who shares a personal line cannot join a call in progress forwarded to an outside telephone number unless the user shares both the personal line on which the call was received and the line/trunk selected to forward the call to the outside number.

When two or more people sharing a personal line use Forward or Follow Me to send to extensions, calls received on the personal line are forwarded to all destinations.

If Forward is turned on at an extension while it is ringing with an incoming call, the call continues to ring at that extension and also begins to ring at the destination extension after the delay time interval.

Forward, Remote Call Forward, and Follow Me forward a call only once. For example, if Extension A forwards calls to Extension B, which in turn is forwarding calls to Extension C, calls arriving for Extension A are forwarded only to Extension B and do not go on to Extension C.

Calls received on a Cover button are not forwarded. When a coverage sender turns on Forward, his or her calls are forwarded and go to coverage at the same time.

A call can be forwarded to a multiline telephone that has a DSS or Auto Dial button for the originator. When this occurs in Release 2.1 and later systems, the red LED next to the DSS button or green LED next to the Auto Dial button does not flash.

The reasons that a call may ring for more than the programmed Delayed Call Forwarding setting are the following:

- If a button is programmed as Delayed Ring, the Forwarding Delay begins after the Delayed Ring period ends. The two delays are cumulative.

- The destination for the Forwarded call may not be available to receive the call.

- There are no lines/trunks available (Remote Call Forwarding only).

In Release 4.0 and later systems, if the Forwarding receiver is unavailable, a call rings at the Forwarding extension (assuming a button is available) until the Forwarding receiver is available or the call is answered. If a call is forwarded to a line/trunk through Remote Call Forwarding, the call rings at the forwarding extension until a line/trunk is seized for the outgoing call.

In Release 4.0 and prior systems, a call arriving on an **SA** or **ICOM** line to a busy forwarding extension is not forwarded. The caller hears a busy tone.

In Release 4.1 and later systems, if all **SA** or **ICOM** buttons are busy at the forwarding extension and the receiving extension is also unavailable, the caller receives a busy signal.

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The Forwarding Delay setting cannot be copied from one extension to another because it is not associated with a button.

In Release 4.1 and later systems, an **SA** or **ICOM** call placed to a forwarding extension with no available **SA** or **ICOM** buttons is forwarded immediately. As a result, the call may arrive before other forwarded calls that are still ringing according to a programmed Forward Delay setting.

Forward on Busy (Release 4.1 and later systems only) is automatic and cannot be changed through programming. It is not activated when the forwarding telephone is busied-out for maintenance or system programming, or when the forwarding telephone is unplugged or in extension or system programming mode.

In Release 3.1 and later releases, Remote Call Forwarding checks the dial-access-to-pools restriction and denies the call if pool access is restricted.

Telephone Differences

Direct-Line Consoles

A DLC operator can forward calls to extensions and, if allowed through system programming, to outside telephone numbers. Because outside lines are assigned as personal line buttons on the console, the ability to forward calls received on each outside line (excluding loop-start lines with unreliable disconnect) to an outside number must also be assigned through system programming and can be assigned to only one telephone for each individual line/trunk.

Queued Call Consoles

Calls cannot be forwarded from a QCC to another extension or an outside number (a QCC operator uses Position Busy instead). However, users can forward calls to an individual QCC.

To turn on Follow Me for another extension at a QCC, press the **Feature** button and select the Follow Me feature from the display. At the prompt, dial the extension of the forwarding telephone.

To cancel Forward and Follow Me from other extensions: at the destination QCC, press the **Feature** button, select `CanclFollow` (Cancel Follow Me) from the display. Then do one of the following:

- To cancel forwarding from one extension, dial that extension number.
- To cancel forwarding from all extensions, dial *.

Other Multiline Telephones

To forward calls to an extension, either press a programmed Forward button and dial the destination extension number, or press the **Feature** button, dial *33*, and dial the destination extension number. If you are off hook on an **SA** or **ICOM**

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button, you hear a confirmation tone (double break in dial tone), and then dial tone is removed. If a programmed Forward button is used, the green LED next to the button turns on.

To forward calls to an outside telephone number, either press a programmed Forward button or press the **Feature** button and dial *33*. Then select the outside line/trunk or pool on which to route forwarded calls by dialing either the Automatic Route Selection (ARS) or pool dial-out code (Hybrid/PBX mode only), the Idle Line Access code (usually *9*; Key and Behind Switch modes only), or the line/trunk number (usually 801–880). Then dial the destination telephone number followed by a pound sign (*#*) to signal the end of the dialing sequence. If you are off hook on an **SA** or **ICOM** button, you hear a confirmation tone, and then dial tone is removed. If a programmed Forward button is used, the green LED next to the button turns on.

To turn on Follow Me, press the **Feature** button, dial *34*, and dial the forwarding telephone's extension. If you are off hook on an **SA** or **ICOM** button, you hear a confirmation tone and dial tone is removed. An MLX display telephone user can also use Follow Me by pressing the **Feature** button, selecting the feature from the display, and dialing the forwarding telephone's extension.

To turn off Forward, Remote Call Forward, and Follow Me at the originating multiline telephone, press the programmed Forward button, or press the **Feature** button, dial *33*, and dial your own extension number (in effect, "forwarding" calls to that extension). If you are off hook on an **SA** or **ICOM** button, you hear a confirmation tone, and then dial tone is removed. If a programmed **Forward** button is used, the green LED next to the button turns off.

At a destination (receiving) multiline telephone, to cancel Forward and Follow Me from other extensions, press the **Feature** button, dial **34*, and do one of the following:

- To cancel forwarding from one extension, dial that extension.

- To cancel forwarding from all extensions, dial ***.

If you are off hook on an **SA** or **ICOM** button, you hear confirmation tone, and then dial tone is removed.

Single-Line Telephones

At a single-line telephone, you must connect to an **SA** or **ICOM** line to turn on forwarding or Follow Me to an extension or outside line.

To forward to an extension, lift the handset and then dial *#33* followed by the destination extension number. You hear a confirmation tone, which is a double break in dial tone, and dial tone is removed.

To forward calls to an outside telephone number, lift the handset and dial *#33*. Then select the outside line/trunk or pool on which to route forwarded calls. Dial the ARS or pool dial-out code (Hybrid/PBX mode only), the Idle Line Access code

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(usually *9*; Key and Behind Switch modes only), or the line/trunk number (usually 801–880). Then dial the destination telephone number followed by a pound sign (#) to signal the end of the dialing sequence. You hear a confirmation tone, and dial tone is removed.

To turn on Follow Me, lift the handset and dial *#34* and your own extension number. You hear a confirmation tone, and dial tone is removed.

To cancel Forward, Remote Call Forward, and Follow Me at the originating single-line telephone, lift the handset and dial *#33* and your own extension number, in effect, "forwarding" calls to that extension. You hear a confirmation tone and dial tone is removed.

At a destination single-line telephone, cancel Forward and Follow Me from other extensions by lifting the handset and dialing *#*34*. Then do one of the following:

- To cancel forwarding from one extension, dial that extension number.
- To cancel forwarding from all extensions, dial ***.

If you are off hook on an **SA** or **ICOM** button, you hear confirmation tone. Then dial tone is removed.

Calls are forwarded to single-line telephone extensions even if there is no telephone or other tip/ring device connected to the specified extension.

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Feature Interactions

Account Code Entry	You cannot enter account codes for calls forwarded to outside numbers. Account codes are not necessary for calls forwarded to extensions.
	Telephones with Forced Account Code Entry assigned can forward calls only to extensions and not to outside telephone numbers. If Forced Account Code Entry is activated at an extension, the extension cannot use Remote Call Forwarding to program an outside number. If the extension already has Remote Call Forwarding on with an outside number programmed when Forced Account Code Entry is activated, then Remote Call Forwarding is overridden and calls ring only at the extension.
Allowed/ Disallowed Lists and Calling Restrictions	A user with an outward- or toll-restricted telephone cannot forward calls to an outside number unless the number is on an Allowed List assigned to the restricted extension. No error tone sounds when a user with a restricted telephone uses Remote Call Forward. However, when a call eligible for forwarding is received, the system checks restrictions and denies the forward if the outside telephone number is not on an Allowed List (or is on a Disallowed List) assigned to the restricted extension.
Auto Answer All	An answering device connected to an analog multiline telephone can answer forwarded calls when Auto Answer All is turned on.
Auto Dial	When a call is forwarded to a multiline telephone that has an Auto Dial button programmed for the forwarding telephone, the green LED next to the Auto Dial button does not flash.
Automatic Route Selection	To have ARS select the facility on which to forward calls to an outside telephone number, enter the ARS code before the telephone number. The Facility Restriction Level (FRL) for the call is that of the extension from which calls are being forwarded.
Barge-In	When a forwarded call is answered at the destination extension, Barge-In can be used to join the call only by dialing the extension number for the destination (not the number for the originating extension). Barge-In cannot be used to join a call forwarded to an outside telephone number.
Callback	If a user queues a call and then uses Forward, Remote Call Forward, or Follow Me, the call does not ring back at the destination extension or telephone number; the callback call returns only to the forwarding telephone.
	If a forwarding extension is busy when a user calls, the user can queue the call for callback. Callback is completed when the forwarding extension is no longer busy. If the forwarding extension and the forwarded-to extension are available, the call rings at both extensions. If the forwarded-to extension is not available, the call rings at the forwarding extension only.

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Callback *continued*	If an inside caller using Automatic Callback calls an extension with Remote Call Forward and no pools are available, the caller hears queuing tone. When the extension becomes available, dequeuing tone is heard and the call is placed to the extension (not the Remote Call Forwarding number) if the user has stayed on the line. Otherwise, if the caller has hung up, priority ring is heard as the callback call is dispensed to the user.
	When no pools are available and an inside caller is not using Automatic Callback, a call to an extension with Remote Call Forwarding follows the extension's coverage path. If there is no coverage and the inside caller activates Selective Callback while listening to the busy signal, the call queues for the extension but not for the Remote Call Forward number.
Caller ID	The systemwide LS-ID delay, if programmed, augments the Forwarding Delay. The total delay is the LS-ID delay plus the Forwarding Delay.
Call Waiting	Call Waiting does not apply to forwarded calls because the system tries the destination telephone instead of the forwarding telephone. However, if the call is not forwarded for any reason (for example, because the user has tried to use Remote Call Forward from a restricted telephone), Call Waiting functions normally.
	In Release 4.1 and later systems, if a user has no available **SA** or **ICOM** buttons and has Forward or Follow Me turned on, he or she does not hear the call-waiting tone when a call is forwarded using the Forward on Busy enhancement. The caller hears ringback.
Conference	When calls received on a personal line are forwarded to an outside telephone number, another user who shares the personal line and the line/trunk selected to forward the call can join the in-progress call by pressing the personal line button. In this case, the person joining the call is considered the conference originator, and the forwarded call can be conferenced. If the person joining the call hangs up, all participants on the conference call are disconnected.
Coverage	In Release 3.0 and earlier systems, or if the Forwarding Delay is programmed to 0 rings in Release 4.0 and later systems, when a coverage sender forwards, calls are forwarded and sent to coverage at the same time. Calls received on any Cover button are not forwarded.
	If a coverage receiver has activated Remote Call Forward, calls sent to that extension by Coverage are not forwarded to the remote location.
	In Release 4.0 and later systems, one of the following occurs if both coverage and forwarding are on and the Forwarding Delay is not set to 0 rings.

- A call that is sent to Group Coverage before the forwarding attempt is not forwarded.

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Coverage *continued*	■ A call that is remote call-forwarded before any coverage is not covered.
	■ A call that is remote call-forwarded while Primary and/or Secondary Coverage receivers are alerting is removed from those coverage points and is not sent to Group Coverage.
	■ If a call is sent to Group Coverage after forwarding, the call is removed from the called extension, the forwarded-to extension and any primary and secondary Cover buttons.
CTI Link	When an MLX extension is programmed as a CTI link (Release 5.0 and later systems only), forwarding is deactivated for that extension.
Digital Data Calls	Digital communications devices can forward calls by dialing the associated feature code.
	Forward can be activated by video systems that have the ability to dial strings and feature codes beginning with #. 2B data calls are forwarded as two 1B data calls. Remote Call Forwarding is not available at video system extensions.
Direct Station Selector	Forward can be turned on by pressing a programmed Forward button or using the feature code, then pressing a DSS button for the destination extension. Follow Me can be turned on by using the feature code and pressing a DSS button corresponding to the forwarding extension.
	A call can be forwarded to a multiline telephone that has a DSS or Auto Dial button for the originator. When this occurs in Release 2.1 and later systems, the red LED next to the DSS button or green LED next to the Auto Dial button does not flash.
Direct Voice Mail	In Release 4.0 and later systems, if Forwarding is active and Delayed Forwarding is not set to 0 rings, pressing the Direct Voice Mail button at the forwarding extension while a call is ringing on a button causes the call to go directly to voice mail without being forwarded.
	In Release 3.0 and later systems, a call that is made or transferred to an extension by using Direct Voice Mail is not forwarded or remote call forwarded.
Display	When an MLX display telephone user forwards calls to an extension, the display prompts for the extension. After Forward is turned on, the user sees a confirmation message. A user receiving a forwarded call sees a message indicating which extension forwarded the call. For an outside call, pressing **More** displays the line the call came in on and, if ISDN calling party identification or Caller ID is available, the caller's number. For an inside call, pressing **More** shows the caller's name and extension.
Display *continued*	When an MLX display telephone user forwards calls to an outside number, the display prompts for the number. On MLX and analog multiline telephones, the digits appear on the display as the user dials the number. An MLX display telephone user receives a feedback message confirming that his or her calls are now forwarded to an outside number.

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When an MLX display telephone user turns Follow Me on or off, the display prompts for the forwarding extension. After the feature is turned on, the message `Signed In` appears. After the feature is turned off, `Signed Out` appears.

If an MLX display telephone user enters an invalid destination while turning on Forward, the display clears. If a user enters an invalid extension while turning on Forward, Remote Call Forwarding, or Follow Me at an analog multiline display telephone, `Error` is displayed.

Do Not Disturb   Calls are not forwarded to a destination extension that has Do Not Disturb turned on; the call rings only at the forwarding telephone as described in Table 22 on page 269. Turning on Do Not Disturb at the forwarding extension does not prevent calls from being forwarded.

In Release 4.0 and later systems, turning on Do Not Disturb at a forwarding extension causes calls to be forwarded immediately. The Forwarding Delay has no effect.

Group Calling   An available calling group member is automatically logged out when the member forwards his or her calls. If a calling group member logs in while calls are being forwarded, Forward or Remote Call Forward is automatically canceled.

Calls cannot be forwarded to a calling group.

When a line/trunk programmed to ring into a calling group is assigned as a personal line on a principal user's telephone, an incoming call received on the personal line is not sent to the calling group if the principal user forwards calls to an outside telephone number through Remote Call Forwarding.

HotLine   Forward and Follow Me are not intended for HotLine extensions (Release 5.0 and later systems) but can be used at these extensions. Forwarding must be programmed at the extension before it is assigned as a HotLine extension. Follow Me cannot be activated at a HotLine extension, and both Forward and Follow Me must be cancelled at non-HotLine extensions.

Remote Call Forwarding is not intended for HotLine extensions but can be programmed before the extension is assigned as a HotLine. To cancel Remote Call Forwarding, remove HotLine programming first.

Multi-Function Module   Forward (including Remote Call Forwarding) and Follow Me should not be used on an MFM because the user does not have an LED that indicates when the feature is active.

Night Service   When Night Service is turned on, calls arriving for a Night Service group member can be forwarded to an extension using Forward or Follow Me. However, calls cannot be forwarded to an outside telephone number using Remote Call Forward.

Paging   Calls cannot be forwarded to a paging group. The line/trunk number used to connect loudspeaker paging equipment cannot be used to forward calls to outside telephone numbers.

Park   Returning parked calls are not forwarded.

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Personal Lines	When an extension is programmed as the principal user of a personal line, calls arriving on the personal line can be forwarded to an outside number (if the extension can use Remote Call Forward), unless the personal line is a loop-start line with unreliable disconnect.
	In Release 4.1 and later systems, the Forward on Busy enhancement does not apply to calls received on personal lines.
Pickup	Pickup cannot be used to answer calls being forwarded to an outside telephone number.
Pools	A pool can be used to forward calls to an outside telephone number. Enter the pool dial-out code before the telephone number.
Primary Rate Interface (PRI) and T1	A PRI line that has been programmed for routing by dial plan cannot have Remote Call Forwarding allowed. A T1 Switched 56 line cannot be used for Remote Call Forwarding.
Recall/Timed Flash	A multiline telephone user on an inside Forward or Follow Me call can use Recall. In Release 2.0 and later systems, Recall can also be used on an outside call received on a loop-start line.
Remote Access	Turn on Forward or Remote Call Forward through Remote Access. To do so, call into the system on a line/trunk that is programmed for Remote Access and enter the barrier code, if required.
	To forward calls to an extension, dial *33 while listening to system dial tone. Then dial the forwarding extension number and the destination extension number.
	To forward calls to an outside telephone number, dial *33 and the forwarding extension number. Then dial either the ARS or pool dial-out code (Hybrid/PBX mode only), the Idle Line Access code (usually 9; Key and Behind Switch modes only), or the line/trunk number (usually 801–880). Finally, dial the destination telephone number and # to signal the end of the dialing sequence.
	To cancel forwarding calls to an extension, dial *33 while listening to system dial tone; then dial the forwarding extension number and then the forwarding extension number again.
Ringing Options	If the forwarding telephone is set to Immediate Ring, only the programmed Forwarding Delay is applied (Release 4.0 and later systems). If the forwarding telephone button is set to Delay Ring, calls that arrive on that button are delayed before forwarding. In Release 4.0 and later systems, the Forwarding Delay is added to the Delay Ring setting. If the forwarding telephone button is set to No Ring, calls that arrive on that button are not forwarded.
	In Release 4.1 and later systems, a call that cannot arrive at the forwarding extension—because it has no available **SA** or **ICOM** button— is forwarded immediately. It does not ring at the forwarding extension, regardless of the Ring Timing options (Delay, Immediate, or No Ring) set.

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SMDR	If the system is programmed to track both incoming and outgoing calls, two Station Message Detail Recording (SMDR) records are generated when an outside call is forwarded to an outside telephone number. One record shows the incoming call, and the other record shows the call made to the destination telephone number with the forwarding telephone as the originator.
	Programming of the Remote Call Forwarding number to which incoming calls are to be forwarded is completed by pressing #. The SMDR report includes the # with the number for calls forwarded to the number.
System Access/ Intercom Buttons	A Shared **SA** button cannot be used to turn on Forward or Remote Call Forward for the principal's telephone. Calls received on a Shared **SA** button are not forwarded.
	When calls are forwarded to an extension, a call received on an **SA** or **ICOM** button rings once at the forwarding extension's **SA** or **ICOM** button —including all assigned Shared **SA** buttons, even though a call received on these buttons is not forwarded—and rings at the destination extension's **SA** or **ICOM** button, including all assigned Shared **SA** buttons, until it is answered. In Release 4.1 and later systems, calls are forwarded immediately when no **SA** or **ICOM** button is available at the forwarding extension.
Transfer	Inside and outside calls transferred by another user or by an operator are forwarded. If a user transfers a call to an extension with calls forwarded, the extension receiving the forwarded calls hears one burst of ring, indicating an inside call. If the extension is a display telephone, the call information appears as an inside call and not an outside call. Returning transferred calls are not forwarded.
Voice Announce	Voice-announced calls are not forwarded.

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Group Calling

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Dial Plan Information, Direct Group Calling Information, Extension Information, System Information (SysSet-up)
Modes	All
Telephones	
Supervisor	One of the following assigned as a DLC: MLX-20L MLX-28D MERLIN II System Display Console BIS-34D BIS-22D
Member	All
Programming Codes	
Any multiline telephone	
Calls-in-Queue Alarm	*22 + *calling group ext. no.*
Calling group supervisor	
Unavailable (ES Status 0)	*760
Available (ES Status 2)	*762
Calling group members	
Log in/out	*44
Feature Codes	
Calling group supervisor	
Enter Supervisory Operation	32 + **Hold**
Exit Supervisory Operation	32 + **Drop**
Unavailable (ES Status 0)	760 + DSS
Available (ES Status 2)	762 + DSS
Calling Group members	
Log In	44
Log Out	*44
MLX Display Labels	
Unavailable (ES Status 0)	ES Status,ES Off [ES,ESOff]
Available (ES Status 2)	ES Status,ES2 [ES,ES2]
System Programming	Assign calling group members and calling group supervisors to each calling group: • Extensions→**More**→Grp Calling→Members Assign lines/trunks to ring into calling group: • Extensions→**More**→Grp Calling→Line/Pool Select hunt type, Circular, Linear, or Most Idle (Release 5.0 and later systems): • Extensions→**More**→Grp Calling→Hunt Type

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System Programming continued	Designate delay announcement device. In Release 5.0 and later systems, designate as many as ten primary delay announcement devices and one secondary device, set interval between the first and second announcements, and specify whether second announcement repeats:
	• Extensions→**More**→Grp Calling→DelayAnnce
	Calling group as receiver for a Group Coverage sender:
	• Extensions→**More**→Grp Calling→GrpCoverage
	Assign message-waiting receiver for calling group:
	• Extensions→**More**→Grp Calling→Message
	Set overflow threshold and designate calling group or QCC queue as overflow receiver:
	• Extensions→**More**→Grp Calling→Overflow→Calling Group No./QCC→Number Based Overflow
	Choose calling group type to determine whether calling group members are automatically logged in after a system restart. When calling group is used for voice messaging systems, specify whether VMI type is integrated or generic:
	• Extensions→**More**→Grp Calling→Group Type
	Set calls-in-queue alarm threshold; in Release 5.0 and later systems, specify up to three alarm levels to signal increasing number of callers waiting:
	• Extensions→**More**→Grp Calling→Queue Alarm
	Set the overflow threshold time:
	• Extensions→**More**→Grp Calling→Overflow→Calling Group No.→ Time Based Overflow
	Assign external alert to notify calling group members of calls-in-queue alarm:
	• Extensions→**More**→Grp Calling→Xtnl Alert
	Enter display label for calling group:
	• **More**→Labeling→Grp Calling
Maximums	
Calling groups	32
Telephones for each group	20
Calling groups for each telephone	1
Calling groups for each line/trunk	1
Delay announcement devices for each system	32 (Releases prior to 5.0, can be shared among groups) 200 (Release 5.0 and later, can be shared among groups)
Primary devices per group	1 (Releases prior to 5.0) 10 (Release 5.0 and later)
Secondary devices per group	1 (Release 5.0 and later

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Maximums continued	
Message-waiting receivers for each calling group	1 (can be shared among groups)
Calls-in-Queue Alarm threshold levels	3 per group (Release 5.0 and later; in earlier systems, 1)
External Alerts for each group	1 (cannot be shared among groups)
Overflow Receivers for each group	1 (can be shared among groups)
Factory Settings	
Overflow Threshold	
Number-based	1 call (range 1–99 calls)
Time-based	0 (0–900 sec)
Repeat Secondary Delay Announcement	Off; Release 5.0 and later systems
Time between Announcements	0 (0–900 sec); Release 5.0 and later systems
Calls-in-Queue Alarm	1 call (range 1–99 calls); Release 4.2 and prior systems
Calls-in-Queue Alarm Levels	Release 5.0 and later systems only
Threshold 1	1 call (range 1–99 calls)
Threshold 2	1 call (range 1–99 calls)
Threshold 3	1 call (range 1–99 calls)
Calling group extension numbers	770–791, 7920–7929
Extension Status	Calling Group/CMS
Hunt Type	Circular
Group Type	Auto Logout

> **NOTE:**
> For additional information about calling group activities, see .

Description

Group Calling is used to direct incoming calls to a specific group of telephones (a *calling group*). A calling group is a team of individuals who answer and handle the same kinds of calls, for example, high-volume work groups such as sales, service, marketing, repair, and technical support. Also, fax machines that receive a large number of fax messages can be placed in a calling group to allow multiple calls to be sent.

Through Group Calling, all members in the calling group are assigned to a single extension number. Specific lines/trunks can be assigned to ring directly into the calling group so that outside callers can dial a published telephone number to reach the group, bypassing the operator.

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Individual calling group member extensions are assigned an extension number, allowing a group member to receive calls as an individual and as a group member. Outside calls that come into a calling group are usually not intended for a particular group member and can be handled by any member. However, inside callers can reach a specific calling group member by dialing the individual extension number assigned to the member.

As calls come into the calling group, the system hunts for an available group member in a circular or linear manner or, in Release 5.0 and later systems, according to which member is most idle (see "Hunt Type" on page 286). If a group member is available, the call rings on an **SA** or **ICOM** button. If all group members are busy or otherwise unavailable, calls are held in a queue. As calling group members become available, the calls are distributed on a first-in, first-out basis.

When all calling group members are busy, inside callers who are transferred to the calling group hear regular ringback and the call is sent to the calling group queue; outside callers hear special ringback or Music On Hold if it is programmed for the system. For a summary of what callers hear while waiting in queue or being transferred, see Table 29 on page 396

In addition, an announcement device can be assigned to the group to play a recorded announcement to each waiting caller, in the order that the calls arrive in the queue. In Release 5.0 and later systems, the system manager can assign up to ten primary and one secondary announcement devices for each group and can specify the delay between announcements as well as whether the second announcement repeats while a caller waits.

NOTE:
In Release 5.0 and later systems, combining multiple delay announcement devices with tiered alarm thresholds (see "Overflow Threshold" on page 290 for additional details) allows the calling group supervisor or system manager to monitor the effectiveness of delay announcements. See "Using Alarm Thresholds to Monitor the Effectiveness of Delay Announcements" on page 293 for more information.

Calling group members log in when they are ready to take calls (called *available status*) and log out while they finish call-related activities or when they leave their positions (called *unavailable status*). Calls are sent to a calling group member only if the member is logged in and is not busy on another call. When the group type is set to Auto Logout (the factory setting) and a call sent to a calling group member is not answered within 30 seconds (5 rings), the call is sent to another member or to the front of the queue if another calling group member is not available. The system automatically logs out the extension where the call went unanswered and makes it unavailable for subsequent calls until the calling group member logs in.

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A calling group member is considered available if *all* of the following conditions are met:

- The extension is logged into the calling group (available status).

- The extension handset is on hook and a red light is on next to the next line button to be used by Automatic Line Selection; or a headset user has disconnected the last call, no red light is on at any line buttons, and the speakerphone is off.

- The extension is not ringing or busy on another call.

- The extension does not have a call on hold (except for a call awaiting transfer).

- The extension is not in programming or test mode.

- An **SA** or **ICOM** button is available for call delivery.

- Do Not Disturb is off.

- Calls are not being forwarded through Forward, Remote Call Forward, or Follow Me.

- The calling group member has not activated Callback to reach a busy line/trunk (Hybrid/PBX mode only) or extension.

- The calling group member is not about to receive a call from a caller who has used Callback to reach the member.

Calling Group Options

This section describes the Group Calling options assigned through system programming and available only for calling groups.

Calling Group Supervisor Position

The calling group supervisor position is a Direct-Line Console (DLC) with Extension Status assigned through system programming. The calling group supervisor monitors and controls calling group activity by using the LEDs and programmed buttons on the console or DSS.

The supervisor console should include the following programmed buttons:

- For each calling group member, one button programmed with the member's extension on the telephone (inside Auto Dial) or optional DSS.

- A Calls-in-Queue Alarm button (either on the console or on a DSS), programmed with the calling group's extension, for monitoring calls in queue. A supervisor who manages more than one group needs a button for each group.

$\Longrightarrow$ **NOTE:**
In Release 5.0 and later systems, a DSS button used as a Calls-in-Queue Alarm button only indicates two alarm threshold

> levels, with either a flash or steady lighting. If DSS buttons are used to monitor calling group queue status, only two alarm thresholds should be set.

- Status buttons for controlling calling group member availability; an Available (ES2) button and an Unavailable (ES1) button. Extension Status features allow a calling group supervisor to change and monitor calling group members' status (and enable members to sign in and out of the calling group). See "Extension Status" on page 256 for additional information.

Hunt Type

The placement of each extension in the hunting sequence used by the system to search for an available calling group member is determined by the order in which each extension is assigned to the group during system programming. When the first call arrives for a calling group after a system is installed or restarted (cold start), the system searches for an available group member, starting with the first extension assigned to the group during system programming.

The order in which the system searches for available calling group members for subsequent calls can be circular, linear, or according to which agent is most idle and is called the *hunt type*. The hunt types are as follows:

- **Circular.** The system searches for an available calling group member starting with the extension after the last extension to receive a call. The circular order is the factory setting and is used when all group members have the same responsibilities for handling calls.

- **Most Idle** (Release 5.0 and later systems only). The system distributes calls according to the most-idle queue. Whenever an agent transfers or hangs up on a call, he or she moves to the end of the queue. For some applications, this hunt type is more efficient than the circular method, because it takes into account the varying duration of calls. Members are selected based on when they last *completed* a calling group call, not on when they last *received* one. When an agent first logs into a group, he or she is most likely to be the most idle and receive the next call. The Most Idle hunting method ignores non-calling group calls. For example, if an agent transfers a call that arrived on a personal line, the calling group member's most-idle status is unaffected. This setting is also used when all group members have the same responsibilities for handling calls.

  ⇒ **NOTE:**
  In a Hybrid/PBX mode system, a calling group member may receive a calling group call at an **SA** button, then put that call on hold at the **SA** button. If the agent then picks up the call at a personal line button at his or her telephone, the agent moves to the end of the most-idle queue.

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■ **Linear.** The system distributes calls starting with the first extension assigned to the group through system programming. Consequently, most calls are handled by the first member assigned to the group. This method is used, for example, when the primary responsibility of the first calling group member is to take calls, while other group members provide backup.

Delay Announcements

Delay announcement devices play a message for callers waiting in a calling group queue, explaining the delay to the caller or asking that the caller continue to wait. In Release 5.0 and later systems, each calling group can have up to 10 primary delay announcements and one secondary delay announcement device, a maximum of 11 per group. In earlier systems, a calling group can have only one delay announcement device (no secondary device). The devices can be connected to the control unit on 012, 016, or 008 OPT modules. A delay announcement device can also be connected to an analog multiline telephone through a General Purpose Adapter (GPA) or to an MLX telephone through a Multi-Function Module (MFM). Each device is identified by the extension number assigned in the system numbering plan. Any number of groups can share devices. Delay announcement devices should not be assigned as calling group members.

When no calling group members are available and calls enter the calling group queue, the announcement device, as it becomes available, answers the call that has been waiting longest and plays the recorded message.

In Release 5.0 and later systems, the primary delay announcements function like the single announcement available in prior releases. After the delay announcement (the primary delay announcement in Release 5.0 and later systems), an inside caller hears a special ringback, a transferred inside caller hears regular ringback, and an outside caller (including a transferred outside caller) hears special ringback or Music On Hold, if programmed, until the call is answered by a calling group member. The delay announcement or primary delay announcement is played only once while the call is in queue.

➡ NOTE:
When you change a delay announcement, for example, re-recording it, be sure to recalculate the announcement interval so that special ringback or Music on Hold does not interrupt the new announcement.

In Release 5.0 and later systems, the system manager can specify the extension for an optional secondary delay announcement and use system programming to set the interval (0–900 seconds) between announcements. This setting determines the time before a waiting caller hears the secondary announcement and, if it is set to repeat, the interval between replays of the secondary announcement. The secondary announcement can either repeat or play only once, after which the caller hears ringback or Music On Hold, according to the rules outlined above.

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The primary and secondary announcement options, when used together, allow the system manager to issue an initial message to callers, followed by a repeating announcement that, for example, urges the caller to stay on the line and wait for a calling group member. Generally the delay interval should be no shorter than the length (in seconds) of the secondary announcement. Ideally, the delay interval should be a multiple of the secondary announcement's length and the anticipated number of calls in queue during a busy time.

> ➡ **NOTE:**
> See "Using Alarm Thresholds to Monitor the Effectiveness of Delay Announcements" on page 293 for information about how tiered alarm thresholds can help determine the effectiveness of delay announcements in Release 5.0 and later systems.

In Release 2.0 and later systems, all calls delivered to a jack programmed as a calling group delay announcement device produce a one-burst inside ring (heard by the caller). In addition, outside calls transferred to a calling group and then answered by either a delay announcement device or a calling group member show the most recent answering extension, not the transferring extension, on the Station Message Detail Recording (SMDR) call record.

If a calling group member becomes available while the caller is listening to a delay announcement, the system immediately routes the caller to the calling group member. The announcement device is then free to handle another queued call.

Each announcement device has an extension number. Therefore, a calling group member or calling group supervisor can dial this number to check or change the announcement as long as the delay announcement device allows a user to read or change messages remotely. If the device is malfunctioning and does not answer the call within 30 seconds (5 rings), the system automatically logs out the device and makes it unavailable for subsequent calls until the calling group supervisor logs in the device or until the next system restart. The only effect on incoming calls is that callers do not hear the announcement.

If a caller hangs up while listening to a delay announcement device, the extension of the delay announcement device, not that of the calling group, is recorded on the SMDR.

Message-Waiting Receiver

The message-waiting receiver is the extension designated to receive message-waiting indications for the calling group. This includes message-waiting indications sent from an operator, from a display telephone using Leave Message, or from a fax machine. Any type of telephone with a message LED can be assigned as a message-waiting receiver.

The extension designated as the message-waiting receiver does not have to be a member of the calling group. Each calling group can have only one extension

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assigned as its message-waiting receiver, but the same extension can be assigned as the message-waiting receiver for more than one calling group.

Message-waiting indications cannot be sent to the extension number assigned to the group unless this option is programmed. The message-waiting receiver cannot distinguish between messages left for the calling group and personal messages.

Calls-in-Queue Alarm Threshold

The Calls-in-Queue Alarm Threshold is the number of calls (1–99) allowed in the queue before calling group supervisors and members are notified that too many calls are waiting for attention. In Release 5.0 and later systems, the system manager can assign three threshold levels to indicate increasing levels of severity, as explained later in this section. When the number of waiting calls is equal to or greater than the programmed Calls-in-Queue Alarm Threshold setting (factory default is one call), the calling group members can be notified in one of two ways:

■ Through an external alert connected to an MLX telephone by using a Multi-Function Module (MFM); the MFM is set for SAA operation and programmed as the alert. Because the tone sent to the alert is continuous, use only a device such as a strobe light, which stays lit until the number of calls drops below the limit. Only one external alert can be assigned to each calling group, and each external alert can be assigned to only one calling group. You should not use a Supplemental Alert Adapter with an analog multiline telephone because a steady tone is emitted from the telephone when the visual alert is on.

The system does not block the programming of any extension jack (including extension jacks used for telephones or operator consoles) as an external alert to provide the calls-in-queue alarm. However, programming a telephone or console extension as a calls-in-queue alarm is not recommended because the telephone alerts continuously with a tone while the number of calls in the calling group queue is equal to or greater than the programmed threshold or in Release 5.0 and later systems, Threshold 3 (see the discussion later in this topic). Single-line telephones do not ring or generate any kind of tone, nor does any device connected to an MFM that is set for tip/ring operation.

■ Through the LED associated with a Calls-in-Queue Alarm button (inside Auto Dial button) programmed with the calling group's extension or a DSS button that corresponds to the extension. In Release 5.0 and later systems, the DSS button flashes if the number of calls waiting in the queue is greater than or equal to Threshold 1 but fewer than Threshold 3. The LED lights steadily if the number of waiting calls is greater than or equal to Threshold 3. If three thresholds are needed, an inside Auto Dial button should be used to monitor queue status. There is no limit to the number of buttons that can be programmed to provide the calls-in-queue alarm indication.

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Any multiline telephone in the system can be used to monitor the status of a calling group's queue by programming a Calls-in-Queue Alarm button. An MLX display telephone can be used to view the number of calls in a queue (1–99) on the display when the user presses the **Inspct** button and then presses the Auto Dial button (Calls-in-Queue Alarm button) programmed with the calling group's extension number. The Inspect feature cannot be used on a DSS button.

In Release 5.0 and later systems, three Calls-in-Queue Alarm thresholds can be set to more clearly indicate the real-time status of the queue according to the behavior of programmed Calls-in-Queue Alarm buttons. If all three thresholds are set to the same value, the result is one threshold only with LED states of off and on. If two values are the same, then the result is two alarm levels with LED states of off, flash, and on. The factory is setting is one call for all three thresholds. Using all three levels, the system manager sets Threshold 3 to the highest value, Threshold 2 to a middle value, and Threshold 1 to the lowest value. A Calls-in-Queue Alarm button indicates the severity of the alarm conditions in the following ways:

- If the number of waiting calls is fewer than the value programmed for Threshold 1 or drops below that level, the LED is unlit.

- If the number of waiting calls is greater than or equal to the Threshold 1 value but less than the Threshold 2 value, the LED flashes.

- If the number of waiting calls is greater than or equal to the Threshold 2 value but fewer than the value for Threshold 3, the LED winks.

- If the number of waiting calls is greater than or equal to the highest value, Threshold 3, the LED lights steadily.

An external alert only signals when the number of calls in the queue is greater than or equal to the programmed Threshold 3 value.

These thresholds can be used to assess the effectiveness of delay announcements. See "Using Alarm Thresholds to Monitor the Effectiveness of Delay Announcements" on page 293 for details.

Overflow Threshold

The overflow threshold is the maximum number of calls waiting in the calling group queue before calls are sent to the overflow receiver. The factory setting is one call.

The Overflow Threshold option should be set to a number larger than the Calls-in-Queue Alarm Threshold so that the Calls-in-Queue Alarm alerts before calls are sent to the overflow receiver. In Release 5.0 and later systems, the overflow threshold should be greater than the highest Calls-in-Queue alarm threshold (Threshold 3).

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Overflow Threshold Time

In Release 4.0 and later systems, there is also an Overflow Threshold Time setting. The overflow threshold time is the maximum time that any call can remain in the calling group queue before it is sent to the overflow receiver. If the overflow threshold time is set to 0 seconds (factory setting), then the Overflow by Time option is off. If the overflow threshold time is set to any other valid interval (1–900 seconds), then calls that remain in the calling group queue for a time equal to or greater than the overflow threshold time are sent to the overflow receiver.

If you want the Overflow Threshold Time setting to be the primary source for overflow, you should specify an Overflow Threshold setting of a large number of calls (for example, 99 calls). If you want to have overflow by number of calls in the queue, set the overflow threshold time to 0 seconds; this turns off overflow by time.

Overflow Receiver

When the number of calls waiting in the calling group queue reaches the overflow threshold, calls can be sent to an overflow receiver, which can be another calling group or the Queued Call Console (QCC) queue. Only one calling group or the QCC queue can be programmed to provide overflow coverage for the same calling group, and each calling group or the QCC queue can provide overflow coverage for more than one calling group. If no overflow receiver is programmed, the call continues to ring in the queue until it is answered or the caller hangs up.

Calling Group Overflow Receiver

Calls to do not go to an overflow receiver that is a calling group until each of the following conditions is met:

- The number of calls in the queue is equal to or greater than the programmed overflow threshold or the time a call has been in the queue is over the overflow threshold time.

- The overflow calling group has an available calling group member.

- No other calls are already queued for the overflow calling group.

If all conditions are met, the calls are directed to the overflow receiver on a first-in/first-out basis until the number of queued calls in the covered calling group is less than the overflow threshold. The system searches for an available calling group member according to the hunt type assigned to the sending calling group. Calls that overflow to a secondary group cannot overflow again or hear a second announcement.

When the overflow group type is set to Auto Logout and an overflow call is not answered within 30 seconds (5 rings), the overflow calling group member is logged out. The call is returned to the sender calling group's queue and is placed at the front of the queue. The caller does not hear the sender's delay announcement even if the call was sent to the overflow calling group before the caller heard the delay announcement.

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QCC Queue Overflow Receiver

When the QCC queue is assigned to provide overflow coverage for a calling group, the following conditions must be met before calls are directed to the QCC queue:

- The number of calls in the calling group queue must be equal to or greater than the programmed overflow threshold.

- No QCC operators can have Position Busy on.

An overflow call that is sent to the QCC queue does not normally return to the calling group even if the call is not answered. If all QCCs have Position Busy active, the calls from the calling group do *not* overflow but continue to wait in the calling group queue. If all QCC operators *activate* Position Busy *while* an overflow call is in the QCC queue, the call is rerouted to the original calling group.

Calling Group Type

The Group Type setting determines whether or not the system automatically logs in members of a calling group following a power failure. The setting also determines the type of voice messaging interface (VMI) when the calling group is used to connect voice messaging systems or automated attendant applications.

The following settings are available:

- **Auto Logout.** This setting is used to specify that the system does not automatically log in calling group members after a power failure. When the Group Type is set to Auto Logout (the factory setting) and a call sent to a calling group member is not answered within 30 seconds (5 rings), the call is sent either to another member or to the front of the queue if no calling group member is available.

- **Auto Login.** This setting is for calling groups used for fax machines or data (also called *data hunt groups*) to specify that the system automatically log in calling group members following a power failure. Auto Login can be set for calling groups where member answer telephones.

- **Integrated VMI.** This setting is used when a voice messaging system (such as AUDIX Voice Power, MERLIN LEGEND MAIL, or MERLIN MAIL) that requires special signaling for integrated operation is connected to one or more extension jacks assigned to a calling group. The system automatically logs in the calling group members after a power failure.

- **Generic VMI.** This setting is used when a voice messaging system (such as Lucent Technologies Attendant or Integrated Voice Power Automated Attendant) that does not require special signaling is connected to one or more extension jacks assigned to a calling group. The system automatically logs in the calling group members after a power failure.

In Release 4.2 and later systems, SMDR can be programmed to provide more detailed information about calls to Auto Login or Auto Logout calling groups. For details, see "Station Message Detail Recording (SMDR)" on page 557.

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Using Alarm Thresholds to Monitor the Effectiveness of Delay Announcements

In Release 5.0 and later systems, a system manager or calling group supervisor can use a simple formula to set alarm thresholds in such a way that Calls-in-Queue Alarm buttons can indicate whether or not delay announcements are functioning optimally.

Generally the delay interval should be no shorter than the length (in seconds) of the secondary announcement. Ideally, the delay interval should be a multiple of the secondary announcement's length and the anticipated number of calls in queue during a busy time. For example, if the secondary announcement is 10 seconds long and 5 calls are expected in the queue, the delay interval should be set to at least 50 seconds.

To accomplish set up alarm thresholds, follow these preliminary steps:

1. Set up primary and secondary announcements of durations that seem appropriate for your needs.

2. Specify a reasonable announcement interval (for example, 30 seconds based on the rule noted above).

3. Refer to Table 23 and divide the announcement interval (Y) by the length of the secondary announcement (Z). Round off this result. This determines the maximum number of calls that can be in the queue before callers have to wait to hear the secondary announcement again.

4. Use the value from Step 3 for any one of the three thresholds. When the number of calls in the queue exceeds this value, the Calls-in-Queue Alarm button signals the overflow.

Table 23.   Checking the Effectiveness of Delay Announcements

Calls Waiting for Secondary Announcement (N)	Length of Secondary Announcement in Seconds (Z)	Announcement Interval in Seconds (Y)	Queue Length That Will Cause Delay if Exceeded (Y/Z)	N * Z	N * Z > Y?
3	10	30	3	30	No
3	20	30	2	60	Yes
5	15	90	6	75	No
10	15	90	6	150	Yes

When the number of calls waiting for a secondary announcement multiplied by the length of that announcement is greater than the announcement interval, an alarm is triggered. The table above illustrates situations where a programmed Calls-in-Queue Alarm button would or would not indicate a problem.

If problems arise, use the display at the calling group supervisor DLC console to monitor the situation while the problem is most severe. Try to adjust the

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secondary announcement's duration and the interval setting so that the announcement interval is greater than or equal to the length of the secondary announcement multiplied by the number of calls waiting for the secondary announcement ($Y >= N * Z$).

If your calculations indicate a problem, take one or more of the following measures:

- Increase the announcement interval (Y).

- Record a shorter secondary announcement (decrease Z).

- Eliminate the queue for the second announcement in one of the following ways:

  — Increase the number of available agents.

  — Increase the length of the primary announcement.

  — Decrease the number of primary announcements.

  — Set the repeat option for the secondary announcement to Off.

  — If the secondary announcement is also serving as the primary announcement, set up a separate primary announcement.

  — If the secondary announcement is shared by one or more other groups, make it exclusive to the group experiencing the problem.

Considerations and Constraints

An extension can be a member of only one calling group. Calling groups with no members are allowed.

Extension Status must be set to calling group/Call Management System (CMS), the factory setting, and not to hotel configuration.

The Integrated or Generic Voice Messaging Interface (VMI) group type should not be assigned to a calling group used for fax machines.

To allow all calling group members' extensions to ring when an outside call is not answered within three rings, the lines/trunks programmed to ring into the queue can also be assigned to buttons on calling group members' telephones and programmed for Delayed Ring. This does not work for inside calls, remote access calls, and Direct Inward Dial (DID) calls, or when a delay announcement device is assigned to the group.

Lines that are programmed to ring into a calling group also ring at any telephones that have the line assigned to a button. If a call is answered at any one of these telephones, the call is removed from the calling group queue. A line/trunk can be assigned both to a calling group and as a personal line.

A line/trunk cannot be programmed to ring into more than one calling group.

A line/trunk cannot be programmed to ring into both a calling group and a QCC queue.

If no lines are assigned to the calling group, only inside calls are eligible for calling group distribution.

The calling group supervisor can log delay announcement devices in or out.

Any of the multiline and single-line telephones compatible with the system can be used as calling group member positions.

The Most Idle hunting method (Release 5.0 and later systems only) ignores non-calling group calls. For example, if an agent transfers a call that was answered on any personal line, the calling group member's most-idle status is unaffected

In a Hybrid/PBX mode system where the Most Idle hunt type (Release 5.0 and later systems only) is used, a calling group member may receive a calling group call at an **SA** button, then put that call on hold at the **SA** button. If the agent then picks up the call at a personal line button at his or her telephone, the system no longer considers the call a calling group call and moves the agent to the end of the most-idle queue.

Labels can be assigned to calling groups to identify the name of the group, such as SALES, SERVICE, or CLAIMS, on display telephones.

Do not use a Supplemental Alert Adapter with an analog multiline telephone because a steady tone is emitted from the telephone when the visual alert is on.

The system does not prevent users who are not members of a calling group from using the Available (ES2) and Unavailable (ES1) programmed buttons or feature codes. Call Management System (CMS) agents who may not be calling group members can use these same codes to log in and out of the CMS.

The published number for a calling group can be a DID number.

If the Overflow Threshold Time setting for a calling group is changed, the time countdown is reset for any calls waiting in the queue for that calling group.

In Release 2.1 and later systems, a 012 port that is programmed as a generic VMI port can transfer an outside call to an outside number (trunk-to-trunk transfer). Release 2.0 and earlier systems can perform a trunk-to-trunk transfer only on ports programmed as integrated VMI.

⚠ SECURITY ALERT:

Calling restrictions (for example, Disallowed Lists, Toll Restriction, Facility Restriction Levels) should be programmed, as appropriate, to minimize toll fraud abuse, especially if a single-line telephone is connected to an integrated VMI port. See "Calling Restrictions" on page 110 and Appendix

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> *A, "Customer Service Information," for additional information about*
> *programming calling restrictions.*

In Release 3.1 and later systems, ports assigned as Generic VMI or Integrated VMI are assigned a number of security restrictions. Generic VMI and Integrated VMI ports are outward restricted. The factory-set Facility Restriction Level is 0. A default disallowed list is assigned to the VMI ports which includes the following entries: 0, 10, 11, 1809, 1700, 1900, 976, 1*ppp*976, *, (*p*=any digit).

In Release 4.1 and later systems, changes to Group Calling coverage delays affect the Integrated Administration feature of Integrated Solution III (IS III). For details, see "Integrated Administration" on page 328.

In Release 5.0 and later systems, the three threshold levels, when set, are signaled only at programmed Calls-in-Queue alarm buttons. An external alert lights or sounds only when the number of calls in the queue is greater than or equal to Threshold 3.

Mode Differences

Behind Switch Mode

Calls to calling groups in a system set up in Behind Switch mode follow the communications system ring pattern, not the central office ring pattern.

Telephone Differences

Direct-Line Consoles

A DLC can be a member of a calling group and is normally used as the calling group supervisor position. Supervisor positions must be assigned to a DLC.

Any of the following telephones assigned as a DLC can be used as a calling group supervisor's console:

- MLX-20L telephones with or without a DSS
- MLX-28D telephones with or without a DSS
- BIS-22D
- BIS-34D
- MERLIN II System Display Console with built-in DSS

The supervisor must activate Extension Status to see the status of calling group members and to change their availability; this cannot be done from normal call-handling operation.

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To activate Extension Status, press the **Feature** button, dial *32*, and press the **Hold** button. To return to normal call handling, press the **Feature** button, dial *32*, and press the **Drop** button.

To change the availability of a calling group member, the supervisor activates Extension Status (if not already active) and presses a programmed button for Available (ES2) or Unavailable (ES0) and the Auto Dial or DSS button for the group member's extension number. The supervisor can also change the status of extensions by pressing the **Feature** button, dialing the feature code [*762* for Available (ES2) and *760* for Unavailable (ES0)], and pressing the Auto Dial or DSS button for the group member's extension number. A supervisor with an MLX display telephone can change the status of extensions by pressing the **Feature** button, selecting the feature from the display (ES2 On for Available and ES Off for Unavailable), and pressing the Auto Dial or DSS button for the group member's extension number.

Direct Station Selector (DSS)

In Release 5.0 and later systems, the state of a DSS button used as a Calls-in-Queue alarm button only indicates two alarm threshold levels, with either a flash or steady lighting. For this reason, if DSS buttons are used to monitor calling group queue status, only two alarm thresholds should be set.

Queued Call Consoles

A QCC cannot be a member of a calling group and cannot be assigned as a calling group or CMS supervisor position.

The QCC queue can be designated to provide overflow coverage for calls from one or more calling groups. When an overflow call is sent to the QCC queue, it cannot be identified as a calling group call.

Other Multiline Telephones

Calling group members log into the group by pressing the programmed Available button or by pressing the **Feature** button or # and dialing *44*. To log out, press the programmed Available button or press the **Feature** button or # and dial **44*. A confirmation tone is heard.

To see the number of calls waiting in queue, using an MLX display telephone, press the **Inspct** button followed by the programmed Calls-in-Queue Alarm button. An analog multiline user cannot use the Inspect feature.

Single-Line Telephones

Log into and out of the calling group by lifting the handset (which must be connected to an **SA** or **ICOM** button) and dialing *#44* to log in or *#*44* to log out. A confirmation tone is heard.

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Feature Interactions

Auto Answer All	A calling group member with an analog multiline telephone can use Auto Answer All when an answering machine is connected to the extension. When the feature is activated, all incoming calls ringing on the group member's telephone (both calls for the calling group and calls to the group member's own extension) are answered automatically by the answering machine.
Auto Dial	The Calls-in-Queue Alarm button is assigned on a multiline telephone by programming an inside Auto Dial button with the calling group's extension number.
	When a DSS adjunct is not available, Auto Dial buttons programmed with each calling group member's extension are used by the calling group supervisor to monitor group member availability.
Barge-In	Barge-In can be used for calling group members, but the member's extension must be used instead of the calling group extension. If a user tries to use Barge-In after dialing the calling group extension number and waiting in the queue, the feature has no effect. All VMI ports always have Privacy on.
	If a person uses Barge-In to reach another user who is waiting in a calling group queue, the queued call is removed from the queue and both people are connected. If a person uses Barge-In for the delay announcement extension and the device is playing a message to a caller, the call is removed from the queue and both people are connected.
	In Release 5.0 and later systems when the Most Idle agent hunt type is used, if a supervisor or operator barges in on a calling group call and hangs up before the agent does, then Most Idle status is not affected. If the agent hangs up first, he or she moves to the end of the Most Idle queue.
	Barge-In cannot be used to join calls to VMI ports.
Callback	Calls made to a calling group are not eligible for Callback because the calls ring into the calling group's queue. However, Callback can be used for calls to individual calling group member extensions or to the delay announcement device. Calling group calls are not sent to the group member extension either when the calling group member uses Callback for a busy extension or pool or when another person is using Callback to reach a calling group member and the callback call is ringing on that person's telephone.
Caller ID	Caller ID information appears on the display. Outgoing call information is not displayed.
Call Waiting	Calls made to a calling group are not eligible for Call Waiting because the call rings into the calling group's queue. However, Call Waiting can be used for calls to individual members of the calling group. If the calling group member is a fax machine, the call-waiting tone is not given to the fax jack.

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Camp-On	Users can transfer calls to a calling group by using Camp-On, but calls do not return to the originating extension, even if not answered within the programmed camp-on interval. If the calling group is made up of fax machines, a call-waiting tone is not given to the fax jack when the call is camped-on.
Conference	Calls waiting in the calling group queue or ringing at a calling group member's extension cannot be added to a conference call. A user must be connected to a calling group member before the call can be added to the conference.
Coverage	A calling group cannot be programmed as a receiver for Individual Coverage. A coverage group can have only one calling group as a receiver. If a calling group is programmed as a receiver for a coverage group, it must be the only Group Coverage receiver. However, Individual Coverage (primary and/or secondary) receivers can be programmed. A calling group can be a receiver for as many as 30 coverage groups.
	As soon as the call is sent from the calling group queue to a calling group member or the delay announcement, the ringing and lit LED are removed from the sender's extension (except for an outside call received on a personal line).
	Coverage VMS Off can be activated if the user does not want outside calls to be sent to the voice messaging system.
	A calling group cannot be a sender. A calling group member can be a sender for Individual Coverage (Primary or Secondary) or Group Coverage. Calls to the calling group extension number are sent only to the calling group member's Individual Coverage receivers and not to the Group Coverage receivers. Calls to the calling group member's individual extension are sent to both Individual and Group Coverage receivers.
CTI Link	When an MLX extension is programmed as a CTI link (Release 5.0 and later systems only), it is removed from membership in calling groups.
	If another calling group is programmed as the overflow receiver for a calling group, and overflow call can arrive at a personal line button at the extension of an overflow calling group member before it is delivered to any **SA** button in the overflow calling group.
Digital Data Calls	Lines intended for data calls should not be mixed in the same calling group with lines intended for voice calls.
	Video systems can connect using only 1B data connections (providing the video application supports 1B data) when receiving a call through a calling group. A calling group dispenses only one call to each calling group member.
Direct Station Selector	The DSS button's LED for a calling group extension number indicates the status of calls in the calling group queue. In releases prior to 5.0, the LED is on when calls are at or above the programmed threshold and off when the number is below the threshold.

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Direct Station Selector *continued*	In Release 5.0 and later systems, the DSS button flashes if the number of calls waiting in the queue is greater than or equal to Threshold 1 but fewer than Threshold 3. The LED lights steadily if the number of waiting calls is greater than or equal to Threshold 3. Otherwise, it flashes. If three thresholds are needed, an inside Auto Dial button should be used to monitor queue status
Display	Calling group agents with MLX display telephones see feedback messages on the display when they log into the Available state. When a calling group supervisor with an MLX display telephone logs calling group members in or out, a message appears on the supervisor's display and on the group member's display. After pressing either the programmed Available or Unavailable button or dialing the feature code, supervisors with MLX telephones are prompted to indicate which group member they want to log in or out.
	When a calling group member with an MLX telephone receives an outside call for the calling group, the label of the calling group or Grappled appears on the display along with the label for the line on which the call came in. If automatic number identification (ANI), station identification (SID, Release 2.0 and later systems), or another PRI-based caller identification service (Release 4.2 and later systems) is available, the number of the caller is shown on the display on MLX telephones after the **More** button is pressed. Analog multiline telephone users see only the line information.
	Any MLX telephone user can inspect the number of calls in queue by pressing the **Inspct** button and then pressing a button programmed with the calling group's extension. The display shows the label associated with the calling group and the number of calls.
Do Not Disturb	If a calling group member uses Do Not Disturb, calls are not sent to the group member even if he or she is logged in and available.
Extension Status	Extension Status allows calling group supervisors to change and monitor calling group member status and enables group members to sign in and out of the calling group.
Fax Extension	The calling group receives fax message-waiting indications directed to the calling group. The message-waiting receiver cannot distinguish between messages left for the calling group and fax or personal messages.
Forward and Follow Me	An available calling group member is automatically logged out when she or he forwards calls to an extension or telephone number. If a calling group member logs in while calls are being forwarded, Forward or Remote Call Forward is automatically canceled. Calls cannot be forwarded to calling groups.
Forward and Follow Me *continued*	A line/trunk can be assigned as a personal line and ring into a calling group. The principal user of the personal line can use Remote Call Forwarding to forward calls to an outside telephone number. In this case, incoming calls do not ring into the calling group.

Hold	A calling group member who puts a call on hold by using the **Hold** button is considered unavailable for incoming calls. Inside callers waiting in the calling group queue cannot put themselves on hold.
HotLine	HotLine extensions (Release 5.0 and later systems) can dial a calling group extension number.
Integrated Administration	AUDIX Voice Power services and the FAX Response service are set up as members of dedicated calling groups. Integrated Administration sets up the necessary calling groups with the applicable options for correct operation of these services.
	In Release 4.1 and later systems, coverage delay settings affect the ability of Integrated Administration to program some Group Calling options for AUDIX Voice Power. See "Integrated Administration" on page 328 for details.
Labeling	An alphanumeric label can be assigned to the calling group. The label is displayed on incoming calling group calls to MLX calling group members or when an MLX display telephone user presses the **Inspct** button and an Auto Dial button programmed with the calling group's extension number.
Messaging	Users can leave messages for the calling group only if the system has been programmed with a calling group message-waiting receiver. The receiver also receives fax message-waiting indications directed to the calling group. The message-waiting receiver cannot distinguish between messages left for the calling group and fax or personal messages.
Multi-Function Module	A Multi-Function Module can be a member of a calling group, can be assigned as a delay announcement for a calling group, or can be used to connect an external alert for a Calls-in-Queue Alarm. An MFM used for the delay announcement or Calls-in-Queue Alert should not be assigned as a group member.
Music On Hold	An outside caller waiting in the calling group queue hears Music On Hold, if programmed.
Night Service	In Release 2.0 and later systems, a calling group can be a Night Service group member.
Park	A calling group member who parks a call is considered available to receive another call.
Personal Lines	If a person uses a shared personal line button to join a call in the calling group queue, the call is removed from the queue. If a delay announcement is playing, it is disconnected from the call.

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Personal Lines *continued*	To allow all calling group members' telephones to ring when an outside call is not answered within three rings, the lines/trunks programmed to ring into the queue can also be assigned as personal lines on group member telephones and programmed for Delay Ring. This does not work for inside calls, remote access calls, DID calls, or when a delay announcement device is assigned to the group.
	In a Hybrid/PBX mode system where the Most Idle hunt type (Release 5.0 and later systems only) is used, a calling group member may receive a calling group call at an **SA** button, then put that call on hold at the **SA** button. If the agent then picks up the call at a personal line button at his or her telephone, the system no longer considers the call a calling group call. Therefore, the agent moves to the end of the most-idle queue (Release 5.0 and later systems) and can receive another calling group call immediately.
Pickup	A calling group member can be a member of a Pickup group. Calling group members can use Pickup to answer a call (either a calling group or individual group member extension) that is ringing at another group member's telephone. Line Pickup can be used to pick up a call that is in the calling group queue. Picking up a call on hold moves a calling group agent to the end of the most-idle queue (Release 5.0 and later systems only).
Pools	Lines/trunks assigned to pools can be assigned to ring into a calling group. An incoming call on a line/trunk assigned to the pool rings on an **SA** button even if the calling group member has a **Pool** button assigned to his or her telephone.
Primary Rate Interface (PRI) and T1	A PRI line that is a member of a B-channel group programmed for routing by dial plan should not belong to a calling group. A line that is part of a B-channel group included in a calling group should not be programmed for routing by dial plan.
Recall/Timed Flash	A user who has received an inside calling group call can use Recall.
Remote Access	Remote access users cannot log into a calling group but can call into a calling group regardless of the restrictions applied. When the call rings at a calling group member's telephone, it rings as an outside call.
	A calling group can be programmed to receive calls from remote access users to invalid extensions. If a line/trunk is programmed for both Remote Access and Group Calling, Remote Access overrides Group Calling.
Ringing Options	Abbreviated ringing is not operable for calls to the calling group extension because a calling group member active on a call is considered unavailable for incoming calls. In Hybrid/PBX mode, calling group members should program **SA** buttons for Immediate Ring.
Signal/Notify	A Signaling button cannot be programmed for a calling group.

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SMDR	Calls to calling groups are associated with the first extension to handle the call. If the call is answered by the calling group delay announcement device, the extension for the delay announcement device is recorded on the SMDR record, even if the call is later answered by a calling group member or overflow group member.
	In Release 4.1 and prior systems, timing begins as soon as the calling group member or delay announcement device answers the call.
	In Release 4.2 and later systems, timing for incoming calls to Auto Login or Auto Logout calling groups begins when a call arrives at the system. If the caller hangs up while listening to a delay announcement, the call is associated with the extension of the device.
	In Release 4.2 and later systems, the programmable SMDR TALK field (factory setting is off) records the time agents spend talking to incoming callers; the agents' calling groups must be assigned the Auto Login or Auto Logout group type. Calls answered by a delay announcement device, calling group overflow receiver, or QCC queue overflow receiver are reported with blank TALK entries.
	Release 4.2 and later systems supply the following additional information about incoming calls to Auto Login or Auto Logout calling groups, providing the SMDR Talk Time option is enabled:

- If a call goes to an overflow receiver, SMDR marks the CALL TAG field with an ampersand (&).
- If a call is answered at a non-calling group extension, SMDR puts an exclamation point (!) in the CALL TAG field.

System Access/ Intercom Buttons	Calls to a calling group ring on **SA** or **ICOM** buttons on the telephones of calling group members. A calling group member who is making or receiving a call on a Shared **SA** button is considered unavailable by the system; the principal owner, however, is considered available and can still receive calls directed to the calling group.
System Renumbering	Extensions for calling groups (the factory settings: 770–791, 7920–7929) are assigned and can be renumbered through system renumbering.
Transfer	A call transferred to a calling group is not returned to the originator but is handled as any other call received in the calling group. For example, the system follows the same hunt sequence to locate an available calling group member, and the call is eligible for a delay announcement if one is programmed. A calling group member who has a call on hold for transfer is considered available for a call because transfer hold requires pressing the **Transfer** button rather than the **Hold** button.

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Transfer continued

Voice-announced transfers cannot be made to a calling group. There is no limit to the number of calls that can be transferred to a calling group. When an agent transfers a call, the system moves his or extension to the end of the most-idle queue (Release 5.0 and later systems only).

In Release 2.0 and later systems, when an inside caller is transferred to a calling group and no members are available, the inside caller hears a one-burst ringback. When an outside caller is transferred to a calling group and no members are available, the outside caller hears a 2-burst ringback or Music On Hold (if programmed).

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Headset Options

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Users Affected	Telephone users, operators
Reports Affected	Extension Information
Modes	All
Telephones	MLX telephones
Programming Codes	
Headset Hang Up	*781 (centralized telephone programming only; not applicable on QCC)
Headset Status	*782
Headset Auto Answer	*780
Headset/Handset Mute	*783
MLX Display Labels	
Headset Hang Up	Hdset,Hang Up
Headset Status	Hdset,Status [Hdset,Stat]
Headset Auto Answer	Hdset,Auto Answer [Hdset,Auto]
Headset/Handset Mute	Hdset,mute [Hdset,Mute]

Description

Four headset options are provided for MLX telephone users and operators who have an optional headset adjunct:

- Headset Hang Up (except for Queued Call Console)

- Headset Status

- Headset Auto Answer

- Headset/Handset Mute

Headset Hang Up

When programmed on a button on an MLX telephone or MLX Direct-Line Console (DLC), Headset Hang Up serves two purposes:

- A Headset Hang Up button automatically turns on headset operation for that extension, so that the user or operator can answer and make calls using the headset instead of the handset. Removing the Headset Hang Up button automatically turns off headset operation for that extension.

- The user or operator presses the Headset Hang Up button to disconnect a headset call. The button replaces switchhook operation, which is disabled when headset operation is active. Pressing the button has no effect on its LEDs, which are always off.

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For a user or operator to be able to use a headset, a Headset Hang Up button must be programmed (centralized telephone programming) for an MLX telephone or MLX DLC.

Headset users press the programmed Headset Hangup button after each call. If the user does not press the Headset Hangup button, new calls still arrive correctly, but the LED status of the extension (as shown on other extensions and DSSs) is not updated.

A Headset Hang Up button is not needed and cannot be programmed on a Queued Call Console (QCC).

To give control of headset/handset operation to an MLX telephone user or MLX DLC operator who has a Headset Hang Up button, a Headset Status button can also be programmed, as described in the next section. On a telephone or console with a Headset Hang Up button but without a Headset Status button, headset operation is always on.

$\Rightarrow$ NOTE:

If an MLX telephone or MLX DLC has a Headset Status button and/or a Headset Auto Answer button in addition to a Headset Hang Up button, the Headset Hang Up button can be removed through centralized programming without removing the Headset Status or Headset Auto Answer button. If either of these features is on, the green LED next to the button stays on. However, the telephone or console is no longer in headset operation and neither the Headset Status nor the Headset Auto Answer button has any effect, whether on or off, until a Headset Hang Up button is reprogrammed for the extension.

Headset Status

When a Headset Hang Up button is programmed on an MLX telephone or MLX DLC, Headset Status is automatically turned on. Programming a Headset Status button also allows the user or operator to turn headset operation off and on manually. With headset operation on (green LED next to Headset Status button is on), the user or operator answers and makes calls with the headset. With headset operation off (green LED next to Headset Status button is off), the user or operator answers and makes calls with the handset.

Two conditions are necessary for an MLX telephone user or MLX DLC operator to use the Headset Status feature:

- A Headset Hang Up button must be programmed as described in the previous section.

- A Headset Status button must be programmed on the telephone or console, through either extension programming or centralized telephone programming.

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A **Headset Status** button is a fixed feature on a QCC and cannot be deleted or changed.

To use Headset Auto Answer, Headset/Handset Mute, or Headset Hang Up on a telephone or console with a Headset Status button, Headset Status must be on.

When Headset Status is on, switchhook operation is disabled. The handset or speakerphone can be used to make or answer a call, but the only way for the user or operator to disconnect from a call is by pressing the Headset Hang Up button. The user or operator can turn off the headset and switch back to switchhook operation by pressing the Headset Status button; the green LED next to the button turns off.

Headset Auto Answer

A Headset Auto Answer button allows an MLX telephone user or operator with a headset to be connected automatically to a ringing call. Headset Status must be on, as described in the two previous sections, before Headset Auto Answer can be used.

When Headset Auto Answer is turned on, the green LED next to Headset Auto Answer button is on and the user or operator hears a zip tone through the headset to indicate an incoming call. Following the tone is a brief pause, during which the microphone is temporarily disabled to prevent the user's or operator's private conversation from being heard by the caller.

If a user with Headset Auto Answer on presses the button with a ringing call (for example, when Ringing/Idle Line Preference is turned off), the call is answered without the user hearing zip tone.

Headset Auto Answer can be turned on and off during a call without disconnecting the caller and takes effect immediately.

Headset Auto Answer does not automatically answer voice-announced calls. When the user or operator is on a call, Headset Auto Answer is turned off; calls are not answered automatically until the caller hangs up or the user or operator presses the Headset Hang Up button to disconnect the call.

When the user or operator has a call on hold or is in the process of transferring a call or setting up a conference, Headset Auto Answer is also turned off. If the user or operator pressed the **Conf**, **Hold**, Direct Voice Mail (to transfer to voice mail), or **Transfer** button, he or she must press the Headset Auto Answer button to turn the feature back on before another call can be answered automatically.

Two buttons are necessary for an MLX telephone user or MLX DLC operator to use the Headset Auto Answer feature:

- A Headset Hang Up button must be programmed, as described earlier.

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■ A Headset Auto Answer button must be programmed on the telephone or console, through either extension programming or centralized telephone programming.

Users who have extensions programmed for Headset Auto Answer may also receive Caller ID information provided by a loop-start line connected to the 800 GS/LS-ID module. They should set the line buttons (**SA**, **ICOM**, or other) where the Caller ID information arrives to Delay Ring so that Caller ID information is not lost.

A **Headset Auto Answer** button is a fixed feature on a QCC and cannot be deleted or changed.

Headset/Handset Mute

Headset/Handset Mute allows an MLX telephone user or operator to turn the microphone in the headset or handset off and on. The user or operator can then talk privately with another person in the same room without the caller hearing the conversation. If headset operation is on, Headset/Handset Mute turns off the headset microphone; if headset operation is off, Headset/Handset Mute turns off the handset microphone. The red LED next to the Headset/Handset Mute button is on when the headset or handset microphone is off; it is off when the headset or handset microphone is on.

When headset operation is off, the handset microphone can be turned off using Headset/Handset Mute only when the user lifts the handset.

When headset operation is on, the user presses the programmed Headset Hang Up button to end an outside call even if the caller hangs up. For an MLX telephone user or MLX DLC operator to use Headset/Handset Mute, a Headset/Handset Mute button must be programmed on the telephone or console, through either extension programming or centralized telephone programming.

A **Headset/Handset Mute** button is a fixed feature on a QCC and cannot be deleted or changed.

Considerations and Constraints

The headset, handset, and speakerphone can be used only one at a time.

Headset Hang Up cannot be programmed on a QCC.

Headset options cannot be used on analog multiline telephones or on single-line telephones.

A headset user must manually select a line button or **Call** button (on the QCC) before making an inside or outside call.

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A user can press the **Speaker** button to move the call from the headset to the speakerphone.

Privacy should be programmed when headset users with Headset Auto Answer turned on either have Shared **SA** buttons or share one or more personal lines. Privacy keeps people from competing for the same call. When two or more users answer the same call on an **SSA** or personal line button, the red and green LEDs next to the button go on, but only one person can talk with the caller.

Headset users should press the Headset Hangup button after each call. If the user does not press the Headset Hangup button, new calls still arrive correctly, but the LED status of the extension (as shown on other extensions and DSSs) is not updated.

Telephone Differences

Queued Call Consoles

A QCC does not have a Headset Hang Up button, nor can the button be programmed. Headset operation is automatically available, and **Headset Auto Answer**, **Headset/Handset Mute**, and **Headset Status** are fixed buttons on a QCC.

The function of disconnecting calls served by the Headset Hang Up feature is replaced by the Release, Forced Release, Camp-On, and Automatic Release features.

Other Multiline Telephones

Headset options apply to MLX telephones and consoles only.

A telephone user or operator cannot use feature codes or extension programming to activate Headset Hang Up. This feature must be programmed on a button through centralized telephone programming.

A telephone user or operator cannot use feature codes to turn Headset Auto Answer, Headset/Handset Mute, or Headset Status on or off. These features must be programmed on buttons through either extension programming or centralized telephone programming. MLX display telephone users can select the feature from the display only during extension programming.

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Feature Interactions

Authorization Code	If a call is made using an authorization code, pressing the **Headset Hang Up** button causes deactivation of the Authorization Code feature.
Auto Dial	If headset operation is turned on at the telephone or console, select a line button before dialing an extension or an outside number using Auto Dial.
Automatic Line Selection	Automatic Line Selection does not work when an MLX telephone or console is in headset operation. A headset user must select a line manually before making a call.
Barge-In	If Barge-In is used to contact a user with Headset Auto Answer turned on, the call is answered automatically.
Callback	Callback calls are answered automatically when Headset Auto Answer is turned on, but the user hears the dequeuing tone instead of zip tone. When both caller and receiver have headsets with Headset Auto Answer on, the person being called hears zip tone when the callback call is completed, but the callback originator does not hear zip tone or dequeuing tone.
Caller ID	When using Headset Auto Answer on an extension, the intercom and line buttons should be programmed for Delay Ring so that the Caller ID information, available after the first ring, is not lost.
Conference	Headset Auto Answer is turned off automatically while the user sets up a conference and must be turned on manually to resume using the feature.
Direct Voice Mail	When an MLX telephone user (except for a QCC operator) transfers a call using Direct Voice Mail, Headset Auto Answer is turned off and must be turned on manually to resume using the feature.
Do Not Disturb	If an MLX telephone user with Headset Auto Answer turned on uses Do Not Disturb, any calls that override Do Not Disturb (such as Barge-In calls and callback calls) are answered automatically.
Hold	Headset Auto Answer is turned off automatically when a user or operator puts a call on hold and must be turned on manually to resume using the feature.
Paging	A user or operator with a headset operation active hears a group page over the speakerphone.
Park	If a user or operator has a call parked, another call can be answered automatically by using Headset Auto Answer.
Privacy	Privacy should be programmed when headset users with Headset Auto Answer on have Shared **SA** buttons or share one or more personal lines. Privacy keeps the users from competing for the same call. When two or more users answer the same call on a Shared **SA** or personal line button, the red and green LEDs next to the button go on, but only one person can talk with the caller.

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Ringing Options	Headset Auto Answer does not automatically answer calls ringing on buttons programmed for No Ring. A user must manually select the button to answer the call. When abbreviated ringing is programmed, the user hears an abbreviated ring if another call comes in while he or she is already on a call.
Ringing/Idle Line Preference	Ringing Line Preference does not operate if Headset Auto Answer is turned off while headset operation is active. To answer a call, press the button with the ringing call. Idle Line Preference does not operate when headset operation is active. Select a line button manually before making an inside or outside call.
Transfer	When an MLX telephone user (except for a QCC operator) transfers a call, Headset Auto Answer is turned off and must be turned on manually to resume using the feature.

Hold

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Operator Information, System Information (`SysSet-up`)
Modes	All
Telephones	All
Feature Codes	
Hold	*771*
Hold Release	***
System Programming	Change hold disconnect interval:
	• `LinesTrunks`→**More**→`HoldDiscnct`
	Enable or disable DLC operator automatic Hold for all DLC operators:
	• `Operator`→`DLC Hold`
	Change operator hold timer for all DLC and QCC operators:
	• `Operator`→`Hold Timer`
	Specify whether calls on hold return to QCC queue after operator hold timer has expired twice:
	• `Operator`→`Queued Call`→`Hold Rtrn`
	Select automatic Hold or automatic release for all QCC operators:
	• `Operator`→`Queued Call`→`HoldRelease`
Factory Settings	
Hold Disconnect Interval	Long (450 ms)
DLC Operator Automatic Hold	Disabled
Operator Hold Timer	60 sec (range 10–255 sec)
Hold Timer for Users	60 sec (fixed)
QCC Hold Return	Remain on Hold
QCC Hold Release	Automatic Release

Description

Hold allows a user to leave a call temporarily in order to perform some other function, such as take another call, look up information, or activate a feature.

When a user, except for a Queued Call Console (QCC) operator, puts an outside call on hold, the green LED next to the line button flashes at a faster rate to distinguish the call from calls put on hold by other users.

An outside caller on hold hears Music On Hold, if programmed, or silence. If a call on hold is not picked up within a set length of time, the person who put the call on hold hears a reminder: a beep for a telephone user, an abbreviated ring for a

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system operator. This hold timer is fixed at 60 seconds for telephone users. It is programmable for DLC and QCC operators, as described below.

At an MLX display telephone, the message `Call On Hold` appears briefly on the display when the user first puts a call on hold. This message reappears briefly each time the hold timer expires.

Five systemwide Hold options can be set through system programming:

■ **Hold Disconnect Interval.** Determines how long the system waits before releasing the line when an outside caller on hold on a loop-start line hangs up. The hold disconnect interval should be programmed to match the local telephone company's disconnect timing: Long if disconnect is unreliable, and Short if disconnect is reliable. The hold disconnect interval applies to all telephone users and system operators. This interval can be set to the following values:

— Long (the factory-set value): 450 ms

— Short: 50 ms

■ **DLC Operator Automatic Hold.** Determines what happens when a DLC operator is on a call and presses another line button, an Auto Dial button, or a Direct Station Selector (DSS) button. The DLC Operator Automatic Hold setting applies only to DLC operators. This option can be set to the following values:

— **Enabled.** The active call is automatically put on hold. This prevents accidental disconnection of callers.

— **Disabled** (factory-set time). The active call is disconnected. This allows an operator to disconnect one call and answer or dial another by pressing a single button.

■ **Operator Hold Timer.** Determines how long a call stays on hold before the system reminds the DLC or QCC operator that it has not been picked up. The operator hold timer applies only to DLC and QCC operators. The operator hears a reminder (abbreviated ring) when the timer expires. This timer can be set to a value between 10 and 255 seconds (the factory-set value is 60 seconds).

If a call is ringing at the console when the timer expires, the reminder is delayed for 10 seconds so that the operator has a chance to hear it. (If after 10 seconds the call is still ringing or a new call is ringing, the reminder is delayed for another 10 seconds, and so on.)

■ **QCC Hold Return.** Determines what happens to a call that a QCC operator has put on hold and that has not been picked up after the operator hold timer has expired twice (the timer is not counted as having expired

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until the operator actually hears the reminder). The QCC Hold Return option applies only to QCC operators. This option can be set to the following values:

— **Remain on Hold** (factory setting). The call remains on hold until picked up. A QCC operator continues to hear an abbreviated ring every time the operator hold timer expires.

— **Return to Queue.** The call returns to the QCC queue. The caller hears ringback.

■ **QCC Hold Release.** Determines what happens when a QCC operator is on a call and presses another **Call** button. The Hold Release option applies only to QCC operators. This option (equivalent to DLC operator automatic Hold for DLC operators) can be set to the following values:

— **Automatic Hold.** The active call is put on hold. This prevents accidental disconnection of callers.

— **Automatic Release** (factory setting). The active call is released. This allows an operator to disconnect one call and answer another by pressing a single button.

Considerations and Constraints

The factory setting for the hold disconnect interval is Long (450 ms) because that is the interval used by most local telephone companies.

If the hold disconnect interval set for the system does not match that of the local telephone company, the system may have the following problems with calls on hold:

■ If the interval is shorter than the setting at the local central office, callers on hold may be disconnected.

■ If the interval is longer than the setting at the central office, the LED next to the line button continues to flash after a caller on hold hangs up.

Both parties on an inside call cannot put each other on hold. If a user presses the **Hold** button while waiting on hold on an inside call, the call is disconnected.

Telephone Differences

Direct-Line Consoles

When DLC operator automatic Hold is enabled, a DLC operator can put an active call on hold by pressing another line button or DSS button.

If the system is programmed for one-touch Transfer, an operator can press an Auto Dial or DSS button to put an active inside or outside call on hold and initiate a transfer, whether or not DLC operator automatic Hold is enabled.

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If the system is not programmed for one-touch Transfer, an operator can press an Auto Dial or DSS button to put an active *outside* call on hold and initiate a transfer, whether or not DLC operator automatic Hold is enabled. (This capability is called *one-touch Hold*.)

Every time the operator hold timer expires, a DLC operator hears an abbreviated ring as a reminder that a call is on hold.

Queued Call Consoles

Pressing the **Hold** button to put a caller on hold makes a QCC operator available for incoming calls from the QCC queue.

The first two times the operator hold timer expires, a QCC operator hears an abbreviated ring as a reminder that a call is on hold.

If an operator does not pick up a call by the time the timer expires twice, the Hold Return option determines whether the call remains on hold or returns to the QCC queue. If this option is programmed for calls to remain on hold, an operator hears the abbreviated ring every time the operator hold timer expires and no call is ringing on the console. If the option is programmed for calls to return to the queue, each call on hold at the QCC is timed individually. (The operator hold timer is applied separately to each **Call** button.)

When a held call returns to the queue after the second hold reminder, the call is identified by call type and by the name and extension number of the operator who put it on hold. The second line of the QCC display also shows the caller information.

Other Multiline Telephones

Multiline telephones have built-in **Hold** buttons.

When a call is first put on hold, the display on an MLX telephone briefly shows `Call on Hold`. This message reappears briefly each time the hold timer expires.

Single-Line Telephones

In Release 4.0 or later systems, single-line telephone users should use Park instead of Hold to put a call on hold.

If a single-line telephone user with a call on hold hangs up, the call rings back at the extension.

A single-line telephone user can put a call on hold by sending a switchhook flash: pressing and releasing the **Recall** or **Flash** button or the switchhook, depending on the telephone model. If a single-line telephone user with a call on hold hangs up, the call rings back at the extension.

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⊨⟩ **NOTE:**

Some single-line telephones, such as Lucent Technologies models
2500YMGL, 2500MMGK, and 8110M, use a timed or positive disconnect.
On these telephones, pressing the switchhook disconnects the call. Use
the **Recall** or **Flash** button instead of the switchhook to send a switchhook
flash. (The 8100M telephone must have positive disconnect programmed
on the telephone as described in its manual.)

Feature Interactions

Allowed/ Disallowed Lists	The **Hold** button is used to enter a wild card character in an Allowed or Disallowed List entry.
Authorization Code	Initiating the Hold feature after entering an authorization code deactivates the Authorization Code feature for subsequent calls.
Auto Dial	The **Hold** button is used to enter the Pause special character in a telephone number programmed on an Auto Dial button.
Basic Rate Interface	An active call on a BRI line can be placed on hold by using the MERLIN LEGEND Communications System Hold feature. All call appearances (such as LEDs) are the same as for other non-BRI lines.
Callback	Pressing the **Hold** button while waiting for a queued call is similar to hanging up. The green LED flashes next to the line button, indicating that the button is being used for the queued call.
Call Waiting	A person with all calls on hold cannot hear the call-waiting tone.
Conference	When adding other participants to a conference, the conference originator hears the hold reminder when the conference is on hold for longer than one minute (if the originator is a telephone user) or for longer than the operator hold timer setting (if the originator is an operator).
	If DLC operator automatic Hold is programmed and used by a DLC operator while setting up a conference, the entire conference goes on hold.
	Both parties on an inside call cannot put each other on hold. If a user presses the **Hold** button while waiting on hold for a conference initiated by another user (an inside call) or if the user presses the **Conf** button while waiting on hold on an inside call, the entire conference call is disconnected.
Conference *continued*	The initiator of a conference call can leave the conference by touching **Hold**. The conference initiator can rejoin the conference call by touching the line button of any conference participant.
	In Release 2.1 and later systems, a call that has been put on hold on a Cover button can be added to a conference by a user who has a personal line for the call.

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Coverage	Coverage calls answered by any type of receiver can be put on hold. The hold timer or operator hold timer applies to a coverage call on hold.
	In Release 2.1 and later systems, a call that has been put on hold on a Cover button can be picked up by a user who has a personal line for the call. When the call is picked up, the green LED next to the personal line lights steadily; however, the call is still on hold at the coverage receiver's telephone. Therefore, the user who picked up the held call cannot transfer the call. In order to transfer a call on hold at a Cover button, use Pickup instead of picking up on a personal line button.
CTI Link	A CTI link application can put an **SA** button call on hold.
Digital Data Calls	Data calls cannot be put on hold.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold at a passive-bus MLX telephone when a 2B call comes in, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Directories	The **Hold** button is used to enter the Pause special character in a telephone number programmed as a System Directory, Extension Directory, or Personal Directory listing.
Direct Station Selector	When one-touch Hold is programmed, only outside callers are automatically put on hold when a DSS button for a user, calling group, or paging group is pressed while another call is active. For an inside caller, pressing a DSS button for a user sends a manual signal to the user's extension; pressing a DSS button for a calling group or paging group has no effect.
Display	When a call is first put on hold, the display on an MLX telephone briefly shows Call On Hold. This message reappears each time the hold timer expires.
	On a QCC only, when a held call returns to the queue after the second hold reminder, the call is identified by call type and by the name and extension number of the operator who put it on hold. The second line of the QCC display also shows the caller information.
Fax Extension	If an extension is programmed as a fax extension, the telephone at that extension is unable to use the **Hold** feature.
Group Calling	A calling group member who has put a call on hold is considered unavailable for incoming calls. A user waiting in the calling group queue cannot put the call on hold.
Headset Options	Headset Auto Answer is automatically turned off when an MLX telephone user puts a call on hold.
HotLine	Hold is not available at HotLine extensions (Release 5.0 and later systems).
Inspect	If a user presses the **Hold** button while in Inspect mode, Inspect is canceled. The system puts the active call (if there is one) on hold.
Multi-Function Module	A single-line telephone connected to an MFM cannot put a call on hold because the MFM cannot send a switchhook flash.

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Paging	A speakerphone paging call can be put on hold only by the originator. However, when an **SA** or **ICOM Voice** button is used to make an inside voice-announced call, either the originator or the person being called can put the call on hold.
Park	When a user or operator parks a call received on a personal line button and the call is picked up at another extension and then put on hold, other users who share the personal line cannot press the line button and pick up the call.
Personal Lines and Pickup	The hold timer or operator hold timer applies to a call on hold for transfer. The user or operator hears a reminder (a beep or abbreviated ring) after the timer expires.
	If a call is received on a personal line and is transferred to another user who receives the call on an **SA** or **ICOM** button and then puts the call on hold, another user who shares the personal line cannot select the shared personal line button and pick up the call. If for some reason the person who received the transfer and put the call on hold cannot return to the call, another user must use Pickup to pick up the call. For example, an operator can take a message and then disconnect the caller.
	In Release 2.1 and later systems, a call that has been put on hold at a Cover, **SA**, Shared **SA**, or **Pool** button can be picked up by a user who has a personal line button for the call. When the call is picked up, the green LED next to the personal line lights steadily; however, the call remains on hold at the Cover, **SA**, Shared **SA**, or **Pool** button. The user who picks up on the personal line cannot transfer the picked-up call. In order to transfer a call on hold at a Cover, **SA**, Shared **SA,** or **Pool** button, use Pickup instead of picking up on a personal line button.
Privacy	Privacy protects a call only while a user is active on the call. Privacy does not keep a user at another extension from picking up a call while it is on hold.
Recall/Timed Flash	Single-line telephones use a switchhook flash to put a call on hold by pressing and releasing the **Recall** or **Flash** button (or if the telephone does not have positive disconnect, press and release the switchhook) depending on the telephone model.
Speed Dial	The **Hold** button is used to enter the Pause special character in a Personal Speed Dial or System Speed Dial telephone number.
System Access/ Intercom Buttons	If a call is put on hold on an **SA** or Shared **SA** button, it can be picked up at the principal extension's **SA** button or at any other Shared **SA** button corresponding to the button with the held call. The hold reminder is heard only at the extension that put the call on hold. In Release 2.1 and later systems, any user with a Shared **SA** button for the call can transfer the held call after picking it up on the **SSA** button.
Transfer	Calls on hold for transfer are timed so that a user or system operator hears a reminder after the timer expires.

In Release 2.1 and later systems, a call that has been put on hold at a Cover, **SA**, Shared **SA**, or **Pool** button can be picked up by a user who has a personal line button for the call. When the call is picked up, the green LED next to the personal line lights steadily; however, the call remains on hold at the Cover, **SA**, **SSA**, or **Pool** button. The user who picks up on the personal line cannot transfer the picked-up call. In order to transfer a call on hold at a Cover, **SA**, **SSA** or **Pool** button, use Pickup instead of answering on a personal line button.

Idle Line Preference

See .

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HotLine

At a Glance

Users Affected	Telephone users
Reports Affected	Extension Information
Modes	All
Telephones	Single-line telephones
System Programming	To assign a HotLine extension: • `Extensions`→**More**→**More**→`HotLine`→Dial ext. no.
Factory Setting	Disabled

Description

In Release 5.0 and later systems, the HotLine feature allows system managers to program single-line telephone extensions connected to 008 OPT, 012, or 016 modules for HotLine operation. When the HotLine feature is programmed, a user dials an inside or outside telephone number by lifting the handset of the telephone.

The HotLine feature works in conjunction with Personal Speed Dial programming (see "Speed Dial" on page 550) to automatically dial the first programmed Personal Speed Dial number (code 01) as soon as someone goes off-hook at the single-line telephone.

This feature is intended to allow easy access to a telephone number in sales, hotel, and other environments. HotLine extensions, for security reasons, are not intended to perform any function other than immediate and convenient dialing of a single telephone or extension number. Because a switchhook flash from a HotLine extension is not recognized by the system, the Hold, Conference, and Transfer features are not available.

If the single-line telephone includes a dialpad, a user can dial digits after the call is connected. This allows the use of an integrated voice response or automated attendant menu.

The HotLine feature uses the existing Personal Speed Dial code 01 for a single-line telephone extension. Prior to the assignment of an extension as a HotLine, the required Personal Speed Dial number can be programmed at the extension or through centralized telephone programming. After an extension has been programmed as a HotLine, there is only one opportunity to program a Personal Speed Dial code at the telephone. For security reasons, any subsequent changes must be made through centralized telephone programming. No further programming of any kind can be performed at the telephone.

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The Personal Speed Dial number used at a single-line telephone HotLine can be an inside extension number, an outside number including Automatic Route Selection (ARS) or pool access codes (Hybrid/PBX mode only), a long-distance service access code, or an Idle Line Access code (usually *9*). Personal Speed Dial numbers are limited to 40 characters.

A HotLine extension can access any personal, **SA**, or **ICOM** line normally used for outgoing voice calls, as programmed using Automatic Line Selection (ALS) or Idle Line Access (Key and Behind Switch modes). For outside calls, a personal line is recommended. For more information see "Automatic Line Selection and Ringing/Idle Line Preference" on page 56 (Key and Behind Switch modes), "Personal Lines" on page 421, and "System Access/Intercom Buttons" on page 573.

⚠ SECURITY ALERT:

If a HotLine extension dials out on a loop-start line, it must supply reliable disconnect and be programmed with Reliable Disconnect enabled. Otherwise, a caller may be able to make a toll call on the line after hanging up on a HotLine call.

If a HotLine extension is not intended to receive calls, its lines should be set to No Ring.

Considerations and Constraints

The first Personal Speed Dial number (code 01) can be programmed at the single-line telephone prior to its assignment as a HotLine extension. After an extension is programmed as a HotLine, the Personal Speed Dial code can be programmed only once. Subsequent changes must be made using centralized telephone programming.

Because switchhook flashes are not recognized from HotLine extensions, Hold, Conference, and Transfer features are not available.

HotLine extensions cannot dial Night Service passwords. For this reason, the Night Service Exclusion Lists may have to include HotLine extensions. Alternatively, the numbers dialed by HotLine extensions may have to be added to Night Service Emergency Lists.

The HotLine feature can be used with tip/ring devices such as modems, but is not intended for this use.

Many features cannot be used at HotLine extensions. Examples include Last Number Dial, Saved Number Dial, Pickup, and Park. Features not normally available to single-line telephones (such as Do Not Disturb) are also unavailable to HotLine extensions. However, other features such as calling restrictions and ARS can be used at HotLine extensions. See the "Feature Interactions" topic in this section for more information.

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A HotLine telephone cannot be connected to an MFM (Multi-Function Module) or GPA (General Purpose Adapter).

Telephone Differences

Only single-line telephones or tip/ring devices can be HotLine extensions.

Feature Interactions

Account Code Entry	HotLine extensions cannot use Account Code Entry.
Allowed/ Disallowed Lists	Allowed and Disallowed Lists can be assigned to HotLine extensions.
Automatic Route Selection	HotLine extensions can use the ARS access code if it is programmed into their Personal Speed Dial number.
Barge-In	HotLine calls can be barged into.
Callback	Callback is not intended for HotLine extensions. However, Automatic Callback may be used, if programmed, for inside and ARS (Hybrid/PBX mode only) calls. Selective Callback is also available.
Call Waiting	Call Waiting can be activated for a HotLine extension, but the telephone cannot put the current call on hold and pick up a waiting call. Instead, the user must hang up the current call and wait for the call-waiting call to ring.
Camp-On	HotLine calls can be camped onto but a HotLine extension cannot camp on to calls.
Conference	Conference is not available at HotLine extensions.
Calling Restrictions	Calling restrictions can be programmed for HotLine extensions.
Coverage	Coverage features are not recommended for HotLine extensions.
Extension Status	Extension Status is not recommended for HotLine extensions because HotLine extension cannot dial the # codes to change the Extension Status.
Forward and Follow Me	Forward and Follow Me are not intended for HotLine extensions but can be used at these extensions. Forwarding must be programmed at the extension before it is assigned as a HotLine extension. Follow Me cannot be activated at a HotLine extension, and both Forward and Follow Me must be cancelled at non-HotLine extensions.
Forward and Follow Me *continued*	Remote Call Forwarding is not intended for HotLine extensions but can be programmed before the extension is assigned as a HotLine. HotLine administration must be removed if the station is to cancel Remote Call Forwarding.
Group Calling	A HotLine extension can dial a calling group extension number.
Hold	Hold is not available at HotLine extensions.
Last Number Dial	Last Number Dial is not available at HotLine extensions.

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Night Service	HotLine extensions (Release 5.0 and later systems) can be members of Night Service groups. If a HotLine extension dials an outside call and Night Service with Outward Restriction is on, either the HotLine extension number must be in the Night Service Exclusion List or the number it dials must be on the Night Service Emergency List.
Paging	A HotLine extension cannot access Loudspeaker Paging, but a HotLine extension can be programmed to dial a Group Paging or number.
Park	Park cannot be used by HotLine extensions.
Pickup	Pickup cannot be used at a HotLine extension.
Pools	A HotLine extension can use a pool, as long as dial-access-to-pools is enabled for the extension and the Pool access code is programmed with the outside number as the first Personal Speed Dial number for the extension.
Privacy	Privacy is not available for HotLine extensions.
Recall/Timed Flash	A switchhook flash from a HotLine extension is not sent to the system or the central office.
Ringing Options	Ringing Options can be set for HotLine extension lines. If the HotLine extension should not receive calls, set its lines for No Ring.
Saved Number Dial	Saved Number Dial is not available at HotLine extensions.
Speed Dial	A HotLine extension can dial only the first Personal Speed Dial number (code 01) programmed for the extension. The end-of-dialing digit, #, should be programmed at the end of the speed dial number. See Appendix H, "Programming Special Characters," for additional information.
Transfer	Transfer is not available at HotLine extensions.

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Inside Dial Tone

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Inside Dial Tone

At a Glance

Users Affected	Telephone users, operators
Reports Affected	System Information (SysSet-up)
Modes	All
Telephones	All
System Programming	Options→InsideDial
Factory Setting	Inside dial tone

Description

The system's inside dial tone is heard when a user lifts the handset or presses the **Speaker** button after an **SA** or **ICOM** button is selected. Two choices are available for inside dial tone:

- **System Inside Dial Tone.** Makes it easy to distinguish inside and outside lines.

- **Outside Dial Tone.** Required by some adjuncts and applications connected to the system, such as voice messaging systems or modems, that do not recognize inside dial tone. With this setting, inside dial tone sounds just like outside dial tone.

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Inspect

At a Glance

Users Affected	Telephone users, operators
Modes	All
Telephones	MLX display telephones

Description

Inspect allows an MLX display telephone user who is on a call to see call information about an incoming call that is ringing, alerting, or on hold.

Call information includes whether it is an inside or outside call, any programmed labels for the caller (such as the inside caller's name or the label assigned to the outside line), and how the call came to the user (transferred, coverage call, forwarded, and so on). Inspect also can be used to inventory what is programmed on the telephone's buttons.

To use Inspect to screen incoming calls while on another call or to identify callers on hold on the telephone using an MLX display telephone, press the **Inspct** button and then press the line button with the incoming or held call. The call information is displayed on the Inspect screen.

To Inspect a programmed button, press the **Inspct** button and then press the programmed button. The name of the feature programmed on the button is displayed on the Inspect screen. However, beginning with Release 2.0, pressing a programmed Last Number Dial or Saved Number Dial button shows the telephone number stored. If no number is stored, the feature name is displayed.

Considerations and Constraints

If the company subscribes to special services, such as AT&T's INFO2 Automatic Number Identification (ANI) service or Caller ID, the display shows the outside telephone number of the person calling.

⇒ NOTE:
The availability of the caller identification information may be limited by local-serving (caller's) jurisdiction, availability, or central office equipment.

If a line button is being inspected, it cannot be used to make or receive a call.

If a user inspects a line that someone else is using, the display shows that the line is in use.

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If Inspect is activated and someone makes a voice-announced call or a group page to the user, the Inspect feature is canceled and the Home screen is displayed.

Pressing the **Feature**, **Menu**, or **Home** button while Inspect is activated cancels Inspect.

If a user is active on a call while using Inspect and presses a fixed-feature button, for example, the **Hold**, **Transfer**, or **Drop** button, the system cancels Inspect and attempts to activate the feature.

Telephone Differences

Direct-Line Consoles

Inspect cannot be used on analog Direct-Line Consoles (DLCs).

Queued Call Consoles

When a conference participant joins a conference by using a shared personal line or Shared **SA** button, the QCC display is updated to include this participant. However, if a QCC operator uses the Inspect feature to verify the number of participants, the number shown on the display does not include participants joining the conference on the Shared **SA** or personal line button.

If a QCC operator presses any of the buttons programmed with fixed QCC features (for example, a **Call**, **Start**, or **Source** button) while in Inspect mode, the console remains in Inspect mode. However, if an operator presses the **Feature**, **Transfer**, **HFAI**, **Conf**, **Mute**, **Drop**, **Speaker**, or **Hold** button, the console is removed from Inspect mode.

Other Multiline Telephones

Inspect is available only on MLX display telephones.

Single-Line Telephones

Inspect cannot be used on single-line telephones.

Feature Interactions

Alarm	Inspect can be used on an MLX DLC or a Queued Call Console (QCC) to display the number of system alarms.
Conference	If a user presses the **Conf** button while Inspect is activated, Inspect is canceled and the system tries to activate the Conference feature.

Direct Station Selector	Inspect can display limited information, such as extension number, label, and number of messages, for each DSS button. To use Inspect, an operator presses the **Page** button for the range of extensions, then the **Inspct** button, then the DSS button for an extension. Inspect must be activated separately for each page on the DSS; to inspect another page, an operator presses the **Home** button and repeats the process.
	When an operator inspects a DSS button associated with an extension, Line 1 of the display shows the extension, the label associated with the extension, if any, and the number of messages that have been left for that extension, if any. It the extension has posted a message, Line 2 shows the posted message.
	In Release 2.0 and later systems, an operator can inspect a DSS button with a red LED on to see whether the extension is busy or using Do Not Disturb. If the user at the extension has turned on Do Not Disturb, the Do Not Disturb message is also posted and appears on the operator's display. However, the message may also mean that the user has posted the message without turning on the Do Not Disturb feature.
Drop	If a user presses the **Drop** button while active on a call with Inspect activated, Inspect is canceled and the system attempts to activate the Drop feature.
Group Calling	Any MLX telephone user can inspect the number of calls in the calling group queue by pressing the **Inspct** button and then pressing a button programmed with the calling group's extension, the Calls-in-Queue Alarm button. The display shows the label associated with the calling group and the number of calls in the queue.
Hold	If a user presses the **Hold** button while active on a call with Inspect activated, Inspect is canceled and the system tries to put the call on hold.
Last Number Dial	Starting with Release 2.0, if a programmed Last Number Dial button is inspected, the display shows the last number stored for dialing. If no number is stored, the feature name is displayed.
Paging	If a user gets a voice-announced inside call or a group speakerphone page while using the Inspect feature, the Inspect feature is canceled and the user is returned to the Home screen.
Saved Number Dial	Starting with Release 2.0, if a programmed Saved Number Dial button is inspected, the display shows the last number stored for dialing. If no number is stored, the feature name is displayed.
Transfer	If a user with Inspect activated tries to transfer a call by pressing the **Transfer** button while active on a call, Inspect is canceled and the user is returned to the Home screen.

Integrated Administration

At a Glance

Users Affected	System manager, installer
Reports Affected	Direct Group Calling Information, Group Coverage Information, GS/LS Trunk Information, System Information (`SysSet-up`)
Modes	Key and Hybrid/PBX
Telephones	All
Factory Settings	
Automated Attendant Calling Group	770
Call Answer Calling Group	7926
Fax Response Calling Group	7924
Information Service Calling Group	7927
Message Drop Calling Group	7928
Voice Mail Calling Group	7925
Coverage Group	30 (range 1–30)
Reliable Disconnect	Yes
Delay Ring	2 rings (range 1–6 rings)
Coverage Delay Ring	3 rings (range 1–9 rings)
VMS Transfer Return Interval	6 rings (range 0–9 rings)
Transfer Return Time	6 rings (range 0–9 rings)

⇒ NOTE:
Integrated Solution III and Integrated Administration are no longer available.

Description

The Integrated Administration capability of Integrated Solution III (IS III, described in Appendix H, "Applications") simplifies the programming of common information for the system, AUDIX Voice Power, and, if it is also installed, Lucent Technologies Fax Attendant System. Because the AUDIX Voice Power and Fax Attendant applications use some of the same information programmed on the system, Integrated Administration lets the installer or system manager make changes or additions to this information just once instead of making changes in both applications and the system itself. Using Integrated Administration reduces programming time and effort and ensures that the system and the applications are in agreement.

The communications system and the applications share the following information:

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- System numbering of extensions, lines/trunks, and pools

- System labeling that determines the user or other name associated with each extension, line/trunk, and pool

- The coverage group that sends its calls to the applications

- The calling group set up for each service of the applications

- The Reliable Disconnect setting for loop-start lines

- The Delay Ring and Coverage Delay Interval settings

- The Transfer Return Time and VMS Transfer Return Interval settings

Integrated Administration consists chiefly of three related functions accessed from the Integrated Solution III menu (for users) or the Integrated Solution Maintenance menu (for qualified technicians only):

- **Extension Directory Setup** (on the Technician Maintenance menu, for qualified technicians only). Used during installation to read all switch extensions and extension labels into the database of extensions accessed by the applications.

- **Extension Directory.** Allows the technician or system manager to add, change, or delete extensions, change extension labels, and add or delete subscribers to AUDIX Voice Power or AUDIX Voice Power/Fax Attendant.

- **System Programming/Switch Administration.** Accessed through the AUDIX Voice Power or AUDIX Voice Power/Fax Attendant menu, allows the technician or system manager to program common information used by the communications system and the applications. Through this selection, a user configures call handling by Automated Attendant and adds or deletes lines/trunks and pools for Call Answer, Fax Response, Information Service, Message Drop, and Voice Mail.

$\Rightarrow$ NOTE:
Integrated Administration uses the word *switch* to refer to the communications system (what we call the *system* in this book).

Integrated Administration in Release 4.1 and Later Systems

Because of enhancements to coverage timers in Release 4.1 and later systems, Integrated Administration cannot be used in these systems to program certain options for AUDIX Voice Power.

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Use the system programming console or System Programming and Maintenance (SPM) software to program the settings listed below. Do not use the Application Switch Defaults menu in Integrated Administration. "Group Calling" on page 281, "Coverage" on page 139, "Labeling" on page 360, and "Transfer" on page 601 provide details about these settings.

- A calling group extension number other than the default of 770

- A Call Answer calling group number other than the default of 7926

- A FAX Response calling group number other than the default of 7924

- An Information Service calling group number other than the default of 7927

- A Message Drop calling group number other than the default of 7928

- A Voice Mail calling group number other than the default of 7925

- Group Coverage by a calling group

- Coverage delay timers, which have been substantially changed in Release 4.1 and later systems

- VMS Transfer Return setting

- Transfer Return setting

- The systemwide Delay Ring Interval, which does not exist in Release 4.1 and later systems

- An AUDIX Voice Power calling group label other than the default of AUDIXVP

Using system programming, change the following settings:

- The default setting of No for Reliable Disconnect on loop-start lines. Change this option to Yes (see *System Programming*).

- The default setting of four rings for VMS Transfer Return time. Change this option to six rings (see "Transfer" on page 601).

- The default setting of four rings for Transfer Return time. Change this option to six rings (see "Transfer" on page 601).

Application Switch Defaults

Integrated Administration provides application switch (system) defaults on the Technician Maintenance menu, for qualified technicians only. This program option displays current values and allows a user to change the following settings used by the applications:

- Coverage group

- Automated Attendant calling group

- Call Answer calling group

- Fax Response calling group

- Information Service calling group

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- ■ Message Drop calling group

- ■ Voice Mail calling group

This screen also displays the following current defaults that are used during programming of the applications. For comparison purposes, it also shows the current values set on the system (the *switch*):

- ■ Reliable Disconnect

- ■ Delay Ring

- ■ Coverage Delay Interval

- ■ VMS Transfer Return Interval

- ■ Transfer Return Time

Using this screen, a user can change the values for the applications only. A difference between the AUDIX Voice Power and switch (system) default columns, other than at initial installation, indicates that the values have been changed on the system through system programming, using the programming console or System Programming and Maintenance (SPM). This information can be helpful in troubleshooting problems.

- ■ **Backup Files.** Allows a user to back up all Integrated Administration programming to tape.

- ■ **Restore Files** (on the Technician Maintenance menu, for qualified technicians only). Allows a user to restore all Integrated Administration programming from tape.

  ⇒ NOTE:
  These functions back up and restore the application database. They are not the same as the SPM backup and restore functions for system programming.

Automatic Reconciliation

⇒ NOTE:
The automatic reconciliation program has been disabled beginning with IS III Version 1.2.

In IS III versions prior to 1.2, if a technician or system manager uses the MLX-20L console or System Programming and Maintenance (SPM) to change extension numbering on the switch, the system and the application database are no longer in agreement. To reduce the chance for such changes to disrupt communications between the system and the applications, Integrated Administration includes an automatic reconciliation program that runs every day at 3:00 a.m., comparing the application database to the switch programming and bringing the two into agreement. The program makes changes, as necessary, only to the application

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database, according to the rules listed in Table 24. It does not change the system programming.

Table 24.   Database Reconciliation Rules

Extension appears in...

System	Application Database	Action
Yes	Yes	None
Yes	No	Extension is added to database. Can be added as AUDIX Voice Power or AUDIX Voice Power/Fax Attendant subscriber through Extension Directory screen.
No	Yes (regular extension)	Extension is deleted from database and removed as an AUDIX Voice Power or AUDIX Voice Power/Fax Attendant subscriber.
No	Yes (special extension)	Extension is retained as special-purpose extension in database.
Yes	Yes (special extension)	Extension is converted from special-purpose extension to regular extension in database.

Installation Overview

The qualified technician uses Integrated Administration during installation. The steps below describe basic tasks, not detailed procedures (see the AUDIX Voice Power or Fax Attendant *System Manager's Guide* for complete instructions about programming the applications and *System Programming* for complete instructions about programming the system). Note that the sequence of tasks differs, depending on the installation:

- If the communications system and IS III are both being installed for the first time, the technician must do some initial programming on the system, as described in Step 1.

- If IS III is being installed on an existing system, the technician skips Step 1.

To install, follow these general procedures:

1. *On installation of both the system and IS III*, program the following basic system operating conditions. SPM in surrogate mode is typically used for this step, but the programming console also can be used.

    - Mode of operation (Hybrid/PBX or Key only for Integrated Administration)

    - System renumbering

    - System operator positions

    - Phantom extensions

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- ■ Assignment of lines/trunks to pools

2. Select `Application Switch Defaults` from the IS III Technician Maintenance menu and, if necessary, change any of the values displayed for the applications.

3. Select `Extension Directory Setup` from the Technician Maintenance menu. This step reads the system extension directory (including any labels already programmed on the switch) into the application database.

4. Select `Extension Directory` and, on the resulting screens, program:

   - ■ Assignment of extensions as AUDIX Voice Power subscribers; if Fax Attendant is installed, this step also assigns the extensions as Fax Attendant subscribers

   - ■ Assignment of special-purpose extensions

   - ■ Labeling of extensions

5. Select `System Programming/Switch Admin` from the AUDIX Voice Power or AUDIX Voice Power/Fax Attendant menu and program any of the services below, as applicable.

   $\implies$ **NOTE:**
   During initial Integrated Administration programming for an existing system, do not assign lines or pools to the calling groups set up for services. If you do, lines begin ringing into the service before greetings or other service options are programmed. Go on to Step 6 and finish programming the application; then return to Step 5 via the System Programming/Switch Admin menu and add lines and pools.

   On first use of Integrated Administration, the user automatically steps through each of these services:

   - ■ Automated Attendant (Immediate, Delayed, or Night Service call handling and lines and pools)

   - ■ Call Answer (lines and pools)

   - ■ Information Service (lines and pools)

   - ■ Message Drop (lines and pools)

   - ■ Voice Mail (lines and pools)

   - ■ Fax Response (lines and pools)

   On subsequent uses of Integrated Administration, select `System Programming/Switch Admin` from the AUDIX Voice Power or AUDIX Voice Power/Fax Attendant menu, then select `System Programming/Switch Admin Form`. Finally, choose the specific service to be programmed.

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6. Program any application options that are not system-related (such as
    Outcalling and voice menus and prompts) through the AUDIX Voice Power
    or AUDIX Voice Power/Fax Attendant menu.

7. On installation of both the system and IS III, exit from IS III, then use SPM
    or the programming console to perform all remaining system programming
    that is not application-related.

> **NOTE:**
> The system technician can perform initial installation from a remote
> location equipped with a surrogate system and IS III. Using the remote
> system and IS III computer, the technician programs the configuration as
> specified earlier in this topic. Through SPM, the technician backs up the
> configuration and, using the Technician Maintenance menu, backs up the
> Extension Directory database files. The technician then dials up the
> customer location and accesses the internal modem, through remote SPM
> restoring the customer's system from the translations made at the remote
> location. After requesting pass-through to the computer running IS III, the
> technician uses the Technician Maintenance menu to restore the
> customer's database files from the database files backed up at the remote
> location. Technicians can access the Extension Directory and Integrated
> Administration screens remotely, but the information is stored in a file and
> executed after the technician hangs up. Also, a change made to system
> numbering is not reflected in the Extension Directory (the reconciliation
> program is disabled in Release 1.2 and later releases).

Operation

Access Integrated Administration in one of the following ways:

■   Log in to IS III as `is` and enter a password, if needed. The IS III menu for
    users appears, with the following selections for Integrated Administration:

    — `AUDIX Voice Power (AVP)` or `AUDIX Voice Power/FAX Attendant`
      `(AVP/FA)`

    — `Extension Directory`

    — `Technician Maintenance`

■   Log in to IS III as `maint` and enter the maintenance password. The
    Integrated Solution Maintenance menu appears, with the following
    selections for Integrated Administration:

    — `AUDIX Voice Power (AVP)` or `AUDIX Voice Power/FAX Attendant`
      `(AVP/FA)`

    — `Extension Directory`

    — `Technician Maintenance`

Other selections on these menus, including System Programming and
Maintenance (SPM), are used for purposes other than Integrated Administration.

The Integrated Administration selections on these menus are used to access the screens described in the sections that follow this one.

On data entry screens described below, the screen-labeled options listed in Table 25 are displayed, as appropriate for each screen. Select one by pressing the corresponding function key.

Table 25.   Screen-Labeled Function Keys for Integrated Administration

Label	Key	Action
Add	F1	Display a pop-up form for adding information, such as adding lines and pools to the calling group for a service.
Cancel	F6	Cancel any changes made on the current screen and return to the previous screen.
Chg-Key	F8	Toggle between two sets of screen-labeled selections. For example, this table shows two different selections—Choices and Delete—corresponding to F2. Chg-Key changes the label to the alternative selection.
Choices	F2	Display a list of valid choices for the current field.
Delete	F2	Display a pop-up form for deleting information, such as deleting lines and pools from the calling group for a service.
Display	F1 or F4	Display information about the record on the current screen, such as the label associated with an extension.
Frm-Mgmt	F7	(Frame Management) Display options for managing the screen, such as Refresh and Resize.
Help	F1	Display help for the current screen. (Help is available for every Integrated Administration screen.)
NextPage	F5	On a multiple-page screen, go to the next page.
Next-Rec	F5	Display the next record, such as the next extension, on the current screen.

Continued on next page

Table 25.   *Continued*

Label	Key	Action
PrevPage	F4	On a multiple-page screen, return to the previous page.
Prev-Rec	F4	Display the previous record, such as the previous extension, on the current screen.
Save	F3	Validate and save the information on the current screen, updating the application database and/or the switch as appropriate.

Application Switch Defaults Screen

A technician reaches the Application Switch Defaults screen from the Technician Maintenance menu. Figure 22 shows this screen when only AUDIX Voice Power is installed and when both AUDIX Voice Power and Fax Attendant are installed.

The values shown in the screens in Figure 22 are the defaults for all information on the Application Switch Defaults screen. When a user accesses the screen, the current programmed values are shown.

The settings in the Current Switch column for Reliable Disconnect, Delay Ring, Coverage Delay Ring, VMS Transfer Return Interval, and Transfer Return Time are displayed for comparison purposes and cannot be changed on this screen. The values in the AVP Default column can be changed, and are sent to the switch when the user presses F3 (Save). A difference between the two columns, other than at initial installation, indicates that the values have been changed through system programming on the system, using the programming console or SPM. Knowing this can be helpful in troubleshooting problems.

⇒ **NOTE:**
The calling group numbers and coverage group number displayed on this screen (including any changes made) are the values used for the information sent to the system when services are programmed on the System Programming/Switch Admin Form screen, Figure 25 on page 345, and when subscribers are added to the AUDIX Voice Power coverage group on the AUDIX Voice Power User or AUDIX Voice Power/Fax Attendant User screen, Figure 24 on page 342. Therefore, if any of these group numbers must be changed, make changes *first*, before programming services or subscribers.

If it is necessary to change any calling group numbers *after* initial programming of the services, make the changes in the following order:

1. Remove the affected services by deleting those services from all channels on the System Programming/Switch Admin Form screen.

2. Change the appropriate calling group numbers on the Application Switch Defaults screen.

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3. Reinstall the affected services by adding them to channels on the System Programming/Switch Admin Form screen.

```
                      APPLICATION SWITCH DEFAULTS
                   AUDIX VOICE POWER SWITCH DEFAULTS
      AUTOMATED ATTENDANT CALLING GROUP:    770
            CALL ANSWER CALLING GROUP:    7926
     INFORMATION SERVICE CALLING GROUP:    1927
          MESSAGE DROP CALLING GROUP:    7928
            VOICE MAIL CALLING GROUP:    1925
                      COVERAGE GROUP:    30

                                       AVP DEFAULT     CURRENT SWITCH
                  RELIABLE DISCONNECT:    [YES/NO]   NO
                           DELAY RING:    2                    2
                  COVERAGE DELAY RING:    3                    3
         VMS TRANSFER RETURN INTERVAL:    6                 4
              TRANSFER RETURN TIME:    6   4
```

```
                      APPLICATION SWITCH DEFAULTS
              AUDIX VOICE POWER/FAX ATTENDANT SWITCH DEFAULTS
      AUTOMATED ATTENDANT CALLING GROUP:    770
            CALL ANSWER CALLING GROUP:    7926
            FAX RESPONSE CALLING GROUP:    7924
     INFORMATION SERVICE CALLING GROUP:    7927
          MESSAGE DROP CALLING GROUP:    7928
            VOICE MAIL CALLING GROUP:    7925
                      COVERAGE GROUP:    30

                                       AVP DEFAULT     CURRENT SWITCH
                  RELIABLE DISCONNECT:    YES   NO
                           DELAY RING:    2                    2
                  COVERAGE DELAY RING:    3                    3
         VMS TRANSFER RETURN INTERVAL:    6                 4
              TRANSFER RETURN TIME:    6   4
```

Figure 22.   Application Switch Defaults Screens

```
Calling Groups
```

The calling group numbers shown in Figure 22 are the defaults assigned to each service. Change these numbers by positioning the cursor in the appropriate field and entering a new value. No two services can share a calling group; each number must be unique.

```
Coverage Group
```

Coverage group 30 is the default for the extensions covered by the applications. Change the group number by positioning the cursor on this field and entering a new value from 1 to 30.

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Reliable Disconnect

Press ⌐F2⌐ (Choices) and select YES (Reliable Disconnect) or NO (Unreliable Disconnect).

When an outside caller on a loop-start line hangs up on Automated Attendant or Call Answer, a setting of NO may result in lost jack availability or recording of dial tone or messages from the telephone company (such as, "Please hang up and dial again"). To prevent this from happening, reliable disconnect should be set to YES. If Automated Attendant is allowed to transfer calls to outside numbers and has access to any loop-start lines, reliable disconnect *must* be set to YES.

⟹ **NOTE:**
You should find out whether your loop-start lines/trunks provide reliable disconnect.

Delay Ring and Coverage Delay Ring

Change these values by positioning the cursor in the appropriate field and entering a new value. The range for Delay Ring is 1 to 6 rings; the range for Coverage Delay Ring is 1 to 9 rings.

The combined total of these two values should be less than either the VMS transfer return interval or the transfer return time. This ensures that a transferred call always rings at a coverage point before the applicable return timer expires and the call either is transferred to the alternative destination (in the case of a transfer from AUDIX Voice Power) or returns to the transfer originator (in the case of a transfer from any other extension).

VMS Transfer Return Interval and Transfer Return Time

Change these values by positioning the cursor in the appropriate field and entering a new value. The range for both timers is from 0, which never returns or redirects transferred calls, to 9 rings.

The VMS transfer return interval governs how long a call transferred from an AUDIX Voice Power extension rings before it is redirected; the transfer return time governs how long a call transferred from any other extension rings before it returns to the transfer originator.

Each of these values should be greater than the combined total of the Delay Ring and Coverage Delay Ring values. This ensures that a transferred call always rings at a coverage point before the applicable return timer expires and the call either is transferred to the alternative destination (in the case of a transfer from AUDIX Voice Power) or returns to the transfer originator (in the case of a transfer from any other extension).

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System Programming Results

The following information is sent to the system:

- Reliable Disconnect setting

- Delay Ring value

- Coverage Delay Ring value

- VMS Transfer Return Interval setting

- Transfer Return Time setting

Screen Results

After the Application Switch Defaults screen, press `F3` (Save); the Technician Maintenance menu returns.

Extension Directory Setup

When the technician selects `Extension Directory Setup` from the Technician Maintenance menu during installation, IS III checks whether the system Extension Directory already exists in the application database. If the directory does not exist, IS III reads the switch extensions into the database, together with the label for each extension, if there is one. If the directory does exist, the technician has the following choices:

- Exit without making any changes to the database, using `F6` (Cancel).

- Reinstall the database. This choice completely replaces the existing Extension Directory in the application database.

- Reconcile the database with the switch. This choice follows the same rules as the daily reconciliation program, as described earlier in Table 24 on page 332.

System Programming Results

No information is sent to the switch.

Screen Results

The user is returned to the Technician Maintenance menu.

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Extension Directory

shows the Extension Directory screen. An explanation of its use follows.

```
                        Extension Directory


    Extension:      ----
    Name (first):   ---------------
    Name (last):    --------------------
    Extension Label:---------------
    Location:       --------------------
    Comments:       ---------------------------------------------
    Comments:       ---------------------------------------------
    Application 1: [  ]
    Application 2: [  ]
    Application 3: [  ]
    Application 4: [  ]
    Application 5: [  ]
```

Figure 23.   Extension Directory Screen

- ■ **Extension.** Enter an extension number in this field. To show information available for that extension in the application database, press F1 (Display); the information fills the remaining fields. When the Extension Directory screen is first accessed after performing an Extension Directory Setup, only the Extension Label field is filled in if the extension is a valid one and a label for it is programmed on the system.

  Press F2 (Delete) to delete the information on the extension from the application database. If the extension still exists on the system, the information is restored to the application database the next time the reconciliation program runs.

  If the user enters an invalid extension (one that is not in the Extension Directory), then when he or she finishes with this screen and presses F3 (Save), a request for confirmation appears. If the user confirms the entry, the extension is identified as a special-purpose extension. Because Integrated Administration never adds extensions to the system, the extension appears only in the application database. The Location field is occupied by the word Special. Special-purpose extensions are used for such features as guest mailboxes or group fax extensions, as described later under the AUDIX Voice Power/Fax Attendant User screen, .

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- **Extension Label.** The user can change the information in this field.

- **Name (first), Name (last), Location, Comments.** The user can enter information in these fields, if desired. This information is not sent to the system.

- **Application 1 through Application 5.** The user can add the extension as an AUDIX Voice Power or AUDIX Voice Power/Fax Attendant subscriber by typing *AVP* or using ⎡F2⎤ (Choices) and selecting AVP in one of these fields. If Fax Attendant is installed, an AUDIX Voice Power subscriber is automatically a Fax Attendant subscriber as well.

⟹ NOTE:

In the "System Programming Results" sections that follow, any information copied to the system is sent after pressing ⎡F3⎤ (Save). This information replaces existing system programming of the applicable items.

System Programming Results

The following information and directions are sent to the system:

- Extension label(s), if any

- Remove deleted extension(s) from AUDIX Voice Power coverage group (30), if they were added previously as subscribers.

Screen Results

When finished with the Extension Directory screen, press ⎡F3⎤ (Save). If either the AUDIX Voice Power User screen or Fax Attendant is installed, the AUDIX Voice Power User/Fax Attendant User screen appears. Figure 24 shows examples of the AUDIX Voice Power and Fax Attendant User screens. A description of their use follows.

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AUDIX Voice Power/Fax Attendant User

```
                        AUDIX Voice Power User

                            Extension:nnnn
      Add User to AUDIX Voice Power Cover Group:[yes/no]
            AUDIX Voice Power button number: --
```

```
                   AUDIX Voice Power/FAX Attendant User

                            Extension:nnnn
      Add User to AUDIX Voice Power Cover Group:[yes/no]
            AUDIX Voice Power button number: --
                      Private Fax Extension:----
```

**Figure 24.   AUDIX Voice Power and AUDIX Voice Power/Fax Attendant
               User Screens**

- **Extension.** The extension displayed is the one entered in the Extension
  Directory screen.

- **Add User to AUDIX Voice Power Cover Group.** Press F2 (Choices) and
  select yes or no.

  On initial installation only, this information is passed to the Subscriber
  screen for AUDIX Voice Power or AUDIX Voice Power/Fax Attendant. This
  screen is used for programming the applications only. If a user
  subsequently changes this field, the change is not passed to the
  Subscriber screen. This allows two choices to be set independently: the
  item on the AUDIX Voice Power User or AUDIX Voice Power/Fax
  Attendant User screen, which controls the addition of the extension to the
  coverage group; and the item on the Subscriber screen, which specifies
  whether AUDIX Voice Power does supervised or unsupervised transfers to
  the extension. See the AUDIX Voice Power or Fax Attendant *System
  Manager's Guide* for details.

- **AUDIX Voice Power Button Number.** Enter a button number (1–34) for
  an Auto Dial button on the telephone at the extension for the Automated
  Attendant calling group. If the specified button is already programmed as a
  personal line or **Pool** button, or if it is the only **SA** or **ICOM** button on the
  telephone, the Auto Dial button is not programmed. The Auto Dial button
  can replace any other button that is already programmed, including an **SA**,
  Shared **SA**, or **ICOM** button.

  The Auto Dial button programming does not appear in the application
  database. As a result, if a user returns to this screen, Integrated
  Administration does not show the button or prevent the programming of a

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different button with the same Auto Dial number. To determine which buttons are programmed on an extension, use Inspect at the telephone or through centralized telephone programming.

If the Auto Dial button is to be programmed for the calling group number for Call Answer or Voice Mail, it must be reprogrammed on the system through either extension programming or centralized telephone programming.

If the user leaves this field blank or enters *0*, no button is programmed.

■ **Private Fax Extension.** The user can enter either the system extension of a tip/ring jack connected to a fax machine or a phantom extension. The extension is added (on the system) to the coverage group that sends its calls to AUDIX Voice Power. If the user leaves this field blank or blanks it out, the extension in the Extension field does not receive Fax Attendant services.

Unless a DID line is assigned to an extension for private fax purposes, a personal line must be assigned to the extension and the extension must be the principal user of that line.

No two subscribers can be assigned the same private fax extension. However, a group of individuals can use the same private fax extension, as follows:

— An extension number that is not a valid extension on the system is assigned as a special-purpose extension, as described earlier under the Extension Directory screen. This extension is the *group fax administrator*.

— The special-purpose extension is assigned a private fax extension on the AUDIX Voice Power/Fax Attendant User screen.

— Group members are assigned as Fax Attendant subscribers on the Extension Directory screen, but are *not* assigned private fax extensions.

When callers reach the group fax administrator's private fax extension, they are prompted for the voice extension of the group member to receive the fax. (See the Fax Attendant *System Manager's Guide* for instructions about programming voice prompts.)

System Programming Results

The following information is sent to the system:

■ Add extension(s) to or delete from AUDIX Voice Power coverage group (30), depending on selection in Add User to AUDIX Voice Power Cover Group field.

■ Add Auto Dial button for Automated Attendant calling group (770).

■ Add private fax extension(s) to or delete from AUDIX Voice Power coverage group.

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Screen Results

When finished using AUDIX Voice Power User or AUDIX Voice Power/Fax Attendant User screen, press `F3` (Save). The Subscriber screen appears for AUDIX Voice Power or for AUDIX Voice Power/Fax Attendant. Subscriber screens are used for programming application parameters and do not send any information to the switch.

Access the Subscriber screens by selecting Subscriber Administration from the AUDIX Voice Power or AUDIX Voice Power/Fax Attendant menu under the Integrated Solution III or Integrated Solution Maintenance menu. This method allows information about an existing subscriber to be changed but does not allow the addition of a new subscriber.

System Programming/Switch Admin

On initial installation of IS III, selecting System Programming/Switch Admin from the AUDIX Voice Power or AUDIX Voice Power/Fax Attendant menu brings up the System Programming/Switch Admin Form screen. Figure 25 shows this screen, and a description of its use follows.

On subsequent access, the System Programming/Switch Admin selection brings up the System Programming/Switch Admin Menu screen. Figure 26 on page 349 shows this menu as it appears with only AUDIX Voice Power installed and as it appears with both AUDIX Voice Power and Fax Attendant installed.

Note that one of the selections on the System Programming/Switch Admin menu (Figure 26) is System Programming/Switch Admin Form, which brings up the System Programming/Switch Admin Form screen (Figure 25).

The purpose of this screen is to assign switch (system) extensions to AUDIX Voice Power and Fax Attendant services. The channel numbers represent physical channels on the AUDIX Voice Power IVP4 or IVP6 board or the Fax Attendant IFP2 or IFP4 board in the IS III computer.

```
            System Programming/Switch Admin Form

      Channel      Extension Service
         0          ----[Service]
         1          ----            [Service]
         2          ----[Service]
         3          ----[Service]
         4          ----[Service]
         5          ----[Service]
         6          ----[Service]
         7          ----[Service]
         8          ----[Service]
         9          ----[Service]
        10          ----[Service]
        11          ----[Service]
```

Figure 25.   System Programming/Switch Admin Form Screen

- ■ **Extension.** Press ⌐F1⌐ (Add) and enter a valid switch extension for the service, or press ⌐F2⌐ (Delete) to delete an extension from a service.

- ■ **Service.** Press ⌐F2⌐ (Choices) and select a service from the following list:

  — AA (Automated Attendant) is the default for all channels. This selection also provides Call Answer and Voice Mail and, if Fax Attendant is installed, Fax Call Answer and Fax Mail services.

  — CA (Call Answer) also provides Fax Call Answer service if Fax Attendant is installed.

  — FR (Fax Response) is available if Fax Attendant is installed.

  — IS (Information Service)

  — MD (Message Drop)

  — VM (Voice Mail) also provides Fax Mail service if Fax Attendant is installed.

System Programming Results

The following information is sent to the system (see "Application Switch Defaults" on page 330 for details):

- ■ Reliable Disconnect: yes

- ■ Delay Ring: 2

- ■ Coverage Delay Ring: 3

- ■ VMS Transfer Return Interval: 6

- ■ Transfer Return Time: 6

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Described below is the service-specific information sent to the system for the services selected.

If `Automated Attendant` is selected:

■ Add the label AUDIXVP to or delete it from the Automated Attendant extension(s).

■ Add the label AUDIXVP to Automated Attendant calling group (770) when the first Automated Attendant extension is added, or delete the label when the last Automated Attendant extension is deleted.

■ Set the group type to Integrated VMI for the Automated Attendant calling group when the first Automated Attendant extension is added; or set it to Auto Logout when the last Automated Attendant extension is deleted.

■ Set the hunt group type to Circular for the Automated Attendant calling group when the first Automated Attendant extension is added.

■ Add Automated Attendant extension(s) to or delete them from the Automated Attendant calling group.

■ Add Automated Attendant extension(s) to or delete them from the Night Service exclusion list.

■ Add the AUDIX Voice Power coverage group (30) to the Automated Attendant calling group when the first Automated Attendant extension is added; or delete it from the calling group when the last Automated Attendant extension is deleted.

■ Delete all lines from the Automated Attendant calling group when the last Automated Attendant extension is deleted and Automated Attendant is set for immediate call-handling operation.

■ Delete the backup operator from the AUDIX Voice Power coverage group when the last Automated Attendant extension is deleted and Automated Attendant is set for delayed call-handling operation.

■ Delete the AUDIX Voice Power coverage group from Night Service group for the affected operator when the last Automated Attendant extension is deleted and Automated Attendant is set for Night Service operation.

If `Call Answer` is selected:

■ Add the label AUDIXVP to or delete it from Call Answer extension(s).

■ Add the label AUDIXVP to Call Answer calling group (7926) when the first Call Answer extension is added, or delete the label when the last Call Answer extension is deleted.

■ Set the group type to Integrated VMI for the Call Answer calling group when the first Call Answer extension is added, or set it to Auto Logout when the last Call Answer extension is deleted.

■ Set the hunt group type to Circular for the Call Answer calling group when the first Call Answer extension is added.

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- Add the Call Answer extension(s) to or delete them from the Call Answer calling group.

- Add the Call Answer extension(s) to or delete them from the Night Service exclusion list.

Because Call Answer is typically not assigned as the only service in a system, the AUDIX Voice Power coverage group (30) is not assigned to the Call Answer calling group. If Call Answer is to be the only service, the AUDIX Voice Power coverage group must be assigned to the Call Answer calling group through system programming. Use either the programming console or System Programming and Maintenance (SPM).

If FAX Response is selected:

- Add the label AVP-FA to or delete it from Fax Response extension(s).

- Add the label AVP-FA to the Fax Response calling group (7924) when the first Fax Response extension is added, or delete the label when the last Fax Response extension is deleted.

- Set the group type to Integrated VMI for the Fax Response calling group when the first Fax Response extension is added, or set it to Auto Logout when the last Fax Response extension is deleted.

- Set the hunt group type to Circular for the Fax Response calling group when the first Fax Response extension is added.

- Add Fax Response extension(s) to or delete extension(s) from the Fax Response calling group.

- Delete all lines from the Fax Response calling group when the last Fax Response extension is deleted.

If Information Service is selected:

- Add the label AUDIXVP to or delete it from the Information Service extension(s).

- Add the label AUDIXVP to the Information Service calling group (7927) when the first Information Service extension is added, or delete the label when the last Information Service extension is deleted.

- Set the group type to Integrated VMI for the Information Service calling group when first the Information Service extension is added,; or set it to Auto Logout when the last Information Service extension is deleted.

- Set the hunt group type to Circular for the Information Service calling group when the first Information Service extension is added.

- Add Information Service extension(s) to or delete them from the Information Service calling group.

- Delete all lines from the Information Service calling group when the last Information Service extension is deleted.

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If `Message Drop` is selected**:**

- Add the label AUDIXVP to or delete it from the Message Drop extension(s).

- Add the label AUDIXVP to the Message Drop calling group (7928) when the first Message Drop extension is added, or delete the label when the last Message Drop extension is deleted.

- Set the group type to Integrated VMI for the Message Drop calling group when the first Message Drop extension is added, or set it to Auto Logout when the last Message Drop extension is deleted.

- Set the hunt group type to Circular for the Message Drop calling group when the first Message Drop extension is added.

- Add Message Drop extension(s) to or delete them from the Message Drop calling group.

- Delete all lines from the Message Drop calling group when the last Message Drop extension is deleted.

If `Voice Mail` is selected:

- Add the label AUDIXVP to or delete it from Voice Mail extension(s).

- Add label AUDIXVP to Voice Mail calling group (7925) when first Voice Mail extension is added; or delete label when last Voice Mail extension is deleted.

- Set the group type to Integrated VMI for the Voice Mail calling group when the first Voice Mail extension is added, or set it to Auto Logout when the last Voice Mail extension is deleted.

- Set the hunt group type to Circular for Voice Mail calling group.

- Add Voice Mail extension(s) to or delete them from the Voice Mail calling group.

- Add Voice Mail extension(s) to or delete them from the Night Service exclusion list.

- If Automated Attendant is not selected, add the AUDIX Voice Power coverage group (30) to the Voice Mail calling group when the first Voice Mail extension is added.

- Delete all lines from the Voice Mail calling group when the last Voice Mail extension is deleted.

Screen Results

On initial installation of IS III, after the System Programming/Switch Admin Form screen, the program steps through the applicable screens shown in Figures <u>24</u> through <u>35</u>, depending on the services selected on this form.

On subsequent access, after the System Programming/Switch Admin Form screen, the AUDIX Voice Power or AUDIX Voice Power/Fax Attendant menu returns. The user can then access the screens shown in Figures <u>25</u> through <u>35</u>

individually through selections on the System Programming/Switch Admin Menu screen, shown in Figure 26. (This menu includes the selection FAX Response only if Fax Attendant is installed.)

- System Programming/Switch Admin Menu

- Automated Attendant

- Call Answer

- Fax Response

- Information Service

- Message Drop

- System Programming/Switch Admin Form

- Voice Mail

```
                    System Programming/Switch Admin Menu

                           Automated Attendant
                                Call Answer
                               FAX Response
                            Information Service
                               Message Drop
                    System Programming/Switch Admin Form
                                 Voice Mail
```
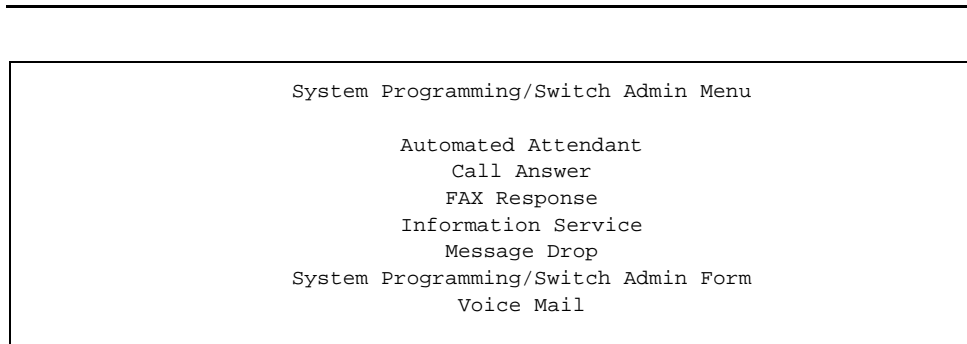
Figure 26.   System Programming/Switch Admin Menu Screen

Automated Attendant

If a user chooses Automated Attendant on the System Programming/Switch Admin Form screen during installation or from the System Programming/Switch Admin menu on subsequent access, the screen shown in Figure 27 appears.

```
                          Automated Attendant

                Channels:        nn   nn   nnnn
                Extensions:      nnnnnnnn nnnnnnnn

     Automated Attendant Usage:    [                    ]
```
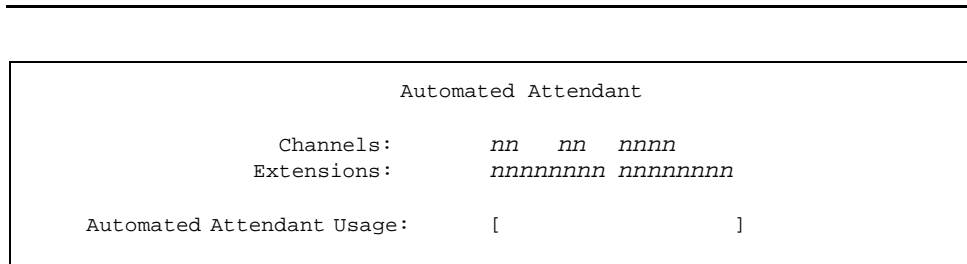
Figure 27.   Automated Attendant Screen

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- ■ **Channels and Extensions.** The values displayed are those entered for Automated Attendant on the System Programming/Switch Admin Form screen.

- ■ **Automated Attendant Usage.** Press F2 (Choices) and select Immediate, Delayed, or Night Service.

System Programming Results

The following information is sent to the system:

- ■ Delete all lines from the Automated Attendant calling group (770) if Automated Attendant usage has been changed from Immediate to Delayed or Night Service.

- ■ Delete the backup operator from the AUDIX Voice Power coverage group (30) if Automated Attendant usage has been changed from Delayed to Immediate or Night Service.

- ■ Delete the AUDIX Voice Power coverage group from the Night Service group for affected operators (see Figure 30) if Automated Attendant usage has been changed from Night Service to Immediate or Delayed.

Screen Results

After the Automated Attendant screen, press F3 (Save). If Automated Attendant Usage has been changed, one of the following screens appears, depending on the selection in the Automated Attendant Usage field:

- ■ Automated Attendant: Immediate Call-Handling (Figure 28)

- ■ Automated Attendant: Delayed Call-Handling (Figure 29)

- ■ Automated Attendant: Night Service (Figure 30)

If Automated Attendant usage has not been changed, *on initial installation* the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figures 31 through 35). *On subsequent access,* the System Programming/Switch Admin menu returns.

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Automated Attendant: Immediate Call-Handling

```
            Automated Attendant - Immediate Call Handling

    Channels:     nn    nn    nn    nn
  Extensions:     nnnn  nnnn  nnnn  nnnn
 Lines/Pools:    ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
                 ---- ---- ---- ---- ---- ---- ---- ---- ----
```
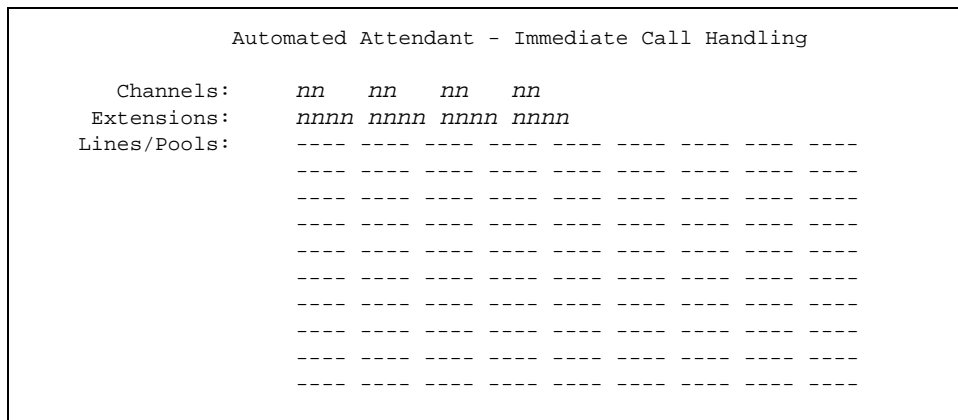
Figure 28.   Automated Attendant: Immediate Call-Handling Screen

- **Channels and Extensions.** The values displayed are those entered for Automated Attendant on the System Programming/Switch Admin Form screen.

- **Lines/Pools.** Press `F1` (Add) or `F2` (Delete) to add or delete a line or pool for this service. A pop-up window appears for entry of a line or pool number.

System Programming Results. Add lines to and/or delete lines from Automated Attendant calling group (770).

Screen Results. *On initial installation,* the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figures 31 through 35).

On subsequent access, the System Programming/Switch Admin menu returns.

Automated Attendant: Delayed Call-Handling

- **Channels and Extensions.** The values displayed are those entered for Automated Attendant on the System Programming/Switch Admin Form screen.

- **Backup Operator Extension.** For delayed call handling, enter a phantom extension that has already been programmed on the system and assigned as an operator position through system programming at the programming console or System Programming and Maintenance (SPM). The phantom operator has the default configuration of lines assigned to it: the first 32 lines for a phantom analog extension or the first 18 lines for a phantom

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MLX extension. If these are not the lines for which backup operation is desired, the assignments must be reprogrammed through system programming.

The phantom operator must also be added as an AUDIX Voice Power subscriber on the Extension Directory screen, Figure 23 on page 340.

If a user either blanks out this field to delete the phantom operator or changes Automated Attendant operation to Immediate or Night Service on the Automated Attendant screen, the extension should also be deleted as a subscriber on the Extension Directory screen to maintain consistency between the application database and the switch.

```
            Automated Attendant-Delayed Call Handling

                 Channels:        nn nn nn nn
               Extensions:        nnnn nnnn nnnn nnnn

 Backup Operator Extension:        ----
```

Figure 29.   Automated Attendant: Delayed Call-Handling Screen

System Programming Results. Add backup operator to or delete from AUDIX Voice Power coverage group (30).

Screen Results. *On initial installation*, the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figures 31 through 35).

On subsequent access, the System Programming/Switch Admin menu returns.

Automated Attendant: Night Service

```
              Automated Attendant: Night Service

              Channels:  nn     nn
            Extensions:  nnnn   nnnn
 Night Service operators:  ---- ---- ---- ---- ---- ---- ---- ----
```

Figure 30.   Automated Attendant: Night Service Screen

■ **Channels and Extensions.** The values displayed are those entered for Automated Attendant on the System Programming/Switch Admin Form screen.

■ **Night Service Operators.** Press F1 (Add) or F2 (Delete) to add or delete an operator. A pop-up window appears for entry of an operator extension. At least one operator must be added or deleted.

System Programming Results. Add Automated Attendant calling group (770) to or delete from the Night Service group for operator(s) entered.

Screen Results. *On initial installation,* the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figures 31 through 35).

On subsequent access, the System Programming/Switch Admin Menu screen returns.

Call Answer

If a either user chooses Call Answer or Automated Attendant as a service on the System Programming/Switch Admin Form screen during initial installation or selects Call Answer from the System Programming/Switch Admin menu on subsequent access, the screen shown in Figure 31 appears.

```
                        Call Answer
      Channels:     nn   nn   nn   nn
    Extensions:     nnnn nnnn nnnn nnnn
   Lines/Pools:     ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
```

Figure 31.   Call Answer Screen

■ **Channels and Extensions.** The values displayed are those entered for Call Answer or Automated Attendant on the System Programming/Switch Admin Form screen.

■ **Lines/Pools.** Press F1 (Add) Or F2 (Delete) to add or delete a line or pool for this service. A pop-up window appears for entry of a line or pool number.

System Programming Results

Add lines to and/or delete lines from Call Answer calling group (7926).

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Screen Results

On initial installation, the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figures 32 through 35).

On subsequent access, the System Programming/Switch Admin menu returns.

Fax Response

If FAX Response either is chosen as a service on the System Programming/Switch Admin Form screen during initial installation or is selected from the System Programming/Switch Admin menu on subsequent access, the screen shown in Figure 32 appears.

- **Channels and Extensions.** The values displayed are those entered for Fax Response on the System Programming/Switch Admin Form screen.

- **Lines/Pools.** Press ⌷F1⌷ (Add) or ⌷F2⌷ (Delete) to add or delete a line or pool for this service. A pop-up window appears for entry of a line or pool number.

```
                      Fax Response
     Channels:      nn    nn    nn    nn
   Extensions:      nnnn nnnn nnnn nnnn
  Lines/Pools:      ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
                    ---- ---- ---- ---- ---- ---- ---- ---- ----
```

Figure 32.   Fax Response Screen

System Programming Results

Add lines to and/or delete lines from Fax Response calling group (7924).

Screen Results

On initial installation, the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figures 26 through 28).

On subsequent access, the System Programming/Switch Admin menu returns.

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Information Service

If a user either selects Information Service as a service on the System Programming/Switch Admin Form screen during initial installation or selects it from the System Programming/Switch Admin menu on subsequent access, the screen shown in Figure 33 appears.

- **Channels and Extensions.** The values displayed are those entered for Information Service on the System Programming/Switch Admin Form screen.

- **Lines/Pools.** Press F1 (Add) or F2 (Delete) to add or delete a line or pool for this service. A pop-up window appears for entry of a line or pool number.

```
                      Information Service
    Channels:      nn    nn    nn    nn
  Extensions:      nnnn  nnnn  nnnn  nnnn
 Lines/Pools:      ----  ----  ----  ----  ----  ----  ----  ----  ----
                   ----  ----  ----  ----  ----  ----  ----  ----  ----
                   ----  ----  ----  ----  ----  ----  ----  ----  ----
                   ----  ----  ----  ----  ----  ----  ----  ----  ----
                   ----  ----  ----  ----  ----  ----  ----  ----  ----
                   ----  ----  ----  ----  ----  ----  ----  ----  ----
                   ----  ----  ----  ----  ----  ----  ----  ----  ----
                   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Figure 33. Information Service Screen

System Programming Results

Add lines to and/or delete lines from Information Service calling group (7927).

Screen Results

On initial installation, the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figures 34 and 35).

On subsequent access, the System Programming/Switch Admin menu returns.

Message Drop

If a user either chooses Message Drop as a service on the System Programming/Switch Admin Form screen during initial installation or selects it from the System Programming/Switch Admin menu on subsequent access, the screen shown in Figure 34 appears.

- **Channels and Extensions.** The values displayed are those entered for Message Drop on the System Programming/Switch Admin Form screen.

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■ **Lines/Pools.** Press F1 (Add) or F2 (Delete) to add or delete a line or pool for this service. A pop-up window appears for entry of a line or pool number.

```
                          Message Drop
      Channels:       nn    nn    nn    nn
    Extensions:     nnnn  nnnn  nnnn  nnnn
   Lines/Pools:    ---- ---- ---- ---- ---- ---- ---- ---- ----
                   ---- ---- ---- ---- ---- ---- ---- ---- ----
                   ---- ---- ---- ---- ---- ---- ---- ---- ----
                   ---- ---- ---- ---- ---- ---- ---- ---- ----
                   ---- ---- ---- ---- ---- ---- ---- ---- ----
                   ---- ---- ---- ---- ---- ---- ---- ---- ----
                   ---- ---- ---- ---- ---- ---- ---- ---- ----
                   ---- ---- ---- ---- ---- ---- ---- ---- ----
```
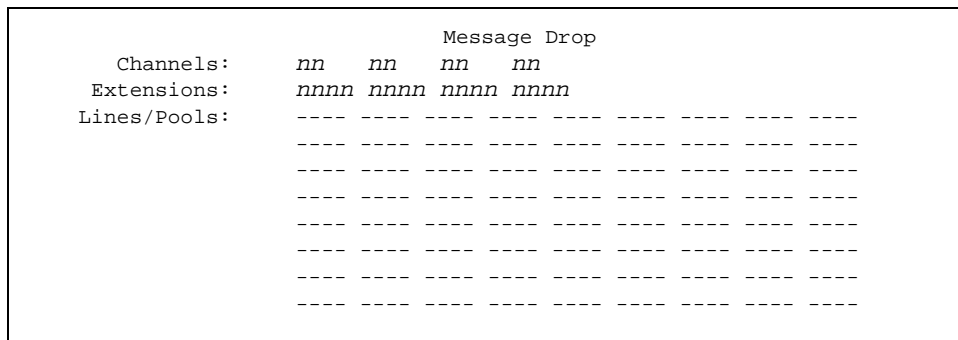
Figure 34.   Message Drop Screen

System Programming Results

Add lines to and/or delete lines from Message Drop calling group (7928).

Screen Results

On initial installation, the screen for the next service selected on the System Programming/Switch Admin Form screen appears (see Figure 35).

On subsequent access, the System Programming/Switch Admin menu returns.

Voice Mail

If a user either chooses Voice Mail or Automated Attendant as a service on the System Programming/Switch Admin Form screen during initial installation or selects Voice Mail from the System Programming/Switch Admin menu on subsequent access, the screen shown in Figure 35 appears.

```
                          Voice Mail
       Channels:     nn    nn    nn    nn
     Extensions:     nnnn  nnnn  nnnn  nnnn
    Lines/Pools:     ---- ---- ---- ---- ---- ---- ---- ---- ----
                     ---- ---- ---- ---- ---- ---- ---- ---- ----
                     ---- ---- ---- ---- ---- ---- ---- ---- ----
                     ---- ---- ---- ---- ---- ---- ---- ---- ----
                     ---- ---- ---- ---- ---- ---- ---- ---- ----
                     ---- ---- ---- ---- ---- ---- ---- ---- ----
                     ---- ---- ---- ---- ---- ---- ---- ---- ----
                     ---- ---- ---- ---- ---- ---- ---- ---- ----
```

Figure 35.　　Voice Mail Screen

- **Channels and Extensions.** The values displayed are those entered for
  Voice Mail or Automated Attendant on the System Programming/Switch
  Admin Form screen.

- **Lines/Pools.** Press $\boxed{\text{F1}}$ (Add) or $\boxed{\text{F2}}$ (Delete) to add or delete a line or
  pool for this service. A pop-up window appears for entry of a line or pool
  number.

System Programming Results

Add lines to and/or delete lines from Voice Mail calling group (7925).

Screen Results

After the Voice Mail screen, the System Programming/Switch Admin menu
returns.

Considerations and Constraints

In Release 4.1 and later systems, Integrated Administration cannot be used to
program some AUDIX Voice Power options. See "Integrated Administration in
Release 4.1 and Later Systems" on page 329 for details.

Integrated Administration never adds or changes extensions on the switch. When
the application database is reconciled with the system extension database, the
system information is always assumed to be correct.

In a Release 2.0 or later system with Integrated Solution III Version 1.0 or 1.1, use
the System Renumbering feature cautiously. When this feature is used, all users'
messages and greetings that have been renumbered may be erased from AUDIX
Voice Power when the automatic reconciliation program runs at 3:00 a.m. (The
reconciliation program is disabled in Integrated Solution III Version 1.2.)

When Integrated Administration is sending information to the system, users are
blocked from entering system programming at the console or SPM until Integrated

Administration is finished. Similarly, if the console or SPM is being used for system programming, Integrated Administration is blocked from sending information to the system until system programming is finished.

While Integrated Administration is sending information to the system about an extension or line/trunk, that extension or line/trunk is forced idle.

For coverage by AUDIX Voice Power to work properly, the values programmed for the transfer return time and the VMS transfer return interval each must be greater than the combined total of the values programmed for the Coverage Delay Interval plus Delay Ring.

Fax Attendant cannot be installed as a standalone application, but only in conjunction with AUDIX Voice Power.

If an AUDIX Voice Power mailbox is needed for a person with no telephone, a phantom extension (on the system) or special-purpose extension (through Integrated Administration) must be assigned to that person.

The date and time should be set the same for AUDIX Voice Power as for the system.

Mode Differences

AUDIX Voice Power (including Fax Attendant) is not supported in Behind Switch mode.

Feature Interactions

Coverage   AUDIX Voice Power and private fax extensions are automatically assigned to coverage group 30, which is covered by the AUDIX Voice Power calling group. This assignment can be changed by a qualified technician using the Application Switch Defaults screen.

      If the Automated Attendant service is configured for delayed call handling, a backup (phantom) extension should be assigned and Integrated Administration sets up coverage for it.

      The total of the values programmed for the systemwide Coverage Delay Interval (Release 4.0 and prior systems) or extension-by-extension coverage delay settings (Release 4.1 and later systems) plus Delay Ring should be less than either the transfer return time or the VMS transfer return interval.

Coverage   See for information about using Integrated Administration with _continued_   coverage timer changes implemented in Release 4.1 and later systems.

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Group Calling	AUDIX Voice Power services and the Fax Response service are set up as members of dedicated calling groups. Integrated Administration sets up the necessary calling groups with the applicable options for correct operation of these services.
	See "Integrated Administration in Release 4.1 and Later Systems" on page 329 for information about using Integrated Administration with Group Calling settings in Release 4.1 and later systems.
Labeling	Names entered on the Extension Directory screen are sent to the switch and appear on system programming labeling screens on the programming console or System Programming and Maintenance (SPM). Names entered on the console or SPM appear on the Extension Directory screen after Extension Directory setup is completed. Labels are added to lines and calling groups, as appropriate, when services are selected through Integrated Administration.
Night Service	The Automated Attendant service can be used for Night Service operation. The necessary system programming options can be set through Integrated Administration.
Ringing Options	The total of the values programmed for Delay Ring plus Coverage Delay Interval should be less than either the transfer return time or the VMS transfer return interval. These values are shown on the Application Switch Defaults screen.
System Renumbering	System renumbering can be done only through system programming on the programming console or SPM. Integrated Administration never sends system numbering information to the system.
Transfer	Both the transfer return time and the VMS transfer return interval should be greater than the total of the values programmed for Delay Ring plus the Coverage Delay Interval. These values are shown on the Application Switch Defaults screen.
	See "Integrated Administration in Release 4.1 and Later Systems" on page 329 for information setting the transfer return time and the VMS transfer return interval in Release 4.1 and later systems.

Labeling

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Dial Plan, Direct Group Calling Information, Extension Directory, Group Coverage Information, Label Information, Operator Information, System Directory
Modes	All
Telephones	Display telephones
System Programming	Create, change, or delete System Directory listings:
	• **More**→Labeling→Directory→System
	Assign extension labels:
	• **More**→Labeling→Directory→Extension
	Create, change, or delete Personal Directory listings:
	• **More**→Labeling→Directory→Personal
	Assign outside line/trunk labels:
	• **More**→Labeling→LinesTrunks
	Assign calling group labels:
	• **More**→Labeling→Grp Calling
	Create, change, or delete posted messages:
	• **More**→Labeling→PostMessage
Maximums	
System Directory Labels	11 characters for each label
Extension Labels	7 characters for each label
Line/Trunk Labels	7 characters for each label
Calling Group Labels	7 characters for each label
Posted Messages	16 characters for each message
	20 messages
Factory Settings	
Posted Messages	1 fixed message
	9 preset but modifiable messages
	10 blank custom messages available for customer use

Description

Through the use of the Labeling feature, the system manager can program the system to provide identification information (called *labels*) and posted messages on display telephones. Alphanumeric labels can be assigned to the following:

■ **System Directory Listings.** To identify the company or person associated with a specific System Speed Dial number. This information appears when a user activates the System Directory.

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- ■ **Extension Directory Listings.** To identify the name of a person or room (for example, a conference room) associated with an extension. This information displays when a user receives an inside call, when a co-worker leaves a message, or when a user accesses the Extension Directory.

- ■ **Personal Directory Listings.** To identify the name of the person or business associated with a frequently called personal number. This information is displayed when an MLX-20L user accesses a Personal Directory.

- ■ **Outside Lines/Trunks.** To identify the type of line/trunk (for example, WATS or tie), the telephone number, or the department to which the line/trunk belongs. This information displays when a user makes or receives a call.

- ■ **Calling Groups.** To identify the group. This information is displayed when a group member answers a group call.

Integrated Administration (see page 328) downloads extension, outside line/trunk, and calling group labels to applications such as AUDIX Voice Power and Fax Attendant System. They can be assigned once in Integrated Administration for both the application and the system.

Labeling is also used to create messages that can be posted to a caller with a display telephone to explain why a person is not answering his or her telephone. Each posted message has a number. To post a message, enter the posted message number. When another user with a display telephone calls, the message is displayed on the caller's telephone (see "Messaging" on page 374 for additional information about how to post a message). Table 26 lists the factory-set posted messages and their numbers.

Table 26.   Factory-Set Posted Messages and Their Codes

Number	Message
01	DO NOT DISTURB (not modifiable in Release 2.0 and later systems, modifiable in earlier releases)
02	OUT TO LUNCH (modifiable)
03	AT HOME (modifiable)
04	OUT SICK (modifiable)
05	IN A MEETING (modifiable)
06	IN A CONFERENCE (modifiable)
07	WITH A CLIENT (modifiable)
08	WITH A CUSTOMER (modifiable)
09	AWAY FROM DESK (modifiable)
10	OUT ALL DAY (modifiable)
11–20	CUSTOM MSG 11, 12, ... (for customer-created messages)

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Considerations and Constraints

If a label is assigned to the extension, the MLX telephone user sees the label, the extension number, and the posted message, for example, `STEVE B Ext 7101 OUT TO LUNCH`. If a label is not assigned to an extension and a caller dials that extension, the telephone's extension number is displayed (instead of the user's name), along with any posted messages. For example, an MLX display telephone user sees `Ext 7103 OUT TO LUNCH`.

If labels are not assigned to operator extensions, display telephone users see `Operator` and the operator's extension number when receiving a call from the operator.

If labels have not been assigned to outside lines/trunks, display users see the factory-set label, `OUTSIDE` and the line/trunk number (such as `Trk 810`), when an outside call is made or received. With AT&T's INFO2 ANI service, another PRI calling party number service, or a calling number identification service and 800 GS/LS-ID module (loop-start lines only), the information displayed also identifies the number of the caller (MLX display telephones only).

⇒ NOTE:
The availability of the caller identification information may be limited by local-serving (caller's) jurisdiction, availability, or central office equipment. Programmed labels cannot be shown on nondisplay telephones or on single-line telephones.

Labels that are programmable by a user are displayed in all capital letters.

Labels can contain capital letters, numbers, and eight types of characters: ampersands (&), dashes (-), spaces, periods (.), commas (,), apostrophes('), stars (*), and pound signs (#).

Telephone Differences

Multiline Telephones

Only MLX-20L telephone users can have Personal Directories. Labels for the entries in this directory can be programmed by the system manager, using system programming, or by the MLX-20L telephone user at the extension.

Feature Interactions

Directories   An MLX extension programmed as a CTI link (Release 5.0 and later systems only) is automatically assigned the Extension Directory label `CTILINK`. This label can be changed using the Labeling feature.

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Do Not Disturb	Labeling is used to enter the names of the persons or businesses associated with the System Speed Dial numbers stored as listings in the System Directory. It is also used to enter the names of people, groups, and locations associated with the extensions in the system stored as listings in the Extension Directory. Labeling is used to enter the telephone numbers and label information associated with Personal Directories on MLX-20L telephones, and this information also can be programmed by the user at the extension.
Group Calling	Posted message 01, DO NOT DISTURB, is modifiable prior to Release 2.0. Starting with Release 2.0, when an MLX user activates the Do Not Disturb feature, the Do Not Disturb message is automatically posted. Therefore, in Release 2.0 and later systems, this posted message is not allowed to be changed. (The message may be posted even if the user does not activate Do Not Disturb.)
Integrated Administration	An alphanumeric label can be assigned to the calling group. The label is displayed when a group member answers a group call or when an MLX display telephone user presses the **Inspct** button and an Auto Dial button programmed with the calling group's extension number.
Messaging	Extension, line/trunk, and calling group labels are shared with certain applications. The extension labels may be entered or updated in Integrated Administration, affecting both the system and the applications.
Speed Dial	The labels stored in the Extension Directory appear on MLX display telephones when users send each other messages. Messages include the name (the 7-character label) of the user who sent the message and the time and day the user called. Posted messages are created and changed by using Labeling.

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Language Choice

At a Glance

Users Affected	Telephone users, operators, system manager
Reports Affected	Extension Information, SMDR, System Information (`SysSet-up`)
Modes	All
Telephones	MLX telephones only
Feature Codes	
English	*790*
French	*791*
Spanish	*792*
System Programming	Select a language for the entire system:
	• **More**→Language→SystemLang
	Select a language for an extension:
	• **More**→Language→Extensions
	Select a language for SMDR headers:
	• **More**→Language→SMDR
	Select a language for printing programming reports:
	• **More**→Language→Printer
Factory Settings	
System Language	English
Extension Language	English
SMDR Report Language	English
Programming Report Language	English
SPM Language	English

$\Longrightarrow$ **NOTE:**
Language choice is available with Release 1.1 and later systems.

Description

Since Release 1.1, the system has supported system operation and programming in three languages: English, French, and Spanish. This enables system managers and MLX telephone users to customize aspects of the system for their linguistic convenience.

■ The system manager can program the entire system to operate in English, French, or Spanish, including MLX prompts and displays, SMDR headings, and system programming reports.

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- The system manager can program specific extensions or consecutive blocks of extensions in English, French, or Spanish as necessary. In addition, an individual MLX telephone user in a Release 1.1 or later system can choose the language most appropriate for his or her own extension.

- The system manager can program SMDR report headers, the headings, and text of system programming reports to be printed in English, French, or Spanish.

- A user of System Programming and Maintenance (SPM) software can select English, French, or Spanish as the language for its displays and messages.

- MLX-5D, MLX-10D, MLX-16DP, MLX-20L, and MLX-28D display telephones and MLX-10 and MLX-5 nondisplay telephones can be obtained with factory-imprinted buttons in English, French, Hungarian, or Spanish.

System Language

Through system programming, the system manager selects a language for the entire system, determining the language used for all MLX telephone displays, SMDR headings, system programming reports, and maintenance displays.

Extension Language

In Release 1.1 and later systems, MLX telephones can operate in English, French, or Spanish, independently of the system language. The language for an extension is chosen either by the system manager through system programming or by a user at the extension. This setting also controls the Reminder and Alarm Clock features on MLX telephones, using a 12-hour clock on telephones operating in English and a 24-hour clock on telephones operating in French or Spanish.

After the user selects a language, the choice is confirmed on Line 2 of MLX display telephones. If the choice is English, the display shows the words *In English*. If the choice is French, the display shows the words *En français*. If the choice is Spanish, the display shows the words *En español*.

After 5 seconds, Line 2 changes, displaying the date and time. In English, the date is shown as *month day*; the time is shown in 12-hour format (a.m. or p.m.). In French and Spanish, the date is shown as *day month*; the time is shown in 24-hour format. At MLX nondisplay telephones, the only effect of this selection is a different time format (12-hour clock versus 24-hour clock) required when dialing times for the Reminder feature.

SMDR Report Language

Through system programming, SMDR reports can be printed with headers in English, French, or Spanish, regardless of the language selected for the system and for SPM.

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Programming Report Language

Through system programming, programming reports can be printed in English, French or Spanish, regardless of the language selected for the system or for System Programming and Maintenance (SPM).

SPM Language

Unlike the SMDR and programming report languages, which are selected through system programming, the SPM language is selected by the SPM user. When the software is first installed, the user is prompted (in English) for line speed, color or black-and-white monitor, and other configuration options. These selections are stored in a system-created configuration file c:\spm\ams.cfg (DOS version) or /usr/ams/ams.cfg (UNIX System version). The language selection made at this time determines whether SPM menus, pop-up windows, and other messages are presented in English, French, or Spanish. A second language selection option on the SPM screen affects messages from the control unit to SPM and controls the 7-line by 24-character console-simulation window for the duration of the session. These two language options operate independently of each other. An SPM user, for example, can select English for one and French for the other.

The following discussion refers to the language specified in the SPM configuration files as the *PC language* and the language used by the control unit as the *console window language*.

PC Language

Once a PC language is chose at initial installation, that selection is written into the configuration file and becomes the default language. Invoking SPM calls that particular language selection. If a user wishes to specify a different language, he or she can do so using the -l option as follows:

spm -l english
spm -l french
spm -l spanish

Note that the option is a lowercase letter L, not the number 1. Use of the -l option changes the language attribute in the SPM configuration file. The language specified becomes the new PC language, used whenever SPM is started without the -l option.

Console Window Language

Because the console window language selection is made only after the selection of the PC language, the language used in the 7-line by 24-character console simulation window always defaults to the PC language. However, by pressing F10 and making a selection, the SPM user can select a different language for this window for the duration of the current session.

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Considerations and Constraints

After a System Reset (cold start), the system language reverts to the default setting, English.

In a system release prior to Release 1.1, if a user attempts to set the language on a telephone, he or she hears a reorder tone or an error beep.

When the system and extension language selections are different, the extension language takes precedence.

Telephone Differences

Multiline Telephones

Language choice is supported only on MLX telephones.

Because the extension language takes precedence over the system language, Alarm Clock (display telephones only) and Reminder differ, depending on the language used at an extension. When the extension language is set for English or the system language has been set for English and no extension language selection has been programmed, MLX telephone users set the Alarm Clock and Reminder features using 12-hour time (a.m. or p.m.). When the extension language is French or Spanish, or the system language is set for French or Spanish and no extension language has been chosen, the MLX telephone user sets the Alarm Clock and Reminder features using 24-hour time. Language choice affects only the Reminder feature on MLX-10 and MLX-5 nondisplay telephones.

Feature Interactions

Alarm Clock and Reminder Service
Enter the time settings for Alarm Clock and Reminder in accordance with the language selection governing the extension. If the language selection is English, the time setting for Alarm Clock and Reminder must be entered in 12-hour format (0100–1259) followed by either a 2 *(*A*)* for a.m. or a 7 *(*P*)* for p.m. If the governing language selection is French or Spanish, the time setting must be entered in 24-hour format (0000–2359).

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Last Number Dial

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Extension Information
Modes	All
Telephones	All except QCC
Programming Code	*84
Feature Code	84
MLX Display Label	LastNumDial [Last#]
Maximums	1 Last Number Dial button for each multiline telephone
	16 digits saved by Last Number Dial

Description

Last Number Dial automatically saves the last number dialed from an extension and allows the user to call the number again without manually redialing. The number is saved even if the called party answers.

The number saved is any extension or telephone number dialed in any of the following ways:

- Manually dialing the complete number on the dialpad
- Dialing the number using a Personal Speed Dial code
- Dialing a number using a programmed outside Auto Dial button
- Dialing a number using a programmed Saved Number Dial button

Each time a user dials a new number using any of these methods, the old number saved for Last Number Dial is erased and replaced with the new number.

Considerations and Constraints

Only one Last Number Dial button can be programmed on each multiline telephone.

A maximum of 16 digits is saved by Last Number Dial.

Because the type of line button used to make the call (personal line, **SA**, or **ICOM**) is not stored, the user must select the appropriate line button before using Last Number Dial to redial a number.

Last Number Dial saves whatever you dial, whether or not the number is valid.

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If you dial a telephone number and, after the call is connected, dial additional digits, such as an account number or password, Last Number Dial saves all digits, including those dialed after the call is connected. In addition, if someone other than the owner of a display telephone presses the Last Number Dial button, all dialed digits are shown on the display, including confidential information such as passwords or account codes.

Last Number Dial does not store numbers dialed through an Extension, Personal, or System Directory, an inside Auto Dial button, a System Speed Dial code, or a DSS button.

If the number is dialed using an outside Auto Dial button or Personal Speed Dial code and includes a special character such as Pause or Stop, the special character does not work when the number is redialed using Last Number Dial.

Mode Differences

Behind Switch

In Behind Switch mode, when a user manually dials an outside number that includes a dial-out code (for example, an Automatic Route Selection or pool dial-out code) required by the host system, the pauses required to wait for dial tone from some host systems are not automatically stored for Last Number Dial. As a result, a user may either hear a fast busy signal or reach a wrong number when using Last Number Dial.

Key Mode

In Key mode, Last Number Dial cannot be used unless a Feature button is programmed on an analog multiline telephone in Key mode. This Feature button is used instead of the # button to activate the feature code.

Telephone Differences

Queued Call Consoles

Last Number Dial cannot be used on QCCs.

Other Multiline Telephones

To redial a number using Last Number Dial on a multiline telephone, select the appropriate personal line (outside line) or **SA** button for the call. Then either press the programmed Last Number Dial button or press the **Feature** button and dial *84*. The number saved by the feature is dialed automatically. On MLX display telephones, press the **Feature** button and select LastNumDial [Last#] from the display.

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Single-Line Telephones

To redial a number using Last Number Dial, lift the handset (the telephone must connect to an **SA** or **ICOM** line) and then dial *#84*. The number that was last dialed is dialed automatically.

Feature Interactions

Authorization Code	After activating the Authorization Code feature, Last Number Dial cannot be used. Once the Authorization Code feature is deactivated, Last Number Dial can be used and contains the last number dialed before the Authorization Code feature was activated.
Auto Dial	Last Number Dial does not store numbers dialed using an inside Auto Dial button. If a number containing special characters is dialed using an outside Auto Dial button, the special characters do not work when the number is redialed using Last Number Dial.
Digital Data Calls	Terminal adapters can use Last Number Dial by dialing the Last Number Dial feature code. Last Number Dial can be activated by video systems that can dial strings and feature codes beginning with #.
Direct Station Selector	An extension number dialed by pressing a DSS button is not stored for Last Number Dial.
Directories	Last Number Dial does not store a number dialed using a Personal, Extension, or System Directory.
Display	When a user presses a programmed Last Number Dial button, the digits appear on the display as if the user were dialing them from the dialpad.
HotLine	Last Number Dial is not available at HotLine extensions (Release 5.0 and later systems).
Inspect	In Release 1.0 and 1.1 systems, when a user presses **Inspct** and then a programmed Last Number Dial button, Last Number Dial appears on the display.
	In Release 2.0 and later systems, when a user presses **Inspct** and then a programmed Last Number Dial button, the saved number appears on the display.
Microphone Disable	When an MLX telephone user's microphone is disabled, pressing the programmed Last Number Dial button before lifting the handset turns on the speakerphone so the user can hear the number being dialed. However, once the call is answered, the user must lift the handset to talk.
Recall/Timed Flash	Recall can be used on a call made with Last Number Dial on a personal line or **Pool** button (loop-start only), an inside call, or, in Release 2.0 and later systems, an outside call made on a loop-start line using an **SA** or **ICOM** button.
SMDR	All outside numbers dialed using Last Number Dial are recorded on the SMDR report.

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Speed Dial	Telephone numbers dialed using Personal Speed Dial are stored by Last Number Dial. However, if the number includes special characters such as Pause or Stop, the special characters do not work when the number is redialed using Last Number Dial. Telephone numbers dialed using System Speed Dial are not stored by Last Number Dial.
System Access/ Intercom Buttons	When Last Number Dial is used on a call made with a Shared **SA** button, the number is stored on the extension where Last Number Dial was used, not on the principal extension.
Transfer	Last Number Dial can be used to dial the outside number of the telephone to which the call is being transferred.

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Line Request

At a Glance

Users Affected	Telephone users, operators
Modes	All
Telephones	All except MLC-5 cordless, MDC 9000, MDW 9000, QCC, and single-line telephones

Description

If a user wants to make a call on a busy outside line assigned to a button, Line Request notifies the user when the line is available. When an outside line is busy, the green LED next to the button is on or flashing.

Line Request is automatically available and does not require programming. To request the busy line, the multiline telephone user presses the line button for the busy line without lifting the handset. The red LED next to the line button turns on, and, when the line becomes available, the telephone automatically alerts the user with a beep. To make a call using the requested line, the user lifts the handset or presses the **Speaker** button.

Line Request is canceled if the user presses another line button or makes or receives a call.

Line Request applies to personal lines only, not to pools or to lines on **SA** or **ICOM** buttons. To complete calls to busy extensions or to complete calls to outside numbers using a pool in which all lines/trunks are busy, use Callback.

Considerations and Constraints

Line Request does not reserve the line; it alerts you only that the line is available.

Line Request cannot be used for an **SA** or **ICOM** button.

Line Request cannot be used on single-line telephones or on a Queued Call Console (QCC).

In Hybrid/PBX mode, Line Request cannot be used on a **Pool** button or for a busy pool.

Mode Differences

Hybrid/PBX Mode

In Hybrid/PBX mode, Line Request can be used for personal lines or special-purpose lines (such as WATS) assigned to line buttons on a multiline telephone. Callback should be used instead of Line Request to complete calls to busy extensions or outside numbers when the call is made by using a pool in which the lines/trunks are busy.

> **NOTE:**
> Do not use Callback when your system includes a voice messaging system.

Key and Behind Switch Modes

Line Request works only for outside lines that are assigned to line buttons.

Telephone Differences

Queued Call Consoles

Line Request cannot be used on QCCs.

Other Multiline Telephones

Line Request cannot be used on MLC-5, MDW 9000 cordless, or MDC 9000 cordless/wireless telephones.

Single-Line Telephones

Line Request cannot be used on single-line telephones.

Feature Interactions

Callback	Returning Callback calls cancel Line Request.
Camp-On	Returning camped-on calls cancel Line Request.
Park	Returning parked calls cancel Line Request.
Pools	Line Request cannot be used on a **Pool** button.
System Access/ Intercom Buttons	Line Request cannot be used for an **SA** or **ICOM** button.
Transfer	Returning transferred calls cancel Line Request.

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Messaging

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Direct Group Calling Information, Extension Directory, Extension Information, Label Information
Modes	All
Telephones	All
Programming Codes	
Send/Remove Message	*38 (Operator only)
Leave Message	*25
Posted Message	*751
Delete Message	*26 (Analog display telephones only)
Return Call	*27 (Analog display telephones only)
Next Message	*28 (Analog display telephones only)
Scroll	*29 (Analog display telephones only)
Feature Codes	
Send/Remove Message	38 + extension number (Operator only)
Leave Message	
After calling	25
Without calling	53 + extension number
Cancel Message Sent	*53 + extension number
Message LED off	54
Delete Message	26 (Analog display telephones only)
Return Call	27 (Analog display telephones only)
Next Message	28 (Analog display telephones only)
Scroll	29 (Analog display telephones only)
MLX Display Labels	
Delete Message	Messages,Delete Msg [Msgs,Dlete]
Next Message	Messages,Next Msg [Msgs,Next]
Return Call	Messages,Return Call [Msgs,Call]
Leave Message	Leave Msg [LvMsg]
Posted Message	Messages,Posted Msg [Msgs,Post]
Send/Remove Message	Messages,Send/RmvMsg [Msgs,SdMsg]
System Programming	Change or add posted messages:
	• Labeling→**More**→PostMessage
	Identify fax extension jacks, assign fax message-waiting receivers, specify length of time before system sends fax message-waiting indication:
	• AuxEquip →Fax→Msg Waiting
	Assign a message-waiting receiver for a calling group:
	• Extensions→**More**→Grp Calling→Message

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Maximums	
Messages for each display telephone	10
Message-Waiting Receivers for fax	4
Message-Waiting Receivers per calling group	1
Fax Message Threshold	10 seconds (range 0–30 seconds)

Description

Messaging features allow users to do the following:

- Send messages

- Receive messages

- Post messages

Sending Messages

The following features are used to send messages:

- **Send/Remove Message.** For operators only.

- **Leave Message.** For any user to leave a message for a co-worker with a display telephone.

Send/Remove Message

The Send/Remove Message feature, available only to operators, turns the Message LED on and off for any telephone connected to the system. For telephones without a display, Send/Remove Message is the only way the Message LED can be turned on, unless either the extension is programmed as the message-waiting receiver for a fax machine or calling group or the system has a voice messaging system connected (see).

A **Send/Remove Message** button is a fixed button on Queued Call Consoles (QCCs) and cannot be reassigned. On a system with 29 or fewer lines, Send/Remove Message is assigned by default to analog DLCs on button 34. On a system with more than 29 lines, Send/Remove Message is replaced with line 32.

On QCCs and MLX DLCs with a DSS, as well as on MERLIN II System Display Consoles, operators can use the LEDs next to the DSS buttons to determine whether *an operator* turned the Message LED on. Before sending a message, the operator presses the **Message Status** button and checks the red LED next to the DSS button of the person to whom the message is to be sent; the red LED is on when a message from an operator is waiting and off if no message from an

operator is waiting. The LEDs on the DSS do not go on when Message LEDs have been turned on by using the Leave Message feature, voice messaging system, fax arrival, or when a message is left for a calling group. To leave a message-waiting indication when the LED is off, the operator presses the programmed Send/Remove Message button, followed by the DSS button or Auto Dial button for the person for whom the message is intended. The operator presses the **Message Status** button to return to normal call handling. MLX DLC operators also can press the **Feature** button and select the feature from the display.

If an operator sends a message while on a call, only an inside caller hears the touch tones; an outside caller does not.

When Message Status is on, if the LED next to a DSS button is on and an operator uses the Send/Remove Message feature, the user's message LED is turned off (unless the LED is also on for a reason other than an operator's using of Send/Remove Message). When the LED next to a DSS button is off and an operator uses the Send/Remove Message feature, the user's Message LED is turned on.

A DLC operator without a DSS can check message status by using Auto Dial buttons programmed with extension numbers. The red LED next to an Auto Dial button indicates whether the Message LED is on. A QCC operator without a DSS cannot check message status. If an operator who cannot check status sends a message, that message can cancel a message-waiting indication sent by another system operator who used Send/Remove Message.

Leave Message

The Leave Message feature allows any user, including operators, to send messages to co-workers with display telephones.

When you call a co-worker with a display telephone and get no answer or a busy signal, press a programmed Leave Message button or press the **Feature** button and dial *25*. On MLX display telephones, select the feature from the display while listening to ringback or a busy tone. A message is sent to the display telephone user. The message includes the caller's name, if labels are programmed, or extension and the time and date of the call.

If the caller leaves another message for the same person before that person responds to a previous message, the previous message is overwritten. A person with a display telephone who has received a message sees only the caller's name (if labels are programmed) or extension and date and time for the new message.

To use the Leave Message feature without calling a user, the multiline telephone user presses the **Feature** button (without lifting the handset) and then dials *53* and the person's extension number. QCC operators cannot use Leave Message without calling the user.

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> $\Rightarrow$ **NOTE:**
> If the Message LED of the person getting the message is already on, using
> the Leave Message feature does not turn the LED off even if an operator
> uses Leave Message to send a message to a display telephone user.

When a person with any telephone tries to use the Leave Message feature to
send a message to a person with a single-line telephone or a multiline telephone
without a display, the caller hears a single beep indicating that a message must
be left with an operator. If the caller has a display telephone, the message Cannot
Send Message is displayed.

When a user tries to use the Leave Message feature and the co-worker's
message box is full, the co-worker's telephone continues to ring and the caller's
telephone beeps once. If the caller has a display, Message Box Full is displayed,
and the caller must leave a message with an operator or voice mail (if available).

Cancel a sent message by pressing the **Feature** button and dialing *53 plus the
extension to which the message was sent. QCC operators cannot cancel
messages they have sent.

Receiving Messages

When the Message LED on a telephone is on or when a single-line telephone
user hears a stutter dial tone upon lifting the handset, there is a message waiting
for that person or for the calling group (if the extension is programmed as a
message-waiting receiver for a calling group). The message can be from the
following sources:

- An operator

- A voice messaging system

- A fax machine, if the extension is programmed as a fax message-waiting
  receiver for fax transmissions

- Another user

An MLX display telephone user (including a QCC operator) reads messages by
pressing the **Menu** button and selecting Messages from the display. The first line
of the most recent message received is shown on the display. To see the rest of
the message, press the **More** button. To see the next message, select Next
Message from the display. To return the call using an MLX display telephone
(including QCCs), select Return Call. The extension of the person who left the
message is dialed automatically. To delete the message, select Delete Message.
The Message LED turns off when all messages have been deleted.

An analog multiline telephone user with a display reads messages by pressing the
Message button. The first message received is shown on the display. If the
message is longer than one line, press a programmed Scroll button or press the
Feature button and dial 29. To see the next message, press a programmed Next

Message button or press the **Feature** button and dial *28*. To return the call, press a programmed Return Call button or press the **Feature** button and dial *27*. To delete the message, press a programmed Delete Message button or press the **Feature** button and dial *26*. The Message LED turns off when all messages have been deleted.

➾ NOTE:

In Release 2.0 and later systems, when someone uses the Return Call feature for a voice messaging system, a call is returned to the voice messaging system, not to the specific VMI extension that sent the message-waiting code.

Display telephones show messages in reverse order of when they were received; the most recent message is displayed first. Each message is identified on the display as described in Table 27.

Table 27.　　Message-Waiting Display Identifiers

Type of Display Telephone	Identifier	Meaning
Analog multiline	`*`	New or unread message
	`Call` *ext.* or *name*	Message from *caller's extension number* or *name*
MLX	`*`	New or unread message
	`ATT`	Message from system operator (attendant)
	`FAX`	You have a fax.
	`VMS`	You have a voice mail message.
	`EXT`	Message from an extension (co-worker)

The type of message indicated does not allow a calling group message-waiting receiver to distinguish between a message left for the calling group and a fax or personal message.

Multiline telephone users with no display cannot use programmed message buttons or feature codes to answer messages. The Message LED is usually turned off by an operator. However, an analog multiline telephone user (excluding those with BIS-34 telephones) can turn off the Message LED by pressing the associated **Message** button. Users of BIS-34 telephones, MLX-5, or MLX-10 nondisplay telephones can turn off the LED by pressing the **Feature** button and dialing *54*. Check with message sources (operator, fax, voice messaging) before turning off the LED.

Fax Message-Waiting Receivers

The Fax Message-Waiting feature notifies designated extensions of the arrival of fax transmissions. Up to four extensions can be programmed to receive message-waiting indications when a fax transmission is received on a specific fax

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machine. The Message LED goes on when the fax message threshold is exceeded. The fax message threshold is the length of time (0–30 seconds) before the system assumes that a fax has arrived.

Return Call is not operable for messages received from a fax machine and cannot be used to make a call to the fax.

➡ NOTE:
Fax machines only can send message-waiting indications. They cannot receive message-waiting indications.

Calling Group Message-Waiting Receivers

An extension can be programmed as the message-waiting receiver for a calling group. The user can receive personal messages or messages intended for the calling group from any of the sources listed under "Receiving Messages."

Posted Messages

Users can post a message to provide special information to co-workers with display telephones—for example, to tell callers where the person is when not answering the telephone or why the person does not want to be disturbed. When a user with a display telephone calls a co-worker who has a message posted, the posted message is shown on the caller's display (even if the call is answered). Users do not need a display telephone to post a message.

Twenty different posted messages can be programmed in the telephone system. Ten messages are factory-set but can be changed. Ten additional messages can be programmed and are factory-set as CUSTOM MSG ##. Beginning with Release 2.0, posted message 01, DO NOT DISTURB, cannot be changed.

Table 28.   Posted Messages

01 DO NOT DISTURB	06 IN CONFERENCE	11 CUSTOM MSG 11	16 CUSTOM MSG 16
02 OUT TO LUNCH	07 WITH A CLIENT	12 CUSTOM MSG 12	17 CUSTOM MSG 17
03 AT HOME	08 WITH A CUS-TOMER	13 CUSTOM MSG 13	18 CUSTOM MSG 18
04 OUT SICK	09 AWAY FROM DESK	14 CUSTOM MSG 14	19 CUSTOM MSG 19
05 IN A MEETING	10 OUT ALL DAY	15 CUSTOM MSG 15	20 CUSTOM MSG 20

See for more information about creating posted messages.

In Release 2.0 and later systems, when Do Not Disturb is turned on, the system automatically posts the Do Not Disturb message. This message appears on the Home screen of an MLX display telephone user with Do Not Disturb turned on and

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on the screen of any inside caller with a display telephone who calls that user. The system automatically removes the Do Not Disturb message when the user turns off the feature. On analog multiline, MLX-5, or MLX-10 nondisplay telephones, the Do Not Disturb message is not posted automatically unless the telephone has a programmed Posted Messages button.

A user can post or remove a Do Not Disturb message by pressing a programmed Posted Messages button. However, this does not turn the Do Not Disturb feature on or off.

Users with MLX display telephones can post a message by pressing the **Menu** button, selecting `Posted Msg` [`Post`] from the display, selecting the desired message, and selecting `Post`.

Users with analog multiline, MLX-5, or MLX-10 nondisplay telephones must use programming code `*751` to program a Posted Messages button for the system to automatically post or remove the message when the feature is turned on or off. To post a message, press the programmed Posted Messages button; the green LED next to the button flashes. Then dial the code for the desired message; the LED next to the button becomes steady. To cancel a posted message, press the programmed Posted Messages button and dial `00`; the green LED next to the button turns off.

Considerations and Constraints

In Release 2.0 and later systems, if a user at an analog multiline, MLX-5, or MLX-10 telephone has a programmed Posted Message button and the Do Not Disturb feature is turned on, the system automatically posts the Do Not Disturb message for callers with display telephones. The programmed button is not required at MLX display telephones. When the feature is turned off, the message is canceled. However, posting or canceling the Do Not Disturb message does *not* turn the feature on or off.

A user does not need a display telephone to use the Leave Message feature, but the person to whom the message is sent must have a display telephone. Unlike Send/Remove Message, when the Leave Message feature is used to send a message to a person whose Message LED is on, the LED is not turned off even if the caller is an operator.

If an operator uses the Send/Remove Message feature while on a call, only an inside caller hears the touch tones; an outside caller does not. If 10 messages have been stored and a user tries to send an eleventh message, the caller hears a beep and display telephones show `Message Box Full`.

Responding to messages by using Return Call does not delete the message. The user must delete all messages before the Message LED turns off. A fax machine can send the message-waiting indication but cannot be assigned as a message-waiting receiver for either another fax or for a calling group.

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If a fax message-waiting indication is deleted by one of the four message-waiting receivers, the message is deleted from all analog multiline display telephones programmed as a message-waiting receivers for the fax, but the message is not deleted from MLX display telephones programmed as message-waiting receivers for the fax.

Each calling group can have only one extension assigned as its message-waiting receiver, but the same extension can be assigned as the message-waiting receiver for more than one calling group.

Messages can be posted only by using a programmed button or, for MLX display telephone users, by selecting the feature from the display.

A single-line telephone user cannot post a message.

When a user posts a nonexistent message, CUSTOM MSG*nn* is displayed, indicating that the system manager has programmed a message for this message number.

Only multiline display telephone users see posted messages. Users with single-line telephones or multiline telephones without displays cannot receive messages posted by other users.

Posting a message does not prevent the telephone from ringing.

Message Waiting does not work for off-premises telephones.

Telephone Differences

Direct-Line Consoles

The Send/Remove Message feature is an operator-only feature used by a DLC operator to turn on the Message LED to indicate a message waiting. For telephones without a display, Send/Remove Message is the only way the Message LED can be turned on and off by operators.

A Send/Remove Message button is factory-assigned to an MLX-28D used as a DLC. On a system with 29 or fewer lines, Alarm, Night Service, and Send/Remove Message are assigned by default to analog DLCs on buttons 32 through 34. On a system with more than 29 lines, Alarm is replaced with line 30, Night Service is replaced with line 31, and Send/Remove Message is replaced with line 32. The first 18 lines on an MLX DLC are always factory-set as personal lines.

Queued Call Consoles

A Queued Call Console (QCC) operator can use Leave Message only by selecting the feature from the display. A **Send/Remove Message** button is programmed as a fixed feature on a QCC.

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Other Multiline Telephones

The 5-button analog multiline telephone (no longer available) has neither a Message LED nor a **Message** button.

MDC 9000 and MDW 9000 telephones cannot receive Leave Message or Posted Message messages. They can receive operator (Send/Remove Message) and voice mail message notification. When the telephone is turned on, MSG appears on the display.

Single-Line Telephones

Single-line telephone users cannot post a message.

To use the Leave Message feature while listening to ringback or the busy tone on a single-line telephone, dial #25. To use Leave Message without calling the extension, lift the handset (the telephone must connect to an **SA** or **ICOM** button), then dial #53 and the person's extension number.

If a single-line telephone sends message to a nondisplay telephone user and there is no voice messaging system, the caller receives *no* error indication, and no message is sent.

In either case, if the person's message box is full or the receiver is a single-line telephone or a multiline telephone without a display, the caller hears a beep indicating that the message has not been left.

To cancel a message sent, lift the handset and dial #*53 and the extension number where the message was left.

Single-line telephone users without a Message LED hear a stutter dial tone when a message is waiting. A single-line telephone user cannot respond to messages by using feature codes. Normally, if a single-line telephone has a Message LED, it is turned off by an operator. However, a single-line user can turn off the Message LED by lifting the handset and (while listening to inside dial tone) dialing #54. Check with all message sources (system operator, fax, voice messaging) before turning off the LED.

Other Nondisplay Telephones

If a caller at a display telephone leaves a message for an extension that does not have a display and there is no voice messaging system on the system, the caller sees an error display. If there is a voice messaging system, the Message LED of the receiving telephone turns on.

If a message is sent from a nondisplay multiline telephone to another nondisplay telephone and there is no voice mail system connected to the communications system, the caller hears an error beep and no message is sent.

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Feature Interactions

Barge-In	If Barge-In is used to contact a user with a posted message, the caller's telephone does not display that message.
Digital Data Calls	Messaging features are not available for data or video extensions, but can be used by telephones at these workstations.
Directories	When an Extension Directory is used to call a co-worker with a posted message, the posted message is not displayed on the caller's telephone.
Direct Station Selector	When an operator presses the **Message Status** button on a DSS adjunct, the LEDs on the DSS reflect only messages left by an operator's using the Send/Remove Message feature and not messages left by any user (including an operator) using the Leave Message feature.
Display	When users try to send messages to an extension with a full message box, they see Message Box Full on the display. When a user tries to retrieve messages and the message box is empty, No Messages appears.
	When a user has a message from a co-worker, the display shows the name or extension number (if no label is programmed) of the caller and, on MLX telephones, the time and date the message was left. An unread message is marked with an asterisk (*).
Display *continued*	Messages also can be received from outside callers (if the telephone has a voice messaging system) and from an operator. On MLX display telephones, messages left by a voice messaging system are identified as VMS, messages from an operator are identified as ATT, and message-waiting indications received by a fax message-waiting receiver are identified as FAX. Analog multiline telephone users see Call *extension* or *caller's name*.
Do Not Disturb	In Release 2.0 and later systems, when Do Not Disturb is turned on, the system automatically posts DO NOT DISTURB, which appears both on the Home screen of an MLX display telephone user with Do Not Disturb turned on and on the screen of any inside display telephone user who calls that person. The system automatically removes the Do Not Disturb message when the user turns off the feature. Users at analog multiline, MLX-5, or MLX-10 nondisplay telephones must program a Posted Messages button for the system to automatically post or remove the message when the feature is turned on or off. A user can post or remove a Do Not Disturb message by pressing a programmed Posted Messages button. However, this does not turn the Do Not Disturb feature on or off.
Fax Extension	Return Call does not work for messages received from a fax machine and cannot be used to make a call to the fax.
Group Calling	The type of message indicated does not allow a calling group message-waiting receiver to distinguish between a message left for the calling group and a fax or personal message.

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HotLine	If the HotLine extension is programmed to dial an outside call, that telephone number must be in the Night Service Exclusion List or a Night Service Emergency number. If the HotLine is programmed to dial an inside extension, the user can dial *#25* to leave a message. The HotLine extension cannot dial any other number except the one assigned to it.
Labeling	Users can leave messages for the calling group only if the system has been programmed with a designated calling group message receiver. The calling group also receives fax message-waiting indications directed to the calling group. The message-waiting receiver cannot distinguish messages left for the calling group from fax or personal messages.
	The labels stored in the Extension Directory appear on MLX display telephones when users send each other messages. Messages include the name (the 7-character label) of the user who sent the message and the time and day the user called. Posted messages (except for posted message 01, DO NOT DISTURB) are created and changed using Labeling.
Multi-Function Module	A single-line telephone with a Message LED connected to an MFM can receive message-waiting indications.
Signal/Notify	If a display telephone user presses only a Signaling button to send an audible signal to an extension, a posted message at the destination is not shown on the signaler's display. However, if a display telephone user selects an **SA** or **ICOM** button, lifts the handset, and uses the Signaling button to dial the extension, the message appears.
System Access/ Intercom Buttons	When a Shared **SA** button is used to leave a message for a display user, the extension shown is that of the telephone with the **SSA** button and not that of the principal owner. When a principal extension owner with an MLX display telephone posts a message and a call is answered at the Shared **SA** button, the Home screen on which the posted message was previously shown is not restored. If the principal owner either presses the **Home** button or makes or receives a call, the Home screen is restored.
Transfer	If an inside call is transferred to an extension with a posted message, only the display telephone user who transfers the call, and not the original caller, sees the posted message, even after the transfer is completed.
	If a call is transferred to an extension programmed as a fax extension, the message indication is not sent to the fax message-waiting receiver regardless of the amount of time programmed for the fax message threshold.
	A nondisplay telephone user who sends a message via Leave Message during a transfer cannot determine who received the message. For example, suppose Extension A calls Extension B and Extension B transfers the call to Extension C. If Extension A sends a message before the transfer is complete, Extension B receives the message. If Extension A sends a message after Extension B completes the transfer, Extension C receives the message, even if Extension C does not answer and the call is ringing at Extension B as a transfer return.

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Voice Messaging Interface (VMI)

In Release 2.0 and later systems, when using the Return Call feature for a voice messaging system, a call is returned to the voice messaging system, not to the specific VMI jack that sent the message-waiting code.

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Microphone Disable

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Directory
Modes	All
Telephones	All MLX (except QCC)
System Programming	Enable or disable individual MLX telephone microphones:
	• `Extensions`→**More**→`Mic Disable`
Factory Setting	Enabled

Description

Microphone Disable can be assigned through system programming to any MLX telephone except a Queued Call Console (QCC) to limit the use of the speakerphone. When the feature is assigned, the microphone does not function, but the speaker functions normally. A user can listen to calls or announcements over the speakerphone but must use the handset to respond.

For some features, such as Auto Dial, Last Number Dial, or Saved Number Dial, the system automatically selects a line and activates the speakerphone. When one of these features is used on a telephone with Microphone Disable assigned, the system selects the line and activates the speaker, but the microphone is muted automatically; the red LED next to the **Mute** button turns on. To be heard, lift the handset. The Mute and Speaker LEDs go off.

Also, when group pages or voice-announced transfers are received on a telephone with Microphone Disable assigned, the user can hear the announcement over the speakerphone, but the microphone is muted automatically. Lift the handset to speak to an inside caller who either is transferring a call or calling the user through an **SA Voice** or **ICOM Voice** button. Microphone Disable is appropriate when speakerphones pick up too much background noise or are needed by only some employees.

Considerations and Constraints

The LED next to the **Mute** button goes on whenever the speakerphone is activated. Pressing the **Mute** button does not turn off the LED or deactivate Microphone Disable.

If a user presses the **Speaker** button before lifting the handset, the system selects a line and the user can dial a number. The microphone is muted, and the user must lift the handset to speak to the person being called.

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Telephone Differences

Queued Call Consoles

The microphone on a QCC cannot be disabled.

Other Telephones

Microphone Disable cannot be assigned to analog multiline telephones.

Microphone Disable cannot be assigned to single-line telephones.

Feature Interactions

Auto Dial, Last Number Dial, and Saved Number Dial	Pressing a programmed Auto Dial, Last Number Dial, or Saved Number Dial button turns on the speakerphone so the user can hear the number being dialed. However, when an MLX telephone user's microphone is disabled, the user must lift the handset to talk once the call is answered.
HFAl	Users whose microphones are disabled cannot use HFAI to respond to voice-announced calls. Pressing the **HFAI** button does not turn on the LED or activate the feature.
Paging	Calls made to speakerphone paging groups can still be heard over telephones whose microphones are disabled.
Transfer	Calls can be transferred with a voice announcement to users whose microphones are disabled, but the users must lift the handset to talk.
Voice Announce to Busy	Users who are on their telephones and whose microphones are disabled can still hear a voice-announced call over the speakerphone. They must press the button with the incoming call and use the handset to talk to the caller.

Multi-Function Module

At a Glance

Users Affected	Telephone users, data users
Reports Affected	SMDR
Modes	All
Telephones	MLX telephones except QCC
Hardware	Tip/ring interface

⚠ WARNING:
RISK OF ELECTRICAL SHOCK: *Follow all warnings and cautions.*

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ONLY a qualified technician should install, repair, or set options for an MFM.

Do not touch the circuitry on the MFM. Touching the circuitry may result in component damage from electrostatic discharge.

Before installing the MFM, disconnect all line/trunk and/or power cords attached to the MLX telephone. This is to ensure that no hazardous voltages are present during assembly. Ringing voltage from the MFM attached to the MLX telephone can cause electrical shock if adjustments are made while the cords are connected.

Description

The Multi-Function Module (MFM) is an optional adapter installed inside an MLX telephone and used for connecting tip/ring or external alert devices. The MFM operates on one of the two communications channels assigned to the telephone; therefore, calls can be made to and from the device independently of the telephone. The communications channel is also used for the Voice Announce to Busy feature. Because of this, when a call is active at both the MLX telephone and the MFM device, the Voice Announce to Busy feature cannot be used to reach the MLX telephone user. Conversely, if the Voice Announce to Busy feature is being used to reach the MLX telephone user, calls cannot be made from the device connected to the MFM. In addition, if the Voice Announce to Busy feature is being used at the same time that a call is received at the MFM extension number, the caller hears ringing and the device rings if it can. But the call to the MFM extension number cannot be answered until one of the communications channels is free (the MLX telephone user hangs up or the person calling the MLX telephone user hangs up).

Although each MLX extension jack used to connect an MLX telephone is assigned only one logical ID, the system automatically assigns two extension numbers— one for the MLX telephone and one for the device connected to the MFM. Both extension numbers are assigned to the jack whether or not an MFM is connected. Because a separate extension number is assigned, features and line/trunk access can be assigned to the MFM independently of the MLX telephone. See for details on specific extension numbers assigned.

The ringing patterns for devices connected to an MFM are similar to those of an MLX telephone for inside calls: two rings for outside calls; a ring and two beeps for priority ring or transfer return.

A switch on the MFM can be set for one of the following operations:

- Tip/ring interface
- Supplemental Alert Adapter (SAA)

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Tip/Ring Interface

When an MFM is set for tip/ring interface operation, only dual-tone multifrequency (DTMF) tip/ring devices can be used to make and/or receive inside and outside calls. The following types of DTMF devices can be used:

- Single-line telephones

- Modems

- Fax machines

- Credit card verification terminals

- Cordless single-line telephones

- Speakerphones that emulate a tip/ring device

- Answering machines

Supplemental Alert Adapter

When an MFM is set for SAA operation, an external alert that requires a 48-VDC contact closure can be connected.

If the external alert is used to supplement the ringing for both inside and outside calls, the MFM should be assigned (through centralized telephone programming) as a Primary Individual Coverage receiver with the Ring Timing option of Immediate Ring. The MLX telephone can use Coverage On/Off to activate the alert. In addition, by specifying that both inside and outside calls or only outside calls are covered with the coverage arrangement, the sender (in this case the MLX telephone user) can specify that the device (the receiver) should ring for both inside and outside calls or only for outside calls.

If the external alert is used to supplement ringing only for calls received on personal lines (outside lines assigned to buttons), the same outside lines/trunks and ringing options assigned to the MLX telephone should also be assigned to the MFM. In this arrangement, the MFM device does not ring when inside calls are received on an **SA** or **ICOM** button.

An external alert connected to an MFM set for SAA operation can be manually signaled, can serve as a calling group calls-in-queue alert, or can provide supplemental alerting for after-hours calls received in a Night Service group. Only a strobe or other light should be used as a calls-in-queue alert; if a bell is used, it rings continuously while the number of calls in the calling group queue exceeds the programmed threshold.

Programming Requirements

Although a device connected through an MFM may not have buttons, the system treats it as a multiline telephone with 34 buttons. In Hybrid/PBX mode, the system automatically assigns one **SA Ring**, one **SA Voice**, and one **SA Originate Only** button to the MFM. In Key mode, the system automatically assigns one **ICOM**

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Ring and one **ICOM Voice** button to the MFM. In Behind Switch mode, the system automatically assigns one **ICOM Ring**, one **ICOM Voice**, and one prime line button.

> **NOTE:**
> Do not attempt to enter extension programming from a device connected to an MFM. Program an MFM through centralized telephone programming.

To ensure proper operation of a device connected through an MFM, the following should be performed through centralized telephone programming:

- Voice Announce to Busy should be disabled.

- **SA** or **ICOM** button assignments should be changed to one **SA Ring** or **ICOM Ring** and either one **SA Originate Only** or one **ICOM Originate Only** button.

- Ringing/Idle Line Preference should be enabled.

- The Automatic Line Selection sequence should be set to the following:

  — **SA Ring** or **ICOM Ring**

  — **SA Originate Only** or **ICOM Originate Only**

  — In Key and Behind Switch modes, outside lines that make calls from the MFM device

  — In Behind Switch mode only, the prime line

  When the ALS sequence is set to select an **SA** or **ICOM** button, an outside line can be selected by dialing the Idle Line Access code (usually *9*) in Key and Behind Switch modes or by dialing the pool dial-out or Automatic Route Selection code in Hybrid/PBX mode. If ALS is set to select an outside line button before an **SA** or **ICOM** button, the device cannot be used to make inside calls (inside calls can be received only).

- Ring Timing options should be set to No Ring for each outside line on which calls are not to be received.

- When the device is used only on personal lines for supplementary answering (such as an answering machine) or ringing (such as an external alert) and lines/trunks are assigned to or removed from the associated MLX telephone, the lines/trunks should also be assigned to or removed from the MFM.

- When the device is used for both inside and outside calls to supplement ringing (external alert) or to answer or screen calls (answering machine), calls can be redirected to the device by assigning a Primary Cover, Secondary Cover, Group Cover, or Shared **SA** button. In addition, an MLX telephone user can activate Forward and Follow Me to redirect incoming calls to the device. However, Coverage and Forward and Follow Me should not be used simultaneously.

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> $\Longrightarrow$ **NOTE:**
> Forward and Follow Me (including Remote Call Forward) and
> Privacy are not recommended because there are no LEDs to
> indicate when the features are active.

Considerations and Constraints

When both the MLX telephone and the device connected to an MFM are in use,
Voice Announce to Busy feature cannot be used to reach the MLX telephone.
Voice Announce to Busy interferes with data calls made to a data workstation
including an MFM.

The tip/ring or SAA interface is selected by setting pin straps in the MFM. Only
authorized technicians can install or set options in the MFM.

When Ringing/Idle Line Preference is turned on for an MFM and Automatic Line
Selection is set to an outside line/trunk, inside calls cannot be made and features
cannot be used. Both inside and outside calls can be received.

Calls are independently sent to the MLX telephone and its associated MFM. The
following features can be employed when a user wants calls to be received at
both the MLX telephone and the device connected to an MFM:

- Cover buttons

- Shared **SA** buttons

- Buttons assigned the same outside lines

- Forward and Follow Me

- Transfer

An MFM can be assigned as a calling group delay announcement or as a
calls-in-queue alert for a calling group queue.

Tip/ring devices connected on an MFM should not be used with Call Management
System (CMS).

Features and tip/ring applications that require a switchhook flash for operation
(such as Lucent Technologies Attendant, MERLIN LEGEND MAIL Voice
Messaging System, or MERLIN MAIL Voice Messaging System) cannot be
connected through an MFM because the system ignores the switchhook flash
sent by the device.

Some answering machines have the built-in ability to disconnect when someone
picks up a line they have already answered. However, when a Shared **SA** button
or a shared personal line is assigned to the MFM, the device cannot detect when
a line is picked up by the sharing user. Therefore, if such an answering machine is
connected to the MFM, the machine does not automatically disconnect when
someone picks up the shared lines that the machine has already answered.

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Similarly, if the MFM extension is a Primary Coverage receiver for the MLX telephone or has the MLX extensions calls forwarded to it, the machine does not automatically disconnect when the telephone user picks up a call.

When programming, you cannot select an MFM by slot and port (*[*sspp*]) or by logical ID (#[*nnn*]).

A digital data or video workstation with an MLX telephone must not include an MFM.

Mode Differences

Hybrid/PBX Mode

When Ringing/Idle Line Preference is turned on and Automatic Line Selection is set to select an **SA** button, an outside line can be selected by dialing the pool dial-out or Automatic Route Selection code.

Key and Behind Switch Modes

When Ringing/Idle Line Preference is turned on and Automatic Line Selection is set to select an **ICOM** button, an outside line can be selected by dialing the Idle Line Access code (usually *9*).

Telephone Differences

Direct-Line Consoles

An MFM in a Direct-Line Console (DLC) serves only as another extension, without the characteristics of an operator extension.

Queued Call Consoles

An MFM cannot be connected to a Queued Call Console (QCC).

Other Telephones

An MFM can be installed only in MLX telephones and cannot be used with analog multiline telephones.

An MFM cannot be used with a digital communications device or videoconferencing system.

Single-Line Telephones

A single-line telephone or other type of tip/ring device up to 1,000 feet away can be connected to an MFM and used to make and receive inside and outside calls.

A single-line telephone connected to an MFM cannot use the Pickup, Conference, Hold, HotLine, or Transfer features.

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Feature Interactions

Automatic Line Selection	When an MFM is installed in an MLX telephone, the ALS sequence for the MFM should be set to select **SA Ring** or **ICOM Ring**, then **SA Originate Only** or **ICOM Originate Only**, then outside lines (or the prime line in Behind Switch mode) assigned to the MFM. Ringing/Idle Line Preference should be on for an MFM.
Callback	Both Automatic and Selective Callback can be used from an MFM; but a callback call cannot be manually canceled because the MFM does not recognize the switchhook flash produced by pressing the **Drop** button.
Conference	The Conference feature cannot be used on the MFM because the system ignores the switchhook flash sent by the MFM.
Coverage	When an MFM device is used for both inside and outside calls to supplement ringing (external alert) or to answer or screen calls (answering machine), calls can be redirected to the device by assigning a Primary Cover, Secondary Cover, or Group Cover button. Coverage and Forward and Follow Me should not be used simultaneously.
Digital Data Calls	An MLX telephone at a digital data workstation must not include an MFM.
Do Not Disturb	Do Not Disturb is not recommended because the device connected to the MFM does not have an LED to indicate when the feature is active.
Fax Extension	A single-line telephone with a Message LED connected to an MFM can receive message waiting indications but not stutter dial tone.
Forward and Follow Me	An MLX telephone user can activate Forward and Follow Me to redirect incoming calls to an MFM device. However, Coverage and Forward and Follow Me should not be used simultaneously.
Group Calling	An MFM can be assigned as a calling group delay announcement or as a calls-in-queue alert for a calling group queue.
Hold	A single-line telephone connected to an MFM cannot put a call on hold because the MFM cannot send a switchhook flash.
Messaging	A single-line telephone with a Message LED connected to an MFM can receive message-waiting indications.
HotLine	A single-line telephone connected to an MFM cannot be used as a HotLine.
Night Service	An MFM can be a member of a Night Service group. An external alert connected to the MFM in SAA operation, when assigned to a Night Service group, can provide supplemental ringing for after-hours calls.
Paging	An MFM should not be a member of a speakerphone paging group.
Park	A user at an MFM cannot park a call but can pick up a call parked by another user.
Personal Lines	If an MFM device is used to answer calls or provide supplementary ringing for its associated MLX telephone, any personal lines removed from the telephone should also be removed from the MFM. When the device connected to an MFM (a modem, for example) requires a personal line to make and/or receive calls, a personal line should be assigned.

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Privacy	Privacy should not be used on an MFM (unless Privacy is to stay on at all times, as at a data workstation) because the user does not have an LED to indicate whether Privacy is on or off.
Recall/Timed Flash	An MFM cannot send a timed flash. As a result, a single-line telephone or other device connected to an MFM cannot use Recall.
Ringing Options	At an MFM, lines that do not receive calls should be set to No Ring.
Signal/Notify	When set for supplemental alert adapter operation, a Multi-Function Module (MFM) can receive a signal but cannot send one. An MFM cannot receive a signal when set for tip/ring operation.
SMDR	An MFM is treated as an MLX telephone on SMDR reports.
System Access/ Intercom Buttons	When the device is used for both inside and outside calls to supplement ringing (external alert) or to answer or screen calls (answering machine), calls can be redirected to the device by assigning a Shared **SA** button.
Transfer	Calls cannot be transferred from an MFM because an MFM cannot send a switchhook flash.
Voice Announce to Busy	Voice Announce to Busy interferes with data calls made through a device attached to an MFM.

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Music On Hold

At a Glance

Reports Affected	System Information (`SysSet-up`)
Modes	All
Telephones	All
System Programming	Designate the Music On Hold extension jack:
	• `AuxEquip`→`MusicOnHold`
Maximums	1 Music On Hold extension for each system

Description

Music On Hold can provide music or recorded information to an outside caller when the following features are used:

- Conference (while on hold)

- Group Calling (while waiting in the calling group queue for a busy extension after listening to the delay announcement)

- Hold

➡ NOTE:
The music source or recorded announcement device must be connected to a ground-start or loop-start line/trunk jack programmed for Music On Hold. If Music On Hold is used without connecting a music source properly, an outside caller hears nothing.

In addition, Music On Hold can be programmed for the Transfer Audible feature as an alternative to ringback in the following feature interactions:

- Camp-On

- Hold, Transfer, and Conference for single-line telephones

- Park

- Transfer

If transfer audible is programmed, what callers hear is described in <u>Table 29</u>.

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Table 29.   Call Types and Transfer Audible

Type of Call	Music On Hold Programmed as Transfer Audible	Ringback Programmed as Transfer Audible: No MOH
Outside call directly dialed into calling group that has delay announcement device(s)	Ringing before announcements[1] play, then Music on Hold between announcements until call leaves the queue and is delivered to an agent; ringing until agent answers	Ringing before announcements play, then special ringing until call leaves the queue and is delivered to an agent; ringing until agent answers
Outside call directly dialed into calling group that has no delay announcement device	Ringing until agent answers	Ringing until agent answers
Outside call transferred to a calling group that has delay announcement device(s)	MOH (both before and after announcements[*] play) until call leaves the queue and is delivered to an agent; ringing until agent answers	Special ringing (both before and after announcements play) until call leaves the queue and is delivered to an agent; ringing until agent answers
Outside call transferred to calling group that has no delay announcement device	MOH until call leaves the queue and is delivered to an agent; ringing until agent answers	Special ringing until call leaves the queue and is delivered to an agent; ringing until agent answers
Outside call parked by user or operator[2]	MOH until call is picked up	Ringing until call is picked up
Outside call that is camped-on to an extension*	MOH until call is answered	Ringing until call is answered
Outside call transferred with consultation to a non-group extension	MOH (during consultation) until transfer is completed; ringing until call is answered	Ringing until call is answered
Outside call transferred without consultation to an extension other than a calling group's	**Manual Completion.** MOH during dialing of destination, then ringing. **Automatic Completion.** Ringing.	**Manual Completion.** Ringing until call is answered. **Automatic Completion.** Ringing until call is answered.
Inside caller	Ringing or special ringing	Ringing or special ringing

---

1.   Up to ten primary and one secondary delay announcement devices are available in Release 5.0 and later systems only. See "Group Calling" on page 281.

2.   If either the Park Return Timer or the Camp-On Return Interval expires before the parked or camped-on call is answered, the call returns to the extension that parked or camped on the call and the outside caller continues to hear Music On Hold until the call is picked up.

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Considerations and Constraints

Music On Hold is not provided to inside callers.

Music On Hold is never heard by callers in the Queued Call Console queue.

Direct Inward Dial (DID) and tie line/trunk jacks cannot be used for Music On Hold. A line/trunk jack designated for Music On Hold cannot be grouped in a pool.

During programming of a line/trunk jack for Music On Hold, the entire system is forced idle.

If you use equipment that rebroadcasts music or other copyrighted materials, you may be required to obtain a copyright license from or pay fees to a third party such as the American Society of Composers, Artists, and Producers (ASCAP) or Broadcast Music Incorporated (BMI). You can purchase a Magic on Hold® system, which does not require such a license, from Lucent Technologies.

Feature Interactions

Callback	An outside caller waiting in the callback queue hears Music On Hold.
Camp-On	When Camp-On is used to complete the transfer of an outside call, the caller hears Music On Hold until the call is answered if the transfer audible is set to Music On Hold. See Table 29 for more information.
Conference	If the first participant put on hold for a conference call is an outside caller, the caller hears Music On Hold until the second participant is added.
Group Calling	Outside callers waiting in calling group queues hear Music On Hold (if programmed).
Night Service	A line/trunk jack programmed for Music on Hold cannot be assigned to a Night Service group.
Park	A parked caller hears Music On Hold.
Pools	Line/trunk jacks used for Music On Hold cannot be assigned to pools.
Personal Lines	Line/trunk jacks used for Music On Hold cannot be assigned as personal lines.
Remote Access	A remote access user who is waiting for a busy line/trunk pool or extension hears Music On Hold.
Transfer	If the system is programmed for Music On Hold, music is played only during the period before a transfer is completed by the extension originating it. The caller hears music when the **Transfer** button is pressed and when the extension number is dialed. When the transfer originator presses the **Transfer** button a second time or hangs up, the caller hears ringing. If the transfer uses automatic completion to a non-calling group extension, the outside caller hears ringing.

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Night Service

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Extension Information, Night Service Information
Modes	All
Telephones	All
Programming Code	*39
Feature Code	39
MLX Display Label	Night Srvc [Night]
System Programming	Assign or remove extensions to or from Night Service group:
	• NightSrvce→GroupAssign→Extensions
	In Release 4.1 and later systems, assign or remove outside lines to or from Night Service group:
	• NightSrvce→GroupAssign→Lines
	Select Night Service with Outward Restriction by assigning a password:
	• NightSrvce→OutRestrict
	In Release 4.1 and later systems, enable or disable Coverage Control option:
	• NightSrvce→CoverContrl
	Add or remove telephone numbers from Night Service Emergency Allowed List:
	• NightSrvce→Emergency
	Assign telephones to Exclusion List (password not required):
	• NightSrvce→ExcludeList
	Select start time and stop time for each day of the week for Night Service with Time Set:
	• NightSrvce→Start/Stop→Day, Hr, Min
Factory Settings	
Outside lines assigned to Night Service Group	None (4.1 and later systems only)
Coverage Control	Disabled (4.1 and later systems only)
Time Set	Disabled
Outward Restriction	Disabled
Maximums	
Night Service groups	8 (one for each operator)
Number of extensions in Night Service group	Unlimited except by system capacity
Number of outside lines in Night Service group	Unlimited except by system capacity (4.1 and later systems)
Calling group extension for each Night Service group	1 (Release 2.0 and later systems)

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Maximums continued	
Night Service groups for each extension	Unlimited
Emergency telephone numbers	10
Digits for each telephone number	12
Extensions on Exclusion List	Unlimited
Password	4 digits (0–9)

Description

Night Service provides optional after-hours operation that can be programmed in combination with the following features:

- Night Service with Group Assignment

- Night Service with Outward Restriction

- Night Service with Time Set

- Night Service with Coverage Control (Release 4.1 and later systems only)

$\Longrightarrow$ **NOTE:**
   The term *after-hours* is only used for convenience. Night Service can operate at any time it is activated and is intended for use outside of normal business hours.

Operators can activate or deactivate Night Service by using a Direct-Line Console (DLC) or a Queued Call Console (QCC). To activate or deactivate Night Service, an operator presses the programmed Night Service button (this function is performed automatically when the Time Set function, described later in this topic, is used). If the Night Service with Outward Restriction option is programmed, the green LED flashes when a DLC operator presses the programmed Night Service button. The operator must enter the assigned password (within 60 seconds) to activate or deactivate Night Service. When Night Service is activated, the green LED next to the programmed Night Service button turns on. When the feature is deactivated, the green LED turns off.

Night Service Group Assignment

Each Night Service group is associated with either an individual QCC (in Hybrid/PBX mode) or an individual DLC during system programming.

Night Service groups can include the following types of members:

- Any type of extension

- One calling group (Release 2.0 and later) for each Night Service group.

- In Release 4.1 and later systems, outside lines must be assigned to Night Service groups in order for calls received on these lines to receive Night Service treatment. The system manager can assign the following types of outside lines to Night Service groups:

  — Loop-start lines

  — Ground-start lines

  — NI-BRI B-channels

  — PRI B-channels that are routed by line appearance

  — Automatic incoming tie trunks

  The following types of outside lines *cannot* be assigned to Night Service groups:

  — DID (Direct Inward Dial) trunks

  — Dial-in tie trunks

  — PRI B-channels that are routed by dial plan

  — Line/trunk jacks programmed for Alarm, Music on Hold, or Paging

  — Unequipped line/trunk jacks

In Release 4.0 and prior systems, when an operator associated with a Night Service group activates Night Service or when the Time Set option turns on Night Service operation automatically, any calls received on lines/trunks programmed to ring at individual operator consoles ring immediately at all available extensions assigned to the group.

During Night Service operation in Release 4.1 and later systems, calls received on lines assigned to a Night Service group ring at the Night Service destination for the group (an extension or calling group). A line need not be assigned to an operator position in order to receive Night Service coverage to a calling group. Lines that are not assigned to a Night Service group, whether or not they appear at operator consoles, do not receive Night Service treatment.

⚠ SECURITY ALERT:

Avoid programming a remote access line as a destination for Night Service on any published telephone number. Professional toll-fraud criminals scan telephone directories for published local and 800 telephone numbers. Using these numbers, they attempt to gain access to the system, then may use such features as Remote Access to reach outside facilities from within the system. For additional information about toll fraud, see Appendix A, "Customer Service Information."

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An extension in a Night Service group is considered unavailable and a Night Service call does not ring at that extension when any of the following situations occur:

- A telephone is in extension or system programming mode.

- A user with an MLX display telephone is using Alarm Clock or Directory features.

- A telephone is busied-out for maintenance or system programming.

- All **SA** or **ICOM** buttons are in use.

- A single-line telephone user is on a call.

⇒ **NOTE:**
Up to eight Night Service groups can be created, one for each operator. There is no limit to the number of extensions assigned to each group. Each extension can be assigned to more than one group.

Night Service with Outward Restriction

Night Service with Outward Restriction prevents unauthorized after-hours use of extensions. When this option is programmed, only authorized operators can activate and deactivate Night Service and only authorized users can place calls.

A system operator must enter a password to activate or deactivate Night Service. When one operator activates or deactivates Night Service this way, all consoles are put into Night Service. If Night Service groups are assigned, Night Service is activated or deactivated for all groups and cannot be activated or deactivated independently for each group. When the Night Service feature is activated, enter a password before making a nonemergency outside call. When you have entered the correct password, the system checks for calling restrictions assigned to your extension before allowing the call.

A Night Service Emergency Allowed List of emergency numbers can include up to 10 numbers, each with no more than 12 digits. Users who do not know the Night Service password can dial only the numbers on the list; calls to numbers not on the list do not go through unless the caller enters a password.

One Exclusion List for Night Service can be created to exempt specific extensions from the password requirement. An unlimited number of extensions can be assigned to the list. However, normal calling restrictions (if any) assigned to the extension are still in effect. Unrestricted extensions on the list are not protected against unauthorized after-hours use.

HotLine extension users cannot dial the Night Service Emergency numbers or the Night Service password.

Night Service with Time Set

When Night Service with Time Set is programmed, the system automatically activates Night Service on all operator consoles at a specified time of day on specified days of the week. A different time of day to activate or deactivate Night Service can be programmed for each day of the week. Operators can still override the timer and turn Night Service on and off manually. If one system operator overrides the timer, Night Service is activated or deactivated on all consoles.

Night Service also can be activated through system programming for special conditions, such as a midweek holiday.

Night Service with Coverage Control

In Release 4.1 and later systems, system managers can set Night Service, in combination with any other Night Service options, to control the status of programmed Coverage VMS Off buttons at Night Service member extensions. This allows the system manager to turn on voice messaging system (VMS) coverage of outside calls automatically.

A coverage sender with a VMS calling group assigned as a receiver can program a Coverage VMS Off button (Release 2.0 and later systems only) to prevent outside calls from being sent to voice mail. When Coverage VMS Off is inactive (button is unlit), inside and outside calls go to voice mail. When the programmed feature is active (button is lit), only inside calls go to voice mail.

The system manager can enable Night Service with Coverage Control through system programming. The option then automatically activates Coverage VMS Off buttons at member extensions when Night Service operation begins. When Night Service goes off, the Coverage Control option automatically deactivates member extensions' Coverage VMS Off buttons so that outside calls are no longer covered by voice mail.

A user at a member extension can press the Coverage VMS Off button to change its status, regardless of Night Service operation. When the next Night Service transition takes place, all programmed Coverage VMS Off buttons reflect Night Service status (the feature does not merely toggle buttons to the opposite state). The most *recent* event, whether it is a Night Service transition or user button-press, governs the status of the Coverage VMS Off buttons.

Considerations and Constraints

A Direct Inward Dial (DID) call to any member of a Night Service group rings at all group members' telephones.

If an extension assigned to a Night Service group has the same outside line (personal line) as an operator console, calls to this line ring immediately at each extension, even if the personal line on the telephone is programmed for Delay Ring or No Ring. If the extension does not have the outside line assigned, the call rings on an **SA** or **ICOM** button.

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When Night Service is deactivated by an operator or automatically by the system, extensions are reset to their programmed Ring Timing options. When a feature code is used to activate or deactivate Night Service and Outward Restriction is programmed, a DLC operator does not hear an error tone if an invalid password is entered. Unless a Night Service button is programmed, an operator cannot determine whether Night Service is active.

When both the Night Service with Outward Restriction and Night Service with Time Set options are programmed, the system imposes restrictions automatically.

When Night Service with Outward Restriction and/or Night Service with Time Set are programmed, Night Service is activated or deactivated for all operator consoles. If Night Service groups are also programmed, Night Service cannot be activated or deactivated independently for each group.

When Night Service with Outward Restriction is activated and a user with a restricted extension presses a dialpad button while on a call, the call is disconnected, the user hears a fast busy signal, and the line/trunk is released. When the dialpad is used, the system assumes that the user is trying to make an outside call, which is not allowed because of the Night Service restriction assigned to the extension.

Operators can override Night Service with Time Set and turn Night Service on or off manually.

Night Service with Time Set can be deactivated through system programming for special conditions such as a midweek holiday.

An answering machine connected to a 012 module or 016 module can be set up as a member of a Night Service group to automatically answer after-hours calls. External alerts, such as strobes, bells, or chimes, can be connected either to an analog multiline telephone by using a Supplemental Alert Adapter or to an MLX telephone by using a Multi-Function Module (MFM) that is a member of a Night Service group. The external alert sounds or lights when a Night Service call comes in to that telephone.

When Night Service with Outward Restriction is used, an operator must enter a password to manually activate or deactivate Night Service.

Changing the system time while in Night Service mode deactivates Night Service; Night Service then must be reactivated manually.

Night Service with Coverage Control controls voice messaging system coverage only and has no effect on other forms of coverage, such as Individual Coverage or other types of Group Coverage. When the option is disabled, Night Service does not affect programmed Coverage VMS Off buttons.

If a user with a programmed Coverage VMS Off button activates or deactivates the feature by pressing the button on his or her telephone, the next transition to Night Service does not necessarily toggle the button to the opposite status.

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Instead, when Night Service goes on or off, the button assumes the same active or inactive state that it would have if no manual button-press had taken place. The most *recent* event, whether it is a manual button-press or an automatic change set by the Coverage Control option, determines the active/inactive state of the programmed Coverage VMS Off button.

Telephone Differences

Direct-Line Consoles

A DLC operator also can activate Night Service by pressing the **Feature** button and dialing *39*. When a feature code is used to activate or deactivate Night Service and Outward Restriction is programmed, the DLC operator does not hear an error tone if an invalid password is entered and, unless a Night Service button is programmed, cannot determine whether Night Service is active.

On a system with 29 or fewer lines, a **Night Service** button is factory-assigned to analog DLCs with 34 buttons or more. On a system with more than 29 lines, the Night Service button is replaced with line 31. The Night Service button is not a fixed feature and can be assigned to any available button on either an analog or MLX DLC.

Queued Call Consoles

The **Night Service** button is factory-assigned as a fixed feature on a QCC.

In Release 4.0 and prior systems, if more than one QCC operator is assigned to receive calls on an individual outside line, Night Service must be activated at all assigned positions before calls on the line/trunk ring on extensions programmed as members of the Night Service group. If Night Service is not activated by one of the QCCs programmed to receive the calls, after-hours calls ring at that position and do not receive Night Service coverage.

When Night Service is on, unassigned DID extension and Listed Directory Number (operator) call types ring into the QCC queue. If these call types are programmed not to go to the QCC queue, the caller hears an error tone when Night Service is off. However, when Night Service is on, these call types still ring into the QCC queue, regardless of programming.

When multiple Night Service calls are received in the QCC queue at the same time and none of the calls are answered by a Night Service group member—all group member **SA** or **ICOM** buttons are busy—new calls are sent to the QCC queue and can be answered by only a QCC operator. To avoid this situation, all outside lines assigned to ring on the QCCs should be assigned as personal lines on at least one group member's extension.

In Release 4.1 and later systems, if an outside line is assigned to more than one QCC Night Service group and only one QCC operator activates Night Service,

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incoming calls on the outside line ring on extensions programmed as members of the Night Service group associated with the operator.

Other Multiline Telephones

To make a call when Night Service with Outward Restriction is assigned on a multiline telephone, before lifting the handset, press the **Hold** button and dial the password. When you have entered the correct password, lift the handset and make the outside call. Night Service password entry is not supported on MDC 9000 or MDW 9000 telephones.

Single-Line Telephones

Single-line telephones cannot make outside calls when Night Service with Outward Restriction is activated.

Feature Interactions

Alarm	A line/trunk jack programmed as a maintenance alarm port cannot be assigned to a Night Service group.
Authorization Code	An authorization code can be used when Night Service is activated. For Night Service with Outward Restriction, a user must enter a valid password before entering an authorization code.
Automatic Route Selection	When Night Service with Outward Restriction is programmed, a user must enter the password before dialing the Automatic Route Selection (ARS) dial-out code unless either the extension is assigned to an exclusion list or the number is on an emergency numbers list.
Caller ID	Caller ID information appears on the display whether or not Night Service has been activated.
Calling Restrictions	For Night Service with Outward Restriction, a Night Service Emergency Numbers List must be created to include emergency numbers that can be dialed from any extension without dialing the password. Any restrictions assigned to an extension assigned to the Exclusion List are in effect when Night Service is activated.
Coverage	When the system manager enables the Coverage Control option, a transition into Night Service operation (either by pressing the Night Service button at an operator's console or through the Time Set feature) automatically deactivates all programmed Coverage VMS Off buttons (LED is off) at extensions in the Night Service group. This allows calls to go to voice messaging system coverage at night. When the system is taken out of Night Service—either by a press of the Night Service button at an operator's console or through the Time Set option—the Coverage Control option automatically activates all programmed Coverage VMS Off buttons, turning the LED on at extensions in the Night Service group. Outside calls no longer go to the voice messaging system.
	A user at the extension can override the Night Service with Coverage Control option by pressing the programmed Coverage VMS Off button at any time.

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Digital Data Calls	If a digital communications device or videoconferencing system is a member of the Night Service group, voice calls to Night Service group do not ring at these extensions. Data or video calls *do* ring, and 2B data calls can be established. However, if there are two or more 2B data extensions receiving Night Service calls, the two 1B data calls that form a 2B data call may be directed to different extensions instead of the same one during Night Service operation.
Display	If a system operator must enter a password to turn Night Service on and off, the display prompts the operator for the password. No message is displayed either when an operator activates Night Service by using a feature code or when Night Service is off. If an MLX display telephone is in test mode and a Night Service call arrives, the call rings at the telephone. However, the calling information is not displayed until the user presses the **Home** button to see it.
Forward and Follow Me	When an extension is a member of a Night Service group and Night Service is activated, calls received at the extension are forwarded to extensions by using Forward and Follow Me but are not forwarded to outside telephone numbers when Remote Call Forwarding is used.
Group Calling	In Release 2.0 and later systems, a calling group can be a Night Service group member. If a calling group is used as a Night Service member, no other calling groups or extensions are allowed to be Night Service members.
HotLine	HotLine extensions (Release 5.0 and later systems) can be members of Night Service groups. If a HotLine extension dials an outside call and Night Service with Outward Restriction is on, either the HotLine extension number must be in the Night Service Exclusion List or the number it dials must be on the Night Service Emergency List.
Integrated Administration	The Automated Attendant service can be used for Night Service operation. The necessary system programming options can be set through Integrated Administration.
Multi-Function Module	An MFM can be a member of a Night Service group. An external alert connected to the MFM in supplemental alert adapter operation, when assigned to a Night Service group, can be used for supplemental ringing for after-hours calls.
Music On Hold	A line/trunk jack programmed for Music on Hold cannot be assigned to a Night Service group.
Paging	A line/trunk jack programmed as a Loudspeaker Paging port cannot be assigned to a Night Service group.
Personal Lines	If the voice mail calling group is assigned as a member of a Night Service group, incoming lines receive Automated Attendant treatment. When a call is answered by the Night Service group, ringing does not occur at an extension with that personal line and the Night Service coverage is used instead of the principal user's coverage.
Pickup	By using Pickup, a user at another extension can answer a call ringing at a Night Service group extension.

Primary Rate Interface (PRI) and T1	A PRI B-channel can be assigned to a Night Service group if the Routing by Line Appearance option is assigned to the B-channel group. If routing by dial plan is assigned to the B-channel group, the B-channels in that group cannot be assigned to Night Service groups.
Remote Access	In Release 4.0 and prior systems, when shared remote access is assigned to a line/trunk, incoming calls on that line/trunk receive remote access treatment only when Night Service is activated on all operator positions that receive calls on the line/trunk. When a call is received on a line/trunk assigned for shared remote access and Night Service is not activated, the call rings at the assigned telephone, operator console, or calling group.
	In Release 4.1 and later systems, when shared remote access is assigned to an outside line that belongs to one or more Night Service groups, calls received on that outside line receive remote access treatment when Night Service is activated on any operator position.
Ringing Options	When Night Service is turned on, calls received at a Night Service group member's telephone ring immediately, even if the line buttons are programmed for Delay Ring or No Ring. When Night Service is turned off, extensions return to their programmed Ring Timing options.
System Access/ Intercom Buttons	Night Service calls override any Ring Timing options (Delay Ring or No Ring) programmed for **SA** buttons and ring immediately. Shared **SA** buttons flash and do not ring.

Notify

See "Signal/Notify" on page 547.

Paging

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Dial Plan Information, Extension Information, Group Paging, System Information (`SysSet-up`)
Modes	All
Telephones	All
Programming Code	*22 + group or Page All ext. no.
MLX Display Labels	Group Page [GrpPg] Loudspkr Pg [LdsPg]
System Programming	Assign telephones to paging groups:
	• Extensions→**More**→Group Page
	Designate a loop-start or ground-start/loop-start line/trunk jack as a paging jack:
	• AuxEquip→Ldspkr Pg
Maximums	
Groups	6 speakerphone paging groups
Telephones	1 Page All group
Line/trunk Jacks	10 in each paging group (see Note below) 3, programmed as loudspeaker paging ports
Factory Settings	
Extensions	793–798 (speakerphone paging groups) 799 (Page All group)

⇒ NOTE:
> Each extension can belong to up to seven paging groups (for example, each of the six speakerphone paging groups and the Page All group).

Description

Paging allows users to broadcast announcements using their telephones. There are two types of paging: Speakerphone Paging and Loudspeaker Paging. Speakerphone Paging allows broadcasting either to specific individuals or to designated groups. Loudspeaker Paging allows broadcasting to specific groups or all extensions, depending on whether or not the loudspeaker system is a multizone paging system.

Speakerphone Paging

An announcement made using Speakerphone Paging is heard on telephones with built-in speakerphones (except single-line telephones with built-in speakerphones) or speakerphone adjuncts. Speakerphone Paging can be directed to an individual telephone, to groups, or to all speakerphones.

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Individual Paging

An **SA Voice** or **ICOM Voice** button on a multiline telephone is used for Speakerphone Paging directed to an individual extension (also called *voice-announced* inside calling). Select the voice button, and then dial the extension number of the telephone to receive the voice-announced call. If the voice announcement can be made, the caller hears a tone and then speaks into the handset.

The person called hears the announcement over the speakerphone unless one of the following conditions exists:

- The telephone does not have a speaker.

- The person called is using the speakerphone.

- The person called is on an analog multiline telephone, the system manager has removed Voice Announce to Busy from the extension.

- The person called has disabled voice announcements.

- The person called is using Do Not Disturb.

- The person called is a QCC operator.

When any of these conditions exists, the caller hears ringback if the person called has an available **SA** or **ICOM** button. The caller hears a busy, call-waiting, or callback tone when the person called is busy on all **SA** or **ICOM** buttons. If the person called is using Do Not Disturb, the caller hears a busy signal.

Speakerphone Paging to an individual extension is considered an inside call. The green LED next to an available **SA** or **ICOM** button flashes to indicate an incoming call. The person called can use the Hands-Free Answer on Intercom (HFAI) feature to talk to the caller or can pick up the handset and speak.

Group Paging

Group Paging directs Speakerphone Paging either to a selected group of extensions, such as a department or work area, or to all extensions in the system except QCC operator positions.

> **NOTE:**
> The system manager can program a QCC **Call** button to allow voice-announced calling, but a QCC cannot receive speakerphone pages.

The system automatically reserves extension numbers 793 through 798 for the first six speakerphone paging groups. Up to 10 extensions can be assigned to each speakerphone paging group. The seventh speakerphone paging group is called the Page All group and is factory-set to page all extension numbers. The system automatically reserves extension number 799 for the Page All group. An extension can belong to up to seven speakerphone paging groups (including the Page All group).

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When the extension number for a speakerphone paging group is dialed by using an **SA** or **ICOM** button, the announcement over speakerphones on all telephones assigned to the group. If the extension dialed is for the Page All group, the announcement is heard on speakerphones throughout the system. A speakerphone paging group member does not hear a group page if one of the following conditions exists:

- The telephone has no speakerphone.

- The paging group member is using the speakerphone.

- The paging group member is on an analog multiline telephone, and the system manager has removed Voice Announce to Busy from the extension.

- The paging group member has disabled voice announcements.

- The paging group member has an MLX telephone and either is programming (extension, centralized, or system) or testing the phone.

- The paging group member has an analog multiline telephone and is in extension programming. (Speakerphone pages are received on analog multiline telephones in test mode.)

- The paging group member is using Do Not Disturb.

When a group member does not hear the announcement for any of these reasons, the caller is not notified unless all extensions in the group cannot hear the page, in which case the caller hears a busy signal.

The people being paged can listen only to the page over the speakerphone and cannot respond to the person making the page.

Loudspeaker Paging

Loudspeaker Paging is used when a loudspeaker paging system is connected to the system on a line/trunk jack programmed for Loudspeaker Paging. Pages over a loudspeaker paging system are heard everywhere in the building or only in a particular area, depending on whether or not the loudspeaker system is a multizone paging system.

Considerations and Constraints

A telephone without a speakerphone, loudspeaker, or speakerphone adjunct cannot be a member of a speakerphone paging group.

After using Loudspeaker Paging, users must remember to disconnect the paging call. Otherwise, the loudspeaker paging system may not be available for someone else.

When a user tries to page a speakerphone paging group that is receiving a voice announcement, the user hears a busy signal.

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Some group members may not hear the announcement (because they are making pages, for example), but the user is not notified unless none of the group telephones can broadcast the page, in which case the caller hears a busy signal.

If an analog multiline telephone has had Voice Announce to Busy disabled through programming and the user lifts the handset while listening to a speakerphone page, he or she is disconnected from the page.

If a multiline telephone user has Voice Announce to Busy active and lifts the handset while listening to a page, the page continues and he or she can still make a call.

A maximum of three line/trunk jacks can be programmed for Loudspeaker Paging and used to connect a single-zone or multizone paging system. Each zone requires its own loudspeaker paging jack, and a user cannot dial a single access code to reach more than one paging system at a time.

Using the speakerphone for making a Speakerphone or Loudspeaker Paging call can cause a feedback tone.

Loudspeaker paging jacks are LS or GS line ports programmed as paging ports. Up to three can be programmed. An extension jack cannot be programmed for loudspeaker paging.

Any loop-start or ground-start/loop-start line/trunk jack can be assigned as a loudspeaker paging jack. A line/trunk jack on an 800 DID, 100D, or 400EM (tie trunk) module cannot be programmed as a loudspeaker paging jack.

A loudspeaker paging jack cannot be assigned to a pool that contains lines/trunks used to make or receive outgoing calls.

When a line/trunk jack is assigned for Loudspeaker Paging, only the loudspeaker paging system can be connected.

If the loudspeaker paging system is multizone, users must dial the appropriate zone number specified by the paging system before making an announcement.

The system supports loudspeaker systems with talkback (bidirectional paging), which allows users to respond to pages.

Prior to Release 2.1, users at extensions programmed with Forced Account Code Entry need to enter an account code to use Loudspeaker Paging. In Release 2.1 and later systems, users at extensions programmed with Forced Account Code Entry do not need to enter an account code to use Loudspeaker Paging.

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Telephone Differences

Direct-Line Consoles

The line/trunk jack programmed for Loudspeaker Paging can be assigned to a button on an analog or digital Direct-Line Console (DLC) for one-touch access. An operator with an MLX DLC also can access a loudspeaker paging system by dialing the line/trunk number (801–880) for the line/trunk jack on which the loudspeaker paging system is connected.

Queued Call Consoles

A Queued Call Console (QCC) cannot make or receive voice-announced inside calls, which are speakerphone calls to an individual extension. A QCC cannot be a member of a speakerphone paging group and cannot receive group pages; however, it can make announcements to a paging group.

A QCC operator can use the Group Paging feature either by selecting a **Call** button and pressing the DSS (Direct Station Selector) button or by dialing the extension for the group.

A QCC operator can use a loudspeaker paging system only by selecting a **Call** button, selecting Loudspeaker Paging from the display, and then dialing the Loudspeaker Paging line number (801–880).

Cordless and Cordless/Wireless Telephones

MLC-5, MDC 9000, and MDW 9000 telephones cannot be members of paging groups or receive speakerphone pages.

Loudspeaker pages can be made from MLC-5 cordless telephones.

All Other Multiline Telephones

To receive pages, a multiline telephone must have Voice Announce to Busy on, which is the factory setting. An analog multiline telephone requires two consecutive jacks to the telephone: one for ringing calls and another for pages.

To direct Speakerphone Paging to an individual extension, select an **SA Voice** or **ICOM Voice** button, dial the extension number, and speak into the handset or speakerphone. To direct Speakerphone Paging to a group of extensions or to all extensions by using Page All, select any **SA** or **ICOM** button, press the programmed Group Page button or dial the extension for the speakerphone paging group or Page All group, and speak into the handset. Using a speakerphone for a group page can cause feedback.

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A multiline telephone user can access the loudspeaker paging equipment. Make a Loudspeaker Paging announcement in the following ways:

- Select a line button programmed for the line/trunk jack on which the loudspeaker paging system is connected.

- Select an **SA** button and dial the pool dial-out code for the loudspeaker paging jack.

- Select an **SA** or **ICOM** button—either by pressing a Pickup button programmed specifically for the paging line or by pressing the **Feature** button and then dialing *9*—followed by the paging line number (801–880).

- Select Loudspeaker Page from the display (MLX display telephones only) and dial the line number (801–880).

Once the loudspeaker paging system is accessed, dial the assigned code number for the paging zone (if required by the loudspeaker paging system) and speak into the handset.

Single-Line Telephones

Single-line telephones cannot receive pages, even if they have speakerphones. They cannot be included as members of a speakerphone paging group.

Single-line telephones cannot be used to make or receive voice-announced inside calls (Speakerphone Paging directed to individual extensions). To direct Speakerphone Paging to a group of extensions or to all extensions by using Page All, lift the handset. Then, while listening to inside dial tone, dial the extension number of the paging or Page All group, and speak into the handset.

To use Loudspeaker Paging while listening to inside dial tone, lift the handset and dial *#9* (Pickup), then dial the paging jack's line number and speak into the handset. The paging jack is normally not assigned to a single-line telephone.

Feature Interactions

Account Code Entry	Prior to Release 2.1, users at extensions programmed with Forced Account Code Entry need to enter an account code to use Loudspeaker Paging. In Release 2.1 and later systems, this restriction is removed.
Auto Dial	A speakerphone paging group extension number can be programmed onto an inside Auto Dial button.
Barge-In	Operators cannot use Barge-In to join speakerphone or loudspeaker paging calls.

Callback	A speakerphone paging (voice-announced inside) call that is queued by using Callback automatically becomes a ringing call. Callback cannot be used for calls to a speakerphone paging group. Systems with loudspeaker paging can be set up to allow calls to be queued for the loudspeaker paging system by placing the loudspeaker paging line in its own pool and having users access the paging system through the pool. When the pool is busy, calls to the loudspeaker paging system can be queued.
Call Waiting	Call Waiting cannot be used for calls to busy speakerphone paging groups.
Camp-On	Camp-On cannot be used for calls to busy speakerphone paging groups.
Conference	Group and loudspeaker paging calls cannot be added to a conference.
Digital Data Calls	Digital communications devices and videoconferencing systems can be assigned to paging groups. However, they should not be: they are not alerted if there is a call to a paging group, and they cannot make group pages.
Direct Station Selector	A DSS button for a line/trunk programmed as a loudspeaker paging line is used only to indicate whether the paging system is in use and cannot be used to gain access to the loudspeaker paging system. A DSS button can be used only to dial an extension for a paging group. When a DSS button for a paging group is pressed, transfer is not automatically initiated.
Display	When users with MLX display telephones use Group Paging, they see a message on the display, indicating the number of the paging group. If a loudspeaker paging jack is not programmed, Loudspeaker Page is not shown as a feature choice on MLX display telephones.
Do Not Disturb	Speakerphone paging calls cannot be made to an extension with the Do Not Disturb feature activated.
Forward and Follow Me	Calls cannot be forwarded to a paging group. The line/trunk number used to connect loudspeaker paging equipment cannot be used to forward calls to outside telephone numbers.
Headset Options	A user with a headset hears group pages over the speakerphone.
Hold	A paging call can be put on hold by the caller. An inside voice-announced call can be put on hold by the person being called.
HotLine	A HotLine extension cannot access Loudspeaker Paging, but a HotLine extension can be programmed to dial a Group Paging number.
Inspect	If a user gets a voice-announced inside call or a group page while using the Inspect feature, the Inspect feature is canceled and the user is returned to the Home screen.
Microphone Disable	Calls made to speakerphone paging groups can still be heard over telephones where microphones are disabled.
Multi-Function Module	A Multi-Function Module (MFM) should not be a member of a speakerphone paging group.
Night Service	A line/trunk jack programmed as a Loudspeaker Paging port cannot be assigned to a Night Service group.

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Personal Lines	A line/trunk used for loudspeaker paging equipment cannot be assigned as a personal line.
Pickup	When the line number used for loudspeaker paging is not assigned to a button on a multiline telephone, you can access the loudspeaker paging system with Individual Pickup: dial the paging jack's line number (801-880) or program a Pickup button specifically for the paging line number.
Pools	In Hybrid/PBX mode, line/trunk jacks used for loudspeaker paging cannot be assigned to pools.
Primary Rate Interface (PRI) and T1	If the extension for an incoming PRI call matches a group paging extension, the call is treated as an unassigned Direct Inward Dial (DID) call.
	Data lines cannot be used for paging.
Remote Access	Loudspeaker Paging cannot be accessed from outside the system through either DID lines or remote access.
SMDR	Paging calls are not printed on the SMDR report.
System Access/ Intercom Buttons	Announcements using Speakerphone Paging can be made from a Shared **SA** button. However, users cannot join a page on a Shared **SA** button.
System Renumbering	Extensions for paging groups can be renumbered. The factory-set extensions are 793 through 799; Page All is 799.
Transfer	Calls cannot be transferred either to paging groups or the loudspeaker paging extension.
Voice Announce to Busy	Users who program their extensions to turn off Voice Announce to Busy (Voice Announce on MLX telephones) do not receive individual or group speakerphone pages.

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Park

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Extension Information, Operator Information, System Information (SysSet-up)
Modes	All
Telephones	All except single-line
Programming Codes	
Park at own extension	*86
Park Zone	*22 + park zone (DLC operators only)
MLX Display Label	
Park at own extension	Park
Park Zone	Park Zone [PrkZn]
System Programming	Assign return interval before unanswered parked call returns:
	• Options→CallParkRtn
Maximums	
No. of parked calls in park zones	8 (one parked call for each zone)
Factory Settings	
Park Zones	881–888
Call Park Return Interval	180 sec (range 30–300 sec, in increments of 10 sec)
QCC Priority Level for returning parked calls	4 (range 1–7)

Description

Park puts a call on hold so that it can be picked up from any extension in the system. A user can park a call and then pick it up at another telephone or can use paging to announce the call so that another person can pick it up. A parked call is picked up using the Pickup feature.

A user (but not a QCC operator) can park calls at his or her own extension by activating Park during the call or by pressing the **Transfer** button, dialing his or her own extension number, and pressing the **Transfer** button again to complete the transfer. The green LED winks at the button where the call is parked and at all other associated **SA** and Shared **SA** buttons. At least two **SA** or **ICOM** buttons are required to use Park this way, and, if a you must park more than one call at a time, additional **SA** or **ICOM** buttons should be assigned to your telephone.

If a parked call is not picked up within the call park return interval (30–300 seconds; the factory setting is 180 seconds), the call returns to and rings at the extension that parked the call. Returning parked calls for a QCC operator can be programmed to return to a different operator.

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The system also automatically reserves eight extensions (881–888) on which operators can park calls. Only operators can use these park-zone extensions.

Considerations and Constraints

Only system operators can use park zones. Operators must share the eight extensions (881–888) reserved for operator park zones.

To park a call at a park zone, an operator with a DSS presses the DSS button for the park zone while the caller is on the line. If an operator tries to park a call by pressing the **Transfer** button followed by the DSS button for the park zone, the call is put on hold for transfer and is not parked. This may result in unintentionally transferring a call to an outside number.

Telephone Differences

Direct-Line Consoles

DLC operators can park calls either by activating Park during the call or by pressing a DSS button programmed for an operator park zone. DLC operators also can park calls at their own extensions. For the park zones to be assigned to a DSS connected to an MLX DLC, the extension numbers must be in the range programmed for the **Page** buttons.

The eight park zone codes cannot be assigned to the DSS buttons on a MERLIN II System Display Console.

Queued Call Consoles

A QCC operator must have a DSS to park a call, which he or she does either by pressing a DSS button for a park zone or by pressing the **Start** button and then a DSS button for an operator park zone. The call is automatically parked; the operator does not need to press the **Release** button.

QCC operators cannot park calls at their own extensions.

For park zones to be assigned to a DSS connected to a QCC position, the extension numbers must be in the range programmed for the **Page** buttons.

Calls parked by QCC operators can be programmed to return to the QCC queue or can be assigned to the QCC operator who parked the calls and/or to another QCC operator. Returning parked calls are assigned a QCC priority level (the factory setting is 4) by using the Returning Call Type setting. A QCC operator can return a parked call to the message center position.

To pick up a parked call, a QCC operator selects Pickup from the display and dials the number for the extension or park zone where the call is parked.

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Other Multiline Telephones

Multiline telephone users park calls at their own extension numbers by pressing programmed Park buttons. On an MLX display telephone, a user can press the **Feature** button and select Park from the display.

If a user pages another person to announce a parked call, he or she mentions the extension number where the call is parked.

A multiline telephone user also can park calls by pressing the **Transfer** button, dialing his or her own extension number (the user hears a busy tone), and then pressing the **Transfer** button again to complete the transfer. The call is automatically parked when the transfer is completed.

To pick up a parked call, press a programmed Pickup button or press the **Feature** button, dial 9, and then dial the extension number for the telephone or park zone where the call is parked. MLX telephone users also can press the **Feature** button and select the feature from the display.

Single-Line Telephones

To park a call, a single-line telephone user presses and releases either the **Recall** or **Flash** button or the switchhook and dials his or her own extension number. The user hears a busy tone and the call is parked.

$\Longrightarrow$ NOTE:

If a single-line telephone with a positive or timed disconnect is used, for example, the Lucent Technologies model 2500YMGL or 2500MMGK, pressing the switchhook disconnects the call. With this type of telephone, the **Recall** or **Flash** button, instead of the switchhook, must be used to park a call.

To pick up a parked call, the single-line user lifts the handset and (while listening to inside dial tone) dials #9 and the extension number for the telephone or park zone where the call is parked.

Feature Interactions

Authorization Code	Initiating Park after entering an authorization code deactivates the Authorization Code feature. An authorization code is not needed to pick up a parked call.
Auto Dial	An operator can program park zones on inside Auto Dial buttons. An inside Auto Dial button also can be programmed with a user's (including an operator's) own extension number and can be used to park calls. When the system is programmed for one-touch Hold with manual completion, the user hears a busy signal and must complete the transfer either by hanging up or by pressing the **Transfer** button.

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Callback	Calls waiting in a callback queue cannot be parked.
Conference	Conference calls cannot be parked. If a QCC operator tries to park a conference call by pressing the **Start** button and then pressing the DSS button for the park zone, the park is denied and the operator is reconnected to the conference call.
Coverage	A returning parked call is not eligible for coverage. A call answered on a Primary Cover, Secondary Cover, or Group Cover button cannot be parked on that button. To park calls received on a Cover button at your extension, press the **Transfer** button, dial your own extension, and press the **Transfer** button again to complete parking the call.
Digital Data Calls	Data calls cannot be parked.
Direct Station Selector	Park zone numbers cannot be assigned to the DSS buttons on a MERLIN II System Display Console. For the park zones to be assigned to a DSS connected to an MLX operator console, the extension numbers must be in the range programmed for the **Page** buttons.
	When an operator parks a call by using an associated DSS button and the call returns, the red LED associated with the park zone where the call is parked turns off and does not flash as it does for a transfer return.
	To park a call at a park zone, an operator with a DSS presses the DSS button for the park zone while the caller is on the line. If an operator tries to park a call by pressing the **Transfer** button followed by the DSS button for the park zone, the call is put on hold for transfer and is not parked. This may result in an unintentional transfer to an outside number.
Display	On a QCC, returning parked calls are identified by call type and the name or extension number of the operator who parked the call. The second line of the QCC display also shows the caller information. On 2-line displays, press the **More** button to see complete caller information.
Forward and Follow Me	Returning parked calls are not forwarded.
Group Calling	A calling group member who parks a call is considered available to receive another call.
Headset Options	If a call is parked, another call can be automatically answered by using Headset Auto Answer.
Hold	If a single-line telephone user with a call on hold hangs up, the call is disconnected. Park should be used instead of Hold.
	When a user or operator parks a call received on a personal line button and the call is picked up using Pickup at another extension and then put on hold, other users who share the personal line cannot press the line button and pick up the call.
HotLine	Park cannot be used by HotLine extensions (Release 5.0 and later systems).
Line Request	A returning parked call cancels Line Request.
Multi-Function Module	A user at a Multi-Function Module (MFM) cannot park a call but can pick up a call parked by another user.

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Music On Hold	If Music On Hold is programmed, a parked caller hears Music On Hold.
Pickup	A parked call can be picked up by using Individual Pickup.
Recall/Timed Flash	A single-line telephone user presses a **Recall** or **Flash** button to use Park.
SMDR	If an incoming call was parked but not picked up by the other extension, the extension of the user who activated Park is shown in the STN field of the SMDR record for the call. If an incoming call was parked and picked up by the destination extension, the destination extension is shown in the STN field of the SMDR report.
System Access/ Intercom Buttons	When a user parks a call made or received on an **SA** button, Shared **SA** buttons do not ring when the parked call returns.
System Renumbering	System operator park zones (factory-set zones are 881–888) can be renumbered.
Transfer	A user also can park calls by pressing the **Transfer** button, dialing his or her own extension, and pressing the **Transfer** button again. DLC operators can press **Transfer** and dial an operator park zone. When this method is used, complete the transfer by pressing the **Transfer** button or by hanging up. This method cannot be used by QCC operators.

Personal Lines

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Extension Information
Modes	All
Telephones	All except QCC
System Programming	Assign or remove personal lines:
	• `Extensions`→`LinesTrunks`
	Assign or remove principal user of a personal line:
	• `LinesTrunks`→**More**→`PrncipalUsr`
Maximums	64 extensions for each personal line
	1 extension as principal user
	3 simultaneous users for each personal line
Factory Settings	
Assigned Personal Lines	Analog DLCs: Lines 1–32
	MLX DLCs: Lines 1–18
	Multiline telephones: Lines 1–8 (Key mode)

Description

A personal line, also called a *direct facility termination* (DFT), is an outside
line/trunk assigned to a button on one or more telephones or to another type of
extension, such as a data communications device. A personal line can provide
either the shared or exclusive use of a specific line/trunk. In Hybrid/PBX mode, a
personal line allows users to receive outside calls without operator involvement.

When a personal line is assigned to more than one extension, a principal user of
the personal line can be assigned through system programming. Assigning an
extension as the principal user has the following effects:

- ■ If Remote Call Forwarding is enabled for the extension, only the principal
  user can forward personal line calls to an outside telephone number.

- ■ Unless the personal line is set to No Ring, calls received on the personal
  line follow the principal user's Individual or Group Coverage patterns.

Select a personal line to make or receive outside calls by pressing the associated
personal line button on a multiline telephone; a dial-out code is not needed. When
the line is in use, the green LED is on at all multiline telephones that share the
personal line. Inside calls cannot be made or received on a personal line.

When two or more users answer the same call on a Shared **SA** or personal line
button, the red and green LEDs next to the button go on, but only one person has
a talk path with the caller. Privacy should be used to eliminate competition for the
same call.

When an individual personal line is assigned to a line button on more than one telephone, up to three users of that personal line can participate in an in-progress call (including conference calls) on which Privacy has not been activated. Users select the personal line button with the call.

Personal lines can be assigned through system programming to single-line telephones or any other type of tip/ring device to allow a user to receive outside calls. Normally the Ringing/Idle Line Preference for single-line telephones or other tip/ring devices is activated and Automatic Line Selection (ALS) is set to select an **SA** or **ICOM** button. With this arrangement in Key and Behind Switch modes, the single-line telephone user can select the personal line to make an outside call by dialing the Idle Line Access code (usually *9*) while listening to inside dial tone.

In Hybrid/PBX mode, when either Ringing/Idle Line Preference is deactivated or ALS is set to select an **SA** button, a single-line telephone or tip/ring device user cannot select the personal line to make calls but can receive calls on the personal line.

For single-line telephones or other tip/ring devices in any mode of operation, ALS can be set to select the personal line. However, the user cannot make inside calls or activate system features.

A multiline telephone user can program personal line buttons for Immediate Ring, Delay Ring, or No Ring. When a personal line button is programmed for No Ring, the user can still answer calls received on a personal line by pressing the personal line button with the flashing green LED. However, when a personal line is set to No Ring and Individual and/or Group Coverage is programmed for the user, calls received on the personal line are not sent to coverage.

Considerations and Constraints

DID (Direct Inward Dial) trunks should not be used as personal lines. If a DID trunk is assigned as a personal line, and a call received on the DID trunk is ringing at the extension programmed to receive the calls (the routing extension), the call can be answered by using the personal line button. However, this is not recommended because the purpose of DID trunks is to route calls to specific extensions without the need for personal line assignment or operator assistance.

If a line/trunk is not assigned as a personal line, grouped in a pool (Hybrid/PBX only), or assigned to ring into the Queued Call Console (QCC) queue, and a call is received on the line/trunk, the caller hears ringback even if that line/trunk does not terminate anywhere in the system.

When an extension is programmed as the principal user (owner) of a personal line, only the principal user can forward calls to an outside number by using Remote Call Forwarding. When the owner has Individual or Group Coverage, calls received on the personal line follow the owner's coverage and not the coverage patterns of other extensions that share the personal line.

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When no principal user is assigned for a personal line, calls received on the personal line cannot be forwarded to outside telephone numbers. Calls follow the Individual Coverage patterns of all senders who share the line and the Group Coverage pattern of the extension with the lowest logical identification number (lowest numbered jack on the module).

Two users can join a call in progress (including a conference call), for up to three users on the same personal line.

Outside lines/trunks used as personal lines cannot be assigned to pools and cannot be assigned as loudspeaker paging, Music On Hold, or maintenance alarm jacks.

Automatic Route Selection (ARS) cannot be used on personal lines.

In all modes, personal lines are not factory-assigned to single-line telephones or tip/ring devices connected to 016, 012, or 008 OPT modules.

In Release 2.1 and later systems, calls received on personal lines with Do Not Disturb on go immediately to coverage instead of waiting for the Coverage Delay Interval.

Mode Differences

Hybrid/PBX Mode

When Ringing/Idle Line Preference is turned on and ALS is set to select an **SA** button, a single-line telephone user cannot select the personal line to make calls. However, outside calls can be received on the personal line.

In Hybrid/PBX mode, the factory setting assigns personal lines to DLC positions rather than to other multiline telephones.

Key and Behind Switch Modes

When Ringing/Idle Line Preference is turned on and ALS is set for an **ICOM** button, a single-line user can select the personal line to make an outside call by dialing the Idle Line Access code (usually *9*) while listening to inside dial tone.

In Key mode, the factory setting for personal lines assigns the first eight lines connected to the system as personal lines on all multiline telephones, including Multi-Function Modules (MFMs) connected to MLX telephones.

In Behind Switch mode, the factory setting assigns personal lines to DLC positions rather than to multiline telephones.

Telephone Differences

Direct-Line Consoles

The factory setting for analog DLCs assigns the first 32 lines connected to the system as personal lines in all modes of operation. For MLX DLCs, the first 18 lines connected to the system are automatically assigned as personal lines.

Queued Call Consoles

Personal lines cannot be assigned to a QCC or to a pool.

Other Multiline Telephones

A personal line is selected by pressing the associated personal line button. Dial-out codes are not required for making outside calls.

Single-Line Telephones

A single-line telephone user can receive calls on a personal line. To allow a single-line telephone user to select a personal line to make a call, Ringing/Idle Line Preference must be turned on and ALS must be set to select an **SA** or **ICOM** button. With this arrangement, in Key and Behind Switch modes, the single-line telephone user can select the personal line to make an outside call by dialing the Idle Line Access code (usually *9*) while listening to inside dial tone.

Feature Interactions

Account Code Entry	When Forced Account Code Entry is assigned to an extension and the user tries to dial an outside call on a personal line button without entering the account code, the call does not go through.
Alarm	A line/trunk jack used for a maintenance alarm cannot be assigned as a personal line.
Allowed/ Disallowed Lists	A user with an outward- or toll-restricted extension cannot dial a toll or outside number on a personal line button unless the number is on an Allowed List assigned to the extension, nor can the user dial a number on a Disallowed List.
Auto Dial	An outside Auto Dial button can be used on a personal line.
Callback	The Callback feature cannot be used to request a busy personal line.
Caller ID	Caller ID information appears on the display of shared personal lines. Outgoing call information is not displayed.
Calling Restrictions	A user with an outward- or toll-restricted extension cannot dial a toll or outside number on a personal line button unless the number is on an Allowed List assigned to the extension, nor can the user dial a number on a Disallowed List.

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Call Waiting	A user does not hear a call-waiting tone for calls received on a personal line unless the business subscribes to call-waiting service from the local telephone company.
Coverage	Assigning a sender as the principal user of a personal line specifies that the calls received on the personal line are sent to the principal user's individual and group receivers. A principal user with Remote Call Forwarding on can forward calls received on the personal line to an outside number.

Calls received on personal line buttons programmed for No Ring or on senders' extensions other than the principal user's are not eligible for coverage.

If no principal user is assigned and the personal line is shared by other senders, calls received on the personal line are sent to all available Individual Coverage receivers for all senders sharing the line and to the Group Coverage receivers programmed for the sender with the lowest logical ID.

In Release 2.1 and later systems, a call answered on a personal line using a Cover button can be picked up by anyone with a button for that personal line. However, the picked-up call cannot be transferred because it is still considered to be on hold at the other extension.

Prior to Release 2.1, once a person answers a call received on a personal line on a Cover button and puts the call on hold, the sender and any other user who shares the personal line cannot pick up the call by pressing the personal line button. For proper handling, the receiver should transfer the call to the sender.

In Release 2.1 and later systems, calls received on personal lines with Do Not Disturb on go immediately to coverage instead of waiting for the Coverage Delay Interval.

CTI Link	When a call is received on a personal line at an unmonitored DLC, caller information is passed on to screen-pop-capable destination extension(s) when the DLC operator conferences or transfers the call.

If a calling group call is delivered to an overflow calling group extension where no **SA** buttons are available, it can instead arrive at a personal line button for that call. In this case, screen pop will not occur at the destination extension. For this reason, personal line button at overflow calling group extensions should be set to No Ring so that overflow calls arrive at **SA** buttons only.

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Digital Data Calls	Personal lines can be assigned to digital communications devices and videoconferencing systems, which, ideally, should not share personal lines except with extensions at the same workstations. If they do share personal lines, the system manager should ensure that enough idle lines are available, particularly when a video system is receiving 2B data calls. Otherwise, the video system may receive only 1B data while another extension is using a second personal line.
	When a personal line is shared between a digital data device and a telephone, voice calls are directed only to the telephone and data calls are received by only the digital communications device.
	Personal lines can be shared between an MLX telephone and a desktop video system in passive-bus configuration. 2B data calls can be completed in this situation.
	Personal lines also can be shared between an MLX telephone and a digital communications device connected to the MLX adjunct extension, provided that the communications device supports this capability.
Directories	A Personal Directory (MLX-20L only) or System Directory can be used to dial numbers on a personal line. An Extension Directory is used only for inside calls and cannot be used to dial calls on a personal line.
Forward and Follow Me	When an extension is programmed as the principal user of a personal line, calls received on the personal line are forwarded to an outside number (if the extension can use Remote Call Forwarding), unless the outside line is a loop-start line with unreliable disconnect.
	Forward on Busy (Release 4.1 and later systems) does not apply to calls received on personal line buttons.
Group Calling	If a person uses a shared personal line button to join a call in the calling group queue, the call is removed from the queue. If a delay announcement is playing, it is disconnected from the call.
	To allow all calling group members' telephones to ring when an outside call is not answered within three rings, the lines/trunks programmed to ring into the queue also can be assigned as personal lines on group member telephones and programmed for Delay Ring. This does not work for inside calls, remote access calls, DID calls, or when a delay announcement device is assigned to the group.
Group Calling *continued*	In a Hybrid/PBX mode system where the Most Idle agent hunt type (Release 5.0 and later systems) is used, a calling group member may receive a calling group call at an **SA** button, then put that call on hold at the **SA** button. If the agent then picks up the call at a personal line button at his or her telephone, the system does not move the agent to the end of the most-idle queue (Release 5.0 and later systems).

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Hold	If a call is received on a personal line and is transferred to another user who receives the call on an **SA** or **ICOM** button and puts the call on hold, users who share the line cannot select the personal line button and pick up the call. If the person who received the transfer and put the call on hold cannot return to the call, another user must use the Pickup feature to enter the line number and pick up the call.
	In Release 2.1 and later systems, a call that has been put on hold at a Cover, **SA**, Shared **SA**, or **Pool** button can be picked up by a user who has a personal line button for the call. When the call is picked up, the green LED next to the personal line lights steadily; however, the call remains on hold at the Cover, **SA**, **SSA** or **Pool** button. The user who picks up on the personal line cannot transfer the call that has been picked up. In order to transfer a call on hold at a Cover, **SA**, **SSA**, or **Pool** button, use Pickup instead of picking up on a personal line button.
Multi-Function Module	If an MFM device is used to answer calls or provide supplementary ringing for its associated MLX telephone, any personal lines removed from the telephone should also be removed from the MFM. When the device connected to an MFM requires a personal line to make and/or receive calls (a modem or fax, for example), a personal line should be assigned.
Music On Hold	A line/trunk used for Music On Hold cannot be assigned as a personal line.
Night Service	If the voice mail calling group is assigned as a member of a Night Service group, incoming lines receive Automated Attendant treatment. When a call is answered by the Night Service group, ringing does not occur at a telephone with that personal line and the Night Service coverage is used instead of the principal user's coverage.
	In Release 4.1 and later systems, a personal line can be assigned to a Night Service group. The personal line need not be assigned to the extension of the Night Service group operator in order to receive Night Service treatment.
Paging	A line/trunk used for loudspeaker paging equipment cannot be assigned as a personal line.
Pickup	If a call received on a personal line is transferred to another user who receives the call on an **SA** or **ICOM** button and then puts the call on hold, another user who shares the personal line cannot select the shared personal line button to pick up the call. If the user who received the transfer and put the call on hold cannot return to the call, another user must use Line Pickup to pick up the call (for example, an operator can take a message and then disconnect the caller).
Pools	A personal line cannot be assigned to a pool.

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Primary Rate Interface (PRI) and T1	A personal line can be assigned to an extension to represent a PRI line with routing by dial plan. The green LED associated with the personal line lights steadily, and ringing on an **SA** button occurs; the LED does not flash to indicate that a line/trunk is ringing.
	A personal line can be assigned on a telephone for monitoring the status of a data line; however, users *must not* use the personal line to attempt to complete a call.
Privacy	When an individual personal line is assigned to more than one extension, a user with the personal line cannot join an in-progress call on which Privacy has been activated.
Recall/Timed Flash	When two users have joined an outside call on a shared personal line (loop-start only), Recall can be used by either inside party.
System Access/ Intercom Buttons	When a call on a personal line button is transferred to another user, the call rings on an **SA** or **ICOM** button. The LED next to the personal line flashes rapidly to indicate that the call is on hold for transfer. If the call is answered at an **SA** or **ICOM** button, the LED next to the personal line turns on steadily. If a user shares the personal line appearance and answers the call by using the personal line button, the call is removed from the **SA** or **ICOM** button.
Transfer	If a call is received on a personal line and is transferred to another user who receives the call on an **SA** or **ICOM** button and then puts the call on hold, another user who shares the personal line cannot select the shared personal line button and pick up the call. If for some reason the person who received the transfer and put the call on hold cannot return to the call, another user must use Pickup to pick up the call. For example, an operator can take a message and then disconnect the caller.

Personalized Ringing

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Pickup

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Extension Information
	Group Call Pickup
Modes	All
Telephones	All (except MLC-5, which cannot be assigned to Pickup groups)
Programming Codes	
Individual Pickup	
General use	*9
Specific extension	*9 + *ext. no.*
Specific line	*9 + *line no.*
Group Pickup	*88
Feature Codes	
Individual Pickup	
Specific extension.	9 + *ext. no.*
Specific line	9 + *line no.*
Group Pickup	88
MLX Display Labels	
Individual Pickup	
General use	Pickup,General [Pkup,Genrl]
Specific extension.	Pickup,Extension [Pkup,Ext]
Specific line	Pickup,Line [Pkup,Line]
Group Pickup	Pickup,Group [Pkup,Group]
System Programming	Assign or remove telephones from Pickup groups:
	• Extensions→Call PickUp
Maximums	30 Pickup groups
	15 members for each group
	1 Pickup group for each telephone

Description

Pickup allows users to answer calls that are ringing, parked, or on hold anywhere in the system. There are two types of Pickup: Individual and Group. Individual Pickup can be used in three ways: Extension, Line, and General. Table 30 shows the calls that can be answered with each type of Pickup. Note that if more than one call is ringing or on hold, the first call received is the one picked up.

Table 30.   Types of Pickup

Individual Extension	Individual Line	Individual General	Group
Inside ringing	Outside ringing	Inside ringing	Inside ringing
Inside held	Outside held	Inside held	Outside ringing
Parked		Outside ringing	
Outside ringing		Outside held	
Outside held			

Individual Pickup

Individual Pickup can be used in the following ways:

- **Extension Pickup.** From the display, select Pickup and then dial the extension number of the call to be picked up. Alternatively, a programmed Individual Extension Pickup button can be set to pick up calls on one specific extension. If that extension has more than one call, the first call sent to the extension is picked up. To pick up a call parked by an operator, select Pickup from the display or press the programmed Individual Extension Pickup button; then dial the park zone.

- **Line Pickup.** From the display, select Pickup, then dial the line number (801–880) to select a specific outside line from which to pick up a ringing or held call. Alternatively, a programmed Individual Line Pickup button can be set to pick up calls on one specific line. Line Pickup also can be used to make announcements through the loudspeaker paging system.

- **General Pickup.** Multiline telephone users can program a general-purpose Pickup button to pick up calls on either extensions or lines. When a general Pickup button is used, enter the line or extension number for the call to be picked up every time the button is used.

Group Pickup

Group Pickup is used to answer a ringing call for any member of the group either by dialing the Group Pickup code or pressing a programmed Group Pickup button. It is not necessary to know the extension number or line number of the ringing call. The system automatically connects to an inside or outside call that is ringing at a telephone assigned to the group.

A telephone cannot be assigned to more than one Pickup group.

Considerations and Constraints

When Group Pickup is used to answer a call, the user cannot determine whose call is being answered. An MLX display telephone user receives call information and can determine whose call is answered only after the call is picked up.

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Individual Pickup, not Group Pickup, is used to pick up calls parked in a park zone by an operator.

Telephone Differences

Direct-Line Consoles

A Direct-Line Console (DLC) can be part of a Pickup group. This allows other group members to provide backup coverage for the DLC. A DLC operator can use Pickup to answer calls on lines/trunks that are not assigned to buttons on the console.

Queued Call Consoles

Individual Pickup

To pick up a call using a Queued Call Console (QCC), select the feature from the Home screen or press the **Feature** button and select the feature from the display. Then press the DSS (Direct Station Selector) button or dial the extension for the telephone or park zone.

To answer calls on specific lines, select the feature from the Home screen or press the **Feature** button and select the feature from the display; then dial the line number (801–880) with the call.

Group Pickup

To pick up a call ringing on any other group member's telephone, select Pickup Grp from the Home screen or press the **Feature** button and select the feature from the display.

Other Multiline Telephones

Individual Pickup

To pick up a call, all other multiline telephone users press a programmed general-purpose Pickup button or press the **Feature** button and dial *9*. MLX telephone users also can press the **Feature** button and select the feature from the display, then dial the number for the extension or park zone.

To answer calls on specific lines, press a programmed general-purpose Pickup button or press the **Feature** button and dial *9*; then dial the number of the line with the call.

If a Pickup button is programmed for a specific telephone or outside line, press that Pickup button to pick up a call.

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Group Pickup

To pick up a call ringing on any other group member's telephone, press a programmed Group Pickup button or press the **Feature** button and dial *88*. MLX telephone users also can press the **Feature** button and select the feature from the display.

MLC-5 cordless telephones cannot be assigned to Pickup groups.

Single-Line Telephones

Individual Pickup

To pick up a parked call, lift the handset and (while listening to inside dial tone) dial *#9* and the extension number for the telephone or park zone.

Group Pickup

To pick up a call ringing at any other group member's telephone, lift the handset and (while listening to inside dial tone) dial *#88*.

$\Longrightarrow$ NOTE:
When a single-line telephone user is on a call and puts the call on hold to pick up another call by using Individual or Group Pickup, the user cannot put the picked-up call on hold to return to the first call. If the user presses the **Recall** or **Flash** button (or, if the telephone does not have timed or positive disconnect, presses and releases the switchhook), the picked-up call is dropped and the user is reconnected to the original held call. If the user hangs up, the picked-up call is disconnected and the first call is considered on hold for transfer and is not returned to the user until after the transfer return interval.

Feature Interactions

Callback	A callback request cannot be picked up at another telephone.
Call Waiting	Pickup cannot be used to answer a waiting call at another extension.
Conference	A conference call cannot be picked up at another extension. A conference originator can, however, pick up a call and add it to the conference call.
Coverage	An Individual or Group Coverage sender or receiver can be a member of a Pickup group. This allows Pickup to be used to answer a ringing Individual or Group Coverage call. If a sender who is a member of a Pickup group uses Coverage On/Off to prevent calls from being sent to Individual or Group Coverage receivers, his or her calls can be picked up by using Individual Pickup; however, calls cannot be picked up by using Group Pickup. When a coverage call is answered by using Pickup, the call appearance is removed from all other telephones in the coverage arrangement.

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Digital Data Calls	A digital communications device can pick up a data call. Pickup is not recommended at video system extensions, although it can be used at a passive-bus MLX telephone.
Direct Station Selector	The DSS buttons associated with a line/trunk number (801–880) cannot be used to answer calls on specific lines by using Individual Pickup. These DSS buttons are used strictly to show the busy or not-busy status of each line/trunk.
Display	When a user with an MLX display telephone selects Pickup, PickupLine/Ext: prompt appears on the display (the prompt is not displayed if a button programmed for a specific line or extension is used). After the user enters the line or extension number to pick up the call, a confirmation message appears (for example, Pickup: OUTSIDE or Pickup: JOE).
Forward and Follow Me	Pickup cannot be used to answer calls being forwarded to an outside telephone number.
Group Calling	A calling group member can be a member of a Pickup group. Calling group members can use Pickup to answer a call (either a calling group or individual group member extension) that is ringing at another group member's telephone. Line Pickup can be used to pick up a call that is in the calling group queue. If an agent has a call on hold and the agent or someone else picks up the call, the system moves the agent to the end of the most-idle agent queue (Release 5.0 and later systems).
HotLine	Pickup cannot be used at a HotLine extension (Release 5.0 and later systems).
Night Service	A call ringing at a Night Service group extension can be answered from another extension by using Pickup.
Paging	When the line number used for loudspeaker paging is not assigned to a button on a multiline telephone, a user can access the loudspeaker paging system either by using Individual Pickup and dialing the loudspeaker paging line number (801–880) or by using a Pickup button specifically programmed for the paging line number.
Park	A parked call can be picked up by using Individual Pickup.
Personal Lines	If a call received on a personal line is transferred to another user who receives the call on an **SA** or **ICOM** button and then puts the call on hold, another user who shares the personal line cannot select the shared personal line button to pick up the call. If the user who received the transfer and put the call on hold cannot return to the call, another user must use Line Pickup to pick up the call (for example, an operator can take a message and then disconnect the caller).
SMDR	The extension of a user who picks up a call by using Pickup is shown on the SMDR report.
System Access/ Intercom Buttons	If Pickup is used to answer a call ringing at an **SA** or Shared **SA** button, the call is removed from the ringing telephone and moves to the **SA** or **SSA** button used to pick up the call. The green LED turns on next to the **SA** button used to answer the call and next to all **SSA** buttons programmed for that specific button.

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An *inside* call ringing at an **SA** or **SSA** button can be picked up at another telephone. All associated **SA** and **SSA** buttons go idle.

Transfer   A transferred call can be answered by using Pickup.

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Pools

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Dial Plan Information
Modes	Hybrid/PBX only
Telephones	All
System Programming	Assign individual lines/trunks to pools:
	• LinesTrunks→Pools
	Assign **Pool** buttons to telephones:
	• Extensions→LinesTrunks
	Restrict telephone from using pool dial-out code:
	• Extensions→Dial OutCd
Maximums	
Pools for each system	11
Lines/trunks for each pool	Unlimited
Buttons assigned for each pool	64
Factory Settings	
Main Pool	70
Ground-Start Trunk Pool	890
Dial-In Tie Trunk	891
Automatic-In Tie Trunk	892
Pool Dial-Out Code Restriction	No access to any pool

Description

Hybrid/PBX mode allows outside lines/trunks to be grouped together in pools. Users select lines/trunks by using **SA** buttons instead of having separate buttons for each line/trunk in the system. To access pools using **SA** buttons, people dial pool dial-out codes. Pools also can be assigned to buttons on one or more telephones to allow a user to select the pool without dialing the pool dial-out code or Automatic Route Selection (ARS) access code. In Release 3.1 and later systems, the factory setting does not allow any extensions to use pool dial-out codes. To allow a user to access a pool by entering a dial-out code, the system manager must remove the restriction for the dial-out code and the extension.

When the system is set up and the Hybrid/PBX mode of operation is selected, the system automatically groups lines/trunks into the following pools:

- All loop-start lines (basic and special-purpose) are assigned to the main pool. The factory-set extension number for the main pool is 70.

- All ground-start trunks are assigned to the pool with the factory-set extension number 890.

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$\Rightarrow$ **NOTE:**
> On initialization of a Release 1.0 system, all loop-start and
> ground-start line/trunk programming reverts to loop-start. The
> ground-start pool never has trunks assigned to it automatically but
> must be programmed after the ground-start jacks are designated. In
> Release 1.1, 2.0, and later systems, ground-start trunks are
> assigned to the ground-start pool on initialization, except in a system
> modified for permanent Key mode operation.

- All dial-in tie trunks are assigned to the pool with the factory-set extension
  number 891.

- All automatic-in tie trunks are assigned to the pool with the factory-set
  extension number 892.

$\Rightarrow$ **NOTE:**
> The factory setting for the type of line/trunk connected to a 400 LS, 800
> GS/LS, 408 GS/LS, 408 GS/LS-MLX, or 800 GS/LS-ID module is
> loop-start. The system does not automatically make pool assignments for
> loop-start, ground-start, or tie trunks that are emulated by using a T1
> facility. Each of these types must be grouped into a pool through system
> programming.

The system can have a maximum of 11 pools. Each pool can be assigned to a
button on a maximum of 64 extensions. The number of lines/trunks in each pool is
limited only by the number of lines/trunks connected to the system. However, a
line/trunk can be assigned to only one pool.

Considerations and Constraints

The maximum number of **Pool** buttons that can be assigned to multiline
telephones, excluding Queued Call Consoles (QCCs), is limited only by the
maximum number of pools allowed (11) and the number of buttons on the
telephone.

The number of lines/trunks in each pool is limited only by the number of
lines/trunks connected to the system. A line/trunk can be assigned to only one
pool.

Each pool should contain the same type of lines/trunks (for example, basic,
WATS, data-only, or foreign exchange) because users cannot control the specific
trunks selected by the system. Ground-start and loop-start lines/trunks of the
same type (for example, WATS) can be mixed in the same pool. Direct Inward
Dial (DID) trunks should not be put into pools; lines/trunks used for Music On Hold
or maintenance alarms cannot be grouped into pools. Also, dial-in tie trunks
should not be placed in a pool that is assigned to a button on the telephone.

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Lines/trunks assigned to pools cannot be assigned as personal lines (on buttons) on any extension except a Direct-Line Console (DLC). However, calls that come in on lines/trunks assigned to pools can be programmed to be received by one or more QCC operators.

When all lines/trunks in a pool are in use, the green LEDs turn on next to the **Pool** buttons assigned to multiline telephones and next to any DSS (Direct Station Selector) buttons associated with the pool dial-out code.

Individual extensions can be restricted to deny dial access to particular pools. See "Calling Restrictions" under .

Users with **Pool** buttons on their telephones can use the pool even if the pool dial-out restriction is assigned to the extension.

One pool can be assigned to buttons on a maximum of 64 extensions.

In Release 3.1 and later systems, if an extension is changed from a Direct-Line Console to a Queued Call Console, pool dial-out codes are disallowed on the QCC. You must use system programming if you want to allow access to dial-out codes on the QCC.

Mode Differences

Although pools are available only in Hybrid/PBX mode, users in Behind Switch mode can access the pools in the host switch through their prime lines.

Telephone Differences

Direct-Line Consoles

A **Pool** button cannot be assigned to a DLC. A DLC operator accesses pools by dialing the pool dial-out code from an **SA** button or, on an MLX DLC with a DSS, by pressing the DSS button associated with the pool dial-out code. Trunks in pools cannot be assigned as personal lines (assigned to line buttons) on any telephone except a DLC. In Release 3.1 and later systems, the system manager, through system programming, must allow the DLC extension to access those pool dial-out codes that it needs.

Queued Call Consoles

A **Pool Status** button is assigned as a fixed-feature button on a QCC and provides an operator with the status of all the pools (maximum of 11). The operator presses the **Inspct** button followed by the **Pool Status** button, and the busy or available status of pools is shown on the display. **Pool** buttons cannot be assigned to a QCC, but a QCC operator can use pools to make outgoing calls by selecting a **Call** button and dialing the ARS or pool dial-out code. In Release 3.1

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and later systems, the system manager, through system programming, must allow the QCC extension to access those pool dial-out codes that it needs. A QCC operator can be assigned to receive calls on lines/trunks assigned to pools.

Feature Interactions

Account Code Entry	When Forced Account Code Entry is assigned to an extension and the user tries to dial an outside call on a **Pool** button without entering the account code, the call does not go through.
Alarm	A line/trunk jack used for a maintenance alarm cannot be assigned to a pool.
Auto Dial	Pool dial-out codes cannot be programmed on inside Auto Dial buttons. A pool dial-out code can be programmed on an outside Auto Dial button when a telephone number is also included. However, depending on the local telephone company, Pause characters may be required before the telephone number. Enter Pause characters by pressing the **Hold** button.
Automatic Maintenance Busy	To provide optimal performance, Automatic Maintenance Busy should be enabled when a Hybrid/PBX system includes pools.
Automatic Route Selection	ARS ensures appropriate and cost-effective use of pools. ARS and the dial-access-to-pools restriction function independently of each other. If ARS restrictions are programmed to allow access to a pool, the user may seize a pool that the extension is not allowed to use under existing pool dial-access restrictions.
Callback	In Hybrid/PBX mode, Callback can be used to complete calls to outside numbers only when all lines/trunks in the pool are busy.
Caller ID	If the LS-ID Delay option is programmed on a 2-way line, the system does not seize a line from a pool for an outgoing call when that line is receiving an incoming call.
Calling Restrictions	Specific pools can be restricted from use for outgoing calls by assigning a pool dial-out code restriction to extensions. In Release 3.1 and later systems, the factory setting is for all pool dial-out codes to be restricted for all users.
Coverage	Calls received on a sender's **Pool** button programmed for Immediate Ring or Delay Ring are eligible for Individual or Group Coverage.
CTI Link	When an MLX extension is programmed as a CTI link, dial access to pools is removed from the extension.
Digital Data Calls	If a videoconferencing system is programmed to have a single **Pool** button, two calls to that pool result in a 1B data call. However, if two separate pools are assigned to a videoconferencing system extension, then a 2B data call can be established. If the communications system includes two or more 2B data devices that share the same two pools, incoming 2B data calls can be answered by the wrong device.
Directories	When a pool dial-out code is included in the telephone number for a Personal or System Directory listing, Pause characters may be required following the pool dial-out code, depending on the local telephone company. Pause characters are entered by pressing the **Hold** button.

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Display	When a display telephone user selects a **Pool** button and lifts the handset, the display shows the label (if programmed) for the lines in the selected pool.
Forward and Follow Me	A pool can be used to select the facility for forwarding calls to an outside telephone number. The user enters the pool dial-out code before the telephone number.
Group Calling	Lines/trunks assigned to pools can be assigned to ring into a calling group. An incoming call on a line/trunk assigned to the pool rings on an **SA** button even if the calling group member has a **Pool** button assigned to his or her telephone.
HotLine	A HotLine extension (Release 5.0 and later systems) can use a pool, as long as dial-access-to-pools is enabled for the extension and the Pool access code is programmed with the outside number as the first Personal Speed Dial number for the extension.
Line Request	Line Request cannot be used on a **Pool** button.
Music On Hold	Line/trunk jacks used for Music On Hold cannot be assigned to pools.
Paging	Line/trunk jacks for loudspeaker paging cannot be assigned to pools.
Personal Lines	A personal line cannot be assigned to a pool.
Primary Rate Interface (PRI) and T1	Data lines (especially T1 data) should not be put in the same pool as voice lines. System alarms eventually result if voice extensions try to access data lines.
Recall/Timed Flash	If a user presses the **Recall** button during or after dialing, a timed flash is sent to the host switch, the accessed line is kept, the user hears dial tone, and calling restrictions are reapplied.
Speed Dial	A pool dial-out code can be included with the telephone number associated with a Personal Speed Dial or System Speed Dial code. However, depending on the local telephone company, Pause characters may be required immediately following the pool dial-out code. Enter Pause characters by pressing the **Hold** button.
SMDR	When outgoing calls are made by using a pool, the line/trunk selected by the system is reported on the SMDR report.
System Renumbering	Pool dial-out codes (the factory-set codes are 70 and 890–899) can be renumbered.

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Power-Failure Transfer   *Page 440*

Power-Failure Transfer

At a Glance

Modes	All
Telephones	Single-line telephones
Hardware	If ground-start trunks are used in Hybrid/PBX mode, KS23566, L1 ground-start buttons are required on power-failure telephones

Description

During a commercial power failure, Power-Failure Transfer (PFT) provides incoming and outgoing service through power-failure telephones. When a power failure occurs, all calls are dropped and the power-failure telephone automatically goes on. It can make and receive calls on the line/trunk connected to the first (lowest) line/trunk jack on the module where the PFT telephone is connected.

A power-failure telephone is a single-line telephone connected to a PFT jack on a 400, 400 LS/TTR, 800, 800 GS/LS, 800 GS/LS-ID, 408, 408 GS/LS, or 408 GS/LS-MLX module. Each module has one PFT jack for each series of four line/trunk jacks; for example, the 800 and 800 GS/LS modules each have two PFT jacks.

Considerations and Constraints

A power-failure telephone cannot be used to make or receive calls and does not function when the system is operating normally.

System features and restrictions do not work when PFT occurs. Power-failure telephones are not working extensions but only dedicated power-failure devices.

Telephone Differences

Multiline Telephones

Multiline telephones cannot be used as power-failure telephones.

Single-Line Telephones

Touch-tone single-line telephones must be connected to PFT line/trunk jacks for touch-tone lines; rotary single-line telephones must be connected to PFT line/trunk jacks for rotary-dial lines.

Feature Interactions

SMDR	No SMDR records are generated during a power failure.

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Primary Rate Interface (PRI) and T1

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	DS1 Information, PRI Information, SMDR
Modes	Key, Hybrid/PBX
Telephones	All (display support on MLX telephones only)
System Programming Systemwide	Specify modules that provide primary, secondary, and tertiary clock synchronization and source of clock synchronization; also activate/deactivate clock:
	• LinesTrunks→**More**→ClockSync
	Specify type of facility connected to 100D module:
	• LinesTrunks→LS/GS/DS1→Type
100D Module	Specify framing format for 100D module:
	• LinesTrunks→LS/GS/DS1→FrameFormat
	Specify line coding for 100D module:
	• LinesTrunks→LS/GS/DS1→Suppression
	Specify line compensation between 100D module and channel service unit (CSU) or far end:
	• LinesTrunks→LS/GS/DS1→Line Comp
	Specify type of CSU equipment provided by CO:
	• LinesTrunks→LS/GS/DS1→Channel Unit
PRI	Specify the type of switch (Release 4.2 and later systems):
	• LinesTrunks→PRI→SwitchType
	Assign telephone numbers to PRI lines:
	• LinesTrunks→PRI→Telephone Number
	Assign B-channels to group:
	• LinesTrunks→PRI→B-ChannlGrp→B-channels
	Assign PRI lines to B-channel groups:
	• LinesTrunks→PRI→B-ChannlGrp→Lines
	Specify type of network service for each B-channel group:
	• LinesTrunks→PRI→B-ChannlGrp→NetworkServ
	Specify whether telephone number to send to network for outgoing calls should be copied from line telephone number:
	• LinesTrunks→PRI→B-ChannlGrp→Copy Number
	Specify telephone number to send to network for outgoing calls on PRI lines:
	• LinesTrunks→PRI→NumbrToSend

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Programming PRI continued T1	Assign test line telephone number for each 100D module:
	• LinesTrunks→PRI→Test TelNum
	Set timer and counter thresholds for each 100D module:
	• LinesTrunks→PRI→Protocol→Timers
	Assign link layer address or Terminal Equipment Identifier (TEI) of equipment connected to each D-channel:
	• LinesTrunks→PRI→Protocol→TEI
	To select T1 emulation:
	• LinesTrunks→LS/GS/DS1→Enter→Type→T1→Enter→ Select Type of emulation.
	To select T1 Switched 56 Data and program Channel Signaling:
	• LinesTrunks→LS/GS/DS1→Enter→Type→T1→ Enter→**More**→S56 Data→Enter→ AssignChan-Signaling→Enter→Select Direction, Intype, Outtype, AnsSupv, Disconnect, Inmode, or Outmode
	To select T1 All Switched 56 Data and program Channel Signaling:
	• LinesTrunks→LS/GS/DS1→Enter→Type→T1→Enter→ **More**→All S56 Data→Signling→Enter→Select Direction, Intype, Outtype, AnsSupv, Disconnect, Inmode, or Outmode
	To select T1 Switched 56 Data and program Incoming Routing Table:
	• LinesTrunks→LS/GS/DS1→Enter→Type→T1→Enter→ **More**→S56 Data→Enter→Incom Routing Table→ Select Expected Digits, Add Digits, or Delete Digits→Enter
	To select T1 All Switched 56 Data and program Incoming Routing Table:
	• LinesTrunks→LS/GS/DS1→Enter→Type→T1→Enter→ **More**→ALL S56 Data→Incom Routing Table→Select Expected Digits, Add Digits, or Delete Digits→Enter

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Maximums	
General	
100D modules	3
PRI-specific	
B-channels	69
Lines (total)	72
Digits for each number assigned to a PRI line	12
ISDN lines for each B-channel group	24
B-channels for each B-channel group	23

At a Glance - *Continued*

Maximums	
PRI-specific continued	
Digits for each telephone number sent to network for outgoing calls	12
Digits for test trunk telephone number	12
PRI Dial-Plan Routing Table (Hybrid/PBX)	
Number of entries	16 (0–15)
Digits for each pattern	8
Digits to delete	14 (range 0–14, 0=wildcard)
Digits to add	4
Network Selection Table	
Number of entries	4 (0–3)
Digits for each pattern	8 (*=wild card, at least one * required, all *s must be at end and contiguous)
Special Services Selection Table	
Number of entries	8 (0–7)
Digits for each pattern	4
Digits to delete	4
Call-by-Call Services Table	
Number of entries	10 (0–9)
Number of patterns for each entry	10
Number of digits for each pattern	8
T1-specific	
T1 Dial-Plan Routing Table	
Number of entries	24 (1–24)
Expected Digits	3 (1–3)
Digits to delete	4 (range 0–4)
Digits to add	4 (range 0–4)

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Factory Settings
Systemwide
Primary Clock

First port that is in service on an 800 NI-BRI module or first 100D module in service in control unit

Clock Synchronization
Source

Loop (not definable by system manager)

Clock

Active

100D Module
Type of Facility

T1

Framing Format

D4 compatible

Line Coding

AMI-ZCS

Signaling

Robbed-Bit Signaling (RBS)

At a Glance - *Continued*

Factory Settings
100D Module
continued
Line Compensation

1 (range 1–5)
1 = 0.6 dB loss
2 = 1.2 dB loss
3 = 1.8 dB loss
4 = 2.4 dB loss
5 = 3 dB loss

Type of CSU equipment

Foreign Exchange

PRI
Telephone number
assigned to PRI line

0 digits

B-channels assigned to
group

None

PRI lines assigned to
B-channel groups

None

Type of network service
for each B-channel group

None

Copy telephone number to
send from telephone
number assigned

Do Not Copy

Telephone number to
send to network for
outgoing PRI calls

0 digits

Test trunk telephone
number for each 100D
module

None

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Call-by-Call Services	
Table	
Patterns	Blank
Call type	Both (Voice and Data)
Service	Blank
Digits to delete	0
Timer and counter thresholds for each 100D module	
T200 Timer	1 second (range 1,000–3,000 ms)
T203 Timer	30 seconds (range 1–60)
N200 Counter	3 transmissions (range 1–5)
N201 Counter	260 octets (range 16–260)
K Counter	7 frames (range 1–15)
T303 Timer	4 seconds (range 4–12)
T305 Timer	4 seconds (range 4–30)
T308 Timer	4 seconds (range 4–12)
T309 Timer	90 seconds (range 30–120)

At a Glance - *Continued*

Factory Settings	
PRI	
Timer and counter thresholds for each 100D module continued	
T310 Timer	60 seconds (range 2–120)
T313 Timer	4 seconds (range 4–60)
T316 Timer	120 seconds (range 30–120)
Link layer address or TEI assigned	
PRI Dial-Plan Routing	0 (range 0–63)
Table	
Service value	Empty
Digits for each pattern	Blank
Digits in Called Party Number	0
Digits to add	Blank
T1 Dial-Plan Routing Table	
Expected Digits	Blank
Digits to delete	0
Digits to add	Blank

Description

The MERLIN LEGEND Communications System supports two types of service for DS1 (Digital Signal Level 1) facilities: T1 and PRI.

T1 service transmits and receives voice and analog data as well as digital data services in Release 4.0 and later releases.

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The ISDN (Integrated Services Digital Network) Primary Rate Interface (PRI) is a standard access arrangement that can be used to connect the system to a network providing voice and digital data services.

The MERLIN LEGEND Communications System supports connection to the following central office (CO) switches for PRI services:

- Releases 1.0 and 1.1 support Lucent Technologies 4ESS™ Generic 16.

- Release 2.0 supports these additional switches:

  — Lucent Technologies 5ESS Generic 6

  — Lucent Technologies 5ESS serving the FTS2000 (government only) network.

- Release 4.2 and later systems also support these switches:

  — NORTEL DMS-100 Generic BCS 36 for local exchange carrier services

  — NORTEL DMS-250 Generic MCI 07 serving the MCI network

  — Digital Switch Corporation DEX600E Generic 500-39.30 serving the MCI network

To provide T1 Switched 56 services in Release 4.0 and later systems, the system supports the following central office switches:

- Lucent Technologies 4ESS Generic 18/19/20

- Lucent Technologies 5ESS Generic 9.1

- Northern Telecom DMS-100 Generic BCS 34

You also can link a MERLIN LEGEND Communications System Release 4.0 or later with a Lucent Technologies DEFINITY G1.1 PBX or DEFINITY Enterprise Communications Server for data tie-trunk connections using T1 Switched 56 services.

Release 2.0 and later systems also support call-by-call service selection for outgoing PRI calls, support for Station Identification/Automatic Number Identification (SID-ANI) as a Calling Party Number, and dial-plan routing.

Terminology

Called Party Number (CdPN)

In general, the term *Called Party Number* (CdPN) is a telephone number that has been dialed to reach a destination. However, while routing the call, the network can change the Called Party Number to make routing easier. In either case, the network sends the Called Party Number to the system when a call arrives at the system.

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Calling Party Number (CPN)

If you subscribe to the AT&T INFO2 Automatic Number Identification (ANI) service or another PRI caller identification network service (Release 4.2 and later), an incoming call on an ISDN line includes accompanying information about the party placing the call. This can be either a station (extension) identification number that is defined by the internal dial plan of the system where the call originated (`Extension Only`), billing number information (`Line Telephone Number`), or both (`Base Number with Ext.`). With this information, a call recipient may identify the caller before answering.

Lines/Trunks

In this section on PRI and T1, *lines* are the representations that appear on extension telephones or are put into pools. They represent the type of service requested on a call. *Trunks* are the facilities that link switches. For all except DS1, lines have a one-to-one correspondence to trunks because there are 24 transmission channels for each DS1 connection. With PRI, lines are further removed from trunks because the type of service is not linked to the B-channel (trunk). The system has an intermediary called a *B-channel group* (BCG). Lines are used to place and receive calls, and a BCG links B-channels to lines. B-channel groups may be either a single B-channel or multiple B-channels grouped together.

Figure 36 shows how lines, B-channels, and B-channel groups, function together. For outgoing calls, a user selects a PRI line that routes the call to a B-channel group. The BCG selects an open B-channel and connects over the PRI connection. For incoming calls, the network selects an open B-channel and the BCG directs the call to the PRI line for which it has been intended: it matches the Called Party Number with the line's programmed telephone number. In addition, the Dial-Plan Routing feature may be used to further direct the call to a specific extension (**SA** button) or calling group by matching some portion of the Called Party Number against the system dial plan. Dial-plan routing is similar to Direct Inward Dial.

Each DS1 module is given 24 lines, whether or not it is used for emulation of lines/trunks or for PRI.

PRI

PRI is a common configuration for a DS1 facility. A DS1 facility consists of 24 channels, sometimes referred to as DS0 channels, each with a capacity of 64 kbps. *DS1* refers to the twenty-four 64-kbps channels, plus framing and signaling bits, multiplexed together to form a 1.544-Mbps *Digital Signal Level 1* signal. When used for PRI, a channel can be designated as either a B-channel (*bearer channel*) or a D-channel (*data* or *delta channel*).

A B-channel is used to carry user information, such as the voice or data content of a call, between the system and the far-end switch. Each B-channel provides access to one or more network services. Releases 1.0 and 1.1 support access to only one network service for each B-channel. Release 2.0 and later supports

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call-by-call service selection, which allows multiple network services over the same B-channels. The D-channel conveys signaling required to set up, control, and clear calls made over all of the B-channels.

The most common configuration of a DS1 facility for PRI consists of 23 B-channels and 1 D-channel, although other combinations are possible. Each PRI must include a D-channel, but may include fewer than 23 B-channels. The remaining channels cannot be used for any other purpose.
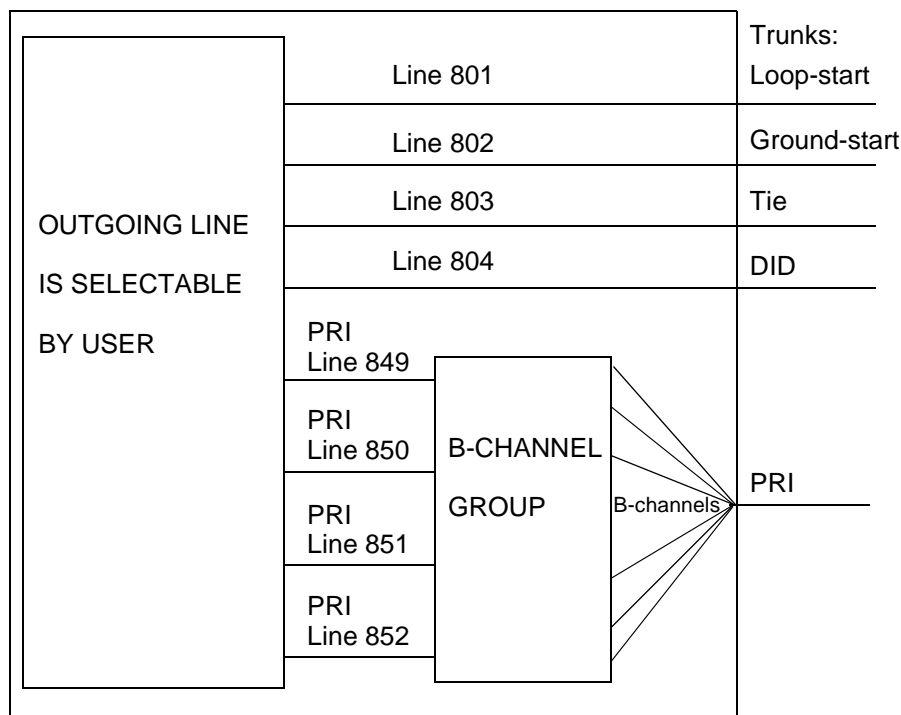
Figure 36.   PRI Lines and B-Channel Groups

➡ **NOTE:**
The MERLIN LEGEND Communications System does not support multiple PRI facilities sharing one D-channel (as allowed with Non-Facility Associated Signaling).

Up to three DS1 carrier facilities (maximum of two in one carrier), and therefore three PRIs, can be connected to the system through separate 100D modules, each of which occupies a slot in the system carrier. In terms of system capacity, each DS1 channel counts as a line/trunk, so the maximum number of B-channels supported by the system is 69. Signaling for 69 B-channels is provided over 3 separate D-channels, using up 72 of the system's 80-line capacity.

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PRI service offers the following benefits:

■ **Network Subscriber Service Options.** Release 4.2 and later systems support network services from AT&T, MCI, and the DMS-100 5ESS network of local exchange carriers (LECs). These services are described in . (Prior releases support AT&T subscriber 5ESS LEC subscriber services only.)

■ **Speed.** Data calls to outside destinations can be established on the same B-channels used for voice calls if the service allows. Dedicated, conditioned lines/trunks are not needed. By supporting high-speed digital data transmission, PRI provides the capability for videoconferencing and Group IV (G4) fax.

■ **Dynamic B-Channel Assignment.** An individual B-channel can be removed from service without blocking ISDN calls to or from any extension.

■ **Improved Toll Restriction.** The ways that toll restriction can be bypassed are limited on PRI lines/trunks. Specifically, three types of toll abuse are eliminated with PRI service:

— Because dialing is in the form of out-of-band messages that must be generated by the system, a user cannot use a touch-tone generating device, such as a pocket dialer, to send dialed digits directly through the system to the line/trunk.

— Without PRI service, toll restriction can be deceived by dialing digits on a loop-start line before the far-end switch applies dial tone. These initial digits may indicate a local call to the system's toll-restriction checking while the subsequent digits, those actually recognized by the far-end switch, may produce a toll call. This is not possible with PRI service because every digit screened and passed on by the system's toll restriction is guaranteed to be received by the far-end switch.

— A PRI line's far-end disconnect signal provides a reliable indication when a call ends, and a new call cannot be initiated until the line has been released from the prior call on both ends. This prevents a user on a loop-start line, waiting off hook for the restoration of dial tone after a previous call, from placing a second call before toll restriction is reapplied.

■ **Reliable Indication of Far-End Disconnect.** This prevents an incoming call from being blocked because a line is not released when a call is ended.

The system's implementation of PRI provides the following features:

■ **Support for Caller Identification.** The system supports AT&T's INFO2 Station Identification/Automatic Number Identification (SID-ANI) Service and, in Release 4.2 and later systems, similar services from MCI and local exchange carriers. Customers who subscribe to one of these services can identify the incoming caller on a PRI line/trunk by either telephone number or billing number. The Calling Party Number (CPN) in Release 1.0 is

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facility-based, whereas it can be extension-based in Release 2.0 and later, if so programmed. Extension-based CPN results in a more PBX-like performance from the system.

> $\Longrightarrow$ **NOTE:**
> The availability of the caller identification information may be limited by local-serving (caller's) jurisdiction, availability, or service provider.

■ **Routing by Dial Plan** (Release 2.0 and later). Routing by dial plan supports call handling similar to Direct Inward Dial (DID). For example, you can specify that calls received from a particular area code should be routed to a specific person or group responsible for accounts in the area.

Routing by dial plan performs digit analysis on incoming calls, matches to Called Party Numbers (CdPNs), and delivers the calls to the destinations based on the respective Called Party Numbers. It also allows multiple calls to the same directory number. That is, multiple concurrent incoming calls with the same Called Party Number can be delivered to a destination simultaneously.

■ **Call-by-Call Service Selection** (Release 2.0 and later). This feature maximizes use of communications lines, providing more services with fewer lines. Call-by-call service selection provides more than one PRI service (such as VPN service and OUTWATS) for each B-channel. Based on the number dialed and the bearer capability (voice, data, or both), the system chooses which service is used. If a caller requests operator service, the system bypasses call-by-call service selection.

■ **Restriction Code Handling for FTS2000 Network** (Release 2.0 and later). FTS2000 network users can have restriction codes applied to their extensions. A person who attempts to place a call that exceeds the set restriction level must first enter a restriction code. If no code is entered, the FTS2000 network prompts the user to enter the code from the telephone dialpad. The system allows a restriction code to be entered with the Account Code Entry feature. This is especially useful for data calls.

T1

A DS1 facility programmed as a T1 line/trunk uses 24 channels, sometimes referred to as *DS0 channels*, each with a capacity of 64 kbps. Signaling must be in-band signaling, however, which limits the data rate for each channel to 56 kbps when the channels are programmed for Switched 56.

T1 channels can be programmed to emulate the following types of connections:

■ Loop-start

■ Ground-start

■ Switched 56 (56-kbps data)

■ E&M tie trunk

- ■ Direct Inward Dial

T1 service provides the following benefits:

- ■ **Speed.** Data calls to outside destinations can be made by programming a channel for T1 Switched 56 Data. This service must be supported on the far end. By allowing high-speed digital data transmission, T1 provides the capability for videoconferencing and Group IV (G4) fax.

- ■ **Improved Toll Restriction.** The ways in which toll restriction can be bypassed are limited on T1 lines/trunks. Specifically, three types of toll abuse are eliminated with T1 service:

  — Because dialing is in the form of out-of-band messages that must be generated by the system, a user cannot use a touch-tone generating device, such as a pocket dialer, to send dialed digits directly through the system to the line/trunk.

  — Without T1 service, toll restriction can be deceived by dialing digits on a loop-start line before the far-end switch applies dial tone. These initial digits may indicate a local call to the system's toll-restriction checking while the subsequent digits, those actually recognized by the far-end switch, may produce a toll call. This is not possible with T1 service because every digit screened and passed on by the system's toll restriction is guaranteed to be received by the far-end switch.

  — A T1 line's far-end disconnect signal provides a reliable indication when a call ends, and a new call cannot be initiated until the line has been released from the prior call on both ends. This prevents a user on a loop-start line, waiting off hook for the restoration of dial tone after a previous call, from placing a second call before toll restriction is reapplied.

- ■ **Reliable Indication of Far-End Disconnect.** This prevents an incoming call from being blocked because a line is not released when a call is ended.

T1 supports routing by dial plan on Switched 56 data channels. Routing by dial plan supports call handling similar to Direct Inward Dial (DID). It performs digit analysis on incoming calls, matches to Called Party Numbers (CdPNs), and delivers the calls to the destinations based on the respective Called Party Numbers. It also allows multiple calls to the same directory number. That is, multiple concurrent incoming calls with the same Called Party Number can be delivered to a destination simultaneously.

DS1 Facility Options

A Digital Signal Level 1 (DS1) facility is a transmission system that transports digital signals in the DS1 format. The interface that allows the connection of DS1 facilities to the system is the 100D module. Through this module, voice and data calls can be made or received using a DS1 facility.

Twenty-four Digital Signal Level 0 (DS0) channels, each operating at 64 kbps, plus framing bits, are multiplexed, forming a DS1 signal of 1.544 Mbps. Each DS0

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channel within the DS1 signal corresponds to a logical port. Although there is only one physical jack, the 100D module supports up to 24 logical ports (one for each channel).

In DS1 format, calls to other digital PBXs or telephone company foreign exchanges (FXs) remain digital. Signals do not need to be converted to analog for acceptance by the connecting trunk, excluding networked applications such as off-premises extensions or situations where your communications equipment does not allow a DS1 digital interface. In addition, the 100D module can be configured to work with T1 or PRI service.

To connect the 100D module to an outside DS1 facility, a channel service unit (CSU) is used. The CSU regulates the transmission into and out of the 100D module so that the module matches the transmission of the outside facility.

Both ends of the DS1 facility must be able to communicate. To ensure this, the following options are set during system programming to match the transmission of the outside DS1 facility:

- Type of service (T1 or PRI)

- Framing format

- Line coding

- Channel service unit

- Line compensation

- Clock synchronization

- Signaling mode (for T1 service only)

➔ NOTE:
Most of these settings are dependent upon the central office and the type of service (T1 or PRI) to which you subscribe.

Type of Service

The system supports two types of service for DS1 facilities: T1 and PRI. The 100D module can be programmed to operate in either type of service. T1 service transmits and receives voice and analog data, as well as digital data in Release 4.0 communications systems; PRI transmits and receives voice, analog, and digital data. Any combination of the following AT&T Switched Network (ASN) Services can be provided through a T1 or a PRI line/trunk:

- Megacom WATS service for domestic outgoing long-distance voice calls

- Megacom 800 service for domestic toll-free incoming voice calls

- Software-Defined Network (SDN) for voice and circuit-switched data calls

- MultiQuest® for 900 service numbers

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PRI interacts with the ACCUNET Switched Digital Service for 56-kbps, 64-kbps restricted, and 64-kbps clear circuit-switched data calls. T1 supports ACCUNET Switched Digital Service or other circuit-switched data service at 56 kbps in Release 4.0 and later.

T1 and PRI support Shared Access for Switched Services (SASS), which allows both Megacom and Megacom 800 services to be offered over the same line. This eliminates the need to have separate incoming and outgoing lines/trunks when these services are chosen.

In Release 4.2 and later systems, when PRI is selected as the type of service, any combination of the following MCI and local exchange carrier services are supported, in addition to the AT&T services supported in prior releases:

- MCI services include:

  — **MCI PRISM.** For domestic outgoing long-distance and international voice calls; domestic outgoing 56-kbps restricted as well as 64-kbps restricted or unrestricted circuit-switched data calls.

  — **MCI 800.** For domestic toll-free incoming voice calls.

  — **MCI Vnet.** For domestic incoming and outgoing voice calls; or for outgoing 56-kbps restricted as well as 64-kbps restricted or unrestricted circuit-switched data calls.

  — **MCI 900.** Providing 900 service numbers.

- The system supports the following local DMS-100 local exchange carrier services:

  — **Virtual Private Network** (VPN). For calls between the MERLIN LEGEND Communications System and another communications system (for example, another MERLIN LEGEND Communications System).

  — **Maximal OUTWATS and INWATS.** For domestic outgoing long-distance voice calls (not including support for bands or zone); for domestic toll-free incoming calls.

  — **Foreign Exchange.** For local call rating of calls from the local exchange in the area served by the foreign exchange.

  — **Tie Trunk.** For private exchange call rating of calls placed on a dedicated central office facility between the MERLIN LEGEND Communications System and another MERLIN LEGEND Communications System.

  — **Integrated Services Access** (also called *call-by-call service selection*). Allows a B-channel group to carry a variety of local services.

T1 is the factory setting and, when selected for the DS1 facility, allows each of the 24 channels to be programmed to emulate tie, loop-start, ground-start, or DID lines or Switched 56 in any combination. Therefore, a single 100D module can take the place of 24 regular outside lines/trunks.

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If common-channel signaling (CCS) is selected, 23 channels are available for emulation, and the twenty-fourth channel carries trunk supervision signals. (See .)

Framing Format

To identify the DS0 channels, the DS1 signal is segmented into blocks of 193 bits called *frames*. A frame consists of 24 eight-bit words (one for each channel) plus a framing bit at the beginning of each frame (24 words x 8 bits = 192 bits). Thus, a framing bit appears in every one hundred ninety-third bit position of the 1.544-Mbps DS1 signal.

Frames repeat at a rate of 8,000 per second. Each frame repeats DS0 channels 1 through 24 sequentially.

The following two methods of framing can be used by a 100D module, but the framing method chosen must match the framing at the far end:

- **D4 Framing Format.** The system is factory-set for D4 framing. A D4 frame consists of 24 eight-bit time slots and one framing bit. To perform synchronization, the receiving equipment uses the framing information to identify the start of each frame and to identify which frames contain signaling information. The framing information repeats once every 12 frames; these 12 frames form the D4 superframe.

- **ESF Framing Format.** The extended superframe (ESF) format extends the 12-frame D4 superframe to a 24-frame superframe. The 24 framing bits include a cyclic redundancy check (CRC) for the entire ESF and a facility data link for maintenance. The ESF can detect more errors than D4 framing can.

Line Coding

The DS1 signal consists of a continuous stream of ones and zeros, encoded into bipolar pulses for transmission. Only the ones create a pulse; the zeros represent the absence of a pulse. Pulses alternate between positive and negative. This type of line coding is called *bipolar* or *alternate mark inversion* (AMI). The line-coding formats guarantee that the ones-density requirement is met to achieve clock recovery.

To meet the ones-density requirement, either zero code suppression (ZCS) or bipolar 8 zero substitution (B8ZS) line coding can be chosen, but the selected line coding must match the line coding at the far end.

ZCS line coding monitors each DS0 channel and prevents strings of eight or more zeros. Upon detecting eight consecutive zeros in a channel octet, ZCS line coding forcibly changes the seventh zero (the second least significant bit) to a one. The factory-set line coding is ZCS.

B8ZS line coding matches the ones-density requirement by using a special sequence with a *bipolar violation* in bit positions 4 and 7. Normally, for bipolar transmission, ones are encoded alternately as a positive then negative, or

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negative then positive, pulse. If two positive or two negative pulses are received in succession, a bipolar violation occurs. Bipolar violations are normally caused by noise hits to the signal; however B,8ZS uses a specific binary sequence with bipolar violations as a code for an all-zero channel octet.

B8ZS line coding is preferred over ZCS because it provides no possibility of corrupting data transmissions.

B8ZS violations are passed by the ACCULINK™ 3150 and 3160/3164, and ESF T1 channel service units (CSUs) but not by other CSUs.

Channel Service Unit

The channel service unit (CSU) is the interface between the 100D module and the DS1 facility provided by the telephone company. This facility contains 24 channels on one 4-pair wire.

The CSU is a hardware component needed when two endpoints are located in different buildings or when the distance between the two endpoints makes office or line repeaters necessary. The CSU is located on the customer's premises and is used to connect the system to DS1 network facilities. The CSU has the following functions:

- It terminates an outside DS1 facility on the 100D module.

- It ensures that the signals entering the public network comply with the requirements of the DS1 facility as specified by the FCC.

- It includes maintenance, diagnostic, and testing capabilities.

There are several channel service units: ACCULINK 3150 and 3160/3164 ESF T1 CSUs, ESF T1 CSU (no longer available but still supported), and 551 T1 L1 CSU (no longer available but still supported). The ACCULINK 3150 or 3160/3164 CSUs are recommended for this system because they allow maintenance without interrupting service and provide diagnostic and testing capabilities as well as B8ZS line coding. They can be programmed remotely or on-site, using menus. The lower-cost 551 T1 L1 CSU does not provide the B8ZS line coding required for 64-kbps data (clear channel signaling support) and for maintenance features, nor does it provide diagnostic and testing capabilities for the DS1 facility.

Line Compensation

Line compensation adjusts for the amount of cable loss, in decibels (dBs), based on the length of cable between the 100D module and the CSU or other far-end connection point. The factory setting is a value of 1, which allows a maximum loss of 0.6 dB. The possible settings are shown in Table 31.

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Table 31.   Line Compensation Settings

Setting	dB Loss	Cable Length (22-Gauge Wire)
1	0.6	0–133 feet (0–40.5 meters)
2	1.2	133–266 feet (40.5–81 meters)
3	1.8	266–399 feet (80–121.5 meters)
4	2.4	399–533 feet (121.5–162 meters)
5	3.0	533–655 feet (162–199.5 meters)

Signaling Mode

Signaling is the process of communicating channel-state information, such as dialing, from endpoint to endpoint. Two types of signaling can be used in T1 transmission: robbed-bit signaling (RBS) and common-channel signaling (CCS). Choosing a signaling mode is important only for T1 service; PRI always uses CCS (23 B-channels and 1 D-channel). The signaling types are as follows:

■ **Robbed-Bit Signaling.** Robbed-bit signaling (RBS) replaces the least significant bit in every sixth frame of each DS0 channel with signaling information. RBS is also called *in-band signaling* because signaling information is embedded in the same channel that carries the user's voice or data in a call. Robbed Bit Signaling must be used if T1 Switched 56 service is to be used on the T1 connection.

Robbed-bit signaling is appropriate for voice and voice-grade data, and digital data on channels programmed for T1 Switched 56 service.

■ **Common-Channel Signaling.** Common-channel signaling (CCS) is an out-of-band signaling format that places the signaling bits for channels 1 through 23 into the 8-bit word of the twenty-fourth channel. This restricts DS1 from using the twenty-fourth channel for voice or data transmissions. D4 framing does not preclude the use of CCS, but CCS is not compatible with D4 channel banks because the D4 channel banks recognize only RBS. CCS is used when PRI service is desired on the DS1 facility.

ESF framing should be used because of its improved maintenance, diagnostic, and testing capabilities. If the transmission between two systems is voice-only, RBS should be used for all 24 communications paths. For voice transmissions, both ZCS and B8ZS line coding can be used to satisfy the ones-density requirement: the preferred line-coding format is B8ZS, which is needed for 64-kbps digital data.

The framing and signaling formats depend on the network and interconnection devices (CSUs) used. For example, the 551 T1 L1 CSU only supports ZCS.

⟹ NOTE:
Through PRI, digital data using up to 64 kbps is possible only when using a DS1 facility; connections of up to 64 kbps for each channel are also

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possible on BRI connections in Release 4.0 and later systems. Also, ESF framing mode, CCS signaling, and B8ZS line coding are required. An ACCULINK 3150/3160/3164 or ESF-T1 CSU must be used for DS1 connections within a building.

PRI Programming Options

The following options should be programmed for PRI facilities connected to a 100D (DS1) module.

PRI Telephone Number

The PRI telephone number is a string of up to 12 digits (any combination of digits 0–9) assigned to each PRI line. This string is matched to the Called Party Number sent by the network to indicate the number dialed by the outside caller. The system uses this number to send the call to the correct personal line button.

Network Services Supported

This option specifies the type of network service provided by each B-channel group. The choices are as follows:

- AT&T toll services:

  — Megacom WATS

  — Megacom 800

  — MultiQuest

  — ACCUNET Switched Digital Service (SDS)

  — Software-Defined Network (SDN)

- Local services:

  — OUTWATS

  — INWATS

  — 56/64 Digital Data

  — Virtual Private Network

- In Release 4.2 and later systems, these MCI services are also available:

  — MCI PRISM

  — MCI Vnet

  — MCI 800

  — MCI 900

- In Release 4.2 and later systems, these local exchange carrier services are also available:

  — DMS Private

  — DMS INWATS

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— DMS OUTWATS

— DMS FX

— DMS Tie Trunk

Copy Telephone Number to Send

This option specifies whether or not the telephone number to send to the network for outgoing calls made on PRI lines assigned to a B-channel group is copied from the PRI telephone number assigned to that PRI line. Select the Copy Telephone Number to Send option when the telephone number sent to the network should match the number received from the network, indicating the number dialed by the outside caller. Select the Do Not Copy Telephone Number option either when a telephone number to send is assigned to each PRI line in the B-channel group or when no telephone number is to be sent to the network.

Telephone Number to Send

This option assigns the telephone number to send to the network when outgoing calls are made on PRI lines. If the person being called subscribes to a PRI caller identification service, the number indicates who is calling.

Test Telephone Number

This option assigns a test line telephone number for each 100D (DS1) module installed in the control unit that provides ISDN PRI service.

Timers and Counters

This option sets the timer and counter thresholds. The factory settings for thresholds are standard and rarely need to be changed (see "At a Glance" on page 441 for factory settings and valid ranges). When no response is received from the network before the duration of the timer setting, the communications system takes appropriate corrective action.

The timers and counters are as follows:

- **T200 Timer.** Times the delay in link layer acknowledgment of a message sent from the communications system to the network over a D-channel.

- **T203 Timer.** Times the period of time between each exchange of messages between the system and the network on the D-channel.

- **N200 Counter.** Counts the number of times the communications system has transmitted a message on a D-channel because no link layer acknowledgment is received from the network.

- **N201 Counter.** Counts the maximum number of layer 3 octets the system can send or receive in a single D-channel message.

- **K Counter.** Counts the number of layer 3 unacknowledged messages sent from the communications system to the network on a D-channel.

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- ■ **T303 Timer.** Times the delay in network response when the communications system sends a setup message to initiate an outgoing call.

- ■ **T305 Timer.** Times the delay in network response when the communications system sends a disconnect message to clear a call.

- ■ **T308 Timer.** Times the delay in network response when the communications system sends a release message to clear a call.

- ■ **T309 Timer.** Times the duration of a D-channel data link failure (a loss of signaling for the entire PRI connection).

- ■ **T310 Timer.** Times the network delay following the receipt of a call-proceeding message on an outgoing call.

- ■ **T313 Timer.** Times the delay in network response when the communications system sends a connect message that indicates the completion of an incoming call.

- ■ **T316 Timer.** Times the delay in network response when the communications system sends a restart message to clear a B-channel.

⚠ CAUTION:
After initial installation, these timers rarely if ever should be changed.

Terminal Equipment Identifier (TEI)

This option assigns the link layer address of devices connected to each D-channel. Usually, only one is connected; the network assumes that its TEI is 0.

PRI Call Processing

Figure 37 shows the order of call processing for both incoming and outgoing calls; the section of the figure within the box applies specifically to call processing on a system with PRI. An explanation of incoming and outgoing call processing follows.

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Incoming call	Outgoing call
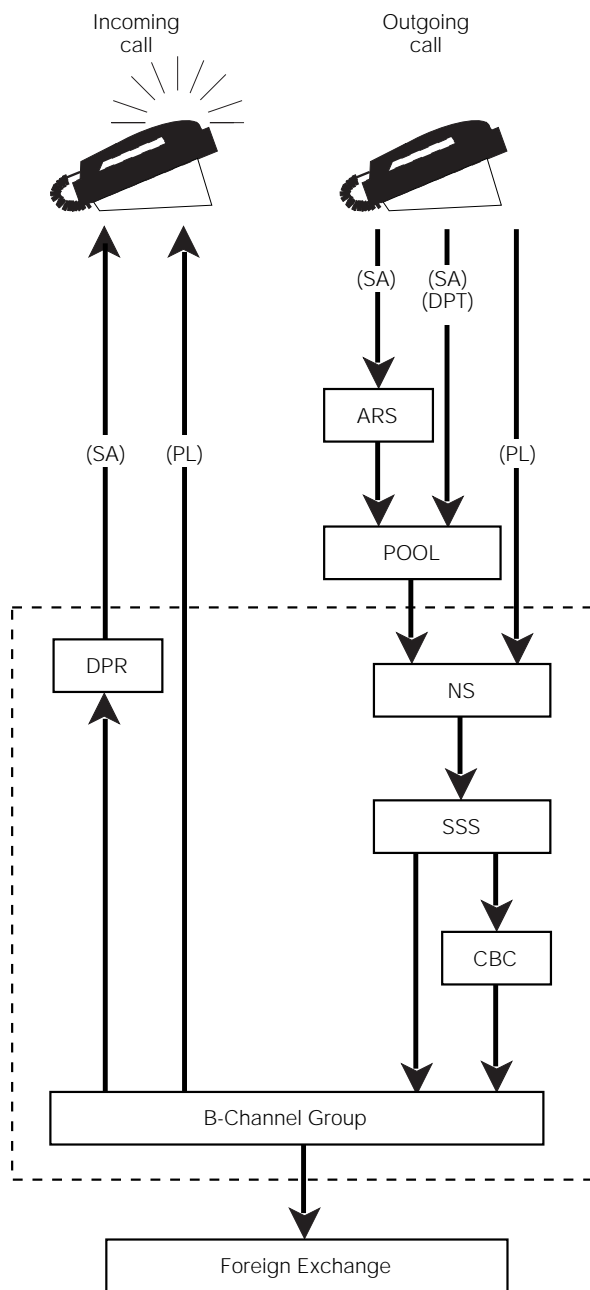
ARS=Automatic Route Selection   DPR=Dial Plan Routing Table   NS=Network Selection Table
CBC=Call-by-Call Services Table   DPT=Direct Pool Termination   SA=System Access
PL=Personal Line   SSS=Special Services Selection Table

Figure 37.   PRI Call Processing

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Incoming Calls

In Release 1.0 and 1.1 systems, incoming calls are routed by line appearance. Beginning with Release 2.0, incoming calls also can apply routing by dial plan, a routing system for incoming calls programmed by the Dial-Plan Routing Table (see Table 32).

Routing by Dial Plan (Hybrid/PBX Only). Routing by dial plan is similar in concept to Direct Inward Dial (DID). It provides the ability to direct a call automatically to the proper destination for improved call distribution and call handling. Unlike a DID line, a PRI line (or T1 line in Release 4.0 or later) programmed for routing by dial plan can accommodate outgoing calls as well as incoming calls. As with DID operation, this feature is available only in Hybrid/PBX mode.

PRI Routing by Dial Plan. Routing by dial plan also allows multiple calls to a directory number. Concurrent incoming calls with the same Called Party Number can be delivered to a destination simultaneously.

The Dialed Number Identification Service (DNIS) is a service attribute of the Megacom 800 service. Based upon customer-selected parameters, such as area code, state, or time of call, it provides distinct Called Party Numbers for incoming 800 and 900 calls. In Release 1.0 and 1.1 systems, DNIS has the restriction of one active call per Called Party Number for each B-channel group. The PRI telephone number, which is matched against the Called Party Number(CdPN), is used for routing a call to a specific line that normally terminates on a personal line button. In Release 2.0 and later systems, the restriction of one active call for each CdPN does not apply.

For each B-channel group, the system can be programmed for either routing by line appearance or routing by dial plan. With routing by dial plan, the Dial-Plan Routing Table must be programmed to contain a series of patterns—the number of digits in the Called Party Number (CdPN), network services on which to match, and a number of digits to add or delete for each match—in order to route the call to the proper destination.

If a B-channel group is programmed for routing by dial plan, all calls into that B-channel group are routed in a DID-like manner and terminate on an **SA** button, on a single-line telephone, into a calling group queue, or at a Queued Call Console (QCC). When an incoming call arrives, its network service type and Called Party Number are compared to entries in the Dial-Plan Routing Table. If no match is found, the call is routed to the programmed backup position for unassigned DID calls (normally the primary system operator). If a match is found, the Called Party Number is manipulated according to the Dial-Plan Routing Table before matching it against the inside dial plan to identify a destination to which the call is delivered. If the manipulated Called Party Number does not match an inside extension, it is treated as an unassigned DID call.

If a fast busy tone is programmed as the routing destination for unassigned Direct Inward Dial calls, the call is rejected. This typically causes the network to return an intercept tone instead of a fast busy tone. If the number matches a destination

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that DID calls are not permitted to reach (for example, pool access codes, group page codes, line access codes, or the ARS access code), the call is routed to the programmed destination for unassigned DID calls (unless the backup is a fast busy tone).

Table 32 is a sample Dial-Plan Routing Table. Note that in the sample table all incoming calls through the Megacom 800 service are delivered to an extension whose dial-plan number is 1234. Entry 15 would be skipped because No Service is specified.

Table 32.   Sample PRI Dial-Plan Routing Table

Entry	0	1	2	3	...	15
Service	SDN	SDN	MEG800			No Service
# of digits in CdPN	7	10	10			[not specified]
Example #	555-1234	908-555-1234				
Pattern	555	[none]	[none]			[none]
Digit deletion	3	6	10			14
Digit addition	[none]	[none]	1234			0

When routing by dial plan is used for an incoming call, if the programmed service, number of digits in the Called Party Number (CdPN) and patterns match those associated with the incoming call, the appropriate digit deletion and addition are performed. The process is as follows:

1. The programmed service is compared with the B-channel service, if supplied. A match is found if the two services are equivalent or if the programmed service in the Dial-Plan Routing Table is All Services. If a match is found, the system continues to search the entry. If no match is found or if No Service is specified, the system skips the entry and proceeds to the next one. If no service is supplied, the call is matched to No Service table entries.

2. The programmed number of digits is compared with the number of digits in the actual Called Party Number. A match is found if the two numbers are equivalent or if the programmed number of digits is 0. If a match is found, the system continues to search the entry. If no match is found, the system skips the entry and proceeds to the next one. If the programmed number of digits is 0, any number of digits in the Called Party Number is acceptable.

3. The programmed pattern is compared with the digits associated with the incoming call. If the pattern matches, the entry is tagged as a possible best match for the incoming call. It is possible that more than one entry can match the incoming call; the entry chosen is the one that matches on the greatest number of digits in the pattern. For example, if 555-2000 is the Called Party Number and the two patterns that match are 555 and 5552, the entry associated with 5552 is chosen as the best match. If the pattern is not programmed, it is considered a match with the number of digits in the pattern equal to 0.

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4. After the table is scanned and the best match is found, the programmed
    digit manipulation (addition and/or deletion) associated with the entry is
    performed. If the digit manipulation results in an invalid dial-plan extension,
    the call is routed to the destination for unassigned DID calls.

Characteristics and valid entries for the Dial-Plan Routing Table are as follows:

■   The factory-set table value for service is Empty (not specified). Entries that
    remain empty are skipped when the system searches for a match.

■   There can be up to 16 entries (0 through 15).

■   The service can be specified as any one of the supported services, Other,
    No Service, or All Services.

■   If the service is programmed as All Services, it matches any input and thus
    acts as a wild card. If the B-channel receiving the incoming call is also
    programmed for call-by-call service selection, the system retrieves the
    service type as supplied by the FX because an incoming call could be
    arriving on any of the services.

■   An entry programmed for No Service matches calls in which no service is
    supplied by the foreign exchange or B-channel group.

■   Each pattern can have 0 through 8 digits. The default is blank.

■   The number of digits can be 0 through 14. A value of 0 in the table
    represents "any number" and thus acts as a wild card. The default number
    of digits is 0.

■   The maximum number of digits to delete is 14.

■   The digits to add include the digits 0 through 9. The length of this item is 0
    through 4 digits. The default is blank.

■   The digit count and pattern are optional. When not programmed, they are
    considered wild cards that match any input.

Display Operation. The telephone display provides call-related information about
incoming PRI calls delivered over the B-channel, if available. Otherwise, it
displays the line label and the digits dialed.

Beginning with Release 3.0, hyphens are inserted between the digits on incoming
calls (for example, `555-1234` for a 7-digit display and `123-555-1234` for a 10-digit
display). Any other number of digits appears without hyphens.

A brief description of the display support provided in Release 2.0 and later follows
(refer to for additional details).

$\Longrightarrow$ **NOTE:**
    PRI display support for Release 2.0 and later applies to MLX display
    telephones only. There is no PRI display support for analog multiline
    telephones.

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- **All Incoming PRI Calls.** When the calling party information is available from the network, the Calling Party Number (CPN) appears on the user's display. Pressing the **More** button shows the Called Party Number on the second screen of the display. If the Called Party Number is more than 15 characters in length, the digits at the end are dropped.

- **Group Calling.** The MLX display of a calling group member shows the original Called Party Number (before digit analysis). The same display applies to PRI calls routed by dial plan to a group calling member extension. Pressing the **More** button shows the Calling Party Number on the second screen of the display.

- **Transfer without Consultation.** In Release 2.0 and later systems, pressing the **More** button on an MLX display telephone that is a transfer destination shows the original Called Party Number (before digit analysis). The same display applies to transferred PRI calls routed by dial plan.

Outgoing Calls

Call-by-call service selection is a feature for outgoing calls in Release 2.0 and later. It allows a group of B-channels to carry a variety of supported PRI services programmed in the Call-by-Call Services Table (see Table 35 on page 466). The service selected is based on the digits dialed and the bearer capability (voice, data, or both) of the originating party. In Release 1.0 and 1.1 systems, an outgoing call is carried on a static B-channel, that is, a B-channel dedicated to one specific service.

Outgoing calls can be made by accessing a personal line, a Pool, or Automatic Route Selection (ARS). When a call is placed, the system determines whether the line accessed is a PRI facility. If so, the system performs digit analysis with the entries in the Network Selection Table (see Table 33) and the Special Services Selection Table. The Network Selection table lists the prefixes for dial access to alternative long-distance carriers (for example, 10*xxx*). The Special Services Selection Table (see Table 34) lists prefixes that represent special services, such as operator service or international dialing (*0* or *00*).

In addition, if the B-channel group for an outgoing call is programmed for call-by-call service selection, the system performs *digit analysis*, with the entries in the Call-by-Call Services Table (see Table 35). The entries in this table indicate the service and tell the system how to delete digits and successfully route an outgoing call.

A sample of each of these tables follows. Refer to *System Programming* for information about programming these tables.

Network Selection Table. The Network Selection table lists the prefixes for dial access to alternative long-distance carriers (for example, 10*xxx*). If multiple entries in the Network Selection Table match the dialed number, the one with the most non-wild card digits prevails. If the first digits of a dialed number (on PRI) match any entry in this table, the entry pattern is deleted from the dialed number

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and the number represented by the asterisks is used as the network selected. Characteristics and valid entries for the Network Selection table are as follows:

- There can be up to 4 entries (0 through 3).

- The pattern can be up to eight digits.

- An asterisk (*) is a wild card.

- The pattern cannot begin with an asterisk but must contain at least one.

- All asterisks must be at the end of the pattern and contiguous.

Table 33.   Sample Network Selection Table

Entry Number	0	1	2	3
Pattern	101****	10***		

The Special Services Selection Table (see Table 34), lists prefixes that represent special services, such as operator service or international dialing (*0* or *00*). If multiple entries in the Special Services Selection Table match the dialed number, the one with the most digits prevails. Characteristics and valid entries are as follows:

- There can be up to eight entries (0 through 7).

- The pattern can be up to four digits (no wild cards).

- The choices for Operator are Operator (OP), Presubscribed Common Carrier Operator (OP/P), and None.

- The choices for Type of Number are National (N) and International (I).

- The number of digits to delete can be from 0 to 4.

Table 34.   Sample Special Services Selection Table

Entry Number	0	1	2	3	4	5	6	7
Pattern	011	010	01	00	0	1		
Operator	None	OP	OP	OP/P	OP	None	None	None
Type of Number	I	I	I	N	N	N	N	N
Digit Deletion	3	3	2	2	1	1	0	0

OP = Operator
OP/P = Presubscribed Common Carrier Operator

Call-by-Call Services Table. When a call is placed on a call-by-call B-channel group, the dialed number and type of call must match one of the entries, the specified number of digits is deleted, and the specified service is selected. Similar

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patterns for the same type of call are permissible in this table; in such a situation, the feature selects the entry with the longest matching pattern. For example, based on the entries in Table 35 and a voice call with a Called Party Number (CdPN) of 908957, Entry 1 is selected, not Entry 2. The last entry is used if the patterns are of equal matching digits.

For each entry, the following can be specified: a set of patterns, the type of call, the service to use, and the number of digits to delete.

Characteristics and valid entries for the Call-by-Call Services Table are as follows:

- By default, the patterns are blank, Call Type is Both, Service is blank, and Delete Digits is 0.

- There can be up to 10 entries (0 through 9).

- Each entry can contain up to 10 patterns of up to 8 digits each.

- The number of digits to delete can be from 0 through 8 (default is 0).

- The user can use an entry as a default by selecting a Call Type and Service and not specifying any patterns.

- If Service is null (not selected), the entry is ignored. Null and No Service are not equivalent.

Table 35.   Sample Call-by-Call Services Table

Entry Number	0	1	2	3	4	...	9
	700	908957	908				
		908949					
Patterns		908615					
		303843					
Call Type	DATA	BOTH	VOICE	VOICE	DATA	BOTH	BOTH
Service	ACCUNET	SDN	MEG WATS	MEG WATS	SDN		
Delete Digits	0	0	0	0	0	0	0

Call-by-call service selection closely resembles ARS in reducing costs and maximizing the benefits derived from limited resources. While ARS selects the most cost-effective route, call-by-call service selection selects the optimal service for that particular call. Call-by-call service selection is integrated with ARS by including the bearer capability of the calling party in its routing decisions. ARS serves as the main gateway for accessing the call-by-call B-channel group. The basic calling process for call-by-call service selection with ARS is as follows:

1.   A user dials ARS.

2.   ARS selects the route and, in this case, the route points to a call-by-call B-channel group.

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3. ARS performs digit deletion/addition operations for the route and, in so doing, may indirectly specify the best service for the call.

4. With these ARS outgoing digits, the call-by-call B-channel group selects the service, possibly based on digits added by ARS, and performs digit deletion as required.

5. A call setup message is sent to the network/central-office switch.

Restriction Code Handling for FTS2000 Network. FTS2000 network users can have restriction codes applied to their extensions. A person who attempts to place a call that exceeds the set restriction level must first enter a restriction code. If no code is entered, the FTS2000 network prompts the user to enter the code from the telephone dialpad.

Prior to Release 2.0, the restriction codes are input in-band (using touch-tones). In Release 2.0 and later systems, the system allows a restriction code to be entered with the Account Code Entry feature. This is especially useful for data calls because there is no in-band signaling to interfere with the data, since the restriction code is sent out of band in the setup message.

Station Identification-Automatic Number Identification (SID-ANI) as Calling Party Number. In Release 1.0 and later systems, facility-based information is used by the network for sending the Calling Party Number. If the SID-ANI option is programmed (and the service subscribed to), Release 2.0 and later systems send a systemwide base number of up to 12 digits, of which the final digits (up to 4 digits) are replaced with the number of the extension from which the call was made. For example, a call made from extension 7104 with a systemwide base number of 908-555-7000 sends the number 908-572-7104. For facility-to-facility calls where there is no call-originating extension (for example, Remote Call Forwarding), the systemwide base number is substituted. However, trunk-to-trunk transfer results in a CPN that consists of a base number in which the last digits are replaced by the number of the transferring extension.

In some instances, the systemwide base number is not sufficient to cover all extension numbers in the system. For example, the base number might be 908-555-7000 and there might be a group of extensions, 7000 through 7099, that correspond to telephone numbers from 908-555-7000 to 908-555-7099; there might be another group of extensions numbered 300 through 399 whose telephone numbers are 908-555-0300 through 908-555-0399. In a case like this, there is no base number that can cover all of the extensions so that the number sent is the correct number for the extension.

In Release 4.2 and later systems, the MERLIN LEGEND Communications System's PRI support for calling party identification extends to MCI and local exchange (DMS-100) subscription services.

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T1 Programming Options

DS1 facilities programmed as T1 lines/trunks can supply many types of connections. T1 service transmits and receives voice and analog data as well as digital data in Release 4.0 communications systems. The connections can be to the Public Switched Telephone Network (PSTN), or they can be tie trunks to other MERLIN LEGEND Communications Systems or other PBX systems.

T1 Switched 56 channels connected to the PSTN can use routing by dial plan to send incoming calls to the correct data extension.

T1 Tie Trunk Connections

T1 trunks can be used to supply digital emulated tie-trunk connections. These trunks can connect two MERLIN LEGEND Communications Systems or one MERLIN LEGEND Communications System to another type of PBX (for instance, a Lucent Technologies DEFINITY G1.1 or DEFINITY Enterprise Communications Server PBX) or the central office with digital (Switched 56 kbps) connections.

Tie trunk settings for these connections are similar to standard analog tie trunks. The only difference between setting up a digital emulated tie trunk and an analog tie trunk is that the Signaling Type setting (Type 1 Standard, Type 1 Compatible, Type 5 Simplex) is not meaningful.

Direction. The tie trunk direction may be programmed in one of the following ways:

- **Two-way** (factory setting). Calls can be made in both directions.

- **Outgoing Only.** Only outgoing calls can be made.

- **Incoming Only.** Calls can be received only.

Trunk Seizure Type. The trunk seizure type can be one of four settings. The setting should be compatible with the signaling on the far end. The trunk seizure type must be set separately for incoming (intype) and outgoing (outtype) calls. The intype and outtype settings for the trunk seizure type can be programmed as one of the following settings:

- Wink Start (factory setting)

- Delay Start

- Automatic Start

- Immediate Dial

⟹ **NOTES:**
   1. The Immediate Dial setting should not be used for DS1 Switched 56 data calls because of the lack of trunk integrity-checking. Auto Route by Line Appearance works only with Immediate Dial and therefore cannot be used with DS1 Switched 56 data calls.

2. Automatic-start trunk seizure is not available on 5ESS and DMS-100
    central office switches.

Dial Mode. The dial mode must be set for incoming calls (inmode) and outgoing
calls (outmode). The dial mode (inmode or outmode) can be set to either Rotary
(factory setting) or Touch-Tone. Touch-tone receivers are required on the remote
communications system when the setting is touch-tone.

Dial Tone. The dial tone can be set to one of the following settings:

- **Remote** (factory setting). The system sends dial tone to callers.

- **Local.** The system does not send dial tone to callers.

Answer Supervision Timing. Answer Supervision Timing sets a limit in
milliseconds that an answer supervision signal must be present to be considered
valid. The timing can be set to any value in increments of 20 ms from 20 to 4,800
ms. The factory setting is 300 ms.

Disconnect Timing. Disconnect Timing sets a time limit, in milliseconds, that a
disconnect signal must be present to be considered valid. The timing can be set to
any value from 140 to 4,800 ms, in increments of 20 ms. The factory setting is
300 ms.

T1 Routing by Dial Plan

Beginning with Release 4.0, routing by dial plan is available on Switched 56
services offered on T1 connections.

Service providers offer digit outpulsing for their T1 Switched 56 services. With
digit outpulsing, the central office sends a number of digits to the MERLIN
LEGEND Communications System. When ordering the service, the system
manager must choose how many digits are to be sent to the communications
system. Generally, the default number of outpulsed digits is four; however the
system manager may choose 3-digit outpulsing, which can be accepted by the
MERLIN LEGEND Communications System for Switched 56 services.

In many cases, the digits that are sent from the service provider may not match
the MERLIN LEGEND Communications System dial plan. In these cases, the
digits can be manipulated by absorption, deletion, or addition of digits. The system
manager also can use system programming to renumber a block of dial-plan
numbers on the communications system to match the outpulsed digits.

With this enhancement, multiple telephone numbers can be used on a single T1
Switched 56 line. For example, these could be three ACCUNET Switched 56
Services channels on a T1 line/trunk with 10 different numbers on each channel.
This allows 30 different (non-simultaneous) callers with unique numbers to call
into the communications system and reach 30 different data extensions.

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> **NOTE:**
> Most local exchange carriers (LECs) do not offer multiple telephone numbers associated with a single channel. Therefore, routing by dial plan can route calls only to a single data extension for each single telephone number provided by the local exchange carrier central office.

The three settings in the Incoming Routing Table are as follows:

- **Expected Digits.** The number of digits sent from the service provider.

- **Digit Addition.** Digits are added to the beginning of the digits.

- **Digit Deletion.** Digits are deleted from the end of the digits.

An example Incoming Routing Table is shown in Table 36.

Table 36.   Sample T1 Switched 56 Dial-Plan Routing Table

Entry	1	2	3	4	...	24
Service	T1 S56	T1 S56	T1 S56			T1 S56
Expected Digits	3	3	3			3
Example #	234	235	300			492
Digit deletion	1	1	1			1
Digit addition	[none]	[none]	67			69
Extension	34	35	6700			6992

Systemwide Programming Options

Clock Synchronization

Clock synchronization is an arrangement in which digital facilities operate from a common clock. Whenever digital signals are transmitted over a communications link, the receiving end must be synchronized with the transmitting end to receive the digital signals without errors.

The system synchronizes itself by extracting the timing signal from the incoming digital stream. If the system has one 100D module, that module provides its own primary synchronization. If the system has at least one 800 NI-BRI module, more than one 100D module, or a combination of 100D modules and 800 NI-BRI modules, then one of the connections provides primary clock synchronization for all 800 NI-BRI and 100D module ports and for the system's time-division multiplexing (TDM) bus. The primary clock synchronization source must be identified during system programming. The factory setting either is the first 100D module or the first port on the first 800 NI-BRI module in the carrier. This can be changed through system programming.

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In the event of a maintenance failure of primary synchronization, backup synchronization can be provided by secondary and tertiary clock synchronization.

In addition, the source of synchronization is factory-set to Loop Clock Reference Source so that the clock is synchronized to the outside source. With a 100D module, it can be set to Local Clock Reference Source so that the clock is free-running. However, this is not recommended for most permanent installations and systems with Primary Rate Interface (PRI). This setting must be made for the primary, secondary, and tertiary synchronization sources.

The following lists the options for primary, secondary, and tertiary clock synchronization sources in order of preference:

1. The clock sources on BRI ports with DSLs in service. If at all possible, all three clock sources should be on the same 800 NI-BRI module. If they are not, interruptions in high-speed data calls can occur when the clock source switches to a backup source.

2. The loop clock source on any 100D module.

3. The loop clock source on any 100D module in T1 mode emulating tie trunks.

4. The local clock source on any 100D module.

$\Longrightarrow$ **NOTE:**
Ports that are not in service should never be programmed as clock sources.

Clock Switching

When the primary clock source is not able to provide the system clock, the secondary clock source is used if it exists and is capable of providing the system clock. If the secondary clock source is incapable of providing the system clock, the tertiary clock source is used.

If none of these is capable of providing the system clock, the communications system searches 800 NI-BRI and 100D modules for a clock source, starting from the first module in the system and ending with the last module. The clock is chosen with the following order of preference:

1. Loop clock source on an 800 NI-BRI or 100D module.

2. Local clock source on an 800 NI-BRI or 100D module.

3. Local clock source on the processor module.

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Mode Differences

Key Mode

Routing by dial plan for PRI or T1 data lines is not supported in Key mode.

Behind Switch Mode

T1 data lines are not supported in Behind Switch mode.

Considerations and Constraints

General

If a B-channel is not available when a call is placed, a fast busy tone is returned. While the tone is in progress, the line is considered busy. If the originator goes on hook while the tone continues, the call is ended and the line is idled. Otherwise, the call appearance is removed and the line is idled 15 seconds after the tone is applied.

A telephone is considered busy when: no **SA** button (aside from Originate Only buttons) is available; Do Not Disturb is activated; the extension either is being programmed or is in forced idle; the alarm clock is being set. The caller hears a busy tone, and the call receives coverage, if programmed.

A PRI line can be assigned to only one B-channel group.

If the inside dial plan uses extension numbers with different numbers of digits—for example, both 3-digit extension numbers and 4-digit extension numbers—Station Identification/Automatic Number Identification (SID-ANI) or other extension identification services (Release 4.2 and later systems) may not work properly.

The PRI telephone number assigned to each channel must be unique within the same B-channel group and different from the associated test number. Also, the number of each channel must be the same number as that supplied by the PRI service provider. The test telephone number assigned for each 100D (DS1) module in the control unit must be different from the numbers assigned to other channels in the same B-channel group and must be the same number as that supplied by the PRI service provider.

An invalid timer value entered in system programming results in truncation to the closest valid value. If, for example, 45 is entered for a counter that ranges from 0 to 30 seconds, 4 is recorded.

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Incoming Calls

PRI

When an incoming call is given routing-by-dial-plan treatment, the green LED associated with the appearance of the line lights steadily; the LED does not flash to indicate that the line/trunk is ringing. The green LED associated with the personal line lights steadily, and ringing on an **SA** button occurs. The LED does not flash to indicate that the line/trunk is ringing.

Routing by dial plan requires programming of the Dial-Plan Routing Table and either the B-channel group (PRI only) or extension to be routed by dial plan.

Call Management System (CMS) does not support routing by dial plan.

Display support for routing by dial plan is on MLX telephones only.

If the number for an incoming call given routing by dial-plan treatment is not found, the call is sent to the invalid number destination for DID calls. This can be a dial-plan extension number or fast busy tone. However, if it is fast busy tone, the call is rejected and the network applies intercept tone.

A PRI line that has been programmed for routing by dial plan should not be programmed for remote access or Shared System Access.

Outgoing Calls

PRI

When placing a call using a PRI facility, you may want to append a # to the dialed number. This signals the facility that the number is complete and causes the call to be placed immediately.

The outgoing telephone number that matches the digit pattern in the Network Selection Table is deleted automatically. This is not programmable. The common carrier ID is sent to the foreign exchange.

In systems that are programmed using a non-uniform extension dialing plan, one base number may not be able to represent all telephones.

To specify that no telephone number is sent to the network, choose the Do Not Copy Telephone Number programming option and use the Telephone Number to Send procedure to ensure that telephone numbers are not assigned to each channel in the B-channel group. A network option to block presentation of CPN is also available.

If Automatic Route Selection (ARS) identifies a call as applying to a call-by-call B-channel group but the Call-by-Call Services Table does not show a matching digit pattern and bearer capability, the call is rejected.

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Outgoing calls using call-by-call service selection can be made by pressing a line button, pressing a **Pool** button, dialing a pool number, or using ARS.

The Call-by-Call Services Table must be programmed for the Call-by-Call Service Selection feature to take effect. If a service is not specified in the table, the entry is ignored.

An SMDR record is not recorded for any call on a PRI facility that is shorter than the programmed SMDR Call Length. Usually, the SMDR Call Length is programmed to compensate for connection and ringing time of calls on non-PRI facilities before they are answered. For systems where the most lines are PRI lines, the call length should be programmed for one (1) second.

Feature Interactions

Account Code Entry	At an extension assigned to a PRI line, either enter an account code before the call is made or during the call. Forced account codes must be entered before the call is made. An account code entered before a call is treated as a restriction code for all the outgoing calls placed over the PRI line.
	If the SMDR feature is not enabled to record incoming calls, the system does not accept Account Code Entry information for incoming calls.
Automatic Route Selection	An incoming call can access Automatic Route Selection (ARS) only through remote access, transferring, or Remote Call Forwarding through ARS. A PRI line can be a member of a pool accessed through ARS. Before ARS routes a call to a pool, it determines whether one or more member lines in that pool are available. If not, it selects an alternative pool so that the call is not blocked. Even if a B-channel is available when ARS selects a pool with an available line, there may be none available when it is time to send a setup message to the network. Or, after the setup message is sent, the network may determine that the B-channel proposed by the system is not available. In either case, the call fails and fast busy tone is heard.
	If an incoming call matches the ARS access code, it is routed to the extension programmed for unassigned DID calls.
Barge-In	Barge-In can be used on a PRI line. Users cannot barge into data calls.
Call Waiting	Call Waiting is provided on PRI lines at extensions so programmed. The call-waiting tone is not blocked from PRI at an extension. Until the call is answered, answer supervision is not returned to the network and the caller hears regular ringback instead of call-waiting ringback.
	Call Waiting does not work with data calls.

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Callback	Callback cannot be used to request a busy PRI line assigned as a personal line, but PRI lines in a pool are eligible for Callback. An idle PRI line is not considered an available pool member unless a check determines that it is associated with an available B-channel. Even if a B-channel is available when the pool selects a line for a callback call, there may be none available when it is time to send a setup message to the network. Or, after the setup message is sent, the network may determine that the B-channel proposed by the system is not available. In either case, the call fails and a fast busy tone is applied.
	Some applications (such as desktop video systems) that use data lines may work improperly when releasing data facilities requested by Callback.
Camp-On	The system does not support Camp-On onto data calls.
Conference	The system does not support conferencing onto data calls.
Coverage	Data calls do not follow coverage delay settings. All data calls ring immediately.
Calling Restrictions	Outward and toll restrictions do not work with T1 lines emulating tie trunks when the lines are set to Tie-PBX or Tie Switched 56 Data. Use Automatic Route Selection or pool dial-out codes instead.
Forward and Follow Me	A PRI line that has been programmed for routing by dial plan cannot have Remote Call Forwarding allowed. A T1 Switched 56 line cannot be used for Remote Call Forwarding.
Group Calling	A PRI line that is a member of a B-channel group programmed for routing by dial plan should not belong to a calling group. A line that is part of a B-channel group included in a calling group should not be programmed for routing by dial plan.
HFAI	Incoming calls on a line that is a member of a B-channel group programmed for routing by dial plan are not eligible for answer by Hands-Free Answer on Intercom (HFAI).
Hold	Data calls cannot be placed on hold.
Music On Hold	Music on Hold cannot be used with data calls.
Night Service	A PRI B-channel can be assigned to a Night Service group (Release 4.1 and later systems only) if its B-channel group has been programmed for routing by line appearance. If the Routing by Dial Plan option has been selected for a PRI B-channel group, its lines cannot be assigned to a Night Service group.
Paging	If the extension for an incoming call matches a group paging extension, the call is treated as an unassigned Direct Inward Dial (DID) call.
	Data lines cannot be used for paging.

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Personal Lines	A personal line can be assigned to an extension to represent a PRI line with routing by dial plan. The green LED associated with the personal line lights steadily, and ringing on an **SA** button occurs; the LED does not flash to indicate that a line/trunk is ringing.
	A personal line can be assigned on a voice telephone for monitoring the status of that data line; however, users *must not* use the personal line to attempt to complete a call.
Pools	Data lines (especially T1 data) should not be put in the same pool as voice lines. System alarms eventually result if voice extensions try to access data lines.
Queued Call Console	Data lines should not be programmed to terminate in the Queued Call Console.
Remote Access	A PRI line that has been programmed for routing by dial plan should not be programmed for remote access.
Ringing Options	Digital data calls do not receive distinctive ringing or Ring Timing options.
System Access/ Intercom Buttons	T1 lines must not be shared between voice and data extensions with Shared **SA** buttons. The lines are programmed for either voice-only or data-only service.
SMDR	The line/trunk number of a PRI line is shown in the LINE field of the SMDR report. The restriction code for the FTS2000 network is shown in the ACCOUNT field.
	Call timing begins when the PRI line is selected. The Called Number field shows the number dialed by the user before any digits are manipulated by ARS or PRI tables (Network Selection Table, Special Services Selection Table, or Call-by-Call Services Table). In Release 2.1 and later systems, call timing begins when the call is answered at the far end. Therefore, calls that are not answered do not create an SMDR call record.
	If the SMDR feature is not enabled to record incoming calls, the system does not accept Account Code Entry information for these calls.
Transfer	For trunk-to-trunk transfer with no extension number involved, the Calling Party Number for the outbound call is the programmed base number.
	Data calls cannot be transferred.

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Privacy

At a Glance

Users Affected	Telephone users, DLC operators, data users
Reports Affected	Extension Directory
Modes	All
Telephones	All except QCC
Programming Code	*31
Feature Codes	
On	31
Off	*31
MLX Display Label	Privacy [Prvcy]

Description

Privacy prevents other people from joining calls on shared personal lines or Shared **SA** buttons. Privacy also prevents Barge-In from being used to join a call.

An extension user can turn on Privacy before or during a call, and it remains on for all calls to and from that extension until the user turns it off.

When Privacy is turned on at an extension, anyone selecting a shared personal line or Shared **SA** button on which a call is active hears silence instead of joining the call. A person using Barge-In hears a busy signal when trying to join a call on a telephone with Privacy turned on.

If Privacy is turned on while a call is in progress, it does not affect anyone who has already joined the call but prevents other users from joining the call.

Privacy is automatically turned on for data calls at digital data workstations and analog voice and modem data workstations connected to analog multiline telephones. Privacy must be turned on manually at modem data-only workstations and MLX voice and modem workstations connected to a Multi-Function Module.

Considerations and Constraints

If a multiline telephone user intends to use Privacy, he or she should program a button for it, so that the green LED next to the button gives a visual reminder when Privacy is turned on.

Single-line telephone users receive no indication of whether Privacy is on or off.

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Privacy is on automatic at data workstations, except modem data-only workstations, and at MLX voice and modem data stations, where Privacy can be activated as part of the dialing sequence.

Telephone Differences

Queued Call Consoles

A QCC operator cannot use Privacy.

Other Multiline Telephones

To turn on Privacy, either press the programmed Privacy button—the green LED turns on—or press the **Feature** button and dial *31*.

To turn off Privacy, either press the programmed Privacy button—the green LED turns off—or press the **Feature** button and dial **31*.

When an MLX display telephone user turns on Privacy, the display briefly shows the message Privacy On before returning to the Home screen or call-handling display. When the user turns off Privacy, the display briefly shows the message Privacy Off.

When an MLX-5 or MLX-10 nondisplay or analog multiline telephone user (with or without a display) turns Privacy on or off, there is no visual confirmation unless a Privacy button is programmed on the telephone. If a Privacy button is programmed, its green LED turns on and off with the Privacy feature.

Single-Line Telephones

To turn on Privacy before making or receiving a call, lift the handset and, while listening to inside dial tone, dial *#31*; then hang up. To turn on Privacy while a call is in progress, press and release either the **Recall** or **Flash** button or the switchhook and dial *#31*. To return to the call, press and release either the **Recall** or **Flash** button or the switchhook again.

To turn off Privacy before making or receiving a call, lift the handset and (while listening to inside dial tone) dial *#*31*; then hang up. To turn off Privacy while a call is in progress, press and release either the **Recall** or **Flash** button or the switchhook and dial *#*31*. To return to the call, press and release either the **Recall** or **Flash** button or the switchhook again.

A single-line telephone user has no indication of whether Privacy is on or off.

➡ **NOTE:**

Some single-line telephones, such as Lucent Technologies models 2500YMGL and 2500MMGK, use a positive or timed disconnect. On these telephones, pressing the switchhook disconnects the call. The user must

use the **Recall** or **Flash** button instead of the switchhook when turning
Privacy on or off.

Feature Interactions

Barge-In	Barge-In does not override Privacy.
Digital Data Calls	Privacy is turned on automatically during digital data calls.
Display	When an MLX display telephone user turns on Privacy, the display briefly shows the message Privacy On before returning to the Home screen or call-handling display. When the user turns off Privacy, the display briefly shows the message Privacy Off.
Headset Options	Privacy should be turned on when headset users with Headset Auto Answer turned on either have Shared **SA** buttons or share one or more personal lines. Privacy keeps the users from competing for the same call. When two or more users try to answer the same call on an **SSA** or personal line button, the red and green LEDs next to the button go on, but only one person can talk with the caller.
Hold	Privacy protects a call only while the user is active on the call. Privacy does not keep a user at another extension from picking up a call while it is on hold.
HotLine	Privacy is not available for HotLine extensions (Release 5.0 and later systems).
Multi-Function Module	Privacy should not be used on an MFM (unless Privacy is to stay on all times, as at a data workstation) because the user does not have an LED to indicate whether Privacy is on or off.
Personal Lines	If Privacy is turned on at an extension, a user with a shared personal line button for that extension cannot join a call on that button.
	If Privacy is turned on while a call is in progress, it does not affect anyone who has already joined the call but prevents other users from joining the call.
Recall/Timed Flash	A single-line telephone user with a **Recall** or **Flash** button can use **Recall** or **Flash** to turn Privacy on or off during a call. The user must press **Recall** or **Flash** and *#31* to turn Privacy on, or **#31* to turn Privacy off.
Signal/Notify	Users can program and use a Signaling button to contact a co-worker who has turned on Privacy.
System Access/ Intercom Buttons	If Privacy is turned on at an extension with a Shared **SA** button, other users, including the principal extension, cannot join a call on that button.
	If Privacy is turned on while a call is in progress, it does not affect anyone who has already joined the call but prevents other users from joining the call.

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Programming

At a Glance

Users Affected	System managers
Modes	All
Telephones	All

⚠ **SECURITY ALERT:**

Remote System Programming. As a customer of a new communications system, you should be aware that there exists an increasing problem of telephone toll fraud. Telephone toll fraud can occur in many forms, despite the numerous efforts of telephone companies and telephone equipment manufacturers to control it. Some individuals use electronic devices to prevent or falsify records of these calls. Others charge calls to someone else's number by illegally using lost or stolen calling cards, billing innocent parties, clipping on to someone else's line, and breaking into someone else's telephone equipment physically or electronically. In certain instances, unauthorized individuals make connections to the telephone network through the use of remote access features.

The Remote Access feature of your system, if you choose to use it, permits off-premises callers to access the system from a remote location by using an 800 number or a 7- or 10-digit telephone number. The system returns an acknowledgment signaling the user to key in his or her barrier code, which is selected and programmed by the system manager. After the barrier code is accepted, the system returns dial tone to the user. If you do not program specific egress restrictions, the user can place any call normally dialed from an extension associated with the system. Such an off-premises network call is originated at, and will be billed from, the system location.

The Remote Access feature, as designed, helps the customer, through proper programming, to minimize the ability of unauthorized persons to gain access to the network. Most commonly, telephone numbers and codes are compromised when overheard in a public location, through theft of a wallet or purse containing access information, or through carelessness (writing codes on a piece of paper and improperly discarding it). Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Enormous charges can be run up quickly. It is the customer's responsibility to take the appropriate steps to properly implement the features, evaluate and program the various restriction levels, protect access codes, and distribute access codes only to individuals who have been fully advised of the sensitive nature of the access information.

Common carriers are required by law to collect their tariffed charges. While these charges are fraudulent charges made by persons with criminal intent,

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> applicable tariffs state that the customer of record is responsible for
> payment of all long-distance or other network charges. Lucent Technologies
> cannot be responsible for such charges and will not make any allowance or
> give any credit for charges that result from unauthorized access.
>
> To minimize the risk of unauthorized access to your communications
> system:
>
> - ■   Use an unpublished remote access number.
>
> - ■   Assign barrier codes randomly to users on a need-to-have basis,
>   keeping a log of ALL authorized users and assigning one code to
>   one person.
>
> - ■   Use random-sequence barrier codes, which are less likely to be
>   easily broken.
>
> - ■   Deactivate all unassigned codes promptly.
>
> - ■   Ensure that remote access users are aware of their responsibility to
>   keep the telephone number and any barrier codes secure.
>
> - ■   When possible, restrict the off-network capability of off-premises
>   callers through use of calling restrictions and Disallowed List
>   capabilities.
>
> - ■   When possible, block out-of-hours calling.
>
> - ■   Frequently monitor system call detail reports for quicker detection of
>   any unauthorized or abnormal calling patterns.
>
> - ■   Limit Remote Call Forward to persons on a need-to-have basis.

Description

The system provides three types of programming:

- ■   System programming
- ■   Centralized telephone programming
- ■   Extension programming

The tables in Appendix C provide complete lists of system operator and extension
features, their programming codes, and the telephones on which the features can
be programmed. The tables also show which features can be assigned only
through centralized telephone programming.

System Programming

Initial system programming is performed when the system is planned and
installed. The system can be reprogrammed as needs change.

Like centralized telephone programming, you can program the system either from
the system programming console or by using SPM software.

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Brief descriptions of the pertinent programming paths can be found in the "At a Glance" section.

Complete information about system programming can be found in *System Programming*.

A chart showing the system programming hierarchy is in Appendix E.

Programming at an MLX-20L Telephone

The MLX-20L telephone is the only telephone that can be used as a system programming console (see Figure 38). For initial programming of a new system, the MLX-20L telephone must be connected to the first extension jack on the first MLX module.

For subsequent programming, the jack assignment can be changed. The system operator jack can be used, or a separate system programming jack can be designated to allow programming of the system without interfering with system operator call handling.

The buttons next to the console's display are used to do most of the programming. The top two buttons on each side are labeled and have the same functions in every screen. They are **Home**, **Menu**, **More**, and **Inspct**. The next five unlabeled buttons on each side are used to select options from a menu displayed on the screen.

The red and green LEDs next to the 20 line and feature buttons assist the system programmer. These buttons are on or off during programming, depending on whether or not they have already been programmed.

Programming the system may also involve using the dialpad, some of the labeled function buttons on the lower portion of the console, or the 20 line and feature buttons in the center of the console. The overlay that "renames" buttons for use during programming is shown in Figure 39. The overlay shows both pages of the numbers of line buttons when the telephone is in centralized telephone programming mode. It also shows the letters to which buttons correspond for programming Directories.

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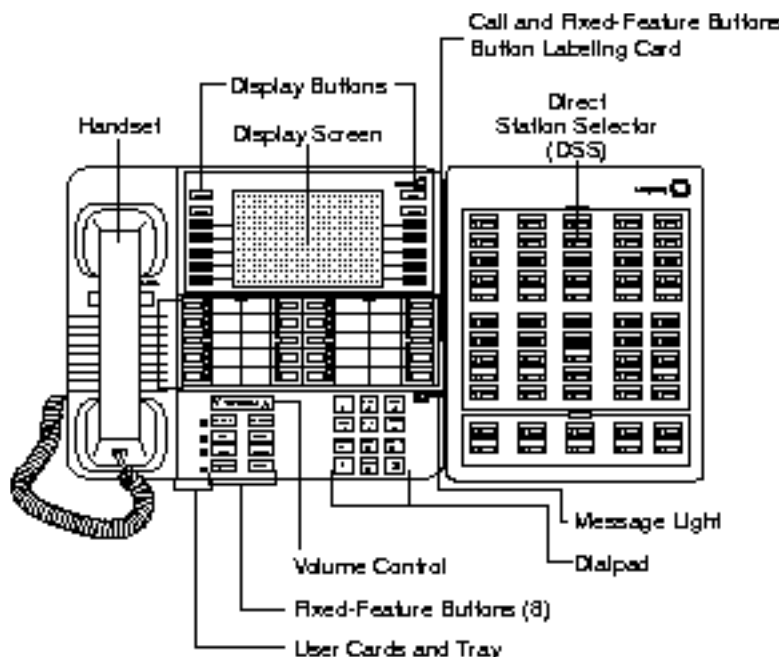
Figure 38.   MLX-20L Telephone and DSS
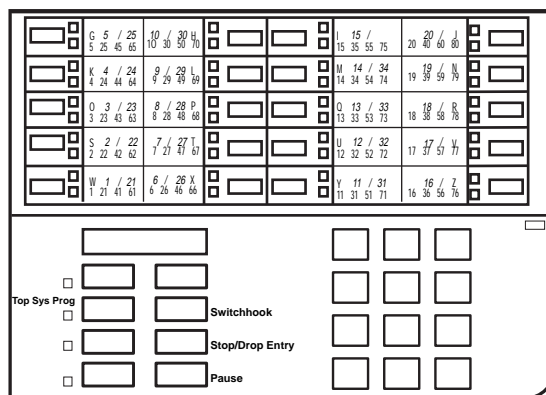
Figure 39.   System Programming Console Overlay

Direct Station Selector

One or two Direct Station Selectors (DSSs) can be used with the MLX-20L telephone. Each DSS adds 50 buttons to the system programming console. For more information about the DSS, see "Direct Station Selector: MLX" on page 199.

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The LEDs on the DSS indicate the status of telephone features during system programming, such as calling restrictions. Each LED on the DSS represents an extension connected to the system. When certain features are selected from the System Programming menu, the LEDs on the DSS indicate the status of the feature for each extension. For example, if Restriction is selected from the Extension menu, the red LED is on for each extension that is toll-restricted.

Programming with SPM on a PC

The advantages of programming the system with a PC are the availability of surrogate mode and, in releases prior to Release 3.0 (where programming can be backed up on a PCMCIA memory card), the security that comes from knowing that programming can be backed up on a floppy or hard disk. This makes recovery of system programming fast and efficient in the event of an inadvertent system shutdown or loss of power.

To program with a PC, SPM software is needed, along with DOS or UNIX operating system software; the latter is necessary only if you are using Integrated Solution II/III. Release 4.1 and later systems work with a version of SPM that allows you to program in a DOS window of Windows 95. SPM provides an interface to the programming and maintenance software in the control unit processor module. The SPM software emulates the display screen and buttons of a system programming console (the MLX-20L telephone). As shown in Figure 40, the SPM display mirrors the following three areas of the console:

- Display and display buttons (at the top of the SPM screen)

- Function buttons (described on the right side of the screen)

- Line buttons (represented in the lower portion of the display)

To use SPM for system programming, you must connect the PC to the control unit. This can be done either directly through the system programming jack on the control unit or through a modem (modems can be used for either on-site or remote programming). See *System Programming* for details on SPM use.

$\Longrightarrow$ NOTE:

Beginning with Release 3.0, SPM is no longer necessary in order to back up system programming. System programming can be backed up on a memory card. For details, see *System Programming*.

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Figure 40.   SPM Display

On‑Site and Remote Programming

PC-based SPM programming through a modem is performed either on-site or from a remote location. In both cases, the modem built into the control unit is used. Dialing `*10`, connects to the control unit modem's extension jack. Reach the built-in modem for remote programming in any of the following ways:

- Call the system on a remote-access line and enter a barrier code (if needed), and then dial the code for the control unit's built-in modem (`*10`)

- Call the system on a regular line and ask the system operator to transfer the call to the control unit's built-in modem (`*10`)

- Call the remote PC with SPM from a telephone on the system, then transfer the call to the control unit's built-in modem (`*10`)

Remote programming allows technicians to run diagnostic tests and to display information needed to maintain the system. It is also used by Lucent Technologies technical support organizations for installation and maintenance support.

Remote system programming overrides on-site system programming unless an on-site backup or restore procedure is taking place. If on-site system programming is being performed when a remote connection is attempted, the system sends a message to the programmer that a remote connection has been established and the current on-site programming session is terminated.

If remote system programming is to be done over loop-start lines, the lines should be set to reliable disconnect. Otherwise, a line could be seized indefinitely.

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System Programming Screens

The system programming console display and SPM screen present step-by-step prompts throughout programming. Three different types of screens appear on the console display and SPM screen:

- **Menu Selection Screens.** Allow selection of menu options. After making a selection, either a more detailed menu screen or a data entry screen is shown.

- **Informational Screens.** Show currently programmed information. Changes cannot be made to these screens.

- **Data Entry Screens.** Allow identification information (such as an extension number or line/trunk number) or values (such as number of seconds or rings) to be entered.

The menu hierarchy—the sequence of menu screens that appears as different options are selected from menus during system programming—is shown in Appendix E, "System Programming Menu Hierarchy."

System Programming Reports

System programming reports are available when Print opts is selected from the System Programming menu. These reports can be directed to the SMDR printer or a printer connected to the PC used for system programming. In addition, Print opts allows you to direct reports to the PC, so you can use the Browse option to read reports on the PC screen. See Appendix F, "Sample Reports."

Centralized Telephone Programming

Centralized telephone programming allows the system manager to program, from a single location, any feature that can be programmed by individual extension users or system operators. Centralized telephone programming can be done on the programming console (MLX-20L) or on a PC with SPM software.

The following features can be programmed only through centralized telephone programming (not by individual users):

- Barge-In
- Headset Hang Up
- All **SA** buttons (Hybrid/PBX mode) and **ICOM** buttons (Key and Behind Switch modes)

Extension Programming

Extension Programming allows extension users and system operators to customize their extensions to meet personal needs. Multiline telephone users can assign a wide range of features to buttons on the telephone. Many other settings (Call Waiting, for example) that do not require button assignment can be programmed on both multiline telephones and single-line telephones.

Users can program their extensions by dialing programming codes or, on MLX display telephones, by selecting features from the display. When an extension user programs his or her extension, the system considers the extension busy; therefore, no incoming calls arrive at the extension until programming is completed. See Appendix C, "General Feature Use and Telephone Programming," for instructions on how to program features on MLX, analog, multiline, and single-line telephones.

⇒ **NOTE:**

When you are programming a feature onto a button that already has a feature assigned to it, make sure before you begin that any light associated with the button is off. In some cases, if the light is on, the feature remains active, even though a new feature has been programmed onto the button. If this happens, you can turn off the original feature only by programming a new button with that feature and deactivating the feature with that button. You can then delete the new feature.

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At a Glance

Users Affected	QCC operators
Reports Affected	Operator Information, System information (`SysSet-up`)
Mode	Hybrid/PBX
Telephones	MLX-20L telephones
System Programming	Assign or remove a QCC position:
	• Operator→Positions→Queued Call
	Change operator hold timer for all QCC (and DLC) operators:
	• Operator→Hold Timer
	Assign QCC queue priority to individual lines/trunks:
	• LinesTrunks→**More**→QCC Prior
	Assign QCC operator to receive calls on individual lines/trunks:
	• LinesTrunks→**More**→QCC Oper
	Specify treatment for calls on DID trunks to invalid (unassigned) extensions:
	• LinesTrunks→DID→InvalDstn
	Specify destination for calls on DID trunks to invalid extensions, if sent to backup extension:
	• Options→**More**→Unassigned
	Assign call types to ring in to QCC queue, QCC operator to receive calls, and priority level:
	• Operator→Queued Call→Call Types
	Specify frequency for elevate priority (queue reprioritization):
	• Operator→Queued Call→ElvatePrior
	Specify whether calls on hold return to QCC queue after operator hold timer has expired twice:
	• Operator→Queued Call→Hold Rtrn
	Select automatic Hold or automatic Release for all QCC operators:
	• Operator→Queued Call→HoldRelease
	Enable or disable calls-in-queue alert:
	• Operator→Queued Call→InQue Alert
	Specify threshold for queue-over-threshold alert:
	• Operator→Queued Call→Threshold
	Select automatic or manual extended call completion for all QCC operators:
	• Operator→Queued Call→ExtndComplt

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At a Glance - *Continued*

System Programming continued	Designate calling group as QCC position-busy backup:
	• Operator→Queued Call→**More**→QCC Backup
	Specify return ring interval for extended calls:
	• Operator→Queued Call→Return Ring
	Assign QCC positions for message center operation:
	• Operator→Queued Call→Msg Center
	Enable or disable Voice Announce capability for Queued Call Consoles (Release 4.0 and later):
	• Operator→Queued Call→**More**→Voice Annc
	Change Overflow Coverage Number:
	• Extensions→**More**→Grp Calling→Overflow
	Change Listed Directory Number extension:
	• SysRenumber→Single→**More**→ ListDirectNo
Hardware	008 MLX or 408 GS/LS-MLX module
Maximums	
QCC Positions	4 (8 operators total, including DLCs)
QCCs for each Module	2
Position-Busy Backups	1
Factory Settings	
Operator Hold Timer	60 sec (range 10–255 sec)
QCC Queue Priority for Trunks/Call Types	4 (range 1–7)
Treatment of Calls to Invalid Extensions	Backup Extension
Destination for Calls to Invalid Extensions	QCC Queue
Call Types	
Dial 0	Primary system operator
Unassigned DID	Primary system operator
Listed Directory Number	Primary system operator
Returning Calls	Originating operator position (Initiator)
Group Coverage	none
Elevate Priority	0 (no reprioritization) (range 5–30 sec, 0)
QCC Hold Return	Remain on Hold
QCC Hold Release	Automatic Release
Calls-in-Queue Alert	Disabled
Queue Over Threshold	0 (no alert) (range 1–99 calls, 0)
Extended Call Completion	Automatic
Position Busy Backup	None
QCC Voice Announce	Disabled
Return Ring Interval	4 rings (range 1–15 rings)
Message center position	None
Listed Directory Number	800

Description

The Queued Call Console (QCC) is an answering position available only in Hybrid/PBX mode. The QCC is an MLX-20L telephone used by operators to do the following:

- Answer outside calls that are directed either to the QCC queue or to a specific QCC operator.

- Answer inside calls either to the operator or to a specific QCC operator's extension.

- Direct (*extend*) inside and outside calls either to an extension or to an outside telephone number.

- Serve as a message center.

- Make outside calls, for example, for users with extensions restricted from making outside calls.

- Set up conference calls.

- Monitor system operation.

The system can have up to four QCCs. Two QCCs can be designated for each 008 MLX or 408 GS/LS-MLX module, with QCCs assigned only to the first and fifth extension jacks on each module. The first QCC must be assigned to the first extension jack in the system—that is, to Port 1 of the MLX module installed in the lowest-numbered slot.

The first jack on the first MLX module is factory-set as the *primary system operator position.* This cannot be changed. The primary system operator is designated to receive Dial 0, Unassigned DID, and Listed Directory Number calls. If a system has both DLC and QCC operator positions, the factory-set primary operator position must be a QCC.

QCC Operation

Call Delivery

Outside calls designated through system programming to ring at a QCC are sent by the system to a single common QCC *queue*, where they wait to be sent to a QCC operator console. When a QCC operator is available to receive a call, the system removes the call from the queue and sends it to an idle **Call** button on the QCC. **Call** buttons are used on QCCs to answer incoming calls and to make inside and outside calls.

Calls are delivered to a QCC operator in first-in first-out order, according to the *queue priority level* assigned to each type of call. If more than one QCC operator is available, the operator who has been idle the longest receives the call.

Both inside and outside calls ring on **Call** buttons on the QCC. Unlike the Direct-Line Console (DLC), on which multiple incoming calls can ring

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simultaneously, the QCC receives one call at a time, regardless of the number of calls in the QCC queue. When a call rings on a **Call** button, call origin information is shown on the display.

In Release 4.0 and later releases, when Voice Announce for QCCs is enabled, the fifth **Call** button can be used to announce a call on another user's speakerphone (providing there is an available **SA** button capable of receiving pages at the receiving telephone). If Voice Announce is disabled (factory setting), then the fifth **Call** button functions just as any other **Call** button does. Inspecting this button displays Call 5 Voice if Voice Announce for QCCs is enabled and Call 5 Ring if Voice Announce for QCCs is *not* enabled.

Operator Availability

A QCC operator is available to receive a call from the queue when there are no active calls (including ringing calls) at the console except calls on hold. A QCC operator is unavailable to receive a call from the queue under the following conditions:

- A call is ringing at the console.

- The operator is on a call.

- The operator has a call in the *split condition* (see below).

- The operator is setting up a conference.

- All **Call** buttons are busy.

- The console is being used for system programming.

- The console is in maintenance mode.

- The operator is programming a Personal Directory listing or the Alarm Clock.

- The console is not plugged in.

Extending Calls

To direct an active call to another extension or outside number using a QCC, press either the **Start** button or a Direct Station Selector (DSS) button. The **Start** button *splits* the call, or divides it into two separate halves, each connected to the QCC.

The active call, or *source*, automatically goes on hold at the **Source** button, and the green LED next to the **Source** button flashes. An outside caller hears either Music On Hold, if programmed, or nothing. An inside caller hears nothing.

A QCC operator hears a dial tone on the same **Call** button where the call had been active. The operator can use the dialpad, a Directory feature, or a DSS button to dial either another extension or an outside number. This second half of the call is the *destination*.

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The QCC display shows that the call is split. Once the destination has answered, the operator can press the appropriate button (**Source** or **Destination**) to speak with the party on either half of the split call. The operator can go back and forth between the source and destination as many times as necessary. An operator connects the two halves of the split call by pressing one of the following buttons:

- **Join** connects all three parties—source, destination, and operator—in a 3-way conference on the original **Call** button.

- **Release** connects the source and destination and removes the call from the QCC. The operator is now available to receive another call from the queue. Only one split call can be active at any given time on a QCC.

A DSS button does one of two things, depending on how extended call completion is programmed for the system:

- With *manual completion*, the call is split automatically. When an operator presses a DSS button, the active call (the source) goes on hold at the **Source** button and the extension represented by the DSS button (the destination) is dialed. Once the destination user answers, the operator can either press the **Source** or **Destination** button to talk to one party at a time, automatically putting the other on hold, or press the **Release** or **Join** button to connect the parties to each other.

- With *automatic completion*, the extension is dialed automatically and the call is released from the console. The effect is the same as if the operator had split the call, dialed an extension, and then pressed **Release** to join the source and destination and remove the call from the console.

> **NOTE:**
> When the system is programmed for automatic completion, an operator can still split and complete the call manually by first pressing the **Start** button, then using the dialpad or a Directory feature to dial the destination, and pressing the **Release** or **Join** button. In this situation, the operator cannot use a DSS button to dial because automatic completion takes over and releases the console.

QCC Features

The MLX-20L telephone is the only telephone that can be assigned as a QCC. A QCC operator cannot use feature codes to activate features. Only the features that can be selected from the display or assigned permanently as buttons on the console can be used. To simplify call handling, the Home screen includes features used often by a QCC operator. The features available on the Home screen depend on the status of the call in progress, as shown in .

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Table 37.   Features Available at Call Progress Stages

Call Progress	Feature Displayed	Display Appearance
Inactive or inside dial tone	Group Pickup	`Pickup Grp`
	Pickup	`Pickup`
	Loudspeaker Page	`Loudspkr Pg`
	Account Code Entry	`AccountCode`
	Follow Me	`Follow Me`
	Cancel Follow Me	`CanclFollow`
Reached busy extension	Barge-In	`Barge In`
	Leave Message	`Leave Msg`
	Camp On	`Camp On`
Ringing at, or connected to, extension	Barge-In	`Barge In`
	Leave Message	`Leave Msg`
	Camp On	`Camp On`
Connected to an outside line	Camp-On	`Camp On`
	Account Code	`AccountCode`
	Follow Me	`Follow Me`
	Cancel Follow Me	`CanclFollow`

The 7-line, 24-character display also provides a QCC operator with descriptive information about incoming and outgoing calls. This information includes the extension numbers and any programmed labels (such as names), the line/trunk identifiers, the reasons for call return and redirection, and the number of unanswered calls waiting in the queue. See "Display" on page 225 for details on call information displays.

The QCC is automatically assigned the buttons shown in Figure 41. These assignments cannot be changed or reprogrammed. Each of these buttons is described following Figure 41.

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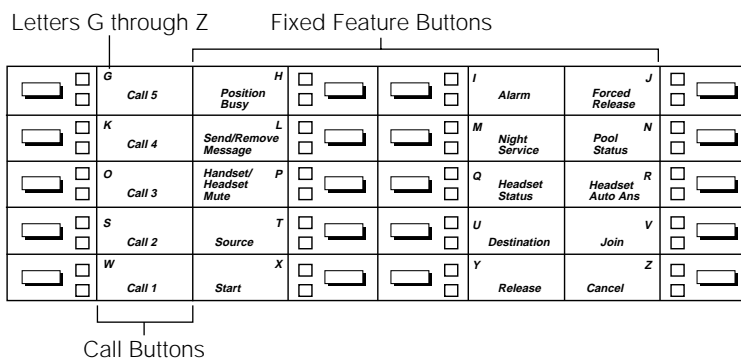
Figure 41.   QCC Button Assignments

Button	Description
Call	Five **Call** buttons are used for answering incoming calls and making inside and outside calls. **Call** buttons are set for Immediate Ring. The fifth **Call** button on a QCC can be programmed to send Voice Announce calls to other extensions if Voice Announce for QCCs is turned on. The receiver must be able to handle Voice Announce calls; otherwise the call rings at the receiving extension.
Start	Initiates call direction by putting a caller on hold at the **Source** button and providing inside dial tone to the QCC operator.
Source	Reconnects the QCC operator to the source and puts the destination on hold while the call is split.
Destination	Reconnects the QCC operator to the destination and puts the source on hold while the call is split.
Release	Releases the QCC operator from a call and/or completes call direction, making the operator available for another call.
Cancel	Cancels call direction and reconnects the QCC operator with the caller (source). If the QCC operator is already connected to the source (destination is on hold), pressing this button has no effect.
Join	Connects all three parties—source, destination, and QCC operator—in a 3-way conference on one **Call** button.
Handset/ Headset Mute	Turns the handset or headset microphone off or on. When the microphone is off, the QCC operator can speak with another person without being heard by the caller. The red LED next to the button is on when the headset or handset microphone is off, and off when the headset or handset microphone is on.

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Button	Description
Headset Status	Turns console headset operation on and off. When headset operation is on, the green LED next to the button is on; the QCC operator must use a headset or the speakerphone. When headset operation is off, the green LED is off; the QCC operator must use the handset or the speakerphone.
Headset Auto Ans	Turns the Headset Auto Answer feature on and off when headset operation is activated. The green LED next to the Headset Auto Answer button is on when the feature is on and off when the feature is off. When the feature is on and a call arrives at the QCC, the operator is connected to the call automatically. To protect the privacy of any conversation an operator may be having, the operator hears a tone in the headset and the microphone is turned off briefly before the call is connected.
	The feature can be turned on during a call without disconnecting the caller and is effective immediately.
Send/ Remove Message	Turns the Message LED on a telephone on or off. For telephones without a display, this button is the only way the message LED can be turned on, unless the telephone is programmed as a message-waiting receiver for a fax machine or calling group or the system has a voice messaging system connected.
Position Busy	Temporarily takes the QCC out of service. When the console is in the position-busy state, the green LED next to the button is on and the position does not receive calls from the QCC queue. However, the position does receive calls to the QCC operator's extension and Forward and Follow Me calls directed to that extension.
	When a QCC operator puts the console in the position-busy state, incoming calls and any calls already in the queue are directed to other available QCCs (whether or not they normally receive such calls). When all QCC operators are in the position-busy state, calls are directed to a calling group assigned as the position-busy backup.
	A QCC operator can still make calls when the console is in the position-busy state.
Night Service	Turns Night Service on and off.
Alarm	Provides visible indication of a system alarm. When there is a system alarm, the red LED next to the button is on and the QCC operator can use Inspect to determine the number of alarms present.
Pool Status	Provides a QCC operator with information about the status of all pools. The QCC operator presses the **Inspct** button, then the **Pool Status** button, and the busy or available status of pools is displayed. The information includes the number of trunks and the number of busy lines/trunks in each pool.
Button	**Description**
Forced Release	Disconnects the QCC from an active call and makes the operator available to receive another call. If the QCC has a split call, this button disconnects the operator and both halves of the call.

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Each QCC can have one or two DSSs attached. A QCC operator can use the buttons during call handling, for example, to direct a call, to make an inside call, to park a call, or to see the availability of an extension. See ''Direct Station Selector: MLX'' on page 199 for detailed information about the use of the DSS.

QCC Options

The options described in this section are assigned through system programming and are available only for QCCs.

Trunk Routing

The factory setting does not assign lines/trunks to any QCC. Calls received on each line/trunk can be programmed to ring on one or more individual QCCs.

When a QCC receiving calls is in the position-busy state, any incoming calls (except for forwarded calls and calls directed to that console's extension) are directed to other available QCCs that are programmed to receive calls on the line/trunk. If no QCC position is programmed to receive the call, the call is directed to any available QCC whether or not it normally receives such calls. When all QCC operators are in the position-busy state, calls received on lines (including calls currently waiting in the queue) are sent to the programmed backup calling group.

In addition to specifying the lines that ring on each QCC, you can specify a priority for each line/trunk. See "QCC Queue Priority" on page 498.

Personal line and **Pool** buttons cannot be assigned to a QCC.

DID trunks, dial-in tie trunks, or dedicated remote access lines/trunks cannot be programmed to ring into the QCC queue, although calls on these lines/trunks can be assigned to ring at a QCC operator's extension, as described later in this section.

Lines/trunks assigned to ring into the QCC queue also can be assigned as personal lines on one or more telephones.

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Call Types

The Call Types option specifies other types of calls that ring into the QCC queue. The following types of calls may be directed to a specific QCC position with a specified queue priority level:

- Dial 0 calls (calls to the QCC operator)

- Calls to unassigned (invalid) extensions, either received on DID or dial-in tie trunks or dialed by remote access users

- Calls to unassigned extensions can be programmed either to receive a fast busy or to be directed to a backup position. The backup position can be any individual extension (including one that is not an operator position), the QCC queue, or a calling group.

    $\Longrightarrow$ **NOTE:**
    Assigning a QCC operator to receive the calls does not cause the calls to ring into the queue. The calls must be programmed to go to a backup position, and the QCC queue must be programmed as the backup position.

- Calls to the Listed Directory Number (the extension for the QCC queue)

- Returning calls (unanswered directed, camped-on, held, and QCC operator-parked calls)

- Group Coverage calls (the QCC can be designated to receive Group Coverage calls)

The following types of calls are assigned only a queue priority level. They cannot be directed to an individual QCC operator position because they are always made to a specific operator position by the caller:

- Calls signed in (Follow Me) or forwarded to a QCC operator

- Calls to a QCC operator extension (for example, calls received from an inside or remote access user)

- Calls received on DID or dial-in trunks programmed to reach a QCC operator's extension rather than the QCC queue

The factory setting directs the following call types to the primary QCC operator position:

- Dial 0 calls

- Calls to the Listed Directory Number

- Calls to invalid destinations (unassigned extensions, for example)

Group Coverage calls are not programmed to ring at any specific QCC.

For returning calls, the factory setting returns calls to the originating operator position (the initiator).

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The factory settings can be changed so that each type of call is either directed to a different and/or additional QCC or is not directed to any of the QCC operator positions. In addition, if the QCC queue is assigned to be a Group Coverage receiver, and if no QCC operator is assigned to receive calls for the coverage group, the coverage calls go to the primary QCC operator position.

If a call on a DID or dial-in tie trunk or dialed by a remote access user is not programmed to ring at a QCC extension and if the caller dials 0 or the Listed Directory Number, the caller hears a fast busy tone. On other types of lines, the caller hears an error tone.

If returning calls are not directed to a QCC operator position, the caller hears normal ringback, Music On Hold, or silence, and is not made aware by any special audible feedback that the call is not returning to the queue for further handling.

Programming an operator to receive DID calls to invalid destinations (unassigned extension numbers) does not cause the calls to ring into the QCC queue unless the QCC queue is also programmed as the backup extension.

QCC Queue Priority

The QCC queue priority determines the priority of calls programmed to ring into the QCC queue. A priority value from 1 up to 7 is assigned; this value determines the order in which calls are sent to QCCs. A value of 1 is the highest priority and 7 is the lowest. The factory-set priority level is 4 for all call types and lines/trunks.

The values can be changed for each line/trunk and each call type according to the order in which calls should be answered. Call types are as follows:

- Dial 0
- Forward/Follow Me
- Unassigned DID
- Listed Directory Number
- Returning
- Group Coverage
- QCC extension

For example, if important customer calls are received on particular lines/trunks, a priority value of 1 should be programmed so that the calls are answered before any others. Values of 2 through 7 should be assigned to lines or call types used for less important calls. Careful planning of QCC queue priority assures prompt answering of all important business calls.

Elevate Priority

During high-volume calling periods, only high-priority calls may be delivered to a QCC within a reasonable amount of time. Low-priority calls can remain unanswered if there is a constant flow of higher-priority calls.

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Elevate Priority helps avoid this problem by allowing the system to raise the priority of a call that has been waiting too long in the QCC queue. The setting determines the length of time (5–30 seconds) before calls waiting in the QCC queue are automatically reprioritized to a higher level. The factory setting is 0, which means that calls are not reprioritized.

When the QCC queue is reprioritized, the priority of every call in the queue is increased to the next higher level. For example, a call that is currently at a priority level of 4 is changed to the next higher priority level of 3 when the timer expires. However, the priority of a call is never elevated to 1 because calls assigned to that level must reach a QCC operator as quickly as possible.

Extended Call Completion

The setting for the Extended Call Completion option determines whether or not the process of directing calls (also known as *extending* calls) is completed automatically when a QCC operator with a DSS presses a DSS button. The following are the available settings for extended call completion:

■ **Automatic** (factory setting). A QCC operator can answer a call and direct it by pressing the DSS button. The operator does not need to press either the **Start** button to begin directing the call or the **Release** button to complete the process. If a QCC operator chooses, he or she can press the **Start** button before pressing the DSS button. However, call directing is automatically completed when the QCC operator presses a DSS button.

With the Automatic option set for extended call completion, a QCC operator can announce transferred calls only by pressing the **Start** button and then manually dialing the destination extension number.

■ **Manual.** A QCC operator can initiate the call direction and dial the extension by pressing a DSS button while on a call. However, the QCC operator then must complete call direction manually by either pressing the **Release** button or hanging up. The QCC operator does not need to press the **Start** button to begin the direction process. This allows the QCC operator to speak to the destination and/or announce the call before connecting the caller.

When automatic release is programmed and a QCC operator tries to direct a call to an invalid extension (such as a paging group), the display shows `Denied: Cannot Release`.

⇒ NOTES:

1. This message also appears immediately if a QCC operator presses the DSS button for Automatic Route Selection (ARS) or a pool dial-out code. The QCC operator can, however, dial the outside telephone number and release the call manually, even though `Denied: Cannot Release` is shown on the display.

2. A QCC operator cannot use Camp-On when automatic release is programmed and she or he presses a DSS button for call direction.

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Message Center Operation

The Message Center Operation setting is useful for sending these types of calls to a specific QCC. Message Center operation designates one or more QCC positions to function as message centers to receive the following types of calls:

- QCC operator returning calls (returning transferred, parked, held, and camped-on calls)

- Group Coverage calls

- Calls to unassigned (invalid) extensions received on DID or dial-in tie trunks or made by remote access users

The factory setting is that no message center position is assigned and that returning calls are returned to the originating operator position (the initiator), which, by definition, is a QCC queue when the system has QCCs. Group Coverage calls are not programmed to ring at any specific QCC operator position. When a message center is programmed, these calls are directed to the message center position. The QCC queue can be programmed so that other QCC operator positions can receive Group Coverage calls, calls to unassigned extensions, and returning calls. If the factory setting remains unchanged—so that returning calls are sent to the originating operator position—then message center operation sends those calls to the programmed message center instead. If, however, this factory setting is changed—so that calls are sent to the QCC queue—returning calls are sent to either the QCC queue or the programmed message center.

A QCC operator position programmed as a message center position also can receive other call types by assigning the position as a QCC operator to receive the call types.

Position Busy Backup

The Position Busy Backup option designates a calling group to receive calls when all QCCs are in a position-busy state. Only calling groups can be designated as QCC position-busy backups. If no calling group is assigned to provide position-busy backup, the system does not allow the last QCC operator to use Position Busy. The Position Busy Backup option is programmed for the QCC queue rather than for individual operator positions. Only one position busy backup can be programmed.

Operator Hold Timer

The Operator Hold Timer option specifies the length of time(10–255 seconds) that must elapse before an operator is reminded (with an abbreviated ring) that a call is on hold. The factory setting for this interval is 60 seconds. The operator hold timer can be set for both DLCs and QCCs. It cannot be programmed for individual operator positions. If another call is received at the same time that the hold timer expires, 10 seconds are added to the programmed operator hold timer interval.

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Hold Return

The Hold Return option determines whether calls put on hold at a QCC remain on hold at a QCC operator's console indefinitely or are returned to the QCC queue after the hold timer has expired twice. The factory setting is that calls remain on hold.

When the QCC Hold Return option is set for calls to remain on hold indefinitely, a QCC operator hears an abbreviated ring every time the interval expires. If the QCC Hold Return option is set for calls to return to the queue, each call on hold at a QCC operator console is timed individually (a queue return timer is used for each **Call** button).

Automatic Hold or Release

The Automatic Hold or Automatic Release setting determines whether a call in progress on a **Call** button is automatically put on hold (automatic hold) or released (automatic release) when a QCC operator presses another **Call** button. The factory setting is Automatic Release.

Return Ring Interval

The Return Ring Interval setting determines the number of rings (1–15) before an unanswered directed call returns to the QCC queue or returns to a QCC message center position. The factory setting is four rings.

QCC Voice Announce

If QCC Voice Announce is enabled, the fifth **Call** button can be used to announce a call on another user's speakerphone. If Voice Announce is disabled (factory setting), then the fifth **Call** button functions the same as any other **Call** button. This setting applies to all QCCs in the system. Inspecting this button displays `Call 5 Voice` if Voice Announce for QCCs is enabled and `Call 5 Ring` if Voice Announce for QCCs is *not* enabled.

QCCs cannot receive Voice Announce calls. Any call to a QCC from a Voice Announce **SA** button is received at the QCC as a ringing call.

Calls-in-Queue Alert

When the Calls-in-Queue Alert option is enabled for an individual QCC operator, the operator hears a single tone every time a new call enters the queue. By monitoring the calls-in-queue alert, the QCC operator can determine whether heavy call volumes warrant the need for additional answering positions. The factory setting for the Calls-in-Queue Alert option is Disabled for each QCC operator.

Queue Over Threshold

The Queue Over Threshold setting is the maximum number of calls allowed in the QCC queue before all QCC operators are warned that too many unanswered calls are waiting in the queue. The factory setting is 0 (operators are not notified). The threshold can be changed to from 1 up to 99 calls.

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In normal call handling, Line 3 of each QCC operator's display shows the number of calls currently in the queue for that QCC position and the total number of calls in the queue for all QCC operators. The information is updated each time a call enters or leaves the queue. When the number of calls is equal to or greater than the programmed threshold, the queue indicator is highlighted and QCC operators who are on a call hear a tone.

⇒ NOTE:

When there are more than 99 calls in the queue, the display shows 99 until the number of calls drops below 99.

If two QCC operators are on the same call, only one QCC operator hears the queue-over-threshold tone when the number of calls in the QCC queue is equal to or greater than the programmed threshold.

Considerations and Constraints

A system operating in Hybrid/PBX mode can include both QCCs and DLCs (see "Direct-Line Console" on page 191). The system can have a total of eight system operators, which can include no more than four QCCs.

When a system includes QCCs, the first MLX module used to connect QCCs must be installed in the control unit to the left of any other type of module with extension jacks. A QCC can be connected on only the first and fifth extension jack of each MLX module.

Assigning a QCC operator to receive calls to unassigned extension numbers arriving on DID or dial-in tie trunks or from remote access users does not cause these calls to ring into the queue unless the calls are programmed to go to a backup position. The QCC queue must be programmed as the backup position for these calls.

Lines/trunks cannot be programmed to ring into both the QCC queue and a calling group.

Lines/trunks assigned to ring into the QCC queue also can be assigned as personal lines on one or more telephones.

When a QCC operator wants to make an outgoing call, he or she should press the **Position Busy** button before pressing the **Hold** button for an existing call. This makes the console temporarily unavailable for calls from the queue (the operator can receive calls forwarded or made to the operator's individual extension number). If the operator presses only the **Hold** button, the position is still available for calls and a call can be delivered from the queue. Receipt of a call at this time can either prevent the operator from making the outgoing call or cause the call ringing on the console to remain unanswered until the operator finishes the outgoing call.

Voice announcements do not come over QCC speakerphones.

QCCs have no programmable buttons (all features are factory-assigned) and cannot use feature codes.

If a QCC operator receives a call and another user joins the call by using a shared personal line or Shared **SA** button, the QCC operator can press the **Start** button to begin the direction process and then press the **Join** button to connect all three parties in a conference call. However, the operator cannot release the call; the QCC operator sees the Denied: Cannot Release message on the screen.

When a QCC operator is assigned to receive calls on a tie trunk (excluding dial-in tie trunks), and the caller at the other system uses the trunk and dials *0*, the call is treated as an unassigned DID call. The QCC operator who receives the call sees DID# as the call type (along with the line/trunk label and line/trunk number) on the display instead of seeing Dial 0 as the call type.

In Release 3.1 and later systems, if an extension is changed from a Direct-Line Console to a Queued Call Console, pool dial-out codes are disallowed on the QCC. You must use system programming if you want to allow access to dial-out codes on the QCC.

Mode Differences

QCCs are available only in Hybrid/PBX mode.

Telephone Differences

Direct-Line Consoles

Both DLCs and QCCs can be assigned in Hybrid/PBX mode. The maximum combined number of operator positions is eight. No more than four can be QCCs.

In a system with both DLC and QCC positions, the primary QCC operator position must be a QCC.

All dial 0 calls are directed to the QCC queue and do not ring at any DLC positions.

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Feature Interactions

Account Code Entry	A QCC operator can use Account Code Entry only by selecting the feature from the display, not by using the feature code. Normally, account codes cannot be entered when a Group Coverage call is answered at a Cover button programmed on a multiline telephone. However, when the QCC queue is programmed as the receiver for a coverage group, the QCC operator can enter account codes and the account code appears on the Station Message Detail Recording (SMDR) printout. This is because Cover buttons are not required when the QCC queue is programmed as a receiver for a coverage group.
	Forced Account Code Entry can be assigned to a QCC.
Allowed/ Disallowed Lists	Allowed and Disallowed Lists can be assigned to a QCC.
Alarm	An **Alarm** button is assigned as a fixed feature on QCCs.
Authorization Codes	QCCs cannot have authorization codes, and the Authorization Code feature cannot be used from a QCC.
Auto Answer All and Auto Answer Intercom	Auto Answer All and Auto Answer Intercom cannot be assigned to a QCC.
Auto Dial	Auto Dial buttons cannot be programmed on a QCC. For one-touch dialing of extensions, a QCC operator can use the buttons on a DSS or select from the Extension Directory. In addition, a QCC operator can use the System Directory and Personal Directory for one-touch dialing of outside numbers.
Automatic Line Selection	Automatic Line Selection on a QCC is a fixed sequence that starts at the lowest **Call** button and moves upward. The sequence cannot be changed.
Barge-In	Barge-In allows a QCC operator to contact a person who is busy on a call or using Do Not Disturb. On a QCC, the operator must press the **Feature** button and select Barge-In from the display. Privacy overrides Barge-In.
Barge-In *continued*	Barge-In can be used to join only an inside call to a QCC. The caller's extension number must be dialed instead of the QCC operator's extension number. If a user tries Barge-In after dialing a QCC operator's extension (while waiting in the QCC queue), the feature has no effect and the user hears an error tone. If the error tone times out while the call is still in the QCC queue, the call is disconnected. If the QCC operator becomes available before the error tone times out, the error tone is removed and the call is delivered to the QCC operator normally.
Callback	Calls to QCCs are not eligible for Callback because the calls ring into the QCC queue. Callback cannot be used on a QCC.
Calling Restrictions	Calling restrictions can be assigned to QCCs.

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Camp-On	A QCC operator can release a call to a busy extension either by selecting Camp On from the display or by pressing the **Release** button. If Camp-On is used, the call does not return to the QCC queue until the Camp-On return interval expires. If the operator presses the **Release** button, the extension being called receives the call-waiting tone and the call returns to the QCC queue when the transfer return interval expires.
	To use Camp-On when the system is programmed for automatic extended call completion, an operator presses the **Start** button, dials the extension manually, then selects Camp On from the display. If the operator presses a DSS button, the transfer is completed automatically and Camp-On cannot be used.
Conference	When a QCC operator arranges a conference call on a QCC, all conference participants (maximum of 5) are connected on one **Call** button. This allows the QCC operator to put the conference on hold and have other **Call** buttons available to make or receive calls. However, because all participants are on one **Call** button, the operator can drop only the last person added to the conference by first pressing the **Drop** button and then the **Call** button for the conference.
	When a QCC operator arranges a 3-participant conference (the operator and two other participants) and then presses the **Release** button or hangs up, the QCC operator is released from the call and the other two participants remain connected. If the QCC operator arranges a 4- or 5-participant conference, the **Release** button has no effect. If the QCC operator hangs up or presses the **Hold** button, the QCC operator is released and the remaining conference participants remain connected. The **Forced Release** button disconnects all parties from the call.
Coverage	An individual QCC operator cannot be a sender or receiver for Individual or Group Coverage. However, the QCC queue can be a receiver for up to 30 coverage groups when one or more QCC operators are assigned to receive the calls. The QCC queue can be assigned as a receiver in addition to multiline telephones programmed with Group Cover buttons; the QCC queue is not counted in the 8-receiver maximum for each group. The QCC queue priority and the individual QCC operator to receive Group Coverage calls are set independently for each group.
Coverage *continued*	If Group Cover buttons are programmed for a coverage group in addition to the QCC queue and if all QCC operators are in the position-busy state, a Group Coverage call does not go to the backup calling group.
	When the QCC queue is programmed as a receiver for a coverage group and a personal line on a coverage group member's extension is also programmed to ring into the QCC queue, calls received on that personal line are not sent to the queue as coverage calls. However, calls received on the personal line can be sent to multiline telephone group coverage receivers.

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When the QCC queue is programmed as a receiver for a coverage group and a call transferred to a group member is not answered, the call returns to the queue as a transfer return if the QCC return ring interval is shorter than the coverage delay. If the QCC return ring interval is longer than the coverage delay, the call returns to the QCC queue as a Group Coverage call.

CTI Link In a system that includes a CTI link, a call to a QCC does not initiate screen pop at the operator position, which cannot use a CTI application. It can initiate screen pop at a screen pop capable-extension either when an operator transfers or conferences a call immediately, or while the operator talks to the system user before transferring or conferencing a call.

Direct Voice Mail The Direct Voice Mail button is factory-assigned on DSSs connected to QCCs.

Directories QCC operators use Directory features to dial extensions or telephone numbers with the touch of a button. The Extension Directory allows an operator to locate and dial system extension numbers. The System Directory and Personal Directory can be used to locate and dial outside numbers. Directory features can be used for directing calls. However, if a QCC operator releases the call immediately after pressing the button for the listing, the caller hears the dial tone plus the touch tones for the dialed digits. If the operator waits until after dialing begins, the caller does not hear the dial tone and touch tones.

Display Features not assigned to buttons on the QCC can be activated only by selecting them from the display. A QCC operator also uses the display for call information such as the person or extension calling, the line/trunk identifiers, the reasons for call return and redirection, and the number of calls waiting in the queue. When a call is in a split condition, a QCC operator sees information about both the source and destination. If the operator presses the **Home** button under these circumstances, the message is replaced with information about the source only. The operator can restore the information by pressing the **Source** and **Destination** buttons or by pressing the **Inspct** button followed by the **Source** or **Destination** button.

Do Not Disturb Do Not Disturb cannot be used on a QCC. Instead, the operator must use Position Busy.

Extension Status Extension Status cannot be used on a QCC, and a QCC cannot be a calling group or CMS supervisor or a calling group member.

Forward and Follow Me A QCC operator cannot forward calls to extensions or telephone numbers. Instead, the operator uses Position Busy to send calls to a backup calling group.

Calls that are forwarded to an individual QCC operator or Follow Me calls that are signed in to a QCC can be assigned a queue priority level. When the QCC operator uses Position Busy, forwarded calls and Follow Me calls signed in to the QCC position continue to ring at the QCC.

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Group Calling	Only a calling group can be programmed to provide Position Busy backup when all QCC operators activate Position Busy. If no calling group is designated to provide backup, the system does not allow the last QCC operator to activate Position Busy. A QCC cannot be a member of a calling group. A calling group can be a backup for calls in the QCC queue when all QCC operators are in the position-busy state. The QCC queue can be designated to provide overflow coverage for calls from one or more calling groups. When an overflow call is sent to the QCC queue, it cannot be distinguished as a call to a calling group.
	When the QCC queue is providing overflow coverage for a calling group and all QCC operators are in the position-busy state, overflow calls do not receive position-busy backup (are not redirected to a second calling group providing position-busy backup for the QCC queue) and continue to wait in the original calling group queue.
	If all QCC operators activate Position Busy while an overflow call is in the QCC queue, the call is rerouted to the original calling group, not to the calling group providing position-busy backup.
	If a QCC operator switches out of Position Busy while a backup call is in the calling group queue or has already been delivered to a calling group member, the call does not go back into the QCC queue.
Headset Options	Headset Auto Answer, Headset/Handset Mute, and Headset Status are assigned as fixed features on buttons on a QCC.
	Headset Hang Up cannot be programmed on a QCC.
	The function of disconnecting calls served by the Headset Hang Up feature is replaced with Release, Forced Release, Camp-On, and Automatic Release through DSS buttons on the QCC.
HFAI	HFAI (Hands Free Answer on Intercom) button does not work on a QCC.
Hold	Pressing the **Hold** button to put a caller on hold makes a QCC operator available for incoming calls from the QCC queue.
	The DLC operator Automatic Hold feature is not used for QCCs.
Inspect	When a participant joins a conference call by using a shared outside line or a Shared **SA** button, the QCC display shows the correct number of participants. However, if the QCC operator uses the Inspect feature to verify the number of participants, the displayed number does not include participants joining the conference call on **SSA** buttons. Pressing any of the buttons programmed with fixed QCC features (for example, a **Call** or **Source** button) while in Inspect mode does not remove the console from Inspect mode. However, pressing the **Feature**, **Transfer**, **HFAI**, **Conf**, **Drop**, **Speaker**, or **Hold** button removes the console from Inspect mode.
Last Number Dial	Last Number Dial cannot be used on a QCC.
Line Request	Line Request cannot be used on a QCC.
Messaging	A QCC operator can use Leave Message only by selecting the feature from the display. A **Send/Remove Message** button is programmed as a fixed feature on a QCC.

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Microphone Disable	The microphone on a QCC is automatically disabled and cannot be enabled.
Multi-Function Module	An MFM cannot be connected to an MLX-20L telephone assigned as a QCC. As a result, adjuncts such as answering machines and fax machines cannot be used with the console.
Night Service	A **Night Service** button is assigned as a fixed feature on a QCC.

In Release 4.0 and prior systems, if more than one QCC operator is assigned to receive calls on an individual line/trunk, Night Service must be turned on at all assigned positions before calls coming in on the line/trunk can ring on extensions programmed as members of the Night Service group. If Night Service is not turned on at the QCC position programmed to receive the calls, after-hours calls ring at that position and do not receive Night Service treatment.

When Night Service is on, unassigned DID extension calls and calls to the listed directory number ring into the QCC queue, and this cannot be changed. If these call types are not programmed to go to the queue, callers hear an error tone when Night Service is on.

When multiple Night Service calls are received in the QCC queue at the same time and none of the calls are answered by a Night Service member (all group member **ICOM** or **SA** buttons are busy), new calls are sent to the QCC queue and can be answered only by a QCC operator. To avoid this situation, all outside lines assigned to ring in to the QCC queue should be assigned as personal lines on at least one group member's extension.

In Release 4.1 and later systems, Night Service lines must be assigned to a Night Service group. They need not appear at the operator position for the group, and lines that are assigned to the Night Service operator receive Night Service operation only if they are assigned to the group.

Paging	A QCC cannot make or receive voice-announced inside calls (speakerphone calls to an extension). A QCC cannot be a member of a speakerphone paging group. A QCC operator can use a loudspeaker paging system only by selecting the feature from the display. He or she can use the Group Paging feature either by selecting a **Call** button and pressing the DSS button or by dialing the extension for the paging group.
Park	Eight park dial codes are automatically reserved for parking calls from a QCC. The factory-set extension numbers are 881 through 888. To assign the park zones to a DSS connected to a QCC, the extension numbers must be in the range programmed for the **Page** buttons.

A QCC operator with a DSS parks a call either by pressing the DSS button for the park zone or by pressing the **Start** button and then the DSS button. The call is automatically parked; the operator does not need to press the **Release** button. A QCC operator without a DSS cannot park calls.

To pick up a parked call, a QCC operator presses the **Feature** button and selects PickUp from the display, then dials the extension number for the extension or park zone where the call is parked.

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	Calls parked by QCC operators can be programmed to return to the QCC operator who parked the calls and/or to another QCC operator. Returning parked calls are also assigned a QCC queue priority level; the factory setting is 4. With message center operation, a call parked by a QCC operator can be returned to the message center position.
Personal Lines	Personal lines cannot be assigned to a QCC.
Pickup	A QCC can be a member of a Pickup group. QCC operators can use Individual Pickup and Group Pickup only by selecting them from the display. `Individual Pickup` and `Group Pickup` are available from the Home screen on QCCs.
Pools	**Pool** buttons cannot be assigned to a QCC, but a QCC operator can select pools to make outgoing calls by pressing a **Call** button and dialing the ARS or pool dial-out code. A QCC operator can be assigned to receive calls on lines/trunks assigned to pools.
	A **Pool Status** button is assigned as a fixed-feature button on a QCC and provides a QCC operator with the status of all pools (maximum of 11). The QCC operator presses the **Inspct** button followed by the **Pool Status** button, and the busy or available status of pools is shown on the display.
Privacy	A QCC operator cannot use Privacy.
Recall/Timed Flash	A **Recall** button cannot be programmed on a QCC.
Reminder Service	Reminder service cannot be used on a QCC.
Remote Access	If a remote caller uses a rotary phone and the system does not require a barrier code, the call, after it times out, is sent to a QCC that is assigned as a backup extension.
	One or more QCC operators can be assigned to receive calls on lines/trunks programmed for shared remote access.
	In Release 4.0 and prior systems, calls received on lines/trunks specified for shared remote access receive remote access treatment only when all QCC operators who are assigned to receive calls on shared remote access lines/trunks turn on Night Service. If Night Service is turned off by one or more QCC operators assigned to receive the calls, calls ring in to the QCC queue normally and do not receive remote access treatment.
	In Release 4.1 and later systems, this restriction is removed. If a remote access line is assigned to one or more Night Service groups, it receives Night Service treatment when any QCC operator whose group includes the line turns Night Service on.
Ringing/Idle Line Preference	Ringing/Idle Line Preference is turned on and cannot be turned off on a QCC.
Ringing Options	Personalized ringing cannot be programmed on a QCC, nor can Ring Timing options be adjusted on a QCC. The **Call** buttons are fixed to Immediate Ring. A QCC receives only two types of distinctive ringing: one ring for an inside call and two rings for an outside call. A QCC does not receive the three rings that indicate a returning transferred call.
Saved Number Dial	Saved Number Dial cannot be used on a QCC.

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Signal/Notify	Notify and Signal buttons cannot be used on a QCC. However, pressing a DSS button sends a signal to the extension associated with the DSS button in the following instances:

- A QCC operator is timed out from dial tone on a **Call** button or has pressed the **Forced Release** button while listening to dial tone on a **Call** button.

- A QCC operator, with the call in a split condition, has pressed the **Source** button after contacting the destination but has not connected both parties by using the **Join** button. If the operator presses a DSS button, a manual signal is sent to the destination extension.

Speed Dial	Personal Speed Dial and System Speed Dial cannot be used to dial numbers on a QCC. The Directory features are used instead.
SMDR	When a QCC operator arranges a 3-party conference (the operator and two other participants) and presses the **Release** button, the operator is released from the call and the other two participants remain connected. Although this process is similar to directing a call, the QCC operator's extension remains on the SMDR record.

In Release 4.2 and later systems, if a calling group is programmed as the backup for the QCC queue and all QCC operators are temporarily unavailable, an incoming call is sent to the calling group queue to wait for the next available agent. SMDR records this type of call in the same way that it does other incoming calls to Auto Login and Auto Logout calling groups.

System Access/ Intercom Buttons	**SA** buttons are not assigned on a QCC. A QCC operator uses **Call** buttons to make and receive inside and outside calls.
System Renumbering	The Listed Directory Number (the extension number for the QCC queue) can be renumbered. The factory-set extension is 800.
Transfer	A QCC operator uses the **Start** and **Release** buttons or a DSS button to transfer calls. However, pressing the **Transfer** button on a QCC is the same as pressing the **Start** button. A QCC operator cannot make or receive voice-announced transfers. When the operator uses the **Start** and **Release** buttons to transfer a call, the return ring interval, rather than the transfer return interval, applies for transfer return timing.
Voice Announce to Busy	Voice announcements cannot be received on a QCC. The ability to make Voice Announce calls can be turned on at a QCCs in Release 4.0 and later releases only.

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Recall/Timed Flash

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Information, System Information (`SysSet-up`)
Modes	All
Telephones	All except QCC
Programming Codes	
Recall	*775
Conference	*772 (Behind Switch mode only)
Drop	*773 (Behind Switch mode only)
Transfer	*774 (Behind Switch mode only)
Feature Code	775
MLX Display Label	Recall [Recll]
System Programming	Change timed-flash duration (recall timer):
	● Options→**More**→RecallTimer
	Program fixed **Conference**, **Drop**, and **Transfer** buttons to access host features in Behind Switch mode:
	● Options→**More**→BehndSwitch→Conference/Drop/ Transfer
Factory Setting	
Recall Timer	450 ms (options 350 ms, 450 ms, 650 ms, 1 sec)

Description

Recall sends a momentary signal called a *timed flash* or *switchhook flash* while the phone is on the hook. A timed flash is used as a control signal, as follows:

- On an inside call, the signal is intercepted by the control unit.

    — A multiline telephone user can use Recall to disconnect a call and get a new dial tone without hanging up. The user can be on an active call or listening to ringback or dial tone. When the user is listening to a busy signal, Recall has no effect.

    — A single-line telephone user can use Recall to put an active call on hold and to access system features such as Conference and Transfer.

- On an outside call, when the system is using host switch services such as Centrex, the signal may be sent to the host, depending on the type of telephone and system operating mode.

- A multiline telephone user can use Recall to access host features. The user can be connected to another party or can be listening to outside dial tone, ringback, or a busy signal.

- A single-line telephone user can use Recall to access host services only if the system is programmed for Behind Switch mode.

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Recall is used by pressing a fixed or programmed **Recall** button (or **Flash** button on some single-line telephones) or dialing the Recall feature code. The Recall timer, which specifies the duration of the switchhook flash, is set through system programming. The duration required by the host switch is specified by the local telephone company.

The Recall timer should be reset if multiline telephone users experience either of the following problems:

- When the user presses the Recall button on an outside call, nothing happens. This indicates that the interval is too short and should be increased to 650 milliseconds or 1 second.

- In a system operating in Behind Switch mode, when the user presses the Recall button on an outside call, the call is disconnected. This indicates that the interval is too long and should be decreased to 350 ms.

Release Differences

Release 1.0 and Release 1.1

Recall can be used on an outside call only if the call has been made or received on a personal line or **Pool** button. Recall cannot be used on an outside call made or received on an **SA** or **ICOM** button.

Release 2.0 and Later

In addition to its use on calls made or received on a personal line button or a **Pool** button, Recall can be used on an outside call made or received on an **SA** (including Shared **SA**) or **ICOM** button. This includes the following kinds of calls:

- Transferred, group, and forwarded calls received on **SA** or **ICOM** buttons

- Automatic Route Selection (ARS) calls and calls made using pool dial-out codes (on **SA** buttons) or Idle Line Access codes (on **ICOM** buttons)

When used after dialing is completed on an outside line/trunk, Recall sends a timed flash to the host switch, the line/trunk is kept, the user hears a new outside dial tone, and calling restrictions are reapplied. On an ARS call or a call on a rotary-dial line/trunk, Recall cannot be used until dialing is completed. On a call made using the pool dial-out code, Recall can be used during, as well as after, dialing. Recall can be used only on loop-start lines.

Considerations and Constraints

Recall can be used to send a timed flash to the host switch only on loop-start lines.

The **Recall** or **Flash** button sends a switchhook flash. It is not a "redial" button.

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Mode Differences

Hybrid/PBX Mode

In Release 1.0 and 1.1 systems, Recall cannot be used on any outside call made or received on an **SA** button. In Release 2.0 and later systems, this restriction is removed.

A Recall signal from a single-line telephone accesses the communications system's Hold, Conference, and Transfer features.

Key Mode

In Release 1.0 and 1.1 systems, Recall cannot be used on any outside call made or received on an **ICOM** button. In Release 2.0 and later systems, this restriction is removed.

A Recall signal from a single-line telephone accesses the communications system's Hold, Conference, and Transfer features.

Behind Switch Mode

If Recall is used on a call made or answered on the prime line, the timed flash is sent to the host switch.

The fixed **Conf**, **Drop**, and **Transfer** buttons on MLX or analog multiline telephones must be programmed through system programming to send a timed flash plus the code expected by the host to activate those features on the host. Once this programming is done, these fixed buttons have no effect when pressed during an inside call.

If use of the communications system's Conference, Drop, and Transfer features is also desired, they must be programmed on available line buttons on multiline telephones, using either extension programming or centralized telephone programming.

In Release 1.0 and 1.1 systems, Recall cannot be used on any outside call made or received on an **ICOM** button. In Release 2.0 and later systems, this restriction is removed.

A Recall signal from a single-line telephone is ordinarily sent to the host switch because the factory setting for the Automatic Line Selection (ALS) sequence selects the prime line. However, if the ALS sequence has been changed to select an **ICOM** button and the user has used the Idle Line Access code to initiate a call, the Recall signal accesses the communications system's Hold, Conference, and Transfer features, not those of the host switch.

Telephone Differences

Queued Call Consoles

A Queued Call Console (QCC) cannot use Recall. A Recall button cannot be programmed on the QCC, nor can the QCC use the Recall feature code.

Other Multiline Telephones

Analog multiline BIS telephones have a fixed **Recall** button that can be pressed to access the Recall feature.

MLX and cordless/wireless telephone users can use Recall by pressing the **Feature** button and dialing *775*, but it is recommended that a **Recall** button be programmed instead.

To activate host system features in Behind Switch mode, the fixed **Conf**, **Drop**, and **Transfer** buttons on an MLX or analog multiline telephone must be programmed, through system programming, to send a timed flash plus the code expected by the host. Once this programming is done, these fixed buttons have no effect when pressed during an inside call.

If use of the communications system's Conference, Drop, and Transfer features is also desired in Behind Switch mode, they must be programmed on available line buttons on each multiline telephone, using either extension programming or centralized telephone programming.

Single-Line Telephones

A single-line telephone user without a **Recall** or **Flash** button must use the switchhook to send a timed flash. The communications system intercepts the signal; if it is to be sent on to a host switch, the system sends a signal of the duration programmed for the Recall timer.

In Hybrid/PBX or Key mode, a Recall signal from a single-line telephone accesses the communications system's Hold, Conference, and Transfer features.

In Behind Switch mode, a Recall signal from a single-line telephone is ordinarily sent to the host switch because the factory setting for the Automatic Line Selection (ALS) sequence selects the prime line. However, if the ALS sequence is changed to select an **ICOM** button and an Idle Line Access code initiates a call, the Recall signal accesses the communications system's Hold, Conference, and Transfer features, not those of the host switch.

⇒ **NOTES:**
   1. If a single-line telephone with a timed or positive disconnect is used, pressing the switchhook disconnects the call. With this type of telephone, the **Recall** or **Flash** button must be used instead of the switchhook for features that require a switchhook flash.

2. A single-line telephone user without a **Recall** or **Flash** button, or with buttons that activate telephone-only features, must press and release the switchhook to send a timed flash.

3. A single-line telephone user who has a 2500 YMGL or 8110M telephone with positive disconnect on *cannot* press the switchhook to activate features. The user must press the **Hold** button or the **Flash** button to activate a feature. (The 8100M telephone must have positive disconnect programmed on the telephone as described in its manual.)

Feature Interactions

Allowed/ Disallowed Lists and Calling Restrictions	If Recall is used on a personal line or **Pool** button—or, in Release 2.0 and later systems, on an **SA** or **ICOM** button—to access an outside loop-start line, the accessed line is kept, the user hears outside dial tone, and calling restrictions are reapplied.
Auto Dial	The **Conf** button is used to enter the Flash special character, which simulates pressing the **Recall** button, in a telephone number programmed on an Auto Dial button.
	If Recall is used during an inside call made on an Auto Dial button, the call is disconnected and the user hears inside dial tone.
Automatic Route Selection	In Release 2.0 and later systems, Recall can be used on an ARS call. Recall cannot be used during dialing. When dialing is complete, pressing the **Recall** button sends a timed flash to the host, the accessed line is kept, the user hears outside dial tone, and calling restrictions are reapplied.
	In Release 1.0 and 1.1 systems, Recall cannot be used on an ARS call because the call is made on an **SA** button.
Barge-In	In Release 2.0 and later systems, Recall can be used by either party on a call joined using Barge-In.
	In Release 1.0 and 1.1 systems, Recall cannot be used with Barge-In.
Basic Rate Interface	Recall is not recognized by the central office (CO) on BRI lines. Thus, the CO ignores a press of the Recall button.
Callback	If Recall is used while a user is off hook with a queued callback request, the call is disconnected and the user hears dial tone.
Call Waiting	If Recall is used while a user is hearing special ringback, the call is disconnected and the user hears inside dial tone.

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Conference	The **Conf** button is used to enter the Flash special character, which simulates pressing the **Recall** button in telephone numbers programmed for Directories, Auto Dial buttons, or Speed Dial codes.
	In Hybrid/PBX and Key modes, a single-line telephone user with a **Recall** or **Flash** button can add a participant to a conference call and connect all participants by using the **Recall** or **Flash** button. In addition, the **Recall** or **Flash** button can be used either to drop the most recently added participant or to drop a busy number.
	In Behind Switch mode, the fixed **Conf** button on an MLX or analog multiline telephone must be set through system programming to send a timed flash plus the code expected by the host switch to activate conference on the host. If the communications system's Conference feature is also desired, it must be assigned to an available line button on each multiline telephone through extension or centralized telephone programming. Recall has no effect on a completed conference call.
Coverage	Recall has no effect on a call answered on a Primary Cover, Secondary Cover, or Group Cover button.
	In Release 2.0 and later systems, Recall can be used on a Group Coverage call answered by a member of a calling group. In Release 1.0 and 1.1 systems, Recall cannot be used on a call of this type because it is answered on an **SA** or **ICOM** button.
Directories	The **Conf** button is used to enter the Flash special character, which simulates pressing the **Recall** button in a Directory listing telephone number.
Display	When an MLX telephone user presses a programmed Recall button while on an outside line, the line information is redisplayed just as if the user had gone off hook on the line.
Forward and Follow Me	A multiline telephone user on an inside Forward or Follow Me call can use Recall. In Release 2.0 and later systems, Recall also can be used on an outside call received on a loop-start line.
Group Calling	A user who has received an inside calling group call can use Recall.
Hold	A single-line telephone user with a **Recall** or **Flash** button can press **Recall** or **Flash** to put a call on hold.
HotLine	A switchhook flash from a HotLine extension (Release 5.0 and later systems) is not transmitted to the system or central office.
Multi-Function Module	An MFM cannot send a timed flash. As a result, a single-line telephone or other device connected to an MFM cannot use Recall.
Last Number Dial	Recall can be used on a Last Number Dial call on a personal line, **Pool** button (loop-start only), an inside call or, in Release 2.0 and later systems, an outside call on a loop-start line using an **SA** or **ICOM** button.
Night Service	A user (except a QCC operator) on an inside Night Service call can use Recall. In Release 2.0 and later systems, Recall also can be used on outside calls received on loop-start lines.
Park	A single-line telephone user can press a **Recall** or **Flash** button for Park.

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Personal Lines	When two users have joined an outside call on a shared personal line (loop-start only), Recall can be used by either inside party.
Pools	If a user presses the Recall button during or after dialing, a timed flash is sent to the host switch, the accessed line is kept, the user hears dial tone, and calling restrictions are reapplied.
Privacy	A single-line telephone user with a **Recall** or **Flash** button can use the button to turn Privacy on or off during a call.
Reminder Service	Recall can be used to disconnect an answered reminder call.
Saved Number Dial	Recall can be used on a Saved Number Dial call on a personal line, **Pool** button (loop-start only), an inside call, or, in Release 2.0 and later, an outside call made on a loop-start line using an **SA** or **ICOM** button.
SMDR	Each time Recall/Timed Flash is used on a call, a new Station Message Detail Recording record is generated. For example, if a user is active on a call and uses Recall to initiate a conference call, SMDR timing is stopped for the original call and a new record is begun. If the user then calls a second party and uses Recall again to join the conference parties, a third SMDR record is generated with an empty CALLED NUMBER field.
Speed Dial	The **Conf** button is used to enter the Flash special character, which simulates pressing the **Recall** button in a Personal Speed Dial or System Speed Dial telephone number.
System Access/ Intercom Buttons	Recall can be used on a ringing or answered inside call made on an **SA** or **ICOM** button. The call is disconnected and the user hears dial tone. When the user is listening to a busy signal, Recall has no effect.
	Either the user with the principal **SA** button or the user with a Shared **SA** button who has joined a call can use Recall. In Release 2.0 and later systems, Recall is available on an outside call on a loop-start line when the call is made or received on the **SA** or Shared **SA** button.
Transfer	A single-line telephone user with a **Recall** or **Flash** button can use it to transfer a call.
	In Release 2.0 and later systems, Recall is available on a transferred outside call on a loop-start line (the transfer arrives on an **SA** or **ICOM** button).
	In Behind Switch mode, the fixed **Transfer** button on an MLX or analog multiline telephone must be programmed through system programming to send a timed flash plus the code expected by the host switch to activate transfer on the host. To use communications system's Transfer feature as well, it must be programmed on an available line button on each multiline telephone, using extension or centralized telephone programming.

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Reminder Service

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Information, System Information (`SysSet-up`)
Modes	All
Telephones	All except QCC
Programming Codes	
Set	*81
Cancel	**81
Missed Reminder	*752 (operators only)
Feature Codes	
Set (users)	*81* + *time* + *A or P* (see note)
Set (operators)	*81* + *Auto Dial or DSS* + *time* + *A or P (see note)*
Cancel (users)	*81
Cancel (operators)	*81 + *Auto Dial or DSS*
MLX Display Labels	
Set	Reminder,Set [Rmind,Set]
Cancel	Reminder,Cancel [Rmind,Cancl]
Missed Reminder	Reminder,Missed [Rmind,Missd]
System Programming	Set time of day when all reminders are automatically canceled:
	• Options→ReminderSrv

⟹ NOTES:

1. In Release 1.1 and later systems, do not use the *A* or *P* on telephones programmed for French or Spanish; on these telephones, time is entered in 24-hour format. In Release 1.0 systems, time *must* be entered in 12-hour format, using *A* or *P*, for telephones programmed in English, French, or Spanish.

2. Operators cannot enter Reminder extensions from the dialpad. Instead, they must use Auto Dial buttons or a Direct Station Selector (DSS).

Description

With Reminder service, users can arrange for the system to make reminder calls at preset times. Users can set and cancel reminder calls for their own telephones. Direct-Line Console (DLC) operators can set and cancel Reminder service for any telephone in the system (for example, to alert several telephones as a reminder for a meeting or, in a hotel or motel, for wake-up call service). Reminder service is available for all telephone users, but for display telephone users, the display's Alarm Clock feature is easier to use and more effective for most purposes. (See "Alarm Clock" on page 32 for more information.)

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When Reminder service is set for a telephone, the system makes a call to the extension at or close to the preset time (reminder calls may arrive up to three minutes before or after the set time). The call rings for 30 seconds or until the telephone is answered. When the call is answered, the reminder is canceled.

If a reminder call is not answered or the telephone is busy, the call is considered a missed reminder. If Reminder service has been set and the call is not answered, the green LED flashes next to the Missed Reminder button on the operator's console.

An operator with a display console can press the Missed Reminder button to display any missed reminder messages. This message identifies the name and extension of the missed reminder call, along with the set time for the reminder. The green LED next to the Missed Reminder button lights steadily while missed reminder call messages are being read. After the messages have been read, the operator can use Reminder service to resend a reminder call to an extension. The operator can then clear the missed reminder by pressing the programmed Missed Reminder and Reminder Cancel buttons.

Through system programming, all outstanding reminders can be canceled by the system at a preset time every day—for example, after business hours when not all users are available to answer reminder calls.

Considerations and Constraints

The system time must be set in order for people to use Reminder service. Reminders use system time, which can differ from the time set by a user at an analog multiline display telephone.

Missed Reminder buttons can be programmed only on operator display consoles because the display is needed to show missed reminder information. To activate, the operator's console must have either a Direct Station Selector (DSS) or inside Auto Dial buttons to access extensions. This feature cannot be used by dialing an extension from the dialpad.

The green LED next to the Missed Reminder button lights steadily to indicate that the operator can read missed reminder messages. Reminder Set cannot be used to set a reminder time until the missed reminders are canceled.

Only one reminder at a time can be set for a telephone.

Reminders do not carry over to the next day; they are sent only once and are either received or missed.

Missed reminders can be canceled only by an operator. A missed reminder stays on the system until canceled.

If a time for a reminder is already set, it is shown on display telephones when the Reminder button is pressed.

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Telephone Differences

Direct-Line Consoles

DLC operators can use Reminder service to set or cancel reminders for other users. An operator with a DLC sets a reminder for another telephone by:

- Pressing a programmed Reminder Set button or pressing the **Feature** button and dialing 81

- Pressing an Auto Dial or DSS button

- Dialing a 4-digit time, 0100 to 1259 and either 2 for a.m. or 7 for p.m. on telephones programmed for English, or 0000 to 2359 on telephones programmed for French or Spanish (Release 1.1 and later)

$\Longrightarrow$ **NOTES:**
1. In Release 1.0 systems, time must be programmed in 12-hour format.

2. To cancel a reminder for another telephone, an operator presses a programmed Reminder Cancel button or presses the **Feature** button and dials $*81$, and then uses an Auto Dial or DSS button.

3. An operator also can see when a reminder was missed and cancel missed reminders. The Missed Reminder button can be programmed on DLC operator consoles only.

Queued Call Consoles

Reminder service cannot be used on a Queued Call Console (QCC).

Other Multiline Telephones

Multiline telephone users set reminders for their telephones either by pressing a programmed Reminder Set button or by pressing the **Feature** button and dialing 81. Then enter the time as follows:

- In Release 1.0 systems, enter the time in 12-hour format in the range from 0100 to 1259 and either 2(A) for a.m. or 7(P) for p.m.

- In Release 1.1 and later systems:

  — On telephones programmed for English, enter the time in 12-hour format in the range from 0100 to 1259 and either 2(A) for a.m. or 7(P) for p.m.

  — On telephones programmed for French or Spanish, enter the time in 24-hour format in the range from 0000 to 2359.

To cancel a reminder, either press a programmed Reminder Cancel button or press the **Feature** button and dial $*81$.

Reminder service cannot be used on MLC-5 cordless telephones.

Single-Line Telephones

Set a reminder by lifting the handset and (while listening to inside dial tone) dialing
#81 and a 4-digit time (*0100–1259*) and either *2* for a.m. or *7* for p.m. To cancel a
reminder, lift the handset (the telephone must connect to an **SA** or **ICOM** button)
and dial *#*81*.

Feature Interactions

Callback	Reminder calls cannot be queued by using Callback.
Call Waiting	Reminder calls are not eligible for Call Waiting.
Coverage	Reminder calls are not eligible for Individual or Group Coverage.
Digital Data Calls	Digital communications devices and Videoconferencing systems cannot receive reminder calls.
Display	See "Display" on page 225.
Do Not Disturb	Reminder calls ring at telephones with Do Not Disturb activated.
HotLine	HotLine extensions cannot dial the feature (#) codes for Reminders.
Language Choice	Enter the time settings for Reminder service in accordance with the language selection governing the extension. If the language selection is English, the time setting for Reminder service must be entered in 12-hour format (0100–1259) followed by either a *2 (A)* for a.m. or a *7 (P)* for p.m. If the governing language selection is French or Spanish, the time setting must be entered in 24-hour format (0000–2359).
Recall/Timed Flash	Recall can be used to disconnect an answered reminder call.
Ringing Options	A reminder call overrides programmed Ring Timing options (Delay Ring and No Ring) and rings with a priority ring at an **SA** or **ICOM** button.
System Access/ Intercom Buttons	A reminder call overrides programmed Ring Timing options (Delay Ring and No Ring) and rings at the principal extension; reminder calls do not ring at Shared **SA** buttons.

Remote Access

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Remote Access (DISA) Information, SMDR
Modes	All
Telephones	Touch-tone only
System Programming	Assign dedicated or shared remote access to lines/trunks:
	• LinesTrunks→RemoteAccss→LinesTrunks
	If barrier codes are not used, assign class of restrictions to lines/trunks:
	• LinesTrunks→RemoteAccss→Non-Tie/Tie Lines→ Restriction/ARS Restrct/AllowList/DisallowList
	Assign class of restriction for each barrier code:
	• LinesTrunks→RemoteAccss→ BarrierCode Restriction/ARS Restrct/AllowList/ DisallowList
	Specify that barrier codes are required for remote access:
	• LinesTrunks→RemoteAccss→Non-Tie/Tie Lines→ BarrierCode
	Add, change, or remove individual barrier codes, or change length of all barrier codes:
	• LinesTrunks→RemoteAccss→BarrierCode→CodeInfo
	Assign barrier codes to remote access system programming lines/trunks (nonfunctional; do not use):
	• LinesTrunks→RemoteAccss→Barri- erCode→SProgMaint
	Enable or disable Callback for busy pools:
	• LinesTrunks→RemoteAccss→AutoQueuing
	Specify destination of remote access calls to unassigned numbers:
	• Options→**More**→Unassigned
	Change remote access code:
	• SysRenumber→Single→RemoteAccs
Maximums	16 barrier codes, with a 4- to 11-digit range (set systemwide), using 0–9 and dialpad characters. All barrier codes are deleted when the systemwide barrier code length is changed.
Factory Settings	
ARS Facility Level for Barrier Codes or Lines/Trunks	3
Autoqueuing	Disabled

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Factory Settings continued	
Restriction for Barrier Codes or Lines/Trunks	Outward-Restricted
Maintenance/Programming Barrier Code	In Release 3.0 and later systems, there is no default barrier code. In Release 2.1 and earlier systems, the default barrier code is 16.
Redirect Destination for Calls to Unassigned Numbers	Primary Operator
Remote Access Code	889

⚠ SECURITY ALERT:

Security of Your System. *As a customer of a new communications system, you should be aware that there exists an increasing problem of telephone toll fraud. Telephone toll fraud can occur in many forms, despite the numerous efforts of telephone companies and telephone equipment manufacturers to control it. Some individuals use electronic devices to prevent or falsify records of these calls. Others charge calls to someone else's number by illegally using lost or stolen calling cards, billing innocent parties, clipping on to someone else's line, and breaking into someone else's telephone equipment physically or electronically. In certain instances, unauthorized individuals make connections to the telephone network through the use of remote access features.*

The Remote Access feature of your system, if you choose to use it, permits off-premises callers to access the system from a remote telephone by using an 800 number or a 7- or 10-digit telephone number. The system returns an acknowledgment signaling the user to key in his or her barrier code, which is selected and programmed by the system manager. After the barrier code is accepted, the system returns dial tone to the user. If restrictions are not in place, the user can place any call normally dialed from a telephone within the system. Such an off-premises network call is originated at, and will be billed from, the system location.

The Remote Access feature, as designed, helps the customer, through proper programming, to minimize the ability of unauthorized persons to gain access to the network. Most commonly, telephone numbers and codes are compromised when overheard in a public location, through theft of a wallet or purse containing access information, or through carelessness (writing codes on a piece of paper and improperly discarding it). Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Enormous charges can be run up quickly. It is the customer's responsibility to take the appropriate steps to properly implement the features, evaluate and program the various restriction levels, protect access codes, and distribute access codes only to individuals who have been fully advised of the sensitive nature of the access information.

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Common carriers are required by law to collect their tariffed charges. While these charges are fraudulent charges made by persons with criminal intent, applicable tariffs state that the customer of record is responsible for payment of all long-distance or other network charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit for charges that result from unauthorized access.

To minimize the risk of unauthorized access to your communications system:

- *Program the maximum length (11) for systemwide barrier code length (Release 3.0)*

- *Use an unpublished remote access number.*

- *Assign barrier codes randomly to users on a need-to-have basis, keeping a log of* all *authorized users and assigning one code to one person.*

- *Use random-sequence barrier codes, which are less likely to be easily broken.*

- *Deactivate all unassigned codes promptly.*

- *Ensure that remote access users are aware of their responsibility to keep the telephone number and any barrier codes secure.*

- *When possible, restrict the off-network capability of off-premises callers, through use of calling restrictions and Disallowed List features.*

- *When possible, block out-of-hours calling.*

- *Frequently monitor system call detail reports for quicker detection of any unauthorized or abnormal calling patterns.*

- *Limit Remote Call Forward to persons on a need-to-have basis.*

- *Change barrier codes periodically.*

Beginning with Release 3.0, additional security to prevent telephone toll fraud is included:

- *The remote access default requires a barrier code.*

- *The barrier code is a flexible-length code ranging from 4 to 11 digits (with a default of 7) and includes the * character. The length is set systemwide.*

- *The user is given three attempts to enter the correct barrier code.*

- *Whether or not the dialed digits are correct, an inter-digit time-out occurs during the first attempt. The system processes only the valid number of digits. So if a hacker enters four digits and the length is four digits, he or she hears dial tone. If a hacker enters four digits and keeps entering more, the system uses the time-out to hide the correct number of digits from the hacker. The time-out recurs until*

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the caller has dialed the eleventh digit—giving the impression that additional digits are required—even if the barrier code length is shorter.

- *SMDR registers 16 zeros for any remote access calls in which 3 failed attempts have occurred.*

Description

The Remote Access feature allows people to use the system by dialing the number of a line/trunk designated for remote access. The remote user should be required to dial a barrier code (password) after reaching the system. Beginning with Release 3.0, the systemwide barrier code length is programmed for a minimum of 4 digits and a maximum of 11. After gaining access to the system, a remote user can do any of the following:

- Dial extension numbers directly without going through a system operator. Remote callers can call inside extensions, data workstations, or calling groups just as if they were calling from an extension within the system.

- Select a regular or special-purpose outside line (for example, a WATS line) or a pool or Automatic Route Selection (ARS) line to make outgoing calls. If the pool is busy, the system can be programmed to allow the remote user to use Callback to queue a call for the busy pool.

- Arrange to have calls forwarded, change the forwarding destination, or cancel forwarding to a telephone inside or outside the system.

$\Longrightarrow$ NOTE:
Calls made through remote access to locations outside the system may vary in transmission quality.

Remote access also allows remote system programming and maintenance.

Specific outside lines/trunks (ground-start, loop-start, emulated ground-start or loop-start) are programmed for either dedicated or shared remote access. When dedicated remote access is programmed for a line/trunk, all incoming calls on that line/trunk are treated as remote access calls. When shared remote access is programmed for a line/trunk, incoming calls on that line/trunk are treated as remote access calls only when Night Service is activated on the system. Remote access can be programmed for any outside line connected to the system, except Direct Inward Dial (DID) or dial-in tie trunks. Loop-start lines programmed for remote access should also be programmed for reliable disconnect.

⚠ SECURITY ALERT:
Avoid programming a remote access line as a destination for Night Service on any published telephone number. Professional toll-fraud criminals scan telephone directories for published local and 800 telephone numbers. Using these numbers, they attempt to gain access to the system, then may use such features as Remote Access to reach outside facilities from within the

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> system. For additional information about toll fraud, see Appendix A,
> "Customer Service Information."

For DID trunks, the routing digits must correspond to the remote access code
programmed into the dial plan. For dial-in tie trunks, remote access is possible
when the remote user dials the remote access code (the factory-set code is 889).

When a person calls into the system on a line/trunk that is programmed for remote
access, the system answers the call and the caller receives a special dial tone. If
a barrier code is not required, the caller can dial an extension, pool dial-out code,
ARS code, telephone number, or feature code. If a barrier code is required, the
caller dials the required 4- to 11-digit barrier code and receives a second dial tone.

➔ NOTE:
To activate features when using remote access, press ∗ followed by the
feature code. Pressing # followed by the feature code (as on a single-line
telephone) does not work.

Lines and Trunks

Remote access calls are treated differently, depending on the type of line/trunk
and how it is routed.

- **Line.** Loop-start, ground-start, emulated loop-start, emulated ground-start,
  BRI, and PRI B-channels programmed for line-appearance routing can be
  set for remote access use, dedicated or shared. A remote access caller
  does not dial the remote access code when remote access is in effect on
  these lines/trunks.

- **Dial-In Tie.** This type of line/trunk requires the caller to enter the remote
  access code when dial tone is received. The code is not part of the
  telephone number.

- **Dial Plan.** If a remote access caller dials the system on a DID, E&M, PRI
  B-channel with dial-plan routing, T1-emulated tie line, or T1-emulated DID
  trunk, the caller can be connected without entering the remote access code
  separately. Instead, the remote access code is part of the telephone
  number dialed by the caller and is routed automatically by the system as a
  remote access call. If either the dialed telephone number does not include
  the remote access number or the line/trunk is not programmed for routing
  by dial plan, the call is treated as a normal incoming call and remote
  access is not available.

When a call is received on a dial-plan-routed DID trunk, a dial-in tie trunk, or a
line/trunk programmed for shared remote access, and Night Service is not
activated, the call is redirected to the QCC queue, a calling group, or an
extension, depending on how the destination of calls to unassigned numbers is
programmed. The factory setting specifies the primary operator as the destination.

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Table 38 summarizes the ways that remote access is made available to callers, depending upon the type of line/trunk and the routing used on that line/trunk.

Table 38.   Remote Access Routing

Routing	Facility	User Dials	Facility Remote Access Programming
Line	Loop-start, ground-start, emulated loop- or ground-start, BRI, PRI B-channel group programmed for line routing, automatic-in tie, emulated automatic-in tie	Telephone number	Must be programmed for dedicated or shared remote access.
Not routed	Dial-in tie or emulated dial-in tie	Remote access code	None
Dial-Plan	DID or emulated DID, PRI B-channel group programmed for dial-plan routing	Telephone number including remote access code	System must be programmed to add or delete digits to or from dialed telephone numbers received, so the remote access code is received.

For more information, see "Primary Rate Interface (PRI) and T1" on page 441.

User Interaction

Beginning with Release 3.0, a caller has three chances to enter the correct barrier code. An inter-digit time-out occurs during the first attempt, even if the dialed digits are incorrect. The system only processes the valid number of digits. A dial tone is given after the correct code is entered. If the caller enters more than the correct number of digits, the system uses the time-out to hide the correct number of digits. The time-out recurs until the caller has dialed the eleventh digit—giving the impression that additional digits are required—even if the barrier code length is shorter. A distinctive tone sounds after an incorrect entry. After three incorrect entries, the system disconnects the caller.

The following steps describe a remote access call.

1. The caller dials into a line, described above, that accepts remote access calls. Personal lines light steady green.

2. If a barrier code is not required, the caller hears a dial tone and proceeds to Step 4.

3. If a barrier code is required, the caller dials the code.

   A barrier code cannot begin with ∗ (star) or contain two ∗s:

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a. If a correct barrier code is entered, the caller hears a dial tone and proceeds to Step 4. If an incorrect barrier code is entered, the caller hears an alternating high-low tone followed by a dial tone, and can enter the barrier code again. Up to three attempts are allowed.

b. If the caller enters an incorrect barrier code, he or she hears a retry tone 15 seconds after the system determines that the code is invalid. During this step, the caller can enter two asterisks (**) to erase the entry. This is treated as a failed attempt. The system then erases the code entry and sends a retry tone for another attempt at entering the barrier code (unless this was the caller's third attempt). If the caller fails all three attempts at entering the code, he or she hears the reorder dial tone and is eventually disconnected by the system.

4. The caller may now enter a telephone number, pool number, ARS, or maintenance code.

Class of Restrictions

Barrier codes should be used for all lines/trunks. A maximum of 16 barrier codes is allowed, each with a different class of restrictions. The class of restrictions allows or denies the use of system features to individuals or groups of users. Classes of restrictions are assigned whether or not barrier codes are used for remote access. If barrier codes are used, the class of restriction is assigned to each barrier code. If barrier codes are not used, the class of restriction can be assigned either to all non-tie trunks or to all tie trunks and DID trunks with remote access.

The restriction classes are as follows:

■ **Calling Restrictions.** Determine whether remote access users can make local and/or toll calls. The factory setting is outward-restricted, meaning the user can make only inside calls. The restricted user cannot make toll calls or any outside calls. The setting can be changed either to unrestricted, meaning the user can make inside local, toll, or outside calls, or to toll-restricted, meaning the user can make only inside and local outside calls. When barrier codes are not used, restrictions are assigned to all trunks and cannot be assigned to individual tie trunk or non-tie trunks. When barrier codes are used, restrictions are assigned to individual barrier codes.

■ **Automatic Route Selection (ARS) Facility Restriction Level.** If the system uses the Automatic Route Selection (ARS) feature, you can restrict the use of outgoing lines/trunks by remote access users by assigning a user restriction level from 0 to 6. The factory setting, 0, is the most restrictive, and 6 is the least restrictive. The value assigned corresponds inversely to the Facility Restriction Level (FRL) assigned to the ARS route. That is, an FRL of 0 is the least restrictive, and one of 6 is the most restrictive. To restrict remote users from using selected lines/trunks, you should assign a value that is lower than the FRL assigned to the route.

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When barrier codes are not used, the FRL is assigned to all remote access lines/trunks and cannot be assigned to individual lines/trunks. When barrier codes are used, FRLs are assigned to individual barrier codes.

■ **Allowed List Assignment.** Assigns Allowed Lists and is used when remote access users are restricted from making local and/or toll calls. When an Allowed List is assigned, remote access users can call specific numbers included on the list (local or long-distance). Allowed Lists are set up for all system users (see "Allowed/Disallowed Lists" on page 34). When barrier codes are used, Allowed Lists are assigned to individual barrier codes.

■ **Disallowed List Assignment.** Assigns Disallowed Lists; use when remote access users are not restricted from making local and/or toll calls. When a Disallowed List is assigned, remote users cannot dial the specific numbers included on the list. Disallowed Lists are set up for all system users (see "Allowed/Disallowed Lists" on page 34). When barrier codes are not used, Disallowed Lists can be assigned to all remote access lines/trunks and cannot be assigned to individual lines/trunks. When barrier codes are used, Disallowed Lists are assigned to individual barrier codes.

■ **Automatic Callback** (Autoqueuing). The factory setting prevents a remote caller who reaches a busy pool (Hybrid/PBX only) or extension from using the Automatic Callback feature to request a pool or extension. The factory setting can be changed to allow remote users to use Automatic Callback to request busy pools or extensions. Automatic Callback assignment applies to all remote access users and cannot be assigned to lines/trunks or barrier codes on an individual basis.

Considerations and Constraints

Under applicable tariffs, the customer is responsible for any charges incurred through the remote use of system facilities. To prevent unauthorized use of the system's outside lines by remote callers, see the Security Alert on page 523.

Beginning with Release 3.0, combining mismatched line/trunk types (touch tone and rotary) does not cause a call to fail.

Rotary-dial telephone users are routed to a QCC assigned as a backup extension. From there, callers are connected to the system operator.

Remote access calls ring on **SA** or **ICOM** buttons; however, the telephone rings like an outside call.

Systems with DID trunks can designate a DID extension that off-site users can dial to use remote access.

If a remote caller does not dial a number or feature code before the time-out period expires, the call goes to the redirect destination programmed for remote access.

Lines/trunks used for dedicated remote access must not be assigned to ring into a calling group.

Systems using Call Accounting System (CAS) track calls by barrier codes.

Touch-tone receivers are needed for remote access to work. For more information about TTR requirements see .

Mode Differences

Hybrid/PBX Mode

Remote access Automatic Callback is available only in Hybrid/PBX mode for calls made to busy pools.

Feature Interactions

Account Code Entry	A remote access user cannot enter account codes. However, if a remote access user calls an inside extension and the person at that extension enters an account code, the code overwrites the barrier code number (01–16) in the ACCOUNT field of the SMDR report.
Allowed/ Disallowed Lists	Allowed and Disallowed Lists are class of restriction items for remote access. When barrier codes are not used, Allowed and/or Disallowed Lists can be assigned to lines/trunks systemwide (tie trunks and non-tie trunks are grouped separately). When barrier codes are used, Allowed and/or Disallowed Lists can be assigned to individual barrier codes.
Authorization Code	A caller cannot enter an authorization code on a remote access call.
Automatic Route Selection	Remote access users can make calls by using ARS. Dial into the system, enter a barrier code if one is required, and dial the ARS code while listening to system dial tone. Facility Restriction Levels (FRLs) can be assigned to restrict the routes that remote callers can use. When barrier codes are not used, an FRL is assigned to all lines/trunks (tie trunks and non-tie trunks are grouped separately) and cannot be assigned to individual lines/trunks. When barrier codes are used, FRLs are assigned to individual barrier codes.
Callback	If the system is programmed for remote access, remote access users can use Callback (the factory setting for Automatic Callback is off, but you can enable this feature for remote access callers). The user cannot hang up but must wait on the line until the extension or pool is available.
Caller ID	If a remote access call comes in on a loop-start line with Caller ID (via a jack on an 800 GS/LS-ID module), caller information is recorded by SMDR. Caller ID information is not retrieved on remote access lines/trunks unless LS-ID Delay is programmed for the line/trunk, because the calls are answered too quickly.
Conference	An inside user can initiate a conference with the callers involved in a remote access call by selecting the active remote access line/trunk.

Digital Data Calls	Data calls cannot be made into lines programmed for remote access.
Display	Calls received through remote access show standard call information for outside calls, including the caller's number if an ISDN/PRI service or Caller ID is available. If a remote access call is sent to coverage because an invalid number has been dialed, an MLX display telephone user who receives the call sees Cover DISA#?.
Forward and Follow Me	Users can set up forwarding of calls to extensions or outside telephone numbers through remote access, as long as the system manager has enabled Remote Call Forwarding. To do so, call into the system on a line/trunk that is programmed for remote access. If a barrier code is required, the remote access dial tone (stutter tone) sounds. Enter the barrier code. Once you have correctly entered the barrier code (or if barrier codes are not required), the system dial tone sounds.

To forward calls to an extension, dial *33 while listening to system dial tone. Then dial the forwarding extension number and the destination extension number.

To forward calls to an outside telephone number, dial *33 and the forwarding extension number. Then dial either the ARS or pool dial-out code (Hybrid/PBX mode only), the Idle Line Access code (usually 9; Key and Behind Switch modes only), or the line/trunk number (usually 801–880). Finally, dial the destination telephone number and # to signal the end of the dialing sequence.

To cancel forwarding of calls to an extension, dial *33 while listening to system dial tone. Then dial the forwarding extension number.

Group Calling	A remote access user cannot be a member of a calling group but can call into a calling group. When the call rings at a calling group member's telephone, it rings as an outside call. A calling group can be programmed to receive calls that remote access users make to invalid extensions. If a line/trunk is programmed for both remote access and Group Calling, remote access overrides Group Calling.
Music On Hold	Remote access users waiting for a busy pool or extension do not hear Music On Hold, even if it is programmed on the system. They hear the queuing tone, then silence.
Night Service	In Release 4.0 and prior systems, when incoming calls are received on a line/trunk programmed for shared remote access, they are treated as remote access calls only when Night Service is activated on all of the operator positions that receive calls on that line/trunk. In Release 4.1 and later systems, the outside line/trunk can be assigned to a Night Service group; in this case, calls received on the outside line/trunk receive remote access treatment when Night Service is activated at *any* system operator position for a group where the line is assigned.

When a call is received on a line/trunk programmed for shared remote access and Night Service is not activated, the call rings at the extension programmed as the redirect destination for calls to invalid numbers.

Paging	Loudspeaker paging cannot be accessed from outside the system through DID lines or remote access.
Primary Rate Interface (PRI) and T1	A PRI line that has been programmed for routing by dial plan should not be programmed for remote access.
SMDR	Remote access calls are recorded only if SMDR is programmed to track incoming calls. If a barrier code is entered, the barrier code number (01–16) appears in the ACCOUNT field of the report, preceded by 999999. If the caller uses remote access to dial an extension and the call is answered, the extension number is shown in the STN (station) field. If the call is not answered at the extension, the STN field is blank.

If the caller uses remote access to dial out on a line or trunk, the STN field on the first SMDR record is blank and a second record is generated for the outgoing call.

If no barrier code is required, the ACCOUNT field contains 99999900.

In Release 3.0 and later systems, if a caller provides an invalid or incomplete barrier code for 3 attempts, either 999999 or 16 zeros are recorded in the ACCOUNT field. If the connection is broken before the third attempt, the ACCOUNT field contains 999999. If a caller hangs up after the third attempt but before receiving reorder tone, the ACCOUNT field may contain either 999999 or 16 zeros. If a caller hangs up after the third attempt and after receiving reorder tone, the ACCOUNT field contains 16 zeros.

System Renumbering	If the system includes DID or dial-in tie trunks, the number assigned to the line/trunk can be programmed for remote access. This allows remote access users to call in on the DID or dial-in trunk.

The remote access code can be renumbered. The factory-set remote access code is 889.

Ringing Line Preference

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Ringing Options

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Information, System Information (SysSet-up)
Modes	All
Telephones	All except QCC
Programming Codes	
Ring Timing Options	(centralized telephone programming only for single-line
All personal line and **Pool**	telephones and MFM)
buttons on extension	
Immediate Ring	*347
Delay Ring	*346
No Ring	*345
Individual personal line,	
Pool, **SA**, **ICOM**, and	
Cover buttons	
Immediate Ring	*37
Delay Ring	*36
No Ring	*35
Send Ring (on principal	
extension, for Shared **SA**	
buttons with Delay Ring)	
On	*15
Off	**15
Abbreviated Ring	
(multiline telephones only)	
On	*341
Off	*342
Personalized Ringing	*32 + *ringing pattern number (1–8)*
(multiline telephones only)	
MLX Display Labels	RingOptions,All Lines,Immed Ring/Delay Ring/No Ring
	[RngOp,AllLn,Immed/Delay/No]
	RingOptions,One Line,Immed Ring/Delay Ring/No Ring
	[RngOp,1Line,Immed/Delay/No]
	SharedSARng,On/Off [ShRng,On/Off]
	RingOptions,Abbreviated,On/Off
	[RngOp,Abbrv,On/Off]
	PersonalRng,Pattern #n [PRing,Pat#n]
System Programming	To set delay for Cover buttons programmed for Delay Ring (Delay Ring Interval, 4.0 and prior systems)
	• Options→Delay Ring
Factory Settings	
Ring Timing Option (all	Immediate Ring
buttons)	
Delay Ring Interval	2 rings (range 1–6 rings)
Send Ring	On

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At a Glance - *Continued*

Factory Settings
continued

Abbreviated Ring	Enabled
Personalized Ringing Pattern	1 (pattern numbers 1–8)

Description

Ringing Options refers collectively to three options that determine how users' telephones ring when they receive calls: Ring Timing options, Abbreviated Ring options, and Personalized Ringing options. These options are programmed for each extension through either extension programming or centralized telephone programming, using the display or programming codes. In addition, the system uses distinctive ringing patterns to identify various call types to the telephone user.

Ring Timing Options

Ring Timing options control how soon a telephone rings, or whether it rings at all when a call arrives. Line buttons on each extension can be programmed so that calls ring as follows:

■ **Immediate Ring** (factory setting). Rings as soon as a call arrives.

■ **Delay Ring.** Provides a delay before the telephone rings. The length of the delay depends on the type of button and the coverage arrangement:

— On outside line, **SA** (including Shared **SA**), and **ICOM** buttons programmed for Delay Ring, the delay is fixed at two rings and cannot be changed.

— On Cover buttons programmed for Delay Ring in Release 4.0 and prior systems, the systemwide Delay Ring Interval, set through system programming, provides a delay of 1 to 6 rings with a factory setting of 2.

In Release 4.1 and later systems, system managers customize coverage delays on an extension-by-extension basis. The Coverage Delay Interval and Delay Ring Interval systemwide settings are replaced by these extension timers: Primary Cover Ring Delay and Secondary Cover Ring Delay (range 1–6 rings, factory setting 2 rings).

— In Release 4.0 and prior systems, when a sender has both Individual and Group Coverage and an Individual Coverage receiver is available, the programmed systemwide Delay Ring Interval of 1 to 6 rings provides a delay, in addition to the systemwide Coverage Delay Interval, before calls go to Group Coverage.

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In Release 4.1 and later systems, the Group Coverage Ring Delay (range 1–9 rings, factory setting 3 rings) is set for each sender's extension. When a sender has both Individual and Group Coverage, the Primary Cover Ring Delay controls the interaction between the two types of coverage.

■ **No Ring.** Prevents the telephone from ringing at all. However, the distinctive returning transfer and callback rings, described later in this section under "Distinctive Ringing" on page 536, do sound.

■ **Send Ring.** An additional Ring Timing option, used at the principal extension to override Delay Ring programming for any **Shared SA** buttons. With Send Ring on (the factory setting), a call arrives at a busy **SA** button at the principal extension and rings immediately at the **SSA** buttons programmed for Delay Ring.

Ring Timing options can be programmed *individually* for each personal line, prime line, **Pool**, **SA** (including Shared **SA**) or **ICOM**, and Cover button on an extension. The extension also can be programmed so that all *outside* calls on personal line, prime line, and **Pool** buttons ring uniformly with one of these options. (**SA**, **ICOM**, and Cover buttons must always be programmed individually.)

Regardless of the Ring Timing option selected, the green LED next to the line button with a call flashes immediately when a call arrives.

➡ **NOTES:**
1. Ring Timing options cannot be programmed for **SA Originate Only** or **ICOM Originate Only** buttons because they do not ordinarily receive calls.
2. For more information about coverage ring delays, see "Coverage" on page 139.

Abbreviated Ring Options

The Abbreviated Ring setting specifies how a telephone rings if a call arrives when a user is already on another call. Each extension can be programmed to ring in one of the following ways:

■ **Abbreviated Ring** (factory setting). When the user is already on a call, a new call arriving on a line button programmed for Immediate Ring or Delay Ring rings only once. The ring is at a lower volume (called *attenuated ring*) than the normal ring.

■ **Repeated Ring.** The telephone rings normally. When the user is already on a call, an incoming call continues to ring until it is answered.

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Personalized Ringing Options

Personalized Ringing options allow a user to select one of eight different ringing patterns for his or her telephone, making it easier to distinguish its ring from those of other telephones. The user hears the personalized ringing pattern as the long part of the distinctive ring for an inside, outside, returning transfer, or callback call, described in the next section. Pattern #1 is the factory setting.

Distinctive Ringing

Distinctive ringing allows users to identify the type or origin of an incoming call. The system identifies calls with the distinctive ringing patterns listed in Table 39. These patterns cannot be changed.

Table 39.   Distinctive Ringing

Call Type	Telephone Type			
	MLX*	Analog Multiline*	Single-Line	QCC
Inside	1 long ring	1 long ring	1 ring	1 ring
Outside	1 long ring + 1 short ring	1 short ring + 1 long ring	2 rings	2 rings
Transferred outside call or returning transfer	1 long ring + 2 short rings	2 short rings + 1 long ring	3 short rings	1 ring
Returning callback call (priority ring)	1 long ring + 3 short rings	2 short rings + 1 long ring	3 short rings	

---

*   Includes Direct-Line Consoles.

⊃ NOTE:
The long ring is the personalized ringing pattern selected for the telephone.

Considerations and Constraints

Transfer returns ring repeatedly until answered, regardless of the Abbreviated Ring setting for the telephone.

When one of the eight personalized ringing patterns is selected, through either extension programming or centralized telephone programming, the person programming the option hears the ring selected. In Release 2.0 and later systems, an MLX display telephone user *must* select Enter from the display to confirm and store the selection. After choosing Enter, the user again hears the selected ring.

The personalized ringing pattern selected for each extension is not shown on system programming reports.

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Delay Ring is especially useful on a Cover button because it gives the sender a chance to answer before the call rings at the receiver's telephone. No Ring is appropriate for users who do not usually answer outside calls. To answer a call when a telephone is programmed not to ring, simply press the line button with the flashing green LED.

While using programming codes or display selections to program Ring Timing options for one line, press a line to which these options apply—any line button with an outside line or any **SA** or **ICOM** button. If you press any other type of button, an error tone sounds; at a display telephone, you also see an error message. While programming Ring Timing options for all outside lines, you can press *any* line button, not necessarily an outside line button.

Telephone Differences

Queued Call Consoles

Ringing options cannot be programmed on a QCC. The **Call** buttons are fixed to Immediate Ring. A QCC receives only two types of distinctive ringing—one ring for an inside call and two rings for an outside call.

Other Multiline Telephones

Personalized ringing can be programmed for an MLC-5 cordless telephone only through centralized telephone programming.

Personalized ringing is not supported on MDC 9000 telephones.

Ring Timing Options can be programmed for a Multi-Function Module (MFM) only through centralized telephone programming.

Single-Line Telephones

Neither abbreviated ringing nor personalized ringing can be programmed for single-line telephones. Ring Timing options can be programmed only through centralized telephone programming.

Single-line telephones connected to a 008 OPT module do not receive distinctive ringing for the various call types listed in Table 39.

Feature Interactions

Auto Answer All   A General Purpose Adapter (GPA) connected to an analog multiline telephone answers calls on lines set for Immediate or Delay Ring. Program lines that are not to be answered for No Ring. If the device should answer only inside calls, personal lines must be set for No Ring.

Automatic Line Selection	The system does not automatically select outside line, **SA**, **ICOM**, or Cover buttons programmed for No Ring, even when Ringing/Idle Line Preference is turned on. The user must select the button manually to answer a call. The green LED flashes when the call arrives; when the user presses the button, the red LED turns on.
Caller ID	The Delay Ring option can be used as an alternative to the LS-ID Delay option at automatically answering adjuncts so that Caller ID information is received. LS-ID Delay delays ringing at all extensions in the system, while Delay Ring delays ringing only at the extension programmed for it. Delay Ring timing starts when LS-ID Delay ends.
Coverage	Primary Cover, Secondary Cover, and Group Cover buttons can be programmed for Immediate Ring, Delay Ring, or No Ring.
	Calls received on line buttons programmed for No Ring are not sent to coverage.
	If an Individual or Group Coverage receiver is on a call when a coverage call is received, the receiver hears an abbreviated ring (if enabled).
	Calls received on a Primary Cover, Secondary Cover, or Group Cover button use the receiver's, not the sender's, personalized ringing pattern.
	In addition to its primary function, the Delay Ring Interval in Release 4.0 and prior systems provides a delay before calls go to Group Coverage, in addition to the Coverage Delay Interval, when the sender also has Individual Coverage and a receiver is available.
	In Release 4.1 and later systems, the ringing at a programmed Primary or Secondary Cover button, set for Delay Ring, is augmented by the Primary and Secondary Ring Delays set for the sender's extension. The systemwide Secondary Ring Delay Interval, fixed at two rings, also augments ringing on Secondary Cover buttons set for Delay Ring. For more information, see .
Digital Data Calls	Personalized ringing has no effect on calls to a digital communications device.
	Terminal adapters follow programmed ringing options and should be set to Immediate Ring.
	Videoconferencing systems are not affected by ringing options.
Fax Extension	The Fax Extension feature overrides the distinctive ringing pattern for calls transferred to a fax extension. When a fax extension receives a transferred call, the fax extension provides one long ring (similar to an inside call) instead of three short rings.

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Forward and Follow Me	On multiline or single-line telephones where an **SA** or **ICOM** button is available to receive the call, calls forwarded to an extension ring with an abbreviated ring at both the forwarding extension and the destination extension. Calls forwarded from either a multiline or single-line telephone to an outside telephone number do not ring at the forwarding extension. In Release 4.0 and prior systems, if no **SA** or **ICOM** button is available at the forwarding extension, the call is not forwarded and the caller hears a busy tone.
	In Release 4.1 and later systems, a forwarded call that is received when the forwarding single-line or multiline telephone has no available **SA** or **ICOM** button is forwarded immediately and does not ring at the forwarding extension, regardless of the Ring Timing options (Delay, Immediate, or No Ring) set.
	Outside calls received at the forwarding extension ring as inside calls at the destination extension (one ring) and do not receive the normal distinctive ring for an outside call.
	With Immediate Ring, calls are sent immediately to the forwarded extension. With Delay Ring, calls are delayed before forwarding. With No Ring, calls are not forwarded. In Release 4.0 and later systems, if a button is set to Delay Ring, calls are forwarded after both the Delay Ring and Forwarding Delay. The two delays are cumulative.
Group Calling	Abbreviated ringing is not operable for calls to a calling group extension because a calling group member who is active on a call is considered unavailable for incoming calls. In Hybrid/PBX mode, calling group members should program **SA** buttons for Immediate Ring.
Headset Options	Headset Auto Answer does not automatically answer calls ringing on buttons programmed for No Ring on an MLX telephone; the user must select the button manually to answer the call. When abbreviated ringing is enabled, the user hears the abbreviated ring if another call rings while the user is on a call.
HotLine	Ringing Options.can be set for HotLine extension (Release 5.0 and later systems) lines. If a HotLine extension should not receive calls, set its line for No Ring.
Integrated Administration	In Release 4.0 and prior systems, the total of the values programmed for Delay Ring plus the systemwide Coverage Delay Interval should be less than either the transfer return time or the VMS transfer return interval. (These values are shown on the Application Switch Defaults screen.)
	In Release 4.1 and later systems, Integrated Administration cannot be used to specify coverage delays for AUDIX Voice Power.
Multi-Function Module	The ringing patterns for tip/ring devices connected to an MFM are those of an MLX telephone rather than a single-line telephone—one ring for inside calls, two for outside calls, and three for priority ring or transfer return. Personalized ringing patterns cannot be programmed for an MFM. Centralized telephone programming must be used to program Ring Timing options (Immediate Ring, Delay Ring, or No Ring).

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Night Service	When Night Service is turned on, calls received at a Night Service group member's telephone ring immediately even if the line buttons are programmed for Delay Ring or No Ring. When Night Service is turned off, telephones return to their programmed Ring Timing options.
Reminder Service	A reminder call overrides programmed Ring Timing options (Delay Ring and No Ring) and rings with a priority ring at an **SA** or **ICOM** button.
Transfer	Transfer returns ring repeatedly until answered, regardless of the Abbreviated Ring setting for the telephone.

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Saved Number Dial

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Directory
Modes	All
Telephones	All except QCC and single-line telephones
Programming Code	*85
MLX Display Label	SaveNumDial [Save#]
Maximums	16 digits

Description

Saved Number Dial allows a user to save the last number dialed from a multiline telephone and to call the number again without manually redialing. You can save the number even if the called party answers. The saved number is any extension or telephone number dialed using one of the following methods:

- Dialing the complete number on the dialpad

- Dialing the number using a Personal Speed Dial code

- Dialing the number using a programmed outside Auto Dial button

- Dialing the number using a programmed Last Number Dial or Saved Number Dial button

Saved Number Dial requires a programmed button. It does not store numbers dialed with an Extension, Personal, or System Directory, an inside Auto Dial button, a System Speed Dial code, or a DSS (Direct Station Selector) button.

Unlike Last Number Dial, Saved Number Dial replaces the saved number only when you press the programmed Saved Number Dial button before hanging up, not each time you dial a new number.

Considerations and Constraints

The number of Saved Number Dial buttons that can be programmed on each multiline telephone is limited only by the number of available programmable buttons.

When using Saved Number Dial on an analog multiline telephone connected to a General Purpose Adapter (GPA) in Auto mode, lift the handset before activating the feature.

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Because the type of line button (personal, **SA**, or **ICOM**) used to make the call is
not stored, select the appropriate line button before using Saved Number Dial to
redial a number.

The green LED next to the programmed Saved Number Dial button does not go
on when the feature is used.

Saved Number Dial saves whatever you dial, whether or not the number is valid.

> **NOTES:**
> 1. If you dial a telephone number and, after the call is connected, dial
>   additional digits, such as an account number or password, Saved
>   Number Dial saves all the digits, including those dialed after the call is
>   connected (up to a total of 16).
>
> 2. When you press the Saved Number Dial button, all dialed digits are
>   shown on the display of a display telephone, including confidential
>   information such as passwords or account codes. Therefore, you must
>   not use Saved Number Dial with sensitive information.

If the number dialed with an outside Auto Dial button or Personal Speed Dial code
includes a special character such as Pause or Stop, the special character does
not work when the number is redialed by Saved Number Dial.

Mode Differences

Behind Switch

When you manually dial an outside number that includes a dial-out code—for
example, an Automatic Route Selection (ARS) or pool dial-out code required by
the host system—the pauses required to wait for dial tone from some host
systems are not automatically stored when Saved Number Dial is used. As a
result, you may either hear a fast busy signal or reach a wrong number when you
use Saved Number Dial to redial a stored number.

Key Mode

In Key mode, Saved Number Dial cannot be used on an analog multiline
telephone unless a Feature button or Saved Number Dial button is programmed
on the telephone. Saved Number Dial cannot be activated by pressing # and
entering the feature code. The programmed Feature button must be used instead.

Telephone Differences

Queued Call Consoles

Saved Number Dial cannot be used on a QCC.

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Other Multiline Telephones

On a multiline telephone, to save a number using Saved Number Dial, press the programmed Saved Number Dial button before hanging up. The green LED next to the programmed button does not go on when the feature is used.

To redial a number using Saved Number Dial, select the appropriate line for the call and press the programmed Saved Number Dial button. The number saved by the feature is dialed automatically. MLX display telephone users cannot use the feature by selecting it from the display but can use the display to program the feature onto a button.

When using Saved Number Dial on an analog multiline telephone connected to a General Purpose Adapter (GPA) in Auto mode, lift the handset before activating the feature.

Single-Line Telephones

Saved Number Dial cannot be used on single-line telephones.

Feature Interactions

Auto Dial	A number dialed by pressing a programmed outside Auto Dial button is stored for Saved Number Dial as though it were dialed with the dialpad, but special characters do not work. An extension dialed by pressing a programmed inside Auto Dial button is not stored for Saved Number Dial.
Authorization Code	For security, an authorization code is not saved by the Saved Number Dial feature.
	The Authorization Code feature does not affect Saved Number Dial on the extension you are using or your home extension. You can retrieve the saved number on the phone you are using.
Automatic Route Selection	The ARS dial-out code is saved with the telephone number dialed.
Directories	Saved Number Dial does not store numbers dialed using a Personal, Extension, or System Directory listing.
Direct Station Selector	An extension number dialed by pressing a DSS button is not stored for Saved Number Dial.
Display	When a user presses a programmed Saved Number Dial button, the digits appear on the display as though dialed from the dialpad.
HotLine	Saved Number Dial is not available at HotLine extensions (Release 5.0 and later systems).

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Inspect	In Release 1.0 and 1.1 systems, when a user presses **Inspct** and then a programmed Saved Number Dial button, Saved Number Dial appears on the display.
	In Release 2.0 and later systems, when a user presses **Inspct** and then a programmed Saved Number Dial button, the saved number appears on the display.
Microphone Disable	When an MLX telephone's microphone is disabled, pressing a Saved Number Dial button before lifting the handset turns on the speakerphone so that you can hear the number being dialed. However, once the call is answered, you must lift the handset to talk.
Recall/Timed Flash	Recall can be used on a call made using Saved Number Dial on a personal line or **Pool** button (loop-start only), an inside call, or, in Release 2.0 and later systems, an outside call made on a loop-start line using an **SA** or **ICOM** button.
SMDR	All outside numbers dialed with Saved Number Dial are recorded by SMDR.
Speed Dial	Telephone numbers dialed using Personal Speed Dial are stored by Saved Number Dial. If the number includes special characters, such as Pause or Stop, the special characters do not work when the number is redialed using Saved Number Dial. Telephone numbers dialed using System Speed Dial are not stored by Saved Number Dial.
System Access/ Intercom Buttons	When Saved Number Dial is used on a call made with a Shared **SA** button, the number is stored on the telephone where Saved Number Dial was used, not on the principal extension.
Transfer	The Saved Number Dial feature can be used to dial the outside number of a party to which a call is being transferred.

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Second Dial Tone Timer

At a Glance

Users Affected	Telephone users, operators
Reports Affected	System Information (`SysSet-up`)
Modes	All
Telephones	All
System Programming	•`Options`→**More**→`SecDTDelay Ring`→`Delay Ring`
MLX Display Labels	
Signal	`Signal [Signl]`
Notify, Send	`Notify,Send [Ntfy,Send]`
Notify, Receive	`Notify,Receive [Ntfy,Recv]`

Description

In Release 3.1 and later systems, the system manager can assign a second dial tone timer to lines and trunks. This feature helps prevent toll fraud when a company uses special services from the telephone service provider (for example, when star codes are used). Most telephone service providers offer special services that involve a second dial tone. For example, star codes enable telephone users to obtain services provided by the central office (CO). A star codes consists of a star (*) digit followed by a 2- or 3-digit number and is often dialed before an outgoing call.

After receiving certain digits dialed by a user, the CO may provide a second dial tone, prompting the user to enter more digits. If this second dial tone is delayed and the user dials digits before the CO provides the second dial tone, one of the following problems can occur:

- The central office misroutes the call. In this case, the CO misses the digits dialed before the second dial tone is provided.

- The user places a call to a restricted number, evading calling restrictions. In this case, a call that should be blocked is not because the first digit that is dialed before the CO provides second dial tone causes the dialed number not to match the restricted number.

Using the second dial tone timer, the system manager can set the time interval during which the CO is expected to provide second dial tone. Once this timer interval is exceeded, users can dial the remaining digits. If users dial the remaining digits before the timer interval is exceeded, the MERLIN LEGEND Communications System blocks the call.

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Considerations and Constraints

Contact your central office to determine whether there is a delay before second dial tone is returned. If calls are misrouted and dropped when special services requiring second dial tone are used, consider adjusting the second dial tone timer interval.

Feature Interactions

Directories and Speed Dial   Marked System Speed Dial entries (entries that do not display) are not affected by the Second Dial Tone setting. If the central office does not immediately supply dial tone when a star code is entered, and a marked System Speed Dial entry uses star codes, then the appropriate number of pauses (each 1.5 seconds) must be programmed in the entry following each star code.

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Signal/Notify

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Extension information
Modes	All
Telephones	All except QCC and single-line telephones
Programming Codes	
Signal	*23 + ext. no.
Notify, Send	*757 + ext. no.
Notify, Receive	*758 + ext. no.
MLX Display Labels	
Signal	Signal [Signl]
Notify, Send	Notify,Send [Ntfy,Send]
Notify, Receive	Notify,Receive [Ntfy,Recv]

Description

A user can signal another telephone user without making a call to that extension, using either the Signal feature, which beeps the destination extension, or the Notify feature, which lights an LED on the destination extension. The meaning of the signal can be prearranged between the sending and receiving users.

Signal

The Signal feature allows a multiline telephone user to beep another telephone. To use the feature, press a programmed Signal button without lifting the handset. A beep is heard at the destination extension for as long as the sender holds the button down.

In addition to sending a beep, the Signal button can be used to see the status of the destination extension. When the destination user lifts the handset or uses Do Not Disturb, the green LED next to the Signal button turns on.

A user also can use the Signal button to dial the destination automatically. However, the user must select an **SA** or **ICOM** button and either lift the handset or press the **Speaker** button before using the Signal button; this is different from Auto Dial, which automatically selects a line and activates the speakerphone.

Notify

Notify allows a multiline telephone user to light an LED on another telephone. To use this feature, a Send button must be programmed at the sender's telephone and a Receive button must be programmed at the receiver's telephone. These

buttons are typically labeled with the names of the sender and recipient, for example, "Notify Mary" at the sending telephone and "Call Consuela," at the receiving telephone.

When the sender presses the Send button, a green LED turns on next to the Receive button at the receiver's telephone and the Send button at the sender's telephone. Both LEDs remain on until either the sender presses the Send button again or the receiver presses the Receive button.

The visual notification, lighting the destination telephone's LED, is sent only one way, from the sender to the receiver. If both users want to send and receive the visual notification, both telephones must be programmed with Send and Receive buttons. Unlike the Signal feature, Notify cannot be used to see the status of a destination extension, nor can it be used to automatically dial the extension.

Considerations and Constraints

Signal and Notify can be used even when both users are on the telephone.

Telephone Differences

Queued Call Consoles

Notify and Signal buttons cannot be used on QCCs; however, pressing a DSS button sends a signal to the extension associated with the DSS button in the following instances:

- A QCC operator is timed out from dial tone on a **Call** button or presses the **Forced Release** button while listening to dial tone on a **Call** button.

- A QCC operator, with a call in a split condition, presses the **Source** button after contacting the destination but does not connect both parties by using the **Join** button. If the operator presses a DSS button, a signal is sent to the destination extension.

Other Multiline Telephones

Both Signal and Notify require a programmed button (Notify requires two). MLX display telephone users cannot select either of these features from the display.

Single-Line Telephones

Neither Signal nor Notify can be used on single-line telephones.

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Feature Interactions

Auto Dial	A Signal button and an Auto Dial button cannot be programmed for the same extension. If a user tries to program one of these buttons while the other is already programmed, the feature being programmed erases the previously programmed feature.
Conference	Signal and Notify can be used during a conference call.
Digital Data Calls	Signaling can be activated by video systems that have the ability to dial strings and feature codes beginning with #.
	A Notify signal can be received at a passive-bus MLX telephone, even when a 2B data or voice call is active.
Direct Station Selector	If a user presses a Signal button programmed with a system operator's extension while making a call to the system operator, the LED next to the operator's DSS (Direct Station Selector) button changes from flashing to steady while the Signal button is held down.
Do Not Disturb	Signal cannot be used when the destination telephone user activates Do Not Disturb.
Group Calling	A Signal button cannot be programmed for a calling group.
Messaging	If a display telephone user presses a Signal button only to send an audible signal with a posted message to a telephone, the posted message is not shown on the display at the destination. However, if a display telephone user selects an **SA** or **ICOM** button, lifts the handset, and *then* uses the Signal button to dial the extension, the posted message is shown at the destination telephone.
Multi-Function Module	When set for supplemental alert adapter operation, a Multi-Function Module (MFM) can receive a signal but cannot send one. An MFM cannot receive a signal when set for tip/ring operation.
Privacy	Users can program and use the Signal and Notify features to signal co-workers who have activated Privacy.
Transfer	A Signal button can be used to dial the extension during a transfer after the **Transfer** button and either an **SA** or **ICOM** button is pressed. Signal buttons cannot be used to initiate one-touch Transfer.

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Speed Dial

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Extension Information, System Directory
Modes	All
Telephones	
System Speed Dial	All except QCC
Personal Speed Dial	Multiline telephones with 10 or fewer buttons, single-line telephones, data equipment
Programming Codes	
System Speed Dial	*24 **+** System Speed Dial code
Personal Speed Dial	# **+** Personal Speed Dial code (01–24) **+** *21 + dial-out code **+** tel. no. **+** ##
MLX Display Label	SysSpeedDl [SpdDl]
System Programming	Create, change, or delete System Speed Dial entries:
	• **More**→Labeling→Directory→System
Maximums	
System Speed Dial	130 numbers
Personal Speed Dial	40 characters for each number
	11 characters for each label
	1,200 numbers in the system
	24 numbers for each user
	28 characters for each number
Factory Settings	
System Speed Dial Codes	600–729
Personal Speed Dial Codes	01–24 for 5-button, 10-button, data equipment, and single-line telephones
	01–18 for 16-button telephones

Description

System Speed Dial and Personal Speed Dial allow users to dial outside numbers quickly, using a 2- or 3-digit code.

System Speed Dial

System Speed Dial lets the system manager program frequently used numbers that can be dialed from any extension (including data workstations) using a 3-digit code.

In Hybrid/PBX mode, numbers can include pool dial-out codes or the ARS code.

System Speed Dial numbers are programmed by using the Labeling feature. The programmed labels include the name of the business or person being called and the number dialed. When a person with a display telephone uses a Speed Dial

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code to dial the number, the number being dialed appears on the display unless it is a *marked* Speed Dial number.

For numbers that include confidential information, such as passwords or account billing numbers, the listing can be specifically designated in system programming to suppress the number dialed so that users with display telephones see only the code that is dialed (600–729) and not the number dialed. This is called a *marked* System Speed Dial code. When a number is dialed using a marked System Speed Dial code, any calling restrictions (such as toll or outward restrictions) assigned to the extension are overridden. In addition, the System Speed Dial code is printed on Station Message Detail Recording (SMDR) reports instead of the number.

The range of numbers available for System Speed Dial codes is 600 through 729; this range cannot be changed.

The codes are available to all users except Queued Call Console (QCC) operators. On multiline telephones, line buttons can be programmed with individual 3-digit System Speed Dial codes. Each System Speed Dial code must be programmed on a separate button.

System Speed Dial numbers are stored in the System Directory. MLX display telephone users can search the directory and select a listing by pressing a display button to dial the number. Users with analog multiline display or nondisplay telephones dial the same numbers either by using the 3-digit System Speed Dial codes or by programming individual System Speed Dial codes onto buttons.

Personal Speed Dial

Personal Speed Dial allows a user to program up to 24 numbers that can be dialed using a 2-digit code. Personal Speed Dial is used only by single-line telephone users and users with multiline telephones having 16 or fewer buttons— for example, MLX-5, MLX-5D, MLX-10, MLX-10D, or MLX-16DP telephones. Personal Speed Dial may be used by digital data workstations and modem data-only workstations, but all numbers must be programmed for the communications device through centralized telephone programming.

Personal Speed Dial allows a user to dial a 2-digit code for long numbers that may require, for example, account codes, long-distance company access codes, and area codes. In Hybrid/PBX mode, a Personal Speed Dial number also can include pool dial-out codes or the Automatic Route Selection (ARS) code. When dial-out codes are included, Pause characters may be required immediately following the dial-out code to allow time to receive the telephone company dial tone.

The Personal Speed Dial codes used to select specific programmed numbers are 01 to 24. Because each user has the same codes from which to choose, the telephone numbers for the codes apply only to the extension for which they were programmed.

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NOTE:
This feature should be used with BIS-10, MLC-5, MDW 9000, MDC 9000, MLX-5, MLX-5D, MLX-10, MLX-10DP, MLX-16DP, or MLX-10D phones *only*. MLX-20L telephone users should program a Personal Directory instead of Personal Speed Dial codes. MLX-28D telephone users and users of analog multiline telephones with more than 10 buttons should program Auto Dial buttons instead of Personal Speed Dial codes. Programming Personal Speed Dial codes on phones with more than 10 buttons may delete features already programmed onto those buttons.

Considerations and Constraints

Personal Speed Dial numbers can be used only with single-line telephones, digital data devices, modem data-only workstations, and multiline telephones with 16 or fewer buttons.

In Release 1.1 later systems, when you are programming Personal Speed Dial on MLX-5D, MLX-10D, MLX-10DP, or MLX-16DP telephones, select Enter from the display after dialing the telephone number. Otherwise, the number is not programmed.

A number dialed using a marked System Speed Dial code overrides any calling restrictions (such as toll or outward restrictions) assigned to the extension.

The following special characters can be used in numbers programmed for Speed Dial codes: Pause (**Hold**), Stop (**Drop**), Flash (**Conf**), and End of Dialing (#). See Appendix H, "Programming Special Characters," for additional information.

When a pool dial-out or ARS code is included in the dialing sequence associated with a Personal Speed Dial or System Speed Dial code, pauses may be required immediately after the dial-out code to allow time to receive outside dial tone.

Personal and System Speed Dial cannot be used at rotary-dial telephones.

Personal Speed Dial can be used at digital data and modem-only workstations, but must be programmed through centralized telephone programming.

On multiline telephones, line buttons can be programmed with individual System Speed Dial codes. Each System Speed Dial code must be programmed on a separate button.

Personal Speed Dial should not be confused with Personal Directories. See "Directories" on page 218 for more information.

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Mode Differences

Hybrid/PBX Mode

A pool dial-out code or an Idle Line Preference access code can be included with the telephone number in a Personal Speed Dial or System Speed Dial code. To allow time to receive a local telephone company dial tone, Pause characters may be required immediately following either a pool dial-out code or an access code for a long-distance carrier. Pauses are not needed following the ARS code.

When ARS is used, the pound sign (#) should be pressed twice after the dialed digits during programming of a Personal Speed Dial or System Speed Dial code for a 7-digit toll number. This signals the end of the dialing sequence. See Appendix H, "Programming Special Characters," for information about special characters.

Behind Switch Mode

The user can program into Personal Speed Dial or System Speed Dial codes any dial-out codes required by the host system.

To allow time to receive a telephone company dial tone, Pause characters may be programmed after a pool dial-out code. Pause characters may also be required either by the host system or after entering an access code for a long-distance carrier.

Telephone Differences

Direct-Line Consoles

System Speed Dial numbers can be programmed from the first Direct-Line Console (DLC) connected to the first analog extension jack. In extension programming, press the **Feature** button or pound sign (#), the 3-digit System Speed Dial code, the outside telephone number, and the pound sign.

Queued Call Consoles

Personal Speed Dial and System Speed Dial cannot be used to dial numbers on a QCC. Directory features can be used instead.

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Other Multiline Telephones

System Speed Dial

To dial a System Speed Dial number, press a System Speed Dial button
programmed with the code. Alternatively, lift the handset, press the **Feature**
button, and dial the System Speed Dial code associated with the number. Analog
multiline telephone users without programmed Feature buttons should select an
SA or **ICOM** button, lift the handset, and dial the System Speed Dial code.

Personal Speed Dial

Users of multiline telephones with more than 10 buttons should not use Personal
Speed Dial; doing so may delete features already programmed onto buttons. To
dial a Personal Speed Dial number on a multiline telephone, press the **Feature**
button and dial the Personal Speed Dial code (01–24) associated with the
number. While off hook or on an **SA** or **ICOM** button at an analog multiline
telephone without a programmed Feature button, dial # and the Personal Speed
Dial Code.

Starting with Release 1.1, when programming Personal Speed Dial numbers,
MLX-10D and MLX-5D telephone users must select Enter from the display after
dialing the telephone number.

Single-Line Telephones

To dial a Personal Speed Dial or System Speed Dial number using a single-line
telephone, lift the handset and, while listening to inside dial tone, dial # and the
Speed Dial code.

In Release 5.0 and later systems, the first Personal Speed Dial number (code 01)
programmed for a single-line telephone is used by the HotLine feature. This inside
or outside number is dialed automatically when a user goes off-hook at a
single-line telephone programmed as a HotLine. The Personal Speed Dial
number may be programmed at the telephone prior to its being assigned as a
HotLine extension. Once the extension is programmed as a HotLine extension,
programming at the extension can only occur once, and any further programming
for the HotLine extension must be performed through centralized programming.

Feature Interactions

Account Code Entry   A System Speed Dial number or a Personal Speed Dial number can be
programmed to replace a long account number, but it cannot be
programmed to contain both an account number and a telephone
number. Single-line telephones cannot use Personal Speed Dial or
System Speed Dial to dial account codes because the # required to use
Speed Dial is also used to terminate Account Code Entry.

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Allowed/ Disallowed Lists	A user with an outward- or toll-restricted telephone cannot dial an outside number by using a Personal Speed Dial or System Speed Dial code (excluding a marked System Speed Dial code), unless the number is on an Allowed List assigned to the extension.
	A user cannot dial an outside number by using Personal Speed Dial or System Speed Dial if the number is on a Disallowed List assigned to the extension, unless the number is dialed using a marked System Speed Dial code.
Authorization Code	Users cannot enter authorization codes by using a System Speed Dial or Personal Speed Dial code because these features are activated by dialing #. Pressing # completes the entry of an authorization code and cannot also be used to activate speed dial features.
Automatic Route Selection	Personal Speed Dial and System Speed Dial numbers can include the ARS code.
Callback	When a Stop character is programmed as part of a Speed Dial number, stay on the line, wait for the callback call, and then reactivate Speed Dial. This signals the system to continue dialing the digits following the Stop character.
Calling Restrictions	When a marked System Speed Dial code is used to dial a number, any calling restrictions (such as toll or outward restrictions) assigned to the extension are overridden.
Conference	Press the **Conf** button to enter the Flash special character in a Personal Speed Dial or System Speed Dial telephone number.
Digital Data Calls	Personal and System Speed Dial codes can be used on digital communications equipment (DCE).
	Speed Dial codes can be used only on digital video systems that have the ability to dial feature codes or number strings beginning with #.
Directories	System Speed Dial numbers are stored in the System Directory. MLX display telephone users can dial the numbers by selecting the name from the display. If the number is on a marked System Directory listing, select the listing and dial the number regardless of any calling restrictions (toll and outward) assigned to the extension.
Drop	Press the **Drop** button to enter the Stop special character in a Personal Speed Dial or System Speed Dial telephone number.
Hold	Press the **Hold** button to enter the Pause special character in Personal Speed Dial or System Speed Dial telephone numbers.
HotLine	A HotLine extension (Release 5.0 and later systems) can dial only the first Personal Speed Dial number (code 01) programmed for the extension. The end-of-dialing digit, #, should be programmed at the end of the speed dial number. See Appendix H, "Programming Special Characters," for additional information.
Labeling	The telephone numbers associated with System Speed Dial codes are entered using the programming screens to program labels for System Directory listings.

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Last Number Dial	Telephone numbers that are dialed by using Personal Speed Dial are stored by Last Number Dial. However, if the stored number includes a special character, such as Pause or Stop, the special character does not work when the number is redialed by using Last Number Dial. Telephone numbers that are dialed by using a System Speed Dial code are not stored by Last Number Dial.
Pools	A pool dial-out code can be programmed on Personal Speed Dial and System Speed Dial numbers. When a pool dial-out code is included in the number dialed, Pause characters may immediately follow the dial-out code to allow time to receive a local telephone company dial tone.
Recall/Timed Flash	The **Conf** button is used to enter the Flash special character, which simulates pressing the **Recall** button in a Personal Speed Dial or System Speed Dial telephone number.
Saved Number Dial	Telephone numbers that are dialed by using a Personal Speed Dial code are stored by Saved Number Dial. If the number includes a special character, such as Pause or Stop, the special characters do not work when the number is redialed by using Last Number Dial. Telephone numbers that are dialed by using a System Speed Dial code are not stored by Saved Number Dial.
Second Dial Tone Timer	Marked System Speed Dial entries—entries that do not display—are not affected by the Second Dial Tone setting. If the central office does not immediately supply dial tone when a star code is entered and a marked System Speed Dial entry uses star codes, then the appropriate number of pauses (each 1.5 seconds) must be programmed in the entry following each star code.
SMDR	When Personal Speed Dial or System Speed Dial is used to dial an outgoing call, the actual digits dialed by the system appear on the report. However, when a marked System Speed Dial number is used, the Speed Dial code, rather than the digits dialed, prints on the report.
Transfer	Both Personal and System Speed Dial can be used to dial a transfer destination.

Station Message Detail Recording (SMDR)

At a Glance

Users Affected	Telephone users, operators, data users, system manager
Reports Affected	System Information (`SysSet-up`)
Modes	All
System Programming	Select types of calls recorded:
	• `Options`→`SMDR`→`Call Report`
	Select minimum duration of calls recorded:
	• `Options`→`SMDR`→`Call Length`
	Select report format:
	• `Options`→`SMDR`→`Format`
	Select whether authorization code is recorded instead of account code:
	• `Options`→`SMDR`→`AuthCode`
	Select whether Talk Time information is recorded on reports (Release 4.2 and later systems only):
	• `Options`→`SMDR`→`Talk Time`
Hardware	Printer needed for reports
Maximums	
Queue	100 records
Called Number Field	15 digits
Factory Settings	
Auth Code	Account Code displayed (if entered)
Talk Time	Disabled
Calls Recorded	Incoming and outgoing calls
Call Length	40 sec (range 0–255)
Format	Basic
Talk field	Off (Release 4.2 and later systems only)

Description

Station Message Detail Recording (SMDR) is used to capture detailed information about incoming and outgoing voice and data calls. The information is sent to an output device such as a printer or an optional call accounting system.

SMDR records are gathered sequentially and sent to the RS-232 SMDR jack on the processor module of the control unit. They can be printed on a serial printer connected to the SMDR jack. To assist further with cost allocation and unauthorized call detection, a Lucent Technologies Call Accounting System (IS CAS for IS III, CAS Plus V3, CAS for Windows, CAT/B, or CAT/H) can be connected to the SMDR jack on the control unit. In Release 4.2 and later systems, the optional MERLIN LEGEND Reporter software application allows the collection

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and analysis of calling group call information via a PC running Windows, connected to the SMDR jack on the control unit.

> **NOTES:**
> 1. For an overview of the applications that you can purchase separately, see Appendix I, "Applications." For more detailed information, see the application documentation or consult your Lucent Technologies representative.
>
> 2. You should not have CAS (Call Accounting System) and MERLIN LEGEND Reporter active at the same time. Use CAS for costing information and MERLIN LEGEND Reporter for analyzing service performance.

Two SMDR report formats are available: the factory-set Basic format and the ISDN (Integrated Services Digital Network) format. The ISDN format is used when the business subscribes to the AT&T INFO2 Automatic Number Identification (ANI) service, another ISDN/PRI network service (Release 4.2 and later systems), or to Caller ID service (requiring an 800 GS/LS-ID module for the loop-start lines on which the service is provided). When the ISDN format is selected during system programming, the CALLED NUMBER field of the call report shows the number dialed by a party calling into the system on a line where the service is provided (not all calling numbers can be identified; for details, see "Caller ID" on page 105).

Call information can be recorded for incoming and outgoing calls (the factory setting) or for outgoing calls only. In Release 4.2 and later systems, enabling the Talk Time option permits recording of incoming calls to Auto Login or Auto Logout calling groups, even if SMDR is programmed for outgoing calls only. Incoming calls to other calling groups still strictly adhere to the Call Report type setting.

In addition, the system is factory-set to record only calls that last at least 40 seconds. This setting can be changed to timing in the range 0 to 255 seconds. In Release 4.2 and later systems, enabling the Talk Time option permits recording of incoming calls to Auto Login or Auto Logout calling groups, even if the call length is less than the programmed minimum number of seconds. Incoming calls to other calling groups still strictly adhere to the minimum call length value.

For outgoing calls, timing starts when dialing is completed (the system detects end of dialing). In Release 4.1 and earlier systems, if incoming calls are included in the call report, timing begins when a user answers the call. In Release 4.2 and later systems, the same holds true for incoming calls if the Talk Time option is disabled (the factory setting). In Release 4.2 and later systems, if the Talk Time option is enabled, timing on incoming calls to Auto Login and Auto Logout calling groups begins from the time the call is initially detected in the system, while timing on incoming calls to other calling groups begins from the time the call is answered. Timing stops for both incoming and outgoing calls when the call is disconnected. In Release 2.1 and later systems, call timing for outgoing calls on PRI (Primary Rate Interface) lines begins when the call is answered at the far end.

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Therefore, no SMDR record is generated for unanswered calls made on these lines. Timing on non-PRI lines begins when dialing is complete.

In Release 4.2 and later systems, the SMDR feature includes enhancements to support sales and customer service calling groups; these improvements are outlined in this topic. They are designed to allow use of the Lucent Technologies MERLIN LEGEND Reporter software application, which assists in determining the effectiveness of calling group agents, in assessing the level of service provided to incoming callers, and in pinpointing needs for additional lines or agents to provide the best possible service for an organization's customers.

SMDR Report Fields

Figure 42 shows a sample SMDR report in ISDN format. The topics that follow describe each of the fields (columns) in an SMDR report.

```
1 2         3      4                 5   6         7      8      9        10
  DATE      TIME   CALLED NUMBER         DUR.      LINE   STN.   ACCOUNT  TALK
                   TAG
C 10/27/97 09:59               IN*   0:00:30   801    4118     123456
C 10/27/9  10:00               IN    00:15:57  801    4114     129345 15:51
C 10/27/9  10:00               IN    00:05:31  804    4116     129345 05:28
C 10/27/97 10:02              IN&    00:12:42  802    4118     435555
I 10/27/97 10:02        555-3633     00:00:55  803    4115     459995 00:48
I 10/27/97 10:03        555-4141*    00:00:53  803    4118
D 10/27/97 10:03     91212-555-1236  00:01:33  805    4115     122345
I 10/27/97 10:05       215-555-1234! 00:01:33  803    4126     111345 01:28
C 10/27/97 10:07  91011-015-555-1234? 00:10:33 803    4114     129345
```

Figure 42.   Sample SMDR Report in ISDN Format

A page heading indicates the name of each field in an SMDR record. Caller ID is available in Release 3.0 and later systems only. The TALK field is available in Release 4.2 and later systems only. Interpret each field as described in the following topics.

CALL TYPE (Column 1)

In Basic format, the values in this column have the following meanings:

- C indicates an incoming or outgoing voice call on an analog or digital facility

- D indicates an incoming or outgoing data call on a digital facility

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In ISDN format, Release 2.0 and earlier systems, the values in this column have the following meanings:

- C indicates an incoming or outgoing voice call on a non-PRI facility.

- D indicates an outgoing data call on a PRI facility.

- I indicates an incoming voice or data call on a PRI facility.

In ISDN format, Release 3.0 and later systems, the values in this column have the following meanings:

- C indicates either an incoming voice call that without ANI/ICLID information or an outgoing voice call.

- D indicates an outgoing data call on a PRI facility.

- I indicates either an incoming voice call with ANI/ICLID information, or a data call on a PRI facility or a facility equipped to receive the Calling Party Number.

In ISDN format, Release 4.0 and later systems, the values in this column have the following meanings:

- C indicates an incoming voice call without ANI/ICLID information or an outgoing voice call.

- D indicates an outgoing data call on a PRI, BRI, or T1 Switched 56 facility.

- I indicates an incoming voice or data call with ANI/ICLID information on a PRI, BRI, or T1 Switched 56 facility or a facility equipped to receive the Calling Party Number.

DATE (Column 2)

The date is shown in *mm/dd/yy* format with leading zeros.

In Release 4.1 and earlier systems, the reported date is as follows:

- When an incoming call was answered

- When an outgoing call was originated (the system detected end of dialing)

In Release 4.2 and later systems, the reported date is as follows:

- When an incoming call was detected in the system for Auto Login or Auto Logout calling groups (if the Talk Time option is enabled)

- When any other incoming call was answered (regardless of the value in the Talk Time option)

- When an outgoing call was originated (the system detects end of dialing)

TIME (Column 3)

The time is shown in *hh:mm* 24-hour (military) format.

In Release 4.1 and earlier systems, the reported time is as follows:

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- When an incoming call was answered

- When an outgoing call was originated (the system detects end of dialing)

In Release 4.2 and later systems, the reported time is as follows:

- When an incoming call was detected in the system for Auto Login or Auto Logout calling groups (if the Talk Time option is enabled)

- When any other incoming call was answered (regardless of the value in the Talk Time option)

- When an outgoing call was originated (the system detected end of dialing)

CALLED NUMBER (Column 4)

The maximum number of digits printed in this field is 15. A question mark (?) in the CALL TAG field (Column 5) indicates that the number overflowed because it was more than 15 digits long.

For an incoming call in Basic format, this field displays IN.

In Release 2.0 and later systems, for an incoming call in ISDN format, Column 4 displays the following values:

- IN on a non-PRI facility

- Automatic Number Identification (ANI) on a PRI facility or IN if no caller identification is available

In Release 3.0 and later systems, for an incoming call in ISDN format, Column 4 displays the following values:

- IN on a non-PRI facility

- Automatic Number Identification (ANI) on a PRI facility, the Calling Party Number on a loop-start facility using an 800 GS/LS-ID module, or IN if no caller identification is available

In Release 4.0 and later systems, for an incoming call in ISDN format, Column 4 displays the following values:

- IN on a non-PRI facility

- Automatic Number Identification (ANI) on a PRI, BRI, or T1 Switched 56 facility, the Calling Party Number on a loop-start facility using an 800 GS/LS-ID module, or IN if no caller identification is available

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For an outgoing call, Column 4 displays one of the following two values:

- Dialed digits

- The marked System Speed Dial code when dialed digits are suppressed to address privacy or security concerns

CALL TAG (Column 5)

This field is blank for the following types of calls:

- Outgoing calls

- Incoming calls to extensions other than calling groups programmed for Auto Login or Auto Logout operation

- Incoming calls assigned to an Integrated VMI type calling group for use when a voice messaging system (for example, AUDIX Voice Power or MERLIN MAIL) is connected to the communications system

- Incoming calls assigned to a Generic VMI type calling group for use when a voice messaging application that does not require special signaling (for example, Integrated Voice Power or Lucent Technologies Attendant) is connected to the system

- Incoming calls answered by an eligible calling group overflow receiver, the extension that is programmed as the Listed Directory Number, or the extension for the QCC (Queued Call Console) queue

- Incoming calls where the caller hangs up or abandons the call while listening to the delay announcement device or waiting in the queue

As applicable, one or more special characters may appear in the CALL TAG field. The special characters are as follows, in order of precedence:

- A question mark (?) indicates that the number overflowed because it was more than 15 digits long.

- An asterisk (*) indicates an abandoned call. This occurs when the calling party disconnects before a member of an Auto Login or Auto Logout calling group answers, even if the call was answered elsewhere in the system.

- An ampersand (&) indicates an overflow call. Because members of an Auto Login or Auto Logout calling group were not available to handle the incoming call, the call was answered by an Auto Login or Auto Logout overflow calling group.

- An exclamation point (!) indicates that the call was not answered at a group member's extension. If an incoming call is answered elsewhere in the system, then transferred to an Auto Login or Auto Logout calling group member who answers the call, the time that the calling party spent waiting to speak directly to a member of the calling group may not be accurately reported.

For an incoming call in Release 4.1 and earlier systems, this column displays an asterisk (*) when the calling party disconnects, unless the call is on a loop-start facility without reliable disconnect supervision.

For an incoming call in Release 4.2 and later systems, the CALL TAG column displays the following symbols when they are applicable:

■ An asterisk (*) if the calling party disconnects, unless the call is on a loop-start facility that does not have reliable disconnect supervision. If the Talk Time option is enabled, the TALK field records zero (00:00).

■ An asterisk (*) and zero (00:00) in the TALK field if the Talk Time option is enabled and the calling party disconnects before a group member answers, even if the call was answered elsewhere in the system. This applies to calls for an Auto Login or Auto Logout calling group.

■ An ampersand (&) and a Talk Time value greater than zero (00:00) if the Talk Time option is enabled and the call is answered by the Auto Login or Auto Logout overflow calling group (overflow call)

> **NOTES:**
>   1. If the calling group type is Integrated or Generic Voice Messaging Interface (VMI), an ampersand does not appear on the incoming call record for an overflow call, even if the overflow receiver is an Auto Login or Auto Logout calling group. In this case, the overflow calling group is considered the intended call destination and the call is not reported as an overflow call. For more information about Auto Login, Auto Logout, Generic VMI, and Integrated VMI calling group types, see "Group Calling" on page 281.
>
>   2. If the person who answers the call then transfers it to the calling group and the caller hangs up while waiting in the queue or listening to the delay announcement, an asterisk (*) appears in the CALL TAG field, instead of an exclamation point (!).

■ An exclamation point (!) and a Talk Time value greater than zero (00:00) under the following circumstances:

— The Talk Time option is enabled.

— The incoming call is answered elsewhere in the system.

— The call is transferred without consultation to an Auto Login or Auto Logout calling group member who answers the call.

> **NOTE:**
> By comparing the duration of the call (DUR. field) and the TALK field value for eligible calls, you can determine how long the caller waited from the time when the call arrived at the system. MERLIN LEGEND Reporter calculates this value, along with others such as the average talk time for agents, to create reports about call center performance.

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DUR. (Column 6)

The time is shown in *hh:mm:ss* format with a maximum value of 99:59:59. The system times an outgoing call from the completion of dialing until the call is disconnected.

In Release 4.1 and earlier systems, Column 6 displays the duration of an incoming call; timing starts when the call is answered and ends when the call is disconnected.

In Release 4.2 and later systems, Column 6 displays the duration of incoming calls according to the following rules:

- When the Talk Time option is disabled, timing begins when the call is answered and ends when it is disconnected.

- When the Talk Time option is enabled and the call is for an Auto Login or Auto Logout calling group, timing begins when the system detects the arriving call.

- When the Talk Time option is enabled and a call is not for an Auto Login or Auto Logout calling group, timing begins when the call is answered and ends when it is disconnected.

LINE (Column 7)

The incoming or outgoing line/trunk used for the call.

STN. (Column 8)

For outgoing calls, Column 8 displays the extension number where the call was placed.

In Release 4.1 and earlier systems, Column 8 displays the number of the extension where an incoming call was answered, overridden only when the call is transferred to another extension or parked and picked up by another extension.

In Release 4.2 and earlier systems, Column 8 displays extension numbers for incoming calls as follows:

- If the Talk Time option is disabled, the extension number that first answered, overridden only when the call is transferred to another extension or parked and picked up by another extension.

- If the Talk Time option is enabled, the extension number of an Auto Login or Auto Logout calling group member who first answered

- If the Talk Time option is enabled and the calling party disconnects before a member of an Auto Login or Auto Logout calling group answers, either the extension number of the last delay announcement unit that handled the call or the calling group member extension number where the call was alerting when the caller hung up. If the call was transferred to the calling group and not handled by a group member or delay announcement device, Column 8 includes the extension number of the transfer originator.

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- If blank, the caller disconnected while the call waited in the calling group queue for answering by a primary announcement unit or an agent.

ACCOUNT (Column 9)

In Release 1.0 and later systems, Column 9 displays the following values:

- The account code, if entered, for an incoming or outgoing call attributed to a specific project, department, or employee for billing purposes

- If the incoming call is a successful remote access call, either the 2-digit barrier code ID number (01–16) preceded by 6 consecutive 9s or 99999900, indicating that no barrier code was required, overridden only when an account code is subsequently entered

- If the remote access caller has failed to enter the correct barrier code, 16 zeros

In Release 3.0 and later systems, Column 9 can also display either the authorization code if entered with the option enabled, or the extension that placed the outgoing call for all outgoing calls that exceed the minimum call length. If this is a PRI call, the restriction code for the FTS 2000 network (U.S. Federal Government only) is displayed in this field.

TALK (Column 10)

This field must be enabled through system programming and is available in Release 4.2 and later systems only. It applies only to incoming calls directed to Auto Login or Auto Logout calling groups; for all other types of calls, the field is blank. The time an agent spent talking to a caller is shown in *hh:mm* format. The maximum value is 59:59. Talk timing starts when a call is answered by a calling group agent and ends when either party disconnects. If the agent transfers or parks the call before it is completed, these transitions are included in the elapsed time.

The TALK field displays values as follows:

- The elapsed time of a call to an Auto Login or Auto Logout group

- The elapsed time of a call routed by an automated attendant to an Auto Login or Auto Logout calling group

- If the caller disconnects before a calling group agent answers, an elapsed time of zero (00:00) is reported, even if the call was answered elsewhere in the system.

> **NOTE:**
> By comparing the duration of the call (DUR. field) and the TALK field value for eligible calls, you can determine how long the caller waited from the time when the call arrived at the system. MERLIN LEGEND Reporter calculates this value, along with others such as the average talk time for agents, to create reports about call center performance.

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Considerations and Constraints

Printing system programming reports has a higher priority than printing SMDR reports. SMDR records are generated when the printing of programming reports is completed. Records are also queued if the printer is turned off, disconnected, runs out of paper, or if a paper jam occurs. Up to 100 SMDR records can be queued. SMDR records generated after maximum capacity is exceeded may be lost because only the newest 100 records are retained.

System time and date must be set correctly to print accurate SMDR reports.

The maximum number of digits recorded in the CALLED NUMBER field is 15.

When the number included in the CALLED NUMBER field contains both an equal access code and a country code for an overseas call, the maximum digits recorded may not provide enough information for call accounting software to process the call and supply cost data. When more than 15 digits are dialed, the CALL TAG field displays a question mark (?) and the first 15 digits are displayed.

Call information can be recorded for incoming and outgoing calls (factory setting) or for outgoing calls only. If SMDR is set to record outgoing calls only, an account code cannot be entered for incoming calls. In Release 4.2 and later systems, enabling Talk Time permits recording of incoming calls to Auto Login or Auto Logout calling groups, even if the call length is less than the programmed minimum number of seconds.

In Release 4.1 and earlier systems, if an incoming call does not satisfy the minimum call length, the call is not recorded on the SMDR report. In Release 4.2 and later systems, enabling Talk Time permits recording of incoming calls to Auto Login or Auto Logout calling groups, even if the call length is less than the programmed minimum number of seconds.

In Release 4.1 and prior systems, call duration timing (DUR. field) begins when an incoming call is answered. In Release 4.2 and later systems, this holds true for incoming calls if the Talk Time option is disabled (the factory setting). In Release 4.2 and later systems, if the Talk Time option is enabled, timing on incoming calls to Auto Login and Auto Logout calling groups begins from the time the call is initially detected in the system.

Inside calls are not recorded on SMDR reports.

When a user joins a call on a shared line and continues on the call after the originator drops off, SMDR records the total duration of the call, through the time when the last person hangs up.

In Release 4.2 and later systems with Talk Time enabled, if a ringing call to an Auto Login or Auto Logout calling group is picked up by someone in the system and then transferred to and answered by a member of the calling group, an exclamation point (!) appears in the SMDR report (CALL TAG field). If the calling

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party disconnects before a member answers, an asterisk (*) appears in the CALL TAG field rather than an exclamation point (!) to indicate an abandoned call.

In Release 4.2 and later systems with Talk Time enabled, an incoming call to an Auto Login or Auto Logout calling group answered by the Auto Login or Auto Logout overflow calling group, displays an ampersand (&) in the SMDR report (CALL TAG field). When an incoming call is routed by an automated attendant to an Auto Login or Auto Logout calling overflow group, the CALL TAG field is left blank, because this is not considered an overflow call. Furthermore, when a member of an Integrated VMI or Generic VMI calling group or the Listed Directory Number (the extension for the QCC queue) is the overflow receiver and answers an incoming call to an Auto Login or Auto Logout calling group, the SMDR report (CALL TAG field) is left blank.

In Release 4.2 and later systems with Talk Time enabled, the TALK field displays a non-zero value to indicate the elapsed time of the incoming call, starting from when the call is answered by a member of an Auto Login or Auto Logout calling group and ending when the call is disconnected.

In Release 4.2 and later systems with Talk Time enabled, the TALK field displays a non-zero value for an incoming call routed by an automated attendant to Auto Login or Auto Logout calling groups. The value indicates the elapsed time of the call, starting from when the call is answered by a member of an Auto Login or Auto Logout calling group and ending when the call is disconnected.

In Release 4.2 and later systems, regardless of the Talk Time value, the TALK field is left blank for all other incoming and outgoing calls.

If a person selects a line and cannot complete the call (for example, due to restrictions), yet remains on the line for more than the programmed call duration, an SMDR record is created although a call was never made on that line.

In the event of a power failure, the SMDR records for those calls are lost. The calls themselves are dropped.

In Release 2.1 and later systems, an SMDR record is not generated for calls made to loudspeaker paging ports.

Telephone Differences

Queued Call Consoles

When a QCC system operator arranges a 3-participant conference call (the system operator and two other participants) and presses the **Release** button, the QCC system operator is released from the call, but the other two participants remain connected. However, the QCC operator's extension number remains on the SMDR record.

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In Release 4.2 and later systems, if the QCC queue is assigned as the overflow receiver for an Auto Login or Auto Logout calling group, and the QCC does not transfer the call to the calling group, the TALK field does not show the amount of time that the overflow receiver spent talking to the caller. The TALK field is zero (00:00) and the CALL TAG field has an asterisk (*).

In Release 4.2 and later systems, if a calling group is programmed as the backup for the QCC queue and all QCC operators are temporarily unavailable, an incoming call is sent to the calling group queue to wait for the next available agent. SMDR records this type of call in the same way that it does other incoming calls to Auto Login and Auto Logout calling groups, as long as SMDR has been programmed for this functionality.

Feature Interactions

Account Code Entry	The account code is printed in the ACCOUNT field of the SMDR record. If SMDR is set to record outgoing calls only, an account code cannot be entered on incoming calls. If a remote access barrier code is entered for an incoming call and then an account code is entered, only the account code (not the barrier code ID) appears on the report.
Authorization Code	All outgoing calls over the minimum call length made using an authorization code are recorded in the SMDR record.
	If an account code is not entered, the ACCOUNT field of the SMDR report contains the authorization code used to obtain calling privileges. If an account code is entered at any time during a call, the account code is stored in the SMDR record.
Auto Dial	All Auto Dial calls to outside numbers are recorded by SMDR.
Automatic Route Selection	The CALLED NUMBER field of SMDR reports for systems with Automatic Route Selection (ARS) shows all digits dialed by the user, including any digits absorbed by the system and the facility used to make the call. The records do not include the ARS dial-out code or any digits added by ARS.
Basic Rate Interface	The number of a BRI line is shown in the LINE field of the SMDR report.
	Call timing begins when an outgoing call is answered. Therefore, calls that are unanswered at the far end do not have an SMDR call record.
	In Release 4.1 and prior systems, call timing for incoming calls begins when the call is answered. In Release 4.2 and later systems, timing for incoming calls to Auto Login or Auto Logout calling groups begins when the system detects the call, assuming the system is programmed for this functionality.
Callback and Call Waiting	SMDR begins measuring the duration of callback calls when the line/trunk is seized and the system begins dialing the call. In Release 4.1 and prior systems, call-waiting calls are measured as soon as the call is answered.
	In Release 4.2 and later systems, timing starts as soon as the system detects an incoming call, assuming the system is programmed for this functionality.

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Caller ID	Calling party numbers for incoming calls (including remote access calls) received on a facility with Caller ID are recorded in the SMDR report only if the SMDR report is set for ISDN format.
Camp-On	If an incoming call is camped on but is not picked up by the other extension, the extension of the user who activated Camp-On is shown in the STN field of the SMDR report. If an incoming call is camped on and picked up by the destination extension, the destination extension is shown in the STN field of the SMDR report.
Conference	When a conference call includes inside and outside participants, records are generated only for outside participants. When a call is dropped from a conference call, it is considered a completed call and is sent to the SMDR print queue.
Coverage	The extension at which an Individual or Group Coverage call is answered is shown on the SMDR report.
	In Release 4.2 and later systems, when a calling group is programmed as a Group Coverage receiver, calls are reported following the same rules that apply to other incoming calling group calls, even if a call is transferred from an operator to a Group Coverage sender before being directed to the calling group.
Forward and Follow Me	If the system is programmed to track both incoming and outgoing calls, two SMDR records are generated when an outside call is forwarded to an outside telephone number. One record shows the incoming call, and the other record shows the call made to the destination telephone number, with the forwarding extension as the originator.
	The Remote Call Forwarding number to which incoming calls are to be forwarded is completed by pressing #. The SMDR report includes the # with the number for calls forwarded to the number.
Group Calling	In Release 4.1 and earlier systems, incoming calls to calling groups are associated with the first extension to answer the call. If an incoming call is answered by a delay announcement unit, this extension number is recorded in the SMDR record and is not overridden when the incoming call is answered by a calling group member or its overflow group member. The timing on incoming calls to calling groups begins as soon as the calling group member or delay announcement unit answers the call.
	In Release 4.2 and later systems with Talk Time enabled through system programming, incoming calls to calling groups are no longer strictly associated with the first extension to answer the call. If an incoming call to an Auto Login or Auto Logout calling group is answered by a delay announcement unit, this extension number is recorded in the SMDR record and is overridden when the incoming call is answered by a calling group member or its overflow group member. The timing on incoming calls to Auto Login or Auto Logout calling groups begins as soon as the incoming call is detected in the system. The timing on incoming calls to any other calling groups still begins as soon as the calling group member or delay announcement unit answers the call.

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In addition, Release 4.2 and later systems with Talk Time enabled provide enhanced information about incoming calls to Auto Login or Auto Logout calling groups, helping system managers assess call center performance. The special characters in the CALL TAG field are described in order of precedence.

■ An asterisk (*) indicates an abandoned call. This occurs when the calling party disconnects before a member of an Auto Login or Auto Logout calling group answers, even if the call was answered elsewhere in the system.

■ An ampersand (&) indicates an overflow call. If members of an Auto Login or Auto Logout calling group were not available to handle the incoming call, the call was answered by an Auto Login or Auto Logout overflow calling group.

■ An exclamation point (!) indicates a bridged call. If an incoming call is answered elsewhere in the system and transferred to and answered by the Auto Login or Auto Logout calling group, the time that the calling party spent waiting to speak directly to a member of the calling group may not be optimal.

Last Number Dial All calls made to outside numbers using Last Number Dial are recorded on the SMDR report.

Multi-Function Module A Multi-Function Module (MFM) is treated as an MLX telephone on SMDR reports.

The system waits until the end of dialing before sending a connect message to the MFM. Any digits dialed after the connect message is received are not recorded on SMDR reports.

Night Service Incoming Night Service calls answered by a member of an Auto Login or Auto Logout calling group display Talk Time (if programmed, Release 4.2 and later systems only) under the following circumstances:

■ If a call for a Night Service Auto Login or Auto Logout calling group is answered by someone who is not in the group, an asterisk (*) is displayed in the CALL TAG field on the SMDR report.

■ If the incoming call is answered by someone in the system and then transferred without consultation to and answered by a member of the group, the CALL TAG field is blank.

Night Service calling group calls do not show calls abandoned while in queue or display calls less than the programmed call duration if abandoned while at the delay announcement unit or in queue after the delay announcement unit. The SMDR report shows calls shorter than the programmed call duration if the call is answered by an Auto Login or Auto Logout calling group agent.

Paging Paging calls are not reported to SMDR.

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Park	If an incoming call was parked but not picked up by the other extension, the extension of the user who activated Park is shown in the STN field of the SMDR record for the call. If an incoming call was parked and picked up by the destination extension, the destination extension is shown in the STN field of the SMDR report.
Personal Lines	In Release 4.2 and later systems, if a personal line is assigned to an Auto Login or Auto Logout calling group and is shared by extensions that do not belong to that group, the SMDR report marks call records answered by a non-group extension. An asterisk (∗) appears in the CALL TAG field.
Pickup	The extension of the person answering the call and using Pickup is shown on the SMDR report.
	In Release 4.2 and later systems, if an incoming call is picked up by someone in the system who is not a member of the Auto Login or Auto Logout calling group and the Talk Time option is enabled, an asterisk (∗) appears in the CALL TAG field of the SMDR report. If the call is then transferred to and answered using Pickup by an Auto Login or Auto Logout agent, an exclamation point (!) is shown on the SMDR report.
Pools	For outgoing calls made by using a pool, the line/trunk selected by the system is reported on the SMDR report.
Power-Failure Transfer	During a commercial power failure, all calls are disconnected and no SMDR records are generated for calls made using a power-failure telephone.
Primary Rate Interface (PRI) and T1	The line/trunk number of a PRI line is shown in the LINE field of the SMDR report. The restriction code for the FTS2000 network is shown in the ACCOUNT field.
Primary Rate Interface (PRI) and T1 *continued*	For outgoing calls in releases prior to 2.1, call timing begins when the PRI line is selected. The Called Number field shows the number dialed by the user before any digits are manipulated by ARS or PRI tables (Network Selection Table, Special Services Selection Table, or Call-by-Call Services Table). In Release 2.1 and later systems, call timing begins when the call is answered at the far end. Therefore, calls that are not answered do not have an SMDR call record generated.
	If the SMDR feature is not enabled to record incoming calls, the system does not accept Account Code Entry information for these calls.
Recall/Timed Flash	If a multiline telephone user presses the **Recall** button to get a new dial tone, SMDR timing stops for the previous call and begins for a new call.
Remote Access	Remote access calls are recorded only if SMDR is programmed to track incoming calls. If a barrier code is entered, the barrier code number (01–16) appears in the ACCOUNT field of the report, preceded by 999999. If the caller uses remote access to dial an extension and the call is answered, the extension number is shown in the STN (station) field. If the call is not answered at the extension, the STN field is blank.
	If no barrier code is required, the ACCOUNT field contains 99999900.

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Beginning with Release 3.0, if the caller provides an invalid or incomplete barrier code for 3 attempts, either 999999 or 16 zeros are recorded in the ACCOUNT field. If the connection is broken before the third try, the ACCOUNT field contains 999999. If the caller hangs up after the third attempt, but before receiving reorder tone, the ACCOUNT field may contain either 999999 or 16 zeros. If the caller hangs up after the third try and after receiving reorder tone, the ACCOUNT field contains 16 zeros.

If the caller uses remote access to dial out on a line/trunk, the STN field on the first SMDR record is blank. A second record is created for the outgoing call.

Saved Number Dial	All calls made to outside numbers using Saved Number Dial are recorded on the SMDR report.
Speed Dial	When Personal Speed Dial or System Speed Dial is used to dial an outgoing call, the actual digits dialed by the system appear on the report. However, when a marked System Speed Dial number is used, the System Speed Dial code prints instead of the digits dialed.
System Access/ Intercom Buttons	When a call is made on a Shared **SA** button, the SMDR report records the extension number from which the call was made rather than the principal extension number.
Transfer	The number of the extension that hangs up on an incoming outside call is shown in the STN field of the SMDR report, regardless of the number of times the call is transferred. For outgoing outside calls, the number of the extension that dialed the call is shown on the SMDR report, even if the call is later transferred to another extension.

System Access/Intercom Buttons

At a Glance

Users Affected	Telephone users, DLC operators, data users
Reports Affected	Extension Information
Modes	
SA buttons	Hybrid/PBX
ICOM buttons	Key and Behind Switch
Telephones	All except QCC
Programming Codes	
Assign Buttons (centralized telephone programming only) Default Ring	
SA or **ICOM**	*16
SA or **ICOM Originate Only**	*18
Shared **SA**	*17 + *primary extension*
Change Button Type (centralized telephone or extension programming)	
Ring	**19
Voice	*19
Send Ring (on principal extension for Shared **SA**)	
On	*15
Off	**15
MLX Display Labels	
Assign Buttons	Centralized telephone programming only, multiline telephones only
SA or **ICOM**	SysAcc (same for **SA** or **ICOM**)
SA or **ICOM Originate Only**	SysAcc oo (same for **SA** or **ICOM**)
Shared **SA**	ShareSysAcc
Change Button Type	Centralized telephone programming only, multiline telephones only
Ring	Voice Annce,Place,Ring [Voice,Place,Ring]
Voice	Voice Annce,Place,Voice [Voice,Place,Voice]
Maximums	10 **SA** or **ICOM** buttons for each extension
	27 Shared **SA** buttons for each multiline telephone
	16 Shared **SA** buttons for each principal extension
	3 system users for each call on Shared **SA**

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At a Glance - *Continued*

Factory Settings		
Button Assignments by Mode	Hybrid/PBX	Key and Behind Switch
Direct-Line Consoles	1 **SA Ring**	1 **ICOM Ring**
	1 **SA Voice**	1 **ICOM Voice**
Other Multiline Telephones and MFMs	1 **SA Ring**	1 **ICOM Ring**
	1 **SA Voice**	1 **ICOM Voice**
	1 **SA Originate Only**	
Single-Line Telephones	2 **SA Ring**	2 **ICOM Ring**
	1 **SA Originate Only**	
Additional buttons assigned (including Shared **SA**)	Ring	
Ring Timing Option	Immediate Ring	
Send Ring (on principal extension)	On	

Description

Users access the system by pressing buttons on their telephones. These buttons are called either System Access (**SA**) or Intercom (**ICOM**) buttons, depending on the system operating mode. How these buttons operate also depends on the operating mode.

SA Buttons: Hybrid/PBX Mode

In Hybrid/PBX mode, telephones have **SA** buttons, which are used as follows:

- To make an outside call by dialing an Automatic Route Selection (ARS) code (usually *9*) and a telephone number

- To make an outside call using a pool by dialing the pool dial-out code and a telephone number

- To make an inside call

- To activate a feature by using a feature code

- To receive inside and outside calls, including voice-announced inside calls and transferred calls

An **SA** button can have one of three attributes:

- **Ring.** Button is used to make and receive inside and outside ringing calls.

- **Voice.** Button is used to make and receive inside and outside calls. An inside call made on this button is a voice-announced call. If the person receiving the call has a speakerphone and it is not already in use or disabled by having Voice Announce to Busy turned off, the call arrives on the speakerphone. Both parties hear a beep and the called person hears the caller's voice over the speakerphone. Because voice-announced calls

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cannot be made to single-line telephones, a call made on this button to a single-line telephone is a ringing call, even if the single-line telephone has a speakerphone.

- **Originate Only.** Button is used only to make inside and outside calls. Calls are not received on this button. Its purpose is to ensure that a user always has a button available to make or transfer calls, establish conference calls, answer call-waiting calls, or pick up parked calls. The button can be programmed for either Ring or Voice operation for inside calls.

The default attribute for all **SA** buttons, including Shared **SA** buttons, after the factory settings by telephone type is Ring. The factory setting for Automatic Line Selection (ALS) is a sequence of **SA** buttons. Ringing for all types of **SA** buttons is set by default to Immediate Ring and can be changed to Delay Ring or No Ring (see "Ringing Options" on page 533).

Shared SA Buttons: Hybrid/PBX Mode

Each **SA** button (whether Ring, Voice, or Originate Only) assigned as a factory setting or through centralized telephone programming is identified with a specific extension. To allow two or more telephone users to join in each others' conversations and answer each others' calls, Shared **SA** (**SSA**) buttons can be assigned. In a shared arrangement, the **SA** button identified with the extension is the *principal* (or primary) button. Up to 16 other multiline telephones can have Shared **SA** buttons corresponding to the principal extension. A telephone can have up to 27 **SSA** buttons for other extensions but can have only one **SSA** button for a given principal extension. (One of the first 10 buttons must be an **SA** button.)

The green LED next to a Shared **SA** button behaves in the same way as it does on the principal extension. When the principal extension or any **SSA** button corresponding to it is busy on a call, the LED is on at the principal extension and at all Shared **SA** buttons for that extension. When a call arrives at the principal extension, that extension rings and the LED at its **SA** button flashes. All telephones with corresponding Shared **SA** buttons also ring, and the LED at the Shared **SA** button flashes.

The telephone user at the principal extension can use Send Ring. This feature overrides Delay Ring programmed for any telephones with **SSA** buttons for the principal extension. When a call arrives for the principal extension while it is busy, the telephones with the Shared **SA** buttons for that extension ring immediately.

When Do Not Disturb is turned on at the principal extension, calls do not ring at that extension or at other telephones with Shared **SA** buttons for that extension.

The principal extension or an **SSA** button can be used to join a conversation in progress. A maximum of three parties can participate in one call.

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> **NOTES:**

1. **SSA** buttons cannot be assigned to single-line telephones or other tip/ring equipment connected to a 016, 012, or 008 OPT module. **SSA** buttons can be assigned to a tip/ring or external alert device connected to either an MFM in an MLX telephone or a GPA connected to an analog multiline telephone.

2. Shared **SA** buttons cannot be assigned when the **SA** button is on a single-line telephone. A single-line telephone cannot be the principal extension for an **SSA** button unless the telephone is connected to an MFM.

ICOM Buttons: Key and Behind Switch Modes

In Key mode and Behind Switch mode, telephones have **ICOM** buttons, which are used as follows:

- To dial the Idle Line Access code (usually *9*) to select the first idle personal line assigned to the telephone (Key mode only)

- To make an inside call

- To activate a feature by using a feature code

- To receive inside calls, including voice-announced calls, and transferred outside calls

An **ICOM** button can have one of three attributes:

- **Ring.** Used to make inside ringing calls, to receive inside and transferred outside calls, and to dial the Idle Line Access code to select a personal line.

- **Voice.** Used to make inside voice-announced calls, to receive inside ringing calls, and to dial the Idle Line Access code to select a personal line. If the person receiving an inside call made from this button has a speakerphone and it is not already in use or disabled by having Voice Announce to Busy turned off, the call arrives on the speakerphone. Both parties hear a beep and the called person hears the caller's voice over the speakerphone. Because voice-announced calls cannot be made to single-line telephones, a call made on this button to a single-line telephone is a ringing call even if the single-line telephone has a speakerphone.

- **Originate Only.** Used only to make inside calls. Calls are not received on this button. Its purpose is to ensure that a user always has a button available to make or transfer calls, establish conference calls, answer call-waiting calls, or pick up parked calls. The button can be programmed for either Ring or Voice operation.

The default attribute for all **ICOM** buttons after the factory settings by telephone type is Ring.

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In Key mode, the factory setting for Automatic Line Selection (ALS) for multiline telephones is a sequence of outside line buttons. The factory setting for ALS on single-line telephones is an **ICOM** button.

In Behind Switch mode, the factory setting for ALS for both multiline and single-line telephones is the prime line.

Ringing for all types of **ICOM** buttons is set by default to Immediate Ring and can be changed to Delay Ring or No Ring (see).

> **⇒ NOTE:**
> **ICOM** buttons are not shared.

Considerations and Constraints

At least one **SA** or **ICOM** button must be assigned to each extension in the system.

SA or **ICOM** buttons can be assigned or removed only through centralized telephone programming.

On a multiline telephone, **SA** or **ICOM** buttons can be assigned only on buttons 1 through 10.

Any **SA** button can be the principal extension for up to 16 Shared **SA** buttons on other telephones. Any multiline telephone can have up to 28 **SA** or **SSA** buttons, at least one of which must be an **SA** button. No **SA** buttons may be assigned beyond line button 10, although **SSA** buttons may be assigned.

The maximum number of system users who can be on a call on an **SSA** button (including the principal extension) is three.

When a call is received at the principal extension, it rings on the principal extension's **SA** button as well as on all corresponding **SSA** buttons.

SSA buttons cannot be assigned to a single-line telephone. A single-line telephone cannot be the principal extension for a Shared **SA** button unless the telephone is connected to an MFM.

When two or more users answer the same call on a Shared **SA** button, the red and green LEDs next to the button go on, but only one person can talk with the caller. Privacy should be used to eliminate competition for the same calls.

Calls received on DID trunks ring on an **SA** button and on all **SSA** buttons for the receiving button.

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Mode Differences

Hybrid/PBX Mode

SA buttons, including Shared **SA** buttons, are available only in Hybrid/PBX mode.

Key and Behind Switch Modes

ICOM buttons are available only in Key and Behind Switch modes.

Telephone Differences

Direct-Line Consoles

Each DLC is assigned one **SA Ring** or **ICOM Ring** and one **SA Voice** or **ICOM Voice** button. Additional **SA** or **ICOM** buttons cannot be assigned to a DLC. This includes **SSA** buttons corresponding to **SA** buttons on other telephones. In addition, a DLC cannot be the principal extension for **SSA** buttons on other telephones.

Queued Call Consoles

A Queued Call Console (QCC), which uses **Call** buttons, cannot be assigned **SA** buttons, including **SSA** buttons. It cannot be assigned **ICOM** buttons because the QCC is available only in Hybrid/PBX mode.

Other Multiline Telephones

In Hybrid/PBX mode, each multiline telephone (except for DLCs) and Multi-Function Module (MFM) device is automatically assigned one **SA Ring**, one **SA Voice**, and one **SA Originate Only** button.

In Key and Behind Switch modes, each multiline telephone (including DLCs) and MFM device is automatically assigned one **ICOM Ring** and one **ICOM Voice** button.

Single-Line Telephones

In Hybrid/PBX mode, each single-line telephone (or other device connected to a 016, 012, or 008 OPT module) is automatically assigned two **SA Ring** buttons and one **SA Originate Only** button.

In Key and Behind Switch modes, each single-line telephone (or other device connected to a 016, 012, or 008 OPT module) is automatically assigned two **ICOM Ring** buttons.

In releases prior to 4.0, the default assignment of **SA** or **ICOM** buttons to single-line telephones is fixed and cannot be changed—no **SA** or **ICOM** buttons can be removed or added. In Release 4.0 and later systems, the default

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assignment of **SA** or **ICOM** buttons can be changed through centralized telephone programming.

A single-line telephone cannot be the principal extension for a Shared **SA** button, nor can it have **SSA** buttons unless the telephone is connected to a Multi-Function Module (MFM).

Data/Video Workstations

Shared **SA** buttons should not be assigned to video workstations.

Feature Interactions

Auto Answer All	When Auto Answer All is activated, incoming calls on **SA Ring**, **ICOM Ring**, **SA Voice**, or **ICOM Voice** buttons can be answered automatically by the device connected to a General Purpose Adapter (GPA).
	If **SSA** buttons are assigned, they should be programmed for either Delay Ring or No Ring, and the corresponding **SA** button at the principal extension should be programmed for Immediate Ring. This prevents calls to the principal extension from being answered simultaneously at the principal extension and at another device with a corresponding Shared **SA** button.
	Voice-announced calls received at an analog multiline telephone are not answered by a device connected through a GPA because ringing current is not sent to the device.
Auto Answer Intercom	When the Auto Answer Intercom feature is activated, a Hands-Free Unit (HFU) cannot be used to answer calls on a Shared **SA** button.
Automatic Line Selection	**SA** buttons (including Shared **SA** buttons) or **ICOM** buttons can be programmed as part of an Automatic Line Selection (ALS) sequence. You should not interleave different button types (personal line, **Pool**, **SA**, or **ICOM**). For example, in Hybrid/PBX or Key mode, the sequence might include all **SA** or **ICOM** buttons first, then **Pool**, then personal line buttons.
Automatic Route Selection	When a call is made on a Shared **SA** button, the ARS Facility Restriction Level (FRL) that applies is the level programmed for the telephone with the button, not the level for the principal extension.
Callback	Callback can be used on an **SA** or **ICOM** button. When Callback is used on an **SSA** button, the callback call from the system rings and the LED next to the button flashes only at the telephone that originated Callback.
	If a user other than the person originating Callback selects a Shared **SA** button with a queued callback request and lifts the handset, the user hears the queuing tone and the green LED on the originator's telephone goes from flashing to on. If the user hangs up, the green LED on the originator's telephone goes back to flashing and the system directs the callback call to the originator. If the user does not hang up, the system directs the callback call to the user and not to the callback originator.

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Caller ID	Both **SA** and Shared **SA** extensions display Caller ID information on Line 1 of the first screen of the display. This information remains on the answering extension's display and is cleared from the other extensions. If another user picks up on the call, that person sees In Use and the principal extension user sees the caller information of the person who picked up; it is displayed on Line 2 of the first screen.
Calling Restrictions	When a call is made on a Shared **SA** button, the calling restrictions that apply are those programmed for the extension with the button, not those for the principal extension.
Call Waiting	A telephone is considered busy when all **SA** or **ICOM** buttons (except **SA Originate Only** or **ICOM Originate Only**) are in use. The user can dial the Call Waiting feature code to pick up a waiting call only when an **SA Originate Only** or **ICOM Originate Only** button is available.
Conference	Calls on **SA**, Shared **SA**, or **ICOM** buttons can be included in a conference call. If a user involved in a conference call on an **SA** button also has a Shared **SA** button for one of the conference participants, the call is active at the **SA** button, not at the **SSA** button.
Coverage	When a Primary Cover, Secondary Cover, or Group Cover button is programmed, a call received on an **SA** or **ICOM** button that is eligible for Individual or Group Coverage remains on the sender's **SA** or **ICOM** button until it is answered at the receiver's telephone. Once answered by a receiver, the call is removed from the sender's **SA** (including Shared **SA**) or **ICOM** button. However, when a calling group is programmed as a Group Coverage receiver, the call is removed from the sender's telephone as soon as it is sent from the calling group queue to an available member.
	Calls received on Shared **SA** buttons are not eligible for Individual or Group Coverage.
	If a receiver has a Primary Cover, Secondary Cover, or Group Cover button for a sender and also has a Shared **SA** button associated with the sender, the green LEDs next to both the Cover button and the Shared **SA** button flash when a call arrives for the sender. In addition, the red LED stays on at the Shared **SA** button.
CTI Link	CTI (Computer Telephony Integration, Release 5.0 and later systems) allows software applications on a worktop PC to control placing a call on hold, retrieving a call from hold, making calls, inside transfer and 3-party conference, answering, and hanging up on the **SA** buttons of an extension using the application.
Digital Data Calls	Data calls cannot be presented as voice calls, although users can make data calls using **ICOM** or **SA** Voice Announce buttons.
Display	If a user with a display telephone calls an extension and the call is answered at a Shared **SA** button, the caller's display shows the principal extension, not the answering extension.
Do Not Disturb	When Do Not Disturb is turned on at the principal extension, calls do not ring at that extension or at telephones with **SSA** buttons for the extension.

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Forward and Follow Me	When a telephone user with **SSA** buttons forwards his or her calls, only calls to his or her extension are affected. Calls ringing on a Shared **SA** button are not forwarded.
Group Calling	If a calling group member is busy on a Shared **SA** button, the principal extension is still considered available.
	If a delay announcement for a calling group is a principal extension that has **SSA** buttons on other telephones, and if a user uses a corresponding **SSA** button to join the announcement while a caller is listening to it, the call is removed from the calling group queue and both parties are connected. (The delay announcement is not disconnected until it finishes playing.)
	If a call from the **SA** button of a user at a principal extension with Shared **SA** buttons is waiting in the calling group queue, other users cannot use the corresponding **SSA** buttons to join the call.
Hold	A call put on hold on an **SA** or Shared **SA** button can be picked up at the principal extension or at any telephone with an **SSA** button for that extension, unless Privacy is turned on at the telephone that put the call on hold. The hold reminder tone is heard only at the telephone that put the call on hold.
	In releases prior to 2.1, a call on hold on a Shared **SA** button cannot be transferred by the user who picked up the call. In Release 2.1 and later systems, an inside call on hold at an **SA** button can be picked up and transferred by a user with an **SSA** button corresponding to the button with the held call.
Hold *continued*	In Release 2.1 and later systems, a call that has been put on hold at a Cover, **SA**, Shared **SA**, or **Pool** button can be picked up by a user who has a personal line button for the call. When the call is picked up, the green LED next to the personal line lights steadily; however, the call remains on hold at the Cover, **SA**, **SSA**, or **Pool** button. The user who picks up on the personal line cannot transfer the picked-up call. To transfer a call on hold at a Cover, **SA**, **SSA** or **Pool** button, use Pickup instead of picking up on a personal line button.
Last Number Dial	If Last Number Dial is used on a Shared **SA** button, the number is stored on the telephone that used the feature, not on the principal extension.
Line Request	Line Request cannot be used for an **SA** or **ICOM** button.
Messaging	If a Shared **SA** button is used to leave a message for a display telephone user, the extension of the telephone with the **SSA** button (not that of the principal extension) is shown in the message. When a principal extension user with an MLX display telephone posts a message and a call is answered at the **SSA** button, the calling information is cleared from the principal extension. However, the Home screen on which the posted message is shown is not restored. If the principal extension user presses the **Home** button or makes or receives a call, the Home screen is restored.

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Multi-Function Module	One **SA Ring** or **ICOM Ring** button and one **SA Originate Only** or **ICOM Originate Only** button should be assigned to a Multi-Function Module (MFM). At least one **SA** or **ICOM** button must be assigned to an MFM. Assigning a Shared **SA** button to an MFM means that the principal extension can join a call that has already been answered by an answering machine connected to the MFM.
Night Service	Night Service calls override any Ring Timing options (Delay Ring or No Ring) programmed for an **SA** button and ring immediately. On a Shared **SA** button, Night Service calls follow the programmed option (Immediate Ring, Delay Ring, or No Ring).
Paging	Announcements using Speakerphone Paging can be made from a Shared **SA** button. However, users cannot join a page (as they can other calls) on a Shared **SA** button.
Park	When a user parks a call made or received on an **SA** button, Shared **SA** buttons do not ring when the parked call returns.
Personal Lines	When a call on a personal line button is transferred to another user, the call rings on an **SA** or **ICOM** button. The LED next to the personal line flashes rapidly to indicate that the call is on hold for transfer. If the call is answered at an **SA** or **ICOM** button, the LED next to the personal line turns on steadily. If a user shares the personal line appearance and answers the call by using the personal line button, the call is removed from the **SA** or **ICOM** button.
Pickup	An inside call ringing at an **SA** or **SSA** button can be answered at another telephone. All associated **SA** or **SSA** buttons are cleared.
Primary Rate Interface (PRI) and T1	T1 lines must not be shared between voice and data extensions with Shared **SA** buttons. The lines are programmed for either voice-only or data-only service.
Privacy	If Privacy is turned on at a telephone with a Shared **SA** button, other users, including the principal extension and other corresponding **SSA** buttons, cannot join a conversation on the **SSA** button. If Privacy is turned on after another user joins the conversation, it does not affect that person, but no other users can join the conversation.
Recall/Timed Flash	Recall can be used on a ringing or answered inside call made on an **SA** or **ICOM** button. When the user is listening to a busy signal, Recall has no effect.
	On a call at an **SA** button, either the principal user or another person who has joined the call on a Shared **SA** button can use the feature. In Release 2.0 and later systems, Recall can be used on **SA** buttons during outside calls made or received on a loop-start line.
Reminder Service	Reminder calls do not ring at **SSA** buttons.
Ringing Options	Ring Timing options (Immediate Ring, Delay Ring, No Ring) cannot be programmed for **SA Originate Only** or **ICOM Originate Only** buttons because they do not ordinarily receive calls.

Incoming calls on a Shared **SA** button ring with the personalized ringing pattern programmed for the telephone with the button (not the principal extension).

The principal extension of Shared **SA** buttons can use Send Ring. This feature overrides Delay Ring programmed for any telephones with Shared **SA** buttons for the principal extension. When a call arrives for the principal extension while it is busy, the Shared **SA** buttons ring immediately.

Saved Number Dial	If Saved Number Dial is used on a Shared **SA** button, the number is stored on the telephone that used the feature, not on the principal extension.
SMDR	When a call is made from an **SSA** button, the SMDR report records the extension from which the call is made, not the principal extension.
Transfer	A transferred call returns only to the telephone that originated the transfer, whether an **SA** or a Shared **SA** button.
	If a transfer originator has an **SSA** button for the person receiving the transfer, the LED next to the **SSA** button flashes to indicate a ringing call. However, if the transfer originator answers the call, it is disconnected.

System Renumbering

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	Automatic Route Selection, Dial Plan, Extension Directory, Extension Information, Group Paging, Operator Information, Remote Access (DISA) Information
Modes	All
Telephones	All
System Programming	Change the 2-digit numbering plan to 3-digit or Set Up Space:
	• SysRenumber→Default Numbering→ 2-Digit/3-Digit/Set-up Space
	Renumber individual extensions or groups of extensions, calling group extensions, Group Paging extension, pool dial-out codes, operator park zones, Listed Directory Number extension, remote access code, ARS access code; or assign the range of extensions on a DSS:
	• SysRenumber→Single
	• SysRenumber→Block
Maximum	Numbering Range: 0–9950

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Factory Settings	
Numbering Plan	2-digit
ARS/Idle Line Access Code	9 (all numbering plans)
Calling Groups	770–791 and 7920–7929 (all numbering plans)
DSS **Page 1** button	starts with Extension 0
DSS **Page 2** button	starts with Extension 50
DSS **Page 3** button	starts with Extension 100
Extra Adjuncts	6850–6992 (2-digit plan)
Extra Extensions	6700–6842 (2-digit plan)
Listed Directory Number	800 (all numbering plans)
MFMs/Terminal Adapters	710–766 (2-digit plan)
Operator	300–499 (3-digit plan)
Paging Groups	0 (not programmable)
Park Zones	793–799 (all numbering plans); 881–888 (operator only)
Pools	
Main Pool	70 (all numbering plans)
Dial-In Tie Trunk	891 (all numbering plans)
Automatic-In Tie Trunk	892 (all numbering plans)
Remote Access Code	889 (all numbering plans)
Extensions	10–66 (2-digit plan); 100–299 (3-digit plan)
Trunks	801–880 (all numbering plans)

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Description

System renumbering is the process of reassigning extension numbers to all types of extensions, adjuncts, lines/trunks, telephones, ranges of extensions on a DSS, Automatic Route Selection (ARS), calling groups, Idle Line Access, Listed Directory Number, paging groups, park zones, pools, and remote access.

When the system is turned on, it identifies the type of module installed in each slot in the control unit and automatically assigns extension numbers. When assigning extension numbers, the system begins with the lowest-numbered slot containing extension jacks and assigns numbers starting with the bottom (lowest) jack and moving consecutively up to the top jack. The system then moves in ascending order to the next slot that contains extension jacks and repeats the process.

The factory default assigns 2-digit extension numbers, starting with Extension 10. Both the number of digits and the extension numbers assigned by the system can be changed to address a company's needs. For example, extension numbers can match room numbers.

$\Longrightarrow$ NOTE:
If a user needs a specific extension number, it is simpler to connect the user's telephone to the extension jack that is already assigned the requested extension number than it is to renumber the jack where the telephone is connected.

Whenever extension numbers are renumbered, the following must be considered:

- Extension numbers can contain digits 0 through 9 in any combination, except that no extension number can begin with 0. Zero is a fixed extension number representing the primary system operator. The system also can be programmed to associate 0 with a QCC operator position.

- Extension numbers can contain one to four digits and must be unique. If you renumber an extension number with one or two digits, you cannot use those digits as the leading digits for a longer extension number. For example, if extension numbers 1, 2, 30, and 40 are assigned to telephones, those numbers cannot be used as the first number in longer extension numbers such as 10, 200, 302, or 4052.

- Whenever an extension number is renumbered, the original extension number is available for use.

- The reserved system-assigned extension numbers (shown in Figures 43, 44, and 45) must be assigned new extension numbers before the original numbers can be used for anything else.

The system offers three numbering plans:

- ■ 2-Digit
- ■ 3-Digit
- ■ Set Up Space

Each of the plans allows renumbering of all or selected extensions (single or block). The system numbering plans, with the numbers they automatically assign, are shown in Figures 43 through 45 and are described in the next three sections.

> **NOTE:**
> Figures 43 through 45 show the default settings in the gray spaces. Extensions can be renumbered to any number shown in the white spaces.

2-Digit Numbering Plan

The 2-digit numbering plan is the factory setting. This plan is designed for companies that do not anticipate a need for more than 50 extensions in the next one or two years.

Figure 43 shows the numbers automatically assigned by the system. The numbers in Figure 43 are arranged in rows according to the first digit. The type of equipment, jack, or feature to which they are assigned is indicated within the row.

0	Operator Console (not flexible) 0					
1	Extensions 10–19					
2	Extensions 20–29					
3	Extensions 30–39					
4	Extensions 40–49					
5	Extensions 50–59					
6	Extensions 60–66	Extra Extensions 6700–6842	6843–6849	Extra MFMs/ Terminal Adapters 6850–6992	6993–6999	
7	Main Pool 70	Adjuncts 710–766	767– 769	Calling Groups 770–791,7920–7929	Paging Groups 793–799	
8	800*	Lines/Trunks 801–880		Park 881–888	889†	Pools 890–899
9	ARS Access (Hybrid/PBX Mode) / Idle Line Access 9					

*   Listed Directory Number (QCC Queue)
†   Remote Access

Figure 43. **2-Digit Numbering Plan**

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> **NOTE:**
>   Extension numbers 0 and 10 both refer to the same operator position in the 2-Digit Numbering Plan.

Each of the first 57 extension jacks defaults to a 2-digit extension number beginning with 10 and ending with 66. The rest of the extensions (extension jacks 67–200) are assigned the 4-digit extension numbers 6700 through 6842.

The extension numbers (710–766) shown for Multi-Function Modules are reserved for MLX extension jacks. These numbers are automatically assigned by the system to adjuncts connected to MLX telephones either using MFMs (such as modems, answering machines, or fax machines) or directly (for example, a terminal adapter). For the first 57 digital extension jacks (numbered 10 through 66), the extension number assigned to the adjunct is the extension number assigned to the MLX telephone, preceded by a 7. For example, if the extension number assigned to an MLX telephone is 25, the extension number for the MFM adjunct on that telephone is 725. In this example, a call can be made to the telephone by dialing *25* or to the adjunct by dialing *725*.

Additional extension jacks are shown in Figure 43 as Extra Extensions (6700–6842), and additional MFMs are shown as Extra Adjuncts (6850–6992). If extra extensions are assigned, the extension numbers for extra adjuncts are assigned by the system to MFM adjuncts. The extension number assigned to the MFM adjunct is the extension number assigned to the MLX telephone, increased by 150. For example, if the extension number assigned to an MLX telephone is 6700, the extension number for the MFM adjunct on that telephone is 6850. In this example, a call can be made to the telephone by dialing *6700* or to the adjunct by dialing *6850*.

> **NOTES:**
>   1.   The extension numbers are reserved whether or not adjuncts are connected to MLX telephones.
>
>   2.   If you renumber the extension number of an MLX telephone, the system does not automatically change the extension number of the associated adjunct.
>
>   3.   Digital adjuncts that use the system's 2B Data feature use both the adjunct and the main extension number of an MLX extension jack (see ''Digital Data Calls'' on page 183 for more information).

3-Digit Numbering Plan

The 3-digit numbering plan is designed for companies with more than 50 extensions. Figure 44 shows the numbers automatically assigned by the system when you renumber the system using the 3-digit numbering plan.

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0	Operator Console (not flexible) 0				
1	Extensions 101–199				
2	Extensions 200–299				
3	MLX Adjuncts 300–399				
4	MLX Adjuncts 400–499				
5	500–599				
6	600–699				
7	Main Pool 70	71–76	Calling Groups 770–791, 7920–7929		Paging Groups 793–799
8	800*	Lines/Trunks 801–880		Park 881–888	889†	Pools 890–899
9	ARS Access (Hybrid/PBX mode)/Idle Line Access				

*   Listed Directory Number (QCC Queue)

†   Remote Access

Figure 44.   3-**Digit Numbering Plan**

> **NOTE:**
> Extension numbers 0 and 100 both refer to the same operator position in the 3-digit numbering plan.

Extensions default to 3-digit extension numbers beginning with 100 and ending with 299.

The extension numbers (300–499) shown for adjuncts are reserved for MLX extension jacks. These numbers are automatically assigned by the system to adjuncts connected to MLX telephones either using MFMs (such as modems, answering machines, or fax machines) or directly (for example, a terminal adapter). The extension number assigned to an MFM (Multi-Function Module) or direct adjunct is the extension number assigned to the MLX telephone, increased by 200. For example, if the extension number assigned for an MLX telephone is 125, the extension number for the adjunct on that telephone is 325. In this example, a call can be made to the telephone by dialing *125* or to the adjunct by dialing *325*.

> **NOTES:**
> 1.   The extension numbers are reserved whether or not adjuncts are connected to MLX telephones.
>
> 2.   If you renumber the extension number of an MLX telephone, the system does not automatically change the extension number of the associated adjunct.

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3. Digital adjuncts that use the system's 2B Data feature use both the adjunct and the main extension number of an MLX extension jack (see "Digital Data Calls" on page 183 for more information).

Set Up Space Numbering Plan

The Set Up Space numbering plan is designed for businesses that want to assign extension numbers that vary in length (1 to 4 digits). Variable-length extension numbers may be more meaningful or more convenient; 1-, 2-, 3-, and 4-digit numbers can be used in the same system. For example, hotels and motels may want extension numbers to match room numbers, and to assign extensions for services (such as Housekeeping or Room Service) to 1-digit extension numbers.

Figure 45 shows the numbers automatically assigned by the system when you renumber using the Set Up Space numbering plan. As shown in Figure 45, the system begins reassigning extension numbers with 7100 and ends with 7299. This makes all numbers beginning with 1 through 6 available for use in renumbering. The new numbers can be from one to four digits long.

➡ NOTE:
Extensions 0 and 7100 both refer to the same operator position in the Set Up Space Numbering plan.

The extension numbers (7300–7499) shown for adjuncts are reserved for MLX extension jacks. These numbers are automatically assigned by the system to adjuncts connected to MLX telephones either using MFMs (such as modems, answering machines, or fax machines) or directly (for example, a terminal adapter). The extension number assigned to an MFM (Multi-Function Module) or MLX adjunct is the extension number assigned to the MLX telephone increased by 200. For example, if the extension number for an MLX telephone is 7125, the extension number for its MFM adjunct is 7325. In this example, a call can be made to the telephone by dialing *7125* or to the adjunct by dialing *7325*.

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> **NOTES:**
> 1. The extension numbers are reserved whether or not adjuncts are connected to MLX telephones.
>
> 2. If you renumber the extension number of an MLX telephone, the system does not automatically change the extension number of the associated adjunct.
>
> 3. Digital adjuncts that use the system's 2B Data feature use both the adjunct and the main extension number of an MLX extension jack (see "Digital Data Calls" on page 183 for more information).

0	Operator Console (not flexible) 0					
1	100–199					
2	200–299					
3	300–399					
4	400–499					
5	500–599					
6	600–699					
7	Main Pool 70	Extensions 7100–7299	MLX Adjuncts 7300–7499	7500–7699	Calling Groups 770–791, 7920–7929	Paging Groups 793–799
8	800*	Lines/Trunks 801–880			Park 881–888	889†	Pools 890–899
9	ARS Access (Hybrid/PBX mode)/Idle Line Access 9					

*   Listed Directory Number (QCC Queue)

†   Remote Access

Figure 45.   Set Up Space Numbering Plan

Renumbering Extensions

Table 40 gives a brief overview of the extensions that can or cannot be renumbered and lists their factory settings.

Single Renumbering

Single Renumbering should be used whenever the extension numbers you are changing *to* or *from* are not sequential.

Single Renumbering can be used to assign a specified extension number to the following: extensions, adjuncts, lines/trunks, telephones, Automatic Route Selection Access Code, calling groups, Idle Line Access Code, Listed Directory Number, paging groups, park zones, Pools, and remote access code.

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Table 40.   Renumbering Extensions

Extensions	Renumbering Yes or No	Factory Settings
ARS Access Code or Idle Line Access Code	Yes	9
Calling Groups	Yes	770–791 and 7920–7929
DSS **Page 1** button	Yes	starts with Extension 0
DSS **Page 2** button	Yes	starts with Extension 50
DSS **Page 3** button	Yes	starts with Extension 100
Extra Adjuncts	Yes	6850–6992 (2-digit plan)
Extra Extensions	Yes	6700–6842 (2-digit plan)
Listed Directory Number*	Yes	800
MFMs	Yes	710–766 (2-digit plan)
		300–499 (3-digit plan)
Operator (Primary System or QCC)	No	0
Paging Groups	Yes	793–799
Park Zones	Yes	881–888 (system operator only)
Pool	Yes	Main Pool: 70
		Dial-in Tie Trunk: 891
		Automatic-in Tie Trunk: 892
Remote Access Code	Yes	889
Extensions	Yes	10–66 (2-digit plan)
		100–299 (3-digit plan)
Lines/Trunks	Yes	801–880

*   In Hybrid/PBX mode, an extension is assigned to the Listed Directory Number
           (the published main number) for the QCC queue.

In Release 1.0 systems, when the system manager uses single renumbering to assign a specified extension number, the system is forced idle during the renumbering process. In Release 1.1 and later systems, the system is not forced idle when renumbering extensions, Automatic Route Selection access code, calling groups, Idle Line Access Code, Listed Directory Number, paging groups, park zones, Pools, and remote access code. However, in Release 1.1 and later systems, when you are renumbering a line/trunk, the line is forced idle during the renumbering process.

Block Renumbering

Block renumbering can be used only when the extension numbers you are changing *from* are sequential and the extension numbers you are changing *to* are sequential. Block renumbering can be used to assign extension numbers to a group of extensions, adjuncts, or lines.

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When you are renumbering extensions using block renumbering, the system is forced idle during the process.

DSS Renumbering

System renumbering is used to assign the beginning extension number in a *page*. A page is the range of extension numbers that is assigned to a DSS. A single DSS can have three pages of extension numbers, with 50 extension numbers for each page, for a total of 150 extension numbers. When two DSSs are connected, each page's capacity is increased to 100 extension numbers. The two connected DSSs can have three pages of extension numbers, for a total of 300 extension numbers.

Page buttons work as Shift keys on a keyboard do. When an operator presses a **Page** button, he or she selects a page of the DSS, which corresponds to a range of 50 (for a single DSS) or 100 (for two connected DSSs) extension numbers. The factory settings for **Page** buttons are: the **Page 1** button begins with Extension 0, the **Page 2** button begins with 50, and the **Page 3** button begins with 100.

If 2 DSSs are attached, the factory setting *must* be changed so that the difference between extensions assigned to the range is at least 100. For example, assign the **Page 1** button to begin with Extension 10, the **Page 2** button to begin with Extension 110, and the **Page 3** button to begin with Extension 210. **Page** button assignments should be sequential.

The beginning extension number associated with each **Page** button is the same for all DSSs and cannot be programmed differently for individual operator positions.

Each **Page** button can be programmed to begin with any extension number in the range of 0 through 9950 that is a multiple of 50. However, to expedite call handling, the assignments should be sequential. The range starting with the lowest extension number should be assigned to **Page 1**, the range starting with the next higher extension number should be assigned to **Page 2**, and the range starting with the highest extension number should be assigned to **Page 3**. You cannot program individual buttons on a DSS.

Operator park zones must be included in the extension number range specified for one of the **Page** buttons.

Each of the 50 DSS buttons corresponds to one of three extension numbers. The specific extension number is determined by the **Page** button that the system operator presses. For example, if the first extension number for the **Page 1** button is programmed to be Extension 100, the DSS buttons and associated LEDs on a single DSS correspond to Extensions 100 to 149.

Remote Access Renumbering

The number assigned to a line/trunk can be reprogrammed and used (after appropriate digit deletion and addition) as a remote access code. Users can call in on a line/trunk, programmed to supply the remote access code, and reach a system dial tone (barrier code entry should be programmed). From the system

dial tone, users can call extensions, call calling groups, and access a line/trunk to make an outside call (if permitted). See for more information.

Logical IDs

A logical ID is a number that is associated with each connection on the communications system. There is one set of logical IDs for extensions and one set for lines/trunks.

Line/trunk logical IDs start numbering at the first jack of the first line/trunk module in the control unit with the number 1 up to the number 80. For most line/trunk modules there is a one-to-one correspondence between the jack and the logical ID. The exceptions are as follows:

- Each 100D module is assigned 24 logical IDs, although the module has only 1 physical line/trunk jack.

- Each 800 NI-BRI module is assigned 2 logical IDs for each physical line/trunk jack, for a total of 16 logical IDs.

For extension modules, another set of logical IDs starts numbering at the first jack of the first extension module in the control unit with the number 1 up to 200. For most extension modules there is a one-to-one correspondence between the jack and the logical ID. The exception is the 008 OPT module is assigned 12 logical IDs, although the module has only 8 physical extension jacks.

Considerations and Constraints

Extensions do not need to be renumbered in the following cases:

- The default 2-digit extension numbers are acceptable.

- No special extension numbers are needed.

- There are fewer than 50 extensions in the system.

Any extension number except 0 (system operator) can be renumbered. Line/trunk numbers (801–880) can be renumbered.

After an extension is renumbered, the original extension number is available for use. For example, after Extension 32 is renumbered to 40, Extension 32 is available for use.

System renumbering should not be confused with board renumbering, which is used when modules in the control unit are changed. For additional information about board renumbering, see *System Programming*.

When you use system renumbering in Release 2.0 or earlier with Integrated Solution III version 1.0 or 1.1, AUDIX Voice Power erases all messages and greetings for extensions that have been renumbered. This occurs when the

automatic reconciliation program runs at 3:00 a.m. The reconciliation program is disabled in Integrated Solution III version 1.2.

Feature Interactions

Authorization Code	Authorization codes are associated with logical IDs, not extension numbers. If extensions are renumbered and the logical IDs for the extensions change, the authorization codes may be reassigned to different extensions.
Automatic Route Selection	In Hybrid/PBX mode, the Automatic Route Selection (ARS) access code (factory setting is 9) can be renumbered.
CTI Link	When the system dial plan changes, CTI applications (Release 5.0 and later systems) must use the new extension numbers in any requests. The Passageway Telephony Services security database should be updated to reflect permissions for the new extension numbers and to clear permissions for the old ones. Some CTI applications may also require updating.
Direct Station Selector	The beginning extension number for each page is assigned through system programming. The factory settings are as follows: **Page 1** button begins with Extension 0, **Page 2** button begins with Extension 50, and **Page 3** button begins with Extension 100.
Group Calling	Extensions for calling groups (the factory settings: 770–791, 7920–7929) are assigned and can be renumbered through system renumbering.
Integrated Administration	System renumbering can be done only through system programming on the programming console or SPM. Integrated Administration never sends system numbering information to the system.
Ringing/Idle Line Preference	In Key and Behind Switch modes, the Idle Line Access code (factory setting is 9) can be renumbered.

Timed Flash

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Timer

At a Glance

Users Affected	Telephone users, operators
Reports Affected	None
Modes	All
Telephones	MLX display and analog multiline telephone users
MLX Display Label	Timer [Timer]

Description

Each MLX telephone and analog multiline display telephone has a timer to time calls, meetings, breaks, or other events. When activated, the timer appears at the top of the display, next to the date, and starts counting. It counts to 59 minutes and 59 seconds, then resets to zero and continues counting.

MLX Display Telephones

To start the timer on an MLX display telephone:

1. Press the **Menu** button.

2. Select Timer. If this feature is not displayed, press the **More** button. The display returns to the Home screen, and the timer starts counting automatically.

To stop the timer on an MLX display telephone:

1. Press the **Menu** button.

2. Select Timer. If this feature is not displayed, press the **More** button. The display returns to the Home screen, and the timer is no longer displayed.

Analog Multiline Display Telephones

To use the timer on an analog multiline display telephone:

1. Press the **Time/Timer** button.

2. Press the **Start** button to reset timer. The timer starts counting at 00:00.

3. When finished timing, press the **Stop** button. The timer stops counting.

4. Press **Time/Timer** to return to normal display.

$\implies$ **NOTE:**
If timing a call, the timer does not stop automatically when the call is completed.

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Toll Type

At a Glance

Users Affected	Telephone users, operators, data users
Reports Affected	General Trunk Information
Modes	All
Telephone	All
System Programming	Designate whether or not a toll prefix is required:
	• LinesTrunks→Toll Type
Factory Setting	Toll prefix required

Description

The Toll Type setting allows the system to classify calls as either local or toll, based on the number a user dials. The factory setting for Toll Type requires a user to dial a toll prefix (*1* or *0*) before dialing the area code and telephone number for a toll call. In some areas, a toll prefix is not necessary. The factory setting for Toll Type can be changed to specify that no toll prefix is required for these types of lines/trunks.

Dialing a prefix depends on local telephone company requirements and the type of line/trunk being used.

Considerations and Constraints

Toll Type does not apply to tie trunks or Direct Inward Dial (DID) trunks. The local telephone company must be consulted to determine which of the system's lines/trunks require a toll prefix.

Mode Differences

Hybrid/PBX Mode

Systems in Hybrid/PBX mode with Automatic Route Selection (ARS) always require a user to dial *1* before dialing a 10-digit toll call. Some 7-digit numbers may require dialing *1* as well.

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Feature Interactions

Automatic Route Selection	In certain areas, the local telephone company requires dialing the prefix 1 for certain exchanges. In these cases, the exchanges can be assigned to a 1 + 7 ARS table, and the 1 + 7 Dial setting must be set to Within Area Code. This dialing requirement is not related to toll type.
Allowed/ Disallowed Lists	When lines/trunks with different toll types are connected to the system (for example, basic lines/trunks and PRI facilities), a toll prefix (*0* or *1*) may be required for toll calls on some lines/trunks but not on others. In this case, two Disallowed List entries are required to restrict users from dialing specific area codes and/or telephone numbers. For example, to restrict users from dialing calls in the 505 area code on both toll types, one entry must be 1505 and the other entry must be 505. When the Disallowed List is assigned to an extension, the 505 entry restricts users from making calls to the 505 area code on lines/trunks that do not require a toll prefix, and the 1505 entry restricts users from making calls (including local calls) to the 505 area code on lines/trunks that *do* require a toll prefix. The same rules apply to Allowed Lists.

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Touch-Tone or Rotary Signaling

At a Glance

Users Affected	Telephone users, operators
Reports Affected	DID Trunk Information, GS/LS Trunk Information, System Information (`SysSet-up`), Tie Trunk Information
Modes	All
Telephones	All
System Programming	Change individual line/trunk to rotary or touch-tone service:
	• `LinesTrunks`→`TT/LS Disc`→`Outmode`
	Change individual tie trunk to rotary or touch-tone service:
	• `LinesTrunks`→`TIE Lines`→`Inmode`
	Change individual tie trunk to rotary or touch-tone service:
	• `LinesTrunks`→`TIE Lines`→`Outmode`
	Change DID trunk block to rotary or touch-tone signaling:
	• `LinesTrunks`→`DID`→`Signaling`
	Change rotary signaling:
	• `Options`→**More**→`Rotary`→`Delay/No Delay`
Factory Settings	
DID	Rotary
Loop-Start/Ground-Start	Touch-tone
Tie	Rotary
Rotary Signaling	Delay

Description

Touch-tone, tip/ring devices, such as single-line telephones or fax machines, are equipped with a dialpad that generates dual-tone multifrequency (DTMF) signals when a dial button is pressed. Analog multiline and MLX telephones are equipped with dialpads that generate digitally coded signals when a dial button is pressed. The duration of the signal sent is 50 milliseconds (50 ms) and is not adjustable.

A touch-tone receiver (TTR) is required either to make calls from tip/ring equipment or to use the Remote Access feature. TTRs are provided on 400, 400 GS/LS, 800 DID, 008 OPT, 800 GS/LS-ID, 016, and 012 modules. Normally, these TTRs are sufficient to handle the calls originated from these modules. However, additional TTRs may be needed to support the following services:

■ Tie trunks and DS1-emulated tie trunks set for DTMF signaling

■ Remote Access

■ Account Code Entry

■ Authorization Codes

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- IS II/III AUDIX Voice Power

- IS II/III Integrated Voice Power Automated Attendant

- IS III Fax Attendant

- MERLIN MAIL

- MERLIN LEGEND MAIL

- Lucent Technologies Attendant

- Intuity CONVERSANT

- Intuity AUDIX

If more TTRs are needed to support these services, 400 GS/LS modules can be added (each module provides four TTRs). shows the estimated number of TTRs needed, depending on the call volume and the type of service. is based on the assumption that the system already has basic telephones, remote access, and tie trunks.

Table 41. Number of TTRs Required

Calls per Hour	No Account Codes or VMS/AA	Account Codes or VMS/AA	Account Codes and VMS/AA
110	2	4	6
180	4	6	8
350	4	8	10
420	6	8	10
610	6	10	12
710	8	10	14

The touch-tone receiver (TTR) is allocated for 15 seconds at the beginning of the call and decreases to 5 seconds as the number of digits dialed increases. Each time the user presses another digit, the TTR timer decreases. If the user does not dial a digit within the time frame, the TTR is removed from the call and, after about 24 seconds, the call is disconnected and the user hears a recording or a fast busy.

The system is factory-set to generate touch-tone signals for all lines/trunks, except tie trunks, when users dial outside calls. The factory setting can be changed for individual rotary trunks so that touch-tone signals are converted to rotary pulses for transmission to the central office.

Rotary signaling can be set for Delay or No Delay. Delay is the factory setting; it makes the rotary pulse inaudible to the telephone user and delays sending the

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dialed number from the control unit to the line/trunk until the user is finished dialing.

Considerations and Constraints

Tie trunks are set up either to send signals to or receive signals from another PBX, or they are set up to be bidirectional, that is, to send and receive signals. If the system has bidirectional tie trunks, the signaling can be set for both directions independently. For example, outgoing (outmode) signaling can be rotary and incoming (inmode) can be touch-tone. Consult the local telephone company for more information.

The audible feedback for touch tones generated when a user presses a dialpad button can be heard by any user who shares a personal line or a Shared **SA** button with the telephone that is used to make a call. Therefore, when dialing confidential numbers such as passwords or account information, the user should take precautions, such as activating Privacy, to prevent others from hearing the touch tones.

Touch-tone dial mode cannot be programmed for DID trunks that are immediate start.

Touch-tone dial mode cannot be programmed for incoming, immediate tie trunks.

Touch-tone, single-line telephone users cannot make calls using individual lines/trunks programmed for rotary operation. The touch-tone signals generated from the telephone while dialing are transmitted to the central office at the same time the rotary signals are sent by the system. The central office receives both signals and cannot process the call.

Mode Differences

In Behind Switch mode, the factory setting for rotary signaling should be changed to No Delay.

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Transfer

At a Glance

Users Affected	Telephone users, operators
Reports Affected	Operator Information, SMDR, System Information (`SysSet-up`)
Modes	All
Telephones	All
Programming Code	*774 (Behind Switch mode only)
MLX Display Label	Transfer [Trans]
System Programming	To program the **Transfer** button in Behind Switch mode:
	• Options→Behind Switch→Transfer
	To specify how long a transferred call goes unanswered before returning:
	• Options→Transfer→Return Time
	To assign one-touch Transfer (with either automatic or manual completion) or one-touch Hold:
	• Options→Transfer→One Touch→Transfer (Manual/ Automatic/Hold
	To select button type (Ring or Voice) to use for transfers:
	• Options→Transfer→Type
	To specify either Music On Hold or ringback for the Transfer Audible:
	• Options→Transfer→Audible
	To enable trunk-to-trunk transfers for an extension (Release 3.1 and later systems only):
	• Extensions→**More**→TrkTransfer→Dial ext. no.→Enter
	To disable trunk-to-trunk transfers for an extension (Release 3.1 and later systems only):
	• Extensions→**More**→TrkTransfer→Dial ext. no.→ Delete
Factory Settings	
Transfer Return Time	4 rings (range 1–9 rings, 0 = disabled)
One-Touch Hold or Transfer	Key and Hybrid/PBX: One-Touch Transfer with Automatic Completion; Behind Switch: One-Touch Hold
One-Touch Transfer	Automatic Completion
Type of Transfer	Ring
Transfer Audible	
Outside callers	Music On Hold (if available)
Inside callers	Ringback (cannot be changed)
Trunk-to-Trunk Transfer	Disabled (Release 3.1 and later systems only)

Description

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Users can transfer inside or outside calls either to inside extensions or to outside numbers. Transferring an outside call to an outside number is called *trunk-to-trunk transfer*.

⚠ SECURITY ALERT:

To increase security, disallow trunk-to-trunk transfer on all Voice Messaging ports.

Calls can be transferred with or without consultation:

■ **With Consultation.** A transfer with consultation can be made only to an inside extension. The user initiating the transfer calls the destination extension and speaks to the person at that extension before completing the transfer.

If the transfer is initiated on an **SA Voice** or **ICOM Voice** button, the transfer is called a *voice-announced transfer* (see "Type of Transfer" on page 604). In a voice-announced transfer, the user initiating the transfer can speak to the person at the inside destination extension on that person's speakerphone before completing the transfer. When the transfer is completed, it arrives at the destination extension as a ringing call.

■ **Without Consultation.** A transfer without consultation can be made either to an inside extension or an outside number. The user initiating the transfer completes the transfer before the person at the destination extension or number answers.

➡ NOTE:
Queued Call Console (QCC) system operators ordinarily use the **Start** and **Release** buttons to transfer calls rather than the transfer process described in this section. For more information, see "Queued Call Console (QCC)" on page 488.

Transfer Options

The sections below describe system-programmed options that determine how to transfer calls.

Transfer Return Time

If a transferred call is unanswered within a programmed number of rings, it rings back at the transfer originator's telephone. This transfer return time can be set to a value of 1 to 9 rings, or 0 (the factory setting is 4 rings). If the transfer return time is set to 0, a transferred call continues to ring until either it is answered or the caller hangs up.

A returning transferred call continues to ring on the telephone it to which it was transferred and on the extension that originated the transfer until either user answers or the caller hangs up.

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Timing begins when the transfer is completed. If the transfer fails for any reason (such as an invalid destination), the transfer return time is automatically set to 2 rings to allow a faster return unless the programmed value is 0 (no transfer return).

Except on a QCC, returning transferred calls ring at the originating extension with a distinctive ring (a 3-ring pattern). Display telephone users also see the call type Return on the display.

> **NOTES:**
> 1. A call transferred to an extension programmed as a fax extension does not return to the originator, but continues to ring at the fax extension. This eliminates the possibility of a high-pitched fax tone being heard by the person who answers the returning call.
>
> 2. A call transferred to a calling group does not return, and the ringing and flashing LED is cleared from the **SA** or **ICOM** button on the originator's telephone as soon as the transfer is completed. The call does not stay on hold.

One-Touch Transfer

The system is programmed either for one-touch Transfer (the factory setting in Hybrid/PBX and Key modes) or for one-touch Hold (described below). With one-touch Transfer, a telephone user or operator can transfer a call to another extension by pressing a programmed Auto Dial or Direct Station Selector (DSS) button for the extension. With this single press of a button, the active call is put on hold and the system automatically selects an **SA** or **ICOM** button and dials the transfer destination.

With one-touch Transfer, the system is also programmed to complete transfers in one of the following ways:

■ **Automatic Completion** (factory setting). A transfer is completed automatically as soon as the Auto Dial or DSS button is pressed. The call is removed from the telephone that initiated the transfer and begins ringing at the destination extension.

One-touch Transfer with automatic completion does not allow a transfer with consultation. This type of transfer is always a ringing call, and voice announcements cannot be made. However, telephone users and operators can still initiate a transfer with consultation by pressing the **Transfer** button, then either dialing the destination extension or pressing an Auto Dial or DSS button.

When one-touch Transfer with automatic completion is programmed, the transfer of a call either to a busy extension or to an extension with Do Not Disturb active is completed automatically, although the call cannot be connected. The call does not return to the transfer originator until the transfer return time expires.

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■ **Manual Completion.** One-touch Transfer with manual completion allows a transfer with consultation; the user can delay completing the transfer until the destination extension is answered. The originator completes the transfer by pressing the **Transfer** button or another line button, or by hanging up.

One-Touch Hold

If the system is not programmed for one-touch Transfer, it is programmed for one-touch Hold (the factory setting in Behind Switch mode). This Transfer option applies to outside calls only. With one-touch Hold, a telephone user or operator can transfer a call on an outside line button to another extension with a shared button for the same outside line. The user or operator presses an Auto Dial or DSS button for the extension to initiate the transfer. The outside call is put on hold, and the system automatically selects an **SA** or **ICOM** button and dials the transfer destination. The originator announces the call to the person at the destination extension, who completes the transfer by pressing the line button with the call.

There is no transfer return function with one-touch Hold. If the transfer destination does not answer or is busy, either the person who initiated the transfer must notify the outside caller or the call remains on hold.

Type of Transfer

The system can be programmed for automatic selection of either a ringing button—**SA Ring** or **ICOM Ring** (the factory setting)—or a voice-announce button—**SA Voice** or **ICOM Voice**—when a transfer is initiated. Type of transfer does not apply to calls transferred outside the system.

If the system is programmed to select a ring button and one is available, the call rings at the destination extension. If the system is programmed to select a voice-announce button and one is available, the person at the destination extension hears a voice announcement. If that person does not have a speakerphone, has turned off Voice Announce to Busy, or is already using the speakerphone, the call is converted to a ringing call. A transfer to an outside number is always a ringing call.

If the specified type of button is not available, the system automatically selects the next available **SA** or **ICOM** button. If no **SA** or **ICOM** button is available, the caller is put on hold for transfer and no line is selected. The user can then select a Shared **SA** button, or an **SA Originate Only** or **ICOM Originate Only** button, wait for a free **SA** or **ICOM** button, or select an outside line button to transfer a call to an outside number.

The following types of calls ring at the destination to which they are transferred, regardless of the programmed type of Transfer:

■ Calls that arrive after waiting in a callback or call-waiting queue

■ Calls to busy extensions that do not have the Voice Announce to Busy capability

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- Calls to a telephone with Voice Announce to Busy turned off

- Calls to a telephone whose speakerphone is in use

- Calls to single-line telephones

- Calls to a calling group

- Calls to a QCC operator

Transfer to Busy Extension

If a call is transferred to an extension with no **SA** or **ICOM** buttons available, the call is queued for the destination extension. If the destination extension is an MLX display telephone, it receives a Call Waiting message. On any type of telephone with Call Waiting programmed, the destination extension receives a call-waiting tone. If an **SA** or **ICOM** button does not become available within the transfer return interval, the call is returned to the extension that initiated the transfer.

Trunk-to-Trunk Transfer

Trunk-to-trunk transfer (a call transferred to an outside number) is not allowed when the line/trunk with the incoming call is a loop-start line that is not programmed for reliable disconnect. (The Reliable Disconnect setting indicates that a disconnect signal is sent by the local telephone company to the system shortly after a caller hangs up.)

In Release 3.1 and later systems, trunk-to-trunk transfers can be blocked for an extension, whether or not the lines/trunks involved are programmed for reliable disconnect. The factory setting restricts all extensions from making trunk-to-trunk transfers. Extensions that should not be restricted must be individually programmed to allow trunk-to-trunk transfer.

⚠ SECURITY ALERT:

Any changes to the trunk-to-trunk transfer setting (especially for voice messaging ports or remote access ports) must be considered carefully in order to minimize the potential for toll fraud. See Appendix A, "Customer Support Information" for security information.

Disable Transfer on Single-Line Telephones

The system manager can disable the ability to transfer calls on single-line telephones in Release 4.0 and later releases. This is done in centralized telephone programming by removing all but one **SA** or **ICOM** buttons from the telephones. Any feature that relies on the use of a second dial tone also does not work on any single-line telephone with transfer disabled. This includes the Account Code Entry, Pickup, Call Waiting, Conference, Privacy, and Transfer features.

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Considerations and Constraints

Calls transferred to outside numbers may vary in transmission quality.

The ability to transfer inside calls to outside numbers cannot be specifically blocked for an individual extension. However, calling restrictions or Disallowed Lists can be assigned to individual extensions to prevent outward or toll calls.

When an outside call is transferred to an outside number (trunk-to-trunk transfer), two outside lines are used for as long as the call is in progress.

When a call is transferred to an outside number, the system does not recognize the transfer until a dialing time-out occurs. Avoid a delay by dialing # after dialing the telephone number.

When you try to complete a transfer to an outside number under the following conditions, the call to the outside destination is disconnected:

- The outside line that the incoming call is using is a loop-start line programmed for unreliable disconnect.

- Another inside user has joined the call and the call is now a conference call, which cannot be transferred.

The transfer originator does not receive an error tone to indicate that the transfer has been denied. When a call is received on a T1 channel that is programmed to emulate a loop-start line and then is transferred to an outside telephone number where the caller hangs up before the call is answered, the call is not disconnected and remains on hold.

Except when one-touch Hold is used, a transferred call always arrives on an **SA** or **ICOM** button or, when transferred to a QCC operator, on a **Call** button.

Calls cannot be transferred *from* an extension programmed for a fax machine, but inside and outside calls can be transferred *to* a fax machine. A call transferred to a fax extension does not return to the originator, but continues to ring at the fax extension. This eliminates the possibility of a high-pitched fax tone being heard by the person who answers the returning call.

If a multiline telephone user presses the **Feature** button after initiating a transfer, the dialed digits activate a feature (for example, Privacy). After the feature is activated, the user should redial the extension or telephone number to transfer the call.

In Release 2.1 and later systems, a 012 port that is programmed as a generic VMI port can transfer an outside call to an outside number (trunk-to-trunk transfer). Release 2.0 and earlier systems can perform a trunk-to-trunk transfer only on ports programmed as integrated VMI.

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> ⚠ **SECURITY ALERT:**
> *Calling restrictions (for example, Disallowed Lists, Toll Restriction, Facility Restriction Levels) should be programmed, as appropriate, to minimize toll fraud, especially if a single-line telephone is connected to an integrated VMI port. See* "Calling Restrictions" on page 110 *for additional information about programming calling restrictions.*

In Release 4.0 and later releases, whenever a switchhook flash is followed by on-hook status on a single-line telephone, transfer return calls are blocked. This is done in order to stop unwanted phantom calls from being made to single-line telephones as a result of telephone handsets bouncing in their cradles. The handset bouncing in the cradle is interpreted by the MERLIN LEGEND Communications System as a switchhook flash attempt to transfer a call.

Mode Differences

Behind Switch Mode

In Behind Switch mode, when the fixed **Transfer** button is pressed, the Transfer feature of the host switch is used instead of the system's Transfer feature. However, to activate Transfer, the fixed **Transfer** button on an MLX or analog multiline telephone must be programmed through system programming to send a timed flash plus the code expected by the host. The fixed button has no effect when pressed during an intercom call within the communications system; inside transfers are made using trunk-to-trunk transfer on prime lines. If use of the communications system's Transfer feature is also desired (to lower traffic on prime lines, for example), it must be programmed on an available line button on each multiline telephone through either extension programming or centralized telephone programming, and then can be used only when transferring within the local system (this option is not available in Hybrid/PBX or Key mode). One-touch Hold is the factory setting in Behind Switch mode. The selection of one-touch Transfer is not blocked in system programming, but the setting is always one-touch Hold regardless of the option chosen.

In Behind Switch Mode, the Transfer Return Time and Type of Transfer options apply only to inside transfers (**ICOM/SA** calls made within the communications system) in which the caller, the transfer originator, and the transfer destination are all system extensions.

Telephone Differences

Queued Call Consoles

A QCC operator uses the **Start** and **Release** buttons or a DSS button to transfer calls. However, pressing the **Transfer** button on a QCC is the same as pressing the **Start** button.

A QCC operator cannot make or receive voice-announced transfers.

When a QCC operator uses the **Start** and **Release** buttons to transfer a call, the QCC return ring interval applies for transfer return timing instead of the transfer return time. The QCC return ring interval is the number of rings (1–15) before an unanswered extended call returns to the QCC queue. See for additional details.

Single-Line Telephones

The One-Touch Transfer option does not apply to single-line telephones.

Single-line telephone users cannot make voice-announced transfers. A single-line telephone user cannot transfer an outside call to an outside number. If the user tries to complete a trunk-to-trunk transfer, the caller remains on hold for transfer and the transfer destination is disconnected. In Release 3.1 and later systems, a single-line telephone is blocked from making trunk-to-trunk transfers even if it is programmed as allowed.

To make a transfer with consultation, a single-line telephone user presses and releases either the **Recall** or **Flash** button or the switchhook. The call is put on hold. The user then dials the destination extension. After consultation, the user hangs up and the call is transferred. If the transfer cannot be made, the user presses and releases either the **Recall** or **Flash** button or the switchhook to return to the caller. To make a transfer without consultation, the single-line telephone user presses and releases either the **Recall** or **Flash** button or the switchhook, dials the extension or outside number, and hangs up. The call is transferred.

If a single-line telephone with positive or timed disconnect is used—for example, Lucent Technologies models 2500YMGL and 2500MMGK—pressing the switchhook disconnects the call. With this type of telephone, the **Recall** button must be used instead of the switchhook to transfer a call.

Feature Interactions

Account Code Entry	When a call is transferred, the destination extension cannot change an account code entered at the originating extension.
Authorization Code	The Authorization Code feature does not affect the ability to make a trunk-to-trunk transfer. If the telephone is restricted from making a trunk-to-trunk transfer, entering an Authorization Code does not remove this restriction.
Auto Dial	Users can press inside Auto Dial buttons instead of dialing extension numbers to transfer calls. To use one-touch Transfer, users must program an Auto Dial button for every extension to which they transfer calls. When a system operator transfers a call and it returns unanswered, the green LED next to the Auto Dial button flashes to indicate the extension from which the call is returning. Only system operators receive this indication.

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Automatic Line Selection	The ALS sequence does not apply when the **Transfer** button is pressed.
Basic Rate Interface	Calls on BRI lines are available for the MERLIN LEGEND Communications System Transfer feature. The central office-based Transfer feature is not supported by the MERLIN LEGEND Communications System.
Callback	A queued callback call cannot be transferred, but calls transferred to busy extensions are eligible for Callback. When a user reaches a busy extension while transferring a call, Automatic Callback or Selective Callback can be used to queue the call before completing the transfer. The caller hears ringback or Music On Hold.
	When the extension is available, the call is transferred to the extension automatically. If the extension is not available before the transfer return time expires, the call is removed from the callback queue and returned to the originator.
Caller ID	If a call comes in over a line connected to an 800 GS/LS-ID module and the customer subscribes to Caller ID service (loop-start lines only), when the call is transferred, the caller's telephone number is shown on Line 1 of the first screen. The extension that initiated the transfer is shown on Line 1 of the second screen. (The call must be from an area where call identification is supported.)
	Caller ID information is displayed when a call returns from transfer because the extension to which the call was transferred is either busy or not answering.
Call Waiting	If a transfer is completed to a busy extension, the destination hears the call-waiting tone, if programmed, and the caller hears call-waiting ringback. The call waits in queue until the transfer return time expires. Calls answered by picking up a call-waiting call cannot be transferred.
Camp-On	A transfer can be completed by using the Camp-On feature, whether or not the destination extension is busy. When the feature is used, the Camp-On return interval is used instead of the transfer return time. The Camp-On return interval is normally longer.
	A transfer can be camped on to an inside extension only. If a user presses the programmed **Camp-On** button or dials the Camp-On feature code while transferring a call to an outside number, the call to the outside number is disconnected. The original call remains on hold.
Conference	A conference call cannot be transferred. However, a user who starts a conference sequence can complete it by pressing the **Transfer** button and transferring the original call instead of completing the conference. Similarly, if a transfer originator has one person on hold for transfer and, after dialing the destination extension or telephone number, decides to establish a conference call, he or she can press the **Conf** button to establish the conference instead of completing the transfer.

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Coverage	Calls transferred to a sender are eligible for Individual and/or Group Coverage. However, if the sender is using Coverage On/Off to prevent calls from going to coverage and does not have an available **SA** or **ICOM** button to receive a transferred call, the sender hears a call-waiting tone, even if an Individual or Group Coverage receiver is available.
	Calls answered on a Primary Cover, Secondary Cover, or Group Cover button can be transferred using one-touch Transfer or the **Transfer** button.
	Transfer returns are not eligible for Individual or Group Coverage.
CTI Link	CTI link applications can control inside transfers, not transfers to outside numbers. When a CTI application is used to initiate a transfer, caller information is passed to a screen-pop-capable destination.
	When a transfer is initiated manually, using the telephone at an extension where a CTI application is installed, screen pop is not initiated at a screen-pop capable destination, even if the CTI application is used to complete the transfer.
	When performed by a QCC operator or unmonitored DLC operator, a transfer generates screen pop of inside or outside caller information at screen-pop-capable destinations.
Digital Data Calls	Data calls cannot be transferred.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold for transfer at a passive-bus MLX telephone when a 2B call arrives, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Direct Station Selector	DSS buttons can be used to transfer outside calls using one-touch Hold only by a DLC operator; a QCC operator cannot use this feature. When one-touch Hold is programmed, if a DLC operator presses a DSS button with an inside caller on the line or, in Hybrid/PBX mode, with an outside caller on an **SA** button, the call is not put on hold. A beep is sent to the extension instead.
	When one-touch Transfer (with either automatic or manual completion) is programmed, and a system operator presses a DSS button while a caller is on the line and no **SA** or **ICOM** button is available to transfer the call, the call does not go on hold. If the operator hangs up, the caller is disconnected.
Direct Voice Mail	A user with a Direct Voice Mail button can activate Direct Voice Mail after starting to transfer a call. While a transfer is being made, press the Direct Voice Mail button to transfer the call to the extension's voice mail. Complete the transfer as usual by pressing the **Transfer** button or hanging up.
Display	When an MLX display telephone user presses the **Transfer** button, the display prompts the user to dial the extension number and shows the digits as they are dialed. When dialing is completed, the display shows the name of the person at the destination extension, if labels are programmed.

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Transfer return calls are identified by call type and by the name and extension number to which the call was transferred. The second line of the display also shows the caller information. When an MLX display telephone user receives a transferred call, the display shows the type of call and the caller information on Line 1. When an inside call is being transferred, the display shows the extension number or line/trunk number. When an outside call is being transferred, the display shows either the line on which the call came in or the caller's telephone number—if PRI-based number identification or Caller ID is available. The transfer originator is shown on Line 2.

When an MLX display telephone user makes a voice-announced transfer, the display on his or her telephone shows Announce to. After the transfer is completed, the user's display shows Call Transferred.

When an MLX display telephone user does not complete a transfer (for example because Do Not Disturb is on at the destination extension), the call returns to the originator's telephone and call information is displayed. The reason for the incomplete transfer is not indicated.

Do Not Disturb If a call is transferred to an extension that has Do Not Disturb on and that has neither forwarding on nor coverage receivers, the call immediately returns to the transfer originator. If there are coverage receivers, the transfer returns to the originator after the transfer return time expires.

Fax Extension If an extension is programmed as a fax extension, the telephone at that extension is unable to use the **Transfer** button.

Forward and Follow Me Transferred inside and outside calls are forwarded. If a user transfers a call to an extension with forwarding activated, the person receiving the forwarded calls hears one ring, indicating an inside call. In addition, if the person has a display telephone, he or she sees the call information for an inside call.

Group Calling A call transferred to a calling group does not return to the originator; the call is handled just as any other call received in the calling group queue. For example, the system follows the programmed hunt sequence to locate an available calling group member, and the call is eligible for a delay announcement if one is programmed.

A calling group member is considered available for a call while in the process of transferring a call. He or she is moved to the end of the most-idle queue (Release 5.0 and later systems).

Voice-announced transfers cannot be made to a calling group. There is no limit to the number of calls that can be transferred to a calling group.

When an inside caller is transferred to a calling group and no members are available, the caller hears regular ringback. When an outside caller is transferred to a calling group and no members are available, the caller hears regular ringback or Music On Hold, if programmed.

If a call being transferred to a calling group is on an **SA** or **ICOM** button, the button is cleared.

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Headset Options	When an MLX telephone user (except for a QCC operator) transfers a call, Headset Auto Answer is turned off and must be turned on manually to resume using the feature.
Hold	Calls on hold for transfer are timed so that the user or system operator hears a reminder after the timer expires.
	In Release 2.1 and later systems, a call that has been put on hold at a Cover, **SA**, Shared **SA**, or **Pool** button can be picked up by a user who has a personal line button for the call. When the call is picked up, the green LED next to the personal line lights steadily; however, the call remains on hold at the Cover, **SA**, **SSA**, or **Pool** button. The user who picks up on the personal line cannot transfer the call that has been picked up. In order to transfer a call on hold at a Cover, **SA**, **SSA** or **Pool** button, use Pickup instead of answering on a personal line button.
HotLine	Transfer is not available at HotLine extensions (Release 5.0 and later systems).
Inspect	If an MLX telephone user presses the **Transfer** button while in Inspect mode, Inspect is canceled, the user is returned to the Home screen, and transfer is initiated.
Integrated Administration	Both the transfer return time and the VMS transfer return interval should be greater than the total of the values programmed for Delay Ring plus the Coverage Delay Interval. These values are shown on the Application Switch Defaults screen.
Last Number Dial	The Last Number Dial feature can be used to originate a transfer to an outside telephone number.
Line Request	Returning transferred calls cancel Line Request.
Messaging	A nondisplay telephone user who uses Leave Message to send a message while a transfer is in progress cannot determine who received the message.
	For example, suppose that Extension A calls Extension B, and Extension B transfers the call to Extension C. If Extension A sends a message before the transfer is completed, Extension B receives the message. If Extension A sends a message after Extension B completes the transfer, Extension C receives the message, even if Extension C does not answer and the call is ringing at Extension B as a transfer return.
	If an inside call is transferred to a telephone with a posted message, only the display telephone user who transfers the call sees the message. The original caller does not see the posted message even after the transfer is completed.
	If a call is transferred to an extension programmed for a fax machine, the message indication is not sent to the fax message-waiting receiver, regardless of the amount of time programmed for the fax message-waiting threshold.
Microphone Disable	A call to a user whose microphone is disabled can be transferred with a voice announcement, but the user must lift the handset to talk.

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Multi-Function Module	Calls cannot be transferred from an MFM because the MFM cannot send a switchhook flash.
Music On Hold	An outside caller hears Music On Hold if it is programmed as the transfer audible. Music is played only before the transfer is completed by the originating extension. The caller hears music when the **Transfer** button is pressed and while the destination extension is being dialed. When the transfer originator presses the **Transfer** button a second time or hangs up, the caller hears ringback.
Paging	Calls cannot be transferred either to paging groups or the loudspeaker paging extension.
Park	A user can park calls by pressing the **Transfer** button and dialing his or her own extension. A DLC operator also can press the **Transfer** button and dial a system operator park zone extension. When either of these methods is used, the transfer must be completed by pressing the **Transfer** button or hanging up. This method cannot be used by QCC operators.
Personal Lines	If a call is received on a personal line and is transferred to another user who receives the call on an **SA** or **ICOM** button and then puts the call on hold, another user who shares the personal line cannot select the shared personal line button and pick up the call. If for some reason the person who received the transfer and put the call on hold cannot return to the call, another user must use Pickup to pick up the call. (For example, an operator can take a message and then disconnect the caller.)
	The hold timer or operator hold timer applies to a call on hold for transfer. The user or operator hears a reminder (a beep or abbreviated ring) after the timer expires.
Pickup	A transferred call can be answered by using Pickup.
Primary Rate Interface (PRI) and T1	If a call comes in over a PRI facility where number identification is available, the caller's telephone number is shown on Line 1 of the first screen when the call is transferred. The extension that initiated the transfer is shown on Line 1 of the second screen.
	For trunk-to-trunk transfer with no extension number involved, the Calling Party Number for the outbound call is the programmed base number.
	Data calls cannot be transferred.
Recall/Timed Flash	A single-line telephone user with a **Recall** or **Flash** button can use it to transfer a call.
Ringing Options	Transfer returns ring until answered and do not receive abbreviated ringing. Ring Timing options are ignored on a transfer return call; the button rings immediately, even if it is programmed for No Ring.
Saved Number Dial	The Saved Number Dial feature can be used to originate a transfer to an outside telephone number.
Signal/Notify	A Signaling button can be used to dial the destination extension after the **Transfer** button is pressed but cannot be used to initiate one-touch Transfer.

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Speed Dial	Both Personal and System Speed Dial can be used to dial a transfer destination.
SMDR	The number of the extension that hangs up on an incoming outside call is shown in the STN field of the Station Message Detail Recording (SMDR) report, regardless of the number of times the call is transferred. For a call to an outside number, the extension that dialed the call is shown on the SMDR report, even if the call is then transferred to another extension.
System Access/ Intercom Buttons	Transferred calls always arrive on **SA** or **ICOM** buttons. The only exception is that when one-touch Hold is used, the transferred outside call stays on hold on an outside line button until it is picked up. When a transfer is initiated, the system automatically selects an **SA** or **ICOM** button (a Shared **SA** button is not automatically selected). If no button is available, the caller is put on hold for transfer and no line is selected. The user can then select a Shared **SA** button or an **SA Originate Only** or **ICOM Originate Only** button, wait for a free **SA** or **ICOM** button, or select an outside line button to transfer a call to an outside number.

A transferred call that returns to the principal extension does not ring on any corresponding Shared **SA** buttons. If a transfer originator has an **SSA** button for the person receiving the transfer, the LED next to the **SSA** button flashes to indicate a ringing call. However, the call is disconnected if the transfer originator answers.

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Voice Announce to Busy

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Voice Announce to Busy

At a Glance

Users Affected	Telephone users, DLC operators
Reports Affected	Extension Directory, Extension Information
Modes	All
Telephones	All except single-line telephones
Programming Codes	
Receive On	*10
Receive Off	**10
MLX Display Labels	Voice Annce,Receive,On [Voice,Recv,On]
	Voice Annce,Receive,Off [Voice,Recv,Off]
System Programming	Turn on/off Voice Announce for analog multiline telephones:
	• Extensions→VoiceSignl
	Enable or disable Voice Announce for Queued Call Consoles:
	• Operator→Queued Call→**More**→Voice Annc
Factory Settings	
Analog multiline Voice Announce	On
QCC Voice Announce	Disabled

Description

Voice Announce to Busy allows MLX and analog multiline telephone users to receive inside calls on their speakerphones, even if they are on a call. A telephone user can turn off all incoming voice announcements, calls made from an **SA Voice** or **ICOM Voice** button on another extension, or group pages.

When Voice Announce to Busy is on at an extension and the handset at that extension is in use, an inside caller can reach that extension by speaking on its speakerphone. When Voice Announce to Busy is turned off at an extension, no caller can turn on that extension's speakerphone. However, the user at that extension can still make calls and speak on the speakerphone.

Voice Announce to Busy requires two communications channels between the control unit and the telephone, one for voice-announced calls and one for ringing calls. Turning off the feature at an extension converts the second, voice-announced, channel into a ringing channel. Calls made to the extension as voice-announced calls arrive as ringing calls instead.

For an MLX telephone, Voice Announce to Busy is automatically available because the MLX extension jack provides two communications channels. For an analog multiline telephone, enabling the feature requires assigning two consecutive extension jacks to the telephone. The extension assigned to the odd-numbered jack is the telephone's extension; the extension assigned to the

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next higher even-numbered jack is used for voice announcements and cannot be
dialed. A single-line telephone cannot receive voice-announced calls even if the
set has a speakerphone.

When a caller makes a voice-announced call to an extension with Voice
Announce to Busy, the caller hears a tone. The called person hears a beep and
the caller's voice over the speakerphone unless one of the following is true:

- The called person is already using the speakerphone. In this case, the
  caller hears ringback, and the called person hears an abbreviated ring, if
  programmed.

- The called person has turned off Voice Announce to Busy. In this case, the
  caller hears ringback, and the called person hears ringing for an inside call.

- The called person has turned on Do Not Disturb. The caller hears a busy
  signal and, if the caller has a display telephone, sees the message DO NOT
  DISTURB.

QCC Voice Announce

In Release 4.0 and later releases, if QCC Voice Announce is Enabled, then the
fifth **Call** button on QCCs can be used to announce a call on another user's
speakerphone. If Voice Announce is disabled (factory setting), then the fifth **Call**
button functions the same as any other **Call** button. This setting applies to all
QCCs in the system. Inspecting this button displays Call 5 Voice if Voice
Announce for QCCs is enabled and Call 5 Ring if Voice Announce for QCCs is
not enabled.

QCCs *cannot* receive Voice Announce calls. Any call to a QCC from a Voice
Announce **SA** button from another extension is received at the QCC as a ringing
call.

Considerations and Constraints

By turning off Voice Announce to Busy, MLX and analog multiline telephone users
can prohibit all voice announcements to their telephones. When a user turns off
Voice Announce to Busy, the Hands Free Answer on Intercom (HFAI) capability is
also turned off.

Voice Announce to Busy should be turned off at data workstations that include
either an MLX telephone or an analog multiline telephone, a GPA, and a modem.

Telephone Differences

Queued Call Consoles

If QCC Voice Announce is Enabled, Voice Announce calls can be made by
choosing the fifth **Call** button on the console.

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QCCs *cannot* receive Voice Announce calls. Any call to a QCC from a Voice Announce **SA** button from another extension is received at the QCC as a ringing call.

Other Multiline Telephones

Voice Announce to Busy is available only on multiline telephones. The feature is automatic on an MLX telephone. An analog multiline telephone requires an additional extension jack for the feature.

MLC-5, MDC 9000, and MDW 9000 cordless and cordless/wireless telephones cannot receive voice-announced calls. However, Voice Announce to Busy is not automatically turned off for this type of telephone. If a multiline telephone user tries to make a voice-announced call to a cordless telephone on which Voice Announce to Busy has not been turned off, the cordless telephone beeps. The user can then answer the call using the handset.

Single-Line Telephones

Single-line telephone users cannot make or receive voice announcements, even if the set has a speakerphone.

Feature Interactions

Digital Data Calls	Voice Announce to Busy should be disabled at digital data workstations.
	At a passive-bus MLX telephone, Voice Announce to Busy requires one of the B-channels needed for a 2B video call and should be used only when the video system is not active on, or receiving, a call.
Coverage	An inside voice-announced call is not sent to coverage because, if the sender's speakerphone is available, the call is answered as soon as it is made. If the sender's speakerphone is in use, the call is converted to a ringing call and sent to coverage.
Do Not Disturb	A user with Do Not Disturb on does not receive voice announcements.
HFAI	When Voice Announce to Busy is turned on, HFAI is disabled.
Microphone Disable	Users who are on their telephones and whose microphones are disabled can still hear a voice-announced call over the speakerphone. They must press the button with the incoming call and use the handset to talk to the caller.
Multi-Function Module	Voice Announce to Busy interferes with data calls made through a device attached to an MFM.
Paging	A user who turns off Voice Announce to Busy does not receive group pages.

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Features
Volume

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Volume

At a Glance

Users Affected	Telephone users, operators
Modes	All
Telephones	MLX telephones

Description

The **Volume** button on the MLX-5, MLX-5D, MLX-10, MLX-10D, MLX-10DP, MLX-16DP, MLX-20L, and MLX-28D telephones controls the volume levels for ringing, conversations on the handset, and conversations on the speakerphone. The user can set each of these volume levels independently of the others, and it stays set until the user changes it again.

Press the side of the **Volume** button labeled $\wedge$ to raise the volume and the side labeled $\vee$ to lower it, as follows:

- Change the ringing volume while the telephone is ringing.

- Change the handset volume while on a call using the handset.

- Change the speakerphone volume while on a call using the speakerphone.

Telephone Differences

Only MLX telephones have **Volume** buttons.

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A Customer Support Information
Support Telephone Number

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Customer Support Information

A

Support Telephone Number

In the USA only, Lucent Technologies provides a toll-tree customer Helpline (1 800 628-2888) 24 hours a day. If you need assistance when installing, programming, or using your system, call the Helpline or your Lucent Technologies representative. Consultation charges may apply.

Outside the USA, if you need assistance when installing, programming, or using your system, contact your Lucent Technologies representative.

Federal Communications Commission (FCC) Electromagnetic Interference Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

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Canadian Department of Communications (DOC) Interference Information

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A préscrites dans le règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.

FCC Notification and Repair Information

This equipment is registered with the FCC in accordance with Part 68 of its rules. In compliance with those rules, you are advised of the following:

- **Means of Connection.** Connection of this equipment to the telephone network shall be through a standard network interface jack, USOC RJ11C, RJ14C, RJ21X. Connection to E&M tie trunks requires a USOC RJ2GX. Connection to off-premises extensions requires a USOC RJ11C or RJ14C. Connection to 1.544-Mbps digital facilities must be through a USOC RJ48C or RJ48X. Connection to DID requires a USOC RJ11C, RJ14C, or RJ21X. These USOCs must be ordered from your telephone company. Connection to 56-Kbps or 64-Kbps facilities requires a USOC RJ11C, RJ14C, or RJ21.

- **Party Lines and Coin Telephones.** This equipment may not be used with party lines or coin telephone lines.

- **Notification to the Telephone Companies.** Before connecting this equipment, you or your equipment supplier must notify your local telephone company's business office of the following:

  — The telephone number(s) you will be using with this equipment.

    □ The appropriate registration number and ringer equivalence number (REN), which can be found on the back or bottom of the control unit, as follows:

    □ If this equipment is to be used as a Key system, report the number AS593M-72914-KF-E.

    □ If the system provides both manual and automatic selection of incoming/outgoing access to the network, report the number AS593M-72682-MF-E.

    □ If there are no directly terminated trunks, or if the only directly terminated facilities are personal lines, report the number AS5USA-65646-PF-E.

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    □ The REN (Ringer Equivalence Number) for all three systems is 1.5A.

— The facility interface code (FIC) and service order code (SOC):

    □ For tie line connection, the FIC is TL31M and the SOC is 9.0F.

    □ For connection to off-premises stations, the FIC is OL13C and the SOC is 9.0F.

    □ For equipment to be connected to DID facilities, the FIC is 02RV2-T and the SOC is AS.2.

           — For equipment to be connected to 1.544-Mbps digital service, the SOC is 6.0P and the FIC is:

           — 04DU9-BN for D4 framing format with AMI zero code suppression.

           — 04DU9-DN for D4 framing format with bipolar 8 zero code suppression (B8ZS).04DU9-IKN for extended superframe format (ESF) with AMI zero code suppression.

           — 04DU9-ISN with ESF and B8ZS.

    □ For equipment to be connected to 56-Kbps or 64-Kbps digital facilities, the FIC is 02B1Q.

— The quantities and USOC numbers of the jacks required.

— For each jack, the sequence in which lines are to be connected, the line types, the FIC, and the REN by position when applicable.

■ **Ringer Equivalence Number (REN).** The REN is used to determine the number of devices that may be connected to the telephone line. Excessive RENs on the line may result in the devices not ringing in response to an incoming call. In most, but not all, areas the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the local telephone company to determine the maximum REN for the calling area.

■ **Disconnection.** You must also notify your local telephone company if and when this equipment is permanently disconnected from the line(s).

Installation and Operational Procedures

The manuals for your system contain information about installation and operational procedures.

■ **Repair Instructions.** If you experience trouble because your equipment is malfunctioning, the FCC requires that the equipment not be used and that it be disconnected from the network until the problem has been corrected. Repairs to this equipment can be made only by the manufacturers, their authorized agents, or others who may be authorized by the FCC. In the

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event repairs are needed on this equipment, contact your authorized Lucent Technologies dealer or, **in the USA only**, contact the National Service Assistance Center (NSAC) at 1 800 628-2888.

■ **Rights of the Local Telephone Company.** If this equipment causes harm to the telephone network, the local telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will also be informed of your right to file a complaint with the FCC.

■ **Changes at Local Telephone Company.** Your local telephone company may make changes in its facilities, equipment, operations, or procedures that affect the proper functioning of this equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

■ **Hearing Aid Compatibility.** The custom telephone sets for this system are compatible with inductively coupled hearing aids as prescribed by the FCC.

■ **Automatic Dialers.** WHEN PROGRAMMING EMERGENCY NUMBERS AND/OR MAKING TEST CALLS TO EMERGENCY NUMBERS:

— Remain on the line and briefly explain to the dispatcher the reason for the call.

— Perform such activities in off-peak hours, such as early morning or late evening.

■ **Direct Inward Dialing** (DID). This equipment returns answer supervision signals to the Public Switched Telephone Network when:

— Answered by the called station

— Answered by the attendant

— Routed to a recorded announcement that can be administered by the customer premises equipment user

— Routed to a dial prompt

This equipment returns answer supervision on all DID calls forwarded back to the Public Switched Telephone Network. Permissible exceptions are when:

— A call is unanswered

— A busy tone is received

— A reorder tone is received

Allowing this equipment to be operated in such a manner as not to provide proper answer supervision signaling is in violation of Part 68 rules.

New Network Area and Exchange Codes. The MERLIN LEGEND Communications System software does not restrict access to any new area codes or exchange codes established by a local telephone company. If the user has established toll restrictions on the system that could restrict access, then the user

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should check the lists of allowed and disallowed dial codes and modify them as needed.

Equal Access Codes. This equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modifications of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

DOC Notification and Repair Information

NOTICE: The Canadian Department of Communications (DOC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The DOC does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to connect it to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring for single-line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or any equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected. This precaution may be particularly important in rural areas.

> ⚠️ **CAUTION:**
> *Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority or electrician, as appropriate.*

To prevent overloading, the Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop used by the device. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

DOC Certification No.: 230 4095A
CSA Certification No.: LR 56260
Load No.: 6

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Renseignements sur la notification du ministère des Communications du Canada et la réparation

AVIS: L'étiquette du ministère des Communications du Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'enterprise utilisés pour un service individuel à ligne unique peuvent être prolongés au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus pas les tarifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particuliérement importante dans les régions rurales.

AVERTISSEMENT: L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu

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que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.

No d'homologation: 230 4095A
No de certification: CSA LR 56260
L'indice de charge: 6

**MERLIN LEGEND D.O.C.
Location Label Placement**

Ministère des Communications du Canada emplacement de l'étiquette

Lucent

MERLIN LEGEND

Model 511A Control Unit

**TELEPHONE
EQUIPMENT**

® LR 56260

UL LISTED
538E
®

MADE IN U.S.A.

Use only Lucent Technologies manufactured MERLIN LEGEND circuit modules, carrier assemblies, and power units, as specified in the Installation Manual, in this product. There are no user serviceable parts inside. Contact your authorized agent for service and repair.

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère Communications du Canada.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Complies with Part 68, FCC Rules. See the System Reference Manual for proper FCC Classification.
FCC Reg. Nos. MF: AS593M-72682-MF-E
KF: AS593M-72914-KF-E
PF: AS5USA-65646-PF-E
REN: 1.5A

WARNING: If equipment is used for out-of-building applications, approved secondary protectors are required. See Installation Manual.

AVERTISSEMENT: Si l'equipment est utilisé pour des applications extérieures, l'installation d'un protector secondair est requise. Voir le manuel d'Installation.

CANADA

DR ID

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Security of Your System: Preventing Toll Fraud

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Security of Your System: Preventing Toll Fraud

As a customer of a new telephone system, you should be aware that there is an increasing problem of telephone toll fraud. Telephone toll fraud can occur in many forms, despite the numerous efforts of telephone companies and telephone equipment manufacturers to control it. Some individuals use electronic devices to prevent or falsify records of these calls. Others charge calls to someone else's number by illegally using lost or stolen calling cards, billing innocent parties, clipping on to someone else's line, and breaking into someone else's telephone equipment physically or electronically. In certain instances, unauthorized individuals make connections to the telephone network through the use of the Remote Access features of your system.

The Remote Access features of your system, if you choose to use them, permit off-premises callers to access the system from a remote telephone by using a telephone number with or without a barrier code. The system returns an acknowledgment signaling the user to key in his or her barrier code, which is selected and administered by the system manager. After the barrier code is accepted, the system returns dial tone to the user. In Release 3.1 and later systems, barrier codes are by default restricted from making outside calls. In prior releases, if you do not program specific outward calling restrictions, the user is able to place any call normally dialed from a telephone associated with the system. Such an off-premises network call is originated at, and will be billed from, the system location.

The Remote Access feature, as designed, helps the customer, through proper administration, to minimize the ability of unauthorized persons to gain access to the network. Most commonly, phone numbers and codes are compromised when overheard in a public location, through theft of a wallet or purse containing access information, or through carelessness (for example, writing codes on a piece of paper and improperly discarding it). Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Enormous charges can be run up quickly. It is the customer's responsibility to take the appropriate steps to properly implement the features, evaluate and administer the various restriction levels, protect access codes, and distribute access codes only to individuals who have been fully advised of the sensitive nature of the access information.

Common carriers are required by law to collect their tariffed charges. While these charges are fraudulent charges made by persons with criminal intent, applicable tariffs state that the customer of record is responsible for payment of all long-distance or other network charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit for charges that result from unauthorized access.

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To minimize the risk of unauthorized access to your communications system:

- Use an unpublished Remote Access number.

- Assign access codes randomly to users on a need-to-have basis, keeping a log of *all* authorized users and assigning one code to one person.

- Use random-sequence access codes, which are less likely to be easily broken.

- Use the longest-length access codes the system will allow.

- Deactivate all unassigned codes promptly.

- Ensure that Remote Access users are aware of their responsibility to keep the telephone number and any access codes secure.

- When possible, restrict the off-network capability of off-premises callers, using calling restrictions, Facility Restriction Levels (Hybrid/PBX mode only), and Disallowed List capabilities. In Release 3.1 and later systems, a prepared Disallowed List (number 7) is provided and is designed to prevent the types of calls that toll-fraud abusers often make.

- When possible, block out-of-hours calling.

- Frequently monitor system call detail reports for quicker detection of any unauthorized or abnormal calling patterns.

- Limit Remote Call Forwarding to persons on a need-to-have basis.

- Change access codes every 90 days.

- Use the longest-length barrier codes possible, following the guidelines for passwords. (See "Choosing Passwords.")

Toll Fraud Prevention

Toll fraud is the unauthorized use of your telecommunications system by third parties to make long-distance telephone calls. Under the law, you, the customer, are responsible for paying part or all of those unauthorized calls. Thus, the following information is of critical importance.

Unauthorized persons concentrate their activities in two areas with the MERLIN LEGEND Communications System:

- They try to transfer out of the MERLIN LEGEND Communications System to gain access to an outgoing trunk and make long-distance calls.

- They try to locate unused or unprotected mailboxes and use them as drop-off points for their own messages.

The following is a discussion of how toll fraud is often perpetrated and ways to prevent unauthorized access that can lead to toll fraud.

Physical Security, Social Engineering, and General Security Measures

Criminals called *hackers* may attempt to gain unauthorized access to your communications system and voice messaging system in order to use the system features. Hackers often attempt to trick employees into providing them with access to a network facility (line/trunk) or a network operator. This is referred to as social engineering. Hackers may pose as telephone company employees and employees of Lucent Technologies or your authorized dealer. Hackers will go through a company's trash to find directories, dialing instructions, and other information that will enable them to break into the system. The more knowledgeable they appear to be about the employee names, departments, telephone numbers, and the internal procedures of your company, the more likely it is that they will be able to trick an employee into helping them.

Preventive Measures

Take the following preventive measures to limit the risk of unauthorized access by hackers:

- Provide good physical security for the room containing your telecommunications equipment and the room with administrative tools, records, and system manager information. These areas should be locked when not attended.

- Provide a secure trash disposal for all sensitive information, including telephone directories, call accounting records, or anything that may supply information about your communications system. This trash should be shredded.

- Educate employees that hackers may try to trick them into providing them with dial tone or dialing a number for them. All reports of trouble, requests for moving extensions, or any other administrative details associated with the MERLIN LEGEND Communications System should be handled by one person (the system manager) or within a specified department. Anyone claiming to be a telephone company representative should be referred to this person or department.

- No one outside of Lucent Technologies needs to use the MERLIN LEGEND Communications System to test facilities (lines/trunks). If a caller identifies him- or herself as a Lucent Technologies employee, the system manager should ask for a telephone number where the caller can be reached. The system manager should be able to recognize the number as a Lucent Technologies telephone number. *Before connecting the caller to the administrative port of the MERLIN LEGEND Communications System, the system manager should feel comfortable that a good reason to do so exists.* In any event, it is not advisable to give anyone access to network facilities or operators, or to dial a number at the request of the caller.

- Any time a call appears to be suspicious, call the Lucent Technologies BCS Fraud Intervention Center at 1 800 628-2888 (fraud intervention for System 25, PARTNER® and MERLIN systems).

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■ Customers should also take advantage of Lucent Technologies monitoring services and devices, such as the NetPROTECT^{SM} family of fraud-detection services, CAS with HackerTracker®, and CAT Terminal with Watchdog. Call 1 800 638-7233 to get more information on these Lucent Technologies fraud detection services and products.

Security Risks Associated with Transferring through Voice Messaging Systems

Toll fraud hackers try to dial into a voice mailbox and then execute a transfer by dialing *T*. The hacker then dials an access code (either *9* for Automatic Route Selection or a pooled facility code) followed by the appropriate digit string to either direct dial or access a network operator to complete the call.

> **NOTE:**
> In Release 3.1 and later systems, all extensions are initially and by default restricted from dial access to pools. In order for an extension to use a pool to access an outside line/trunk, this restriction must be removed.

Preventive Measures

Take the following preventive measures to limit the risk of unauthorized transfers by hackers:

■ Outward restrict all MERLIN LEGEND Communications System voice mail port extension numbers. This denies access to facilities (lines/trunks). In Release 3.1 and later systems, voice mail ports are by default outward restricted.

■ As an additional security step, network dialing for all extensions, including voice mail port extensions, should be processed through ARS using dial access code *9*.

> **⚠ SECURITY ALERT:**
> *The MERLIN LEGEND Communications System ships with ARS activated with all extensions set to Facility Restriction Level 3, allowing all international calling.* **To prevent toll fraud**, *ARS Facility Restriction Levels (FRLs) should be established using:*
>
> ■ FRL 0 for restriction to internal dialing only
>
> ■ FRL 2 for restriction to local network calling only
>
> ■ FRL 3 for restriction to domestic ong-distance (excluding area code 809 for the Dominican Republic as this is part of the North American Numbering Plan, unless 809 is required)
>
> ■ RL 4 for international calling
>
> *In Release 3.1 and later systems, default local and default toll tables are factory-assigned an FRL of 2. This simplifies the task of*

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> *restricting extensions: the FRL for an extension merely needs to be changed from the default of 3.*
>
> *Each extension should be assigned the appropriate FRL to match its calling requirements. All voice mail port extensions not used for Outcalling should be assigned to FRL 0 (the default setting in Release 3.1 and later).*

- Deny access to pooled facility codes by removing pool dial-out codes 70, 890-899, or any others on your system.

- Create a Disallowed List or use the pre-prepared Disallowed List number 7 (Release 3.1 and later systems only) to disallow dialing 0, 11, 10, 1700, 1809, 1900, and 976 or 1(wildcard)976. In Release 3.1 and later systems, Disallowed List number 7 does not include 800 and 1800 and 411 and 1411, but Lucent Technologies recommends that you add them. **Assign all voice mail port extensions to this Disallowed List. Lucent Technologies recommends assigning Disallowed List number 7.** *This is an added layer of security, in case outward restriction is inadvertently removed.* (In Release 3.1 and later systems, voice messaging ports are assigned by default to Disallowed List number 7.)

If Outcalling is required by voice messaging system extensions:

- Program an ARS Facility Restriction Level (FRL) of 2 on voice mail port extension(s) used for Outcalling.

- If 800 and 411 numbers are used, remove 1800, 800, 411, and 1411 from Disallowed List number 7.

- If Outcalling is allowed to long-distance numbers, build an Allowed List for the voice mail port extension(s) used for Outcalling. This list should contain the area code and the first three digits of the local exchange telephone numbers to be allowed.

Additional general security for voice messaging systems:

- Use a secure password for the General Mailboxes.

- The default administration mailbox, 9997, must be reassigned to the system manager's mailbox/extension number and securely password protected.

- All voice messaging system users must use secure passwords known only to the user.

Security Risks Associated with the Automated Attendant Feature of Voice Messaging Systems

Two areas of toll fraud risk associated with the Automated Attendant feature of voice messaging systems are the following:

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- Pooled facility (line/trunk) access codes are translated to a menu prompt to allow Remote Access. If a hacker finds this prompt, the hacker has immediate access. (In Release 3.1 and later systems, dial access to pools is initially factory-set to restrict all extensions: to allow pool access, this restriction must be removed by the system manager.)

- If the Automated Attendant prompts callers to use Remote Call Forwarding (RCF) to reach an outside telephone number, the system may be susceptible to toll fraud. An example of this application is a menu or Submenu that says, "To reach our answering service, select prompt number 5," and transfers a caller to an external telephone number.

  Remote Call Forwarding can be used securely only when the central office provides "reliable disconnect" (sometimes referred to as forward disconnect or disconnect supervision), which guarantees that the central office does not return a dial tone after the called party hangs up. In most cases, the central office facility is a loop-start line/trunk which does not provide reliable disconnect. When loop-start lines/trunks are used, if the calling party stays on the line, the central office does return a dial tone at the conclusion of the call, enabling the caller to place another call as if it were being placed from your company. Ground-start trunks provide reliable disconnect and should be used whenever possible.

Preventive Measures

Take the following preventive measures to limit the risk of unauthorized use of the Automated Attendant feature by hackers:

- *Do not* use Automated Attendant prompts for Automatic Route Selection (ARS) Codes or Pooled Facility Codes.

- Assign all unused Automated Attendant Selector Codes to zero, so that attempts to dial these are routed to the system attendant.

- If Remote Call Forwarding (RCF) is required, MERLIN LEGEND Communications System owners should coordinate with their Lucent Technologies Account Team or authorized dealer to verify the type of central office facility used for RCF. If it is a ground-start line/trunk, or if it is a loop-start line/trunk and central office reliable disconnect can be ensured, then nothing else needs to be done.

$\Longrightarrow$ **NOTE:**
In most cases these are loop-start lines/trunks without reliable disconnect. The local telephone company must be involved in order to change the facilities used for RCF to ground start lines/trunks. Usually a charge applies for this change. Also, hardware and software changes may be necessary in the MERLIN LEGEND Communications System. The *MERLIN MAIL* MERLIN and *MERLIN LEGEND* MAIL Automated Attendant feature merely accesses the RCF feature in the MERLIN LEGEND Communications System. Without these changes being made, this feature is highly susceptible to toll fraud. These same preventive measures must be taken if the RCF feature is active for MERLIN LEGEND

Communications System extensions whether or not it is accessed by an
Automated Attendant menu.

Security Risks Associated with the Remote Access Feature

Remote Access allows the MERLIN LEGEND Communications System owner to
access the system from a remote telephone and make an outgoing call or perform
system administration, using the network facilities (lines/trunks) connected to the
MERLIN LEGEND Communications System. Hackers, scanning the public
switched network by randomly dialing numbers with war dialers (a device that
randomly dials telephone numbers, including 800 numbers, until a modem or dial
tone is obtained), can find this feature, which will return a dial tone to them. They
can even employ war dialers to attempt to discover barrier codes.

Preventive Measures

Take the following preventive measures to limit the risk of unauthorized use of the
MERLIN LEGEND Communications System Remote Access feature by hackers:

■　The Remote Access feature can be abused by criminal toll fraud hackers, if
it is not properly administered. Therefore, this feature should not be used
unless there is a strong business need.

■　It is strongly recommended that customers invest in security adjuncts,
which typically use one-time passcode algorithms. These security adjuncts
discourage hackers. Since a secure use of the Remote Access feature
generally offers savings over credit-card calling, the break-even period can
make the investment in security adjuncts worthwhile.

■　If a customer chooses to use the Remote Access feature without a security
adjunct, then multiple barrier codes should be employed, with one per user
if the system permits. The MERLIN LEGEND Communications System
permits a maximum of 16 barrier codes.

■　The maximum length should be used for each barrier code, and should be
changed periodically. Barrier codes, like passwords, should consist of a
random, hard-to-guess sequence of digits. While MERLIN LEGEND
Communications System Release 3.0 permits a barrier code of up to 11
digits, systems prior to Release 3.0 permit barrier codes of up to only four
digits.

If Remote Access is used, an upgrade to MERLIN LEGEND Communications
System Release 3.0 is encouraged to take advantage of the longer barrier code.

Other Security Hints

Make sure that the Automated Attendant Selector Codes do not permit outside
line selection.

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Other Security Hints

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Following are a number of measures and guidelines that can help you ensure the security of your communications system and voice messaging system.

Multiple layers of security are always recommended to keep your system secure.

Educating Users

Everyone in your company who uses the telephone system is responsible for system security. Users and attendants/operators need to be aware of how to recognize and react to potential hacker activity. Informed people are more likely to cooperate with security measures that often make the system less flexible and more difficult to use.

- Never program passwords or authorization codes onto Auto Dial buttons. Display telephones reveal the programmed numbers and internal abusers can use the Auto Dial buttons to originate unauthorized calls.

- Discourage the practice of writing down barrier codes or passwords. If a barrier code or password needs to be written down, keep it in a secure place and never discard it while it is active.

- Operators or attendants should tell their system manager if they answer a series of calls where there is silence on the other end or the caller hangs up.

- Users who are assigned voice mailboxes should frequently change personal passwords and should not choose obvious passwords.

- The system manager should advise users with special telephone privileges (such as Remote Access, Outcalling, and Remote Call Forwarding) of the potential risks and responsibilities.

- Be suspicious of any caller who claims to be with the telephone company and wants to check an outside line. Ask for a callback number, hang up and confirm the caller's identity.

- Never distribute the office telephone directory to anyone outside the company; be careful when discarding it (shred the directory).

- Never accept collect telephone calls.

- Never discuss your telephone system's numbering plan with anyone outside the company.

Educating Operators

Operators or attendants need to be especially aware of how to recognize and react to potential hacker activity. To defend against toll fraud, operators should follow the guidelines below:

- Establish procedures to counter *social engineering*. Social engineering is a con game that hackers frequently use to obtain information that may help them gain access to your communications system or voice messaging system.

- When callers ask for assistance in placing outside or long-distance calls, ask for a callback extension.

- Verify the source. Ask callers claiming to be maintenance or service personnel for a callback number. Never transfer to ∗10 without this verification. Never transfer to extension 900.

- Remove the headset and/or handset when the console is not in use.

Detecting Toll Fraud

To detect toll fraud, users and operators should look for the following:

- Lost voice mail messages, mailbox lockout, or altered greetings

- Inability to log into voice mail

- Inability to get an outside line

- Foreign language callers

- Frequent hang-ups

- Touch-tone sounds

- Caller or employee complaints that the lines are busy

- Increases in internal requests for assistance in making outbound calls (particularly international calls or requests for dial tone)

- Outsiders trying to obtain sensitive information

- Callers claiming to be the "phone" company

- Sudden increase in wrong numbers

Establishing a Policy

As a safeguard against toll fraud, follow these guidelines for your MERLIN LEGEND Communications System and voice messaging system:

- Change passwords frequently (at least quarterly). Changing passwords routinely on a specific date (such as the first of the month) helps users to remember to do so.

- Always use the longest-length password allowed.

- Establish well-controlled procedures for resetting passwords.

- Limit the number of invalid attempts to access a voice mailbox to five or less.

- Monitor access to the MERLIN LEGEND Communications System dial-up maintenance port. Change the access password regularly and issue it only to authorized personnel. Disconnect the maintenance port when not in use. (However, this eliminates Lucent Technologies' 24-hour maintenance surveillance capability and may result in additional maintenance costs.)

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- Create a communications system management policy concerning employee turnover and include these suggestions:

  — Delete all unused voice mailboxes in the voice mail system.

  — If a terminated employee had Remote Access calling privileges and a personal authorization code, remove the authorization code immediately.

  — If barrier codes and/or authorization codes were shared by the terminated employee, these should be changed immediately.

- Regularly back up your MERLIN LEGEND Communications System files to ensure a timely recovery should it be required. Schedule regular, off-site backups.

- Keep the Remote Maintenance Device turned off when not in use by Lucent Technologies or your authorized dealer.

- Limit transfers to registered subscribers only.

- Use the Security Violations Notification options (Mailbox Lock or Warning Message) to alert you of any mailbox break-in attempts. Investigate all incidents.

- Review security policies and procedures and keep them up to date.

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Choosing Passwords

Passwords should be the maximum length allowed by the system.

Passwords should be hard to guess and should *not* contain:

- All the same numbers (for example, 1111, 666666)

- Sequential characters (for example 123456)

- Numbers that can be associated with you or your business, such as your name, birthday, business name, business address, telephone number, or social security number.

- Words and commonly used names.

Passwords should be changed regularly, at least on a quarterly basis. Recycling old passwords is not recommended. Never program passwords (or authorization codes or barrier codes) onto a speed dial button.

Physical Security

You should always limit access to the system console (or attendant console) and supporting documentation. The following are some recommendations:

- Keep the system console and supporting documentation in an office that is secured with a changeable combination lock. Provide the combination only to those individuals having a real need to enter the office.

- Keep telephone wiring closets and equipment rooms locked.

- Keep telephone logs and printed reports in locations that only authorized personnel can enter.

- Design distributed reports so they do not reveal password or trunk access code information.

- Keep the voice messaging system Remote Maintenance Device turned off.

Limiting Outcalling

When Outcalling is used to contact subscribers who are off-site, use the MERLIN LEGEND Communications System Allowed Lists and Disallowed Lists or Automatic Route Selection features to minimize toll fraud.

If the Outcalling feature will not be used, outward restrict all voice messaging system ports. If Outcalling will be used, ports not used for Outcalling should be Outward Restricted (for MERLIN MAIL Voice Messaging Systems, port 2 on a 2-port system, port 4 on a 4-port system, ports 5 and 6 on a 6-port system; for MERLIN LEGEND MAIL Voice Messaging Systems, port 7 of the system's module). Use Outward Restriction, Toll Restrictions, Allowed Lists, Disallowed Lists and Facility Restrictions Levels, as appropriate, to minimize the possibility of toll fraud.

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Limited Warranty and Limitation of Liability

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Limited Warranty and Limitation of Liability

Lucent Technologies warrants to you, the customer, that your MERLIN LEGEND Communications System will be in good working order on the date Lucent Technologies or its authorized reseller delivers or installs the system, whichever is later ("Warranty Date"). If you notify Lucent Technologies or its authorized reseller within one year of the Warranty Date that your system is not in good working order, Lucent Technologies will without charge to you repair or replace, at its option, the system components that are not in good working order. Repair or replacement parts may be new or refurbished and will be provided on an exchange basis. If Lucent Technologies determines that your system cannot be repaired or replaced, Lucent Technologies will remove the system and, at your option, refund the purchase price of your system, or apply the purchase price towards the purchase of another Lucent Technologies system.

If you purchased your system directly from Lucent Technologies, Lucent Technologies will perform warranty repair in accordance with the terms and conditions of the specific type of Lucent Technologies maintenance coverage you selected. If you purchased your system from an a Lucent Technologies-authorized reseller, contact your reseller for the details of the maintenance plan applicable to your system.

This Lucent Technologies limited warranty covers damage to the system caused by power surges, including power surges due to lightning.

The following will not be deemed to impair the good working order of the system, and Lucent Technologies will not be responsible under the limited warranty for damages resulting from:

- Failure to follow Lucent Technologies' installation, operation, or maintenance instructions

- Unauthorized system modification, movement, or alteration

- Unauthorized use of common carrier communications services accessed through the system

- Abuse, misuse, or negligent acts or omissions of the customer and persons under the customer's control

- Acts of third parties and acts of God

LUCENT TECHNOLOGIES' OBLIGATION TO REPAIR, REPLACE, OR REFUND AS SET FORTH ABOVE IS YOUR EXCLUSIVE REMEDY.

EXCEPT AS SPECIFICALLY SET FORTH ABOVE, LUCENT TECHNOLOGIES, ITS AFFILIATES, SUPPLIERS, AND AUTHORIZED RESELLERS MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIM ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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Limitation of Liability

Except as provided below, the liability of Lucent Technologies and its affiliates and suppliers for any claims, losses, damages, or expenses from any cause whatsoever (including acts or omissions of third parties), regardless of the form of action, whether in contract, tort, or otherwise, shall not exceed the lesser of: (1) the direct damages proven; or (2) the repair cost, replacement cost, license fee, annual rental charge, or purchase price, as the case may be, of the equipment that gives rise to the claim. Except as provided below, Lucent Technologies and its affiliates and suppliers shall not be liable for any incidental, special, reliance, consequential, or indirect loss or damage incurred in connection with the equipment. As used in this paragraph, consequential damages include, but are not limited to, the following: lost profits, lost revenues, and losses arising out of unauthorized use (or charges for such use) of common carrier telecommunications services or facilities accessed through or connected to the equipment. For personal injury caused by Lucent Technologies's negligence, Lucent Technologies's liability shall be limited to proven damages to person. **No action or proceeding against Lucent Technologies or its affiliates or suppliers may be commenced more than twenty-four (24) months after the cause of action accrues**. THIS PARAGRAPH SHALL SURVIVE FAILURE OF AN EXCLUSIVE REMEDY.

Remote Administration and Maintenance

The Remote Administration and Maintenance feature of your telecommunications system, if you choose to use it, permits users to change the system features and capabilities from a remote location.

The Remote Administration and Maintenance feature, through proper administration, can help you reduce the risk of unauthorized persons gaining access to the network. However, telephone numbers and access codes can be compromised when overheard in a public location, or lost through theft of a wallet or purse containing access information or through carelessness (for example, writing codes on a piece of paper and improperly discarding them). Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Substantial charges can accumulate quickly. It is your responsibility to take appropriate steps to implement the features properly, evaluate and administer the various restriction levels, and protect and carefully distribute access codes.

Under applicable tariffs, you will be responsible for payment of toll charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit resulting from unauthorized access.

To reduce the risk of unauthorized access through Remote Administration and Maintenance, please observe the following procedures:

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- The System Administration and Maintenance capability of a Hybrid/PBX or Key system is protected by a password.

  — Change the default password immediately.

  — Continue to change the password regularly.

  — Give the password only to people who need it and impress upon them the need to keep it secret.

  — If anyone who knows the password leaves the company, change the password immediately.

- If you have a special telephone line connected to your Hybrid/PBX or Key system for Remote Administration and Maintenance, you should do one of the following:

  — Unplug the line when it is not being used.

  — Install a switch in the line to turn it off when it is not being used.

  — Keep the Remote Administration and Maintenance telephone number secret. Give it only to people who need to know it, and impress upon them the need to keep it a secret. Do not write the telephone number on the Hybrid/PBX or Key system, the connecting equipment, or anywhere else in the system room.

If your Remote Administration and Maintenance feature requires that someone in your office transfer the caller to the Remote Administration and Maintenance extension, you should impress upon your employees the importance of transferring only authorized individuals to that extension.

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B   Features and Planning Forms

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Features and Planning Forms

B

This appendix contains an alphabetical list of the features that can be assigned to the system or system extensions and the planning forms associated with each feature.

Feature	Planning Forms
Abbreviated Ring *(see Ringing Options, page B–9)*	
Account Code Entry/ Forced Account Code Entry	4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 5d—Queued Call Console (QCC) Data Form 1a—Modem Data Station Data Form 1b—ISDN Terminal Adapter Data Station Data Form 3—Digital Data/Video Station
Alarm	2c—System Numbering: Line/Trunk Jacks 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital

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Feature	Planning Forms
Allowed/Disallowed Lists	3a—Incoming Trunks: Remote Access 4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 5d—Queued Call Console (QCC) 6e—Allowed Lists 6f—Disallowed Lists 6g—Call Restriction Assignments and Lists 9b—Night Service: Outward Restriction Data Form 1a—Modem Data Station Data Form 1b—ISDN Terminal Adapter Data Station Data Form 3—Digital Data/Video Station
Auto Answer All	Button diagrams on all appropriate telephone forms
Auto Answer Intercom	Button diagrams on all appropriate telephone forms
Auto Dial	Button diagrams on all appropriate telephone forms
Automatic Line Selection and Ringing/Idle Line Preference	4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC
Automatic Maintenance Busy	1—System Planning
Automatic Route Selection (Facility Restriction Level)	3a—Incoming Trunks: Remote Access 4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 6g—Call Restriction Assignments and Lists

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Feature	Planning Forms
Automatic Route Selection (Facility Restriction Level) *continued*	3e—Automatic Route Selection Worksheet 3f—Automatic Route Selection Tables 3g—Automatic Route Selection Default and Special Numbers Tables Data Form 1a—Modem Data Station Data Form 1b—ISDN Terminal Adapter Data Station Data Form 3—Digital Data/Video Station
Barge-In	Button diagrams on all appropriate telephone forms
Callback	3a—Incoming Trunks: Remote Access 4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 8a—System Features Data Form 1a—Modem Data Station Data Form 1b—ISDN Terminal Adapter Data Station Data Form 3—Digital Data/Video Station
Calling Restrictions	3a—Incoming Trunks: Remote Access 4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 5d—Queued Call Console (QCC) 6e—Allowed Lists 6f—Disallowed Lists 6g—Call Restriction Assignments and Lists 9b—Night Service: Outward Restriction Data Form 1a—Modem Data Station Data Form 1b—ISDN Terminal Adapter Data Station Data Form 3—Digital Data/Video Station
Call Waiting	Not Applicable
Camp-On	8a—System Features Button diagrams on all appropriate telephone forms

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Feature	Planning Forms
Centrex Operation	1—System Planning Button diagrams on all appropriate telephone forms
Conference	1—System Planning Button diagrams on all appropriate telephone forms
Coverage	4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 6a—Optional Operator Features 7c—Group Coverage 7d—Group Calling Button diagrams on all appropriate telephone forms
CTI Link	2a—System Numbering: Extension Jacks
Direct-Line Console	1—System Planning 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 6a—Optional Operator Features
Directories	2a—System Numbering: Extension Jacks 10b—System Speed Dial
Direct Station Selector-MLX	5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 6a—Optional Operator Features
Display	Not Applicable
Do Not Disturb	Button diagrams on all appropriate telephone forms
Drop	1—System Planning Button diagrams on all appropriate telephone forms
Extension Status	5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 8a—System Features

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Feature	Planning Forms
Forward and Follow Me (Remote Call Forward)	4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 6a—Optional Operator Features Button diagrams on all appropriate telephone forms
Group Calling	2d—System Numbering: Special Renumbers 6e—Group Calling 6f—System Features 7a—Night Service: Group Assignment Data Form 2—Data Hunt Groups
Headset Options	4b—Analog Multiline Telephone 4d—MLX Telephone 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5d—Queued Call Console (QCC) Button diagrams on all appropriate telephone forms
Hold	2c—System Numbering: Line/Trunk Jacks 6a—Optional Operator Features 8a—System Features
Idle Line Preference *(see Automatic Line Selection and Ringing/Idle Line Preference, page B–2)*	
HotLine	4f—Tip/Ring Equipment
Inside Dial Tone	8a—System Features
Inspect	Not Applicable
Integrated Administration	1—System Planning 2c—System Numbering: Line/Trunk Jacks 2d—System Numbering: Special Renumbers 7d—Group Calling 8a—System Features 9a—Night Service: Group Assignment 9b—Night Service: Outward Restriction

Feature	Planning Forms
Labeling	2a—System Numbering: Extension Jacks 2c—System Numbering: Line/Trunk Jacks 2d—System Numbering: Special Renumbers 10a—Label Form: Posted Message 10b—System Speed Dial
Language Choice	1—System Planning 4d—MLX Telephone 5b—Direct-Line Console (DLC): Digital 5d—Queued Call Console (QCC)
Last Number Dial	Button diagrams on all appropriate telephone forms
Line Request	Not Applicable
Messaging (Message Waiting Receivers)	4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f —Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 5d—Queued Call Console (QCC) 6a—Optional Operator Features 7d—Group Calling 10a—Label Form: Posted Message
Microphone Disable	4d—MLX Telephone 5b—Direct-Line Console (DLC): Digital
Multi-Function Module	2a—System Numbering: Extension Jacks 2b—System Numbering: Digital Adjuncts 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC
Music on Hold	2c—System Numbering: Line/Trunk Jacks 8a—System Features
Night Service	9a—Night Service: Group Assignment 9b—Night Service: Outward Restriction 9c—Night Service: Time Set 9b—Night Service: Outward Restriction

Feature	Planning Forms
Notify *(see Signal/Notify, page B–9)*	
Paging	2c—System Numbering: Line/Trunk Jacks 2d—System Numbering: Special Renumbers 4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 5d—Queued Call Console (QCC) 7b—Group Paging
Park	2d—System Numbering: Special Renumbers 6a—Optional Operator Features 8a—System Features Button diagrams on all appropriate telephone forms
Personal Lines	4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC
Pickup	4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 5d—Queued Call Console (QCC) 7a—Call Pickup Groups

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Feature	Planning Forms
Pools	2c—System Numbering: Line/Trunk Jacks 2d—System Numbering: Special Renumbers 4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 4f—Tip/Ring Equipment 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC 5d—Queued Call Console (QCC) 3e—Automatic Route Selection Worksheet 3f—Automatic Route Selection Tables 3g—Automatic Route Selection Default and Special Numbers Tables Data Form 1a—Modem Data Station Data Form 1b—ISDN Terminal Adapter Data Station Data Form 3—Digital Data/Video Station
Power Failure Transfer	Not Applicable
Primary Rate Interface (PRI)	3b—Incoming Trunks: DS1 Connectivity (100D Module)
Privacy	Button diagrams on all appropriate telephone forms
Programming	1—System Planning
Queued Call Console	1—System Planning 2d—System Numbering: Special Renumbers 5d—Queued Call Console (QCC) 6a—Optional Operator Features 7c—Group Coverage 7d—Group Calling 8a—System Features
Recall/Timed Flash	1—System Planning Button diagrams on all appropriate telephone forms
Reminder Service	8a—System Features Button diagrams on all appropriate telephone forms
Remote Access	2d—System Numbering: Special Renumbers 3a—Incoming Trunks: Remote Access

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Feature	Planning Forms
Ringing/Idle Line Preference *(see Automatic Line Selection and Ringing/Idle Line Preference, page B–2)*	
Ringing Options	4b—Analog Multiline Telephone 4d—MLX Telephone 4e—MFM Adjunct: MLX Telephone 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital 5c—MFM Adjunct: DLC
Saved Number Dial	Button diagrams on all appropriate telephone forms
Signal/Notify	Button diagrams on all appropriate telephone forms
Speed Dial	10b—System Speed Dial
Station Message Detail Recording (SMDR)	8a—System Features
System Access/Intercom Buttons	Button diagrams on all appropriate telephone forms
System Renumbering	2a—System Numbering: Extension Jacks 2b—System Numbering: Digital Adjuncts 2c—System Numbering: Line/Trunk Jacks 2d—System Numbering: Special Renumbers 6a—Optional Operator Features 7b—Group Paging 7d—Group Calling
Toll Type	2c—System Numbering: Line/Trunk Jacks 3e—Automatic Route Selection Worksheet
Touch-Tone or Rotary Signaling	2c—System Numbering: Line/Trunk Jacks 3c—Incoming Trunks: Tie 3d—Incoming Trunks: DID 8a—System Features
Transfer	1—System Planning 6a—Optional Operator Features 8a—System Features Button diagrams on all appropriate telephone forms

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Feature	Planning Forms
Voice Announce to Busy	4b—Analog Multiline Telephone 4d—MLX Telephone 5a—Direct-Line Console (DLC): Analog 5b—Direct-Line Console (DLC): Digital Data Form 1a—Modem Data Station Data Form 1b—ISDN Terminal Adapter Data Station Data Form 3—Digital Data/Video Station Data Form 2—Data Hunt Group 5d—Queued Call Console (QCC)
Volume	Not Applicable

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C System Features

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System Features

C

This appendix provides an alphabetical list of systemwide features and outlines their availability by mode. Notes, where appropriate, briefly describe mode differences and specific release availability. For information about feature use on MLX, analog multiline, and single-line telephones, see Appendix D, "General Feature Use and Telephone Programming."

	Availability by Mode			
Feature	**Key**	**Hybrid/ PBX**	**Behind Switch**	**Notes**
Account Code Entry	✓	✓	✓	
Alarm	✓	✓	✓	
Allowed/Disallowed Lists	✓	✓	✓	
Authorization Code	✓	✓	✓	Release 3.0 and later
Auto Answer All	✓	✓	✓	Analog multiline telephones
Auto Answer Intercom	✓	✓	✓	Analog multiline telephones
Auto Dial	✓	✓	✓	
Automatic Line Selection	✓	✓	✓	
Automatic Maintenance Busy	✓	✓	✓	
Automatic Route Selection		✓		For trunk pools only
Barge-In	✓	✓	✓	
Basic Rate Interface	✓	✓		Release 4.0 and later
Call-by-Call Service Selection		✓		Release 2.0 and later
Call Waiting	✓	✓	✓	
Callback	✓	✓	✓	Key and Behind Switch: not available for outside lines

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Feature	Availability by Mode			Notes
	Key	**Hybrid/ PBX**	**Behind Switch**	
Caller ID	✓	✓	✓	Release 3.0 and later. Requires 800 GS/LS-ID module and subscriber service from central office.
Calling Restrictions	✓	✓	✓	Hybrid/PBX: can deny access to trunk pools.
Camp-On	✓	✓	✓	
Conference	✓	✓	✓	
Coverage	✓	✓	✓	
Coverage VMS	✓	✓		Release 2.0 and later
CTILink		✓		Release 5.0 and later
Delay Ring interval	✓	✓	✓	
Digital Data Calls	✓	✓		Release 4.0 and later
Direct-Line Console (DLC) Options	✓	✓	✓	Hybrid/PBX: cannot have trunk pool access buttons
Direct Voice Mail	✓	✓		
Directories	✓	✓	✓	
Direct Inward Dial (DID) Options		✓		
Direct Voice Mail	✓	✓		Release 3.0 and later
DS1 Module Options	✓	✓	✓	
Extension Status	✓	✓	✓	
Fax Extension	✓	✓	✓	
Forced Account Code Entry	✓	✓	✓	Behind Switch: unavailable for single-line telephones Hybrid/PBX and Behind Switch: users must enter account code before dial-out code
Group Call Coverage	✓	✓	✓	
Group Calling	✓	✓	✓	Behind Switch: calls do not follow the local telephone company's central office ring pattern
Headset Status	✓	✓	✓	
Hold Disconnect Interval	✓	✓	✓	
HotLine	✓	✓	✓	
Inside Dial Tone	✓	✓	✓	
Labeling	✓	✓	✓	
Language Choice	✓	✓	✓	Release 1.1 and later

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Feature	Availability by Mode			Notes
	Key	**Hybrid/ PBX**	**Behind Switch**	
Line/Trunk Options	✓	✓	✓	
Loudspeaker Paging	✓	✓	✓	
Microphone Disable	✓	✓	✓	
Night Service	✓	✓	✓	
Paging Groups	✓	✓	✓	
Park	✓	✓	✓	
Pickup Groups	✓	✓	✓	
Pools (trunk group)		✓		
Primary Rate Interface (PRI) Options	✓	✓	✓	Release 2.0 and later
Queued Call Console (QCC)		✓		
Recall Interval *(Recall/Timed Flash)*	✓	✓	✓	Behind Switch: recall interval may need to be shortened
Reminder Service Cancel	✓	✓	✓	
Remote Access	✓	✓	✓	
Remote Call Forward	✓	✓	✓	Behind Switch: unavailable for single-line telephones
Ringing/Idle Line Preference	✓	✓	✓	
Routing by Dial Plan		✓		Release 2.0 and later
Second Dial Tone Timer	✓	✓	✓	Release 3.1 and later
Station Message Detail Recording (SMDR)	✓	✓	✓	
System Numbering	✓	✓	✓	Hybrid/PBX: extension number is assigned to Listed Directory Number (the published main number) for QCC
System Restart	✓	✓	✓	
System Speed Dial	✓	✓	✓	
T1 trunks	✓	✓		Switched 56 data supported in Release 4.0 and later
Tie Trunk Options	✓	✓	✓	
Timed Flash *(Recall/Timed Flash)*	✓	✓	✓	Release 2.0 and later
Toll Type	✓	✓	✓	
Touch-Tone or Rotary Signaling	✓	✓	✓	
Transfer Options	✓	✓	✓	
Trunk Pools		✓		
Voice Announce to Busy	✓	✓	✓	

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D General Feature Use and Telephone Programming
General Feature Use Information

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General Feature Use and Telephone Programming

D

This appendix contains information on the general use of features for the MLX, analog multiline, and single-line telephones. It covers telephone and operator features and the acceptable programming codes for each. It also describes how to program these features on MLX and analog multiline telephones.

General Feature Use Information

The following sections provide general instructions for feature use on MLX, analog multiline, and single-line telephones. Features can be used in the following ways:

- Press a dedicated feature button.
- Press a programmed button.

Fixed Features

All multiline telephones have a group of dedicated (or fixed) feature buttons that are programmed and labeled at the factory. The functions of these buttons, which include **Conf**, **Transfer**, and **Speaker**, cannot be changed. Press the button for the feature you want to use.

Programmed Buttons

Any unlabeled line button on multiline telephones can be programmed with a feature for one-touch activation. See Tables D–1 through D–4 for additional information about programming features onto line buttons.

Some features, such as Auto Dial, must be programmed onto line buttons in order to function. Other features, such as Privacy, are best used if programmed onto

line buttons—the LED next to the line button provides visual indication that the
feature is in use. The following features must be programmed onto line buttons:

- Auto Answer All

- Auto Answer Headset

- Auto Dial

- Barge-In

- Coverage

  — Group Coverage

  — Primary Coverage

  — Secondary Coverage

  — Coverage Off

  — Coverage VMS Off

- Do Not Disturb

- Extension Status-Agent Login/Logout

- Feature Button (analog multiline telephones only)

- Headset/Handset Mute

- Headset Status

- Headset Hang Up

- Notify

- Posted Message (available from display on MLX display telephones)

- Saved Number Dial

- Signal

Feature Codes

Feature codes are 1-, 2-, and 3-digit codes that activate features. A feature code
is used by first pressing the dedicated **Feature** button on MLX telephones,
pressing a programmed Feature button on analog multiline telephones, or dialing
on single-line telephones. Each of these methods sends a signal to the system
that a feature code is about to be dialed. When the code is dialed, the feature is
activated.

⎯⎯⟩ **NOTE:**
　Queued Call Console (QCC) system operators cannot use feature codes.

The following features can be used only by dialing feature codes:

- Pickup

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- ■   Forward/Follow Me—Cancel One

- ■   Forward/Follow Me—Cancel All

- ■   Message Cancel

- ■   Personal Speed Dial

- ■   System Speed Dial

⇒ **NOTE:**
Pressing the **Conf**, **Transfer**, **Speaker**, or **Feature** button while activating a feature cancels the process. Pressing any other button, such as the **Mute, HFAI**, **Message Status**, DSS **Page**, **More**, **Message**, **Clock**, analog multiline display keys, or analog multiline disconnect button does not cancel the feature activating process.

Telephone and Operator Features

Table D–1 lists the telephone and operator features that can be assigned to telephones or consoles either through centralized telephone programming or by users from their telephones.

Table D–1. Telephone and Operator Features

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Account Code Entry	*82	82 + code	Acct	AccountCode	K P B	K P B	K P B	K P	K P B	K P B
Alarm*	*759		Alarm	Alarm		K P B	K P B			K P B
Alarm Clock			AlClk	Alarm Clock	K P B	K P B	K P B		K P B	K P B
Authorization Code	*80	80	Auth	Auth Code	K P B	K P B	K P B	K P B	K P B	K P B
Auto Answer All	*754			AutoAns All						K P B
Auto Answer Intercom	*753			AutoAnsIcom						K P B
Auto Dial			AutoD	Auto Dial	K P B	K P B	K P B	K P B		K P B
Inside (ext., group, zone)	*22 + ext. no.		In	Inside						
Outside	*21 + tel. no.		Out	Outside						
Automatic Line Selection	*14				K P B	K P B	K P B	K P B	K P B	K P B
Begin Sequence	**14									
End Sequence										
Barge-In*†	*58		Barge	Barge In	K P B	K P B	K P B	K P B		K P B
Callback					K P B	K P B	K P B	K P B	K P B	K P B
Automatic			CbckA	Cback Auto						
On	*12		On	On						
Off	**12		Off	Off						
Selective	*55	55	CbckS	Cback Sel						
Cancel selective		*55								
Camp-On	*57	57	Camp	Camp On	K P B	K P B	K P B	K P B		K P B

* System operator feature only

† Centralized telephone programming only

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Call Waiting			CWait	CallWaiting	K P B	K P B	K P B	K P B	K P B	K P B
On	*11		On	On						
Off	**11		Off	Off						
Call Waiting Pickup		87								
Conference	*772	772	Conf	Conference	B	B	B	B		B
Contrast			Ctrst		K P B	K P B	K P B			K P B
Coverage			Cover	Coverage	K P B	K P B	K P B	K P B		K P B
Cover inside and outside calls	*48		CvIns, On	CoverInside, On					K P B	
Cover outside calls only	**48		CvIns, Off						K P B	
				CoverInside, Off	K P B	K P B	K P B	K P B		K P B
Receiver buttons					K P B	K P B	K P B	K P B		K P B
Group	*42 + ext. no.		Group		K P B	K P B	K P B	K P B		K P B
Primary	*40 + ext. no.		Prmry	Group						
Secondary	*41 + ext. no.		Secnd	Primary						
Sender buttons				Secondary						
Coverage Off	*49		Cvoff		K P B	K P B	K P B	K P B		K P B
Coverage VMS Off	*46			CoverageOff	K P B	K P B	K P B	K P B		K P B
Data Status	*83 + ext. no.				K P B	K P B	K P B	K P B		K P B
Direct Voice Mail	*56	56	DrcVM	Direct VM	K P	K P	K P	K P	K P	K P
Directories			Dir	Directory						
Extension Directory	(display only)		ExtDir	Ext Dir	K P B	K P B	K P B			
Personal Directory	(display only)			Personal Dir			K P B			
System Directory	(sys. prog.)		SysDir	System Dir	K P B	K P B	K P B			
Do Not Disturb	*47		DND	DoNotDistrb	K P B	K P B	K P B	K P B		K P B
Drop	*773	773	Drop	Drop	B	B	B	B		B

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Extension Status										
Direct-Line Console*										
Status Off	*760	760 + DSS button	OPES, ESOff	OperatorES, ESOff		K P B	K P B			K P B
Status 1	*761	761 + DSS button	OPES, ES1	OperatorES, ES1						
Status 2	*762	762 + DSS button	OPES, ES2	OperatorES, ES2	K P B	K P B	K P B	K P B	K P B	K P B
Telephones (rooms or agents)										
Status Off		*44								
Status 1	*45	45	ES, ES1							
Status 2	*44	44	ES, ES2							
				ES Status, ES1						
				ES Status, ES2						
Feature Button	*20			Feature Btn						K P B
Forward and Follow Me					K P B	K P B	K P B	K P B	K P B	K P B
Activate										
Forward (inside)	*33	33 + ext. no.	Forwd	Forward						
Remote Call Forward (outside)	*33	33 + tel no.	Forwd	Forward						
Follow Me		34 + ext. no.	FlwMe	Follow Me						
Cancel										
cancel sending from your telephone		33 + your ext. no.								
cancel sending from one extension		*34 + ext. no.		CanclFollow (QCC only)						
cancel sending from all extensions		*34*		CanclFollow (QCC only)						

*   System operator feature only

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Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Group Calling										
In-Queue Alarm button	*22 + calling group ext. no.		GrpCl	Group Call	K P B	K P B	K P B	K P B		K P B
Calling group supervisor*						K P B	K P B			K P B
Enter supervisor mode*		32 + **Hold**								
Exit supervisor mode*		32 + **Drop**								
Available (ES Status 2)	*762	762 + DSS bt.	OPES, ES2	OperatorES, ES2						
Unavailable (ES Status Off)	*760	760 + DSS bt.	OPES, ESOff	OperatorES, ES Off	K P B	K P B	K P B	K P B	K P B	K P B
Calling group members										
Sign in (Available)	*44	44	ES	Status, ES2						
Sign out (Unavailable)		*44	ES,Off	ES Status, ES Off						
After-call work state (CMS only)	*45	45	ES,ES1	ES Status, ES1						
Group Page Auto Dial Button	*22 + paging group ext. no.		GrpPg	Group Page	K P B	K P B	K P B	K P B		
Headset Options			Hdset	Hdset	K P B	K P B	K P B	K P B		
Auto Answer	*780		Auto	Auto Answer						
Hang Up†	*781			Hang Up						
Mute (Headset/Handset)	*783		Mute	Mute						
Status	*782		Stat	Status						
Hold		771			B	B	B	B		B
Hold release		**			B	B	B	B	B	B

---

*   System operator feature only

†   Centralized telephone programming only

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Intercom buttons					K B	K B	K B	K B		K B
Assign buttons*										
ICOM (Default Ring)	*16			SysAccess					K B	
ICOM Originate Only	*18			SysAcc-00					K B	
Change button type										
Ring	**19		Voice, Place, Ring	Voice Annce, Place,Ring						
Voice	*19		Voice, Place, Voice	Voice Annce, Place,Voice						
Language Choice					K P B	K P B	K P B	K P B		
English		790								
French		791								
Spanish		792								
Last Number Dial	*84	84	Last#*	LastNumDial	K P B	K P B	K P B	K P B	K P	K P B
Messaging			Msgs	Messages						
Leave Message	*25				K P B	K P B	K P B	K P B	K P B	K P B
After calling		25	LvMsg	Msg Leave						
Without calling		53 + ext no.								
Cancel msg. left		*53 + ext no.								
Message LED off	*54	54								
Posted Message	*751		Post	Posted Msg	K P B	K P B	K P B	K P B		K P B
Send/Remove Msg†	*38	38 + ext no.	SdMsg	Send/RmvMsg	K P B	K P B	K P B	K P B		K P B
Receiving messages			Msgs	Messages		K P B	K P B			K P B
Delete Message‡	*26	26	Dlete	Delete Msg	K P B	K P B	K P B			K P B
Next Message‡	*28	28	Next	Next Msg	K P B	K P B	K P B			K P B
Return Call‡	*27	27	Call	Return Call	K P B	K P B	K P B			K P B
Scroll‡	*29	29								K P B

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Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
*	Centralized telephone programming only									
†	System operator feature only									
‡	Display telephones only. Programming and feature codes are used with analog multiline telephones only.									
Night Service*	*39	39	Night	Night Srvc		K P B	K P B			K P B
Notify			Ntfy	Notify	K P B	K P B	K P B	K P B		K P B
Send	*757 + ext. no.		Send	Send						
Receive	*758 + ext. no.		Recv	Receive						
Paging					K P B	K P B	K P B	K P B		K P B
Group Paging			GrpPg	Group Page						
Loudspeaker Paging			LdsPg	Loudspkr Pg						
Park	*86		Park	Park	K P B	K P B	K P B	K P B	K P	K P B
Park Zone Auto Dial*	*22 + park zone		PrkZn	Park Zone		K P B	K P B			K P B
Personal Speed Dial	# + (01−24) + *21 + tel no. + ##		PSpdDl	PersSpeedDl	K P B			K P B	K P	K P B
Personalized Ringing	*32 + ring (1−8)		PRing, Pat #1 ...Pat*8	PersonalRng, Pattern #1 ... Pattern #8	K P B	K P B	K P B	K P B		K P B
Pickup			Pkup	Pickup	K P B	K P B	K P B	K P B	K P	K P B
General use	*9		Genrl	General						
Specific extension	*9 + ext. no.	9 + ext. no.	Ext	Extension						
Specific line	*9 + line no.	9 + line no.	Line	Line						
Group	*88	88	PkupG	PickupGroup						
Privacy			Prvcy	Privacy	K P B	K P B	K P B	K P B	K P	K P B
On	*31	31								
Off		*31								

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Recall	*775	775	Recll	Recall	K P B	K P B	K P B	K P B		K P B

---

* System operator feature only

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Reminder Service			Rmind	Reminder	K P B	K P B	K P B	K P B	K P B	K P B
Set*	*81	81 *+ time +* A or P	Set	Set						
Operator Set*†		81 *+ ext. no.+ time +* A *or* P §								
Cancel	**81	*81	Cancl	Cancel						
Operator Cancel†		*81 *+ ext. no.*								
Missed†	*752		Missd	Missed						
Ringing/Idle Line Preference					K P B	K P B	K P B	K P B		K P B
On	*343		LnPrf, On	Line Preference, On						
Off	*344		LnPrf, Off	Line Preference, Off						

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Ringing Options			RngOp	RingOptions						
Individual lines			1Line	One Line	K P B	K P B	K P B	K P B		K P B
Immediate ring	*37		Immed	Immed Ring						
Delay ring	*36		Delay	Delay Ring						
No ring	*35		No	No Ring						
All lines			AllLn	All Lines	K P B	K P B	K P B	K P B		K P B
Immediate ring	*347		Immed	Immed Ring						
Delay ring	*346		Delay	Delay Ring						
No ring	*345		No	No Ring						
Abbreviated ring			Abbrv	Abbreviated	K P B	K P B	K P B	K P B		K P B
On	*341		On	On						
Off	*342		Off	Off						
Send Ring (Shared **SA**)			ShRng	SharedSARng	P	P	P	P	P	P
On	*15		On	On						
Off	**15		Off	Off						

*   English only: time is 12-hour (`0100-1259`) + `2` (`A`) or `7` (`P`); French and Spanish: time is 24-hour (`0000-2359`).

†   System operator feature only

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX-20L	MLX-10/5	Single-Line	Analog Multi.
Saved Number Dial	*85		Save#	SaveNumDial	K P B	K P B	K P B	K P B		K P B
Send/Remove Message*	*38	38 + ext. no.	SdMsg	Send/RmvMsg		K P B	K P B			K P B
Signal (manual)	*23 + ext. no.		Signl	Signal	K P B	K P B	K P B	K P B		K P B

Feature	Prog Code	Feature Code	2-Line Display	7-Line Display	MLX-10 D/5D	MLX-28 D	MLX- 20L	MLX- 10/5	Single- Line	Analog Multi.
System Access buttons					P	P	P	P		P
Assign buttons†										
SA (Default Ring)	*16			SysAccess					P	
SA Originate Only	*18			SysAcc-00					P	
Shared **SA**	*17 + primary ext. no.			ShareSysAcc					P	
Change type (**SA** or Shared **SA**)										
Ring	**19									
Voice	*19									
System Speed Dial	*24 + code (600–729)	600-729	SpdDl	SysSpeedDl	K P B	K P B	K P B	K P B	K P	K P B
Timer			Timer	Timer	K P B	K P B	K P B	K P B		K P B
Transfer	*774	774	Trans	Transfer	B	B	B	B		B
Voice Announce to Busy			Voice Place Recv	Voice Annce Place Receive	K P B	K P B	K P B	K P B		K P B
On	*10		On	On						
Off	**10		Off	Off						

*   System operator feature only

†   Centralized telephone programming only

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Telephone Programming

The following describes how to program features on MLX and analog multiline telephones. Because Personal Speed Dial is the only feature that single-line telephone users can program, general programming instructions for single-line telephones are not provided.

> **NOTE:**
> Features cannot be programmed on QCCs in system operator positions.

Features assigned to these consoles are fixed and cannot be changed.

Programming Methods

Telephones can be programmed by dialing programming codes or, on MLX display telephones, by selecting features from the display. Analog multiline telephones cannot be programmed by selecting features from the display.

To program a telephone, first enter programming mode:

- On analog multiline telephones, slide the Test/Program (T/P) switch on the side of the telephone to **P**, or lift the handset, or press **Spkrphone** and dial *#00*.

- On MLX-10 and MLX-5 nondisplay telephones, press the **Feature** button and dial *00*.

- On MLX display telephones, use the same procedures as for the MLX nondisplay telephones or enter programming mode by selecting Ext Program from the menu screen on the display.

- On MDC 9000 and MDW 9000 telephones, press the imprinted **Feat** button and dial *00*.

See the appropriate user or operator guide for more information.

> **NOTE:**
> Features can also be programmed onto individual telephones through centralized telephone programming. The steps for using programming codes vary, depending on the telephone. Tables D–2 through D–5 list the basic steps for programming each telephone type.

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Table D−2. Programming Analog Multiline Telephones

Step		Action
1	Label the button. **Note:** Skip this step if the feature is not programmed on a button.	Remove the clear label cover from the phone: insert the end of a paper clip in the notch at the top of the cover.
		Write the feature name on the card next to the button to be programmed.
		Replace the cover.
2	Begin programming.	Slide the T/P switch on the side of the phone to **P**.
3	Select the feature or setting.	Press the button you labeled.
		If you have a display phone, it shows the name of the feature currently programmed on the button. If no feature is programmed, the display indicates that the button is blank.
		Note: If the feature does not get programmed onto a button, press any line button. This does not affect the button in any way.
		Dial the programming code.
		The feature is programmed.
4	End programming.	Slide the T/P switch to the center position.

Table D−3. Programming MLX-10 and MLX-5 Nondisplay Telephones

Step		Action
1	Label the button. **Note:** Skip this step if the feature will not be programmed onto a button.	Remove the clear label cover from the phone: pull up on the tab that extends from the top of the cover.
		Write the feature name on the card next to the button to be programmed.
		Replace the cover.
2	Begin programming.	Press the **Feature** button and then dial *00*.
3	Select the feature or setting.	Press the button you labeled.
		Note: If the feature is programmed onto a button, press any line button. This does not affect the button in any way.
		Dial the programming code.
		The feature is programmed.
4	End programming.	Press the **Feature** button and dial *＊00*.

Table D−4. Programming MLX Telephones Using the Display

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Step		Action
1	Label the button to be programmed. **Note:** Skip this step if the feature will not be programmed onto a button.	Remove the clear label cover from the telephone by pulling up on the tab that extends from the top of the cover.
		Write the feature name on the card next to the button to be programmed.
		Replace the cover.
2	Begin programming.	Press **Menu**.
		Select Ext Program from the display.
		Select Start from the display.
3	Identify the button to be programmed.	Press the button you labeled. **Note:** If the feature does not get programmed onto a button, press any line button. This does not affect the button in any way.
		The display identifies the feature currently programmed on the button. If no feature is programmed, the display indicates that the button is blank.
	To delete the features currently programmed on the button:	Select Delete from the display. *The button is now blank.*
		Press the button you labeled again to continue programming.
		Note: If the currently programmed feature was not deleted from the button, the new feature programmed onto it will replace it.
	To display features:	Select List Feature from the display.
		The screen lists feature names in alphabetical order.

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Table D–4. *Continued*

Step	Action	
4	Select the feature.	
	If the feature name is on the display:	Press the button next to or below the name of the feature to be programmed.
	If the feature name is not on the display:	Press **More**.
	To move through the list of features page by page, or	Press **More**.
	To jump to the screen that displays the feature name.	Select Find Feature from the display.
		Select the range of letters from the display that corresponds to the first letter of the feature name (for example, it the feature begins with A, select ABC).
		If the feature is not displayed on the page that you jumped to, press **More**.
		When you find the feature you want, press the button next to or below it.
5	Respond to any additional prompts on the display.	Select the appropriate prompt (for example, select On or Off to turn inside Coverage on or off), and/or enter required information (for example, dial a phone number for Auto Dial).
		Select Enter.
6	End programming.	
	To return to the Home screen:	Press **Home** or lift and replace the handset.
	To return to the Menu screen:	Press **Menu**.

$\Longrightarrow$ **NOTE:**
MLX display telephones can also be programmed using the method described for MLX-10 and MLX-5 nondisplay telephones. For example, the programming mode can be entered by pressing the **Feature** button and dialing *00*, then referring to the display to continue the programming process. Or, enter programming by using the display and then dial a programming code to select the feature rather than selecting it from the display.

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Table D−5. Programming MDC 9000 and MDW 9000 Telephones

Step		Action
1	Label the button to be programmed. **Note:** Skip this step if the feature will not be programmed onto a button.	Remove the clear label cover from the telephone by pulling up on the tab that extends from the top of the cover. Write the feature name on the card next to the button to be programmed. Replace the cover.
2	Begin programming.	Press the imprinted **Feat** button. Dial *00*.
3	Select the feature or setting.	Press the button you labeled. **Note:** If the feature does not get programmed onto a button, press any line button. This does not affect the button in any way. Dial the programming code. The feature is programmed.
4	End programming.	Press the imprinted **Feat** button. Dial *00*.

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E System Programming Menu Hierarchy

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System Programming Menu Hierarchy

E

The system programming menu hierarchy details the sequence of menu screens that appear when you select the system programming options. The choice of an option on the first menu screen leads to either a second menu screen or a data-entry screen. A second menu screen may lead to still another menu screen, and so on, up to six screens, as shown on the following pages.

You can use the Inspect feature in system programming to display the telephone or line/trunk numbers that are programmed with a specific feature. Inspect is helpful either when you must assign a feature to many lines/trunks or extensions and you do not have a Direct Station Selector (DSS) attached to the system programming console, or when you are programming using a PC with the SPM (System Programming and Maintenance) program.

Inspect can be used with the menu options on the following pages that have an asterisk (*) next to them. To use Inspect in system programming, choose an eligible option, and press either **Inspct** or **PgDn.**

SEE SYSTEM PROGRAMMING

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F   Sample Reports

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Sample Reports

F

This appendix includes samples of the print reports generated by the communications system. Table F–1 lists the system reports and the pages in this appendix where samples can be found.

$\Longrightarrow$ **NOTE:**
The system's Station Message Detail Recording (SMDR) feature reports incoming and outgoing call details. For more information, see "Station Message Detail Recording (SMDR)" on page 557.

Table F–1.   Sample Report Pages

For...	See...
System Information Report	F–6
Dial Plan Report	F–8
Label Information Report	F–11
Tie Trunk Information Report	F–12
DID Trunk Information Report	F–13
GS/LS Trunk Information Report	F–14
General Trunk Information Report	F–15
DS1 Information Report	F–16
PRI Information Report	F–17

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F   Sample Reports

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Table F–1.   *Continued*

For...	See...
Remote Access (DISA) Information Report	F–19
Operator Information Report	F–20
Allowed Lists Report	F–22
Access to Allowed Lists Report	F–23
Disallowed Lists Report	F–24
Access to Disallowed Lists Report	F–25
Automatic Route Selection Report	F–26
Extension Directory Report	F–27
System Directory Report	F–28
Group Paging Report	F–29
Extension Information Report	F–30
Group Coverage Information Report	F–32
Direct Group Calling Information Report	F–33
Night Service Information Report	F–34
Group Call Pickup Report	F–35
Error Log Report	F–36
Authorization Code Information Report	F–37
BRI Information Report	F–38
Switch 56 Data Information Report	F–39

Table F–2 lists all of the system reports and includes the print menu option used to print each report, the report name, and a brief description of each report.

To access the menu options in Table F–2, select the Print option on the System Programming menu.

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F Sample Reports

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Table F–2. System Reports

Menu Option	Report Name	Description
All		Prints each of the reports available on the Print menu, from SysSet-up to Error Log.
		Note: When All is selected, the four Trunk Information reports automatically print. See Trunk Info.
SysSet-up	System Information	Systemwide information such as return intervals, system mode, system programming port, slot assignments, and so on.
Dial Plan	Dial Plan	Extensions assigned to pools, paging zones, calling groups, lines or trunks, and stations (in the report); labels for lines/trunks and stations.
Labels	Label Information	Labels assigned to stations (extensions), Posted Messages, and names and telephone numbers included in MLX-20L user's Personal Directory.
Trunk Info		Select to display four trunk options: Tie, DID, Loop/Ground, General.
TIE	TIE Trunk Information	Extensions assigned to and signaling attributes associated with Tie trunks.
DID	DID Trunk Information	Extensions assigned to and signaling attributes associated with DID trunks.
Loop/ Ground	GS/LS Trunk Information	Extensions assigned to and signaling attributes associated with ground- and loop-start lines/trunks.
General	General Trunk Information	All identified extensions and feature-related attributes of each extension.
T1 Info	DS1 information	Options (line, signal, and so on) assigned to T1 trunks or lines.
PRI Info	PRI Information	PRI trunks/lines assigned to B-channel groups.
Rmote Access	Remote Access (DISA) Information	Remote access dial code, class of restriction, barrier code information.
Oper Info	Operator Information	For each system operator position: the logical ID, extension number, label, type (DLC or QCC). All general system operator options, such as backup position; call types and priorities.
AllowList	Allowed Lists	Telephone numbers included in Allowed Lists. Lists are numbered 0–7 and entries are numbered 0–9.

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F Sample Reports

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Table F–2. *Continued*

Menu Option	Report Name	Description
AllowListTo	Access to Allowed Lists	Lists are numbered 0–7. If the Allowed List is assigned to Remote Access users and barrier codes are used, the barrier codes are numbered 0–16. If no barrier codes are used, 17 means the Allowed List is assigned to tie-trunk users and 18 means the Allowed list is assigned to non-tie-trunk users.
DisallowLst	Disallowed Lists	Telephone numbers included in Disallowed Lists. Lists are numbered 0–7, and entries are numbered 0–9.
DisallowTo	Access to Disallowed Lists	Telephones to which Disallowed Lists are assigned. Lists are numbered 0–7. If the Disallowed List is assigned to Remote Access users and barrier codes are used, the barrier codes are numbered 0–16. If no barrier codes are used, 17 means the Disallowed List is assigned to tie-trunk users and 18 means the Disallowed List is assigned to non-tie-trunk users.
ARS	Automatic Route Selection	Access code; table types with area codes and exchanges; routes for subpatterns A and B, FRL, absorb digit, delete digit, Dial 0, and N11 tables.
Ext Direct	Extension Directory	Slot/port addresses, extensions, labels and feature-related attributes. Column headings are printed on the first page only and are not carried over to subsequent pages. Column headings 4 through 10 (and 14 through 20) should be read vertically. That is: FACE (Forced Account Code Entry); HBIS (HFAI/BIS); RCFW (Remote Call Forward); MICD (Microphone Disable); SIG (Voice Signal); RSTR (Calling Restrictions); ARSR (ARS Restriction Level); 2BDT (2B Data Capability).
Sys Direct	System Directory	System Speed Dial number, label and telephone number in System Directory, and whether number should display.
Group Page	Group Paging	Extension number for each group and the extension number of each telephone assigned to the group.

Continued on next page

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Table F–2.   *Continued*

Menu Option	Report Name	Description
Ext Info	Extension Information	For each specified station (extension), type of equipment connected, features assigned to extension, ESS supervisor status, and features assigned to each button on the station. On this report, MLX-16DP telephones are reported as MLX-28D telephones. In releases prior to 5.0, MLX-5 and MLX-5D telephones are reported as MLX-10 and MLX-10D telephones respectively. In Release 5.0 and later systems, MLX-5 and MLX-5D telephones are reported as 5-button telephones.
GrpCoverage	Group Coverage Information	Extension number for each group and the extension number for each telephone assigned to the group. Information is printed only for calling groups with members and/or lines/trunks assigned.
GrpCalling	Direct Group Calling Information	Group calling options (hunt, type, message waiting, station, delay announcements, alarm thresholds, and so on), the extension number for each telephone assigned to the group, and the lines or trunks assigned to the group.
Night Service	Night Service Information	The operator, password required, time-of-day, and Emergency Allowed List extension numbers.
Call Pickup	Group Call Pickup	Extension numbers for telephones assigned to each group. Pickup groups are numbered 1–30.
Error Log	Error Log	Error message and code, time and day error occurred, frequency of error. See the *Maintenance and Troubleshooting* guide.
Auth Code	Authorization Code Information	Authorization Code and permissions for extensions to which authorization codes are assigned.
BRI	BRI Information Report	Service Profile ID and Directory Number for each BRI line, flexible timers, and fixed timers and counters.
Switch 56	Switch 56 Data Information Report	Dial Plan Routing information and programmable options.

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System Information Report

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System Information Report

Print Menu Option: SysSet-up

```
SYSTEM INFORMATION


Current Date:    01/04/00
Current Time:    00:21:15
System :  Mode           AutoMaintBusy   AutoBusyTie
       :  Hybrid/PBX     Disable         Disable

Language:    SystemLang      SMDR            Printer

             English         English         English

CTI Links                    :    19
Direct Line Operators        :    14   18   22   42
Queued Call Operators:    10
SysProg Port:    10              Password    :    craftr4

Transfer : Type      Audible      OneTouch(Complete)  ReturnTimer
         : Ring      MusicOnHold  Transfer(Auto)      5 rings

VMS Transfer Return Interval    : 4
Paging System Lines             :
Music On Hold Line              : 804
Camp On Time                    : 90 sec
Call Park Return Time           : 180 sec
Auto Callback Rings             : 3
Extension Status (ESS)          : Group Call / CMS
ESS Operators                   :

SMDR :   Min.CallTime       CallReport          Format
     :   40 sec             In/Out              Basic

Intercom Dial Tone            : Inside
Reminder Service Cancel        :    :
Behind Switch Code            : Drop    Transfer    Conference
Inter-digit Timer (seconds)   : 24  24  24  10  10  10  10   5   5
Recall Timer                  : 450 msec
Second Dial-tone Timer        : 200 msec
Rotary Line Cut Through       : Delay
Unassigned Extension          : 10
Automatic Backup              : Weekly - 04:30 Sunday

TI/PRI/BRI Clock Synchronization:
Primary           Secondary        Tertiary
02/01 Loop        04/01 Local      04/02 Local
```

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F Sample Reports
System Information Report

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System Information Report— *Continued*

```
Slot # 1:        008 MLX
Slot # 2:        408
Slot # 3:        008
Slot # 4:        408
Slot # 5:        800 GS/LS
Slot # 6:        008 GS/LS-MLX
Slot # 7:        800 CO-BRI
Slot # 8:        008
Slot # 9:        016 (Ringing Frequency - 25 Hz.)
Slot #10:        408 GS/LS
Slot #11:        008
Slot #12:        800
Slot #13:        800 DID
Slot #14:        400 EM
Slot #15:        012
Slot #16:        008 MLX
Slot  #17:       408               * Not Present *
```

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F Sample Reports
Dial Plan Report

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Dial Plan Report

Print Menu Option: Dial Plan
Sections: Pools; Telephone Paging Zones; Direct Group Calling
                Group; Lines/Trunks; Stations

```
DIAL PLAN FOR POOLS


POOL.#  1:     70
POOL.#  2:    890
POOL.#  3:    891
POOL.#  4:    892
POOL.#  5:    893
POOL.#  6:    894
POOL.#  4:    895
POOL.#  8:    896
POOL.#  9:    897
POOL.# 10:    898
POOL.# 11:    899


DIAL PLAN FOR TELEPHONE PAGING ZONES

TPZ #  1:     793
TPZ #  2:     794
TPZ #  3:     795
TPZ #  4:     796
TPZ #  5:     797
TPZ #  6:     798
TPZ #  7:     799


DIAL PLAN FOR DIRECT GROUP CALLING GROUP

DGCG  #  1:    770
DGCG  #  2:    771
DGCG  #  3:    772
DGCG  #  4:    773
DGCG  #  5:    774
  .                                   .
  .                                   .
  .                                   .
DGCG  # 32:   7929


DIAL PLAN FOR LINES/TRUNKS

LINE #  1:   801      OUTSIDE      LINE # 2:   802    OUTSIDE
LINE #  3:   803      OUTSIDE      LINE # 4:   804    OUTSIDE
LINE #  5:   805      OUTSIDE      LINE # 6:   806    OUTSIDE
LINE #  7:   807      OUTSIDE      LINE # 8:   808    OUTSIDE
LINE #  9:   809      OUTSIDE      LINE # 10:  810    OUTSIDE
  .                                   .
  .                                   .
  .                                   .
LINE #  75:  875      OUTSIDE      LINE # 76:  876    OUTSIDE
```

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Dial Plan Report   Page F-9

Dial Plan Report—*Continued*

```
DIAL PLAN FOR STATIONS


STN #:   1    10        OPERATR      STN  #:  2     710
STN #:   3    11                     STN  #:  4     711
STN #:   5    12                     STN  #:  6     712
STN #:   7    13        EXT 13       STN  #:  8     713
STN #:   9    14        EXT 14       STN  #:  10    714
STN #:   11   15                     STN  #:  12    715
STN #:   13   16                     STN  #:  14    716
STN #:   15   17                     STN  #:  16    717
STN #:   17   18        EXT 18       STN  #:  18    19
STN #:   19   20                     STN  #:  20    21
STN #:   21   22        OPERATR      STN  #:  22    23
STN #:   23   24                     STN  #:  24    25
STN #:   25   26                     STN  #:  26    21
STN #:   27   28                     STN  #:  28    29
STN #:   29   30        AUDIXVP      STN  #:  30    31        AUDIXVP
STN #:   31   32        AUDIXVP      STN  #:  32    33        AUDIXVP
STN #:   33   34                     STN  #:  34    35
STN #:   35   36                     STN  #:  36    31
STN #:   37   38                     STN  #:  38    39
STN #:   39   40                     STN  #:  40    41
STN #:   41   42        EXT 42       STN  #:  42    742
  .                                    .
  .                                    .
  .                                    .
STN #:   121  7198                   STN #:   122   7398
STN #:   123  5555                   STN #:   124   7399
```

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F Sample Reports
Dial Plan Report

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Dial Plan Report—*Continued*

```
COMPLETE DIAL PLAN FOR STATIONS AND ADJUNCTS

ID #:  1    4000    7300       ID #:  2    4001    7301
ID #:  3    4002    7302       ID #:  4    4003    7303
ID #:  5    4004    7304       ID #:  6    4005    7305
ID #:  7    4006    7306       ID #:  8    4007    7307
ID #:  9    4008    7308       ID #: 10    4009    7309
ID #: 11    4010    3000       ID #: 12    4011    3001
ID #: 13    4012    3002       ID #: 14    4013    3003
ID #: 15    4014    3004       ID #: 16    4015    3005
ID #: 17    4016    3006       ID #: 18    4017    3007
ID #: 19    4018    3008       ID #: 20    4019    3009
ID #: 21    4020    3010       ID #: 22    4021    3011
ID #: 23    4022    3012       ID #: 24    4023    3013
ID #: 25    4024    3014       ID #: 26    4025    3015
ID #: 27    4026    3016       ID #: 28    4027    3017
ID #: 29    4028    3018       ID #: 30    4029    3019
ID #: 31    4030    3020       ID #: 32    4031    3021
ID #: 33    4032    3022       ID #: 34    4033    3023
ID #: 35    4034    3024       ID #: 36    4035    3025
ID #: 37    4036    3026       ID #: 38    4037    3027
ID #: 39    4038    3028       ID #: 40    4039    3029
ID #: 41    4040    3030       ID #: 42    4041    3031
ID #: 43    4042    3032       ID #: 44    4043    3033
ID #: 45    4044    3034       ID #: 46    4045    3035
ID #: 47    4046    3036       ID #: 48    4047    3037
ID #: 49    4048    3038       ID #: 50    4049    3039
ID #: 51    4050    3040       ID #: 52    4051    7351
ID #: 53    4052    3042       ID #: 54    4053    7353
ID #: 55    4054    7354       ID #: 56    4055    7355
ID #: 57    4056    7356       ID #: 58    4057    7357
ID #: 59    4058    7358       ID #: 60    4059    7359
ID #: 61    7160    7360       ID #: 62    7161    7361
ID #: 63    7162    7362       ID #: 64    7163    7363
ID #: 65    7164    7364       ID #: 66    7165    7365
ID #: 67    7166    7366       ID #: 68    7167    7367
ID #: 69    7168    7368       ID #: 70    7169    7369
 .                              .
 .                              .
 .                              .
ID #:191    5151    7490       ID #:192    5152    7491
ID #:193    5153    7492       ID #:194    5154    7493
ID #:195    5155    7494       ID #:196    5156    7495
ID #:197    5156    7496       ID #:198    5158    7497
ID #:199    5158    7498       ID #:200    5160    7499
```

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F Sample Reports
Label Information Report

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Label Information Report

```
Print Menu Option: Labels
```
Sections: Telephone Personal Directory; Posted Messages and
                         Numbers

```
LABEL INFORMATION

Executive Telephone #   10:  Personal Directory

Name          Number                        Display

Executive Telephone #   14:  Personal Directory

Name          Number                        Display

Executive Telephone #   15:  Personal Directory

Name          Number                        Display
MSG #               POSTED MESSAGE

   1                DO NOT DISTURB
   2                OUT TO LUNCH
   3                AT HOME
   4                OUT SICK
   5                IN A MEETING
   6                IN CONFERENCE
   7                WITH A CLIENT
   8                WITH A CUSTOMER
   9                AWAY FROM DESK
  10                OUT ALL DAY
  11                CUSTM MSG11
  12                CUSTM MSG12
  13                CUSTM MSG13
  14                CUSTM MSG14
  15                CUSTM MSG15
  16                CUSTM MSG16
  17                CUSTM MSG17
  18                CUSTM MSG18
  19                CUSTM MSG19
  20                CUSTM MSG20
```

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F   Sample Reports
Tie Trunk Information Report

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Tie Trunk Information Report

Print Menu Option: Trunk Info and TIE

```
TIE TRUNK INFORMATION

TRUNK    849        Slot/Port : 14/ 1       TIE-PBX
Direction: 2 Way    E&M Signal: Type1S      Dialtone  : Remote
InType   : Wink     InMode    : Rotary      AnsSupvr  : 300  ms
OutType  : Wink     OutMode   : Rotary      Disconnect: 300  ms


TRUNK    850        Slot/Port : I4/ 2       TIE-PBX
Direction: 2 Way    E&M Signal: Type1S      Dialtone  : Remote
InType   : Wink     InMode    : Rotary      AnsSupvr  : 300  ms
OutType  : Wink     OutMode   : Rotary      Disconnect: 300  ms


TRUNK    851        Slot/Port : 14/ 3       TIE-PBX
Direction: 2 Way    E&M Signal: Type1S      Dialtone  : Remote
InType   : Wink     InMode    : Rotary      AnsSupvr  : 300  ms
OutType  : Wink     OutMode   : Rotary      Disconnect: 300  ms


TRUNK    852        Slot/Part : 14/ 4       TIE-PBX
Direction: 2 Way    E&M Signal: Type1S      Dialtone  : Remote
InType   : Wink     InMode    : Rotary      AnsSupvr  : 300  ms
OutType  : Wink     OutMode   : Rotary      Disconnect: 300  ms
```

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F Sample Reports
DID Trunk Information Report

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DID Trunk Information Report

Print Menu Option: Trunk Info and DID

```
DID      TRUNK INFORMATION


Trk SS/PP Blk DiscTime Type ExpDig DelDig AddDig   Signal  InvDest
841 13/ 1  1    500ms  Wink    4      3        1   TouchTone BkupExt
842 13/ 2  1    500ms  Wink    4      3        1   TouchTone BkupExt
843 13/ 3  2    500ms  Wink    3      0               Rotary BkupExt
844 13/ 4  2    500ms  Wink    3      0               Rotary BkupExt
845 13/ 5  1    500ms  Wink    4      3        1   TouchTone BkupExt
846 13/ 6  1    500ms  Wink    4      3        1   TouchTone BkupExt
847 13/ 7  2    500ms  Wink    3      0               Rotary BkupExt
848 13/ 8  1    500ms  Wink    4      3        1   TouchTone BkupExt
```

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F Sample Reports
   GS/LS Trunk Information Report

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GS/LS Trunk Information Report

Print Menu Option: Trunk Info and Loop/Ground

```
GS/LS TRUNK INFORMATION


Trk    SS/PP      Type      OutMode     RelDisc    ChannelUnit    LS-ID Delay
801    2/ 1       Loop      TouchTone   Yes         N/A           N/A
802    2/ 2       Loop      TouchTone   Yes         N/A           N/A
803    2/ 3       Loop      TouchTone   Yes         N/A           N/A
804    2/ 4       Loop      TouchTone   Yes         N/A           N/A
805    4/ 1       Loop      Rotary      Yes         N/A           N/A
806    4/ 2       Loop      Rotary      Yes         N/A           N/A
807    4/ 3       Loop      Rotary      Yes         N/A           N/A
808    4/ 4       Loop      Rotary      Yes         N/A           N/A
809    5/ 1       Ground    TouchTone   N/A         N/A           N/A
810    5/ 2       Ground    TouchTone   N/A         N/A           N/A
811    5/ 3       Loop      Rotary      Yes         N/A           N/A
812    5/ 4       Loop      Rotary      Yes         N/A           N/A
813    5/ 5       Loop      Rotary      Yes         N/A           N/A
814    5/ 6       Loop      Rotary      Yes         N/A           N/A
815    5/ 7       Loop      TouchTone   Yes         N/A           N/A
816    5/ 8       Loop      Rotary      Yes         N/A           N/A
817    6/ 1       Ground    Rotary      N/A         N/A           N/A
  .
  .
879    15/ 7      LS-ID     Rotary      Yes         N/A           Yes
880    15/ 8      LS-ID     Rotary      Yes         N/A           No
```

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F Sample Reports
General Trunk Information Report

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General Trunk Information Report

Print Menu Option: Trunk Info and General

```
GENERAL TRUNK INFORMATION


Trk  SS/PP  RemAccess    Pool    TlPrfx  HldDisc Principal QCC Prty QCC Oper
801  2/ 1   No Remote     70      Yes     Long              4
802  2/ 2   No Remote     70      Yes     Long              4
803  2/ 3   No Remote     70      Yes     Long              4
804  2/ 4   No Remote             Yes     Long              4
805  4/ 1   No Remote             Yes     Long              4
806  4/ 2   No Remote             Yes     Long              4
807  4/ 3   No Remote             Yes     Long              4
808  4/ 4   No Remote             Yes     Long              4
809  5/ 1   No Remote    890      Yes     Long              4        10
810  5/ 2   No Remote             Yes     Long              4
811  5/ 3   No Remote             Yes     Long              4
812  5/ 4   No Remote             Yes     Long              4
813  5/ 5   No Remote             Yes     Long              4
814  5/ 6   No Remote             Yes     Long              4
815  5/ 7   No Remote             Yes     Long              4
816  5/ 8   No Remote             Yes     Long              4
817  6/ 1   Dedicated            Yes     Long    42        4
```

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F   Sample Reports
DS1 Information Report

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DS1 Information Report

```
   Print Menu Option: T1 Info


DS1 SLOT ATTRIBUTES


Slot     Type  Format     Supp  Signal   LineComp   ClkSync  Src    Active
  3      T1    D4         ZCS   Rob Bit    1          Prim    Loop   Yes
  3      T1    D4         ZCS   Rob Bit    1          None    Local  Yes
```

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F Sample Reports
PRI Information Report

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PRI Information Report

Print Menu Option: PRI Info
Sections: Network Selection, Special Service, Call-by-Call and Dial Plan Routing Tables; PRI Information

```
PRI INFORMATION

Switch: DMS-250

System: By line

BchnlGrp #:   Slot:           TestTelNum:   NtwkServ:    Incoming Routing:
1            9                              MCI PRISM    By Line Appearance
Channel ID: 1


Line         PhoneNumber       NumberToSend


Network Selection Table

Entry Number:        0        1      2        3
Pattern to Match:    101**** 10***  101****


Special Service Table

Entry Number:          0      1      2      3      4      5      6      7
Pattern to Match:      011    010    01     00     0      1
Operator:              none   none   OP     OP     OP/P   none   none   none
Type of Number:        I      I      I      N      N      I      I      N
Digits to Delete:      3      1      3      2      1      1      0      0


Call-By-Call Service Table

Entry Number:        0        1            2            3          4
Pattern   0:         777
Pattern   1:                  212555
Pattern   2:                  212
Call Type:           BOTH     BOTH         BOTH         BOTH       BOTH
NtwkServ:            MCI PRISM No Service   MCI PRISM
DeleteDigits:        0        1            2            0          0


Entry Number:        0        6            7            8          9
Pattern   0:         777
Pattern   1:                  212555
Pattern   2:                  212
Call Type:           BOTH     BOTH         BOTH         BOTH       BOTH
NtwkServ:            No Service             MCI PRISM
DeleteDigits:        0        0            0            0          0
```

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F Sample Reports
PRI Information Report

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PRI Information Report—*Continued*

```
Dial Plan Routing Table

Entry Number:           0           1           2           3
NtwkServ:                           MCI PRISM   Any service MCI PRISM
Expected Digits:        0           0           11          0
Pattern to Match:                   222
Digits to Delete:       0           1           0           0
Digits to Add:                      22


Entry Number:           4           5           6           7
NtwkServ:               MCI PRISM
Expected Digits:        2           1           0           0
Pattern to Match:       2
Digits to Delete:       0           1           2           0
Digits to Add:          2


Entry Number:           8           9           10          11
NtwkServ:
Expected Digits:        0           0           0           0
Pattern to Match:
Digits to Delete:       0           0           0           0
Digits to Add:


Entry Number:           12          13          14          15
NtwkServ:
Expected Digits:        0           0           0           0
Pattern to Match:
Digits to Delete:       0           0           0           0
Digits to Add:
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Remote Access (DISA) Information Report

Page F-19

Remote Access (DISA) Information Report

Print Menu Option: Rmote Access
Sections: General Options; System Default Class of Restrictions (Non-TIE); System Default Class of Restrictions (TIE); Barrier Code Administration

```
GENERAL OPTIONS (ACCESS CODE 889)

Barrier Code required for Non-TIE DISA lines     :   Yes
Barrier Code required for TIE DISA lines    :No
Automatic Queuing enabled for DISA lines    :Yes
System Wide Barrier Code Length: 07
Date And Time of Last Barrier Code Length Change: 09:23:94, 09:45 PM


SYSTEM DEFAULT CLASS OF RESTRICTIONS (NON-TIE)

Restriction          : UNRESTRICTED
ARS Restriction Level: 3
Allowed Lists        :
Disallowed Lists     :


SYSTEM DEFAULT CLASS OF RESTRICTIONS (TIE)

Restriction          : UNRESTRICTED
ARS Restriction Level: 3
Allowed Lists        :
Disallowed Lists     :


BARRIER CODE ADMINISTRATION

Barrier Code number  : 1
Barrier Digits       : 2468345
Restriction          : OUTWARD RESTRICTED
ARS Restriction Level: 3
Allowed Lists        :
Disallowed Lists     :

Barrier Code number  : 2
Barrier Digits       : 1234693
Restriction          : UNRESTRICTED
ARS Restriction Level: 3
Allowed Lists        :
Disallowed Lists     :
.
.
Barrier Code number  : 16
Barrier Digits       : 9876115
Restriction          : OUTWARD RESTRICTED
ARS Restriction Level: 0
Allowed Lists        :
Disallowed Lists     :
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference *555-650-110*

Issue 1
June 1997

F Sample Reports
Operator Information Report

Page F-20

Operator Information Report

Print Menu Option: Oper Info
Sections: Operator Positions; General Options; DSS Options; QCC Operator Options: QCC Call Types

```
OPERATOR POSITIONS

PORT                                    CALL ALERT
ADDR.    EXT # LABEL        TYPE        (QCC ONLY)
====     ===== =======      ====         ==========
1/ 1     10    OPERATR      QCC          No
1/ 5     14    EXT 14       DLC          N/A
2/ 1     18    EXT 18       DLC          N/A
2/ 5     22    OPERATR      DLC          N/A
6/ 1     42    EXT 42       DLC          N/A


GENERAL OPTIONS


Length of hold reminder timer: 60 sec
DLC Automatic hold enabled   : No


DIRECT STATION SELECTOR (DSS) OPTIONS


BUTTON    FIRST
NUMBER    DIAL CODE
======    =========
  1            0
  2           50
  3          100
Operator Call Park codes:  881  882  883  884  885  886  884  888


QCC OPERATOR OPTIONS


Listed Directory Number for queue : 800
Held calls return to queue        : No
Automatic hold enabled            : No
Calls-in-queue alarm threshold    : 0
Time until priorities are elevated: 0 sec
Message Center Operators          :
One Touch Extend                  : AUTOMATIC
Rings before extended calls return: 4
Backup operator station           :
Voice Announce on Call 5 button   : Disable
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Operator Information Report

Page F-21

Operator Information Report—
Continued

```
QCC CALL TYPES:
        CALL TYPE          PRIORITY   OPERATORS
=======================    ========   ===================
Dial 0 Operator               4          10
Follow Forward                4          N/A
Unassigned DID                4          10
Listed Directory Number       4          10
Operator's Extension          4          N/A
Returning                     4           0
Group Coverage
    Group #    1              4
    Group #    2              4
    Group #    3              4
    Group #    4              4
    Group #    5              4
    Group #    6              4
    Group #    7              4
    Group #    8              4
    Group #    9              4
    Group #   10              4
    Group #   11              4
    Group #   12              4
    Group #   13              4
    Group #   14              4
    Group #   15              4
    Group #   16              4
    Group #   17              4
    Group #   18              4
    Group #   19              4
    Group #   20              4
    Group #   21              4
    Group #   22              4
    Group #   23              4
    Group #   24              4
    Group #   25              4
    Group #   26              4
    Group #   27              4
    Group #   28              4
    Group #   29              4
    Group #   30              4
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference *555-650-110*

Issue 1
June 1997

F   Sample Reports
Allowed Lists Report

Page F-22

Allowed Lists Report

Print Menu Option: `AllowList`
Sections: Lists 1 through 7

```
ALLOWED LISTS

List :   0

Entry 0:      ------
Entry 1:      ------
Entry 2:      ------
Entry 3:      ------
Entry 4:      ------
Entry 5:      ------
Entry 6:      ------
Entry 7:      ------
Entry 8:      ------
Entry 9:      ------
     .
     .
     .
List :   7

Entry 0:      ------
Entry 1:      ------
Entry 2:      ------
Entry 3:      ------
Entry 4:      ------
Entry 5:      ------
Entry 6:      ------
Entry 7:      ------
Entry 8:      ------
Entry 9:      ------
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference *555-650-110*

Issue 1
June 1997

F Sample Reports
Access to Allowed Lists Report

Page F-23

Access to Allowed Lists Report

Print Menu Option: AllowListTo

```
ACCESS TO ALLOWED LISTS

FOR REMOTE ACCESS 17 & 18 MEAN TIE & NON-TIE RESTRICTIONS

List    1     STNS       10

              RACC       1                  17        18

List    3     STNS       33

              RACC
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference *555-650-110*

Issue 1
June 1997

F Sample Reports
Disallowed Lists Report

Page F-24

Disallowed Lists Report

Print Menu Option: DisallowLst
Sections: Lists 1 through 7

```
DISALLOWED LISTS

List :   0

Entry 0:        ------------
Entry 1:        ------------
Entry 2:        ------------
Entry 3:        ------------
Entry 4:        ------------
Entry 5:        ------------
Entry 6:        ------------
Entry 7:        ------------
Entry 8:        ------------
Entry 9:        ------------
     .
     .
     .
List :   7

Entry 0:        ------------
Entry 1:        ------------
Entry 2:        ------------
Entry 3:        ------------
Entry 4:        ------------
Entry 5:        ------------
Entry 6:        ------------
Entry 7:        ------------
Entry 8:        ------------
Entry 9:        ------------
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Access to Disallowed Lists Report

Page F-25

Access to Disallowed Lists Report

Print Menu Option: DisallowTo

```
ACCESS TO DISALLOWED LISTS

FOR REMOTE ACCESS 17 & 18 MEAN TIE & NON-TIE RESTRICTIONS

List    1    STNS       33

             RACC        9

List    3    STNS       33

             RACC
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F   Sample Reports
Automatic Route Selection Report

Page F-26

Automatic Route Selection Report

Print Menu Option: ARS
Sections: Tables

```
AUTOMATIC ROUTE SELECTION

ARS IS: ACTIVE           ACCESS CODE: 9

TABLE 17: Default Toll Output Table

Pool   Absorb   Other Digits        FRL   Call type   Start   Pattern
1)70--   00     ------------------   3     BOTH        --:--   A
2)----   --     ------------------   -     -----       --:--   A
3)----   --     ------------------   -     -----       --:--   A
4)----   --     ------------------   -     -----       --:--   A
5)----   --     ------------------   -     -----       --:--   B
6)----   --     ------------------   -     -----       --:--   B


Pool   Absorb   Other Digits        FRL   Call type   Start   Pattern
1)70--   00     ------------------   3     BOTH        --:--   B
2)----   --     ------------------   -     -----       --:--   B
3)----   --     ------------------   -     -----       --:--   B
4)----   --     ------------------   -     -----       --:--   B
5)----   --     ------------------   -     -----       --:--   B
6)----   --     ------------------   -     -----       --:--   B


TABLE 18: Default Local Output Table

Pool   Absorb   Other Digits        FRL   Call type   Start   Pattern
1)70--   00     ------------------   3     BOTH        --:--   A
2)----   --     ------------------   -     -----       --:--   A
3)----   --     ------------------   -     -----       --:--   A
4)----   --     ------------------   -     -----       --:--   A
5)----   --     ------------------   -     -----       --:--   B
6)----   --     ------------------   -     -----       --:--   B


Pool   Absorb   Other Digits        FRL   Call type   Start   Pattern
1)70--   00     ------------------   3     BOTH        --:--   B
2)----   --     ------------------   -     -----       --:--   B
3)----   --     ------------------   -     -----       --:--   B
4)----   --     ------------------   -     -----       --:--   B
5)----   --     ------------------   -     -----       --:--   B


TABLE 19: Dial 0 Output Table

Pool   Absorb   Other Digits        FRL   Call type   Start   Pattern
1)70--   00     ------------------   3     BOTH        --:--   A


TABLE 20: N11 Output Table
01)411 02)611 03)811 04)911

Pool   Absorb   Other Digits        FRL   Call type   Start   Pattern
1)70--   00     ------------------   3     BOTH        --:--   A
1)70--   00     ------------------   3     BOTH        --:--   A
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Extension Directory Report

Page F-27

Extension Directory Report

Print Menu Option: Ext Direct

```
EXTENSION DIRECTORY

Port   Ext #   Label     F H R M V R A 2    Port   Ext #   Label     F H R M V R A 2
Addr                     A B C I S S R B    Addr                     A B C I S S R B
                         C I F C I T S D                             C I F C I T S D
                         E S W D G R R T                             E S W D G R R T
1/ 1   10      OPERATR   N N N N   U 3 N    1/21   710               N N N N   U 3 N
1/ 2   11                N N N N   O 3 Y    1/22   711               N N N N   U 3 N
1/ 3   12                N N N N   U 3 Y    1/23   712               N N N N   U 3 N
1/ 4   13      EXT 13    N N N N   U 3 N    1/24   713               N N N N   U 3 N
1/ 5   14      EXT 14    N N N N   U 3 N    1/25   714               N N N N   U 3 N
1/ 6   15                N N N N   U 3 N    1/26   715               N N N N   U 3 N
1/ 7   16                N N N N   U 3 N    1/27   716               N N N N   U 3 N
1/ 8   17                N N N N   U 3 N    1/28   717               N N N N   U 3 N
2/ 1   18      EXT 18    N Y N N   U 3 N    2/ 2   19                N Y N N   U 3 N
2/ 3   20                N Y N N   U 3 N    2/ 4   21                N Y N N   U 3 N
2/ 5   22      OPERATR   N Y N N   U 3 N    2/ 6   23                N Y N N   U 3 N
2/ 7   24                N Y N N   U 3 N    2/ 8   25                N Y N N   U 3 N
3/ 1   26                N Y N N   U 3 N    3/ 2   27                N Y N N   U 3 N
3/ 3   28                N Y N N   U 3 N    3/ 4   29                N Y N N   U 3 N
3/ 5   30      AUDIXVP   N Y N N   U 3 N    3/ 6   31                N Y N N   U 3 N
3/ 7   32      AUDIXVP   N Y N N   U 3 N    3/ 8   33                N Y N N   U 3 N
4/ 1   34                N Y N N   U 3 N    4/ 2   35      AUDIXVP   N Y N N   U 3 N
4/ 3   36      AUDIXVP   N Y N N   U 3 N    4/ 4   37                N Y N N   U 3 N
4/ 5   38                N Y N N   U 3 N    4/ 6   39                N Y N N   U 3 N
4/ 7   40                N Y N N   U 3 N    4/ 8   41                N Y N N   U 3 N
6/ 1   42      EXT 42    N N N N   U 3 N    6/21   742               N N N N   U 3 N
  .
  .
  .
7/ 1   54      EXT 54    N N N N   U 3 N    7/2    754               N N N N   U 3 N
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
System Directory Report

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System Directory Report

Print Menu Option: Sys Direct

```
SYSTEM DIRECTORY

    Code   Name             Number          Display
     600   ABC Company      555-9999        YES
     601   Jacques Smith    5551212         YES
     605   Travel Agency    912015556677    YES
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Group Paging Report

Page F-29

Group Paging Report

Print Menu Option: Group Page

```
GROUP PAGING

Group #   793   STNS   :   20   21   22   23   24   25

Group #   794   STNS   :   15   16   17   18   19
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Extension Information Report

Page F-30

Extension Information Report

Print Menu Option: `Ext Info` plus extension number

```
EXTENSION INFORMATION
Extn    SS/PP       Type
  10    1/ 1        MLX-20L + 1 DSS


CTI Link              :  NO  Alarms: ACTIVE  (SUSPENDED)
Pool Access           :  70  890 891 892 893 894 895 896 897 898 899
Page Group            :
Primary Coverage      :
Secondary Coverage    :
Coverage Group        : 5
Group Coverers        : 773
NS Groups             : 10
Group Calling Member  :
Pickup Groups         :
Allowed Lists         :
Disallowed Lists      :
Restrictions          : UNRESTRICTED
ESS Sup. Status       : NOT ACTIVE
ESS Restrictions      : ESS-0 -NO RESTRICTION
Auto Callback         : ON
Call Waiting          : OFF
Abbreviated Ring      : ON
Line Preference       : ON
Shared SA Ring        : ON
Receive Voice Calls   : ON
Coverage Inside       : ON
Forwarding to         : OFF
Delay Forwarding      : 0
ARS Restriction       : 3
Forced Account Code   : No
Microphone Disable    : No
Remote Forward Allow  : No
Trunk Transfer Allow  : No
NS Exclusion          : No
Voice Announce Pair   : No
Voice/Data Pair       : No
BIS/HFAI              : No
Language              : English
Authorization Code    : 3134
2B Data Port          : No
Primary Ring Delay    : 2
Secondary Ring Delay  : 2
Group Cover Delay     : 3
HotLine Extension     : No
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Extension Information Report

Page F-31

Extension Information Report— *Continued*

```
EXTENSION INFORMATION

Extn    SS/PP      Type
  10     1/ 1      MLX-20L + 1 DSS


Button  34   Blank                  Status None
Button  33   Blank                  Status None
Button  32   Blank                  Status None
Button  31   Blank                  Status None
Button  30   Blank                  Status None
Button  29   Blank                  Status None
Button  28   Blank                  Status None
Button  27   Blank                  Status None
Button  26   Blank                  Status None
Button  25   Blank                  Status None
Button  24   Blank                  Status None
Button  23   Blank                  Status None
Button  22   Blank                  Status None
Button  21   Blank                  Status None
Button  20   Forced Release         Status None
Button  19   Pool Inspect           Status None
Button  18   Headset Auto Answer    Status Off
Button  17   Join                   Status None
Button  16   Cancel                 Status None
Button  15   Alarm Status           Status Off
Button  14   Night Service          Status Off
Button  13   Headset Status         Status Off
Button  12   Destination            Status None
Button  11   Release                Status None
Button  10   Position Busy          Status Off
Button   9   Send/Remove Message    Status None
Button   8   Handset/Headset Mute   Status Off
Button   7   Source                 Status None
Button   6   Start                  Status None
Button   5   Call 5                 Status None
Button   4   Call 4                 Status None
Button   3   Call 3                 Status None
Button   2   Call 2                 Status None
Button   1   Call 1                 Status None
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Group Coverage Information Report

Page F-32

Group Coverage Information Report

Print Menu Option: GrpCoverage

```
GROUP COVERAGE INFORMATION

Group #   2    Senders     :          6802 6804
Group #   5    Senders     :           10   11   12   13   14   18   19   20   42
                                        44   45   47 6810


DIRECT GROUP CALLING INFORMATION

Group #  :     770         Group Type : AutoLogout
Call Distribution Type   : CIRCULAR
Delay Announcement Ext # : 11
Message Waiting Station  : 20
Calls-in-queue Threshold : 1
External Alert ext #      : 21
Overflow Threshold (#)   : 1
Overflow to DGC group #  :

Group Coverage :   1

No.    EXT #          LABEL
 1
 2
 3
 4
 5
 6
 7
 8
 9
10
11
12
13
14
15
16
17
18
19
20
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Direct Group Calling Information Report

Page F-33

Direct Group Calling Information Report

Print Menu Option: Grp Calling
Sections: Each programmed group

```
DIRECT GROUP CALLING INFORMATION

Group #  : 782        Group Type : AutoLogout
Call Distribution Type   : CIRCULAR
PryAnn No.     Ext #        LABEL
      1       27           ANN1
      2       28           ANN2
Secondary Delay Announcement Ext # : 29
Time Between Delay Announcements : 0
Repeat Secondary Announcement: NO
Message Waiting Station  :
Calls-in-queue Threshold 1: 1
Calls-in-queue Threshold 2: 1
Calls-in-queue Threshold 3: 1
External Alert ext #     :
Overflow Threshold (#)   : 1
Overflow Threshold (Time): 0
Overflow to DGC group #  :

Group Coverage :   1

Member No.    EXT #          LABEL
      1      12
      2      13
      3
      4
      5
      6
      7
      8
      9
     10
     11
     12
     13
     14
     15
     16
     17
     18
     19
     20
LINES:
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Night Service Information Report   *Page F-34*

Night Service Information Report

Print Menu Option: Night Service

```
NIGHT SERVICE INFORMATION

OPERATOR      10    DGCG      #:
                    STNS      :    10
                    LINES     :    801
OPERATOR      14    DGCG      #:
                    STNS      :    14
                    LINES     :    804
OPERATOR      18    DGCG      #:
                    STNS      :    18
                    LINES     :    808
OPERATOR      22    DGCG      #:
                    STNS      :    22
                    LINES     :    822
OPERATOR      42    DGCG      #:
                    STNS      :    42
                    LINES     :    842
Password      :
Current Day   : OFF
              Turn off at:              Turn on at:
  Sunday              :                          :
  Monday              :                          :
  Tuesday             :                          :
  Wednesday           :                          :
  Thursday            :                          :
  Friday              :                          :
  Saturday            :                          :
Emergency Allowed List:
 0)
 1)
 2)
 3)
 4)
 5)
 6)
 7)
 8)
 9)
NS Excluded STNS:
  61   62   63   64   65
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F   Sample Reports
Group Call Pickup Report

Page F-35

Group Call Pickup Report

Print Menu Option: Call Pickup

```
GROUP CALL PICKUP

Group #  1  STNS  :  10  11  12  13  I4  15  16
Group #  2  STNS  :  17  18  19  20
Group #  3  STNS  :  21  22  23  24  25  26  27  28  29  30
Group #  4  STNS  :  31
Group #  5  STNS  :  32
Group #  6  STNS  :  33
Group #  7  STNS  :  34
Group #  8  STNS  :  35
Group #  9  STNS  :  36
Group # 10  STNS  :  37
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F   Sample Reports
Error Log Report

Page F-36

Error Log Report

Print Menu Option: Error Log

```
ERROR LOG

Last 30 System Errors:

Message                 ss/pp   Cnt   First       Last        Code
PRI SVC AUDIT TIMEOUT   00/00    -     -      01/08 00:00:53   7001
TIMEOUT COLD START      00/00    -     -      01/11 00:04:08   0001
PRI SVC AUDIT TIMEOUT   00/00    -     -      01/11 00:04:14   7001
TIMEOUT COLD START      00/00    -     -      01/21 00:22:14   0001
PRI SVC AUDIT TIMEOUT   00/00    -     -      01/03 00:22:14   7001
PRI SVC AUDIT TIMEOUT   00/00    -     -      01/04 00:22:14   7001
SOFTWARE COLD START     00/00    -     -      01/04 00:21:14   0003
SOFTWARE COLD START     00/00    -     -      01/04 00:21:14   0003
PRI SVC AUDIT TIMEOUT   00/00    -     -      01/04 00:21:14   7001
SOFTWARE COLD START     00/00    -     -      01/04 00:22:11   0003
PRI SVC AUDIT TIMEOUT   00/00    -     -      01/08 00:00:53   7001
TIMEOUT COLD START      00/00    -     -      02/11 00:04:08   0001
PRI SVC AUDIT TIMEOUT   00/00    -     -      02/11 00:04:14   7001
TIMEOUT COLD START      00/00    -     -      02/21 00:22:14   0001
PRI SVC AUDIT TIMEOUT   00/00    -     -      02/03 00:22:14   7001
PRI SVC AUDIT TIMEOUT   00/00    -     -      02/04 00:22:14   7001
SOFTWARE COLD START     00/00    -     -      02/04 00:21:14   0003
SOFTWARE COLD START     00/00    -     -      02/04 00:21:14   0003
PRI SVC AUDIT TIMEOUT   00/00    -     -      02/04 00:21:14   7001
SOFTWARE COLD START     00/00    -     -      02/04 00:22:11   0003
PRI SVC AUDIT TIMEOUT   00/00    -     -      02/08 00:00:53   7001
TIMEOUT COLD START      00/00    -     -      03/11 00:04:08   0001
PRI SVC AUDIT TIMEOUT   00/00    -     -      03/11 00:04:14   7001
TIMEOUT COLD START      00/00    -     -      03/21 00:22:14   0001
PRI SVC AUDIT TIMEOUT   00/00    -     -      03/03 00:22:14   7001
PRI SVC AUDIT TIMEOUT   00/00    -     -      03/04 00:22:14   7001
SOFTWARE COLD START     00/00    -     -      03/04 00:21:14   0003
SOFTWARE COLD START     00/00    -     -      03/04 00:21:14   0003
PRI SVC AUDIT TIMEOUT   00/00    -     -      03/04 00:21:14   7001
SOFTWARE COLD START     00/00    -     -      03/04 00:22:11   0003
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
  Authorization Code Information Report   **Page F-37**

Authorization Code Information Report

Print Menu Option: Auth Code

```
SMDR Option for the Account Code Field is Home Extension

Extension          Authorization Code
10                 3124
15                 1357921
20                 6578
23                 443796
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
BRI Information Report

Page F-38

BRI Information Report

Print Menu Option: BRI

```
                BRI INFORMATION

Flexible Timers:
T200 = 1000 ms   T203 = 33 sec   T303 = 4 sec T305 = 30 sec T308 = 4 sec

Fixed Timers and Counters:
T202 = 2 sec   T309 = 90 sec   T310 = 60 sec   T313 = 4 sec
K Cntr = 1     N200 = 3        N201 = 260      N202 = 3

        Line     Service Profile ID      Directory Number
        801      908555100001            9085551000
        802      908555100101            9085551001
        803      908555100201            9085551002
        804      908555100301            9085551003
        805      908555100401            9085551004
        806      908555100501            9085551005
        807      908555100601            9085551006
        808      908555100701            9085551007
```

MERLIN LEGEND Communications System Release 5.0
Feature Reference 555-650-110

Issue 1
June 1997

F Sample Reports
Switch 56 Data Information Report

Page F-39

Switch 56 Data Information Report

Print Menu Option: Switch 56

```
Dial Plan Routing for Network Service

        Expected Digits:  3
        Digits to Delete: 0
        Digits to Add:    0

Trk   ss/pp   Dirction   InType   OutType   AnsSup   Discnt   Inmode   Outmode   Service
801   02/01   2 Way      Wink     Wink      120      180      T-Tone   T-Tone    TIE
802   02/02   Outgoing   Delay    Delay     160      180      Rotary   T-Tone    S56
803   02/03   Incoming   Auto     Auto      100      140      Rotary   Rotary    S56
.
.
.
808   02/08   2 Way      Wink     Wink      120      180      Rotary   Rotary    TIE
```

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F Sample Reports
Switch 56 Data Information Report

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G   Button Diagrams

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Button Diagrams

G

This appendix contains the button diagrams for Hybrid/PBX, Key, and Behind Switch systems.
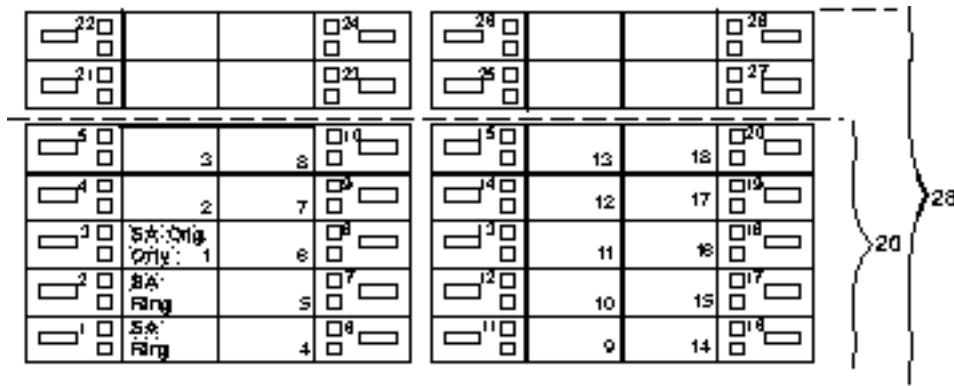
Figure G–1.   MLX-20L and MLX-28D Telephone Button Diagram (Hybrid/PBX Mode)

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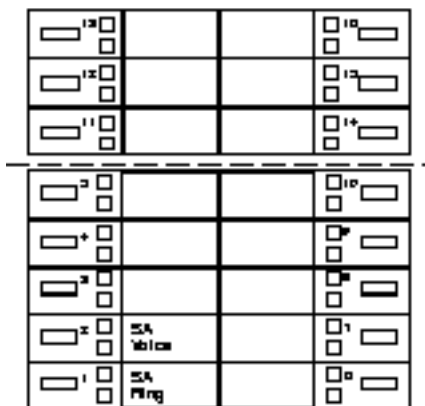
Figure G–2.   MLX-16DP Telephone Button Diagram (Hybrid/PBX Mode)
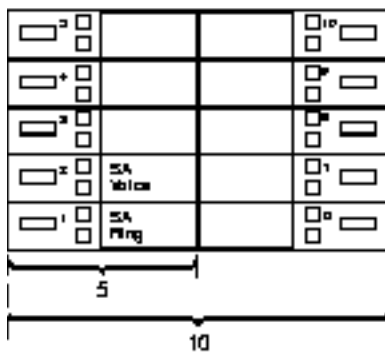
Figure G–3.   MLX 5- and 10-Button Telephone Button Diagram (Hybrid/PBX Mode)

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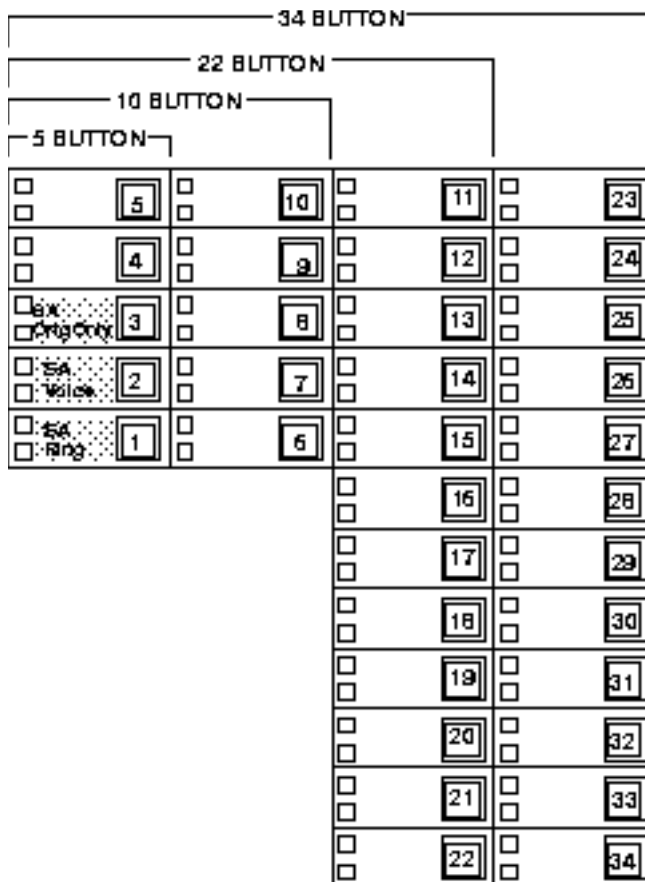
Figure G–4.   Analog Multiline Telephone Button Diagram (Hybrid/PBX Mode)

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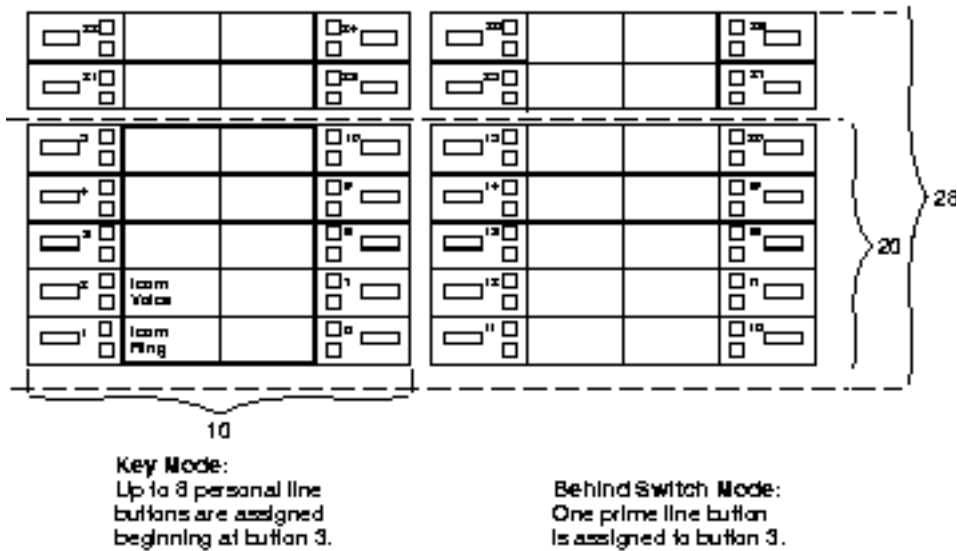
Figure G–5.   MLX-20L and MLX-28D Telephone Button Diagram (Key and Behind Switch Modes)
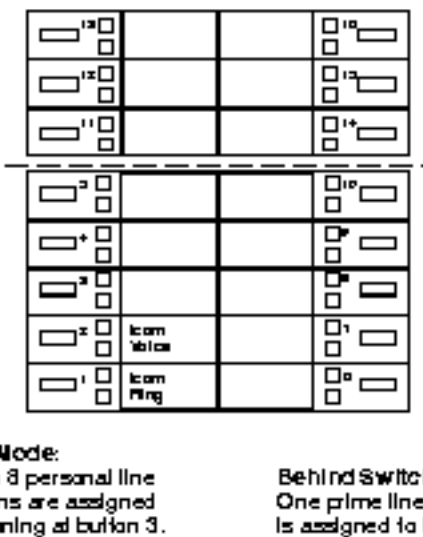
Figure G–6.   MLX-16DP Telephone Button Diagram (Key and Behind Switch Modes)

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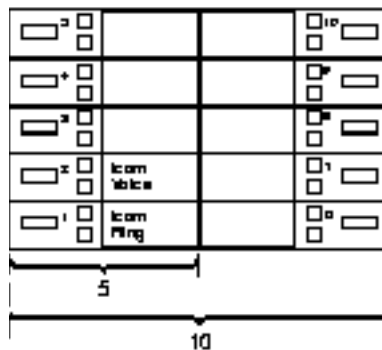
Behind Switch Mode:
One prime line is assigned
to button 3

Figure G–7.   MLX 5- and 10-Button Telephone Button Diagram (Key and Behind Switch Modes)

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Figure G–8. Analog Multiline Telephone Button Diagram (Key and Behind Switch Modes)

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H Programming Special Characters
Single-Line Telephones

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Programming Special Characters

H

This appendix provides the special characters used in dialing sequences for numbers dialed automatically, such as on Auto Dial buttons. The characters allowed depend on the type of telephone.

Single-Line Telephones

Some dialing sequences need special characters. For example, the user presses and releases either the **Recall** or **Flash** button or the switchhook to insert a Pause character in a dialing sequence after a dial-out code to allow the system to seize an outside line/trunk before dialing the number

Table H–1.   Special Characters for Single-Line Telephones

Press ...	Means ...
Recall, **Flash**, or switchhook[1]	**Pause.** Inserts a 1.5-second pause in the dialing sequence. Multiple consecutive pauses are allowed.
#	**End of Dialing.** Used to signal the end of the dialing sequence or to separate one group of dialed digits from another, such as an account code from a telephone number.

1.   On single-line telephones with positive or timed disconnect (such as the 2500YMGL) the **Recall** or **Flash** button, instead of the switchhook, must be used.

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Analog Multiline Telephones

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Analog Multiline Telephones

Some dialing sequences need special characters. For example, the user presses
Hold to insert a Pause character after the dial-out code in a dialing sequence to
allow the system to seize an outside line before dialing the number. A Pause
character can also be used to separate a telephone number from an extension
number.

Table H–2. Special Characters for Analog Multiline Telephones

Press...	See[1]...	Means...
Drop[†]	s	**Stop.** Inserts a Stop within a sequence of automatically dialed numbers. For example, an outside Auto Dial button may be programmed with a password, then a Stop, then a telephone number. To use Auto Dial with a Stop in the sequence, the user presses the button to dial the password, listens for the dialing and connection, and presses the button again to dial the number.
Hold	p	**Pause.** Inserts a 1.5-second pause in the dialing sequence. Multiple consecutive pauses are allowed.
Conference[2]	f	**Flash.** Sends a switchhook flash. Must be the first entry in the dialing sequence.
##	#	**End of Dialing for Auto Dial buttons.** Used at the end of a dialing sequence to indicate that the user has finished dialing or to separate one group of dialed digits from another.
#	#	**End of Dialing.** Used at the end of a dialing sequence to indicate that the user has finished dialing or to separate one group of dialed digits from another.

---

1. Display telephones only
2. Not available on MLC-5, MDC 9000, and MDW 9000 cordless and cordless/wireless telephones

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H Programming Special Characters
   MLX-10 and MLX-5 Nondisplay Telephones

Page H-3

MLX-10 and MLX-5 Nondisplay Telephones

Some dialing sequences need special characters. For example, the user presses **Hold** to insert a Pause character after the dial-out code in a dialing sequence to allow the system to seize an outside line before dialing the number. A Pause character can also be used to separate a telephone number from an extension number.

Table H–3. Special Characters for MLX-10 and MLX-5 Nondisplay Telephones

Press...	Means...
Drop	**Stop.** Halts the dialing sequence to allow for system response.
Hold	**Pause.** Inserts a 1.5-second pause in the dialing sequence. Multiple consecutive pauses are allowed.
Conf	**Flash.** Sends a switchhook flash. Must be the first entry in the dialing sequence.
#	**End of Dialing for extension programming only.** Used at the end of a dialing sequence to indicate that the user has finished dialing or to separate one group of dialed digits from another.
##	**End of Dialing.** Used to signal the end of the dialing sequence or to separate one group of dialed digits from another.

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H   Programming Special Characters
  MLX Display Telephones

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MLX Display Telephones

Some dialing sequences need special characters. For example, the user presses
Hold to insert a Pause character in a dialing sequence after a dial-out code to
allow the system to seize an outside line before dialing the number. A Pause
character can also be used to separate a telephone number from an extension
number.

Table H–4. Special Characters for MLX Display Telephones

Press ...	See ...	Means ...
Drop	s	**Stop.** Halts the dialing sequence to allow for system response.
Hold	p	**Pause.** Inserts a 1.5-second pause in the dialing sequence. Multiple consecutive pauses are allowed.
Conf	f	**Flash.** Sends a switchhook flash. Must be the first entry in the dialing sequence.
#	#	**End of Dialing for extension programming only.** Used at the end of a dialing sequence to indicate that the user has finished dialing or to separate one group of dialed digits from another.
##	#	**End of Dialing.** Used to signal the end of the dialing sequence or to separate one group of dialed digits from another.

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I Applications

Page I-1

Applications

I

This appendix provides an *overview* of the applications that you can connect to the system or that were available in the past. For complete information about the use of any application discussed here, refer to the documentation for that product.

The system supports the following applications for enhanced call-handling and system management capabilities:

- PassageWay Direct Connection Solution (see page I–5)

- Standalone voice messaging applications (see "Voice Messaging Systems" on page I-7 and "MERLIN MAIL and MERLIN LEGEND MAIL" on page I-11)

- Standalone call accounting and management applications (see "Call Accounting System" on page I-21, "Call Accounting Terminal" on page I-25, and "Call Management System" on page I-28)

  > **NOTE:**
  > Call Management System (CMS) is no longer available for sale. The information included here is intended for existing installations and for technician reference.

- Standalone telephone facilities and call-response management application for Windows (Release 4.2 and later systems only, see "MERLIN LEGEND Reporter" on page I-31)

- Standalone system management application: System Programming and Maintenance (SPM) for DOS (see "System Programming and Maintenance" on page I-37)

- Standalone automated attendant (see "Lucent Technologies Attendant" on page I-18)

- Integrated applications

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— Integrated Solution II (IS II) applications (see page I–39)

  □ AUDIX Voice Power

  □ CAS

  □ SPM

— Integrated Solution III (IS III) applications (see page I–45)

  □ AUDIX Voice Power

  □ IS CAS

  □ SPM

  □ Fax Attendant

  □ Integrated Voice Power

> ➡ **NOTE:**
> IS II and IS III are no longer available for sale. The information
> included here is intended for existing installations and for
> technician reference.

— Intuity (see page I–53)

  □ AUDIX Voice Messaging

  □ Intuity CAS

  □ Lodging

  □ Fax Messaging

  □ Intro Voice Response

  □ Message Manager

■ Intuity CONVERSANT (see page I–58)

■ Group IV (G4) fax (see page I–53)

■ Videoconferencing (see page I–60)

■ Standalone fax and imaging services:

— MERLIN PFC Telephone (see page I–55)

— Picasso Still-Image Phone (see page I–59)

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Applications
Organization of Descriptions

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■ Data communications devices:

— ExpressRoute 1000 ISDN Terminal Adapter (see page I–69)

⇒ **NOTE:**
The ExpressRoute 1000 is no longer available for sale. The
information included here is intended for existing installations and for
technician reference.

— Ascend Pipeline 25-Px access device (see page I–72)

Organization of Descriptions

The following sections provide a brief description of each application, service, or
system. Most descriptions include the subheadings below. When a subheading
does not pertain to a given application, it does not appear.

■ **Mode Differences.** Lists any differences or limitations of the application in
Key, Hybrid/PBX, or Behind Switch modes of operation.

■ **Considerations and Constraints.** Discusses restrictions, capacities, and
other information that you should consider before installing or using the
application.

■ **Feature Interactions.** Provides information about system and telephone
features that affect how the application works and notes any features that
do not work with the application.

■ **System Programming.** Provides an outline of the system programming
required to set up the application.

■ **Platform Requirements.** Lists the hardware and software required to
connect the application to the system.

Also see *System Planning* for planning instructions, *System Programming* for
complete system programming instructions, and the documentation provided with
the application for connection diagrams and installation instructions.

System Support for Applications

Table I–1 summarizes the system's capacity to support each application and
identifies the modes of operation in which you can use the application.

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I Applications
System Support for Applications

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Table I–1. Application Capacities and Modes of Operation

Application	Capacity	Key	Hybrid /PBX	Behind Switch
PassageWay Direct Connection Solution	127 (MLX only)	✔	✔	✔
MERLIN MAIL VMS R3	1 (2, 4, or 6 jacks)*	✔	✔	
Number of mailboxes	100			
MERLIN LEGEND MAIL VMS	1 (2, 4, or 6 jacks)*	✔	✔	
Number of mailboxes	100			
MERLIN LEGEND Reporter	1		✔	
Lucent Technologies Attendant	4*	✔	✔	
CAS Plus V3/CAS for Windows	1	✔	✔	✔
CAT	1	✔	✔	✔
CMS[†]	2	✔	✔	
Number of lines/trunks (each)	28			
Number of agents (each)	28			
Number of external alerts (each)	4			
SPM (standalone)	1	✔	✔	✔
IS II[†]	1	✔	✔	
AUDIX Voice Power	1	✔	✔	
Number of mailboxes	300			
Integrated Voice Power	1	✔	✔	
Automated Attendant	1	✔	✔	
IS CAS	1	✔	✔	
SPM	1	✔	✔	
IS III[†]	1	✔	✔	
AUDIX Voice Power	1	✔	✔	
Number of mailboxes	300			
CAS IS III	1	✔	✔	
SPM	1	✔	✔	
Fax Attendant	1	✔	✔	
Intuity	1	✔	✔	
Group IV (G4) fax		✔	✔	
Videoconferencing			✔	
Intuity CONVERSANT	1	✔	✔	
ExpressRoute 1000[†]	127	✔	✔	
Pipeline 25-Px	127	✔	✔	

---

* These attendant applications are mutually exclusive. MERLIN LEGEND MAIL includes a jack in addition to those listed; it is used for the application's modem. Although MERLIN MAIL and MERLIN LEGEND MAIL can support up to 100 mailboxes, 60 are recommended.

† These applications are no longer available for purchase.

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Supported Printers   Page I-5

Supported Printers

The following table shows the printers that are supported with the optional applications discussed in this chapter. For many applications, a comparable printer can be used, rather than the specific product listed below.

Table I–2. Applications Printers

Printer	Document No.	Description
Lucent Technologies CAS Printer	582-421-105	9-pin dot matrix printer that provides choice of print quality and speed. Uses parallel connection to the computer.
Lucent Technologies Applications Printer	582-421-106	9-pin dot matrix printer that provides choice of print quality and speed. Has wide carriage that accommodates pin-feed paper up to 14 7/8 in. (37.8 cm) wide. Uses parallel connection to the computer.
Call Accounting Terminal (CAT) Printer	582-421-100	9-pin dot matrix printer that provides choice of print quality and speed. Uses serial connection to the computer.

PassageWay Direct Connection Solution

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

NOTE:
This entry describes PassageWay Direct Connection Solution, Release 2. This version must be used with MERLIN LEGEND Communications System, Release 3.0 and later. PassageWay Direct Connection Solution Release 1.0 can be used with Release 2.1 MERLIN LEGEND Communications Systems.

PassageWay Direct Connection Solution is a collection of software applications and a hardware adapter. It provides an API (applications programming interface) link between a PC with Windows 3.1 or later and the MERLIN LEGEND Communications System through an MLX-28D, MLX-20L, MLX-16DP, or MLX-10DP telephone.

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PassageWay Direct Connection Solution

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PassageWay Direct Connection Solution includes these applications:

- **Call.** A cardfile application that enables you to maintain information such as names, addresses, and telephone numbers. You specify the information that you want to store. With Call, you can place a call directly from the PC and keep a log of all outgoing calls.

- **Set.** A telephone programming application that enables you to program telephone features for your telephone from your PC. You can also create and save multiple-button programming files for your telephone and can exchange these files with other Set users.

- **Log Viewer.** An application that enables you to view the entries stored in the PassageWay Direct Connection Solution call log. The call log stores a record of every call you make using Call.

- **Connect.** Management software that provides both the basis for other PassageWay Direct Connection Solution software applications and the diagnostic features to troubleshoot these applications. Auto dialing capabilities using the Hayes-compatible command set are also provided.

- **Buzz.** You can manage incoming calls (answer, hold, or drop) and view the calling party number (Caller ID) for each incoming call at your telephone.

Considerations and Constraints

If there are problems connecting PassageWay Direct Connection Solution to a communications port, see the PassageWay Direct Connection Solution manual for information on PC serial ports.

Feature Interactions

Idle Line Preference   Your MLX telephone should have Idle Line Preference activated. With Idle Line Preference activated, the system automatically selects a line for outgoing calls when you go off hook.

The system manager should set Automatic Line Selection on your telephone so that your Idle Line Preference is on an **ICOM** button (in Key or Behind Switch mode) or an **SA** button (in Hybrid/PBX mode). Ensuring that Automatic Line Selection is set to an **ICOM** or an **SA** button means you can make both inside and outside calls via Lucent Technologies Call. (You make outside calls on an **ICOM** or **SA** button by dialing *9*.)

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Platform Requirements

To use PassageWay Direct Connection Solution on the system, you must have the following components:

- A Lucent Technologies-approved personal computer (PC) with a 286, 386, or more powerful microprocessor and:

- Microsoft Windows, version 3.1 or later

- MLX-16DP, MLX-28D, MLX-20L, or MLX-10DP telephone connected to the system

- PassageWay Direct Connection Solution software

- PassageWay Direct Connection Solution adapter

- 9-pin to 25-pin adapter

- 4-foot, 4-pair keyed modular phone cord (D8AC)

Additional MERLIN LEGEND Communications System requirements are:

- MLX telephones must be wired with 3- or 4-pair extension wiring; otherwise local telephone power is required.

- If you use a console and DSS, local telephone power is required.

Voice Messaging Systems

IMPORTANT:
This section is intended solely as an overview of the applications. For comprehensive information about the use of the applications, see the documentation for the products.

⚠ SECURITY ALERT:

Your voice messaging system permits callers to leave verbal messages for system users or gain access to the backup position in an emergency as well as create and distribute voice messages among system users.

The voice messaging system, through proper programming, can help you reduce the risk of unauthorized persons gaining access to the network. However, phone numbers and authorization codes can be compromised when overheard in a public location or are lost either through theft of a wallet or purse containing access information or through carelessness (writing codes on a piece of paper and improperly discarding them). Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Substantial charges can accumulate quickly. It is your responsibility to take appropriate steps to implement the features properly, evaluate and program the various restriction levels, protect and carefully distribute access codes.

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Voice Messaging Systems

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*Under applicable tariffs, you are responsible for payment of toll charges.
Lucent Technologies cannot be responsible for such charges and will not
make any allowance or give any credit resulting from unauthorized access.*

*To reduce the risk of unauthorized access through your voice messaging
system, please observe the following procedures:*

- *Employees who have voice mailboxes should be required to use
  passwords to protect their mailboxes.*

- *The administrator should remove any unneeded voice mailboxes
  from the system immediately.*

- *AUDIX Voice Power has the ability to limit transfers to subscribers
  only. You are strongly urged to limit transfers in this manner.*

- *Monitor SMDR reports or Call Accounting System reports for
  outgoing calls that might be originated by voice messaging ports.*

A voice messaging system (VMS) provides call-answering services and may
provide voice mail services. Each of the following VMS applications connects to
an enhanced T/R port, called a *voice messaging interface (VMI)* port:

- MERLIN MAIL Voice Messaging System

- MERLIN LEGEND MAIL Voice Messaging System (supplies its own ports
  with its own module)

- Lucent Technologies Attendant

- AUDIX Voice Power

- Integrated Voice Power (IVP) Automated Attendant

You can program T/R ports on a 012, MERLIN LEGEND MAIL, or 016 module as
either *generic* VMI ports or *integrated* VMI ports. MERLIN MAIL, MERLIN
LEGEND MAIL, and AUDIX Voice Power use streams of touch-tone codes, called
mode codes, to communicate with the control unit. Because these applications
use mode codes, you must connect the hardware to integrated VMI ports. You
can connect Lucent Technologies Attendant and IVP Automated Attendant, which
do not use mode codes, to generic VMI ports. See Table I–6 on page I-21.

> ⚠ **SECURITY ALERT:**
> *Beginning with Release 2.1, a 012 or 016 port that is programmed as a
> generic VMI port can transfer an outside call to an outside number.
> Previously, only VMI ports programmed as integrated VMI ports could do a
> trunk-to-trunk transfer. A single-line telephone connected to an integrated
> VMI port can complete trunk-to-trunk transfers. In Release 3.1 and later
> systems, the default setting disables trunk-to-trunk transfers from these
> ports.*
>
> *Calling restrictions (for example, Disallowed Lists, Toll Restriction, Facility
> Restriction Levels) should be programmed, as appropriate, to minimize toll
> fraud abuse, especially if a single-line telephone is connected to an*

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> integrated VMI port. Refer to this guide for additional information on
> programming calling restrictions.

A VMS requires touch-tone receivers (TTRs); the number it requires depends on
the number of VMI ports, as shown in Table I–3. These TTR requirements apply
only to a VMS; they do *not* include the TTR needs of T/R sets.

Table I–3.   TTRs Required by Voice Messaging Systems

No. of VMI Ports	No. of TTRs Required
1	1
2	1
3	2
4	2
6	3
8	4
12	6

Table I–4 identifies the modules and the number of TTRs each supplies. MERLIN
LEGEND MAIL modules' TTRs are available as system resources, but the 4-port
configuration requires both the TTRs supplied on the MERLIN LEGEND MAIL
module; the 6-port configuration requires an additional TTR, not supplied by the
MERLIN LEGEND MAIL module.

Table I–4.   Modules with TTRs

Module	Number of TTRs
008 OPT	2
012	2
016	4
MERLIN LEGEND MAIL	2
400 GS/LS/TTR	4
400	4
800 DID	2
800 GS/LS-ID	2

➤ **NOTE:**
A voice messaging system cannot be directly connected to a 008 OPT
module. However, the TTRs supplied by the 008 OPT module can be used
by the voice messaging system.

The following symptoms indicate that the system needs more TTRs:

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- Single-line telephone users do not get dial tone when trying to dial out.

- The voice messaging system fails to transfer calls.

- Calls fail to ring or go to coverage prematurely.

Voice Messaging Interface (VMI) Port Capabilities

VMI ports use switchhook flashes for Hold, Transfer, Conference, and Drop in the same way single-line telephones do. VMI ports also have the ability to perform transfer redirection, to respond to far-end disconnect, and, in the case of integrated VMI ports only, to send call information and mark a port in or out of service. The following sections describe these capabilities. Beginning with Release 2.1, both integrated and generic VMI ports can perform trunk-to-trunk transfer.

> ⟹ **NOTE:**
> A 016 module can ring all 16 ports simultaneously. On a 012 or MERLIN LEGEND MAIL module, only four ports can ring simultaneously (sufficient for the 6-port configuration of the MERLIN LEGEND MAIL module). If you are using an attendant or voice messaging system that requires eight of the 012 jacks on a single module, you should not use the remaining jacks on the module. If the application uses fewer than 8 jacks, you may use the remaining jacks for T/R devices such as single-line telephones.

Transfer Redirect

If unanswered by the end of the transfer redirect time interval (0–9 rings), a call transferred from a VMI port alerts at the VMS transfer redirect extension, rather than returning to the VMI port that originated the transfer. For example, you might program Extension 15 as a VMI port for a Lucent Technologies Attendant and set the transfer redirect time interval to four rings. When a call comes in on Extension 15, the caller listens to a recording and dials a request for Extension 24. The call rings at Extension 24 four times without being answered. The system redirects the call to Extension 10, the system operator; it does not redirect the call back to Extension 15.

On an unsupervised transfer (described in "Automated Attendant," later in this chapter), when the transfer destination is busy or is an invalid extension, the transfer redirect is immediate (no time interval). If the system cannot alert the transfer redirect extension (all buttons are in use), the VMS keeps trying to alert the transfer redirect extension every 20 seconds until the alert is delivered or the caller hangs up.

Far-End Disconnect

When the system detects a far-end disconnect signal on a line/trunk where a VMI extension is receiving a call, the system sends the disconnect signal to the VMI extension, whether or not that extension is the only party left on the call. If another

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MERLIN MAIL and MERLIN LEGEND MAIL

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party is still on the call, the VMS decides whether to continue or disconnect the party. (The far-end disconnect signal occurs only if you program the VMI port for Reliable Disconnect.) Loop-start lines must be programmed for Reliable Disconnect.

Ports In/Out of Service

When a group call to a VMI extension is not answered within 30 seconds, the call either is sent to another available VMI extension in the calling group or is queued back to wait for an available extension in the calling group.

For an integrated VMI extension, the control unit sends messages to inform the VMS that the extension is out of service. Both the VMS and the calling group software mark the unavailable port as out of service. If all VMI extensions go out of service, the system generates a hardware error report.

Every 10 minutes, the system tests each out-of-service VMI extension. If the extension responds to the test, the VMS and the calling group software mark it as *in service*. For an integrated VMI extension, the control unit informs the VMS by sending extension-in-service messages.

MERLIN MAIL and MERLIN LEGEND MAIL

IMPORTANT:
This section is intended solely as an overview of the applications. For comprehensive information about the use of the applications, see the documentation for the products.

The MERLIN MAIL and MERLIN LEGEND MAIL Voice Messaging Systems (VMSs) are standalone applications that provide the following integrated call-handling services:

- Automated Attendant Service

- Call Answer Service

- Voice Mail Service

The MERLIN LEGEND MAIL VMS supplies the same functionality as MERLIN MAIL VMS Release 3.0. However, it is packaged as a single, integrated module that plugs into the backplane of the MERLIN LEGEND Communications System control unit. The module resembles a 012 module; it replaces the hardware required to support MERLIN MAIL Release 3.0. The standard configuration includes two VMI ports, expandable to a total of 6 ports. In addition, the MERLIN LEGEND MAIL VMS includes an internal Remote Maintenance Device (RMD) for answering remote maintenance calls, a serial port for connecting a PC to the module, and a detachable disk drive for storing messages.

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Automated Attendant Service

Automated Attendant Service consists of one or more menus, providing callers with a number of options that allow them to quickly access an extension, a department, or information by pressing a single dialpad button. In MERLIN MAIL Voice Messaging System Release 3.0 and MERLIN LEGEND MAIL, there can be up to three Automated Attendants.

This service provides several major benefits, both to the callers and to the company:

■   Different greetings, menus, and announcements can be recorded to play during the day and night.

   For example, during the day you may want to tell callers to stay on the line for assistance by an operator. At night, when there may be no operator, you may want to tell callers to stay on the line to leave a message in the Automated Attendant General Mailbox.

■   Different greetings, menus, and announcements can be recorded to play for different incoming lines.

   For example, you may want to answer calls using one corporate name on one set of telephone numbers and answer calls using another name on a different set of telephone numbers.

■   Calls are routed efficiently to the correct party.

■   Incoming fax calls from machines that produce industry-standard fax (CNG) tones are recognized and automatically routed to the fax extension.

■   Using the Automated Attendant Touch-Tone Gate feature, callers on rotary phones or needing assistance are either automatically transferred to the system operator or Automated Attendant General Mailbox or disconnected, based on your company's preference.

■   If callers do not know the extension needed, they can either access a directory of subscribers or be transferred automatically to an operator.

■   Announcements of frequently requested information—such as directions or business hours—can be included as menu options, freeing an employee's time for other tasks.

■   Callers can be given the choice of two languages in which to hear prompts. These languages may be American English and Canadian French or American English and Latin-American Spanish.

■   You can set up the system to answer calls immediately or after a delay. If the system is set for delayed call handling, calls unanswered by the system operator are answered by an Automated Attendant after a specified number of rings.

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Call Answer Service

The system's Call Answer Service allows callers to leave messages or to transfer to another extension when the extension called is busy or does not answer. When a message is left, Call Answer Service deposits the message in the subscriber's voice mailbox, then lights the message-waiting indicator on the subscriber's phone. If the subscriber has Outcalling turned on, the system also places a call to up to five specified Outcalling numbers.

Bulletin Board mailboxes can be created to contain timely information, such as current teaching assignments from teachers or professors.

Guest mailboxes can be created for users who do not have their own extensions, such as temporary workers, contract workers, and consultants. They can receive messages from subscribers and outside callers, even if they do not have an actual extension in the system.

In addition to acting as an answering machine, Call Answer enables callers to perform any of the following actions:

- Press *0* for the subscriber's personal operator or the system operator.

- Transfer to another extension by dialing *∗T* (or *∗8*) before or after leaving a message.

- Review and edit messages before depositing them in the voice mailbox.

Voice Mail Service

Voice Mail Service lets subscribers do the following:

- Listen to messages from nonsubscribers and other subscribers.

- Record their own personal greetings and names.

- Forward a received message to one or more subscribers, with additional comments, if desired.

- Assign their own passwords, which they can change to ensure that messages are kept confidential.

- Create a message and send it to one or more subscribers.

- Choose an extension to be a personal operator that receives calls when a caller dials *0* after reaching the subscriber's mailbox.

- Designate up to five telephone numbers and/or pager/beepers that are notified when a new message arrives in the subscriber's mailbox.

Mode Differences

The system must operate in Key or Hybrid/PBX mode. You cannot connect MERLIN MAIL or MERLIN LEGEND MAIL to a system operating in Behind Switch mode.

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Considerations and Constraints

The MERLIN MAIL and MERLIN LEGEND MAIL VMSs are available in 2-port, 4-port, and 6-port configurations. The 2-port and 4-port configurations have 6 hours of message storage capacity, and the 6-port configuration has 10 hours of message storage capacity.

The size of a subscriber's mailbox—that is, the total amount of storage for all the messages it can hold—is variable. Available options are 5, 10, or 15 minutes; 5-, 10-, or 60-minute *total* storage is available for mailboxes.

Callers with rotary telephones whose calls are answered by the Automated Attendant Touch-Tone Gate cannot use the features of the MERLIN MAIL or MERLIN LEGEND MAIL VMS. The application should be set up to direct these calls to the system operator during business hours.

Each Automated Attendant answers calls immediately (immediate call handling) or after a delay (delayed call handling).

You program the VMS with a touch-tone telephone. To support remote diagnostics, the MERLIN MAIL VMS is equipped with an RS-232 serial port and an external remote maintenance device (modem). The MERLIN LEGEND MAIL VMS is equipped with a 9-pin RS-232 serial port and a 1,200-baud internal remote maintenance device.

You should assign Disallowed Lists to the VMI ports that connect to MERLIN MAIL or to MERLIN LEGEND MAIL voice messaging systems. Restrict or toll-restrict the VMI ports and then assign Allowed Lists as necessary. This prevents toll calls from being dialed through the VMS and permits the application to call out only to the area codes or numbers you specify. If Automatic Route Selection is being used, apply the appropriate Facility Restriction Levels. See *MERLIN MAIL Voice Messaging System Release 3 Planning, Installation, and Use* for more details.

You cannot use MERLIN MAIL or MERLIN LEGEND MAIL VMS with Lucent Technologies Attendant.

Feature Interactions

Coverage   Use system programming to assign all extensions that need coverage to a coverage group. The system does not do this automatically. It assigns the VMS ports to a calling group and designates the VMS as the coverage receiver for the coverage group.

Subscribers can program their telephones so that only outside calls are sent to coverage.

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In Release 2.0 and later, when subscribers activate Coverage VMS Off for their telephones, normally covered outside calls are not covered. No special programming is needed on MERLIN MAIL or MERLIN LEGEND MAIL to activate this feature.

Group Calling

Use system programming to assign the MERLIN MAIL or MERLIN LEGEND MAIL VMI ports to the same calling group.

With integrated VMI ports, mode codes identify coverage calls that overflow from one calling group to another calling group. As a result, the overflow calling group's number appears in the Called Party field of the mode code.

Leave Message

If the target telephone does not have display capabilities, the Leave Message feature sends mode codes to the MERLIN MAIL or MERLIN LEGEND MAIL VMS to deposit a message.

In Release 2.0 and later, when the MERLIN MAIL or MERLIN LEGEND MAIL VMS sends a Leave Message notification to an extension, the system identifies the VMS calling group as the sender of the message. As a result, when a subscriber uses the Return Call feature, the call goes to any available VMS port, not just to the port that generated the message. This reduces the chance of getting a busy port.

Night Service

Each MERLIN MAIL or MERLIN LEGEND MAIL VMS Automated Attendant can work with the Night Service feature to provide specialized after-hours service. An Automated Attendant can answer calls on lines it does not handle during business hours. A special night announcement can greet after-hours callers.

Privacy

Privacy is automatic for all VMI ports.

Ringing Options

If lines set for answering by an Automated Attendant appear on telephones other than the system operator console or backup extension, program them for No Ring.

SMDR

In Release 4.2 and later systems, if an automated attendant or voice response unit transfers an outside call to an Auto Logout or Auto Logout calling group and the Talk Time option is enabled, a call record is created in the same way that it is for other incoming calls to this type of group.

Transfer

If a call received on a line/trunk is transferred to a VMI port, the direct inside access mode code is sent. The call is treated as a transferred call, and the caller hears the greeting assigned for callers within the system.

You can program any calling group, calling group member, or extension as a VMS transfer redirect extension. If the extension is a QCC, the VMS forwards the transfer redirect call to the QCC as a returning call and places it in the QCC queue.

If a transferred caller gets no answer and returns to the system operator, the operator has no indication of the origin of the call.

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System Programming

Complete the following procedures so that MERLIN MAIL or MERLIN LEGEND MAIL VMS can work on your system. Refer to *System Programming* for complete procedures.

- Assign all VMS ports to a calling group, set the group type to VMI Integrated, and set the hunt type to Linear.

- Program loop-start lines for reliable disconnect.

- Specify the touch-tone duration and interval between digits in codes sent between the MERLIN MAIL or MERLIN LEGEND MAIL VMS and the system.

- Specify the VMS transfer return interval. This is the number of rings before a call transferred by the MERLIN MAIL or MERLIN LEGEND MAIL VMS is sent to the system operator.

- Set inside (intercom) dial tone to Outside.

- Assign Disallowed Lists to each VMI port not used for Outcalling.

- Assign Facility Restriction Levels to each VMI port.

- When you use an Automated Attendant only for Night Service:

  — If the lines/trunks set for answering by Automated Attendant service appear at other extensions, set the No Ring option for the other extensions.

  — Specify Immediate Answer (one ring) for the VMI ports.

  — Specify the VMS calling group as the Night Service operator.

Platform Requirements

MERLIN MAIL Voice Messaging System

To connect the MERLIN MAIL VMS to the system, you need the following equipment:

- MERLIN MAIL VMS unit

- Remote maintenance device (a modem and power supply)

- Modem cable with a 9-pin connector at one end and a 25-pin connector at the other, to connect the remote maintenance device to the serial port on the MERLIN MAIL VMS unit

- D4BU modular cords (two for a two-port system, four for a four-port system, or six for a six-port system, plus one for the remote maintenance device)

- ■　A 016 or 012 module (and ring generator, if the module is an older one that has the apparatus code 517C13, 517D13, 517E13, or 517F13). Current 012 modules [apparatus code 517G13 (28) or higher-lettered code] include built-in ring generators and work with all releases of the system. Models 517A13 and 517B13 cannot be used with Release 3.0 or later.

➡ **NOTE:**
The system may require additional TTRs to allow the 012 module to handle a large number of voice connections. Two TTRs are provided on the 012 module. Four TTRs are provided on the 016 module. For more information about planning TTRs, see <u>Table I–3 on page I-9</u>.

MERLIN LEGEND MAIL
Voice Messaging System

To connect the MERLIN LEGEND MAIL VMS to the system, you need the following equipment:

- ■　MERLIN LEGEND MAIL VMS module with 2 VMI ports, 2 TTRs, and built-in 1,200-baud remote maintenance device

- ■　MERLIN LEGEND MAIL VMS detachable disk drive

- ■　A 2-port or 4-port VMI expansion card (optional)

- ■　A domestic release of the MERLIN LEGEND Communications System that is functioning properly and has a 391A3 or newer power supply

- ■　One available slot in the control unit carrier

➡ **NOTES:**
1.　The system treats the MERLIN LEGEND MAIL module as a 012 module. It uses a maximum of seven ports, up to six VMI ports and one RMD port (port 7); ports 8 through 12 are not installed. Module ports cannot be used as standard extensions; you cannot plug any equipment into them. The system assigns 12 extension numbers to the module as a default.

2.　The system may require additional TTRs to allow the MERLIN LEGEND MAIL module to handle a large number of voice connections. Two TTRs are provided on the MERLIN LEGEND MAIL module, two TTRs on the 012 module, and four on the 016 module. For details about TTR requirements, see <u>Table I–3 on page I-9</u>.

Required Voice Messaging Interface (VMI) Ports

The number of required VMI ports depends on the number of incoming lines/trunks, the number of subscribers programmed for Automated Attendant service, and the number of busy-hour calls. <u>Table I–5</u> lists these requirements.

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**Table I–5.   Ports Required for MERLIN MAIL and MERLIN LEGEND MAIL
Voice Messaging Systems**

No. of VMI Ports Required	Incoming Lines/Trunks	No. of Subscribers or Busy-Hour Calls
2	1 to 6	1 to 20
4	7 to 18	21 to 60
6	19 and up	61 and up

Lucent Technologies Attendant

IMPORTANT:
This section is intended solely as an overview of the application. For
comprehensive information about the use of the application, see the
documentation for the product.

Lucent Technologies Attendant answers incoming calls and plays a menu of
recorded prompts. A caller can respond to the prompts by dialing touch tones.
The application then routes the call to an inside extension. Lucent Technologies
Attendant transfers callers with rotary telephones to a designated extension
(Route 0) for further call handling and routing.

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You can program Lucent Technologies Attendant to transfer calls in either of two ways:

- **Unsupervised Transfer.** The application dials the extension or department requested by the caller and disconnects. If the call is not answered or the extension is busy, the communications system routes the call to the redirect extension.

- **Supervised Transfer.** The application transfers the call and retrieves it if the transfer is unsuccessful. It then directs the call to another telephone, allows the caller a second route choice or plays a failed-transfer announcement, depending on how you program it.

Lucent Technologies Attendant can answer calls immediately *(primary call handling)* or after a delay *(secondary call handling).*

Mode Differences

The system must operate in Key or Hybrid/PBX mode. You cannot use Lucent Technologies Attendant on a system operating in Behind Switch mode.

Considerations and Constraints

You cannot connect Lucent Technologies Attendant to the system if AUDIX Voice Power, MERLIN LEGEND MAIL, or MERLIN MAIL is installed.

You can connect a maximum of four Lucent Technologies Attendants to the system.

You can program the application to answer every incoming call or only calls on certain lines/trunks.

You can route calls to an answering machine to allow callers to leave messages if a called extension is busy, if a call is unanswered, or if it is after business hours.

Lucent Technologies Attendant can transfer calls to fax machines if the fax extension number is specified and the caller dials it. The application does not automatically detect fax tones.

Lucent Technologies Attendant provides 64 seconds for recording up to five standard messages, including the caller greetings used during and after business hours, a hold announcement for a caller who is being transferred, a connect announcement for the department or extension receiving a transferred call, and an announcement explaining that a call cannot be completed.

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Feature Interactions

Coverage	An inside call on a VMI port that transfers to an inside extension does not go to coverage but continues to ring at the inside extension until the transfer redirect feature is configured.
	In Release 2.0 and later, outside calls that would normally proceed to Lucent Technologies Attendant as coverage calls do not do so if the telephone that sends the call to Group Coverage has activated Coverage VMS Off. No special programming is needed to activate this feature.
Forwarding	Remote Call Forwarding is supported on generic VMI ports.
Group Calling	Assign all Lucent Technologies Attendants on the system to the same calling group.
Night Service	Lucent Technologies Attendant works with the system's Night Service feature to provide specialized after-hours service. The application can answer calls on lines that it does not handle during business hours, or it can direct calls to a night extension or department, such as Building Security. A special night announcement can greet after-hours callers.
Privacy	Program Privacy for each Lucent Technologies Attendant VMI port.
SMDR	n Release 4.2 and later systems, if an automated attendant or voice response unit transfers an outside call to an Auto Logout or Auto Logout calling group and the Talk Time option is enabled, a call record is created in the same way that it is for other incoming calls to this type of group.
Transfer	If a caller incorrectly specifies the answering VMI port as the desired transfer destination extension, the VMI port may park the call.

System Programming

The following procedures must be completed for Lucent Technologies Attendant to function on your system. Refer to *System Programming* for complete procedures.

- Assign all Lucent Technologies Attendant ports to a calling group and set the group type to VMI Generic.

- Set inside dial tone to Outside.

- Designate a transfer redirect extension, such as the system operator, either to receive calls that were originally transferred to unanswered or busy extensions, or to receive calls when a caller fails to respond to the announcement.

- Program all calling groups as Auto Logout, which is the factory setting.

- Assign Privacy to each Lucent Technologies Attendant VMI port.

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Platform Requirements

To connect Lucent Technologies Attendant to the system, you need the following equipment:

- Lucent Technologies Attendant unit

- A 6-wire modular telephone cord

- A 012 module (and ring generator, if the module has the apparatus code 517F13). Current 012 modules [apparatus code 517G13 (28) or higher-letter or lower letter] include a built-in ring generator and work with all releases of the system.

> **NOTE:**
> The system may require additional TTRs to allow a 012 or 016 module to handle a large number of voice connections. Two TTRs are provided on the 012 module and four are provided on the 016 module. For guidelines on TTR needs, see Table I–3 on page I-9.

The number of Lucent Technologies Attendants that the system requires depends on the number of incoming lines/trunks and the number of busy-hour calls. One is normally sufficient for handling after-hours calls only and for delayed (secondary) call handling. Table I–6 shows the requirements when you program Lucent Technologies Attendant for primary (immediate) call handling.

Table I–6.   Lucent Technologies Attendants Required

Number of Attendants Required	Incoming Lines/Trunks	Busy-Hour Calls
2	1 to 6	1 to 25
3	7 to 9	25 to 50
4	10 to 12	50 to 100

Call Accounting System

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

A Call Accounting System (CAS) is a software application for businesses that need to manage telephone usage and control costs by tracking, sorting, and recovering telephone charges. CAS provides a menu-driven user interface and online help.

There are three versions of CAS:

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- ■ **CAS Integrated with IS III** (IS CAS). Starting with Release 1.2 of IS III, this application differs from two versions of CAS described below. Please also see for more information.

- ■ **CAS Plus V3.** This version, for general business use, is a standalone application that runs on a Lucent Technologies-approved DOS PC.

- ■ **CAS for Windows.** This version takes advantage of the easy-to-use graphical user interface of Microsoft Windows. It is also a standalone application that runs on a Lucent Technologies-approved DOS PC. It allows a single CAS system to be used for both local and remote business sites.

All three versions allow businesses to calculate the costs of calls using the rates charged by long-distance carriers in one of 11 major metropolitan areas. In addition, you can customize CAS for Windows, CAS Plus V3, and IS CAS by programming additional rate tables.

All three versions provide the following services and features:

- ■ **Call Record Processing.** This feature collects, stores, and produces records of calls, calculating costs using the selected rate table. You can program the system to process all calls or only calls that exceed a specified cost threshold. It can also add a service charge to calls before billing them to clients, departments, or projects.

  In addition, IS CAS collects and processes Automatic Number Identification (ANI) information as well as Caller Identification information provided by the 800 GS/LS-ID module and/or a DS1 module with PRI and Station Identification automatic Number Identification (SID/ANI) service. However, the availability of this information may be limited, depending on the legal jurisdiction and the equipment at the CO serving the caller. IS CAS also includes custom rate tables, required for the application.

- ■ **Report Generation.** This feature organizes and prints call record information in the following formats:

  — **System Management.** The system manager can customize and maintain CAS activities, by editing tables, setting up reports, and updating call rate information.

  — **Directory Lookup and Message Center.** Callers can look up anyone in the organization by name or extension, leave a message, and print or display messages.

- ■ **HackerTracker System for CAS Plus V3 and IS CAS.** Telephone systems with auto attendant, voice mail, or remote access lines are common targets for toll theft. HackerTracker is designed to help detect fraudulent use of the system by detecting abnormal calling activity and tracking authorization code usage.

CAS Plus V3

The following steps are necessary for implementation of Caller ID information and
CAS Plus V3 on the MERLIN LEGEND Communications System, Release 3.0
and later systems:

> **NOTE:**
> If your organization has PRI, BRI, or ICLID (loop-start with Caller ID
> service) lines/trunks, the system manager or programmer must create a
> customized facility name in the telephone system configuration in order to
> distinguish among the three types of calls. If this is not programmed, all
> three types of calls are costed and reported as ANI/ANIAB calls.

1. Program the Release 3.0 and later options, SMDR format for ISDN and
   SMDR call report for In/Out collection.

2. Install a new PBX/KTS interface, MERLIN LEGEND Communications
   System ISDN interface for the CAS Plus V3. To complete this task, you
   must have the PBX/KTS interface disk.

3. If necessary, update facility tables for the new ICLID line numbers under
   Telephone System Configuration in CAS. If your company has ISDN
   facilities, see the note that precedes these steps.

4. Program the dialed-digit processing (DDP) in CAS Plus V3 to identify the
   Caller ID calls that are completed (ANI) and those that are abandoned
   (ANIAB). Program the DDP records based upon how you want the calls to
   be displayed on CAS reports.

5. If your system is using MERLIN LEGEND Reporter, make sure that the
   SMDR Talk Time option is disabled.

6. Run a report to verify that Caller ID information is being processed and
   reported in CAS according to your needs and requirements.

Considerations and Constraints

You can connect only one CAS device to the system.

The system does not provide Station Message Detail Recording (SMDR) for calls
within the system.

The number of calls about which CAS can store information depends on the
amount of available disk space. In its largest configuration, CAS records data for
up to 5,000 extensions and 15,000 account codes.

MERLIN LEGEND Reporter and Call Accounting System (CAS) should not be
active on the system at the same time. Use MERLIN LEGEND Reporter when you
primarily need to assess facilities and agent performance. CAS is used for costing
purposes.

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Feature Interactions

Account Code Entry   CAS uses the account codes, entered by users before or during calls, to provide reports by account code.

SMDR   CAS collects call information from the SMDR output of the system. To collect Caller ID or ANI information, program SMDR to ISDN format.

Platform Requirements

To install CAS Plus V3 with the system, you need a Lucent Technologies-approved 386 PC, with:

- 132- or 80-column IBM-compatible graphics parallel printer

- D8W modular cord and 355AF adapter connecting the SMDR jack on the system to the COM1 serial port on the PC (CAS Plus V3 only; CAS IS III connects to the COM2 port).

To use CAS for Windows with the system, the following components are recommended:

- For a single-site system, an NCR 3315 PC (20-MHz 386) with 6 MB of RAM and a 120-MB hard disk

- For a multi-site system, an NCR 3332 PC (66-MHz 486) with 16 MB of RAM and a 340-MB hard disk

- VGA color monitor

- Bus mouse

- For a single-site system, a 120-MB tape drive

- For a multi-site system, a 525-MB tape drive

- Lucent Technologies Applications printer

For communications using CAS for Windows, the following components are recommended:

- For a single-site system, one parallel port and two built-in serial ports (DB9 for direct switch connection and DB25 for other connections)

- For a multi-site system, one parallel port and a four-port Equinox Mark-IV board with four RJ45 connections for direct switch hookup

- For remote diagnostics, a Remote Maintenance Board

- If a modem is used, a COMSPHERE 3830 or compatible

- If you are using the 9-pin port on your PC for the direct switch connection, you need a DB9-to-modular adapter.

- An RJ45 modular cable to connect the PC's COM1 port with the control unit's SMDR port

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For information on IS CAS, see .

Call Accounting Terminal

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

A Call Accounting Terminal (CAT) is a dedicated terminal and printer designed to track, sort, and print reports on telephone charges. See Figures I–1 and I–2.

Three versions of CAT are available:

- **CAT Basic.** This version is an entry-level system for small businesses.

- **CAT Plus.** This version is for larger businesses and includes a two-line display.

- **CAT Plus/Hospitality.** This version, for hotels and health care facilities, also includes a two-line display.

You can set up a CAT to calculate the cost of calls using toll rates or by-the-minute charges. The CAT can apply service charges and discounts to calls made to local and long-distance numbers and to directory assistance. It can also identify calls to specified area codes (such as 900) for special treatment.

You customize CAT with current local and long-distance rates for your company's location. As rates change or a new area code or exchange is added, you can update the rate information by exchanging a chip inside the terminal. When you add a new telephone line or account code to the system, the CAT automatically adds the information to its memory the first time the new line or code is used.

CAT provides a variety of reports that it can print on a regular schedule or automatically when call information reaches 90 percent of the terminal's storage capacity. The available reports include the following, depending on the version of CAT that you have:

- A variety of summary and detail reports. For example, CAT can print reports on all extensions or rooms, a single extension or room, account codes, time of day, duration, and line/trunk facility.

- Management analyses organize call information by time of day, cost and duration of calls, area codes and exchanges called, and line/trunk facilities.

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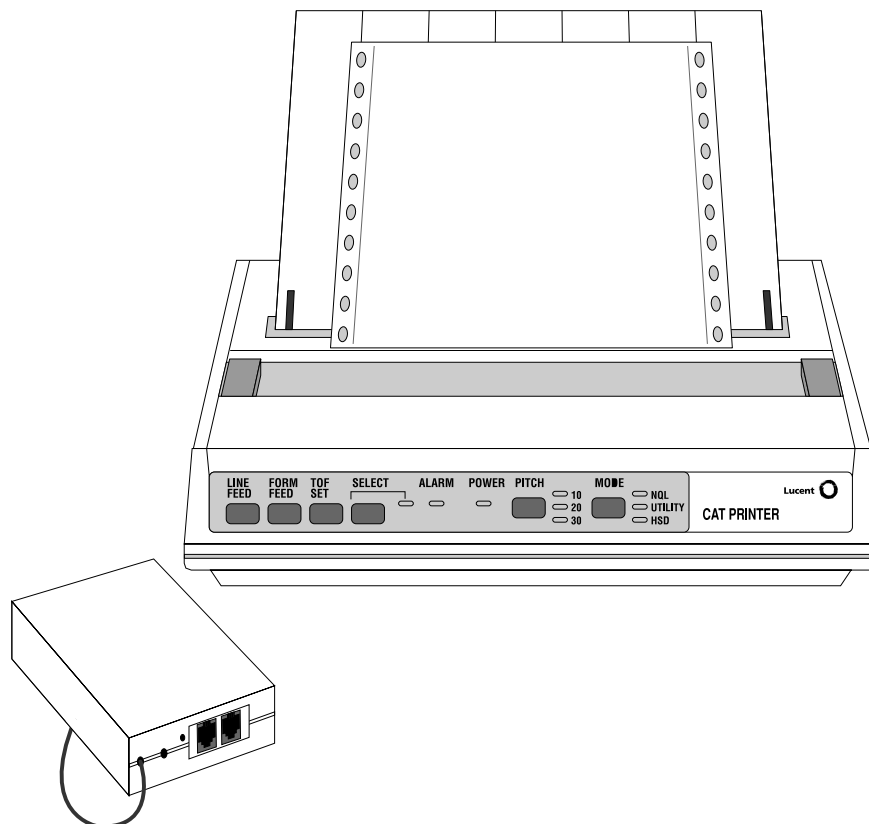
Figure I–1.   Call Accounting Terminal Basic

CAT can receive and process ANI information as well as Caller ID information provided by the incoming line identification from SMDR. The system gets such information from the AT&T Megacom 800 service, MCI or central office (DMS-100) PRI services (Release 4.2 and later systems only), or local telephone company loop-start line/trunk Caller ID services and puts it into the SMDR.

CAT Plus features an LCD display.

NOTE:
The availability of caller identification information may be limited by local-serving (caller's) jurisdiction, availability, or telephone company equipment.

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2-line LCD display
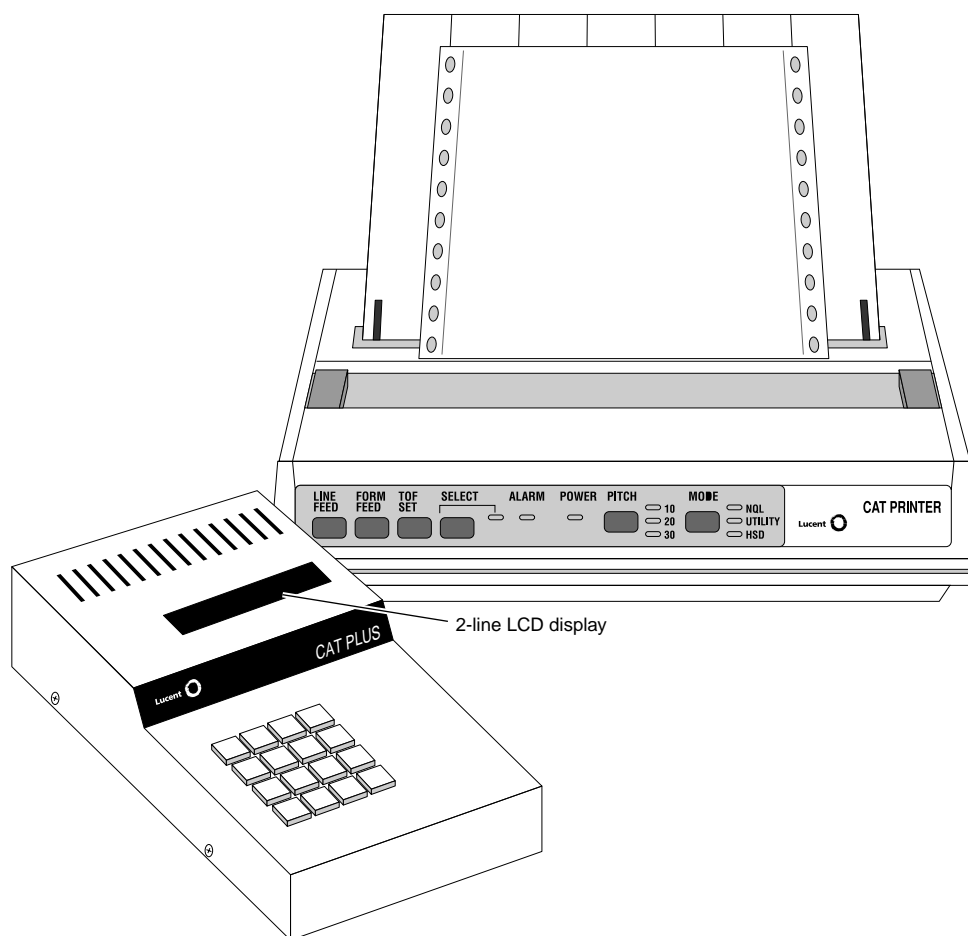
Figure I–2.   Call Accounting Terminal Plus

Considerations and Constraints

You can connect only one CAT to the system.

CAT Basic can store information about as many as 1,200 calls for 100 extensions and 49 lines.

CAT Plus/Business can store information about as many as 6,500 calls made from up to 200 telephones that share up to 49 lines. When 90 percent of this capacity is reached and 5,850 of these calls have been processed, reports are printed and memory is cleared. Any calls that come in during this process are held until reports are printed again.

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System Programming

Set SMDR options as follows:

- Select Basic or ISDN call report format. Select ISDN if you want ANI or Caller ID information reported.

- Specify the minimum call length to be recorded (10 seconds is recommended).

- Specify whether information is to be recorded for both incoming and outgoing calls or for only outgoing calls.

Feature Interactions

Account Code Entry   CAT uses the 9-digit account codes that callers enter before or during calls to associate calls with accounts and individuals; these codes appear on CAT reports.

SMDR   CAT collects call information from the SMDR output of the system.

Platform Requirements

To connect CAT to the system, you need the following equipment:

- CAT Basic, CAT Plus/Business, or CAT Plus/Hospitality

- CAT Printer

- D8W modular cord to connect CAT to SMDR port on the CU and 355AF adapter to connect CAT to the printer.

Call Management System

IMPORTANT:
This section is intended solely as an overview of the application, which is no longer available for sale. For comprehensive information about the use of the application, see the documentation for the product.

Call Management System (CMS) is a DOS-based application that simulates the actions of a system operator by answering calls and distributing them to individual agent extensions. If no agents are available, CMS puts calls on hold and, if programmed, plays a recorded announcement to the callers. When agents become available, CMS searches the system for the appropriate agent—usually the one who has been idle the longest—and transfers the call to that agent's extension.

CMS is designed for businesses with large groups of personnel who perform a common function, such as airline ticketing, filling catalog orders, or providing customer service. You can divide agents within these groups into *splits*, or subgroups, to handle different kinds of calls or customers. For example, you might

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divide the agents in a travel agency into three splits: one that handles personal vacations, one that handles business trips, and one that handles group charters. You can designate another split to provide support when call traffic is particularly heavy in the other splits. Calls come in to each split on a group of lines designated to ring into that split.

Agents make themselves available and unavailable to take calls by logging in and out. In addition, agents can enter the after-call work (ACW) state, which allows them to complete work on their last call without being interrupted by new CMS calls. You can set up the system so that agents are automatically in the ACW state whenever they complete a CMS call or so that agents must dial a feature code or press a programmed button to enter ACW.

CMS provides the following additional features:

- Management reports that analyze call volume and patterns and agent activity. Summary reports can span from 1 to 93 days.

- The Answer Delay option to specify how long a call rings before it is designated as unanswered and connected to the recorded announcement

- The Forced Delay option to connect all calls to the recorded delay announcement regardless of whether all agents are busy

- Priority lines to ensure that calls coming in on those lines are answered first

- Display of current agent activity on system status screens to allow monitoring, tracking, and analyzing of short- and long-term performance

- Music on Hold for callers waiting for available agents

- Allows connection of up to four external alerts to indicate an exception, for example, an LED that lights when the oldest call has waited longer than 30 seconds. Exception thresholds are programmed.

- Real-time dynamic reconfiguration, allowing you to modify the call flow on-line

Mode Differences

The system must operate in Hybrid/PBX or Key mode. You cannot connect CMS equipment to a system operating in Behind Switch mode.

Considerations and Constraints

You can connect a maximum of two CMSs to the system.

You must install CMS on a Lucent Technologies-approved DOS PC, which is dedicated to the application. You must connect the two CMS interface card ports on the PC to two analog multiline extension jacks on the same module in the control unit (008 or 408). These jacks must be system operator positions. If two system operator position jacks are not available on the same module, you must install another of these modules in the control unit to provide them.

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Each CMS can handle calls for up to 28 agents on up to 28 lines, and it can answer calls on two lines at the same time with the same announcement.

You can designate up to six agent splits for each CMS, with 28 agents per split.

The CMS supervisor's console is a Direct-Line Console (DLC). CMS agents can have any MLX telephone or any analog multiline telephone. You must connect agent telephones to the first 40 extension jacks on the control unit.

Lines/trunks ringing in to CMS can be loop-start, ground-start, T1-emulated ground-start, BRI, or PRI.

You can use up to four external alerts to alert agents and supervisors when the number of calls waiting in the queue reaches the programmed threshold.

You can use Lucent Technologies Attendant to direct callers to the appropriate CMS group by use of a *loopback* or *loop-around* arrangement, where Lucent Technologies Attendant transfers group calls to a tip/ring (T/R) port on a 012 or 008 OPT module that in turn rings a loop-start line assigned to CMS. Calls transferred in this way look like new outside calls to CMS. This also applies for DS1 applications using DNIS to route calls to CMS.

Connect a Music On Hold audio source and coupler to play music for callers waiting in the queue.

⇒ **NOTE:**
If such equipment is used to rebroadcast music or other copyrighted materials, it may be necessary to obtain a copyright license from or pay license fees to a third party, such as ASCAP or BMI. Or you can purchase a Magic on Hold system, which does not require such a license, from Lucent Technologies.

Call Management System does not work with Caller ID on loop-start lines. It does work with PRI or BRI service.

Feature Interactions

Extension Status	A CMS supervisor uses the Extension Status feature to control and monitor when agents are in the available, unavailable, or ACW state. A CMS agent does not have to be a member of a calling group to be available or unavailable. The system can be programmed for CMS or for Hotel/Motel Extension Status, but not for both.
Group Calling	CMS agents log in and out by using the same buttons or codes as calling group members.
System Renumbering	CMS uses 2-digit extension numbers only.

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System Programming

Set basic system operating conditions:

- Remove CMS lines from all telephones (Key mode only) or from pools (Hybrid/PBX mode only).

- Set up three DLC system operator positions, two for CMS PC positions and one for the CMS supervisor position (if a CMS supervisor telephone is required).

Set up a CMS fallback plan:

- Assign the agent telephones to a calling group and assign group coverage to the calling group.

- Designate the CMS supervisor console as a group coverage sender.

Set up optional equipment and features, including headsets and paging groups.

Set the Ringing options for lines assigned to CMS ports to No Ring.

Platform Requirements

To connect CMS to the system, you need the following equipment:

- A Lucent Technologies-approved DOS PC, with:
  - CMS interface card with two 14-ft. (430-cm), 4-pair modular extension cords
  - CMS software
- Digital Announcer Unit with one 14-ft. (430-cm) DIN connector cord
- Parallel printer with cable to connect to the PC parallel port
- Supervisor console, any DLC position
- Agent telephones, any MLX or analog multiline telephones
- One analog multiline module (008 or 408) to connect the two PC ports to the extension jacks assigned as DLC ports

MERLIN LEGEND Reporter

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

Available for Hybrid/PBX mode in Release 4.2 and later systems, MERLIN LEGEND Reporter helps system managers and calling group supervisors assess

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the effectiveness of facilities and calling groups in responding to customer or client needs. It offers these broad benefits:

- **Monitoring of Facilities Volume Usage.** Traffic reports help in the analysis of peak-hour facilities usage and availability of calling group agents to respond to customer calls. The reports help determine whether availability issues can be resolved through staffing or additional facilities.

- **Customer Response Assessments.** Calling group managers can determine whether customers are hanging up rather than waiting for an available agent, how long they waited, and (with caller identification services) their telephone numbers so that agents can return their calls.

- **Monitoring Proper Facilities Usage.** Some facilities may be overutilized while others are ignored. MERLIN LEGEND Reporter helps managers pinpoint problems with the setup of pools or with users' understanding of which lines they should access for specific purposes.

MERLIN LEGEND Reporter includes the following major features:

- **Call Collection.** MERLIN LEGEND Reporter collects call records from the MERLIN LEGEND Communications System's SMDR (Station Message Detail Recording) feature. It uses one of the three following methods:

  ⇒ **NOTE:**
  For more information about this system feature, see "Station Message Detail Recording (SMDR)" on page 557.

  — Direct connection to the SMDR jack on the control unit

  — File transfer from another application that collects the call information from the SMDR jack

  — A Pollable Storage Unit (PSU) that connects to the control unit and passes record information to MERLIN LEGEND Reporter through a modem or direct connection

- **Call Processing.** MERLIN LEGEND Reporter processes call record details and stores them in a database. With caller identification services, the application can automatically and immediately print out the incoming telephone numbers of callers who abandoned their calls while waiting for an agent, allowing a rapid return call from the organization. In addition, the application can mask certain outgoing telephone numbers to ensure privacy where needed (for example, on an executive's private line).

- **Reports.** MERLIN LEGEND Reporter produces an extensive library of reports to help in analyzing facilities and calling groups. You can set up reports to run automatically at preset intervals or on demand. Some reports are tabular only, while others allow the manager to see a chart as well. User-customizable reports are organized into the following categories:

  — **Organization.** Detailed call records according to user-specified criteria, summary statistics on specified types of calls, cost center summaries by organization, and summary trends reports are available.

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> — **Account Code.** Callers can input codes to identify the subject of a call, the client account number, or other information. Summary and detail call reports are organized by account code.

> — **Selection.** Providing summary and detail information according to very specific criteria, these reports include the duration of calls and how long agents spent actually talking to customers. They allow a manager to pinpoint details or summarize trends, particularly in problem areas.

> — **Traffic.** Primarily covering incoming calls, you can select reports by date, time of day, extension, calling areas where calls originated, and talk and queue (wait) time. Facility reports describe the lines in each facility and report busy-hour incoming and outgoing volume, durations, and performance against user-defined service goals.

- **Archives.** The application maintains data from the previous accounting period. You may move it to a backup storage medium and restore it when you need historic reports.

- **Remote Access.** Optionally, you can install remote access software and a modem to allow remote assistance from the Lucent Technologies customer helpline.

- **Multi-Site Network.** MERLIN LEGEND Reporter can work in a network configuration where one central site receives SMDR information from multiple sites and multiple MERLIN LEGEND Communications System control units for central processing and reporting.

Mode Differences

The system must operate in Hybrid/PBX mode. MERLIN LEGEND Reporter does not work with systems in Key or Behind Switch mode.

Considerations and Constraints

MERLIN LEGEND Reporter does not work in a system where another application accesses the SMDR jack on the control unit. Such applications include all configurations of Call Accounting System (CAS) and Call Accounting Terminal (CAT).

MERLIN LEGEND Reporter and Call Accounting System (CAS) should not be active on the system at the same time. Use MERLIN LEGEND Reporter when you primarily need to assess facilities and agent performance. CAS is used for costing purposes.

System reports take precedence over the SMDR information generated for MERLIN LEGEND Reporter. In order to print system reports using the SMDR jack on the control unit, the MERLIN LEGEND Reporter serial connection to the port must be disconnected. MERLIN LEGEND Reporter information is queued while system reports are generated. For smoother operation, use System Programming and Maintenance (SPM) software to print system reports from a printer connected

to a PC running SPM. For more information about SPM, see "System Programming and Maintenance" on page I-37.

MERLIN LEGEND Reporter does not report inside calls.

You must program a calling group as Auto Login or Auto Logout in order for its call records and facilities usage to be analyzed using MERLIN LEGEND Reporter. Make sure that the SMDR Talk Time option is enabled.

The application does not report talk times for calls answered by a delay announcement device, calling group overflow receiver, or QCC queue overflow receiver.

Feature Interactions

Account Code Entry	If SMDR is set to record outgoing calls only, account codes cannot be reported on incoming calls. If a remote access barrier code is entered for an incoming call and then an account code is entered, the account code only (not the barrier code ID) is recorded.
Authorization Code	If an account code is not entered, the call record contains the authorization code used to obtain calling privileges. If an account code is entered at any time during a call, the account code is stored in the record.
Auto Dial	All calls made to an outside number using Auto Dial are recorded.
Automatic Route Selection	Outgoing call reports for systems with Automatic Route Selection (ARS) show all the digits dialed by the user, including any digits absorbed by the system and the facility used to make the call. The records do not include the ARS dial-out code or any digits added by ARS.
Callback and Call Waiting	SMDR begins measuring the duration of callback calls when the line/trunk is seized and the system begins dialing the call. Call-waiting calls are measured as soon as the call is answered.
Caller ID	Calling party numbers (if available) for incoming calls (including remote access calls) that are received on a facility with Caller ID are recorded only if the SMDR report is set for ISDN format.
Camp-On	If an incoming call is camped on but is not picked up by the other extension, the extension of the user that activated Camp-On is shown in reports. If an incoming call is camped on and picked up by the destination extension, the destination extension is shown in the report.
Conference	When a conference call includes inside and outside participants, records are generated only for outside participants. When a call is dropped from a conference call, it is considered a completed call.
Coverage	When a calling group is programmed as a Group Coverage receiver, calls are reported following the same rules that apply to other incoming Auto Logout or Auto Logout calling group calls, even if a call is transferred from an operator to a Group Coverage sender before being directed to the calling group.

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Forward and Follow Me	When an outside call is forwarded to an outside telephone number, MERLIN LEGEND Reporter captures the incoming call in one record; another record shows the call made to the destination telephone number, with the forwarding telephone as the originator.
	A user presses # to complete the Remote Call Forwarding number to which incoming calls should be forwarded. The report includes the # with the number for calls forwarded to the number.
Group Calling	Calls to calling groups are associated with the first extension to handle the call. If the call is answered by the calling group delay announcement device and the caller hangs up, the extension for the delay announcement device is recorded on the record. Timing for an incoming call to an Auto Login or Auto Logout calling group (assuming that the Talk Time option is enabled) begins when a call arrives at the system. If the caller hangs up while listening to a delay announcement, the call is associated with the extension of the delay announcement device
	Incoming calls that go to an overflow receiver or to an extension not in the calling group are reported as such.
Last Number Dial	All calls made to outside numbers using Last Number Dial are recorded.
Multi-Function Module	A Multi-Function Module (MFM) is treated as an MLX telephone on reports.
	The system waits until the end of dialing before sending a connect message to the MFM. Any digits dialed after the connect message is received are not recorded.
Paging	Paging calls are not reported.
Park	If an incoming call is parked but is not picked up by the other extension, the extension of the user who activated Park is recorded. If an incoming call is parked and picked up by the destination extension, the destination extension is recorded.
Personal Lines	If a personal line is assigned to an Auto Login or Auto Logout calling group and is shared by extensions that do not belong to that group, the report marks call records answered by a non-group extension.
Pickup	The extension of the person answering the call and using Pickup is shown on the report.
Pools	For outgoing calls made by using a pool, the line/trunk selected by the system is reported.
Power Failure Transfer	During a commercial power failure, all calls are disconnected and no records are generated for calls made using a Power Failure Transfer telephone.
Recall/Timed Flash	If a multiline telephone user presses the **Recall** button to get a new dial tone, timing is stopped for the previous call and timing begins for a new call.
Remote Access	If a remote access barrier code is entered for an incoming call and then an account code is entered, only the account code (not the barrier code ID) appears on the report.

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	If the caller uses Remote Access to dial out on a line or trunk, the extension information is blank on the first record and a second record is generated for the outgoing call.
Saved Number Dial	All calls made to outside numbers using Saved Number Dial are recorded.
SMDR	MERLIN LEGEND Reporter collects call information from the SMDR output of the system. To print system reports without interrupting the collection of SMDR information, use System Programming and Maintenance (SPM) software to print reports from a PC's printer, not from the SMDR port.
	For use with MERLIN LEGEND Reporter, the optional SMDR TALK field should be enabled using system programming.
Speed Dial	When Personal Speed Dial or System Speed Dial is used to dial an outgoing call, the actual digits dialed by the system appear on the report. However, when a marked System Speed Dial number is used, the System Speed Dial code prints rather than the digits dialed.
System Access/ Intercom Buttons	When a call is made on a Shared **SA** button, the SMDR report records the extension number that the call was made from, not the principal extension number.
Transfer	The number of the extension that hangs up on an incoming outside call is reported, regardless of how many times the call is transferred. For outgoing outside calls, the number of the extension that dialed the call is shown, even if the call is later transferred to another extension.
Voice Messaging Systems	In Release 4.2 and later systems, if an automated attendant or voice response unit transfers an outside call to an Auto Logout or Auto Logout calling group, a call record is created in the same way that it is for other incoming calls to this type of group.

Platform Requirements

For either a single-site or multi-site MERLIN LEGEND Reporter application, the following hardware and software components are required:

- Windows 95, Windows 3.1, or Windows for Workgroups 3.11

- A serial (COM) port available at all times for SMDR record input

- Optionally, an additional serial port and 9,600-baud or faster modem for remote access

- Bus, PS/2, or serial mouse (serial mouse can cause IRQ conflicts)

- VGA color monitor and adapter

- Parallel printer supporting graphics and from 10 to 17 characters per inch

For a single-site MERLIN LEGEND Reporter application, the following hardware components are required:

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- A 486-class or better PC with a processor speed of at least 25 MHz and at least 8 megabytes of RAM

- Five megabytes of available hard-disk storage space for the application and 80 megabytes to hold approximately 25,000 call records

For a multi-site MERLIN LEGEND Reporter application, the following hardware components are required:

- A 486-class or better PC with a processor speed of at least 66 MHz and at least 8 megabytes of RAM

- Five megabytes of available hard-disk storage space for the application and 200 megabytes to hold approximately 62,500 call records

- A 1,200-baud or faster modem for SMDR input

System Programming and Maintenance

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

System Programming and Maintenance (SPM) software lets you program and maintain the system. It performs the same functions as an MLX-20L telephone set up as a system programming console, providing a display that emulates the console display. SPM also has other features, such as the abilities to back up and restore system programming and to print reports.

Two versions of SPM are available:

- **SPM.** This standalone version runs on a Lucent Technologies-approved DOS PC. Version 4.25, for Release 4.1 and later systems, runs as a DOS application under Windows 95.

- **SPM Integrated with IS II or III** (SPM IS II or III). This version runs under the UNIX system. For more information, see "Integrated Solution II" on page I-39 and "Integrated Solution III" on page I-45.

You can connect a PC with DOS-based SPM directly to the control unit or you can access the system remotely in one of the following ways:

- The system programmer dials the system directly. You can set up a password to prevent unauthorized access.

- The system programmer dials the system operator and asks to be transferred to the system's built-in modem (dial code *10*).

You can use SPM IS III only through a direct local connection.

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You can program SPM to operate in English, French, or Spanish. Independently of the overall language setting, you can select one of these languages for the console-simulation window during the current session.

Considerations and Constraints

When you upgrade to a new system release, you typically must upgrade SPM as well. For more information, see "Platform Requirements" on page I-38 and *System Programming.*

Unless the system is being backed up or restored, a remote SPM connection takes priority over a local user. If the local user is programming when a remote user connects to the system, the system sends a warning message to the local user and disconnects that user.

The SPM PC connects to the lower RS-232 jack on the processor module in the control unit. This connection runs at 1.2 or 2.4 kbps with autobaud switching.

You can print SPM reports and/or save them on the PC's hard or floppy disk drive. At the same time, the report is displayed on the screen together with prompts for browsing.

You should not print SPM reports when the system is handling more than 100 calls per hour.

You can use a printer connected to the SPM PC to print system reports. Alternatively, you can send reports to a printer connected to the SMDR port on the control unit [for more information about SMDR, see "Station Message Detail Recording (SMDR)" on page 557]. However, SMDR information may be lost while system programming reports are being printed through the SMDR port.

Platform Requirements

To support standalone SPM, you need:

- Lucent Technologies-approved DOS PC

- MS-DOS 3.3 or higher; or for Release 4.1 or later, Windows 95 or later and a Windows 95-compatible version of DOS (SPM runs as a DOS application under Windows 95 in Release 4.1 and later systems)

- At least 128 KB of RAM; or required RAM for Windows 95 or later

- A double-sided floppy diskette drive, either 5.25-in. or 3.5-in. (hard disk is optional but recommended)

- A serial port assigned to COM1 or COM2. The serial port can use either a DB-9 or DB-25 connector. If a DB-9 connector is used, a 9-pin to 25-pin adapter is also required. The 9-pin side must be female.

- A monochrome or color monitor

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■ A D8W modular cord and a 355AF modular adapter if the PC is less than 50 ft. (15 m) from the control unit. Distances of greater than 50 ft. (15 m) require back-to-back Asynchronous Data Units (ADUs).

To use SPM with Release 4.1 of the system, you *must* upgrade to Release 4.25 or later of SPM. Table I–7 summarizes the versions of standalone SPM that are required for upgrading to specific system releases. For additional information, see *System Programming*.

Table I–7.   Programming Compatibility

To Restore to System Release...	Requires Minimum SPM Version...
1.0	1.13
1.1	1.16
2.0 or 2.1	2.09
3.0	3.10
3.1	4.25
4.0	4.15
4.1	4.25
4.2	4.25
5.0	5.15

Integrated Solution II

IMPORTANT:
This section is intended solely as an overview of the application, which is no longer available for sale. For comprehensive information about the use of the application, see the documentation for the product.

Integrated Solution II (IS II) is a complete package of UNIX System-based voice processing and call analysis software applications. IS II offers a single interface to any of the following applications:

■ **Integrated Voice Power Automated Attendant** (IVP AA). Answers telephones automatically and transfers callers to the appropriate departments or extensions. Also provides callers with a menu of recorded prompts that they can respond to by dialing numbers on a touch-tone telephone.

The system transfers callers without touch-tone telephones to the system operator. You can set up separate menus for day and night service, as well as multilevel menus and corresponding announcements to ensure that callers reach the right person or department as quickly as possible.

IVP AA can operate either in touch-tone gate mode or in no-gate mode. To speed handling of calls from touch-tone telephones, gate mode prompts callers to dial 1 to continue to the main menu. If a 1 is not dialed within a

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programmed interval, calls are automatically transferred to the system operator. In no-gate mode, callers hear the main menu immediately and, if no response is received after the main menu is played, calls are transferred to the system operator.

IVP AA is a low-cost alternative for businesses that need enhanced call handling without the added voice messaging capabilities of AUDIX Voice Power IS II.

■ **AUDIX Voice Power IS II** (AVP IS II). Offers the features of IVP AA plus the following services:

— **Call Accounting System IS II** (CAS IS II). Collects and analyzes call information, calculates the prices of calls by using rates selected by the business, organizes calls by client or project, and prints reports on a daily or as-needed basis. For more information on the features of CAS, see "Call Accounting System" on page 21.

— **System Programming and Maintenance IS II** (SPM IS II). This programming package, built into IS II, allows a system manager or technician to upgrade and maintain the system and its features and to add, change, or rearrange telephones. The system manager or technician can program on site or remotely.

Additional IS II features include the following:

■ **Dial by Name.** Permits AVP users to call subscribers by dialing the last name of the subscriber instead of dialing the extension number.

■ **Alternate Personal Greetings.** Allows a user to record a second personal greeting in addition to the primary call-answer greeting.

■ **Fax Transfer.** Directs incoming fax calls to a designated fax machine.

■ **Class of Service.** Allows the system manager to assign one of 16 predefined parameters to a subscriber. These parameters define the size of the mailbox, the type of coverage service, and the activation of the outcalling feature.

■ **General Mailbox Options.** Provides two special mailboxes that have reserve extensions associated with them. Callers using rotary telephones or needing assistance can be transferred to a general mailbox where they can leave messages. Subscribers having problems with the system can report these to the trouble mailbox.

The number of incoming lines and subscribers programmed for AVP or IVP AA and the number of busy-hour calls determine how many voice channels are required for the system (see Table I–8).

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Table I–8.   Voice Channels Required: IS II

Channels Required	Lines	Subscribers	Busy-Hour Calls
2	1 to 6	1 to 20	1 to 20
4	7 to 18	21 to 60	21 to 60
6	19 to 24	61 to 80	61 to 80
8	25 to 42	81 to 200	81 to 200
12	Over 42	201 to 300	201 to 300

Mode Differences

Of the available IS II applications, you can connect only CAS IS II and SPM IS II applications to a system that operates in Behind Switch mode.

Considerations and Constraints

IS II uses UNIX System V Release 3.2.2.

IS II stores up to 12 hours of voice-mail messages when IS II includes AVP and over 200,000 call accounting records when IS II includes CAS.

You can install either IVP AA or AVP on the system, but not both.

The system supports up to 12 IVP AA ports (on three circuit boards).

If IS II includes AVP, when users receive voice-mail messages, the Message LEDs on their telephones light if a mailbox has been assigned to each of those telephones.

For AVP or IVP AA, the following symptoms indicate that the system needs more TTRs:

- Single-line telephone users do not get dial tone when trying to dial out.

- AVP or IVP AA fails to transfer calls.

- Calls either fail to ring or go to coverage prematurely.

You can print SPM IS II reports or save them on disk (floppy or hard disk). At the same time, the report is displayed on the screen together with prompts for browsing.

You should not print SPM IS II reports when the system is handling more than 100 calls per hour.

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Feature Interactions

Account Code Entry	CAS IS II associates account codes entered by users before or during calls with accounts and individuals; they appear on CAS IS II reports.
Coverage	An inside call on a VMI port that transfers to an inside extension does not go to coverage. It continues to ring at the inside extension.
	If a sender programs the telephone so that only outside calls are sent to coverage, calls received on **ICOM** or **SA** buttons are not sent to voice mail.
	In Release 2.0 and later, outside calls that would normally proceed to AUDIX Voice Power as coverage calls do not do so if the telephone that sends the call to Group Coverage has activated Coverage VMS Off. No special action is needed in AUDIX Voice Power programming to activate this feature.
Group Calling	With integrated VMI ports in AUDIX Voice Power, mode codes identify coverage calls that overflow from one calling group to another calling group. As a result, the overflow calling group's number appears in the Called Party field of the mode code.
Leave Message	If a Leave Message notification is left in a mailbox in a system with heavy VMI traffic, the user may have to dial out manually for messages.
	In Release 2.0 and later, when AUDIX Voice Power sends a Leave Message notification to an extension, the system identifies the voice mail system as the sender of the message. As a result, when the voice mail subscriber uses the Return Call feature, the call goes to any available voice mail port, not just to the specific port that generated the message. This improves access by reducing the chance of getting a busy port.
Night Service	If the AVP Automated Attendant handles only after-hours calls, a phantom extension (an unused extension or vacant port) must be programmed as a member of a Night Service group associated with the system operator. In turn, this phantom extension is covered by a calling group with integrated VMI ports as members. If an incoming call is not answered in the programmed number of rings, the control unit sends the call to the calling group with the VMI ports. Because of prior programming, AVP recognizes the call to be from the phantom extension and provides Automated Attendant service rather than the usual Call Answer service.
SMDR	CAS IS II uses the call information provided by the system's built-in SMDR feature to process calls. There are two system formats for SMDR: Basic and ISDN.

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Transfer	Beginning with Release 2.1, any VMI port can transfer an incoming call to an outgoing line/trunk. In earlier versions, only integrated VMI ports could transfer to an outgoing line/trunk.

If a caller incorrectly specifies the answering VMI port as the desired transfer destination telephone, the VMI port may inadvertently park the call.

You can program any calling group, calling group member, or telephone to be a VMS transfer redirect extension. If you program a QCC as such, the transfer redirect call is delivered to the QCC as a returning call and is not placed in the QCC queue.

If a transferred caller gets no answer and returns to the system operator, the system operator has no indication of the origin of the call.

System Programming

When IS II includes IVP AA, you must perform the following programming tasks:

- Designate Inside Dial Tone to be the same as the outside line/trunk dial tone.

- Assign all Automated Attendants to the same calling group and set the group type to VMI Generic.

- Program each VMI loop-start port for reliable far-end disconnect.

- Designate a backup position, such as the system operator, to receive calls that originally transferred to unanswered or busy extensions or to receive calls when a caller fails to respond to a message.

- Specify the number of rings before a call transferred by the voice messaging system is sent to the backup position.

When IS II includes AVP, you must perform the following programming tasks:

- Assign AVP ports to a calling group and specify the group type as VMI Integrated.

- Program each VMI loop-start port for Reliable far-end disconnect.

- Specify the touch-tone duration and interval between digits in codes sent between the AVP and the system.

- Specify the number of rings before a call transferred by AVP is sent to the backup position (usually the system operator).

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- When you use AVP Automated Attendant for Night Service only, do the following:

    — If the lines/trunks set for answering by Automated Attendant appear at other extensions, set the No Ring option for the other telephones.

    — Assign the phantom extension to a Night Service group for each system operator position.

    — Assign the phantom extension to a coverage group, and assign the VMI calling group to cover that coverage group.

    — Specify the VMI ports that provide Automated Attendant to be Automated Attendant ports.

    — Specify the business schedule for AVP.

Platform Requirements

You need the following equipment:

- A 200-MB fixed disk if IS II includes either IVP AA or AVP.

- A Master Controller, based on a 6386/SX WGS processor with UNIX System V/386 Release 3.2.2. It includes:

    — Master Controller II processor (with a 40-MB, 80-MB, or 200-MB fixed disk and a 3.5-in. floppy disk drive)

    — Monitor (monochrome or color)

    — Keyboard

    — Optional tape drive (required for systems with a 200-MB fixed disk for saving UNIX files, application program files, programming files, and voice system files during backup)

- A 355AF adapter for connecting the Master Controller to the serial port on the control unit if they are within 50 ft. (15 m) of each other and are on the same AC branch circuit

- Asynchronous Data Units for connecting the Master Controller to the serial port on the control unit if they are not within 50 ft. (15 m) of each other and are not on the same AC branch unit

- Any additional hardware required by each application included in IS II, including the cables and adapters for connecting the applications to the system. See the instruction booklet that comes with each application.

- IVP4 boards

- A 012 or 016 basic telephone module to provide the tip/ring interface for IVP AA or AVP

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Integrated Solution III

IMPORTANT:
This section is intended solely as an overview of the application, which is no longer available for sale. For comprehensive information about the use of the application, see the documentation for the product.

Integrated Solution III (IS III) Release 1.2 is an interface to a complete package of UNIX System-based voice processing and call management software applications. It provides a single integrated interface to any of the following applications:

■ **AUDIX Voice Power 2.1.1** (AVP). Combines the following voice messaging services and features:

— **Call Answer Service.** Allows callers who reach a busy or unanswered extension to leave a message, transfer to another extension, or transfer to a system operator. Individual subscribers can program a personal greeting or select a standard greeting and also can program a password to prevent others from retrieving their messages.

— **Voice Mail Service.** Allows subscribers to send messages to other system extensions, forward messages with comments, and reply to messages. The system manager can broadcast messages to all subscribers.

— **Information Service.** Provides a call-in information service that plays a recorded message and then disconnects the caller.

— **Message Drop.** Provides an answering service, similar to an answering machine, that plays a message to callers and then allows a caller to "drop off" a message, such as a request for service or an order. Callers cannot direct messages to specific extensions.

— **Automated Attendant Service.** Answers incoming calls and plays a menu of recorded prompts. A caller can respond to the prompts by dialing touch tones, and Automated Attendant routes the call to an inside extension accordingly. If there is no answer or if the extension is busy, the caller can be given the option to leave a message or try another extension.

A caller with a rotary telephone is transferred to the system operator for further call handling and routing.

The system manager can record multiple levels of menus and announcements, including separate menus for day and night service.

— **Outcalling.** When a user or subscriber receives a new message, the system can automatically call a programmed number, for example, a beeper or a home telephone number. The subscriber can then log in to the VMS.

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> **⚠ SECURITY ALERT:**
> *To restrict outcalling, use AVP's Transfer to Subscribers Only*
> *feature. Do not use MERLIN LEGEND Communications System*
> *calling restrictions.*

■ **Fax Attendant 2.1.1.** Provides an integrated voice/fax mailbox, fax
broadcasting, fax bulletin board, and coverage for busy or off-line fax
machines. Fax Attendant only works with AUDIX Voice Power and not by
itself. Fax Attendant includes the following services and features:

— **Fax Call Answer.** Allows Fax Attendant to receive fax messages for
subscribers whose fax machines are busy or out of paper. This feature
also allows subscribers who have personal fax mailboxes but not fax
machines to receive fax messages. In such a case, Fax Call Coverage
gives the appearance of a personal fax machine by automatically
answering and receiving fax messages for the specified telephone
number. Faxes are temporarily stored for printing at a convenient time.

— **Personal Fax Messaging.** Because subscribers have fax mailboxes
similar to voice mail mailboxes, inbound faxes can be stored until the
subscriber asks that they be printed at any fax machine he or she
specifies, either on company premises or off-site, when the subscriber
retrieves fax messages remotely. This feature protects the
confidentiality of sensitive documents. Fax Attendant can even inform
subscribers of waiting faxes by calling to an outside number.

— **Fax Mail.** Allows subscribers to send fax messages, receive fax
messages, record personal greetings, program outcalling (standalone
configuration with AVP only: create fax distribution lists, change account
passwords, deliver report settings, and autoprint setting).

— **Fax Response.** Allows users to dedicate a phone number from which
callers can retrieve information. This feature directs callers through a
series of prompts that asks information about their fax machines. Callers
are greeted with spoken prompts that guide them in pressing touch-tone
buttons to access the information and to receive their information within
minutes by fax transmission.

— **Fax Broadcast.** Provides a simple way to send one fax to as many as
1,000 fax numbers. Because this feature uses multiple ports, faxes are
sent in a fraction of the time required for a broadcast fax machine, and
fax machines are free to receive incoming calls and to send other faxes.
Features such as Economy Delivery and Intelligent Auto Retry save time
and money. AVP voice prompts make operation easy.

■ **Integrated Solution Call Accounting System** (IS CAS). Collects and
analyzes call record information, calculates costs using rate tables
selected by the customer, organizes calls by client or project, and prints
reports daily or as needed. With IS III Release 1.2, IS CAS is distinct from
the standalone CAS Plus V3 application in the following ways:

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— **ANI and Caller ID Support.** IS CAS collects and processes Automatic Number Identification (ANI) information as well as Caller ID information provided through the 800 GS/LS-ID module. However, the availability of this information may be limited, depending on the legal jurisdiction and the equipment at the CO serving the caller.

— **Custom Rate Tables.** Custom rate table software is required for IS CAS and is included in the package.

■ **System Programming and Maintenance.** Provides a maintenance and programming interface to the system. SPM IS Ill provides the same functionality as the standalone SPM application, except that it does not allow remote connection to the control unit.

Integrated Administration is the integration of AUDIX Voice Power and Fax Attendant programming with the system parameters that the two applications use. It is described in the topic "Integrated Administration" on page 328.

Mode Differences

The system must operate in Key or Hybrid/PBX mode for all IS III applications except IS CAS and SPM. Those are the only two applications that you can connect to a system operating in Behind Switch mode.

Considerations and Constraints

The MAP/5 is a 32-bit, i486SX computer that comes in a range of hard disk/tape sizes with a VGA monitor. The following considerations and constraints should be reviewed when configuring a system:

■ On a 500-MB fixed disk, IS III can store up to 36 hours of voice mail messages for AUDIX Voice Power, as many as 3,000 pages of faxes for Fax Attendant, and 332,000 call records for IS CAS.

■ If both IS CAS and Fax Attendant System are part of IS III, they share the same disk area for record storage and so share the same maximum based on disk size.

■ On a 200-MB fixed disk, IS III can store over 200,000 call records for IS CAS, 12 hours of messages for AUDIX Voice Power, and as many as 1,000 pages of faxes for Fax Attendant.

■ Fax Attendant is not supported on a 100-MB fixed disk system or MAP/5.

■ You cannot install Fax Attendant without AUDIX Voice Power.

■ Fax Attendant versions prior to Release 2.1.1 (optional with IS III Release 1.2) used IFP2 two-port (two-channel) boards. These boards are compatible with Release 2.1.1, but IFP4 four-port (four-channel) boards are also available. The IFP2 and IFP4 boards cannot be mixed in the same IS III configuration.

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- You cannot install Automated Attendant as a standalone application but only in conjunction with AUDIX Voice Power.

- When an AUDIX Voice Power subscriber receives a voice mail message, the Message LED on the telephone lights. To properly update Message LEDs on system extensions, link each AVP mailbox with telephones connected to the control unit.

- If an AUDIX Voice Power mailbox is needed for a person with no telephone, you must assign a phantom extension to the control unit.

- You should synchronize AUDIX Voice Power time with system time.

- For Integrated Administration, the MAP/5 provides a separate backup and restore capability that saves the directory information on the hard disk. This is available through the Backup and Restore menu options under Maintenance.

- The subscriber must have AVP in the Applications field of the Integrated Administration Extension Directory in order to be added to or deleted from AUDIX Voice Power.

- All extensions and lines that you program through Integrated Administration must be idle.

Feature Interactions

Account Code Entry	IS CAS uses the account codes people enter before or during calls to associate calls with accounts and individuals; these codes appear on IS CAS reports.
Coverage	An inside call on a VMI port that transfers to an inside extension does not go to coverage, but continues to ring at the inside extension.
	If a sender programs the telephone so that only outside calls are sent to coverage, calls received on **ICOM** or **SA** buttons are not sent to voice mail.
	In Release 2.0 and later, outside calls that would normally proceed to AUDIX Voice Power as coverage do not do so if the telephone that sends the call to group coverage has activated Coverage VMS Off. No special action is needed in AUDIX Voice Power programming to activate this feature.
Group Calling	With integrated VMI ports, mode codes identify coverage calls that overflow from one calling group to another calling group. As a result, the overflow calling group's number appears in the Called Party field of the mode code.
Labeling	Names entered through the Integrated Administration Extension Directory are sent to the control unit and are available through Switch Labeling screens.

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Leave Message	If a Leave Message notification is left in a mailbox in a system with heavy VMI traffic, the subscriber may have to dial out manually to retrieve the message.
	In Release 2.0 and later, when AUDIX Voice Power sends a Leave Message notification to an extension, the system identifies the voice mail system as the sender of the message. As a result, when the voice mail subscriber uses the Return Call feature, the call goes to any available voice mail port, not just to the specific port that generated the message. This improves access by reducing the chance of getting a busy port.
Night Service	If Automated Attendant handles only after-hours calls, you must program a phantom extension as a member of a Night Service group associated with a system operator. This phantom extension is covered by a calling group with integrated VMI ports as members. If an incoming call is not answered within the programmed number of rings, the control unit sends it to the calling group with the VMI ports. You must program AUDIX Voice Power to recognize the call from the phantom extension, and you must provide Automated Attendant service rather than the usual Call Answer service.
SMDR	IS CAS collects call information from the SMDR output of the system.
System Renumbering	System Renumbering can be done only through SPM or MLX-20L system programming. Integrated Administration uses System Renumbering to read extension numbers and adjuncts.
Transfer	Beginning with Release 2.1, any VMI port can transfer an incoming call to an outgoing line/trunk. In earlier versions, only integrated VMI ports could transfer to an outgoing line/trunk.
	If a caller incorrectly specifies the answering VMI port as the desired transfer destination telephone, the VMI port may inadvertently park the call.
	You can program any calling group, calling group member, or telephone to be a VMS transfer redirect extension. If you program a QCC as such, the transfer redirect call is delivered to the QCC as a returning call and is not placed in the QCC queue.
	If a transferred caller gets no answer and returns to the system operator, the system operator has no indication of the origin of the call.

System Programming

AUDIX Voice Power requires the following system programming:

- Assign AUDIX Voice Power ports to a calling group and specify the group type as VMI integrated.

- Specify the touch-tone duration and interval between digits in codes sent between AUDIX Voice Power and the system.

- Specify the number of rings before a call transferred by AUDIX Voice Power is sent to the backup position (usually the system operator).

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AUDIX Voice Power with Automated Attendant requires the following system programming:

- Set inside dial tone to Outside.

- Assign Automated Attendants to a calling group and specify the group type as VMI Integrated.

- Designate a backup position, such as the system operator, to receive calls that originally transferred to unanswered or busy extensions or to receive calls when a caller fails to respond to a message.

- Specify the number of rings before a call transferred by the VMS is sent to the backup position.

When you use AUDIX Voice Power Automated Attendant only for Night Service:

- If the lines/trunks set for answering by Automated Attendant appear at other extensions, set the No Ring option for the other extensions.

- Specify the VMI ports that provide Automated Attendant service as Automated Attendant ports.

Integrated Administration with Fax Attendant requires the following system programming:

- **IVP 4/6 Board Jacks.** For fax response service, you must program the following items:

  — Assign the tip/ring extensions dedicated to fax response into a calling group for Integrated Administration.

  — Set the calling group type to VMI Integrated-Automatic.

  — Assign outside lines to the calling group.

  — Assign appropriate labels to the lines.

- **Fax Board Ports.** Each fax board connects to a T/R extension jack on the control unit. These extension jacks are regular T/R extension jacks and do not have to be identified as fax extensions on the system. You must program the following options:

  — Assign appropriate labels to the T/R extensions.

  — Assign the T/R extensions to the Night Service Exclusion List; this enables off-site fax delivery to function at night.

  — If users want a waiting fax to light Message LEDs, use SPM to identify the ports as fax extension jacks on the control unit.

- **Private Fax Extensions.** A private fax extension either connects to an actual fax machine used by an individual or is a phantom extension associated with an individual's voice extension. Programming for a private fax extension depends on whether or not the system's configuration supports DID (Direct Inward Dial) lines. In systems with DID, unique DID

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extension numbers are sufficient for private fax extensions because outside calls placed to a DID number ring the fax machine or phantom extension. Systems without DID must rely on personal lines.

For private fax extensions in DID configurations, you assign the DID number of a phantom extension or actual fax machine as a private fax extension.

You must program the following items for private fax extensions in non-DID configurations:

- Assign a personal line to a phantom extension or to the extension connected to an actual fax machine.

- Using SPM, assign the phantom extension or fax machine as the owner of that line.

You must program the following remaining items for private fax extensions in both configurations:

- Assign the individual as a subscriber to Fax Attendant service. Specifying AUDIX Voice Power as an application automatically subscribes the user to both AUDIX Voice Power and Fax Attendant.

- Assign the phantom extension or fax machine as a private fax extension.

- Assign the private fax extension to a coverage group.

- Set the label of the private fax extension appropriately.

- Assign the previously specified coverage group to be covered by the calling group of Automated Attendant, Call Answer, or Voice Mail-Automatic.

One private fax extension can be used by a group of individuals through parameters that you set with Fax Attendant setup screens on the MAP/5. To facilitate these configurations, select a group fax administrator. You must program the following items:

- Assign a non-valid extension number as a special-purpose extension for the group fax administrator.

- Assign a private fax extension to the special-purpose extension.

- Set group members as Fax Attendant subscribers. Do not program any of these users for private fax extensions.

For more information about programming, see .

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Platform Requirements

When IS III is delivered, it is installed and configured according to the applications you ordered. The system consists of a MAP/5 running UNIX System V Release 3.2.2. Various hardware configurations are available; see the *Lucent Technologies Integrated Solution III Installation and Maintenance Guide* for details.

If AUDIX Voice Power is installed, a 012 or 016 module is required.

Personal Fax Messaging and most group mailbox applications require that DID numbers or personal lines be assigned to each personal mailbox subscriber or group administrator. A separate DID extension number is needed for each subscriber using the Personal Fax Messaging application.

The number of voice channels required for AUDIX Voice Power depends on the number of incoming lines/trunks, the number of subscribers programmed for the system, and the number of busy-hour calls. Table I–9 shows these requirements.

Table I–9.   Voice Channels Required: IS III

Channels Required	Lines	Subscribers	Busy-Hour Calls
2	1 to 6	1 to 20	1 to 20
4	7 to 18	21 to 60	21 to 60
6	19 to 24	61 to 80	61 to 80
8	25 to 42	81 to 200	81 to 200
12	Over 42	201 to 300	201 to 300

Fax Attendant's Fax Mail and Fax Call Answering services share voice channels with AUDIX Voice Power's Voice Mail, Voice Call Answering, and Automated Attendant services; one port can handle all these services. The number of voice channels needed for Fax Attendant depends upon the services used and the traffic on each service, but Fax Response, Message Drop, and Information Service all require dedicated voice ports.

The number of data channels required for Fax Attendant depends on the number of faxes sent and received per hour, assuming three pages per fax. Table I–10 estimates these requirements.

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Table I–10.   Data Channels Required

Faxes Sent/Received Per Hour	Channels Required
1 to 20	4
21 to 80	8
81 to 130	12 (maximum)

Intuity

IMPORTANT:
This section is intended solely as an overview of the applications available for the Intuity platform. For comprehensive information about the use of the applications, see the documentation for the products.

Intuity is Lucent Technologies' messaging solution. It provides a single, integrated interface to any of the following applications (your package may not include all of these):

- **AUDIX Voice Messaging.** Allows the recording and exchanging of voice messages, including stored voice prompts to help users create, store, retrieve, answer, send, or forward voice mail. It also answers calls for people who are busy or unavailable.

- **Lodging.** A simple call-answering and voice messaging application designed for hotels, other lodgings, and institutions such as hospitals and colleges. The guest voice messaging interface is multilingual.

- **Fax Messaging.** Allows Intuity AUDIX subscribers to handle faxes using voice mail capabilities. Users can send, receive, annotate, forward, broadcast, and otherwise handle a fax message just as they do a voice message. Voice, fax, and voice/fax messages are received in the same mailbox. Callers and subscribers can access voice and fax capabilities with a single call.

- **Intro Voice Response.** This set of tools allows the creation of applications to automate telephone transactions. Using recorded speech menus, the application responds to callers and requests information from them. When a caller requests specific information, the application can even ask for more data about their needs and then return an additional response.

  Intuity Intro Voice Response and Intuity AUDIX can share information among databases. For example, after requesting and obtaining information using Intro Voice Response, a caller can leave a voice message for the person who originated the information.

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- **Call Accounting System.** Intuity Call Accounting System collects and processes call records from the communications system, generating reports about facilities, extension, and traffic. The system is designed for costing purposes.

- **Message Manager.** Allows Intuity AUDIX subscribers to use their PCs to monitor and control AUDIX messages. In addition, if Intuity Fax Messaging is included in the system, subscribers can display and print faxes received in their mailboxes.

Group IV Fax

> **NOTE:**
> Through its support of high-speed digital facilities, the system allows you to use several types of advanced data communications application, including Group IV fax, videoconferencing, and rapid data transfer. For more information about digital facilities and adjuncts, see the following topics:
>
> - "Basic Rate Interface (BRI)" on page 82
> - "CTI (Computer Telephony Integration) Link" on page 173
> - "Digital Data Calls" on page 183
> - "Primary Rate Interface (PRI) and T1" on page 441
> - "Videoconferencing" on page I-60
> - "ExpressRoute 1000" on page I-69
> - "Ascend Pipeline 25-Px" on page I-72

Group IV (G4) fax is an application that enables the system to use the advanced Group IV fax equipment, one of the services accessible with Primary Rate Interface (PRI) facilities. Group IV fax equipment provides several advantages:

- High-speed transmission
- High-quality laser reproductions
- High-speed, high-capacity printing
- Virtually error-free transmission
- Office copying on a fax machine

Documents received from Group IV fax equipment are virtually perfect reproductions of the original document. Therefore, any company involved in graphic media (such as detailed engineering or architectural drawings or advertising graphic layouts) is an ideal candidate for this application.

Depending on the fax machine's interface, you can connect the Group IV equipment in the following ways:

- Direct RS-232 (the recommended method)

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- ■ V.35 interface connecting to an ExpressRoute 1000 RS-232D interface

- ■ V.35 interface connecting to a ExpressRoute 1000 ISDN terminal adapter

Each configuration requires additional equipment.

MERLIN PFC Telephone

IMPORTANT:
This section is intended solely as an overview of the application. For
comprehensive information about the use of the application, see the
documentation for the product.

The MERLIN PFC (Phone-Fax-Copier) telephone is a BIS-34D (34–button)
display telephone with a built-in fax machine and personal copier that provides a
fax machine and personal copier in one compact unit. See Figure I–3 for an
illustration of the PFC telephone.

The MERLIN PFC telephone allows users to:

- ■ Make and receive inside and outside calls with the built-in speakerphone
  and use the BIS-34D telephone features provided by the system.

- ■ Send and receive fax transmissions while using the telephone.

- ■ Make quick photocopies while using the telephone.

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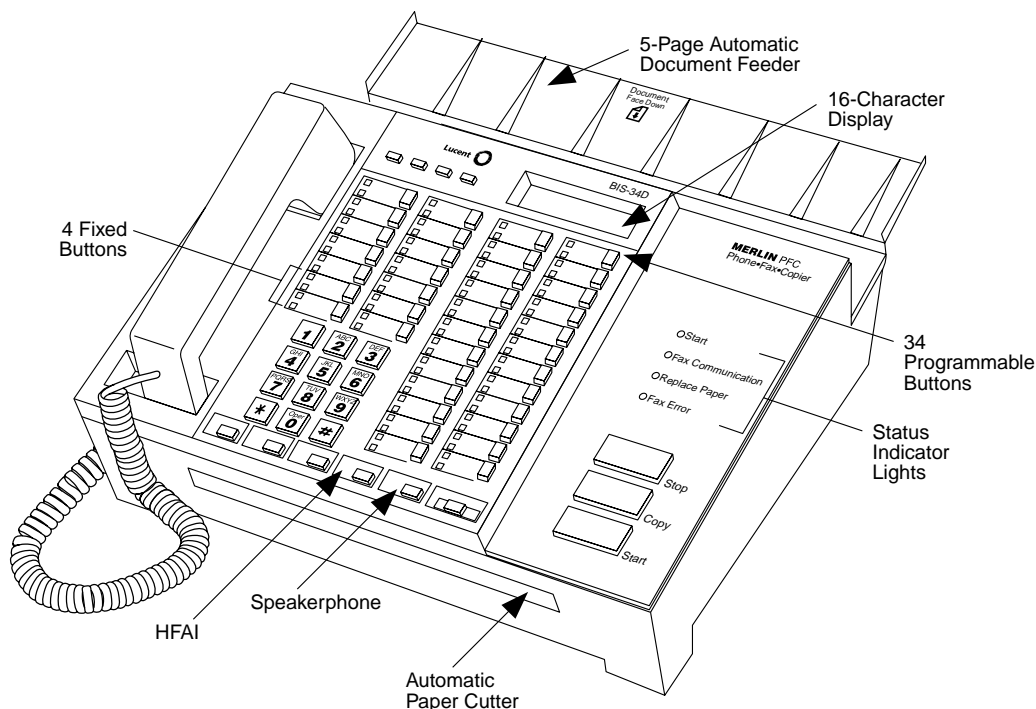
Figure I–3.   MERLIN PFC Telephone

The system must have two analog extension jacks available on the control unit. In Behind Switch mode, the system also requires a dedicated fax line for incoming fax calls; in Hybrid/PBX or Key mode, the system can have either a dedicated fax line or a Direct Inward Dial (DID) trunk.

> **NOTE:**
> The MERLIN PFC telephone's built-in fax does not transmit the date, time, and fax number.

Mode Differences

Hybrid/PBX and Key Modes

You must connect the dedicated fax line for incoming fax calls from the CO to a line/trunk jack in the control unit. You cannot assign the fax line to any pool.

If you use DID, you must assign a DID number to the fax extension.

If you use a dedicated private line, you must assign the fax line to the voice extension.

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You cannot assign lines and line pools to the fax extension.

At the fax extension you should program the dedicated fax line to Immediate Ring and any other lines to No Ring.

Behind Switch Mode

You can assign the dedicated fax line only to the MERLIN PFC telephone fax extension.

You cannot assign the dedicated fax line to a pool.

You should assign the dedicated fax line as the secondary line on the MERLIN PFC telephone.

Considerations and Constraints

The MERLIN PFC telephone requires two analog extension jacks on the control unit: one for the voice line and one for the fax line.

You must install the telephone wiring between the control unit and the MERLIN PFC telephone in the same building.

You cannot install a MERLIN PFC telephone outside of the building.

You must remove all button assignments, except the one for the fax line, from the fax extension.

You should remove the Voice Announce feature from the fax extension.

Feature Interactions

If the dedicated fax line is shared for outgoing calls only, you must program the Ringing Option to No Ring at any extension except the MERLIN PFC Telephone fax extension.

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Intuity CONVERSANT

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

Intuity CONVERSANT is a voice response system that enables a user to run integrated voice response (IVR) applications. Intuity CONVERSANT can automatically answer and route calls and execute telephone transactions. It is particularly useful for order-taking, for example.

You can configure the Intuity CONVERSANT software in one of two ways:

- As an application development environment in which all the tools to create an application are available

- As a platform to run applications that are already developed

Intuity CONVERSANT consists of the hardware and software that support transaction processing, data retrieval, and data entry using a touch-tone telephone connected to a public telephone network. When a telephone connection is made to Intuity CONVERSANT, the application running on Intuity CONVERSANT prompts the caller with a synthesized voice in an application-dependent dialogue. The caller enters the appropriate responses by using the touch-tone keys on the telephone. This interaction continues until the caller ends the call.

You can develop applications that allow calls to be transferred to an attendant telephone during some part of the dialogue. Calls also can be transferred automatically to an attendant telephone if the application determines that an attendant is required. Intuity CONVERSANT also supports scripts that allow callers to record and play back information.

Intuity CONVERSANT offers the following capabilities:

- Customized inbound call management or call routing

- Functions that are performed by choosing options in windows displayed on the screen

- Multiple script configuration possibilities that allow for different paths within the same script for handling calls during normal business hours, after hours, and on holidays

- Simple prompt-recording using a telephone

- Optional seasonal greetings to be played during set time intervals

- Interaction of applications with voice mailboxes, with the ability to leave and retrieve messages, execute voice mail scripts, or get subscriber information

- Creation of tables and retrieval and updating of data using database tables

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- Logging and displaying error messages

- Management reports and a system monitor for monitoring daily and ongoing system progress

Considerations and Constraints

Intuity CONVERSANT supports a maximum of 24 channels of analog ports, or up to 6 IVP4 boards. In a coresident environment, such as Intuity CONVERSANT and Intuity AUDIX Voice Power, the system supports a maximum of 16 channels. The number of channels assigned to AUDIX Voice Power can *never* exceed 12.

Platform Requirements

The platform for Intuity CONVERSANT is the Master Controller III, a high-performance 32-bit computer built around an 486SX microprocessor. It has 8 MB of random-access memory (RAM) and a 500-MB fixed disk drive. The Master Controller III uses UNIX System V version 3.2.2. It includes a system unit, a monitor, and a keyboard.

The system unit also comes with a 250-MB tape drive and a 3.5-in. floppy disk drive. Two serial ports and one parallel port are integrated on the main board with connectors on the back panel of the system unit. A diskette drive controller and fixed disk drive interface are also integrated on the main board. A Video Graphics Array (VGA) video display controller and a tape drive controller are provided on separate add-in boards. Six additional Extended Industry Standard Architecture (EISA) slots are available for other Input/Output (I/O) cards.

Picasso Still-Image Phone

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

This single-line telephone allows users simultaneously to transmit and discuss full-color, still images. It permits rapid, accurate communication of visual images for remote conferences, project reviews, and remote presentations. It provides the following features:

- Storage of up to 32 images in the phone itself

- Hardcopy output from a video printer supplied by the customer

- Optional wireless remote control

- Optional real-time annotation using a Windows-compatible annotation device such as a mouse

- Windows interface software

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- Support for required customer-supplied input device

- Support for required customer-supplied monitor

Considerations and Constraints

Image transmission requires 5 to 40 seconds.

The customer supplies a required input device and monitor.

Both parties on a call must have a Picasso Still-Image Phone.

Platform Requirements

The Picasso Still-Image Phone connects to a port on a 016 or 012 module and uses any analog central office line/trunk. Depending upon the configuration and optional features required, the following components may be needed:

- Windows version 3.1 or higher

- A replacement handset

- An annotation device

- A TV monitor or LCD monitor (required)

- A customer-supplied camcorder, electronic camera, document camera, VCR, or photo CD player as an input device (required)

- An AC power supply with power supply cord (required)

- An RCA video cable

- A 4-pin mini DIN video cable

- A BNC-RCA adapter

- An RF modulator

- An F connector cable

- A 6-outlet power strip

Videoconferencing

$\Longrightarrow$ **NOTE:**
Through its support of high-speed digital facilities, the system allows you to use several types of advanced data communications applications, including Group IV fax, videoconferencing, and rapid data transfer. For more information about digital facilities and adjuncts, see the following topics:

- "Basic Rate Interface (BRI)" on page 82

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The system supports two types of videoconferencing systems:

- **Desktop Videoconferencing Workstation.** This type of data workstation typically consists of a PC or LAN workstation with one or more videoconferencing circuit boards installed; the video system is equipped with an ISDN-BRI interface. A microphone, software, and a video camera are also included. This type of video workstation does not require separate data communications equipment.

- **Group Videoconferencing Workstations.** Group videoconferencing equipment is usually more expensive than desktop equipment and provides more capabilities. Such standalone systems include a built-in monitor and are installed in conference rooms or on roll-about units. There are two types of group videoconferencing workstations:

  — **ISDN Group Videoconferencing Workstations.** ISDN group videoconferencing systems do not require separate data communications equipment and are equipped with an ISDN-BRI interface.

  — **V.35 Group Videoconferencing Workstation.** This type of data workstation usually consists of a roll-about or built-in videoconferencing system as its data terminal equipment. The data communications equipment consists of two ISDN terminal adapters and sometimes two EIA 232/V.35 converters. The converters are not needed when the equipment includes interfaces other than V.35, such as V.24. Sometimes an inverse multiplexor (IMUX) is connected instead of the two terminal adapters.

$\Longrightarrow$ **NOTE:**
For the most complete information about videoconferencing, see the *Data/Video Reference.* In this guide, includes details about how the system functions with 2B data.

Videoconferencing requires PRI, BRI, or T1 Switched 56 digital services for communications at 56 or 64 kbps (kilobits per second) per channel or B-channel. Many videoconferencing systems require two channels, for speeds of 112 or 128 kbps.

Basic video system components include the following:

- Camera

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- Microphone

- Video codec circuitry that digitizes and compresses audio and video signals

- Cables

- Software

Additional data communication equipment may be built-in or required as separate components.

Group and desktop videoconferencing systems differ primarily in the capabilities and sophistication of the equipment and software that they include. The type of *interface*, not whether they designed for groups or individuals, differentiates their use with the communications system.

Making and receiving voice calls are not supported on telephones included with videoconferencing systems. However, the system's 2B Data feature allows connection of a *passive-bus* MLX telephone to a desktop videoconferencing system, as described in the topic .

Group Videoconferencing

Group videoconferencing enables groups of people in different geographical locations to meet face to face. Conferees can exchange information, documents, ideas, and data while employing a variety of visual aids. Visual aids can include interactive writing and drawing, prepared text and graphic materials, and prerecorded audio and video material. Improved technology, superior camera optics, and digital audio signals result in video pictures that are equal to commercial broadcast quality.

Users start videoconferences from an easy-to-use control console and conduct the conference as easily as they operate a telephone. No special technical expertise is required.

Group video systems are often integrated in a mobile roll-about console that can be wheeled easily into a conference room or executive office prior to a scheduled videoconference call. Alternatively, the components can be built into a videoconference room.

Older group videoconferencing systems use V.35 interfaces, requiring two ISDN terminal adapters or an inverse multiplexor (IMUX); these components are sometimes included with the systems. Newer group videoconferencing systems use ISDN/BRI interfaces and include data communications equipment.

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Desktop Videoconferencing

Desktop videoconferencing allows video calls, data transfer, and screen-sharing between two PCs equipped with compatible hardware and software. Most systems provide extensive menu- and mouse-driven interfaces with options for call control. Desktop videoconferencing systems use ISDN/BRI interfaces.

With standalone configuration, only the desktop video system is attached to the MLX port. The desktop video system always has full access to two B-channels in its connection to the MERLIN LEGEND Communications System. Therefore, it always has the capability to make and receive 2B data video calls.

With the passive-bus configuration, one MLX port serves both the desktop video system and an MLX telephone. The MLX telephone is not directly connected to the MLX extension jack on the control unit. Instead, it is connected to the desktop video system card. The desktop video connection to the MLX extension jack handles the communications for both devices.

The MLX telephone uses one of the B-channels of the extension jack. While the telephone is in use, the video system can make or receive only 1B data calls. If the passive-bus telephone's handset and speakerphone are both in use, then both B-channels are busy and no video calls can be placed or received. Because a video call generally uses both available B-channels, a user of the attached MLX telephone cannot place or answer any voice calls or dial any feature codes while a 2B video call is active.

Mode Differences

Key Mode

In Key mode, a video workstation can be set up for inside video only, outside video only, or both inside and outside video. To place and receive calls in this mode, a video workstation uses personal lines or intercom lines programmed for the MLX adjunct extension. Program and then make calls as follows:

■ **Inside and Outside Video**

— To make an *outside* call, enter the Idle Line Access code (usually *9*) and the telephone number; repeat this step for the second call. Or, enter the line number (for example, 808) of an outside line assigned to the adjunct extension; repeat this step for the second call, using another assigned line number.

— To place an inside call to a videoconferencing workstation programmed for 2B data, enter the MLX adjunct extension number for the video system twice. If you are calling a V.35 group videoconferencing system, enter a different MLX adjunct extension number for each call.

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- **Inside Video Only.** Outside lines should not be assigned to the adjunct extension(s). To place an inside call to a videoconferencing workstation programmed for 2B data, enter the MLX adjunct extension number for the video system twice. If you are calling a V.35 group videoconferencing system, enter a different MLX adjunct extension number for each call.

- **Outside Video Only.** Use Idle Line Access to dial the telephone number; repeat this step for the second call.

To call the telephone at a passive-bus desktop videoconferencing workstation, dial the extension number for the telephone.

To disconnect from a video call, follow the instructions provided with the videoconferencing system.

Hybrid/PBX Mode

As in Key mode, a video workstation in Hybrid/PBX mode can be set up for inside video-only operation, outside video only, or both inside and outside video.

- **Inside and Outside Video**

  — To make an *outside* call, enter the line number (for example, 808) of an outside line assigned to the adjunct extension; repeat this step, using another assigned line number, for the second call. Or, if ARS has been programmed for data, enter the ARS access code (usually *9*), followed by the telephone number; repeat this step for the second call.

  $\Longrightarrow$ **NOTES:**
  1. Pools can be assigned to video extensions and used for outside calls. However, this is not recommended, because two separate pools are required at a video extension. If a system includes two or more video extensions with the same two pools assigned to them, incoming calls can be misdirected.

  2. Shared System Access (**SSA**) buttons are not recommended for video extensions because they can cause 2B data calls to ring at and be answered by an extension that should not answer.

  — To place an inside call to a videoconferencing workstation programmed for 2B data, enter the MLX adjunct extension number for the video system twice. If you are calling a V.35 group videoconferencing system, enter a different MLX adjunct extension number for each call.

- **Inside Video Only.** Outside lines should not be assigned to the adjunct extension(s); dial access to pools should be restricted, and FRLs should be assigned to restrict outside calling. To place an inside call to a videoconferencing workstation programmed for 2B data, enter the MLX adjunct extension number for the video system twice. If you are calling a V.35 group videoconferencing system, enter a different MLX adjunct extension number for each call.

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■ **Outside Video Only.** Only one **SA** button should be assigned to the extension(s). To make a call, enter the line number (for example, 808) of an outside line assigned to the adjunct extension; repeat this step for the second call, using another assigned line number. Or, if ARS has been programmed for data, enter the ARS access code (usually *9*), followed by the telephone number, for one of the calls.

To disconnect from a video call, follow the instructions provided with your videoconferencing equipment.

Considerations and Constraints

Generally, video workstations should have exclusive use of their own lines and dedicated pools (Hybrid/PBX mode only). Because they require two lines for optimal performance, sharing lines is often not practical. Pools should be assigned only lines that provide like services (for video systems, T1 data-only, or PRI and BRI voice and data). ARS should also be programmed so that extensions access pools with the proper grouped facilities (T1 or analog voice only, T1 data only, or PRI/BRI voice and data). ARS default local and toll tables should be programmed to route calls according to their type: voice only, data only, or both voice and data. For more information, see"Automatic Route Selection" on page 63, "Basic Rate Interface (BRI)" on page 82, and "Primary Rate Interface (PRI) and T1" on page 441.

When a passive-bus MLX telephone is included in a desktop video workstation, it should be located near the video system, so that the user at the telephone is aware of calls at the video system.

Feature Interactions

Features that redirect the destination of a call (for example, Coverage features and Forwarding) are not often practical for extensions used by videoconferencing systems (although passive-bus MLX extensions can take advantage of these features). For example, if a video system is a coverage sender, a receiving video system can be assigned only one Cover button for the sender. Therefore, it cannot receive both calls of a 2B video call.

Data hunt groups are not practical where 2B data is required, because two calls must arrive at the destination video system, and data hunt groups distribute the two calls that make up a 2B data call to two different data hunt group members.

The following list details specific feature interactions. For additional information, see the *Data/Video Reference.*

Account Code Entry   Account Code Entry can be entered for calls made by video systems that support the use of # for feature codes. The account code must be entered before the telephone number.

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Authorization Code	Authorization codes can be used by video systems that support the use of # for feature codes.
Auto Dial	A video system that supports the use of entering # for feature codes can use Auto Dial in the same fashion.
Automatic Route Selection	Video calls can be made using ARS. To make calls using ARS, video systems simply dial the ARS dial-out code (usually *9*) followed by the telephone number. The calls *must* be routed through ARS pools that have only PRI, NI-1 BRI, and/or Switched 56 T1 data lines. To make a 2B data call, the user must access two separate lines.
Barge-In	Video calls cannot be barged into.
Call Waiting	Call waiting does not work with video calls. The call appears to wait but does not return to the extension when it becomes available. This feature should be disabled at video system extensions.
	At a passive-bus MLX telephone, Call Waiting requires one of the B-channels needed for a 2B video call and should be used only when the video system is not active on or receiving a call.
Callback	Video systems can be programmed for Callback. When either a pooled line becomes available or the busy video system is idle, the queued call is made, one B-channel at a time. When the second B-channel becomes available, it is added to the call if the video system supports this capability. Off-hook Callback must be used.
Callback *continued*	Automatic Callback should be disabled for videoconferencing extensions. It can be used at an MLX passive-bus extension at a desktop video workstation. If you use Automatic Callback, the call is connected as a 1B data call.
Camp-On	Video calls cannot be camped on.
Conference	Conference does not function with video calls.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold for conferencing at a passive-bus MLX telephone when a 2B call comes in, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Coverage	Individual Coverage is not recommended for 2B data calls. Because a coverage receiver can have only one Cover button for each coverage sender, covered 2B data calls are received only as 1B data calls at the coverage receiver. The second call also continues to ring at the coverage sender.
	Coverage is not recommended for video extensions. However, an MLX passive-bus telephone can be covered during 2B video calls (when both B-channels are busy), but it must have a programmed Do Not Disturb button. The user at the telephone activates Do Not Disturb during 2B calls. A passive-bus MLX telephone can also be a coverage receiver.
Directories	Videoconferencing systems cannot make use of Extension, Personal, or System Directories.

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Do Not Disturb	Do Not Disturb can be activated by video systems that have the ability to dial strings and feature codes beginning with #.
	A Do Not Disturb button should be programmed at MLX passive-bus telephones, and the feature should be activated during 2B video calls. Otherwise, voice calls ring and flash at the MLX telephone during 2B data calls, even though they cannot be answered.
	The use of Do Not Disturb at a passive-bus MLX telephone allows voice calls to be covered while 2B video calls are in progress.
Forward and Follow Me	Forward can be activated by video systems that have the ability to dial strings and feature codes beginning with #. 2B data calls are forwarded as two 1B data calls.
	Remote Call Forwarding is not available at video system extensions.
Group Calling	When receiving calls through a calling group or data hunt group, video systems can connect only using 1B data connections and only if the video application supports 1B data. A calling group dispenses only one call to each calling group member.
Hold	Video calls cannot be put on hold.
	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold at a passive-bus MLX telephone when a 2B call comes in, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Last Number Dial	Last Number Dial can be activated by video systems that can dial strings and feature codes beginning with #.
Messaging	Messaging features are not available for video extensions, but can be used by MLX passive-bus telephones.
Multi-Function Module	An MFM cannot be used with a digital communications device or videoconferencing system.
Night Service	If a videoconferencing system is a member of the Night Service group, voice calls to Night Service group do not ring at these extensions. Video calls *do* ring, and 2B data calls can be established. However, if there are two or more 2B data extensions in the system assigned to Night Service groups, 2B data calls can be answered at the wrong extension during Night Service.
Notify	Signaling can be activated by video systems that have the ability to dial strings and feature codes beginning with #.
	A Notify signal can be received at a passive-bus MLX telephone, even when a 2B data or voice call is active.
Paging	Videoconferencing systems can be assigned to a paging group. However, they should not be: they are not alerted if there is a call to a paging group, and they cannot make group pages.
Park	Video calls cannot be parked.

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Personal Lines	Personal lines can be assigned to videoconferencing systems. It is best for these extensions to have exclusive use of their own personal lines; if they do not, the system manager should ensure that enough idle lines are available, particularly when a video system is receiving 2B data calls. Otherwise, the video system may receive only 1B data while another extension is using a second personal line.
	Personal lines are shared between an MLX telephone and a desktop video system in passive-bus configuration. 2B data calls can be completed in this situation.
Pickup	Pickup is not recommended at video system extensions, although it can be used at a passive-bus MLX telephone.
Pools	If a videoconferencing system is programmed to have a single **Pool** button, two calls to that pool result in a 1B data call. However, if two separate pools are assigned to a videoconferencing system extension, then a 2B data call can be established. If a system includes two or more video systems sharing the same pools, incoming 2B data calls can be misrouted.
Privacy	Privacy is activated automatically for video calls.
Reminder Service	Videoconferencing systems cannot receive reminder calls.
Remote Access	Video calls cannot be made into lines programmed for remote access.
Ringing Options	Personalized Ringing and ringing options have no effect on calls to a videoconferencing system.
Speed Dial	Speed Dial codes can be used only on digital video systems that have the ability to dial feature codes or number strings beginning with #.
Transfer	2B data video calls require both B-channels at a video workstation. For this reason, if a call is on hold for transfer at a passive-bus MLX telephone when a 2B call comes in, the passive-bus MLX telephone cannot retrieve the held call until the 2B video call is over.
Voice Announce to Busy	At a passive-bus MLX telephone, Voice Announce to Busy requires one of the B-channels needed for a 2B video call and should be used only when the video system is not active on or receiving a call.

System Programming

In order to use the 2B Data feature, the video workstation's MLX port must be programmed for the feature. An extension jack programmed as a QCC position (Hybrid/PBX mode only) cannot be programmed for 2B data and used by a desktop or ISDN group videoconferencing workstation. Extensions for MFMs (or data communications equipment not supporting 2B data, such as ISDN terminal adapters) cannot be programmed for data and should not be connected to 2B data ports.

For programming details, see *System Programming.*

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Platform Requirements

Below is a summary of the required hardware and facilities.

- At the control unit:

  — A 100D module set up for Primary Rate Interface (PRI) operation or T1 Switched 56 operation (with channels programmed for T1 data service); or an NI-1 BRI line/trunk module for NI-1 BRI service

  — If a 100D module is used, a CSU (channel service unit) is necessary.

  — A 008 MLX or 408 GS/LS MLX module (not firmware vintage 29)

- For digital data communications, the system operates with the following central office switches, according to the access arrangement or facility:

  — **PRI.** Requires Lucent Technologies 4ESS Generic 16 and later; or Lucent Technologies 5ESS Generic 6 and later; or Lucent Technologies 5ESS serving the FTS-2000 network. In Release 5.0 and later systems, support is included for the NORTEL DMS-100 BCS 36 for local exchange carrier services, NORTEL DMS-250 generic MCI07 serving the MCI network, and Digital Switch Corporation DEX600E generic 500-39.30 serving the MCI network

  — **NI-1 BRI.** Requires Lucent Technologies 5ESS Generic 9; or Lucent Technologies 5ESS 2000 Generic 9.2; or Northern Telecom DMS-100 Generic NA003; or Siemens Stromberg-Carlson EWSD Generic ATS-12.

  — **T1 Switched 56 Data.** Requires Lucent Technologies 4ESS Generic 18/19/20; or Lucent Technologies 5ESS Generic 9.1; or Northern Telecom DMS-100 Generic BCS 34.

- Network services for high-speed data transmission are available from AT&T, MCI (Release 4.2 and later systems), and your local service provider (Release 4.2 and later systems). For details, see "Primary Rate Interface (PRI) and T1" on page 441.

- Video equipment (including a variety of components depending upon your needs, for example, two ISDN terminal adapters if required for use with V.35 circuitry, video codec, a camera, cables, software, and a microphone)

ExpressRoute 1000

IMPORTANT:
This section is intended solely as an overview of the application, which is no longer available for sale. For comprehensive information about the use of the application, see the documentation for the product.

⊳ **NOTE:**
Through its support of high-speed digital facilities, the system allows you to use several types of advanced data communications applications,

including Group IV fax, videoconferencing, and rapid data transfer. For more information about digital facilities and adjuncts, see the following topics:

- "Basic Rate Interface (BRI)" on page 82
- "CTI (Computer Telephony Integration) Link" on page 173
- "Digital Data Calls" on page 183
- "Primary Rate Interface (PRI) and T1" on page 441
- "Videoconferencing" on page I-60
- "Group IV Fax" on page I-54
- "Ascend Pipeline 25-Px" on page I-72

The ExpressRoute 1000 is an ISDN terminal adapter, also referred to as a *digital modem*, that allows users to perform high-speed data transfer internally through the MERLIN LEGEND Communications System and over ISDN or T1 Switched 56 lines, at 64 kbps or 56 kbps. The ExpressRoute 1000 cannot take advantage of 2B data connections.

⇒ **NOTE:**
For the most complete information about using terminal adapters with the system, see the *Data/Video Reference.* In this guide, "Digital Data Calls" on page 183 includes details about how the system functions with digital communications devices.

The ExpressRoute 1000 supports data calls over Primary Rate Interface B-channels (at 64 kbps), Basic Rate Interface B-channels (at 64 kbps), and T1 Switched 56 lines (at 56 kbps).

Feature Interactions

Account Code Entry	Account Code Entry can be entered for calls made by digital data workstations.
Authorization Code	Data calls can use authorization calls. If Account Code Entry is also used, the authorization code must be entered after the account code.
Auto Dial	An ExpressRoute 1000 can make a call using an Auto Dial button by dialing the virtual number of the button (for example, *#01*).
Automatic Route Selection	Data calls can be made using ARS. ExpressRoute 1000s simply dial the ARS dial-out code (usually *9*) followed by the telephone number to make calls using ARS. The data calls *must* be routed through ARS pools that have only PRI, NI-1 BRI, and/or Switched 56 T1 data lines.
Barge-In	Data calls cannot be barged into.
Call Waiting	Call waiting does not work with data calls. The call appears to wait but does not arrive when the extension becomes available.

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Camp-On	Camp-On does not function with data calls.
Conference	Conference does not function with data calls.
Coverage	Coverage delays do not apply to data calls. Calls ring immediately.
Directories	ExpressRoute 1000s cannot make use of Extension, Personal, or System Directories.
Do Not Disturb	ExpressRoute 1000s can activate Do Not Disturb, by dialing the virtual button number (for example, `#01`) of the Do Not Disturb button.
Forward and Follow Me	ExpressRoute 1000s can forward calls by dialing the associated feature code. Inside calls can be answered at either the forwarding ExpressRoute 1000 or the destination ExpressRoute 1000. Outside calls, however, are only answered by the forwarding ExpressRoute 1000.
Group Calling	Lines intended for data calls should not be mixed in the same Calling Group with lines intended for voice calls.
Hold	Data calls cannot be put on hold.
Last Number Dial	ExpressRoute 1000s can use Last Number Dial by dialing the Last Number Dial feature code.
Multi-Function Module	An MFM cannot be used with an ExpressRoute 1000.
Night Service	If an ExpressRoute 1000 is a member of the Night Service group, voice calls to Night Service group calls do not ring at an ExpressRoute 1000. Data calls *do* ring.
Paging	ExpressRoute 1000s can be in a paging group. However they are not alerted if there is a call to a paging group, and they cannot make group pages.
Ringing Options	Personalized Ringing has no effect on calls to an ExpressRoute 1000.
	ExpressRoute 1000s follow programmed ringing options and should be set to Immediate Ring.
Park	Data calls cannot be parked.
Personal Lines	Personal lines can be assigned to ExpressRoute 1000s; however, the personal lines should *not* be shared between them.
	Personal lines can be shared between an MLX and an ExpressRoute 1000 connected to the MLX adjunct extension. This configuration allows voice calls to ring at the MLX telephone and data calls to be received by the ExpressRoute 1000.
Pickup	An ExpressRoute 1000 can pick up a data call.
Reminder Service	ExpressRoute 1000s cannot receive reminder calls.
Remote Access	Data calls cannot be made into lines programmed for remote access.
System Access/ Intercom Buttons	Data calls cannot be presented as voice calls, although they can make calls using **ICOM** or **SA** Voice Announce buttons.
Transfer	Data calls cannot be transferred.

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Ascend Pipeline 25-Px

IMPORTANT:
This section is intended solely as an overview of the application. For comprehensive information about the use of the application, see the documentation for the product.

➨ **NOTE:**
Through its support of high-speed digital facilities, the system allows you to use several types of advanced data communications applications, including Group IV fax, videoconferencing, and rapid data transfer. For more information about digital facilities and adjuncts, see the following topics:

- "Basic Rate Interface (BRI)" on page 82
- "CTI (Computer Telephony Integration) Link" on page 173
- "Digital Data Calls" on page 183
- "Primary Rate Interface (PRI) and T1" on page 441
- ''Videoconferencing'' on page I-60
- ''ExpressRoute 1000'' on page I-69
- ''Group IV Fax'' on page I-54

The Ascend Communications, Inc. Pipeline 25-Px access device is an ISDN-BRI bridge/router that enables high-speed Internet access over a digital facility. This data communications equipment allows an Internet service provider to dynamically assign an IP address to the device. Because of this capability, the Pipeline 25-Px can be used for standard consumer Internet access accounts, which are considerably less expensive than business or local area network (LAN) accounts.

➨ **NOTE:**
For the most complete information about using the 2B Data feature, see the *Data/Video Reference.* In this guide, "Digital Data Calls" on page 183 includes details about how the system functions with digital communications devices.

The Pipeline 25-Px makes outgoing calls only; it cannot perform server-side applications.

The Pipeline 25-Px connects to the network card in a PC; the access device connects to an MLX extension jack that can access a PRI, T1 Switched 56, or BRI facility using Automatic Route Selection (ARS, Hybrid/PBX mode only) programmed to route data calls over appropriate facilities, personal lines, or dial access to pools (not recommended). The Pipeline 25-Px can use the system's 2B Data feature, for speeds as high as 128 or 112 kbps.

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The access device can also be used in applications that require a user to dial into a server located on a remote LAN, for example, at a branch site accessing information on a service on the main-site LAN. The far-end device (in this example, at the main site) must be able to terminate a digital connection and establish a connection with the Pipeline 25-Px using industry-standard Point-to-Point Protocol (PPP) and/or Multichannel PPP. Examples of such far-end devices are remote-node LAN access servers such as those used by Internet service providers and ISDN routers capable of answering incoming calls.

The Ascend Pipeline 25-Px includes the following components:

- Pipeline 25-Px, model P25-1S-PX

- 10Base-T Ethernet crossover cable for connecting the access device to the network card in a user's PC

- RJ-38C ISDN cable for connecting the access device to the MLX jack on the system

- DB-9 to DB-25 serial cable adapter for use when connecting the Pipeline 25-Px control port to a PC serial port

- Power supply

Considerations and Constraints

One Pipeline 25-Px serves a single PC; it cannot serve multiple PCs or other terminal equipment such as fax machines or telephones. For 2B data, it requires both extensions of an MLX extension jack.

Feature Interactions

Data hunt groups are not practical where 2B data is required, because two calls must arrive at the destination video system, and data hunt groups distribute the two calls that make up a 2B data call to two different data hunt group members.

Account Code Entry	Account Code Entry can be entered for calls made by digital data workstations.The account code must be entered before the telephone number.
Authorization Code	Data calls can use authorization calls. If Account Code Entry is also used, the authorization code must be entered after the account code.
Automatic Route Selection	Data calls can be made using ARS. To make calls using ARS, communications devices simply dial the ARS dial-out code (usually *9*) followed by the telephone number. The data calls *must* be routed through ARS pools that have only PRI, NI-1 BRI, and/or Switched 56 T1 data lines. To make a 2B data call, the user must access two separate lines.
Barge-In	Data calls cannot be barged into.

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Call Waiting	Call waiting does not work with data calls. The call appears to wait but does not return to the extension when it becomes available. This feature should be disabled at data extensions.
Callback	Automatic Callback should be disabled for digital data extensions.
Camp-On	Data and video calls cannot be camped on.
Conference	Conference does not function with data calls.
Coverage	individual Coverage is not recommended for 2B data calls. Because a coverage receiver can have only one Cover button for each coverage sender, covered 2B data calls are received only as 1B data calls at the coverage receiver. The second call also continues to ring at the coverage sender.
	Coverage delays do not apply to data calls. Calls ring immediately.
Directories	Digital communications devices cannot make use of Extension, Personal, or System Directories.
Do Not Disturb	Digital communications devices can activate Do Not Disturb by dialing the virtual button number (for example *#01*) of the Do Not Disturb button.
Forward and Follow Me	Digital communications devices can forward calls by dialing the associated feature code. Inside calls can be answered either at the forwarding device or the destination terminal adapter. Outside calls, however, are only answered by the forwarding device.
Hold	Data calls cannot be put on hold.
Messaging	Messaging features are not available for data extensions.
Multi-Function Module	An MFM cannot be used with a digital communications device.
Night Service	If a digital communications device is a member of the Night Service group, voice calls to Night Service group do not ring at these extensions. Data or video calls *do* ring, and 2B data calls can be established. However, if there are two or more 2B data extensions in the system assigned to Night Service groups, 2B data calls can be answered at the wrong extension during Night Service.
Paging	Digital communications devices can be assigned to a paging group. However, they should not be: they are not alerted if there is a call to a paging group, and they cannot make group pages.
Park	Data calls cannot be parked.
Personal Lines	Personal lines can be assigned to digital communications devices. It is best for these extensions to have exclusive use of their own personal lines; if they do not, the system manager should ensure that enough idle lines are available, particularly for 2B data calls.
Pickup	A digital communications device can pick up a data call.

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Pools	If a digital communications device is programmed to have a single **Pool** button, two calls to that pool result in a 1B data call. However, if two separate pools are assigned to the data extension, then a 2B data call can be established. If there is more than one video system sharing the pools, 2B data calls can be misrouted.
Privacy	Privacy is activated automatically for digital data calls.
Reminder Service	Digital communications devices cannot receive reminder calls.
Remote Access	Data calls cannot be made into lines programmed for remote access.
Ringing Options	Personalized Ringing and Ringing Options have no effect on calls to digital communications devices. Calls ring immediately.
Speed Dial	Personal and System Speed dial codes can be used on digital communication equipment (DCE).
Transfer	Data calls cannot be transferred.
Voice Announce to Busy	Voice Announce to Busy should be disabled at digital data workstations.

System Programming

In order to use the 2B Data feature, the Pipeline 25-Px's MLX port must be programmed for the feature. An extension jack programmed as a QCC position (Hybrid/PBX mode only) cannot be programmed for 2B data and used by the access device. Extensions for MFMs (or data communications equipment not supporting 2B data, such as ISDN terminal adapters) cannot be programmed for data and should not be connected to 2B data ports.

For programming details, see *System Programming.*

Platform Requirements

Here is a summary of the required hardware and facilities:

- At the MERLIN LEGEND Communications System Release 4.0 or later control unit:

  — A 100D module set up for Primary Rate Interface (PRI) operation or T1 Switched 56 operation (with channels programmed for T1 data service); or an NI-1 BRI line/trunk module for NI-1 BRI service

  — If a 100D module is used, a CSU (channel service unit) is necessary.

  — A 008 MLX or 408 GS/LS MLX module (not firmware vintage 29)

- For digital data communications, the system operates with the following central office switches, according to the access arrangement or facility:

  — **PRI.** Requires Lucent Technologies 4ESS Generic 16 and later; or Lucent Technologies 5ESS Generic 6 and later; or Lucent Technologies 5ESS serving the FTS-2000 network. In Release 5.0 and later systems, support is included for the NORTEL DMS-100 BCS 36 for local

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exchange carrier services, NORTEL DMS-250 generic MCI07 serving the MCI network, and Digital Switch Corporation DEX600E generic 500-39.30 serving the MCI network.

— **NI-1 BRI.** Requires Lucent Technologies 5ESS Generic 9; or Lucent Technologies 5ESS 2000 Generic 9.2; or Northern Telecom DMS-100 Generic NA003; or Siemens Stromberg-Carlson EWSD Generic ATS-12.

— **T1 Switched 56 Data.** Requires Lucent Technologies 4ESS Generic 18/19/20; or Lucent Technologies 5ESS Generic 9.1; or Northern Telecom DMS-100 Generic BCS 34.

■ Network services for high-speed data transmission are available form AT&T, MCI (Release 4.2 and later systems), and your local service provider (Release 4.2 and later systems). For details, see "Primary Rate Interface (PRI) and T1" on page 441.

The PC must be running Windows 3.11, Windows 95, Windows NT, Macintosh OS, or UNIX. At the PC, the following hardware is required:

■ 10Base-T Ethernet network interface card

■ Serial communications port capable of transmitting data at 9.6 kbps

■ Serial communications (modem) cable for the PC

In addition to the operating system software, TCP/IP and Internet tool software (for example, a browser and email application) must be installed on the PC. The user must have an account with an Internet service provider (ISP), who should provide the following information to the user:

■ Domain name server (DNS)

■ Account name and password

■ Type of password authentication protocol used

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