AT&T

MERLIN LEGEND ®
Communications
System
Release 3.0

System Programming
and
Maintenance (SPM)

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" following *Programming Summary,* for important information.

Security of Your System: Preventing Toll Fraud

As a customer of a new telephone 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. For important information regarding your system and toll fraud, see Appendix A, "Customer Support Information" following *Programming Summary.*

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" following *Programming Summary.*

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'èmet pas de bruits radioélectriques dèpassant Ies Iimites applicable aux appareils numèriques de la class A prescribes clans Ie reglement sur Ie brouillage radioélectrique èdicté par Ie ministère des Communications du Canada.

Trademarks

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MS-DOS is a registered trademark of Microsoft Corp.
Hayes IS a registered trademark of Hayes Microcomputer Products, Inc.
UNIX IS a registered trademark of UNIX System Laboratories, Inc.

Ordering Information

The ordering number for this document is 555-630-140. To order this document, call the AT&T Customer Information Center at 1-800-432-6600 (in Canada, 1-800-255-1242). For more information about AT&T documents, refer to the section entitled, "Related Documents" in "About This Book. " The *Pocket Reference,* listed in that section, provides full ordering Information for replacement parts, accessories, and other compatible equipment; or, contact your AT&T representative.

Support Telephone Number

In the continental U. S., AT&T provides a toll-free customer helpline 24 hours a day. Call the AT&T Helpline at 1-800-628-2888 If you need assistance when installing or using your system.

Outside the continental U. S., contact your local AT&T representative.

Warranty

AT&T provides a limited warranty on this product. Refer to "Limited Warranty and Limitation of Liability" in Appendix A, "Customer Support Information" following *Programming Summary.*

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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.

IMPORTANT SAFETY INSTRUCTIONS

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 AT&T-manufactured MERLIN LEGEND Communications System circuit modules, carrier assemblies, and power units in the MERLIN LEGEND Communications System control unit.

■ Use only AT&T-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.

- 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

About This Book

System Programming and Maintenance (SPM) is a software tool developed specifically for the MERLIN LEGEND Communication System to allow programming, administration, and maintenance tasks to be done on a PC.

Intended Audience

This book is intended for anyone who uses a PC to perform programming or maintenance tasks for the communication system, It is especially aimed at system managers and support personnel.

"Related Documents, " later in this section, provides a complete list of system documentation together with ordering information.

In the U.S.A. only, AT&T provides a toll-free customer Helpline (1 -800-628-2888) 24 hours a day. Call the Helpline, or your AT&T representative, if you need assistance when installing, programming, or using your system.

Terms and Conventions Used

In this document, the terms in the following list 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 two switches, for example, an intercom line or a Centrex line. However, in actual usage, the terms line and trunk are often applied interchangeably. {n this book, we use line/trunk and lines/trunks to refer to facilities in general. Specifically, we refer to digital facilities. We also use terms such as personal line, ground-start trunk, DID trunk, and so on. When you talk to your local telephone company central office, ask them what 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.

trunk module	line/trunk module
trunk jack	line/trunk jack
station	extension
station jack	extension jack
analog data station	modem data station
digital data station	7500B data station
analog voice and analog data station	analog voice and modem data
digital voice and analog data station	MLX voice and modem data
analog data only station	modem data only station
digital data only station	7500B data only station
digital voice and digital data station	MLX voice and 75006 data station

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.

Nondisplaying authorization codes and telephone numbers provide another layer of security. For more information, see 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-documents can be ordered from the AT&T Customer Information Center by calling 1-800-432-6600.

Document No.	Title
	System Documents
555-630-117	*Introduction*
555-630-118	*System Manager's Guide*
555-630-110	*Feature Reference*
555-630-115	*Equipment and Operations Reference*
555-630-116	*Pocket Reference*
555-630-111	*System Programming*
555-630-112	*System Planning*
555-630-113	*System Planning Forms*

	Telephone User Support
555-630-122	*MLX-10D™, MLX-10DP™, MLX-28D™, and MLX-20L™ Display Telephones User's Guide*
555-630-150	*MLX- 10D Display Telephone Tray Cards (5 cards)*
555-630-153	*MLX-28D and MLX-20L Telephone Tray Cards (5 cards)*
555-630-124	*MLX- 10™ Nondisplay Telephone User's Guide*
555-630-151	*MLX-10 Nondisplay Telephone Tray Cards (6 cards)*
555-630-120	*Analog Multiline Telephones User's Guide*
555-630-126	*Single-Line Telephones User's Guide*
	System Operator Support
555-630-134	*MLX Direct-Line Consoles Operator's Guide*
555-630-132	*Analog Direct-Line Consoles Operator's Guide*
555-630-136	*MLX Queued Call Console Operator's Guide*
555-630-138	*MDC 9000 and MD W 900 Telephones User's Guide*
	Miscellaneous User Support
555-630-130	*Calling Group Supervisor's Guide*
555-630-129	*Data User's Guide*
	Documentation for Qualified Technicians
555-630-140	*Installation, Programming, & Maintenance (IP&M) Binder.*

How to Comment on This Document

We welcome your comments, both good and bad. 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
AT&T
211 Mount Airy Road
Room 2W226
Basking Ridge, NJ 07920.

System Programming and Maintenance

The System Programming and Maintenance (SPM) software package offers an alternate method of programming the MERLIN LEGEND Communication System using a PC. This method frees the system programming console for other uses and also provides the additional functions listed below:

- Backing up system programming information

- Restoring system programming information from a backup

- Converting system programming information from one release to another (part of the upgrade procedure)

- Upgrading your communications system to a newer release

- Printing, viewing, and storing reports

- Programming the communications system remotely

- Programming in surrogate mode

SPM runs on a DOS-based PC as a stand alone program or on a UNIX® System platform as part of Integrated Solution II or Integrated Solution lll (IS II/III). It is available on a 3.5-inch diskette for DOS or UNIX, or on a 5.25 inch diskette for DOS.

NOTE:
SPM software can be used directly from the floppy disks on a DOS machine; however, if your PC has a hard disk, you should install SPM onto the hard disk.

This book describes the use of SPM on a PC with a DOS operating system. If your system has the IS II/III application, you have the UNIX System version of SPM.

For information about accessing SPM from the IS II/III application, refer to the following books:

- *integrated Solution III System Manager's Guide,* order no. 555-601-010

- *Integrated Solution III Installation and Maintenance Guide,* order no. 555-601-011

- *Integrated Solution II System Manager's Guide,* order no. 555-600-726

- *Integrated Solution II Installation and Maintenance Guide,* order no. 555-600-720

System Requirements

To use SPM for system programming, you need the SPM diskette and an approved PC with version 3.3 (or later) of MS-DOS®. At a minimum, your PC should support and include the following items:

- At least 640 kbytes of RAM

- A floppy disk drive that will accommodate the SPM diskette (3.5-inch or 5.25-inch)

- A monochrome or color monitor

- A serial port (either COM1 or COM2) that can use either a DB-9 or DB-25 connector

    For a DB-9 connector, use a 9-pin to 25-pin adapter to attach the 25-pin connector of the RS-232 interface cable.

- An RS-232 interface cable of appropriate length for your site connection(s)

Depending on how you connect the PC to the control unit, you will also need the following items:

- Direct local connection, with the PC within 50 feet of the control unit.

    Either a 355AF modular adapter (if there is a male connector on the interface cable) or a 355A modular adapter (if there is a female connector on the interface cable)

    A 4-pair modular cord (D8W)

- Direct local connection, with the PC more than 50 feet from the control unit.

    355AF adapter

    EIA crossover cable

    Two Z3A2 Asynchronous Data Units (ADUs)

    ADU crossover cable

    400B2 power adapter

    2012D transformer

    BRIA-4P adapter and 102 connecting block or 103 connecting block

    248B adapter

    8-position wall jacks

    4-pair plug-ended cable

    D8W cords

    D6AP power cord

    EIA-232-D cables

- Modem (local or remote) connection

    A modem that supports 1200- or 2400-bps connections

In addition, a parallel printer is useful for reports (the PC needs a parallel port for the connection).

NOTE:
SPM uses Interrupt 4 and I/O address 3F8 for COM1. It uses Interrupt 3 and I/O address 2F8 for COM2.

Installing the SPM Software

Before you install or run SPM, use `diskcopy` on a DOS PC (see your operating system guide) to make a backup copy of the SPM diskette and store the original in a safe place. Use the backup copy to run the installation program.

For installing SPM on a DOS PC, follow the appropriate instructions in the next section of this book.

NOTE:
If your PC does not have a hard disk, you do not need to run the installation program. Go to "Initializing the SPM Software. "

DOS Installation

Use the following procedure to install SPM on the hard drive of a DOS PC.

NOTE:

If you are updating SPM, you do not need to remove the current SPM files. The new files will overwrite your current SPM files.

Considerations
Review the following items before you begin the installation procedure.

The installation program automatically performs the following:

- Checks available space on the hard disk. If space is insufficient, the installation is terminated and an error message is generated.

- Checks the autoexec.bat and config.sys files. If either file is write-protected, the installation is terminated and an error message is generated. SPM must make changes to these files.

- Saves a copy of autoexec.bat as autoexec.old.

- Saves a copy of config.sys as config.old.

- If autoexec.bat has not already been configured for SPM, performs the following:

  Adds `c: \spm` to the path statement

  Adds the line `SET AMS PATH=C:`

  Adds the background print command
  `PRINT  /D:PRN/B:4096/U:3/M:200/S:1>NUL`

- Adds the following line to config.sys if it is not already present
  `DEVICE=C:\ANSI.SYS.`

- Copies the ansi.sys file from the floppy disk to c:\.

- Creates the directory c:\spm.

- Copies the following files from the floppy disk into c:\spm:

  spm.exe

  ams_hlp.eng (English language help file)

  ams_hlp.fre (French language help file)

  ams_hlp.spa (Spanish language help file)

- Creates the following directories if they do not already exist:

  c:\spm\backup

  c:\spm\reports

  c:\spm\tmp.

■ Does one of the following:

Creates the SPM configuration file c:\spm\ams.cfg, if it does not already exist. In this case, the ares.cfg file consists of only one line, in which the language attribute is specified: `LANG 1` if you specified English or did not specify a language with the install command;

Modifies the ares.cfg file, if it already exists, by adding or changing the LANG value.

Follow the steps below to install SPM on the PC'S hard disk.

1 Switch to Drive A, if it is not already the current drive.

`A:>` appears on the screen.

2 Insert the backup copy of the SPM diskette into Drive A.

3 Type one of the commands shown below and press (Enter ↵).

- *install*

- *install french*

■*install spanish*

Because English is the default language, install and `install english` have the same result. If you do use the language argument `(english, french,` or `spanish),` you must type it in lowercase letters as shown. The command install may be upper case or lower case.

4 Wait for the message shown below to appear.

```
SPM1 HARD DISK INSTALLATION PROGRAM
Strike a key when ready
```

5 Press any key to begin the installation.

When the installation is finished, the following message appears:
```
SPM HARD DISK INSTALLATION IS NOW COMPLETE
YOU MUST REBOOT YOUR SYSTEM BEFORE USING SPMl
```

6 Remove the SPM diskette from Drive A and reboot your system.

The installation procedure is complete. Go to "Initializing the SPM Software. "

Initializing the SPM Software

To run correctly, the DOS version of SPM requires certain information (transmission speed, type of monitor, and so on). You need to supply this information only once, the first time you run SPM.

The information you provide during the initialization process is written to the SPM configuration file (ams.cfg). If you need to change this information at some later time, you can do so in either of the following ways:

- Use any of the options in Table 1 to change the information in ams.cfg.

- Edit the ares,cfg file, (If you are unsure about editing the file, you can remove it. You are prompted to reinitialize the next time you invoke SPM. The file is created at that time.)

NOTE:
The DEBUG attribute is also specified in ams.cfg as **DEBUG=0** (off), the default setting, or **DEBUG=1** (on). This attribute is used to enable the Escape-to-Shell feature of SPM, activated by pressing (Ctrl) + (F9) . To turn DEBUG on, you must edit the ams.cfg file; it is not part of the initialization process. The DEBUG attribute is for use by qualified service personnel only.

Table 1. SPM Configuration File (ams.cfg) Options

OPtion	Use
spm -com1	Specifies COM1 as the serial communications port used by SPM
spm -com2	Specifies COM2 as the serial communications port used by SPM
spm -s1200	Specifies modem speed of 1200 bps
spm -s2400	Specifies modem speed of 2400 bps
spm -color	Specifies color monitor
spm -mono	Specifies monochrome monitor
spm -1 english	Specifies English as the PC language '
spm -1 french	Specifies French as the PC language
spm -1 spanish	Specifies Spanish as the PC language

Follow the steps below to perform the SPM initialization.

1   **Type *spm* and press (Enter ↵) to display the SPM Welcome screen shown in Step 2.**

   ■ Make your entry at the **C:>** prompt if your PC has a hard disk.

   ■ Make your entry at the **A:>** prompt if you are using the floppy drive.

2   **Press any key.**

```
      Welcome to SPM
    The MERLIN LEGEND
    System Programing
  & Maintenance Utility
   Please press any key
        to continue
      Version X.XX
```
X.XX = current version of SPM

The screens shown in Steps 3 through 7 appear only if the system has not been initialized. Otherwise, the screen shown in Step 8 appears.

3   **Select the serial communications port used for SPM and press (Enter ↵).**

```
 COMM PORT:
 1. Comm 1
 2. Comm 2
 Enter selection #
```
Type *1* for serial port 1 (COM1).
Type *2* for serial port 2 (COM2).

4   **Select the communications port speed and press (Enter ↵) .**

```
 speed
 1. 1200
 2. 2400
 Enter selection #
```
Type *1* for 1200 bps.
Type *2* for 2400 bps.

8 System Programming and Maintenance (SPM)

5 Respoond to the color prompt and press (Enter ↵) .

```
COLOR
Enter selection (y/n):
```

Type *y* if you have a color monitor.
Type *n* if you do not have a color monitor.

6 Select a language and press (Enter ↵) .

```
Language:
1. English
2. French
3. Spanish
Enter selection #:
```

Type *1* for English.
Type *2* for French.
Type *3* for Spanish.

The language you select here becomes the SPM (PC) language.

7 Review your selections.

```
SPM  CONFIGURATION:
Comm Port: x
Speed: x
Color: x
Desire change (y/n)?
```

x = the values entered for each
          entry in Steps 3 through 6

- ■ To change any of the information shown, type *y* and press (Enter ↵). The screen shown in Step 3 appears. Repeat Steps 3 through 6.

- ■ To save the information shown, type *n* and press (Enter ↵) .

    If the PC is connected to the processor, the SPM Main Menu appears as shown in Step 8.

    If the PC is not connected, go to "Connecting the PC. "

8 Press the function key that corresponds to the option you want.

```
     SPM   Main   Menu
    Menu: Select Function
(F1) Sys Program Maintenance (F6)
(F2) Backup        Restore    (F7)
(F3) Boards        Pass-Thru  (F8)
(F4) Print Opts     Password  (F9)
(F5) Monitor       Language   (F10)
```

NOTE:
The function keys shown on either side of the display are included here for
quick reference, See "SPM Screens" for details on using the PC keys in SPM.

Connecting the PC

There are three ways to connect the PC to the control unit. Choose the
method below that is most useful for your installation.

- Direct local connection

- Local modem connection

- Remote modem connection

Direct Local Connection

For a direct local connection, you must connect the PC to the system programming jack. This is the lower modular RS-232 jack on the processor module, as shown in Figure 1. (The upper jack is reserved for the SMDR printer.)

To connect a PC more than fifty feet from the control unit, see Figure 2.

For direct local connections, the system supports speeds of 1200 and 2400 bps.

NOTE:
You must use a direct local connection to program in surrogate mode.
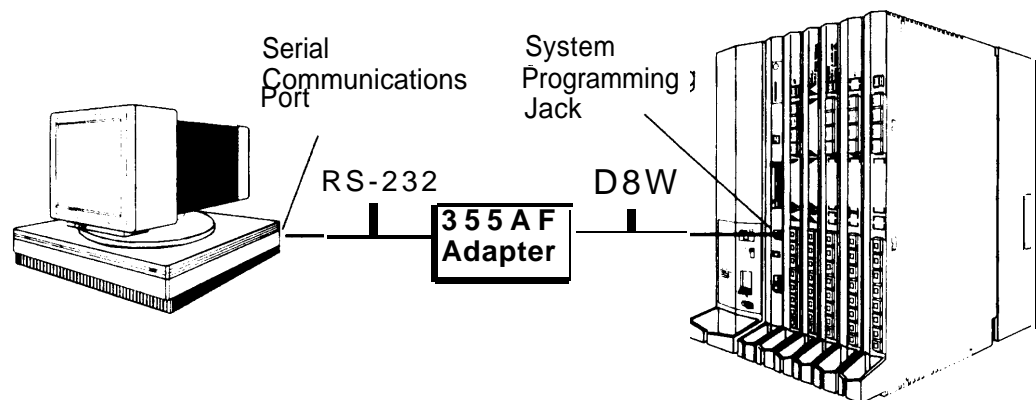
Figure 1. Direct Local Connection, PC Less Than 50 Feet Away
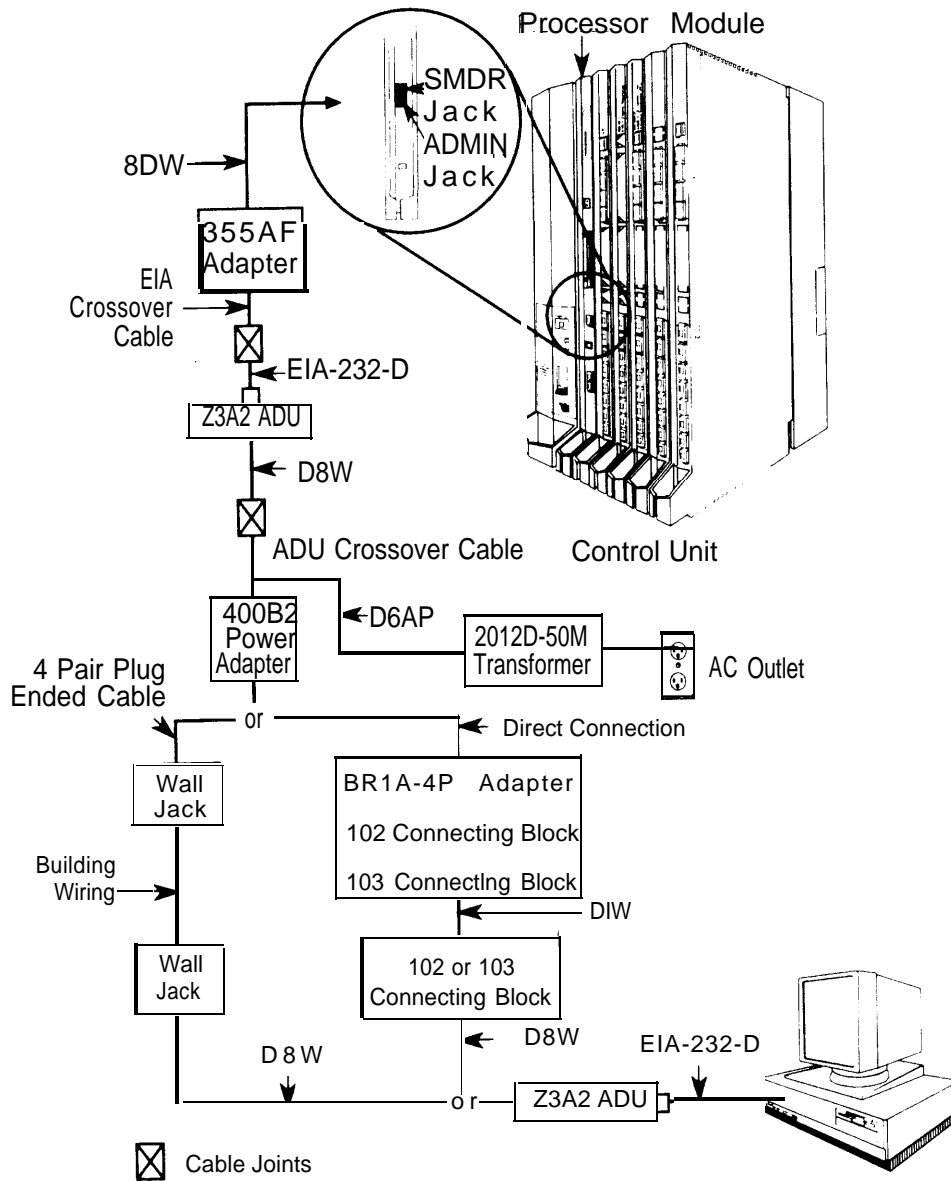
Figure 2. Direct Local Connection, PC More Than 50 Feet Away

Local Modem Connection

For a local modem connection, you must use a modem (either connected to, or built into the PC) to access the internal modem in the control unit. Connect the modem to an 012 module in the control unit, as shown in Figure 3.

The internal modem operates at speeds of 1200 and 2400 bps.

Figure 3. Local Modem Connection

Remote Modem Connection

For a remote modem connection, you must use a modem (either connected to, or built into the PC) to access the internal modem in the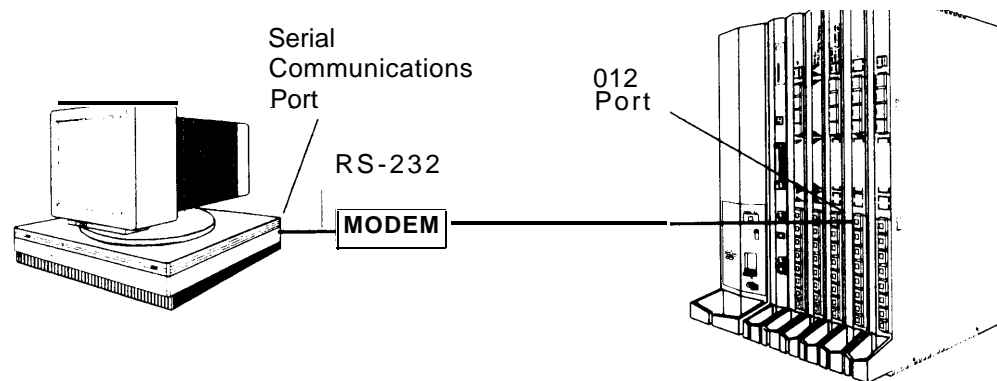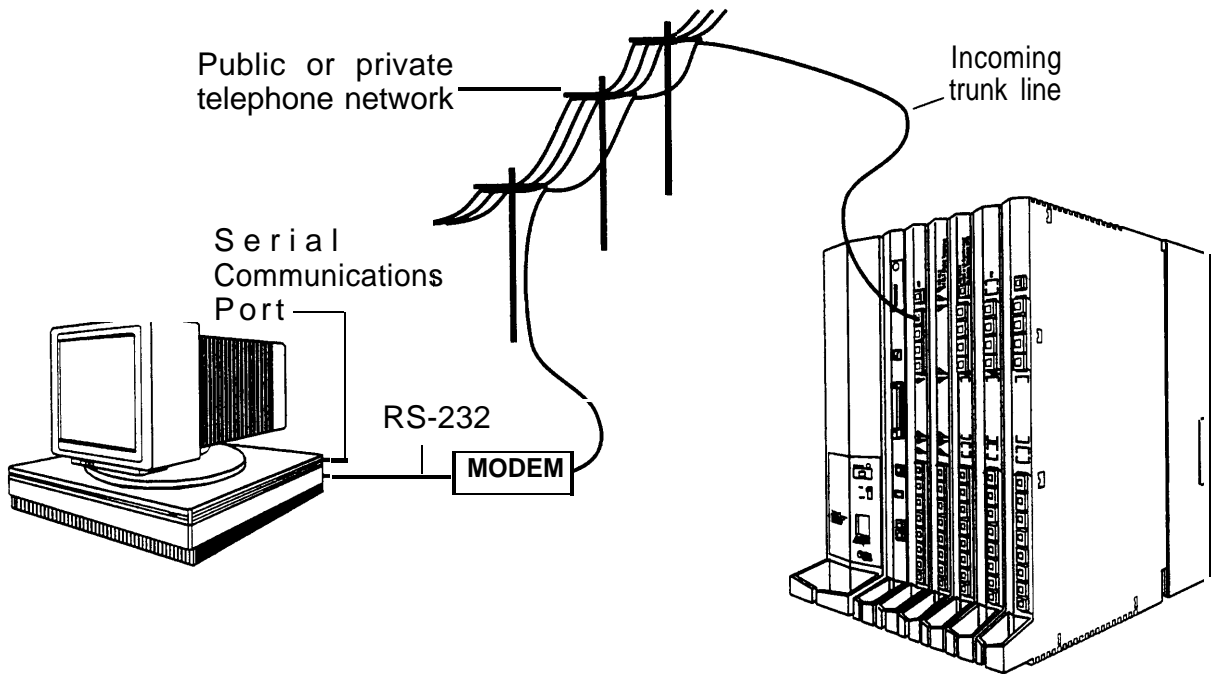 control unit. You must also use a dial-up connection, as shown in Figure 4. See "Accessing SPM" for details on accessing SPM with a remote modem connection.

The internal modem operates at speeds of 1200 and 2400 bps.

Figure 4. Remote Modem Connection

NOTE:
Remote access (modem connection) has priority over local access (direct connection), unless a backup or restore procedure is in progress through a direct local connection. If a modem connection is attempted while any other type of on-site programming is in progress (either at the system console or at a directly-connected PC), the system sends a message to the on-site programmer. The message indicates that a modem connection is being established and the on-site programming session is terminated.

Accessing SPM

The procedure for accessing SPM depends on whether your PC is connected to the control unit with a modem (either local or remote) or without a modem (direct). This section covers both of these access procedures.

With a Direct Local Connection

To access SPM when your PC is connected directly to the control unit, follow the steps below.

1 Set up the appropriate physical connections between the PC and the control unit.

See "Connecting the PC."

2 If you installed SPM on the hard disl of the PC , go to Step 5.

3 If the PC does not have a hard disk, insert the SPM diskette into Drive A.

4 Type *a:* and press (Enter ↵) .

A:> appears on the screen.

5 Type *spm* **and press (Enter ⏎) to display the SPM Welcome screen shown.
below.**

```
    Welcome to SPM
  The MERLIN LEGEND
  System Programming
& Maintenance Utility
 Please press any key
     to continue
     Version X.XX
```

X.XX current version of SPM

6 Press and key to display the SPM Main Meu below.

```
      SPM Main Menu
 Menu: Select Function
 Sys Program Maintenance
 Backup         Restore
 Boards        Pass-Thru
  Print Opts       Password
ɪ Monitor      Language
```

(F1)
(F2)
(F3)
(F4)
(F5)

(F6)
(F7)
(F8)
(F9)
(F10)

- ■ If the SPM Main Menu does not appear or if the information on the
  screen is garbled, press any key again.

- ■ If the COM Port (communications port) screen appears instead of the
  SPM Main Menu, it indicates that the SPM software has. not been
  initialized. See "Initializing the SPM Software."

NOTE:
The function keys shown on either side of the display are included here for
quick reference. See "SPM Screens" for details on using the PC keys in SPM.

**7 To select an option, press the funciton dey that corresponds to the
option you want. For example, to select Language press (F10)**

With a Local or Remote Modem Connection

The method you use to access SPM by modem depends on whether you are programming on site (locally) or from a remote location.

■ If you are on site, the modem must be connected to an 012 module on the control unit. To establish a connection to the control unit's internal modem, dial *10.

■ If you are at a remote location, do one of the following:

Place a call to the system on a Remote Access line, enter the barrier code (if required), and dial the code for the internal modem (*10).

Place a voice call to the system using the line to which the modem is connected and ask the operator to transfer you to the modem (by pressing **Transfer,** dialing *10, then hanging up the telephone). When you hear the modem answer tone, switch to data mode.

Considerations

Review the following items before you begin the modem connection procedure.

Set the Programming Language

If you prefer to program in a language other than the current SPM language setting, see "Language."

Modem Connections

You must make a data connection to a modem. The following modem dialing commands are for Hayes® and Hayes-compatible modems. These may not be the commands your modem use-refer to the user guide that came with your modem for specific information.

- ■ If the PC is in the same location as the control unit, type *10.

- ■ If the PC is in a remote location and your system has activated the Remote Access feature, type the following and press (Enter ↵) .

  Without barrier codes type:

  ATDT; the remote access telephone number; and W*10.
  For example: ATDT12015551234 W*10 (Enter ↵) .

  With barrier codes type:

  ATDT; the remote access telephone number; the barrier code preceded by a "W" and W*10. The barrier code in the example below is 555555.
  For example: ATDT12015551234 W555555 W*10 (Enter ↵) .

  The password prompt appears on the screen when the connection is made. (You may have to press (Enter ↵) more than once to get the password prompt.)

- ■ If the PC is in a remote location and your system has not activated the Remote Access feature, do the following:

  — Use the main telephone number to place a voice call to the system on the line to which the modem is connected.

  — Instruct the operator to transfer you to the modem (by pressing **Transfer,** dialing *10, then hanging up the telephone).

  — To put the modem on line, type ATH1 and press (Enter ↵) , then hang up the telephone.

NOTE:
If you enter a telephone number of fewer than 11 digits, you must end it with a pound sign (#).

To access SPM through a local or remote modem connection, follow the steps below.

1 Sep up the appropriate physical connections between the PC and the control unit. See "Connecting the PC."

2 Type spm and press (Enter ↵) to display the SPM Welcome screen shown below.

```
      Welcome to SPM
     The MERLIN LEGEND
    System Programming
    & Maintenance Utility
     Please press any key
         to continue
        Version X.XX
```

X.XX = current version of SPM

If you wish to program in a language other than the current language set for SPM, see "Set the Programming Language."

3 Press and key to display a blank screen on which you can enter modem commands. (You may have to press the key several times.)

4 Make a data connection to the modem of the control unit.

See "Modem Connections." When the connection is made, the password prompt appears as shown in Step 4.

5 Type the SPM password to display the SPM Main Menu shown in Step 6.

```
Enter Password:
```

The password does not display as you type it.

**6 To select an option, press the function key that corresponds to the
option you want. For example, to select Language press (F10).**

```
                SPM Main Menu
         Menu: Select Function
(F1)    Sys Program  Maintenance   (F6)
(F2)    Backup       Restore       (F7)
(F3)    Boards       Pass-Thru     (F8)
(F4)    Print Opts   Password      (F9)
(F5)    Monitor      Language      (F10)
```

NOTE:

The function keys shown on either side of the display are included here for
quick reference. See "SPM Screens" for details on using the PC keys in SPM.

Using SPM

This section describes how to use the SPM screens, SPM Help, and the SPM options listed below.

- Backup

- Boards

- Browse

- Convert

- Language

- Maintenance

- Monitor

- Pass-Thru

- Password

- Print Options

- Restore

- System Programming

NOTE:
Some of the procedures described in this section should be performed by qualified service personnel only.

SPM Screens

SPM screens simulate the system programming console. Each SPM screen includes a 7-line by 24-character console simulation window that corresponds to the display area of the MLX-20L™ telephone. To the right and left of this console simulation window are columns that list the keys corresponding to similarly located buttons on the MLX-20L telephone. If you are working with Version 2.0 or higher, the version number appears in the upper left corner of the screen (for example, **V3)**. Figure 5 illustrates the SPM display screen.

Figure 5. SPM Display

F1 through **F5,** and **F6** through **F10** display on either side of the console
simulation window. They represent the function keys to use when you select
screen options. When a screen contains several choices, press the function
key identified by the label next to your choice. (If you were programming on
the console, you would press the telephone button next to your choice.)

Below the console simulation window are 20 simulated line buttons. The 20 line buttons can be selected using the arrow keys to position the cursor on the appropriate button. Using [PgDn] (the Inspect feature), you can determine the status of each line and the features programmed on each line according to the letter that appears next to the line number (see below).

On the PC screen, the letters **R** and **G** represent the ON state of the red and green LEDs, respectively, that are on the console. For example, if a line, trunk, or pool is assigned to a line button, on the console a green LED lights next to the button. On the PC screen, the letter **G** (for green) displays next to the button. Similarly, if a line, trunk, or pool is not assigned to a line button, neither **G** nor **R** display next to the button on the PC screen. If a trunk is assigned to a pool, an **R** (for red) displays on the PC screen.

The labels in the column on the right side of the screen show key combinations that correspond to buttons on the MLX-20L telephone. Table 2 describes the function of PC keys in SPM.

Table 2. Function of PC Keys in SPM

PC Key	Console	SPM Function
(Home)	**Home**	**Quit.** Exit from SPM and return to the DOS prompt when you finish with system programming. If you are using a modem, the call is disconnected.
(End)	**Menu**	Return to the SPM Main Menu.
(PgUp)	**More**	Display more menu items (when there is another screen and the > symbol appears next to the key).
(PgDn)	**Inspct**	Show the current information that has been programmed for a feature or button.
(Alt) + (P)	**Drop**	Enter a stop in a speed dialing sequence. This combination also deletes an entry in a field on any screen except one in which you are entering a speed dialing sequence.
(Alt) + (F)	**Conf**	**Flash.** Enter a switchhook flash in a speed dialing sequence.
(Alt) + (C)	n/a	**TopSP.** Return to the top of the System Programming menu.
(Alt) + (H)	**Hold**	**Pause.** Enter a pause in a speed dialing sequence.
(Alt) + (U)	n/a	**Convert.** Convert a backup file from its original Release format to a different Release format.
(Alt) + (N)	n/a	Toggle modem speed between 1200 to 2400 bps.
(Ctrl) + (F1)	n/a	**Help.** Display a help screen about SPM operations. To exit from Help, press (End).

Continued on next page

Table 2- *Continued*

PC Key	Console	SPM Function
(Ctrl) + (F5)	n/a	**Reset.** Reset the communications port. For example, if the information on the screen is garbled, try exiting from and then recentering the screen. If the screen remains garbled, use (Ctrl) + (F5) to clear the screen and return to the SPM Welcome screen. Note that using (Ctrl) + (F5) drops the modem connection.
(Ctrl) + (F8)	n/a	**Browse.** View print reports saved with Print opts.
(Ctrl) + (F9)	n/a	Escape to shell. To use this key sequence, you must set DEBUG=1 in the SPM configuration file ams.cfg. You can then use this key sequence to execute DOS (or UNIX System) commands. To return to SPM, type **exit.**
(Enter ↵)	**Enter**	The (Enter ↵) key on your PC can be used instead of (F10) when **Enter** appears as a choice in the console simulation window.
(Bksp)	**Backspace**	The (Bksp) key on your PC can be used instead of (F9) **(Backspace)** when it appears as a choice in the console simulation window.
(Del)	**Delete**	The (Del) key on your PC can be used instead of (F8) **(Delete)** when it appears as a choice in the console simulation window.
(↑) (↓) (←) (→)	n/a	The up, down, left, and right arrow keys can be used to highlight selections in a menu and to select the 20 line buttons below the console simulation window.

SPM Main Menu Options

The SPM Main Menu provides access to system programming and to the SPM functions listed in Table 3.

Table 3. SPM Main Menu Options

SPM Menu	Function
Sys Program	To program the system
Backup*	To make a backup copy of your system programming and store it on diskette or on hard disk
Boards*	Shows which modules (port boards) are in each slot of the control unit and allows you to assign boards to slots
Print Opts*	Directs reports to the printer or to the PC for storage on diskette or hard disk
Monitor*	Restricted to use by your technical support organization
Maintenance	Restricted to use by your technical support organization and qualified technicians
Restore*	To restore your system programming from diskette or hard disk
Pass-Thru*	(IS II/III only) To make a remote connection, through the control unit, to an IS II/III PC to administer applications on the IS II/III PC.
Password*	To change the password for remote entry into the system.
Language	To select a language (English, French, or Spanish) for the console simulation window on the PC. (There is also a Language option available on the System Programming menu that allows you to set the system language.)

* SPM option only. Not available on the MLX-20L system programming console. To be used only by qualified service personnel.

SPM Help

To access the SPM help screens, press (Ctrl) + (F1).

To review the help screens press, (PgUp) and (PgDn).

To return to the first Help screen, press (Home) .

To exit from SPM Help, press (End).
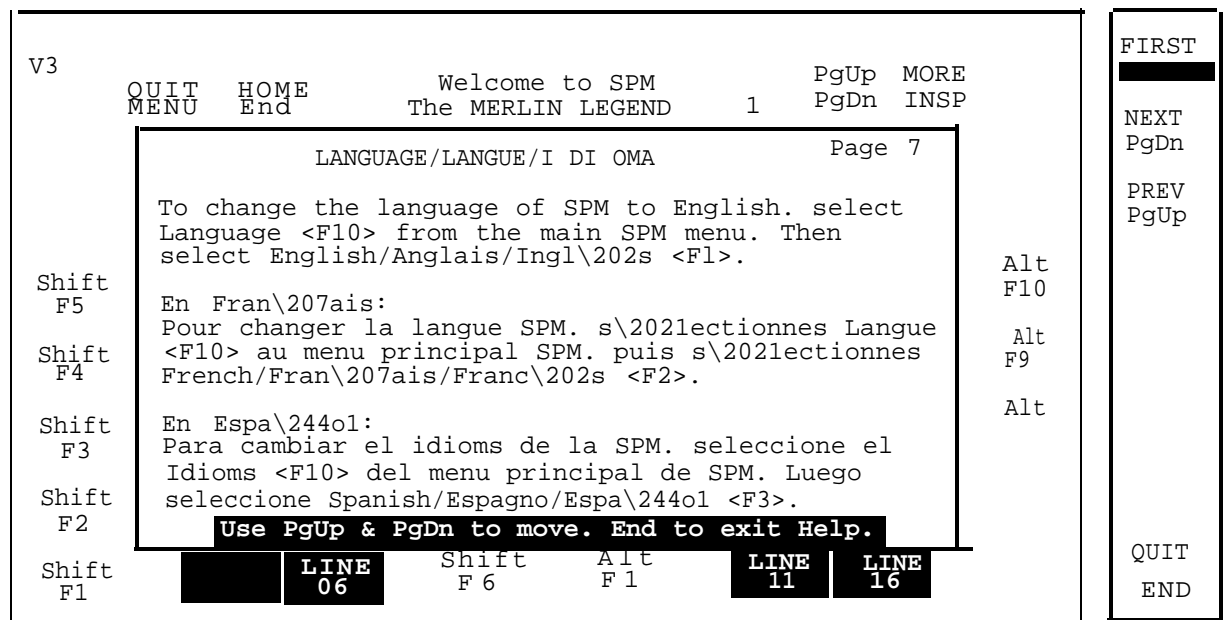
A typical help screen is shown in Figure 6.

```
V3                                              PgUp  MORE
      QUIT   HOME          Welcome to SPM
      MENU   End        The MERLIN LEGEND     1   PgDn  INSP

                   LANGUAGE/LANGUE/I DI OMA          Page 7

           To change the language of SPM to English. select
           Language <F10> from the main SPM menu. Then
           select English/Anglais/Ingl\202s <Fl>.              Alt
   Shift                                                        F10
    F5     En  Fran\207ais:
           Pour changer la langue SPM. s\2021ectionnes Langue    Alt
   Shift   <10> au menu principal SPM. puis s\2021ectionnes     F9
    F4     French/Fran\207ais/Franc\202s  <F2>.

   Shift                                                   Alt
    F3     En Espa\244o1:
           Para cambiar el idioms de la SPM. seleccione el
           Idioms <F10> del menu principal de SPM. Luego
   Shift   seleccione Spanish/Espagno/Espa\244o1 <F3>.
    F2      Use PgUp & PgDn to move. End to exit Help.

   Shift                   Shift    Alt         LINE   LINE
    F1          LINE        F 6     F 1          11     16
                06
```

```
FIRST


NEXT
PgDn

PREV
PgUp






QUIT

END
```

Figure 6. SPM Help

Backup

The Backup procedure is used by qualified service personnel to create a file of system programming information in the \spm\backup directory (on the hard - drive of the PC) or in the root directory of a diskette (on the floppy disk drive of the PC).

NOTES:
1. Back up your system programming information on a regular basis. A current backup file allows you to quickly and easily restore your system, if the need arises.

2 With Release 3.0 and later, system programming can be backed up or restored from a PCMCIA memory card. See Chapter 22, "Memory Card," for more information.

Determining the Release Number
of a Backup File

If you have a backup diskette but do not know its release number, you maybe ,\ able to find this information in the backup header. Beginning with later versions of Release 1.1, the backup file contains a backup header 128 bytes long. Approximately 59 of these bytes are currently used. Bytes 55 through 59 of the header contain the MERLIN Legend Communication System Release number, as shown in Table 4. (Release 1.0 and early versions of Release 1.1 do not contain this information in readable form.)

Table 4. Backup Header Release Number

	Release No.	Build No.	System Size	Mode
Size	2 bytes	12 bytes	1 byte	1 byte
Examples	03 00	32	01	01, - Key
	02 01			02- Behind Switch
				03- Hybrid/PBX

The release number is found in the first two bytes (four characters) of the identification number. For example, 0300 = 3.0, 0201 = 2.1.

If the backup file is compressed, you can read the header but you cannot read the data area following the header. Use *type* *[backup filename]* to read the header on a DOS system or *cat* *[backup filename]* to read the header on a UNIX System.

Note that the communication system release number, not the version number of SPM, reflects whether the backup file is compressed or uncompressed. Release 1.0 backups are uncompressed and Release 1.1 and later backups are compressed. Uncompressed files take longer to restore.

Considerations

Review the following items before you begin the backup procedure:

- The communications system does not have to be idle during backup; however, extension programming is blocked.

- Any objects that are in a maintenance-busy state are stored in that state. When you restore system programming, these objects are busied out, even if they have since been released from the maintenance-busy state.

- If you plan to store your backup file on a diskette, format a DOS diskette. (DOS formatting can be done on a UNIX System PC or a DOS PC).

- Uncompressed backup files are 100,000 to 210,000 bytes in size; compressed files are about 70,000 to 85,000 bytes.

- Maintenance data (error logs and other data used by qualified service technicians) is not saved in the backup file.

Follow the steps below to perform the backup procedure.

1 At the SPM Main Menu, press (F2) to select backup.

(F2)

```
         SPM Main Menu
 Menu: Select  Function
 Sys Program  Maintenance
 Backup          Restore
 Boards         Pass-Thru
 Print Opts     Password
 Monitor        Language
```

2 Follow the instructions for a floppy or a hard disk.

A second window apperars which displays the **GOTO FLOPPY** and **MAKE NEW FILE** options and a directory listing for the C:\spm\backup directory.

- If you are saving the backup file to a floppy disk, go to Step 3.
- If you are saving the backup file to the hard disk, go to Step 4.

3 Remove the SPM diskette and insert a formatted diskette. Use the arrow keys to highlight GOTO FLOPPY and press (Enter ↵).

```
 Make a selection for
  the BACKUP file.
 MAKE NEW FILE will
  create a new file
  on selected device.


 Press ESC to abort.
```

```
 GOTO FLOPPY
 MAKE NEW FILE
 backup.ams
 file.1
 file.2

```

After you press (Enter ↵), to **GOTO FLOPPY** statement shown above changes to **GOTO HARD DISK** and the directory listing for A:\is displayed. Continue with Step 4.

The screen displays the default name for the backup file **(bakup.ams).**

4 Specify a backup filename.

- To select the default filename use the arrow keys to highlight **backup.ams** and press (Enter ↵) . Go to Step 6.

- To enter a different filename use the arrow keys to select **MAKE NEW FILE** and press (Enter ↵). Go to Step 5.

5 Type the new filename and press (Enter ↵).

```
        Press ESC to Abort.




Enter filename:


(*fault is backup.ams)
```

If you are working from the floppy drive, `A:\` appears on the screen.

You can specify a drive letter with the filename but no path information.

6 Verify that the filename chosen does not already exist.

The following screen appears only if the filename chosen already exists. Continue with Step 7 if this screen does not appear.

```
The file already exists.
If you continue, the old
version will be deleted.
Press ESC to abort.
Press "c" to continue.
```

Press (Esc) to abort the backup. Go to Step 1 to create a different backup file.

Press (C) to continue. Go to Step 7.

7 Observe the backpstaus screen

```
Press ESC to Abort.
Est. Blocks: xxx -xxxx


    filename


BACKUP IN PROGRESS
Received Block xx
```

flename = the backup filename specified in Step 5

SPM indicates the status of the backup by displaying the number of the last block received (xx). Line 2 of the display screen shows the estimated number of blocks to be sent from the control unit *(xxx-xxxx).* This line is blank if you are backing up from Release 1.0.

If you abort the backup, the partial backup file is deleted to prevent restoration from a corrupted file and you see the screen shown in Step 8.

When the backup is complete, you see the screen shown in Step 9.

8 To abort the backup press (Esc) ro reurtn to the SPM Main Menu.

```
Backup aborted
Please press Enter
to see the Main Menu:
```

9 When the backup is complete, press (Enter ⏎) to return to the SPM Main Menu.

```
Backup successful.
Please press Enter
to see the Main Menu




Received xxx Blocks.
```

xxx = total number of blocks received

Boards

The Boards option allows qualified service personnel to add a board to the next available slot. The system must be idle to use this option. This option is not available from the system programming console.

The Boards option is also available in surrogate mode. In surrogate mode, you can assign trunk and extension modules (boards) to slots, even though the boards have not actually been installed. This type of board is referred to as a "phantom" or "null" board.

You cannot use the Boards option to change an actual board type. All boards assigned with the Boards option, including phantom boards, are cleared (unassigned) if you perform a board renumber **(System> Board Renum).**

NOTES:

1. You must assign phantom boards to higher slot numbers than any real boards you assign. If you assign a phantom board to a lower slot number than a real board, the control unit does not recognize the real board(s) that follow the phantom board.

2. If you remove a board but do not replace it, and then perform a board renumber, the control unit will not recognize any boards that follow the empty slot. You must reseat all of the boards to fill the empty slot before you perform the board renumber.

The Inspect function ([PgDn]) lets you see which modules have been assigned to slots on the control unit. Note that both phantom boards and real boards display if you use the Inspect function. To see only real board assignments, you must print the System Information report:
System> More> Print>SysSet-up.

Table 5 shows the type of boards that you can select.

Table 5. Board Types

Board Type	Description
400LSR	4 loop-start line jacks with 4 touch-tone receivers
400GLR	4 ground-start/loop-start line jacks with 4 touch-tone receivers
800LS	8 loop-start line jacks
800GLID	8 ground-start/loop-start line jacks with Caller ID capability available on the loop-start lines and 2 touch-tone receivers
800GLS	8 ground-start/loop-start line jacks
408LSA	4 loop-start line jacks and 8 ATL analog extension jacks
408GLA	4 ground-start/loop-start line jacks and 8 ATL analog extension jacks
408GLM	4 ground-start/loop-start line jacks and 8 MLX extension jacks (16 endpoints)
008ATL	8 analog extension jacks
008MLX	8 MLX-20L extension jacks(16 endpoints)
012TR/OPT	12 tip/ring extension jacks with 2 touch-tone receivers or 008 OPT jacks
800DID	8 DID trunk jacks with 2 touch-tone receivers
400E&M	4 E&M tie trunk jacks
100D	1 DS1 jack (24 channels)
517A31	Board with blank downloadable firmware.

Follow the steps below to assign modules.

1 At the SPM Main Menu, press (F3) to select Boards.

(F3)

```
        SPM Main Menu
Menu: Select Function
Sys Program  Maintenance
Backup       Restore
Boards       Pass-Thru
Print Opts   Password
Monitor      Language
```

**2 Press the funciton key that corresponds to the module you want to
select.**

```
4Boards:                >
Make a selection
408LSA         800LS
012TR/OPT      008ATL
800DID         008MLX
800GLS         400GLR
Exit           400LSR
```

(F1)
(F2)
(F3)
(F4)
(F5)

(F6)
(F7)
(F8)
(F9)
(F10)

(F1)
(F2)
(F3)
(F4)
(F5)

```
Boards:
Make a selection
400E&M         800GLID
408GLA         517A31
100D
408GLM
Exit
```

(F6)
(F7)

If the module you want to assign is not shown on the first screen of the Boards
menu, press (PgUp) to display the next menu screen.

**3 Type the control unit slot number (01 through 17) in which the module is
to be installed.**

```
module name
Enter slot numbers
(01-17)

              Delete
Backspace     Next
Exit          Enter
```

module name = option selected in Step 2

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4 Assign or remove the nodule from the slot entered in Step 3.

```
module name
Enter slot numbers
(01-17)
nn
                Delete    (F8)
Backspace       Next      (F9)
Exit            Enter     (F10)
```

module name = option selected in Step 2
nn= slot entered in Step 3.

- To remove the module type from the specified slot number, press (F8) (Delete). The Boards menu re-appears.

- To assign the module type to the specified slot number and assign that same module type to another slot, press (F9) **(Next).**

- To assign the module type to the specified slot number and assign a different module type to another slot, press (F10) **(Enter).**

- To terminate the procedure and assign a different module, press (F5) **(Exit)** and repeat Steps 2 through 4.

- To view types of modules assigned to all slots, press (PgDn) **(Inspect).**

5 Save your entry.

Select **Exit.**

The progamming session terminates and the system restarts.

(F5)

Browse

The Browse option allows you to browse through reports saved in the Reports directory (\spm\reports) on the hard disk of the PC or on a floppy.

1 At the SPM Main Menu press (Ctrl) + (F8) .

```
Please enter file name




Press ESC to Abort.
```

```
GOTO HARD DISK
GOTO FLOPPY
```

2 Use the arroe keys to highlight the source (hard disk or floppy) from which you wnat to view the reports and press (F10).

A list of the current reports appears.

3 Use the arrow keys to highlight the report you want to view and press (F10) .

The report appears.

- ■ To view the next page of a report, press (PgDn).

- ■ To view the previous page of a report, press (PgUp).

- ■ To return to the beginning of a report, press (Home).

- ■ To exit from the Browse option and return to the SPM Main Menu, press (Esc).

Convert

The Convert option (which can be used remotely) simplifies upgrading from an earlier release to a later release of the communications system. (See "Upgrading the Communications System.") This procedure should be done only by qualified service personnel.

Convert uses two files: the existing backup file (the "convert from" file) and the converted file (the "convert to" file), which is created when you run the Convert option. The converted file contains system programming information " in an uncompressed form. The "convert from" file is unchanged. Because uncompressed files take longer to process than compressed files, you may want to restore this uncompressed backup to the old control unit and then create a new backup. This new backup is in compressed form and does not have to be converted. For more information about compressed and uncompressed files see "Backup."

To convert system programming to Release 3.0 format, Version 3.XX of SPM is required. This version can be easily identified by the version number, `v3,` in the upper left corner of the screen.

Help screens are available to guide you through the Convert procedure. See "SPM Help."

Before you use the Convert option, you must complete the following tasks:

- If your PC has a hard disk, install the appropriate version of the SPM software. See "Upgrading the System."

- Back up system programming. See "Backup."

- Make sure you know the name of the backup file that you have created.

IMPORTANT:
Once the actual file conversion begins, you cannot stop the process; pressing

Follow the steps below to perform the conversion.

1 At the SPM Main Menu, press (Alt) + (U) to begin the conversion.

```
     SPM Main Menu
Menu:  Select Function
Sys Program Maintenance
Backup        Restore
Boards        Pass-Thru
Print Opts    Password
Monitor       Language
```

A second window appears which displays the GOTO FLOPPY option and a directory listing for the C:\spm\backup directory.

■ If the backup file is stored on a floppy disk, go to Step 3.

■ If the backup file is stored on a hard disk, go to Step 4.

3 Use the srrow keys to gighlight GOTO FLOPPY and press (Enter ↵) .

```
Please select file name
    to convert from,
   then press Enter



   Press ESC to abort.
```

```
GOTO  FLOPPY
FILENAME.XXX
FILENAME. YYY
```

FILENAME.XXX and
FILENAME. YYY from the
\spm\backup directory

After you press (Enter ↵), the **GOTO FLOPPY** statement shown above changes to
GOTO HARD DISK and a directory listing from the root directory of the floppy
disk smears. Go to Step 4.

```
Please select file name
     to convert from,
     then press Enter


     Press ESC to abort.
```

```
GOTO HARD DISK
FILENAME.XXX
FILENAME.YYY
```

FILENAME.XXX and
FILENAME. YYY from the root
directory of the disk in
Drive A.

**4 Use the arroe keys to highlight the name of the backup file to be
converted and press (Enter ↵) .**

■ If the backup file you select is a 3.0 backup, it can not be converted
and the following message appears:

**File has already been converted.
Press Enter to continue.**

Press (Enter ↵) to select another filename, or press (Esc) to abort the
convert procedure.

■ If the backup file you select can be converted, go to Step 6.

5 Observe the updated file selection screen and press (Enter ↵) .

```
Please select file name
     to convert from,
     then press Enter

N: FILENAME.XXX
     Press ESC to abort.
```

FILENAME.XXX = the backup filename
                 selected in Step 4

N = drive

6 If converting from Release 1.0 or 1.1, select the CONVERT TO release. To convert from Release 1.2, 2.0 or 2.1 go to Step 7.

The screen below appears when converting from Release 1.0 or 1.1. Release 1.2, 2.0 and 2.1 can only be converted to Release 3.0.

```
Please enter your
CONVERT TO release
and press ENTER.
1.2
2.0              2.1
3.0
Enter number: x.x
```

All characters must be entered as they appear on the screen, including the decimal point.

7 Follow the instruction for a floppy or a hard disk.

- If the CONVERT TO file will be saved to a floppy kisk, go to Step 8.
- If the CONVERT TO file will be saved to the hard disk, go to Step 9.

8 Use the srrow keys to highlight GOTO FLOPPY and press (Enter ↵)

```
Please select file name
to convert to, or select
NEW FILE to create a new
 file on selected drive.
    Enter Filename:
```

```
GOTO FLOPPY
MAKE NEW FILE
FILENAME.XXX
FILENAME.YYY
```

After you press (Enter ↵) the GOTO FLOPPY statement shown above changes to GOTO HARD DISK and the directory listing from the root directory of the disk in Drive A appears. Continue with Step 9 .

```
Please select file name
to convert to, or select
NEW FILE to create a new
 file m selected drive.
    Enter Filename:

    Press ESC to abort.
```

```
GOTO HARD DISK
MAKE NEW FILE
FILENAME.XXX
FILENAME.YYY
```

9 Specify a filename for the converted file.

- Highlight the name of the file you want to convert to, press (Enter ↵) and go to Step 11.

- To enter a different filename, use the arrow keys to select MAKE NEW **FILE and press (Enter ↵)** .

10 Enter the new filename and press (Enter ↵).

```
Please select file name
to convert to, or select
NEW FILE to create a new
 file on selected drive.
     Enter Filename:
A:\filename.new
(default is RESTORE.NEW)
```

The converted file cannot have the same name as the file you converted from. If you specify the same filename, the following screen appears:

```
 The file selected to
convert to is the same
as the file selected to
convert from. Please
choose a different file.


 Press Enter to continue
```

Press (Enter ↵) and repeat this step.

11 Check the updated file screen and press (Enter ↵).

```
Please select file mine
to convert to, or select
NEW FILE to create a new
 file on selected drive.
     Enter Filename.
N: FILENAME. NEW
(default is RESTORE.NEW)
```

FILENAME.NEW = name entered in
Step 10
N = drive

12 Observe the conversion progress screen.

```
CONVERSION IN PROGRESS


   Converting From:
N:FILENAME.XXX
   Converting To:
N:FILENAME.NEW
```

FILENAME.XXX = name entered in Step 4
FILENAME.NEW = name entered in Step 10

N = drive

When the conversion completes, the screen shown in Step 13 appears.

13 Press any key to return to the SPM Main Menu.

```
Conversion  successful.
Please press any key
     to continue.
```

Language

A language attribute in the SPM configuration file \spm\ams.cfg (DOS version) or /usr/ams/ams.cfg (UNIX System version) specifies whether SPM menus, pop-up windows, and other messages are presented in English, French, or Spanish. A second language selection option affects messages from the control unit to SPM and controls the display on the console simulation window for the duration of the session. These two language options operate independently of each other.

The following discussion refers to the language specified in the SPM configuration file as the *PC language* and the language used by the control unit as the *console window language.*

PC Language

During SPM installation, you select a language that is recorded in the SPM configuration file. Any time thereafter, SPM can be started with the *-1* option to specify a different language, using one of the following command lines:

- *spm -1 english*

- *spm -1 french*

- *spm -1 spanish*

Note that the option is a lowercase letter L and not the number 1.

Use of the *-1* option changes the language attribute in the ams.cfg file. The language specified becomes the new PC language, used whenever SPM is started without the *-1* option.

Console Window Language

By default, the language used in the console simulation window is the language specified in the ams.cfg file; however, you can select a different language for this window for the duration of the current session. To select a different language, follow the steps below.

1 At the SPM Main Menu press (F10) to select Language.

```
       SPM Main Menu
 Menu:  Select Function
 Sys Program  Maintenance
 Backup       Restore
 Boards       Pass-Thru
 Print Opts   Password
 Monitor      Language
```
(F10)

2 Press the funciton key that corresponds to your language selection.

```
         Display Language
         Make a Selection:
(F1)     English
(F2)     French
(F3)     Spanish

         Exit
```
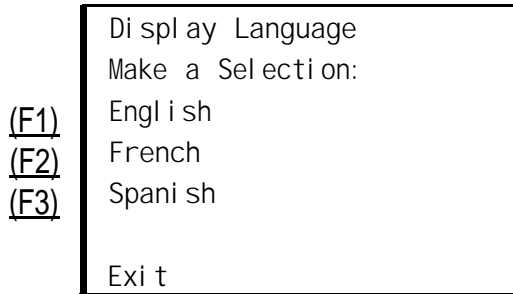
The Display language screen re-appears, with the language you selected.

3 press (F5) to return to the SPM Main Menu or select another language.

Maintenance

⚠ **CAUTION:**
This option is for use by qualified technicians only. Maintenance procedures are provided in the documentation for qualified technicians. See "Related Documents. "

Monitor

⚠ **CAUTION:**
This is a password-protected option and is for use by your technical support organization only.

Pass-Thru

The Pass-Thru option allows qualified service personnel to administer IS II/III applications on a remote PC. It permits you to establish a remote connection with the control unit to which the IS II/Ill PC is directly connected. Figure 7 illustrates the relationship of the SPM PC, the communications system control unit, and the IS II/III PC.
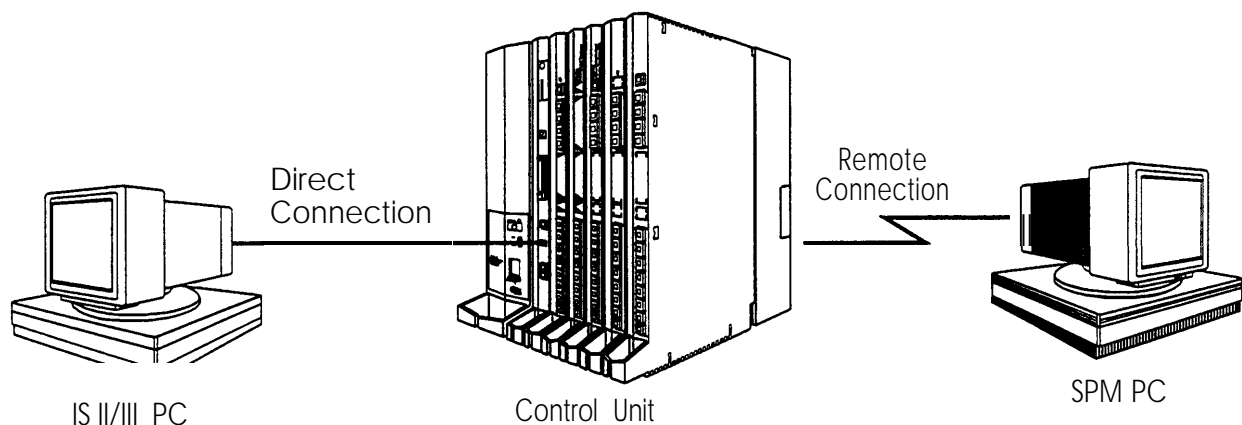
Figure 7. Pass-Thru

A Pass-Thru request must be initiated at a DOS PC. It is not available from a UNIX System PC; that is, Pass-Thru cannot be established between two IS II/III PCs. The local admin PC must be in an idle state.

A Pass-Thru request to a locally connected IS I I/III system causes the modem to fall back to 1200 bps if the speed is set to 2400 bps and the modem call to the control unit is at 1200 bps. If necessary, the communication system will adjust its speed to that of the local SPM PC.

Once the Pass-Thru connection is established, you can program in any of the following IS II/III applications from your SPM PC:

- AUDIX Voice Power™

- Call Accounting System

- Fax Attendant System® (IS III only)

- CONVERSANT Intro® (IS III only)

NOTE:
You cannot program the SPM application on the IS II/III PC because the remote call (from your SPM PC) uses the IS II/I II PC's COM1 port; therefore, the system programming jack cannot be used for system programming. For the same reason, a user at the IS II/III PC end of the connection cannot use SPM while your Pass-Thru is in effect. If use of SPM is attempted, the user at the IS II/III end sees the following message:

```
PRE-EMPT IN PROGRESS
Please try again.
```

To initiate Pass-Thru, establish a modem connection between the SPM PC and the control unit.

If the IS II/III PC does not respond to   the Pass-Thru request from the control unit (for example, because the PC is turned off), you see the following message:

```
Pass-thru failed.
Please try again.
```

If the connection between the control unit and the IS II/III PC fails, the connection between the control unit and the SPM PC is dropped. You see the following message:

```
Pass-through Session
unexpectedly terminated.
Please press Enter
to continue.
```

When you press (Enter ↵) you return to the SPM Main Menu.

Follow the steps below to initiate the Pass-Thru.

1 At the SPM ain Menu press (F8) to select `Pass-Thru`.

```
      SPM Main Menu
Menu:  Select Function
Sys Program Maintenance
Backup        Restore
Boards        Pass-Thru       (F8)
Print Opts    Password
Monitor       Language
```

The display area changes to 24-lines by 80-characters, which is much larger than the display area on the console simulation window (7-lines by 24-characters).

2 Type your login name and press (Enter ↵)

```
Welcome to
IS-II/III


login:
```

3 Type the IS II/III password and press (Enter ↵)

```
Password
```

4 Type *ams* **for the terminal emulation type and press (Enter ↵).**

```
Unix  disk usage
information


Term=
```

■ If you are working with IS II, the IS II main menu appears.

■ If you are working with IS III , the system prompts you for your login registration. After you enter your login and press (Enter ↵), the IS III main menu appears.

:

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5 To exit from II/III programming press (F5) `(Exit)` .

The system prompts you for confirmation that you want to exit. After confirmation the following message appears.

```
Returning to SPM
```

Password

The Password option is used by qualified service personnel to change the modem connection password. A password is always required to establish a connection with the built-in modem. The password always consists of five characters. You can perform remote system programming only if you enter the password correctly. A default password is set at the factory. You must obtain this password from your system consultant (SC).

Follow the steps below to change the modem connection password.

1 At the SPM Main Menu, press (F9) ro select `Password`.

```
      SPM Main Menu
 Menu:  Select  Function
 Sys Program  Maintenance
 Backup        Restore
 Boards        Pass-Thru
 Print opts    Password        (F9)
 Monitor       Language
```

2 Type the old (current) password. Do not press (Enter ↵) .

```
Password:
Enter Old Password
```

If you type the old password incorrectly, the bottom of the screen displays the message Not Equal, Repeat Step 2. If you fail to enter the password correctly after three attempts, the bottom of the screen displays the message Old Password in Use and the procedure terminates. Press (Enter ↵) to return to the SPM Main Menu.

3 Type the new password (any five characters). Do not press (Enter ↵).

```
Password
Enter New Password
```

The password does not appear on the screen as you type it.

4 Type the new password again, Do not press (Enter ↵) .

```
Password
Enter New Password again




New Password in use
```

5 Press (F5) to return to the SPM Main Menu.

Print Options

The Print Opts option allows qualified service personnel to direct the output of system programming reports either to the PC (where you can save them, browse through them, or print them with the system programming Print option) or to the SMDR printer.

Follow the procedure below to direct the output of the system programming reports.

1 At the SPM Main Menu press (F4) to select Print Opts.

```
        SPM Main Menu
   Menu: Select Function
   Sys Program  Maintenance
   Backup       Restore
   Boards       Pass-Thru
(F4) Print Opts  Password
   Monitor      Language
```

2 Select the target device for the reports.

```
   Printer Options
   Make a selection
(F1) SMDR Port
(F2) PC Port



 Exit
```

3 Press (F5) to return to the SPM Main Menu.

SMDR Port Output

See "Printing System Reports" in *System Programming* for more information about the print procedure using the system console and the SMDR port.

PC Port output

See "Printing Reports" for more information about the print procedure using SPM and the PC port.

Restore

The Restore option allows qualified service personnel to load system programming from a diskette or from the hard disk into the processor module memory.

This procedure is used to program a new system if a disk was created through surrogate mode programming, or to restore information (using a backup disk) lost through system failure. It is also part of the upgrade procedure.

NOTE:
With Release 3.0 and later, system programming can be backed up or restored from a PCMCIA memory card. See Chapter 22, "Memory Card, " for more information.

Considerations

Review the following items before you begin the restore procedure.

- The system will be forced idle during a restore procedure.

- You must have a backup file containing system programming before you use this procedure, See "Backup."

- Features that were not programmed when the backup file was created are reset to factory defaults.

- The data restored reflects the number of extensions and lines available on the system at the time the backup was created. The remaining extensions and lines will be set to the default values that are initialized during a Restart (cold start).

- Restore is terminated under the following conditions:

    — If fewer boards are listed on the disk than on the control unit.

    — If any real board is out of sequence with the boards listed on the disk.

    — If phantom boards are not listed last.

    — If the operating mode of the system being restored is Hybrid/PBX, but the control unit processor module has been modified to operate only in Key mode.

- A successful restore is followed automatically by a Restart (cold start).

⚠ WARNING:

An unsuccessful or terminated restore results in a System Erase (frigid start). All calls are dropped. The system configuration is erased. All system programming is lost, and the system returns to the factory settings. If the restore is being done remotely, the connection is dropped immediately. If this happens, attempt to reconnect to the control unit and immediately perform another restore. If this is not successful, programming must be restored on site.

Follow the steps below to perform a restore.

1 At the SPM Main Menu, press (F7) to select Restore.

```
        SPM Main Menu
Menu:  Select  Function
Sys Program  Maintenance
Backup         Restore        (F7)
Boards         Pass-Thru
Print Opts     Password
Monitor        Language
```

2 Follow the instructions for a floppy or a hard disk.

A second window appears which displays the `GOTO FLOPPY` option and a directory listing for C:\spm\backup.

- ■ If you are performing a Restore with a file saved on a floppy disk, go to Step 3.

- ■ If you are performing a Restore with a file saved on the hard disk, go to Step 4.

3 Use the srrow keys to highlight `GOTO FLOPPY` and press (Enter ↵) .

```
Make a selection for
the RESTORE file.


If upgrading, convert
files before restoring.


Press ESC to Abort.
```

```
GOTO FLOPPY
backup. ams.
file.1
file.2
```

After you press (Enter ↵), the `GOTO FLOPPY` statement shown above changes to `GOTO HARD DISK.` Go to Step 5.

4 Specify the filename to restore from.

- ■ To select the default backup filename, use the arrow keys to highlight `backup.ams` and press (Enter ↵) .

- ■ If you used a different backup filename, use the arrow keys to select one of the other filenames and press (Enter ↵) .

    If the file you select is not in the same format as the communications system, the screen below appears. Press (Enter ↵) to return to the SPM Main Menu. See "Convert" for details about converting a backup file.

```
File must be converted
before  restoring.


Please press Enter
to see the main menu:
```

5 Observe the restore progress screen.

```
Press CTRL-F5 to Abort
Est. total time. xx min


filename
RESTORE IN PROGRESS
Blocks sent   Remaining
   xxxx          xxxx
```

xx= approximate number of minutes
filename = name entered in Step *5*
xxxx = number of blocks

To abort the restore press (Ctrl) + (F5) . You return to the SPM Main Menu.

6 When the resotre completes, press (Enter ↵) to return to the SPM Main. Menu.

```
Restore successful.
Please press Enter
to see the Main Menu




Sent xxxx Blocks
```

xxxx = number of blocks sent

System Programming

A primary function of SPM is to provide a method for programming the communications system. The Sys Program option gives you access to all of the system programming features available from the system programming console. See *System Programming* for information about all of the features.

Basic Programming Information

To begin programming, you must perform one of the following to display the System Programming menu on the console or PC:

On the console: **Menu> Sys Program>Exit**
On the PC: Type *spm*> **(Enter ↵)**>Press any key> (F1) > (F5)

In most cases, you can press Exit or (F5) to exit from a screen without making any changes. Exceptions to this are noted as part of a procedure. When you complete a procedure and press Exit [(F5)], you usually move up one screen in the menu hierarchy. Occasionally, when you press Exit [(F5)], you return to the previous screen. *In a few cases,* pressing Exit brings you back to the System Programming menu where you can select another option to program or exit from system programming.

To complete a procedure and save the information you have programmed, press Enter [(F10)].

If you are programming a group of sequentially numbered extensions or trunks, you may have the option of pressing Next [(F8)]. This saves your entry and automatically provides the number of the next extension or trunk in the sequence, thus saving you a couple of steps. If Next displays on the screen, you can use it with the current option.

In most cases, you will beat an intermediate step in the procedure you have just completed. At that point, you can select one of the options shown on the screen and continue programming, or you can press Exit [(F5)] again. This usually takes you back to the System Programming menu. If not, you again can continue programming on the current screen or press Exit [(F5)] again.

Idle States

A few of the programming procedures can be started only when the entire system or some part of it, such as a trunk or an extension, is idle (not in use). Some procedures require that the trunk or extension be idle only at the instant of programming. Other procedures, which take longer, require the system, trunk, or extension to be forced into remaining idle until programming is completed. These procedures wait for the system, trunk, or extension to become idle and then prevent the initiation of any new calls. This condition is called *forced idle.*

NOTE:
If a procedure requires an idle condition, perform the programming outside of normal business hours.

If a procedure requires that the system be in an idle state and the system is busy when you begin, you see the screen shown below.

```
System Busy Pls Wait

Dial  Code:    nnnn
Slot/Port:      ss/pp




Exit
```

The screen changes to the appropriate programming screen when the system is no longer busy.

System Forced Idle

When the entire system is forced idle, no calls can be made or received. The .
procedures listed below can be performed only when the entire system (every '
line and every extension) is idle:

- Select system mode.

- Identify system operator positions.

- Renumber boards.

- Renumber system.

- Identify telephones with voice signal pairs for the Voice Announce to
  Busy feature.

- Identify telephones that need the Simultaneous Voice and Data
  feature.

- Restore system programming information.

- Identify the Music On Hold jack.

When the system is forced idle, the following occurs: multiline telephone users
hear a reminder tone that indicates the telephone cannot be used; display
telephone users see the message **Wait: System Busy;** single-line telephone
users do not hear a dial tone.

Line or Trunk Idle

Since these procedures require the line or trunk to be idle *only at the instant of
programming,* the line or trunk is not forced idle. The following procedures
can be performed only when the line or trunk being programmed is idle:

- Identify loudspeaker paging line jack.

- Assign trunks to pools.

- Specify incoming or outgoing DID-or tie-trunk type.

- Specify tie-trunk direction.

- Specify tie-trunk E&M signal.

Extension Forced Idle

When an extension or data terminal is forced idle, no calls can be made or received on that extension or data terminal. The following procedures can be performed only when the extension or data terminal being programmed is idle:

- Assign call restrictions.

- Assign pool dial-out restrictions.

- Copy extension assignments.

- Assign lines, trunks, or pools to extensions.

- Assign labels to a personal directory.

- Use centralized telephone programming.

When the extension is forced idle, the following occurs: multiline telephone users hear a reminder tone that indicates the telephone cannot be used; display telephone users see the message Wait: System Busy; single-line telephone users do not hear a dial tone.

Forced Idle Reminder Tone

The forced idle reminder tone is a high-low "door-phone" tone-400 ms of 667 Hz tone followed by 400 ms of 571 Hz tone. The tone is provided under the following circumstances:

- At the extension, to remind the user that the system or the extension is in the forced idle state

- At the programming console or at a PC running SPM, to remind the system manager that the system (or at least one extension) is in the forced idle state because of administrative activity

In Release 1.1 and higher of the communications system, forced idle reminder tones occur every 20 seconds. You can adjust the volume of these tones with the volume control on the system console.

Accessing System Programming

Follow the steps below to access system programming.

1 At the SPM Main Menu press (F1) to select `Sys  Program.`

(F1)
```
       SPM Main Menu
Menu:  Select Function
Sys Program  Maintenance
Backup        Restore
Boards        Pass-Thru
Print Opts    Password
Monitor       Language
```

2 Press the function key next to the option you want.

```
System Programming:  >
Make a selection
System        Extensions
SysRenumber   Options
Operator      Tables
LinesTrunks   AuxEquip
Exit          NightSrvce
```
(F1) (F2) (F3) (F4) (F5) (F6) (F7) (F8) (F9) (F10)

```
System Programming:
flake a selection
Labeling      Language
Data
Print
Cntr-Prg
Exit
```
(F1) (F2) (F3) (F4) (F5) (F6)

If the option you want does not appear on the first screen of the System
Programming menu, press (PgUp) to display the second screen of the menu.

Printing Reports

Use the following procedure to print system reports using SPM at the PC. The
SPM **Print Opts** must be set to **PC Port.** See "Print Options" for details about
setting the printer output port.

**1 At the System Programming menu, press (PgUp) to display the second page
of the menu.**

```
System Programming:  >
Make a selection
```
(F1) `Labeling`
(F2) `Data`
(F3) `Print`
(F4) `Cntr-Prg`
(F5) `Exit`

2 Press (F3) to select Print.

```
Please enter file name
      to store print
(default is print .ams)




Press Esc to Abort.
```

```
LPT1:
GOTO FLOPPY
MAKE NEW FILE
PRINT.AMS
```

3 Use one of the methods shown after this procedure to print the report(s).

4 Observe the print status screen.

```
Print in Progress . . .






```
(F5) `Exit`

You can press (F5) to interrupt printing and return to the SPM Main Menu.

Print Hard Copy

- To print a hard copy of the report, use the arrow keys to highlight LPTI: and press (Enter ↵) .

Print to Hard Disk

- To print the reports to the hard disk if the print file does not exist, use the arrow keys to highlight **MAKE NEW FILE** and press (Enter ↵) .

   — To save to the default print filename (print. ares), press (Enter ↵) .

   — To save to the filename of your choice, type *[filename]* and press (Enter ↵)

- To print the reports to the hard disk if the print file already exists, use the arrow keys to highlight the *[filename]* and press (Enter ↵) .

Print to Floppy Disk

Use the arrow keys to highlight **GOTO FLOPPY:** and press (Enter ↵). Use one of the methods shown below.

- To print the reports to a floppy disk if the print file does not exist, use the arrow keys to highlight **MAKE NEW FILE** and press (Enter ↵) .

   — To save to the default print filename (print. ams), press (Enter ↵) .

   — To save to the filename of your choice, type *[filename]* and press (Enter ↵) .

- To print the reports to a floppy disk if the print file already exists, use the arrow keys to highlight the *[filename]* and press (Enter ↵) .

Upgrading the System

⚠ **WARNING:**
The following procedures are to be used by qualified technicians or service personnel only. Installation or maintenance of this product by anyone other than qualified personnel may damage or impair the product; your limited warranty does not cover such damage. For details, see your limited warranty in the Customer Support Information in the back of this book. Hazardous electrical voltages are present inside this product.

This section describes upgrading your communications system to Release 3.0. You can use this procedure to perform the following upgrades:

■ From Release 1.0 to Release 3.0

■ From Release 1.1 to Release 3.0

■ From Release 2.0 to Release 3.0

■ From Release 2.1 to Release 3.0

MERLIN® II Communications System programming cannot be upgraded to this communications system. The new communications system must be completely reprogrammed.

Before You Begin

Before you begin the upgrade to Release 3.0, you will need the items listed below.

■ SPM Version 3.XX or later to backup and convert system programming information and to restore system programming information after the Release 3.0 processor module has been installed.

■ Release 3.0 processor module

■ DOS-formatted diskette

NOTE:
If SPM is already installed, the `Welcome to SPM` screen that appears when you start SPM identifies the version on both the last line of the console simulation window and in the upper left corner of the screen. If you are working with Version 3. XX, `v3` appears in the upper left-hand corner of the screen and `Version 3.XX` appears on the last line of the console simulation window.

Inter-Release Compatibility

It is important to understand compatibility between files created on each of the different versions of SPM, not only for upgrading but also for programming.

Table 6 summarizes programming compatibility. (It is assumed that the majority of the programming is done in surrogate mode and backed up on disk).

Table 6. Programming

SPM Version	Program Backup on	Restore on			
		1.0	1.1	2.0/ 2.1	3.0
1.13	1.0	yes	no	no	no
1.16	1.0	yes	yes	no	no
2.09	1.0	yes	yes	yes*	no
2.16	1.0	yes	yes	yes*	no
3.XX	1.0	yes	yes	yes*	yes*
1.16	1.1	no	yes	no	no
2.09	1.1	no	yes	yes*	no
2.16	1.1	no	yes	yes*	no
3.XX	1.1	no	yes	yes*	yes*
2.09	2.0	no	no	yes	no
2.16	2.0	no	no	yes	no
3.XX	2.0	no	no	yes	yes*
2.16	2.1	no	no	no	no
3.XX	2.1	no	no	no	yes*
3.XX	3.0	no	no	no	yes

* The backup file must be converted before it is restored.

NOTE:
The default barrier code and any programmed barrier codes will be carried over to Release 3.0 with no change and the barrier code length will be four (4). It is the responsibility of the system manager to change the barrier code length and the barrier codes if so desired.

Upgrade Procedure

IMPORTANT:
The upgrade procedure must follow the order of the steps shown below.

1 Install SPM.

To upgrade the system to Release 3.0, you will need to install (or upgrade to) Version 3.XX of SPM. See "Installing the SPM Software."

2 Back up your system programming.

This step creates a file containing system programming information. See "Backup."

3 Replace the processor module.

a. Turn off the AC power switches on the control unit in the following order:

(1) Basic carrier
(2) Expansion carrier 1, if present
(3) Expansion carrier 2, if present.

b. Unplug the interface cords from the SPM and SMDR printer ports on the processor module.

c. Remove the processor module from Slot 0.

d. Install the Release 3.0 processor module in Slot 0.

e. Plug the interface cords into the SPM and SMDR printer ports on the processor module.

f. Turn on AC power to the control unit in the following order:

(1) Expansion carrier 2, if present
(2) Expansion carrier 1, if present
(3) Basic carrier.

5 Perform a System Erase (frigid start).

Use the following procedure to ensure that all system programming is returned to default values.

`Maintenance>Slot>00>Demand Test>System Erase (Line 5, left button)>`
`System Erase` (Line 5, left button)> `Yes`

The System Erase option is not displayed on the screen to prevent accidental erasure of system programming. See Maintenance and Troubleshooting for additional information about System Erasure.

5 Convert your backup file to Release 3.0 format.

This procedure converts the backup file created in Step 2. See "Convert."

6 Restore your system programming.

The system is forced idle and cannot be used during this procedure. See "Restore."

7 Program new features.

If you wich to use the factory defaults for the new features available with Release 3.0, skip this step.

See Tables 7, 8 and 9 which follow this procedure.

- Table 7. Lists the features added with Release 1.1 of the communications system.

- Table 8. Lists the features added with Release 2.0 or 2.1 of the communications system.

- Table 9. Lists the features added with Release 3.0 of the communications system.

    — When you upgrade from Release 2.0 or 2.1 to Release 3.0, you must program these features as the last step of the upgrade procedure.

    — When you upgrade from Release 1.1 to Release 3.0, you must program the features listed in Table 8, then the features listed in Table 9.

    — When you upgrade from Release 1.0 to Release 3.0, you must first program the features listed in Table 7, then the features listed in Table 8, then the features listed in Table 9.

Table 7. Programming Needed after Upgrade to Release 1.1

Feature	Sequence
System language	`System  Programming>More>Language>SystemLang`
Extension language	`System  Programming>More>Language>Extensions`
SMDR language	`System  Programming>More>Language>SMDR`
Printer language	`System  Programming>More>Language>Printer`

Table 8. Programming Needed after Upgrade to Release 2.0

Feature	Sequence
Primary Rate Interface (PRI)	Sys Program>LinesTrunks>LS/GS/DS1>Type>PRI
	Sys Program>LinesTrunks>LS/GS/DS1>FrameFormat
	Sys Program>LinesTrunks>LS/GS/DSI>Suppression
	Sys Program>LinesTrunks>PRI>PhoneNumber
	Sys Program>LinesTrunks>PRI>B-Channl Grp
	Sys Program>LinesTrunks>PRI>NumbrToSend
	Sys Program>LinesTrunks>PRI>TestTel Num
	Sys Program>LinesTrunks>PRI>Protocol
	Sys Program>LinesTrunks>PRI>Dial PlanRtg
	Sys Program>LinesTrunks>PRI>OutgoingTbl
	Sys Program>Tables>ARS
DID Emulation on T1	SysProgram>LinesTrunks>LS/GS/DSI>Type>More >DID/A11 DID
Night Service Calling Group	Sys Program>NightSrvce>GroupAssign>Calling Group
Coverage VMS Off	Sys Program> **More** >Cntr-Prg>Program Ext
Data Status	Sys Program> **More** >Cntr-Prg>Program Ext
Extension Copy	Sys Program> **More** >Cntr-Prg>Copy Ext
Posted Message button on analog multiline and MLX-10 non-display telephones (for use with Do Not Disturb)	Sys Program> **More** >Cntr-Prg>Program Ext

Table 9. Programming Needed after Upgrade to Release 3.0

Feature	Sequence
Automatic Backup	`Sys Program> System>Back/Restore>Auto Backup`
Incoming Call Line Identification Delay	`LinesTrunks> More >LS-ID Delay> Drop >Dial trunk no,>Enter`
Remote Access Barrier Codes	`LinesTrunks>RemoteAccss>BarrierCode>CodeInfo >Code Length`
	`LinesTrunks>RemoteAccss>BarrierCode>CodeInfo >Code Entry`
Authorization Codes	`Extensions> More >Auth Code`

Surrogate Mode Programming

Surrogate mode allows qualified service personnel to perform system programming at an off-site service location. The actual communications system hardware does not have to be installed—the programmer needs only a direct connection from the PC to the processor module. By following a customer's set of completed planning forms, the system can be programmed as if the appropriate modules, trunks, and telephones have been installed. When system programming is completed, a system backup is performed to save the information on disk. This backup disk is then taken to the new installation site and used with the Restore option to provide complete system programming for a new communications system.

You do not "select" surrogate mode programming-you enter it automatically under the following conditions:

■ The PC is connected to the lower RS-232 port on a control unit (direct local connection).

■ Only the processor and power modules are connected.

Once you enter surrogate mode programming, you must follow the sequence of procedures shown below.

- At the service location, perform the following:

    1. System Erase

    2. Program the Boards (except the 10OD module)

    3. System Programming

    4. Backup

- At the installation site, perform the following:

    1. Restore

    2. Program the 10OD module

While you are in surrogate mode, the Pass-Thru and Password options are not available.

NOTE:
Surrogate mode is available only through the local programming port. You cannot access surrogate features through the system programming console.

Glossary

A

account code Code used to associate incoming and outgoing calls with corresponding accounts, employees, projects, and clients.

Accunet AT&T's switched digital service for 56-kbps, 64-kbps restricted, and 64-kbps clear circuit-switched data calls.

address a coded representation of the destination of data or of the data's originating terminal, such as the dialed extension number assigned to the data terminal. Multiple terminals on one communication line must each have a unique address.

adjunct Optional equipment used with the communications system, such as an alerting device or *modem* that connects to a multiline telephone or to an extension jack.

ALS (Automatic Line Selection) Programmed order in which the system makes outside lines available to a user.

analog transmission Mode of transmission in which information is represented in continuously variable physical quantities such as amplitude, frequency, phase, or resistance. See also *digital transmission.*

ANI (automatic number identification) Process of automatically identifying a caller's billing number and transmitting that number from the caller's local central office to another point on or off the public network.

application	Software and/or hardware that adds functional capabilities to the system. For example, MERLIN Identifier is an application that provides caller identification information (if available in the local area or jurisdiction).
ARS	(Automatic Route Selection) System feature that routes calls on outside trunks according to the number dialed and trunk availability.
ASCAP	(American Society of Composers, Artists, and Producers)
ASN	(AT&T Switched Network) AT&T telecommunications services provided through an Integrated Services Digital Network Primary Rate Interface (ISDN-PRI) trunk, *Accunet* switched digital service, *Megacom, Megacom 800,* Software Defined Network (SDN), Multiquest, and Shared Access for Switch Services (SASS).
asynchronous data transmission	A method of transmitting a short bitstream of digital data, such as printable characters represented by a 7- or *8-bit* ASCII code. Each string of data bits is preceded by a start bit and followed by a stop bit, thus permitting data to be transmitted at irregular intervals. See also *synchronous data transmission.*
AT&T Attendant	Application with equipment that connects to one or more *tip/ring* extension jacks and automatically answers incoming calls with a recorded announcement; directs calls in response to touch tones.
AT&T Switched Network	See *ASN.*

AUDIX Voice Power	A voice-processing application, part of *IS II/III,* that provides Automated Attendant, Call Answer, Information Service, Message Drop, Voice Mail, and, optionally, *FAX Attendant System* for use with the system.
Automated Attendant	*IS II/III, MERLIN MAIL,* and *AT&T Attendant* application that automatically answers incoming calls with a recorded announcement and directs callers to a department, an extension, or the system operator.
Automatic Line Selection	See *ALS.*
Automatic Number Identification	*See ANI.*
automatic ringdown tie-trunk	*See automatic-start tie trunk.*
Automatic Route Selection	*See ARS.*
automatic-start tie trunk	*Tie trunk* on which incoming calls are routed to an operator or other designated destination without a start signal, as soon as the trunk is seized; the destination is specified during programming. Also called "automatic ringdown" or "(auto-in" tie trunk.
auxiliary power unit	Device that provides additional power to the system.

B

B8ZS
(bipolar 8 zero substitution) Line-coding format that encodes a string of eight zeros in a unique binary sequence to detect *bipolar violation.* See also *bipolar signal.*

backup
Procedure for saving a copy of system programming onto a floppy disk or *memory card. See* also *restore.*

bandwidth
Difference, expressed in hertz, between the highest and lowest frequencies in a range that determines channel capacity.

barrier code
Password used to limit access to the *Remote Access* feature of the system.

basic carrier
Hardware that holds and connects the *processor, power supply,* and up to five modules in the system. See also *expansion carrier.*

baud rate
Strictly speaking, a measurement of transmission speed equal to the number of signal level changes per second. In practice, often used synonymously with *bit rate* and *bps.*

B-channel
(Bearer-channel) 64-kbps channel that carries a variety of digital information streams, such as voice at 64 kbps, data at up to 64 kbps, wideband voice encoded at 64 kbps, and voice at less than 64 kbps, alone or combined.

Bearer-channel
See B-channel.

Behind Switch mode　　One of three modes of system operation, in which the control unit is connected to (behind) another telephone switching system, such as *Centrex* or Definity, which provides features and services to telephone users. See also *Hybrid/PBX mode* and *Key mode.*

binary code　　Electrical representation of quantities or symbols expressed in the base-2 number system, which includes zeros and ones.

bipolar 8 zero substitution　　See *B8ZS.*

BIS　　(Built-in Speakerphone) Part of the model name of some analog multiline telephones.

bit　　(binary digit) One unit of information in binary notation; it can have one of two values, zero or one.

bit rate　　Speed at which bits are transmitted, usually expressed in *bps.* Also called "data rate. " See also *baud rate.*

blocking　　Condition in which end-to-end connections cannot be made on calls because of a full load on all possible services and facilities. See also *glare.*

BMI　　(Broadcast Music Incorporated)

board　　a module, for example, 100D or 408 MLX GS/LS, that allows you to connect lines/trunks and extensions to the communication system.

board assignment　　SPM procedure for assigning line/trunk and extension modules to slots on the control unit.

board renumbering	System programming procedure for renumbering boards that have already been assigned to specific slots on the control unit.
broadband	Transmission path having a bandwidth greater than a voice-grade channel.
bus	Multiconductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.
button	Key on the face of a telephone that is used to access a line, activate a feature, or enter a code on a communications system.
byte	Sequence of *bits* (usually eight) processed together. Also called "octet."

C

Call Accounting System	See *CAS.*
Call Accounting Terminal	See *CAT.*
calling group	Team of individuals who answer the same types of calls.
Call Management System	See *CMS.*
CAS	(Call Accounting System) DOS- or UNIX system-based application that monitors and manages telecommunications costs.

CAT	(Call Accounting Terminal) Standalone unit with a built-in microprocessor and data buffer that provides simple call accounting at a low cost.
CCITT	(International Telegraph and Telephone Consultative Committee)
CCS	(common-channel signaling) Signaling in which one channel of a group of channels carries signaling information for each of the remaining channels, permitting each of the remaining channels to be used to nearly full capacity. In the system's 100D module, channel 24 can be designated as the signaling channel for channels 1-23.
centralized telephone programming	Programming of features on individual telephones; performed at a central location by the *system manager. See* also *system programming* and *extension programming.*
central office	See *CO.*
Centrex	Set of system features to which a user can subscribe on telephone trunks from the local telephone company.
channel	Telecommunications transmission path for voice and/or data.
channel service unit	See *CSU.*
checksum	Sum of ones in a sequence of ones and zeros used to detect or correct errors in data transmission.
circuit-switched data call	Data call made through an exclusively established and maintained connection between *data stations.*
class of restriction	See *COR.*

clock synchronization	Operation of digital facilities from a common clock.
CMS	(Call Management System) DOS-based application that simulates the actions of a system operator by answering and distributing calls. Also produces reports for call analysis.
CO	(central office) Location of telephone switching equipment that provides local telephone service and access to toll facilities for long-distance calling.
common channel signaling	See *CCS.*
communications system	Software-controlled processor complex that interprets dialing pulses, tones, and or keyboard characters and makes the proper interconnections both inside and outside. Consists of a computer, software, a storage device, and *carriers* with special hardware to perform the actual connections. Provides voice and/or data communications services, including access to public and private networks, for telephones and other equipment. Also referred to in this guide as "system," short for LEGEND Communications System.
control unit	*Processor, power supply,* modules, *carriers,* and housing of the system.
console	Refers to telephone and adjuncts (if any) at operator or system programmer extension.
CONVERSANT Intro	Entry-level voice response application that automatically answers and routes calls and executes telephone transactions.
conversion resource	See *modem pool.*

COR	(class of restriction) Various types of restrictions that can be assigned to *remote access* trunks or barrier codes. These restrictions consist of Calling Restrictions, *ARS* Facility Restriction Levels *(FRLs),* Allowed Lists, Disallowed Lists, and Automatic Callback queuing.
Coverage	Set of system features that can determine how extensions' calls are covered when the person at the extension is busy or not available.
CSU	(channel service unit) Equipment used on customer premises to provide *DS1* facility terminations and signaling compatibility.

D

D4 framing format	*Framing format* consisting of a sequence of individual frames of 24 eight- *bit* slots and one signal bit (193 bits) in a 12-frame superframe. See also *ESF*
Data-channel	See *D-channel.*
data communications equipment	See *DCE.*
data hunt group	See *DHG.*
data module	See *ISDN 75008 Data Module.*
data rate	See *bps.*

data station	Special type of extension where data communications take place; includes *DTE* and *DCE;* sometimes a telephone is also part of a data station.
data terminal	An input/output *(I/O)* device (often a personal computer) that can be connected to the control unit via an interface.
data terminal equipment	See *DTE* and *data terminal*
DCE	(data communications equipment) Equipment such as *modems* or data modules used to establish, maintain, and terminate a connection between the system and data terminal equipment *(DTE),* such as printers, personal computers, host computers, or network workstations.
D-channel	(Data-channel) 16-or 64-kbps channel that carries signaling information or data on a PRI.
DCP	(Digital Communications Protocol) AT&T proprietary protocol to transmit digitized voice and data over the same communications link. A DCP link is made up of two 64-kbps information (I) channels and one signaling (S) channel to the B- and D-channels used in an *ISDN.*
dedicated feature buttons	The imprinted feature buttons on a telephone: **Conf** or **Conference, Drop, Feature, HFAI** (Hands Free Answer on Intercom), **Hold, Message, Mute** or **Microphone, Recall, Speaker** or **Speakerphone,** and **Transfer.**

delay-dial-start tie trunk	*Tie trunk* on which the originating end of the tie trunk transmits an off-hook signal to the receiving end and waits for the receiving end to send an off-hook signal followed by an on-hook signal. Also called "dial-repeating tie trunk."
DFT	(direct facility termination) See *personal line.*
dial access	See *feature code.*
Dialed Number identification Service	See *DNIS*
dial-out code	Digit (usually a 9) or digits dialed by telephone users to get an outside line.
dial plan	Numbering scheme for system extensions, lines, and trunks.
dial-repeating tie trunk	See *delay-dial start tie trunk.*
DID	(Direct Inward Dialing) Service that transmits from the telephone company central office and routes incoming calls directly to the called extension, *calling group,* or outgoing trunk *pool,* bypassing the system operator.
DID trunk	Incoming trunk that receives dialed digits from the local exchange, allowing the system to connect directly to an extension without assistance from the system operator.
digital	Representation of information in discrete elements such as off and on or zero and one. See also *analog transmission.*
Digital Communications Protocol	See *DCP.*
Digital Signal 0	See *DS0.*

Digital Signal 1	See *DS1.*
digital switch element	See *DSE.*
digital transmission	Mode of transmission in which the information to be transmitted is first converted to digital form and then transmitted as a serial stream of pulses. See also *analog transmission.*
DIP switch	(dual in-line package) Switch on a 400EM module used to select the signaling format for tie-line transmission. Also used on other equipment for setting hardware options.
direct facility termination	(DFT) See *personal line.*
Direct Inward Dialing	See *DID.*
Direct-Line Console	See *DLC.*
Direct Station Selector	See *DSS.*
display buttons	Buttons on an MLX display telephone used to access the telephone's display.
DLC	(Direct-Line Console) Telephone used by a system operator to answer outside calls (not directed to an individual or a group) and inside calls, transfer calls, make outside calls for users with outward calling restrictions, set up conference calls, and monitor system operation.
DNIS	(Dialed Number Identification Service) Service provided by the AT&T Switched Network *(ASN);* it routes incoming 800 or 900 calls according to customer-selected parameters, such as area code, state, or time of call.

door answering unit   Device connected to a basic telephone jack and used at an unattended extension or front desk.

DOS   (disk operating system)

DS0   (Digital Signal 0) Single 64-kbps voice or data channel.

DS1   (Digital Signal 1) *Bit-* oriented signaling interface that multiplexes twenty-four 64-kbps channels into a single 1.544-Mbps stream.

DSS   (Direct Station Selector) 60-button *adjunct* that enhances the call-handling capabilities of an MLX-20L or MLX-28D telephone used as an operator console.

DTE   (data terminal equipment) Equipment that makes the endpoints in a connection over a data connection, for example, a data terminal, personal computer, host computer, or printer.

DTMF signaling   (dual-tone multifrequency signaling) Touch-tone signaling from telephones using the voice transmission path. DTMF signaling provides 12 distinct signals, each representing a dialed digit or character, and each composed of two voiceband frequencies.

E

E&M signaling   Trunk supervisory signaling, used between two communications systems, in which signaling information is transferred through two-state voltage conditions (on the Ear and Mouth leads) for analog applications and through two *bits* for digital applications. See also *tie trunk.*

EIA   (Electronic Industries Association)

EIA-232-D   Physical interface, specified by the *EIA,* that transmits and receives asynchronous data at speeds of up to 19.2 Kbps over cable distances of50ft(15m) or less.

endpoint   Final destination in the path of an electrical or telecommunications signal.

ESF   (extended superframe format) *Framing format* consisting of individual frames of 24 eight- *bit* slots and one signal bit (193 bits) in a 24-frame extended superframe. See also 04 *framing format.*

expansion carrier   *Carrier* added to the control unit when the basic carrier cannot house all of the required modules. Houses a power supply and up to six additional modules.

extension   An endpoint on the internal side of the communications system. An extension can be a telephone with or without an adjunct. Also called "station." See also *data station.*

extension jack   An analog, digital, or *tip/ring* physical interface on a module in the control unit for connecting a telephone or other device to the system. Also called "station jack."

extension programming	Programming performed at an extension to customize telephones for personal needs; users can program features on buttons, set the telephone ringing pattern, and so on. See also *extension programming* and *system programming.*
extended superframe format	See *ESF.*

F

facility	Equipment (often a *trunk)* constituting a telecommunications path between the system and the telephone company central office *(CO).*
Facility Restriction Level	See *FRL.*
factory setting	Default state of a device or feature when an optional setting is not programmed by the user or system manager.
fax	(facsimile) Scanning and transmission of a graphic image over a telecommunications facility, or the resulting reproduced image, or the machine that does the scanning and transmitting.
FAX Attendant System	Fax handling and processing application available with *AUDIX Voice Power.*
FCC	Federal Communications Commission
feature	Function or service provided by the system.

feature code	Code entered on a dial pad to activate a feature.
feature module	Prior to Release 3.0, a circuit pack inserted into ' the *processor* module, used to provide system features and replaced when the system is upgraded.
Feature screen	Display screen on MLX display telephones; provides quick access to commonly used features.
Flash ROM	Beginning with Release 3.0, a type of memory provided on the *processor* module,
forced idle	Condition of the system during certain programming or maintenance procedure; system prevents initiation of new calls.
foreign exchange	See *FX.*
frame	One of several segments of an analog or digital signal that has a repetitive characteristic. For example, a *DS1* frame consists of a framing *bit* and 24 bytes, which equals 193 bits.
framing format	Pattern of *frames* used in transmissions.
FRL	(Facility Restriction Level) *ARS* calling restriction type that restricts outgoing calls to certain specified routes.
FX	(Foreign exchange) Central office (CO) other than the one that is providing local access to the public telephone network.

G

General-Purpose Adapter.　　See *GPA.*

glare　　Condition that occurs when a user tries to call out on a *loop-start* trunk at the same time that another call arrives on the same trunk.

GPA　　(General-Purpose Adapter) Device that connects an analog multiline telephone to optional equipment such as an answering machine or a fax machine.

ground-start trunk　　Trunk on which the communications system, after verifying that the trunk is idle (no ground on tip lead), transmits a request for service (puts ground on ring lead) to the telephone company central off ice *(CO).*

Group IV (G4) fax machine　　A fax unit, offering 400 by 100 dots per inch (DPI) in fine mode, that can operate at any speed for communication with a Group III (G3) fax machine or another Group IV (G4) fax machine.

H

Hands Free Answer on Intercom　　See *HFAI.*

hands-free unit　　See *HFU.*

headset　　Lightweight earpiece and microphone used for hands-free telephone operation.

HFAI	(Hands Free Answer on Intercom) Feature that allows a user to answer a voice-announced call.
HFU	(Hands-Free Unit) Unit for analog multiline telephones that allows users to make and receive calls on the speakerphone without using the handset.
Home screen	Display normally shown on an MLX display telephone; shows time, date, and call information, and shows when some features are in use.
host	Telephone company or other switch providing features and services to the system users, usually when the system is operating in *Behind Switch mode.*
Hybrid/PBX mode	One of three modes of system operation, in which the system uses trunk *pools* and *ARS* in addition to *personal lines.* Provides a single interface **(SA** buttons) to users for both internal and external calling. See also *Behind Switch mode* and *Key mode.*

I

ICLID	(Incoming Call Line Identification) A service provided by some local telephone companies (if local regulations allow) that supplies the calling party telephone number. In Release 3.0 and later, an 800 GS/LS-ID module on the system can capture this information and display it on the screens of MLX telephones. See also *ANI.*

ICOM buttons	(intercom buttons) Telephone buttons that provide access to inside system lines for calling other extensions or receiving calls from them.
immediate-start tie **trunk**	*Tie trunk* on which no start signal is necessary; dialing can begin immediately after the trunk is seized.
in-band signaling	*See robbed-bit signaling.*
inside dial tone	A tone users hear when they are off-hook on an **SA** or **ICOM** *button.*
Inspect screen	Display screen on an MLX display telephone that allows the user to preview incoming calls and see a list of the features programmed on line buttons.
Integrated Administration	Capability of *IS III* that simplifies the programming of common information for the system, *AUDIX Voice Power,* and, if it is also installed, *FAX Attendant System.*
Integrated Services Digital Network	See *ISDN.*
Integrated Solution II/III	See *IS II/III.*
Integrated Voice Power Automated Attendant	*IS II* application that automatically answers incoming calls with a recorded announcement and directs callers to a department, an extension, or the system operator.
intercom buttons	See *ICOM buttons.*
interface	Hardware and/or software that links systems, programs, or devices.

I/O device	(input/output device) Equipment that can be attached to a computer internally or externally for managing a computer system's input and output of information.
IS II/III	(Integrated Solution II or Integrated Solution lll) Set of UNIX system-based applications that augments and provides additional services using the system.
ISDN	(Integrated Services Digital Network) Public or private network that provides end-to-end digital connectivity for all services to which users have access by a limited set of standard multipurpose user and *network interfaces;* provides digital circuit-switched or packet-switched connections within the network and to other networks for national and international digital connectivity.
ISDN 7500B Data Module	Data communications device that allows connection between an RS-232 *DTE* device and the control unit via MLX extension jacks on the 008 MLX or 408 GS/LS-MLX module.

J

jack	Physical connection point to the system for a telephone, trunk, or other device. Also called "port."

K

kbps Kilobits per second.

Key mode One of three modes of system operation, in which the system uses personal lines on line buttons for outside calls, with a separate interface *(ICOM buttons)* for internal calling. See also *Behind Switch mode* and *Hybrid/PBX mode.*

L

LDN listed directory number

LED (light-emitting diode) Semiconductor device that produces light when voltage is applied; light on a telephone.

line Connection between extensions within the communications system; often, however, used synonymously with *trunk.*

line and trunk assignment Assignment of lines and trunks connected to the system control unit to specific buttons on each telephone.

line coding Pattern that data assumes as it is transmitted over a communications channel.

line compensation Adjustment for the amount of cable loss in decibels (dB), based on the length of cable between a 100D module and a channel service unit *(CSU)* or other far-end connection point.

line/trunk	Refers to inside system lines and outside trunks in general terms, See also *line* and *trunk.*
line/trunk jack	Physical interface on a module in the control unit for connecting an outside trunk to the communications system. Also called "trunk jack."
line/trunk and extension module	Module on which the jacks for connecting central office lines/trunks and/or the jacks for connecting the extensions are located.
local host computer access	A method for connecting an extension jack to an on-site computer for data-only calls through a *modem* or data module.
local loop	See *access line.*
logical ID	Unique numeric identifier for each *extension* and *line/trunk jack* in the system control unit.
loop-start trunk	Trunk on which a closure between the tip and ring leads is used to originate or answer a call. High-voltage 20-Hz AC ringing current from the central office signals an incoming call.

M

Magic On Hold	An AT&T Music on Hold enhancement that promotes a company's products or services.
Mbps	megabits per second
Megacom	AT&T's tariffed digital *WATS* offering for outward calling.
Megacom 800	AT&T's tariffed digital 800 offering for inward calling.

memory card	Storage medium, similar in function to a floppy disk, that allows information to be added to or obtained from the communication system through the PCMCIA interface slot on the processor module.
MERLIN Identifier	Adjunct that allows users to receive, store, and use information provided by Caller ID.
MERLIN Mail Voice Messaging System	Application that provides automated attendant, call answering, and voice-mail services on the system.
MFM	(Multi-Function Module) Adapter that has a *tip/ring* mode for answering machines, modems, fax machines, and tip/ring alerts, and an SAA mode for -48 VDC alerts. Installed inside an MLX telephone, and is used to connect optional equipment to the telephone. The optional equipment and the telephone operate simultaneously and independently.
MLX-10 or MLX-10D telephone	10-line button digital telephone offered with (MLX-10D) or without (MLX-10) a 2-line by 24-character display.
MLX-20L telephone	20-line button digital telephone with a 7-line by-24-character display.
MLX-28D telephone	28-line button digital telephone with a 2-line by 24-character display.
modem	Device that converts digital data signals to analog signals for transmission over a telephone line, and analog signals received on a telephone line to digital signals.

modem pool	Pair, or group of pairs, of *modems* and data modules with interconnected RS-232 interlaces that converts digital signals to analog, or analog signals to digital, thereby allowing users with digital *data stations* to communicate with users who have analog data stations.
module	Circuit pack in the control unit that provides the physical jacks for connection of telephones and/or outside trunks to the communications system. In the name of a module, the first digit indicates the number of *line/trunk* jacks it contains; the last digit indicates the number of *extension jacks* it contains. If no letters appear after the number, a line/trunk module provides *loop-start trunks* or an extension jack module provides analog or *tip/ring* jacks. For example, a 408 GS/LS MLX module contains four line/trunk jacks and eight digital (MLX) extension jacks, provides either loop-start (LS) or *ground-start (GS)trunks.*
Multi-Function Module	See *MFM.*
multiline telephone	An analog or digital (MLX) telephone that provides multiple line buttons for making or receiving calls or programming features.
multiplexing	The division of a transmission channel into two or more independent channels, either by splitting the frequency band into a number of narrower bands or by dividing the channel into successive time slots.
Music On Hold	Customer-provided music source or Magic on Hold connected to the system through a *loop-start* jack.

N

network
Configuration of communications devices and software connected for information interchange.

network interface
Hardware, software, or both that links two systems in an interconnected group of systems, for example, between the local telephone company and a PBX.

O

off-hook
Telephone is said to be off-hook when the user has lifted the handset, pressed the **Speaker** button to turn on the speakerphone, or used a headset to connect to the communications system or the telephone network.

off-premises telephone
See *OPT.*

ones density
Requirement for channelized *DS1* service to the public network that eight consecutive zeros cannot occur in a digital data stream.

on-hook
Telephone is said to be on-hook when the handset is hung up, the speakerphone is turned off, and the user is not using a headset to connect to the communications system or the telephone network.

OPT	(off-premises telephone) *Single-line telephone* or other *tip/ring* device connected to the system through an 008 OPT module in the control unit. Appears as an inside extension to the system, but may be physically located away from the system.
OPX	off-premises extension
out-of-band signaling	Signaling that uses the same path as voice-frequency transmission and in which the signaling is outside the band used for voice frequencies.

P

parity	The addition of a *bit* to a bit string so that the total number of ones is odd or even, used to detect and correct transmission errors.
pass-through	Connection from an internal *modem* to a programming jack on the system.
PBX	(private branch exchange) Local electronic telephone switch that serves local stations (for example, extensions within a business) and provides them with access to the public network.
PC	personal computer
PCMCIA memory card	Personal Computer Memory Card International Association memory card) See *memory card.*
personal line	Central office trunk that terminates directly on one or more telephones. In *Hybrid/PBX mode,* a personal line cannot be part of a trunk *pool.* Also called "DFT" (direct facility termination).

pool	In *Hybrid/PBX mode,* a group of outside trunks that users can access with a Pool button or by dialing an access code on an *SA button.* Also used by the *ARS* feature when choosing the least expensive route for a call.
port	See *jack.* Also, refers to *extension* or *line jacks* before these are numbered according to the *dial plan* during programming. The lowest jack on a module is always port 1.
power supply module	Device that directs electricity to modules and telephones on the system. One power supply module is needed for each carrier, and an *auxiliary power unit* is added if the module exceeds capacity.
PRI	(Primary Rate Interface) Standard interface that specifies the protocol used between two or more communications systems. As used in North America, provides twenty-three 64-kbps *B-channels* for voice and/or data and one 16-kbps *D-channel,* which carries multiplexed signaling information for the other 23 channels.
primary system operator position	First jack on the first MLX or analog multiline extension module in the control unit, that is, the extension jack with the lowest logical ID in the system.
prime line	Individual extension number assigned to a telephone in a system operating in *Behind Switch mode.* Each telephone user has his or her own prime line and is automatically connected to that line when he or she lifts the handset.

processor module Module in the second slot of the control unit (Slot O, to the right of the *power supply).* Includes the software and memory that runs the ' system.

programming port reassignment Reassignment of the system programming jack position to any of the first five extension jacks on the first MLX module in the control unit.

protocol Set of conventions governing the format and timing of message exchanges between devices, such as an MLX telephone and the control unit.

public network Network that is commonly accessible for local or long-distance calling. Also called "public switched telephone network."

Q

QCC (Queued Call Console) MLX-20L telephone used by a system operator in *Hybrid/PBX mode* only. Used to answer outside calls (directed to a system operator position) and inside calls, direct inside and outside calls to an extension or an outside telephone number, serve as a message center, make outside calls for users with outward calling restrictions, set up conference calls, and monitor system operation.

R

RAM (random-access memory) Computer memory in which an individual *byte* or range of bytes can be addressed and read or changed without affecting other parts of memory.

read-only memory See *ROM.*

Remote Access System feature that allows an outside caller to gain access to the system, almost as if at a system extension.

restore Procedure whereby saved and archived system programming is reinstated on the system, from a floppy disk or *memory card. See* also *backup.*

RS-232 Physical interface, specified by the Electronics Industries Association *(EIA),* that transmits and receives *asynchronous* data at distances of up to 50 feet (15 m).

robbed-bit signaling Signaling in which the least significant *bit* of every sixth frame per channel is used for signaling in that channel.

ROM (read-only memory) Computer memory that can be read but cannot be changed.

S

SAA
(Supplemental Alert Adapter) Device that permits -48-VDC alerting equipment to be connected to an analog multiline telephone jack so that people working in noisy or remote areas of a building can be alerted to incoming calls.

SA buttons
Telephone buttons that provide a single interface to users for both internal and external calling.

SDN
(Software Defined Network) AT&T private networking service created by specialized software within the public network.

SID
[station (extension) identification]

simplex signaling
Transmission of signals in one direction only across a telecommunications channel.

signaling
Sending of control and status information between devices to set up, maintain, or cease a connection such as a telephone call.

single-line telephone
Industry-standard touch-tone or rotary-dial telephone that handles only one call at a time and is connected to the system via an *extension jack* on a basic 012 or 008 OPT module.

slot
Position in a *carrier* for a module; numbered from 0 *(processor module).*

SMDR
(Station Message Detail Recording) Feature that captures detailed usage information on incoming and outgoing voice and data calls.

SMDR printer	Printer used to produce SMDR reports. Connected to the system via an RS-232 jack on the *processor* module.
Software Defined Network	See *SDN.*
special character	Pause, Stop, or End-of-Dialing signal in a programmed dialing sequence such as an Auto Dial or Personal Speed Dial number.
SPM	(System Programming and Maintenance) *DOS-* or UNIX system-based application for programming and maintaining the system.
square key	Configuration in *Key mode* operation in which all outside lines appear on all telephones.
station	See *extension.*
station jack	See *extension jack.*
Station Message Detail Recording	See *SMDR.*
Supplemental Alert Adapter	*See SAA.*
switchhook flash	Momentary (320 ms to 1 second) on-hook signal used as a control signal. May be directed either to the control unit or to a *host* switch outside the system. Also called "Recall" or "timed flash."
synchronous data transmission	Method of transmitting a continuous digital data stream in which the transmission of each binary *bit* is synchronized with a master clock. See also *asynchronous data transmission.*
System Access buttons	*See SA buttons.*

system date and time   Date and time that appear on MLX display telephones and *SMDR* reports.

system programming   Programming of system functions and features that affect most users, performed from an MLX-20L telephone or a computer using *SPM. See* also *extension programming* and *centralized telephone programming.*

System Programming and Maintenance   See *SPM.*

system renumbering   Procedure used to change the numbers assigned to telephones, adjuncts, *calling groups,* paging groups, park zones. *Remote Access,* and lines/trunks.

T

T1   Type of digital transmission facility that in North America transmits at the *DS1* rate of 1.544 Mbps.

tie trunk   Private trunk directly connecting two telephone switches. See also *automatic-start tie trunk, delay-dial-start tie trunk, immediate-start tie trunk,* and *wink-start tie trunk.*

timed flash   See *switchhook flash.*

tip/ring   Contacts and associated conductors of a *single-line telephone* plug or jack.

touch-tone receiver   See *TTR.*

T/R   See *tip/ring.*

trunk	Line creating a telecommunications path between the communications system and the telephone company central office *(CO)* or another switch. Often used synonymously with *line.*
trunk jack	See *line/trunk jack.*
trunk pool	See *pool* and *modem pool.*
TTR	(touch-tone receiver) Device used to decode DTMF touch-tones dialed from *single-line telephones* or *Remote Access* telephones.

V

VMI	(voice messaging interface) An enhanced *tip/ring* port.
voice mail	Application that allows users to send messages to other extensions in the system, forward messages received with comments, and reply to messages.
voice messaging interface	See *VMI.*

W

WATS
(Wide Area Telecommunications Service)
Service that allows calls to certain areas for a
flat-rate charge based on expected usage.

wink-start tie trunk
Tie trunk on which the originating end transmits
an off-hook signal and waits for the remote end
to send back a signal (a wink) that it is ready
for transmission.

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