AT&T

MERLIN LEGEND™ Communications System Release 2.0

System Programming and Maintenance (SPM)
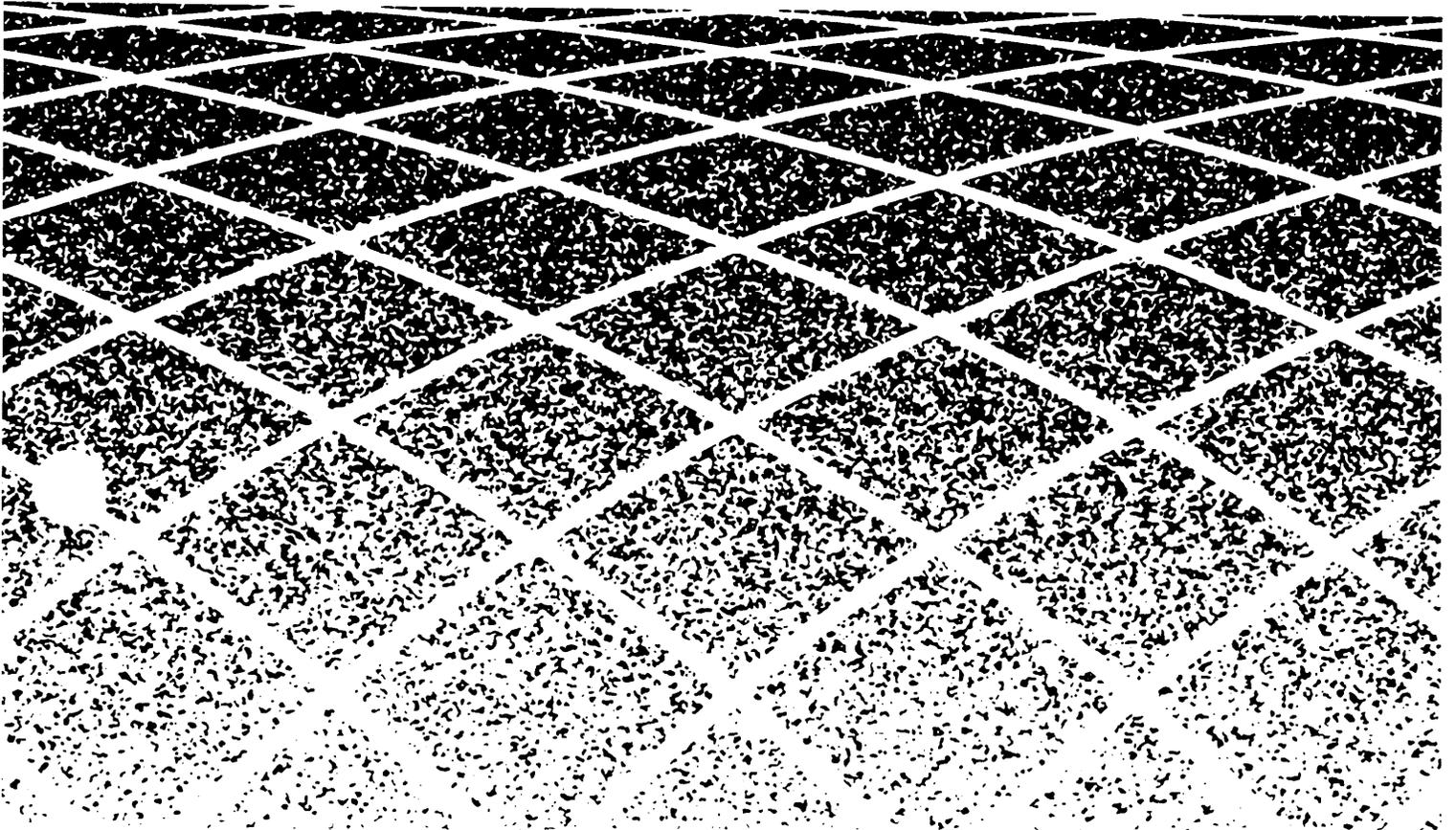
AT&T 555-620-142
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Notice

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.

Federal Communications Commission (FCC) Electromagnetic Interference Information

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

Canadian Department of Communications (DOC) Interference Information

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

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicable aux appareils numériques de la class A prescribes clans Ie Réglement sur Ie brouillage radioélectrique par le ministére des Communications du Canada.

Trademarks

CONVERSANT and MERLIN are registered trademarks and AUDIX Voice Power, FAX Attendant System, MLX-20L, and MERLIN LEGEND are trademarks of AT&T in the U.S. and other countries.

Hayes is a registered trademark of Hayes Microcomputer Products, Inc.

MS-DOS is a registered trademark of Microsoft Corp.

UNIX is a registered trademark of UNIX System Laboratories, Inc.

Support Telephone Number

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

System Programming and Maintenance (SPM)

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┌─────────────────────────────────────────────────────────┐
│                   CUSTOMER WARNING                       │
│                                                          │
│  This manual is designed for use **by qualified service  │
│  technicians only.** Technician qualification includes   │
│  completion of an AT&T hands-on instructor-led course    │
│  covering installation and maintenance for this product. │
│  Installation or maintenance of this product by anyone   │
│  other than a qualified service technician may void the  │
│  warranty. **Hazardous electrical voltages are present   │
│  inside this product.**                                  │
└─────────────────────────────────────────────────────────┘
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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 (511A) control unit.

- Use only AT&T-recommended/approved MERLIN LEGEND Communications System accessories.

- If equipment connected to the analog station 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 three-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.

Customer Support Information

Support Telephone Number

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 authorized dealer, if you need assistance when installing, programming, or using your system.

Outside the U.S.A., if you need assistance when installing, programming, or using your system, contact your authorized AT&T dealer.

Federal Communications Commission (FCC)
Electromagnetic Interference Information

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

Canadian Department of Communications (DOC)
Interference Information

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

Le Présent Appareil Numérique n'émet pas de bruits radioelectriques depassant les limites applicable aux appareils numériques de la class A prescrites dans le reglement sur le brouillage radioelectrique edicté par le ministère des Communications du Canada.

FCC Notification and Repair Information

This equipment is registered with the FCC in accordance with Part 68 of its rules. In compliance with those rules, you are advised of the following:

■ **Means of Connection.** Connection of this equipment to the telephone network shall be through a standard network interface jack: USOC RJ11C, RJ14C, RJ21X. Connection to E&M tie trunks requires a USOC RJ2GX. Connection to off-premises stations requires a USOC RJ11C or RJ14C. Connection to 1.544-Mbps digital facilities must be through a USOC RJ48C or RJ48X. Connection to DID requires a USOC RJ11C, RJ14C, or RJ21X. These USOCs must be ordered from your telephone company.

This equipment may not be used with party lines or coin telephone lines.

■ **Notification to the Telephone Companies.** Before connecting this equipment, you or your equipment supplier must notify your local telephone company's business office of the following:

— The telephone number(s) you will be using with this equipment.

— The appropriate registration number and ringer equivalence number (REN), which can be found on the back or bottom of the control unit, as follows:

If this equipment is to be used as Key System, report the number AS593M-72914-KF-E.

If the system provides both manual and automatic selection of incoming/outgoing access to the network, report the number AS593M-72682-MF-E.

If there are no directly terminated trunks, or if the only directly terminated facilities are personal lines, report the number AS5USA-65646-PF-E.

The REN for all three systems is 1.5A.

— For tie line connection, the facility interface code (FIC) is TL31M and the service order code (SOC) is 9.0F.

— For connection to off-premises stations, the FIC is OL13C and the SOC is 9.0F.

— For equipment to be connected to 1.544-Mbps digital service, the FIC is 04DU9-B for D4 framing format or 04DU9-C for extended framing format, and the SOC is 6.0P.

— For equipment to be connected to DID facilities, the FIC is 02RV2-T and the SOC is 9.0F.

— The quantities and USOC numbers of the jacks required.

— For each jack, the sequence in which lines are to be connected: the line types, the FIC, and the REN by position when applicable.

You must also notify your local telephone company if and when this equipment is permanently disconnected from the line(s).

The REN is used to determine the number of devices that maybe connected to the telephone line. Excessive RENs on the line may result in the devices not

ringing in response to an incoming call. In most, but not all, areas the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

Installation and Operational Procedures

The manuals for your system contain information about installation and operational procedures.

- **Repair Instructions.** If you experience trouble because your equipment is malfunctioning, the FCC requires that the equipment not be used and that it be disconnected from the network until the problem has been corrected. Repairs to this equipment can be made only by the manufacturers, their authorized agents, or others who may be authorized by the FCC. In the event repairs are needed on this equipment, contact your authorized AT&T dealer or, **in the U.S.A. only,** contact the National Service Assistance Center (NSAC) at 1-800-628-2888.

- **Rights of the Local Telephone Company.** If this equipment causes harm to the telephone network, the local telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will also be informed of your right to file a complaint with the FCC.

  Your local telephone company may make changes in its facilities, equipment, operations, or procedures that affect the proper functioning of this equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

- **Hearing Aid Compatibility.** The custom telephone sets for this system are compatible with inductively coupled hearing aids as prescribed by the FCC.

- **Automatic Dialers.** WHEN PROGRAMMING EMERGENCY NUMBERS AND/OR MAKING TEST CALLS TO EMERGENCY NUMBERS:
  - — Remain on the line and briefly explain to the dispatcher the reason for the call.
  - — Perform such activities in off-peak hours, such as early morning or late evening.

- **Direct Inward Dialing (DID).**
  - a. This equipment returns answer supervision signals to the Public Switched Telephone Network when:
    - (1) answered by the called station
    - (2) answered by the attendant
    - (3) routed to a recorded announcement that can be administered by the customer premises equipment user
    - (4) routed to a dial prompt

b. This equipment returns answer supervision on all DID calls forwarded back to the Public Switched Telephone Network. Permissible exceptions are when:
   (1)   a call is unanswered
   (2)   a busy tone is received
   (3)   a reorder tone is received

Allowing this equipment to be operated in such a manner as not to provide proper answer supervision signaling is in violation of Part 68 rules.

DOC Notification and Repair Information

NOTICE: The Canadian Department of Communications (DOC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The DOC does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to connect it to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring for single-line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or any equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present are connected. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority or electrician, as appropriate.

To prevent overloading, the Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop used by the device. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

DOC Certification No.: 230 4095A
CSA Certification No.: LR 56260
Load No.: 6

Renseignements sur la notification du ministére des Communications du Canada et la réparation

AVIS: L'étiquette du ministére des Communications du Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le Ministére n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également étre installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'enterprise utilisés pour un service individueal à ligne unique peuvent étre prolongés au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique interne).

L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus pas les tarifs particuliers de ces entreprises.

Les reparations de matériel homologué doivent étre effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fits de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importance dans les régions rurales.

AVERTISSEMENT: L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un electricien, selon le cas.

L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut étre raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut étre constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.

> No d'homologation: 230 4095A
> No de certification: CSA LR 56260
> L'indice de charge: 6

**MERLIN LEGEND D.O.C.
Location Label Placement**

**Ministère des Communications
du Canada emplacement de
l'étiquette**

Security of Your Systern—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. Some individuals use electronic devices to prevent or falsify records of these calls. Others charge calls to someone else's number by illegally using lost or stolen calling cards, billing innocent parties, clipping on to someone else's line, and breaking into someone else's telephone equipment physically or electronically. In certain instances, unauthorized individuals make connections to the telephone network through the use of remote access features.

The Remote Access feature of your system, if you choose to use it, permits off-premises callers to access the system from a remote telephone by using an 800 number or a 7-digit or 10-digit telephone number. The system returns an acknowledgement signaling the user to key in his or her authorization code, which is selected and administered by the system manager. After the authorization code is accepted, the system returns dial tone to the user. If you do not program specific egress restrictions, the user will be able to place any call normally dialed from a telephone associated with the system. Such an off-premises network call is originated at, and will be billed from the system location.

The Remote Access feature, as designed, helps the customer, through proper administration, to minimize the ability of unauthorized persons to gain access to the network. Most commonly, phone numbers and codes are compromised when overheard in a public location, through theft of a wallet or purse containing access information, or through carelessness (writing codes on a piece of paper and improperly discarding it). Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Enormous charges can be run up quickly. It is the customer's responsibility to take the appropriate steps to properly implement the features, evaluate and administer the various restriction levels, protect access codes, and distribute access codes only to individuals who have been fully advised of the sensitive nature of the access information.

Common carriers are required by law to collect their tariffed charges. While these charges are fraudulent charges made by persons with criminal intent, applicable tariffs state that the customer of record is responsible for payment of all long-distance or other network charges. AT&T cannot be responsible for such charges and will not make any allowance or give any credit for charges that result from unauthorized access.

To minimize the risk of unauthorized access to your communications system:

- Use a nonpublished Remote Access number.
- Assign authorization codes randomly to users on a need-to-have basis, keeping a log of ALL authorized users and assigning one code to one person.
- Use random sequence authorization codes, which are less likely to be easily broken.
- Deactivate all unassigned codes promptly.
- Ensure that Remote Access users are aware of their responsibility to keep the telephone number and any authorization codes secure.
- When possible, restrict the off-network capability of off-premises callers, via use of Call Restrictions and Disallowed List capabilities.
- When possible, block out-of-hours calling.
- Frequently monitor system call detail reports for quicker detection of any unauthorized or abnormal calling patterns.
- Limit Remote Call Forward to persons on a need-to-have basis.

Limited Warranty and Limitation of Liability

AT&T warrants to you, the customer, that your MERLIN LEGEND Communications System will be in good working order on the date AT&T or its authorized reseller delivers or installs the system, whichever is later ("Warranty Date"). If you notify AT&T or its authorized reseller within one year of the Warranty Date that your system is not in good working order, AT&T will without charge to you repair or replace, at its option, the system components that are not in good working order. Repair or replacement parts may be new or refurbished and will be provided on an exchange basis. If AT&T determines that your system cannot be repaired or replaced, AT&Twill remove the system and, at your option, refund the purchase price of your system, or apply the purchase price towards the purchase of another AT&T system.

If you purchased your system directly from AT&T, AT&T will perform warranty repair in accordance with the terms and conditions of the specific type of AT&T maintenance coverage you selected. If you purchased your system from an AT&T-authorized reseller, contact your reseller for the details of the maintenance plan applicable to your system.

This AT&T limited warranty covers damage to the system caused by power surges, including power surges due to lightning.

The following will not be deemed to impair the good working order of the system, and AT&T will not be responsible under the limited warranty for damages resulting from

- failure to follow AT&T's installation, operation, or maintenance instructions
- unauthorized system modification, movement, or alteration
- unauthorized use of common carrier communication services accessed through the system
- abuse, misuse, or negligent acts or omissions of the customer and persons under the customer's control
- acts of third parties and acts of God

AT&T'S OBLIGATION TO REPAIR, REPLACE, OR REFUND AS SET FORTH ABOVE IS YOUR EXCLUSIVE REMEDY.

EXCEPT AS SPECIFICALLY SET FORTH ABOVE, AT&T, ITS AFFILIATES, SUPPLIERS, AND AUTHORIZED RESELLERS MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIM ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Limitation of Liability

EXCEPT FOR PERSONAL INJURY, DIRECT DAMAGES TO TANGIBLE PERSONAL PROPERTY PROXIMATELY CAUSED BY AT&T, AND LIABILITY OTHERWISE EXPRESSLY ASSUMED IN A WRITTEN AGREEMENT SIGNED BY AT&T, THE LIABILITY OF AT&T, ITS AFFILIATES, SUPPLIERS, AND AUTHORIZED RESELLERS FOR ANY CLAIMS, LOSSES, DAMAGES, OR EXPENSES FROM ANY CAUSE WHATSOEVER (INCLUDING ACTS OR OMISSIONS OF THIRD PARTIES), REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT OR OTHERWISE, SHALL NOT EXCEED AN AMOUNT EQUAL TO THE LESSER OF THE DIRECT DAMAGES PROVEN OR THE PURCHASE PRICE OF THE SYSTEM. IN NO EVENT SHALL AT&T OR ITS AFFILIATES, SUPPLIERS, OR AUTHORIZED RESELLERS BE LIABLE FOR INCIDENTAL, RELIANCE, CONSEQUENTLY, OR ANY OTHER INDIRECT LOSS OR DAMAGE (INCLUDING LOST PROFITS OR REVENUES) INCURRED IN CONNECTION WITH THE SYSTEM. THIS LIMITATION OF LIABILITY SHALL SURVIVE FAILURE OF THE EXCLUSIVE REMEDY SET FORTH IN THE LIMITED WARRANTY ABOVE.

Voice Mail Systems

Your Voice Mail system permits callers to leave verbal messages for system users or gain access to the back-up position in an emergency as well as create and distribute voice messages among system users.

The Voice Mail system, through proper administration, can help you reduce the risk of unauthorized persons gaining access to the network. However, phone numbers and authorization codes can be compromised when overheard in a public location, are lost through theft of a wallet or purse containing access information, or through carelessness (writing codes on a piece of paper and improperly discarding them).

Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Substantial charges can accumulate quickly. It is your responsibility to take appropriate steps to implement the features properly, evaluate and administer the various restriction levels, protect and carefully distribute access codes.

Under applicable tariffs, you will be responsible for payment of toll charges. AT&T cannot be responsible for such charges and will not make any allowance or give any credit resulting from unauthorized access.

To reduce the risk of unauthorized access through your Voice Mail system, please observe the following procedures:

- Employees who have voice mailboxes should be required to use the passwords to protect their mailboxes.
    - Have them use random sequence passwords.
    - Impress upon them the importance of keeping their passwords a secret.
    - Encourage them to change their passwords regularly.
- The administrator should remove any unneeded voice mailboxes from the system immediately.
- AUDIX Voice Power™ has the ability to limit transfers to subscribers only. You are strongly urged to limit transfers in this manner.
- Use the PBX or Key system administration capability to do the following:
    - Block direct access to outgoing lines and force the use of account codes/authorization codes.
    - Disallow trunk-to-trunk transfer unless required.
    - Assign toll restriction levels to all AUDIX Voice Power ports.
    - If you do not need to use the Outcalling feature, completely restrict the outward calling capability of the AUDIX Voice Power ports.
- Monitor SMDR reports or Call Accounting System reports for outgoing calls that might be originated by AUDIX Voice Power ports.

Remote Administration and Maintenance

The Remote Administration and Maintenance feature of your telecommunications system, if you choose to use it, permits users to change the system features and capabilities from a remote location.

The Remote Administration and Maintenance feature, through proper administration, can help you reduce the risk of unauthorized persons gaining access to the network. However, telephone numbers and authorization codes can be compromised when overheard in a public location, are lost through theft of a wallet or purse containing access information, or through carelessness (writing codes on a piece of paper and

improperly discarding them). Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Substantial charges can accumulate quickly. It is your responsibility to take appropriate steps to implement the features properly, evaluate and administer the various restriction levels, and protect and carefully distribute access codes.

Under applicable tariffs, you will be responsible for payment of toll charges. AT&T cannot be responsible for such charges and will not make any allowance or give any credit resulting from unauthorized access.

To reduce the risk of unauthorized access through Remote Administration and Maintenance, please observe the following procedures:

■ The System Administration and Maintenance capability of a PBX or Key system is protected by a password.
  — Change the default password immediately.
  — Continue to change the password regularly.
  — Only give the password to people who need it and impress upon them the need to keep it secret.
  — If anyone who knows the password leaves the company, change the password immediately.

■ If you have a special telephone line connected to your PBX or Key system for Remote Administration and Maintenance, you should do one of the following:
  — Unplug the line when it is not being used.
  — Install a switch in the line to turn it off when it is not being used.
  — Keep the Remote Administration and Maintenance telephone number secret. Only give it to people who need to know it, and impress upon them the need to keep it a secret. Do not write the telephone number on the PBX or Key system, the connecting equipment, or anywhere else in the system room.

■ If your Remote Administration and Maintenance feature requires that someone in your office transfer the caller to the Remote Administration and Maintenance extension, you should impress upon your employees the importance of only transferring authorized individuals to that extension.

About This Book

System Programming and Maintenance (SPM) is a software tool developed specifically for the MERLIN LEGEND™ Communications 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 communications system. It is especially aimed at system managers and support personnel.

To use this book effectively, you should have *System Programming* at hand.

Conventions

The following typographical conventions are used in this book:

■ **Bold type** is used for telephone buttons.

  Press **Drop** to delete the current entry.

■ *Italic type* is used for emphasis and as a substitute for information for which you must supply a specific value.

  Specify extension: dial/type *nnnn.*

Specify slot and port: dial/type *sspp.*

■ `Constant width` type is used for information on telephone display screens or on a PC screen.

Select `Sys Program.`

■ **`Bold constant width`** type indicates information that you enter exactly as shown.

Type **`install;`** dial **`#55.`**

■ Keys on the PC are shown in boxes.

Press **[F7]** .

■ When two keys are to be pressed at the same time, the keys are connected by a hyphen.

Press **[Alt]** - **[P]** .

■ The Enter (Return) key on a PC is shown as [↵] .

Product Safety Labels

Throughout this book, hazardous situations are indicated by an exclamation point inside a triangle, along with 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 will or can cause minor personal injury or property damage if the hazard is not avoided.

Related Documents

Document No.	Title
	System Documents
555-620-114	*System Overview*
555-620-110	*Feature Reference*
555-620-115	*Equipment and Operations Reference*
555-620-116	*Pocket Reference*
555-620-111	*System Programming*
555-620-112	*System Planning*
555-620-113	*System Planning Forms*
	Telephone User Support
555-620-122	*MLX-10D, MLX-28D, and MLX-20L Display Telephones User's Guide*
555-620-123	*MLX-10D, MLX-28D, and MLX-20L Display Telephones Quick Reference*
555-620-150	MLX-10D Telephone Tray Cards (6 cards)
555-620-152	MLX-28D and MLX-20L Telephone Tray Cards (5 cards)
555-620-124	*MLX-10 Non-Display Telephone User's Guide*
555-620-125	*MLX-10 Non-Display Telephone Quick Reference*
555-620-151	MLX-10 (non-display) Telephone Tray Cards (6 cards)
555-620-120	*Analog Multiline Telephones User's Guide*
555-620-121	*Analog Multiline Telephones Quick Reference*
555-620-128	*MLC-5 Cordless Telephone Quick Reference*
555-620-126	*Single-Line Telephones User's Guide*
555-620-127	*Single-Line Telephones Quick Reference*
	System Operator Support
555-620-134	*MLX Direct-Line Consoles Operator's Guide*
555-620-135	*MLX Direct-Line Consoles Quick Reference*
555-620-132	*Analog Direct-Line Consoles Operator's Guide*
555-620-133	*Analog Direct-Line Consoles Quick Reference*
555-620-136	*MLX Queued Call Console Operator's Guide*
555-620-137	*MLX Queued Call Console Quick Reference*

Document No.	Title
	Miscellaneous User Support
555-620-130	*Calling Group Supervisor's Guide*
555-620-131	*Calling Group Supervisor's Quick Reference*
555-620-129	*Data User's Guide*
	Documentation for Qualified Technicians
555-620-140	*Installation, Programming, & Maintenance (IP&M) Binder* (consists of 555-620-141, 555-620-142, 555-620-143, and 555-620-144)
555-620-141	*Installation*
555-620-142	*System Programming & Maintenance (SPM)*
555-620-143	*Maintenance and Troubleshooting*
555-620-144	*Programming Summary*

How to Comment on This Document

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

A. Sherwood
AT&T
99 Jefferson Road
Room 2A25
Parsippany, NJ 07054

System Programming and Maintenance (SPM)

The SPM software package not only offers an alternative programming method, thus freeing the system programming console for other uses, but also provides additional functionality:

- backing up system programming information

- restoring system programming information

- converting system programming information (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 or on a UNIX® system platform with Integrated Solution II or Integrated Solution III (IS-II/III). It is available on a 3½-inch diskette. The DOS version is also available on a 5¼-inch diskette. This software can be used directly from the floppies on a DOS machine; however, if your PC has a hard disk, you should install SPM on the hard disk.

This book describes programming on a PC with a DOS operating system. If your system has the IS-II/-III application, you have a Master Controller equipped with 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

Introduction to SPM

Figure 1 illustrates the SPM display.

V2								Drop
QUIT	Home		Welcome to SPM		PgUp	MORE		ALT-P
MENU	End		The MERLIN LEGEND		PgDn	INSP		
	F1		System Programming		F6			Flash
	F2		& Maintenance Utility		F7			ALT-F
	F3		Please press any key		F8			
	F4		to continue:		F9			TopSP
	F5		Version 2.xx		F10			ALT-C
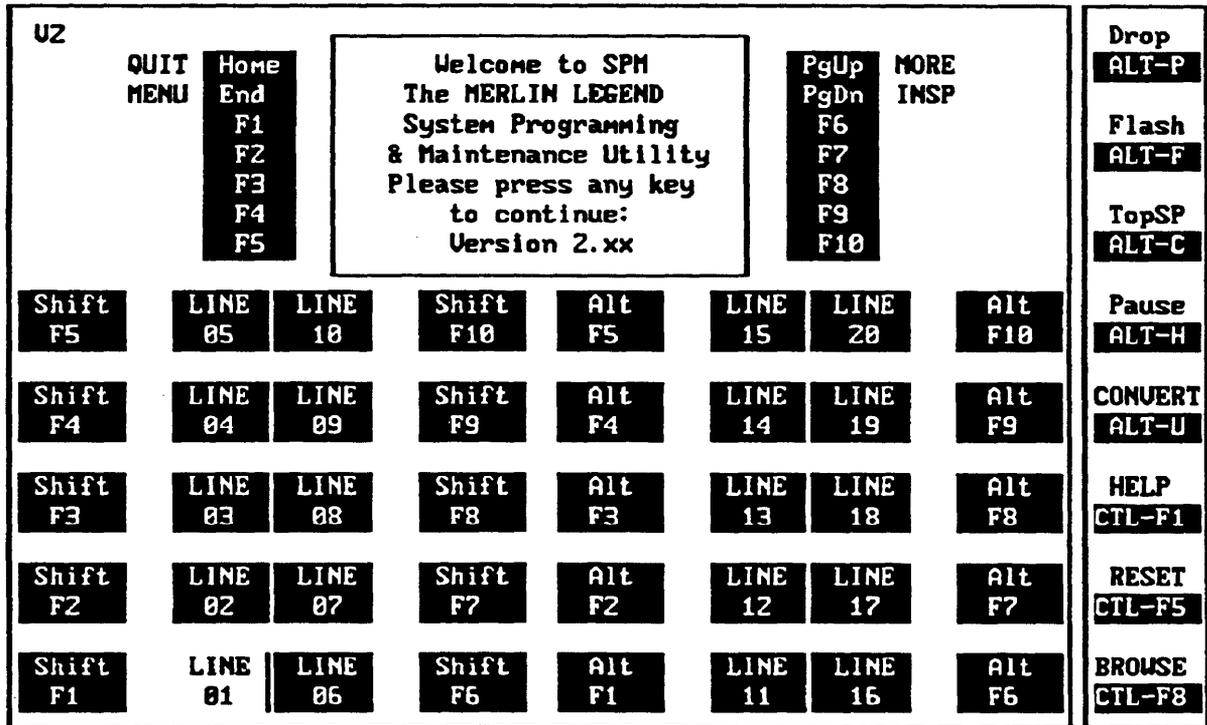
Figure 1. The SPM Display

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, listing the keys that correspond to similarly located buttons on the MLX-20L telephone. If you are working with Version 2.00 or higher (2.xx), v2 appears in the upper left-hand corner of the screen, as shown in Figure 1.

The 10 function keys, identified on the screen as **[F1]** through **[F10]** , are used to select screen options. When a screen offers you 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. Using **[PgDn]** (Inspect), you can determine the status of each line and which features are programmed on each line by the letter that appears next to the line number. R and G represent the ON state of the red and green LEDs on the system programming console.

The 20 line buttons can be selected by using the arrow keys to position the cursor on the appropriate key. For example, if a line, trunk, or pool is assigned to a line button, you see G next to that button. If a line, trunk, or pool is not assigned to a line button, you see neither G nor R. If a trunk is assigned to a pool, you see an R.

A list of labels on the right side of the screen shows key combinations that correspond to buttons on the MLX-20L telephone (Alt-P, Ctl-F8, etc.). Table 1 describes the function of PC keys within SPM.

Table 1. 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 have finished 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 an additional screen and the > symbol appears next to the key).
[PgDn]	**Inspct**	Show the current information that has been programmed for a feature or button.

Table 1.— *Continued*

PC Key	Console	SPM Function
[Alt] - [P]	**Drop**	Enter a stop in a speed dialing sequence.
		This combination also deletes an entry in a field in 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 an earlier release to Release 2.0 format.
[Ctl] – [F1]	n/a	**Help:** Display a help screen about SPM operations. To exit from Help, press [End] .
[Ctl] – [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 [Ctl] – [F5] to clear the screen and return to the SPM Welcome screen. Note that using [Ctl] – [F5] drops the modem connection.

Continued on next page

Table 1.- *Continued*

PC Key	Console	SPM Function
[Ctl] – **[F8]**	n/a	**Browse:** View print reports saved with Print Opts.
[Ctl] – **[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	The [↵] key on your PC can be used instead of **[F10]** (Enter) when Enter appears as a choice in the 7 x 24 console simulation window.
[Backspace]	Backspace	The Backspace key on your PC can be used instead of **[F9]** (Backspace) when it appears as a choice in the 7 x 24 console simulation window.
[Delete]	Delete	The **[Delete]** key on your PC can be used instead of **[F8]** (Delete) when it appears as a choice in the 7 x 24 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 7 x 24 console simulation window.

Surrogate Mode Programming

The purpose of surrogate mode programming is to allow system programming by qualified service personnel at a service location rather than on-site. 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. He or she then programs a system as if the appropriate modules, trunks, and telephones were installed, following a customer's set of planning forms. The programmer saves the system programming on disk by performing a system backup. The disk is then taken to a new installation and used (via 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, the normal sequence of procedures is as follows:

1. At the service location:

    a. System Erase

    b. Boards

    c. System Programming

    d. Backup

2. On-site:

    a. Restore

While you are in surrogate mode, Pass-Thru and Password are unavailable to other users.

For more information, see "Boards" later in this book.

SPM Main Menu Options

The SPM Main Menu provides access to system programming and to the other functions of SPM:

Sys Program   enables you to program the system.

Backup*   enables you to make a backup copy of your system programming and store it on diskette or on hard disk.

Boards*   shows you 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*   is restricted to use by your technical support organization.

Maintenance   is restricted to use by your technical support organization and qualified technicians.

Restore*   enables you to restore your system programming from diskette or hard disk.

Pass-Thru*   (IS-II/III only) allows you to make a remote connection, via the control unit, to an IS-II/III machine to administer applications on the IS-II/III machine.

Password*   allows you to change the password for remote entry into the system.

Language   allows you to choose a language (English, French, or Spanish) for the 7 x 24 console simulation window on the PC. (There is also a Language selection under `Sys Program` for setting the system language.)

---

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

SPM Help

SPM includes help screens that you can access by pressing [Ctl] – [F1] .

You can examine the help screens with [PgUp] and [PgDn] . To return to the first Help screen, press [Home] ; to exit from Help, press [End] .

A typical help screen is shown in Figure 2.
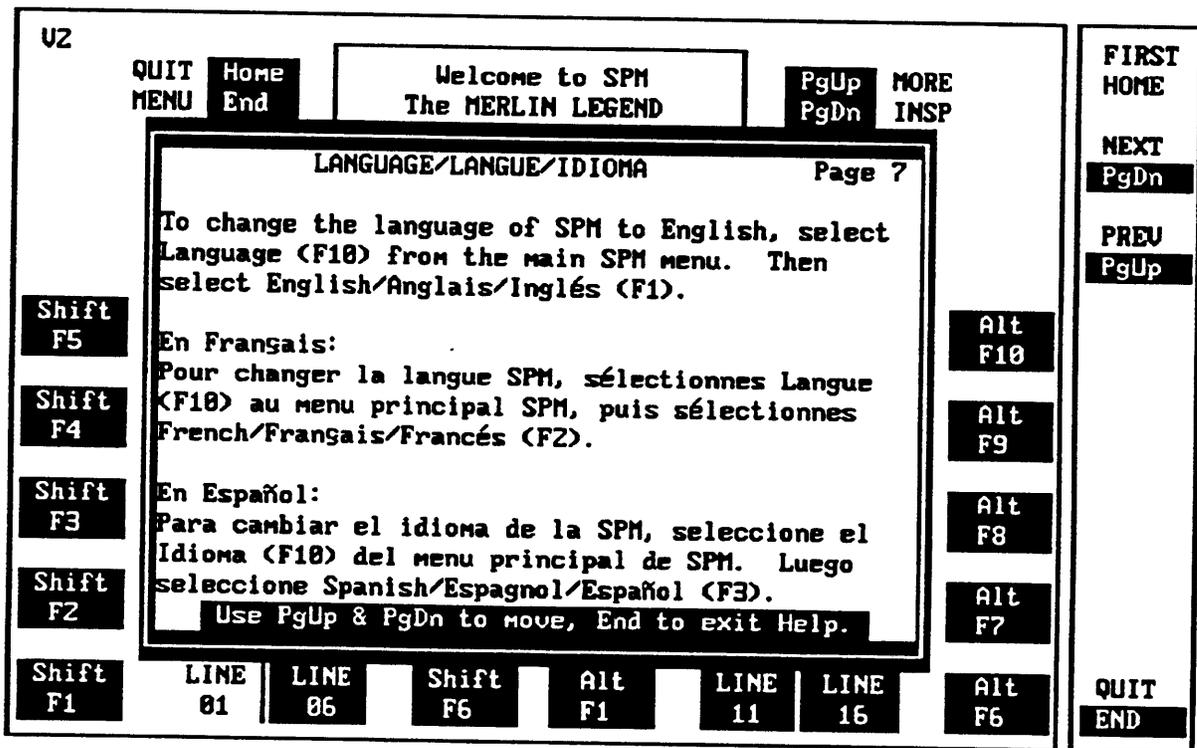
Figure2. SPM Help Sceen

General Programming Information

To begin programming, do the following:

On the console
> Select **Menu** → Sys Program → Exit:
> The System Programming menu is displayed.

On the PC   Type **SPM** → [↵] → Press any key → **[F1]** → **[F5]** :
The System Programming menu is displayed.

In most cases, to exit from a screen without making any changes, press Exit or **[F5]** . Exceptions are noted as part of a procedure.

Ordinarily you complete a procedure by pressing Enter (**[F10]**) to save the information you have programmed. Occasionally you press Exit (**[F5]**) and go back to the previous screen.

If you are programming a group of sequentially numbered extensions or trunks, you may have the option of pressing Next (**[F8]**) to save your entry *and* automatically provide the number of the next extension or trunk in the sequence, thus saving you a couple of steps.

When you have completed a procedure, pressing Exit (**[F5]**) takes you up one screen in the menu hierarchy.

In most cases, you will be at 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 again. This usually takes you back to the System Programming menu. If not, you again have the option of continuing to program from the current screen or pressing Exit again.

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.

Idle States

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

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

If a procedure requires an idle system and the system is busy when you begin, you see this screen:

```
System Busy      Pls Wait

Dial Code:   nnnn
Slot/Port:   ss/pp



Exit
```

When the system is no longer busy, the screen changes to the appropriate programming screen.

System Forced Idle

When the entire system is forced idle, no calls can be made or received. The following procedures can be done only when the entire system (all lines and telephones) is idle:

■ select system mode

■ identify system operator positions

■ renumber boards

■ renumber system

■ identify telephones with voice signal pairs for Voice Announce to Busy
   feature

■ identify telephones

■ restore system programming information

■ identify Music-on-Hold jack

When the system is forced idle, all multiline telephone users hear a reminder
tone, indicating that the telephone cannot be used. On a display telephone,
the message `Wait:  System Busy` appears. Single-line telephones do not
get a dial tone.

Line or Trunk Idle

The following procedures can be done only when the line or trunk being
programmed is idle. Since these procedure require the line or trunk to be idle
only at the instant of programming, the line or trunk is not forced idle as
described above.

■ 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 a telephone or data terminal is forced idle, no calls can be made or
received on that telephone or data terminal. The following procedures can be
started only when the telephone or data terminal being programmed is idle.

■ assign call restrictions

■ assign pool dial-out restrictions

- copy telephone assignments

- assign lines, trunks, or pools to extensions

- assign labels to a Personal Directory

- use centralized telephone programming

When the telephone is forced idle, a multiline telephone user hears a reminder tone, indicating that the telephone cannot be used. On a display telephone, the message `Wait: System Busy` appears.

When the telephone is forced idle, a single-line telephone user does not get a dial tone.

Forced Idle Reminder Tone

Forced idle reminder tones are provided in the following situations:

- At the telephone, to remind an extension 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.

  This tone is a high-low "doorphone" tone (400 ms of 667 Hz tone followed by 400 ms of 571 Hz tone).

In Release 1.1 and Release 2.0 of the communications system, forced idle reminder tones occur every 20 seconds. The user can adjust the volume of these tones with the volume control.

Connecting the PC

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

- direct local connection

- local modem connection

- remote modem connection

These types of connections are described in detail later in this section.

System Requirements

To use SPM to program your system, you need the SPM diskette and an AT&T PC with version 3.3 (or a later version) of MS-DOS®. Your PC should include the following:

- at least 640 kbytes of RAM

- a floppy disk drive that will accommodate the SPM diskette

- a monochrome or color monitor

- a serial port that can use either a DB-9 or DB-25 connector

  NOTE:
  For a DB-9 connector, use a 9-pin to 25-pin adapter to convert the 25-pin connector to a modular connector.

- an RS-232 interface cable

Also, depending on how you connect the PC to the control unit, you may need the following:

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

- a 4-pair modular cord (D8W)

In addition, the following equipment is useful:

■ a parallel printer (the PC needs a parallel port for the connection)

■ a 1200- or 2400-bps modem

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

Direct Local Connection

For a direct local connection, connect the PC to the system programming jack. This is the lower modular RS-232 jack on the processor module, as shown in Figure 3. (The upper jack is reserved for the SMDR printer.) For direct local connections, the system supports speeds of 1200 and 2400 bps. Use a direct local connection to program in surrogate mode.
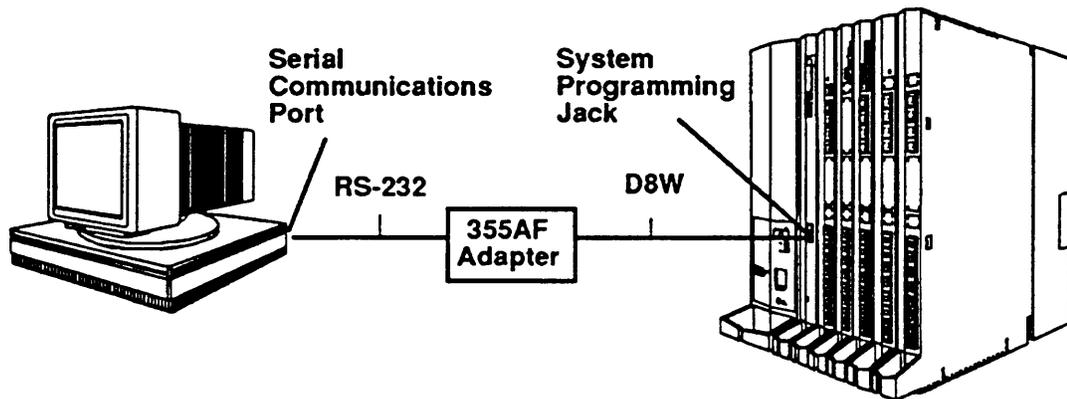

Figure 3. Direct Local Connection

Local Modem Connection

For a local modem connection, use a modem 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 4. The internal modem operates at a speed of 1200 bps.
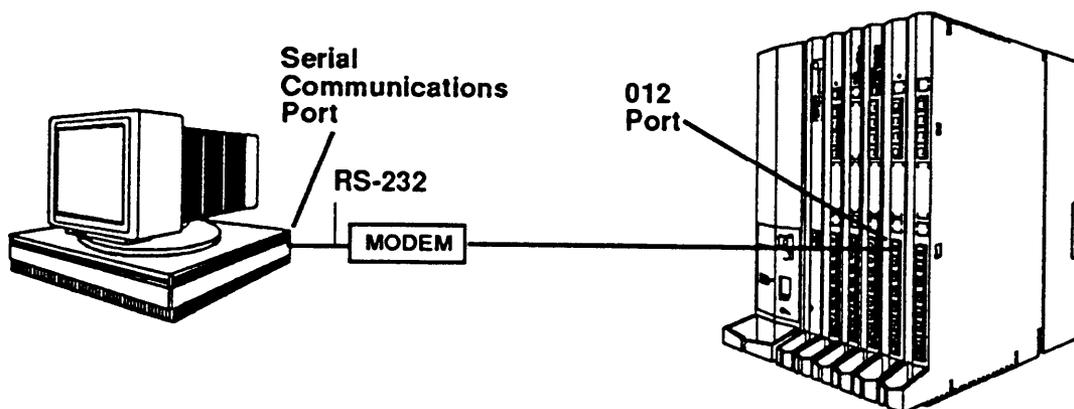

Figure 4. Local Modem Connection

Remote Modem Connection

For a remote modem connection, you also use a modem connected to (or built into) the PC to access the internal modem in the control unit; however, the connection is a dial-up connection, as shown in Figure 5. The internal modem operates at a speed of 1200 bps.
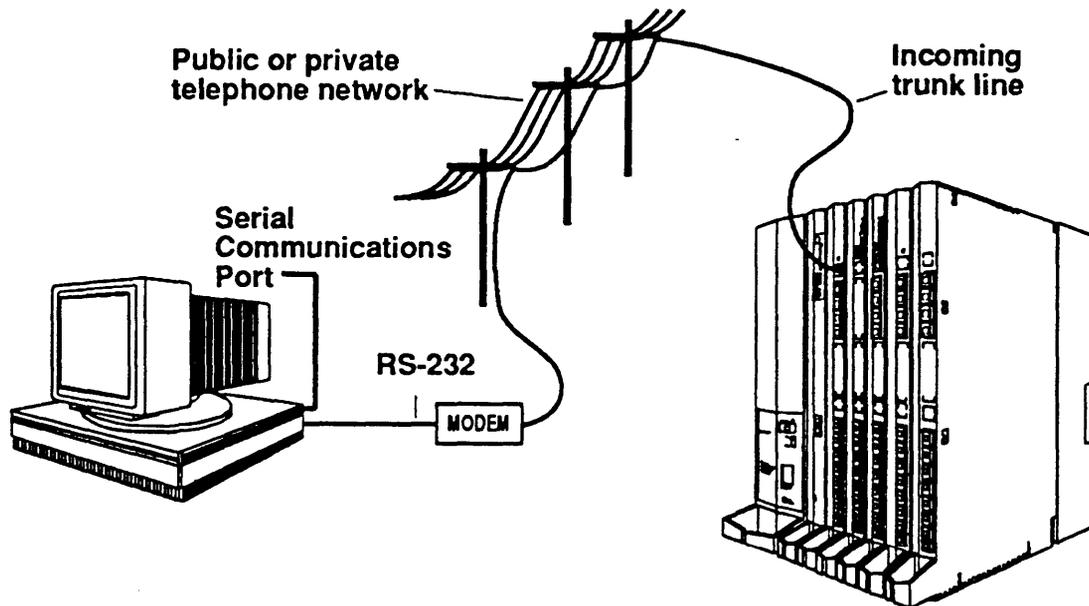
Figure 5. Remote Modem Connection

NOTE:
Any modem connection overrides a direct connection unless a backup or restore procedure is in progress via a direct local connection. When a modem connection is attempted while any other 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 indicating that a modem connection is being established, and the on-site programming session is terminated.

Starting SPM

The procedure for accessing SPM differs slightly, depending on whether your PC is connected directly or by modem to the control unit. Both procedures are described in the following sections.

With a Direct Local Connection

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

Step	Display	Instructions

1   If you do not have a hard disk, insert the SPM diskette into Drive A and switch to Drive A, if it is not already the current drive.

2   Start the SPM program by typing **spm.** The SPM Welcome screen appears as shown in Step 3.

3

```
    Welcome to SPM
   The MERLIN LEGEND
   System Programming
 & Maintenance Utility
 Please press any key
     to continue:
     Version 2.xx
```

Press any key. The SPM Main Menu appears as shown in Step 4.

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

4

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

Select an option by pressing one of the function keys.

With a Local or Remote Modem Connection

The method you use to access SPM by modem depends on whether you are programming on-site 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 on a regular line and ask the operator to transfer you to the modem (by dialing ✶ 10). When you hear answer tone, switch to data mode.

You can also set up the remote connection in the other direction: place a voice call from the system to the remote PC running SPM. Then transfer the call to the modem.

To access SPM with a local or a remote modem connection, follow these steps:

Step	Display	Instructions

1   Start the SPM program by typing **spm.** If you prefer to program in a language other than the current language setting for SPM, use the -l option to the spm command (note that the option is a lowercase letter L, not the number 1):

> **spm -l english**
> **spm -l french**
> **spm -l spanish**

The SPM welcome screen appears as shown in Step 2.

2

```
    Welcome to SPM
  The MERLIN LEGEND
  System Programming
& Maintenance Utility
 Please press any key
     to continue:
     Version 2.xx
```
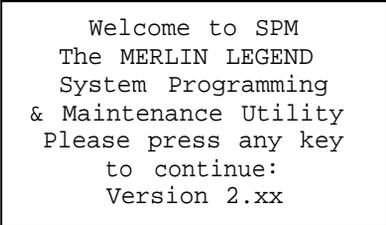
Press any key. (You may have to press it several times.) This brings up a blank screen on which you can enter modem commands.

3   Make a data connection to the control unit's internal modem. The following modem commands are for Hayes® and Hayes-compatible modems. They may not be the commands used by your modem. Refer to your modem user's guide 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 **ATDT** followed by the remote access telephone number, followed by **W ✶ 10,** and press [↵] . (You may need to press it 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,* place a voice call to the system, using the main telephone number, and have the operator transfer the call to the modem. (The operator dials ✶ **10** to transfer the call to the modem.) To put the modem on line, type **ATH1** and press [↵] .

Step	Display	Instructions
4	``` Enter Password: ```	Type the Remote Access password. The password you enter does not appear as you type it. The SPM Main Menu appears as shown in Step 5.
5	``` SPM Main Menu Menu: Select Function Sys Program Maintenance Backup Restore Boards Pass-Thru Print Opts Password Monitor Language ```	Select an option by pressing one of the function keys.

Using SPM

The following sections describe the use of the SPM options. Note that most of the procedures described here are to be performed by qualified service personnel only. Options are presented in alphabetical order for ease of reference:

- ■ Backup
- ■ Boards
- ■ Browse
- ■ Convert
- ■ Language
- ■ Maintenance
- ■ Monitor
- ■ Pass-Thru
- ■ Password
- ■ Print Options
- ■ Restore
- ■ System Programming

Backup

The Backup procedure is used by qualified service personnel to create a file of system programming information in the `\spm\backup` directory (hard disk drive PC) or in the root directory of a diskette (floppy disk drive PC). Backing up your system regularly is strongly recommended. If you lose system programming information, you can restore your system quickly from a backup file.

Release 2.0 Only
If you have a backup diskette and do not know its release number, you may be able to find this information in the backup header. Backups of Release 2.0 and later versions of Release 1.1 contain a backup header 128 bytes long. Approximately 59 of these bytes are currently used. Bytes 55 through 59 of the header contain the feature module identification number, as shown in Table 2. (Release 1.0 and early versions of Release 1.1 do not contain this information in readable form.)

Table 2. Backup Header: Feature Module Identification Number

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

The release number is found in the first 2 bytes of the feature module identification number (`0200` = 2.0, `0101` = 1.1).

If the backup file is compressed, you can still 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* on a UNIX system.

Note that the feature module release number, not the version number of SPM, determines whether the backup file is compressed or uncompressed. Release 1.0 backups are uncompressed. Release 1.1 and 2.0 backups are compressed. Uncompressed files take longer to restore. Before you begin a backup procedure, note the following:

- The communications system does not have to be idle during backup; however, station 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, be prepared with a DOS-formatted diskette. (DOS formatting can be done on a UNIX system PC or a DOS PC.)

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

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

Step	Display	Instructions
1	``` SPM Main Menu Menu: Select Function Sys Program Maintenance Backup Restore Boards Pass-Thru Print Opts Password Monitor Language ```	Select Backup by pressing **[F2]** . The following two screens appear.
2	``` Make a selection for the BACKUP file. NEW FILE will create a new file on selected device. Press Esc to Abort. ``` ``` GOTO FLOPPY MAKE NEW FILE BACKUP.AMS ```	The first screen (Make a selection for) is an information screen. Entries you make appear only on the second screen. If you are using a hard disk PC, go to Step 3. If you are using a floppy disk PC, remove the SPM diskette and insert a *formatted* diskette. Highlight GOTO FLOPPY (use the arrow keys) and press [↵] .
3	``` Make a selection for the BACKUP file. NEW FILE will create a new file on selected device. Press Esc to Abort. ``` ``` GOTO FLOPPY GOTO HARD DISK MAKE NEW FILE MAKE NEW FILE BACKUP.AMS BACKUP.AMS ```	You see only one of the two narrow screens. If you are working on a floppy disk PC, you see the GOTO HARD DISK screen. If you are working on a hard disk PC, you see the GOTO FLOPPY screen. The filename shown on the GOTO screen (BACKUP.AMS) is the default name for a backup file. To select the default filename, highlight BACKUP.AMS (use the arrow keys) and press [↵] . Goto Step 5. To specify a different name for this file, select MAKE NEW FILE and press [↵] Go to Step 4.

Step	Display	Instructions
| **4** | ```
    Press ESC to abort


 Enter  filename:

(default is backup.ams)
``` | Enter the filename you have chosen, or press [↵] to select the default name. You can specify a drive letter with the filename (A: or B:) but no path information. |
| **5** | ```
     Press ESC to Abort.
  Est.  Blocks:  xxx-xxxx

       filename

BACKUP IN PROGRESS
Received Block
``` | SPM indicates the status of the backup by displaying the number of the last block received. If you are backing up from Release 1.1 or 2.0 of the communications system, Line 2 of the display screen shows the estimated number of blocks to be sent from the control unit. This line is blank if you are backing up from Release 1.0.<br><br>If you abort the backup, the partial backup file is deleted to prevent restoration from a corrupted file. You see the screen shown in Step 6. Otherwise, when Backup is complete, you see the screen shown in Step 7. |
| **6** | ```
Backup  aborted.
Please press Enter
to see the main menu:
``` | Press [↵] to return to the SPM Main Menu. |

Step	Display	Instructions
7	Backup successful. Please press Enter to see the main menu:	Press [↵] to return to the SPM Main Menu.

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 station modules (boards) to slots, even though those boards have not actually been installed. Such boards are referred to as "phantom boards" or "null boards."

NOTE:
If you assign phantom boards, they must be installed in 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 will not recognize the real board(s) that follow the phantom board.

The following boards can be selected:

Board Type	Description
400LSR	4 loop-start line jacks with 4 touchtone receivers
400GLR	4 ground-start/loop-start line jacks with 4 touchtone receivers
800LS	8 loop-start line jacks
800GLS	8 ground-start/loop-start line jacks
408LSA	4 loop-start line jacks and 8 ATL station jacks
408GLR	4 ground-start/loop-start line jacks and 8 ATL station jacks
O08ATL	8 ATL station jacks
O08MLX	8 MLX station jacks (16 endpoints)
012TR/OPT	12 tip/ring station jacks with 2 touchtone receivers or 008 OPT jacks
800DID	8 DID trunk jacks with 2 touchtone receivers
400E&M	4 E&M tie trunk jacks
100D	1 DS1 jack (24 channels)
408GLM	4 ground-start/loop-start line jacks and 8 MLX station jacks (16 endpoints)

The Inspect function (**[PgDn]**) lets you see which modules have been assigned to slots on the control unit. Note that phantom boards as well as real boards are displayed with the Inspect function; to see phantom board assignments, you must print the System Information report (System →
More → Print → SysSet-up).

You cannot use this option to change a board type. All boards assigned with the Boards option, including phantom boards, are cleared (unassigned), if you perform a Board Renumber (System → Board Renum).

Step	Display	Instructions
1	``` SPM Main Menu Menu: Select Function Sys Program Maintenance Backup Restore Boards Pass-Thru Print Opts Password Monitor Language ```	Select Boards by pressing **[F3]** .
2	``` Boards: > Make a selection 408LSA 800LS 012TR/OPT 008ATL 800DID 008MLX 800GLS 400GLR Exit 400LSR ``` ``` Boards: > Make a selection 400E&M 408GLR 100D 408GLM Exit ```	If the module you want to assign is not shown, press **[PgUp]** to see the next screen. When you see the module you want to assign, press the function key that corresponds to that module.
3	``` module name Enter slot numbers (01-17) Delete Backspace Next Exit Enter ```	Type the control unit slot number in which the module is to be installed. Valid numbers are 01 through 17.

Step	Display	Instructions
4	*module name* Enter slot numbers (01-17) *nn* 　　　　Delete Backspace　Next Exit　　　Enter	To remove the module type from the specified slot number, press **[F8]** (Delete). 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).

5　To assign another module, select another module type and repeat Steps 3 and 4.

　　To view types of modules assigned to all slots, press **[PgDn]** .

　　When all entries are complete, press **[F5]** (Exit). The system restarts, terminating the programming session.

Browse

The Browse option is accessed by pressing **[Ctl]** – **[F8]** . It allows you to browse through reports saved (by using Print Opts) in the reports directory of the PC's hard disk. When you access Browse, you see a listing of the contents of the reports directory. To select a report, highlight the desired filename by using the arrow keys, then press **[⏎]** . To view the next page of a report, press **[PgDn]** . To go back a page, press **[PgUp]** . To return to the beginning of a report, press **[Home]** . To exit from the Browse option, press **[End]** .

Convert

The Convert option simplifies upgrading from an earlier release to Release 2.0 of the communications system. Convert is one of the steps in the upgrade procedure. (See "Upgrading the Communications System" later in this book.) The Convert option is available only on Version 2.xx of SPM (Version 2.00 or higher). Such versions can be easily identified by the V2 in the upper left-hand corner of the screen. Conversion is done by qualified service personnel. The Convert option can be invoked remotely. Before you use this option, you must do the following:

- *If your PC has a hard disk,* install Version 2.xx of the SPM software.

- Back up system programming using Version 2.xx of SPM. (See "Backup" earlier in this book.)

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

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

Convert uses two files: the existing Release 1.0 or 1.1 backup file (the "convert from" file) and the converted file (the "'convert to" file), which Convert creates. The "convert to" file contains system programming information in Release 2.0 format 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 Release 2.0 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" earlier in this book.

NOTE:
Once you begin to convert the backup file, you cannot stop the process. Pressing **[Esc]** has no effect.

Step	Display	Instructions
| **1** | ```
       SPM Main Menu
Menu:  Select  Function
Sys Program   Maintenance
Backup        Restore
Boards        Pass-Thru
Print Opts    Password
Monitor       Language
``` | Select `Convert` by pressing **[Alt]** - **[U]**. The two screens shown in Step 2 appear. |
| **2** | ```
Please select file name
   to convert from,
   then press Enter

  Press ESC to abort.
```

```
GOTO FLOPPY
filename
filename
``` | The first screen (`Please select file name`) is an information screen. Entries you make appear only on the second screen.

If you are using a hard disk PC, go to Step 3.

If you are using a floppy disk PC, highlight `GOTO FLOPPY` (use the arrow keys) and press **[↵]**. |

Step	Display	Instructions
| **3** | ```
Please select file name
   to convert from,
   then press Enter


  Press ESC to abort.
``` <br><br> ```
GOTO FLOPPY
filename
filename
``` ```
GOTO HARD DISK
filename
filename
``` | You see only one of the two narrow screens. If you are working on a floppy disk PC, you see the GOTO HARD DISK screen. If you are working on a hard disk PC, you see the GOTO FLOPPY screen.

 The filenames shown on the GOTO screen are from the \spm\backup directory (hard disk) or the root directory of the diskette in Drive A (floppy disk).

 Highlight the name of the backup file that you want to convert from (use the arrow keys) and press [↵] .

 If the backup file you select is in Release 2.0 format (that is, does not need to be converted), you see the following message: File has already been converted
 Press [↵] to return to the beginning of Step 3. Select a different filename or press **[Esc]** .

 If the backup file you select is not in Release 2.0 format, go to Step 4. |
| **4** | ```
Please select file name
   to convert from,
   then press Enter

       filename
  Press ESC to abort.
``` | The Please select file name screen is updated to show the name of the file you selected. <br><br> Press [↵] . The two screens shown in Step 5 appear. |

Step	Display	Instructions

5

```
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
```

The first screen (`Please select file name`) is an information screen. Entries you make appear only on the second screen.

If you are using a hard disk PC, go to Step 6.

If you are using a floppy disk PC, highlight `GOTO FLOPPY` (use the arrow keys) and press [↵] .

6

```
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
```

```
GOTO HARD DISK
MAKE NEW FILE
filename
```

You see only one of the two narrow screens. If you are working on a floppy disk PC, you see the `GOTO HARD DISK` screen. If you are working on a hard disk PC, you see the `GOTO FLOPPY` screen.

Highlight the name of the file that you want to convert to or, to select a different name for the file, highlight `MAKE NEW FILE` (use the arrow keys) and press [↵] .

Step	Display	Instructions

7

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

(default is RESTORE2.0)
```

```
GOTO FLOPPY
MAKE NEW FILE
filename
```

```
GOTO HARD DISK
MAKE NEW FILE
filename
```

If you selected the default filename, go to Step 9.

If you selected MAKE NEW FILE, type the filename. This file cannot have the same name ast he backup file. If you deselect the same filename, you see the screen shown in Step 8.

8

```
  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 [↵] to return to Step 7.

9

```
Please select file name
to convert to, or select
NEW FILE to create a new
 file on selected drive.
     Enter Filename:
          filename
(default is RESTORE2.0)
```

The Please select file name screen is updated to show the name of the file you selected.

Press **[F10]** .

34 Convert

Step	Display	Instructions
| 10 | ```
CONVERSION IN PROGRESS

  Converting From:
     filename
  Converting To:
     filename
``` | This screen informs you that the conversion is in progress.<br><br>When the conversion is complete, the following screen appears. |
| 11 | ```
Conversion successful.
 Please press any key
   to continue.
``` | After you press a key, you see the SPM Main Menu. |

Language

A language attribute in the SPM configuration file `\spm\ams.cfg` (DOS version) or `/usr/ams/ares.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 7 x 24 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 installation of SPM, the user selects a language, and that selection is recorded in the SPM configuration file. Any time thereafter, SPM can be started with the -l option to specify a different language, using one of the following command lines:

spm -l english
spm -l french
spm -l spanish

Use of the -l 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 -l option. (Note that the option is a lowercase letter L, not the number 1.)

Console Window Language

By default, the language used in the 7 x 24 console simulation window is the language specified in the ams.cfg file. However, the SPM user can select a different language for this window for the duration of the current session, as follows:

Step	Disday	Instructions
| 1 | ```
SPM Main Menu
Menu: Select Function
Sys Program  Maintenance
Backup       Restore
Boards       Pass-Thru
Print Opts   Password
Monitor      Language
``` | Select Language by pressing **[F10]** . The Language menu appears as shown in Step 2. The current language selection is highlighted. |
| 2 | ```
Language
Make a Selection:
English
French
Spanish

Exit             Enter
``` | Highlight the new language selection. To highlight English, press **[F1]** . To highlight French, press **[F2]** . To highlight Spanish, press **[F3]** . To complete the language selection, press **[F10]** (Enter). |

36 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" earlier in this book.)

Monitor

⚠ **CAUTION:**
   This option 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 by establishing a remote connection with the control unit to which the IS-II/III PC is directly connected. Figure 6 illustrates the relationship of the SPM PC, the communications system control unit, and the IS-II/III PC.

Figure 6. Pass-Thru

A Pass-Thru request must be initiated by 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.

Once your Pass-Thru connection is established, you can administer 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 administer the SPM application on the IS-II/III PC because the remote call (from your SPM PC) uses the IS-II/III PC's COM1 port, so 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 this 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 [↵] , you are returned to the SPM Main Menu.

Step	Display	Instructions
1	``` SPM Main Menu Menu: Select Function Sys Program Maintenance Backup Restore Boards Pass-Thru Print Opts Password Monitor Language ```	Press **[F8]** to initiate Pass-Thru.
2	``` Welcome to IS-II/III login: ```	Type your login name. The next screen you see is a full-sized screen (approximately 24 lines by 80 characters), not the 7 x 24 SPM screen.
3	``` Password: ```	Type the IS-II/III password.
4	``` Unix disk usage information Term= ```	Type **ams** for your terminal emulation type. The IS-II/III Main Menu appears. To exit from IS-II/III programming, select Exit. You are asked to confirm your selection and, when you confirm it, you are returned to the SPM Main Menu.

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. Note that a default password is set in the factory.

Step	Display	Instructions
| 1 | ```
      SPM Main Menu
Menu:  Select  Function
Sys Program  Maintenance
Backup       Restore
Boards       Pass-Thru
Print Opts   Password
Monitor      Language
``` | Select `Password` by pressing **[F9]**. |
| 2 | ```
Password
Enter Old Password
``` | Type the old password (which does not appear on the screen as you type it).<br><br>If you do not type the old password correctly, you see `Not Equal` at the bottom of the screen. Type the old password again. If you do not type the old password correctly in three attempts, you see `Old Password in Use` at the bottom of the screen. The procedure is terminated. Press [↵] to return to the SPM Main Menu. |

Step	Display	Instructions
3	Password Enter New Password	To assign a new password, type any 5 characters. (The password does not appear on the screen as you type it.)
4	Password Enter New Password again New Password in use	Type the new password again. To return to the SPM Main Menu, press **[F5]** .

Print Options

The Print Opts option allows qualified service personnel to direct system programming reports either to the PC (where you can save them, browse through them, or print them with the System Programming Print procedure) or to the SMDR printer. The Print procedure is described in detail in *System Programming.* This option merely specifies where reports are to be sent.

Step	Display	Instructions
1	``` SPM Main Menu Menu: Select Function Sys Program Maintenance Backup Restore Boards Pass-Thru Print Opts Password Monitor Language ```	Select `Print Opts` by pressing **[F4]** .
2	``` Printer Options Make a selection SMDR Port PC Port Exit ```	Specify the target device for reports: ■ Press **[F1]** for the SMDR printer. ■ Press **[F2]** for the PC. Press **[F5]** (Exit) to return to the main menu.

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. (You must have backed up system programming to use this procedure.)

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

The system must be idle during a Restore procedure.

> ⚠ **CAUTION:**
> *An unsuccessful or aborted Restore results in a 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, reconnect to the control unit and do another Restore immediately.*

Restore is aborted 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 with a hardware strap in place to operate only in Key mode

A successful Restore is followed by a cold start; however, you do not automatically exit from SPM.

Step	Display	Instructions
1	``` SPM Main Menu Menu: Select Function Sys Program Maintenance Backup Restore Boards Pass-Thru Print Opts Password Monitor Language ```	If you are restoring from diskette, remove the SPM diskette from Drive A and insert Select Restore by pressing **[F7]** . The two screens shown in Step 2 appear.

Step	Display	Instructions
2	``` Make a selection for the RESTORE file Press ESC to abort ```	The first screen (Make a selection for the) is an information screen. Entries you make appear only on the second screen.
		If you are using a hard disk PC, go to Step 3.
	``` GOTO FLOPPY BACKUP.AMS OTHER.FILES ```	If you are using a floppy disk PC, highlight GOTO FLOPPY (use the arrow keys) and press [↵] .
3	``` Make a selection for the RESTORE file Press ESC to abort ```	You see only one of the two narrow screens. If you are using a floppy disk PC, you see the GOTO HARD DISK screen. If you are working on a hard disk PC, you see the GOTO FLOPPY screen.
	``` GOTO FLOPPY GOTO HARD DISK BACKUP.AMS BACKUP.AMS OTHER.FILES OTHER.FILES ```	The filename shown on the GOTO screen (BACKUP.AMS) is the default name for the backup file. Highlight BACKUP.AMS or, if you have backed up to a different file, select OTHER FILES (use the arrow keys) and press [↵] .
		If the file selected is in Release 1.0 or 1.1 format and the communications system is Release 2.0, you see the screen shown in Step 4. Otherwise, go to Step 5.
4	``` Must convert file first Please press Enter To see the main menu: ```	Press [↵] to return to the SPM Main Menu. For instructions on converting a backup file to Release 2.0 format, see "Convert" earlier in this book.

Step	Display	Instructions
5	Press CTRL-F5 to Abort Est . Total Time: *xx* min *filename* RESTORE IN PROGRESS Blocks Sent Remaining *xxxx* *xxxx*	Wait until the screen shown in Step 6 appears.
6	Restore successful. Please press Enter to see the main menu	Press [↵] to return to the SPM Main Menu.

System Programming

One of the main functions 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. Complete information on system programming can be found in *System Programming.*

Step	Display	Instructions
1	``` SPM Main Menu Menu: Select Function Sys Program Maintenance Backup Restore Boards Pass-Thru Print Opts Password Monitor Language ```	Press **[F1]** to select `Sys Program`.
2	``` System Programming > Make a selection System Extensions SysRenumber Options Operator Tables LinesTrunks AuxEquip Exit NightSrvce ``` ``` System Programming Make a selection Labeling Language Data Print Cntr-Prg Exit ```	If the programming function you want to perform does not appear on the screen, press **[PgUp]** (More) to see the second screen. You can select any option by pressing one of the function keys.

Installing the SPM Software

Before you install or run SPM, make a backup copy of the SPM diskette (use the `diskcopy` or `cp` command) and store the original in a safe place. Use the backup copy to run the installation program.

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

Follow the appropriate instructions in the next sections of this book for installing SPM on a DOS or UNIX system PC.

DOS Installation

If you are installing a new version of SPM, the new files will overwrite your current SPM files. You do not need to remove them.

To install SPM on the PC's hard disk, follow these steps:

1. With the system prompt (`c:>`) on your screen, insert the backup copy of the SPM diskette into Drive A.

2. Change to Drive A (`a:`). You see the `A:>` prompt on the screen.

3. Type *one* of the following commands:

    - **`install`**
    - **`install english`**
    - **`install french`**
    - **`install spanish`**

    The following message appears:

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

    NOTE:
    Since English is the default language, `install` and `install english` have the same effect. If you use the language argument (`english`, `french`, or `spanish`), you must type it in lowercase letters as shown. `install` itself is not case-sensitive.

4. Press any key.

   When the installation is finished, the following message appears:

   ```
   SPM HARD DISK INSTALLATION IS NOW COMPLETE
   YOU MUST REBOOT YOUR SYSTEM BEFORE USING SPM
   ```

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

NOTE:
If the OUT OF ENVIRONMENT SPACE error message appears on the screen, refer to the shell command in your DOS manual.

The installation procedure automatically does the following:

- Checks available space on the hard disk. Installation terminates with an error message if the space is insufficient.

- Checks permissions on the autoexec.bat and config.sys files. Installation terminates with an error message if either file is write-protected.

- 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, does the following:

  — Adds C:\spm to the PATH variable.
  — Adds the line SET AMS_PATH=C:.
  — Adds the background print command
     PRINT /D:PRN /B:4096 /U:3 /M:200 /S:1 > NUL.

- If config.sys has not already been configured for SPM, adds the line 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,` the English-language help file
— `ams_hlp.fre,` the French-language help file
— `ams_hlp.spa,` the 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 is not already present. In this case, the `ams.cfg` file consists of only one line, specifying the language attribute (`LANG 1` if you specified English or did not specify a language with the `install` command, `LANG 2` if you specified French, `LANG 3` if you specified Spanish).
— Modifies the `ams.cfg` file, if it is present, by adding or changing the `LANG` value.

Installation is complete. Continue with the section entitled "Initializing the SPM Software."

UNIX System Installation

The procedure for installing the UNIX system version of SPM saves any existing system programming backup files on the hard disk.

To install the UNIX system version of SPM, follow these steps:
1. Log on to IS-II/III as **maint.**
2. Select `Technician Maintenance` from the IS-II/III Maintenance menu.
3. Select `Administer Integrated Solution` from the Technician Maintenance menu.
4. Mark `System Programming and Maintenance (SPM)` On the menu by pressing the `UN/MARK` function key, **[F2]**.

5. Press the UPDATE function key, **[F4]** .
6. Insert the SPM diskette into the floppy disk drive and press **[↵]** .

    A request for confirmation appears.
7. Press **[↵]** to continue.

    You are prompted to insert the SPM diskette.
8. Press **[↵]** to continue.

    The system shows the progress of the installation by displaying dots at the rate of one dot per second. The procedure takes about 3½ minutes.

    When the installation is finished, a confirmation message appears.
9. Press **[↵]** to continue.

    You are prompted to remove the SPM diskette and to shut down the system.
10. Remove the diskette and press **[↵]** to shut down the system.

    (If you press **[Esc]** instead, you can continue running SPM; however, the software is not installed until you shut down and reboot.)

    When shutdown is finished, you are prompted to reboot the system.
11. Press the PC's reset button or **[Alt]** – **[Ctl]** – **[Delete]** to reboot.

The installation procedure is complete. Since the UNIX system version of SPM does not have to be initialized, you are ready to use SPM.

Initializing the SPM Software

To run correctly, the DOS version of SPM requires certain information (transmission speed, type of monitor, etc.). This information needs to be supplied only once, the first time you run SPM.

The information provided 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:

■ Invoke SPM with one or more of the following options, for example,

spm -com1 -s1200 -color -l french

Any of these options changes the information in ams.cfg.

spm -com1	specifies COM1 as the communications port used by SPM.
spm -com2	specifies COM2 as the 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 -l english	specifies English as the PC language.
spm -l french	specifies French as the PC language.
spm -l spanish	specifies Spanish as the PC language.

■ Edit the ams.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.)

To initialize SPM, follow these steps:

Step	Display	Instructions

1   Start the SPM program by typing **spm** at the `C:>` prompt if your PC has a hare disk, otherwise at the `A:>` prompt.

2

```
     Welcome to SPM
  The MERLIN LEGEND
  System  Programming
 & Maintenance Utility
  please press any key
       to continue:
     Version 2.xx
```

Press any key.

The screens in Steps 3 through 7 appear only if the system has not been initialized.

3

```
COMM PORT:
1.   Comm 1
2.   Comm 2
Enter selection #
```

Select the communications port used by SPM by typing **1** for COM1 or **2** for COM2.

4

```
Speed:
1.   1200
2.   2400
Enter selection #
```

Select the communication speed by typing **1** for 1200 bps **2** for 2400 bps.

5

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

If you have a color monitor, type **y.** Otherwise, type **n.**

Step	Display	Instructions
| **6** | ```
Language:
1.   English
2.   French
3.   Spanish
Enter selection #
``` | Type **1, 2,** or **3** to select a language. The language you choose becomes the SPM (PC) language. |
| **7** | ```
SPM CONFIGURATION:
Comm Port:  (1 or 2)
Speed:  (1200 or 2400)
Color:  (Yes or No)


Desire change (y/n)?
``` | Review your selections and type **y** to change any of the information on the screen or **n** to save the initialization information.  **y** takes you back to the screen shown in Step 3. **n** takes you to the screen shown in Step 8. |
| **8** | ```
     SPM Main Menu
Menu: Select Function
Sys Program  Maintenance
Backup       Restore
Boards       Pass-Thru
Print Opts   Password
Monitor      Language
``` | You see the SPM Main Menu, indicating that the SPM program is ready to use. |

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 the **[Ctl]** – **[F9]** key sequence. It is not part of the initialization process — to turn DEBUG on, you must edit the ams.cfg file.

The DEBUG attribute is for use by qualified service personnel only.

Upgrading the Communications 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 earlier in this book.* **Hazardous electrical voltages are present inside this product.**

This section describes upgrading your communications system. You can use this procedure to upgrade from Release 1.0 to Release 1.1 or to Release 2.0, and from Release 1.1 to Release 2.0. The procedure varies slightly, depending on the release *from which* and *to which* you are upgrading.

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 procedure, you need the following:

- To upgrade from Release 1.0 to Release 1.1:

    — SPM Version 1.16 to back up system programming information and, after the new feature module has been installed, to restore system programming information
    — Release 1.1 feature module
    — (for a floppy disk PC only) DOS-formatted diskette

■ To upgrade to Release 2.0:

— SPM Version 2.xx to back up and convert system programming information and, after the new feature module has been installed, to restore system programming information
— Release 2.0 feature module
— (for floppy disk PCs only) DOS-formatted diskette

NOTE:
If SPM is already installed, the initial `Welcome to SPM` screen that appears when you start SPM identifies the existing version on the last line.

If you are working with Version 2.xx, `V2` appears in the upper left-hand corner of the screen.

Inter-Release Compatibility

It is important to understand compatibilities between files created on each of the different versions of SPM and the different feature modules of the communications system, not only for upgrading, but also for programming.

Table 3 summarizes programming compatibility. (It is assumed that the majority of the programming is done in surrogate mode and backed up on disk.)

Table 3. Programming Compatibility

SPM Version	Program/ Backup on	Restore on		
		1.0	**1.1**	**2.0**
1.13	1.0	yes	no	no
1.16	1.0	yes	yes	no
2.xx	1.0	yes	yes	yes*
1.16	1.1	no	yes	no
2.xx	1.1	no	yes	yes*
2.xx	2.0	no	no	yes

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

Upgrade Procedure

Upgrading involves several steps. It is not a difficult procedure, but the steps *must* be performed in the order listed.

1. Install SPM.

   Complete instructions can be found in the section entitled "Installing the SPM Software" earlier in this book.

   To upgrade your communications system to Release 1.1, you will need to install (or, on a UNIX system PC, upgrade to) Version 1.16 of SPM.

   To upgrade your communications system to Release 2.0, you will need to install (or upgrade to) Version 2.xx of SPM.

2. Back up your system programming.

   This step creates a file containing system programming information. Complete instructions can be found in the section entitled "Backup" earlier in this book.

   To upgrade the system to Release 1.1, you can use Version 1.16 or later of SPM.

   To upgrade the system to Release 2.0, you must use Version 2.xx of SPM.

3. Change your feature 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. Remove the feature module from the processor module and replace it with a Release 1.1 or 2.0 feature module.

e. Reinstall the processor module in Slot 0.

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

g. 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

4. Perform a System Erase (frigid start).

    This step ensures that all system programming is returned to default values. *To upgrade to Release 1.1,* use the System Erase function as follows: `Maintenance` → `Slot` → `00` → `Demand Test` → `System Erase.`

    To upgrade to Release 2.0, use the System Erase function as follows: `Maintenance` → `Slot` → `00` → `Demand Test` → `System Erase` (Line 5, left button) **twice** → `Yes`

    See *Maintenance and Troubleshooting* for additional information on System Erase.

5. Convert your backup file **(Upgrade to Release 2.0 only).**

    This procedure converts the backup file created in Step 2 to the Release 2.0 format. See "Convert" earlier in this book.

6. Restore your system programming.

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

    To upgrade to Release 1.1, Use Version 1.16 or Version 2.xx of SPM and restore the backup file you created in Step 2.

    To upgrade to Release 2.0, Use Version 2.xx of SPM and restore the file you converted in Step 5.

7. Program new features.

Table 4 lists features added with Release 1.1 of the communications system. When you upgrade to Release 1.1, you must program these features as the last step (Step 7) of the upgrade procedure above.

Table 5 lists features added with Release 2.0 of the communications system. When you upgrade from Release 1.1 to Release 2.0, you must program these features as the last step (Step 7) of the upgrade procedure above. When you upgrade from Release 1.0 to Release 2.0, you must program the features listed in Table 4, then the features listed in Table 5.

Table 4. Programming Needed after Upgrade to Release 1.1

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 5. Programming Needed after Upgrade to Release 2.0

Primary Rate Interface (PRI)
   Sys Program → LinesTrunks → LS/GS/DS1 → Type → PRI

   Sys Program → LinesTrunks → LS/GS/DS1 → FrameFormat

   Sys Program → LinesTrunks → LS/GS/DS1 → Suppression

   Sys Program → LinesTrunks → PRI → PhoneNumber

   Sys Program → LinesTrunks → PRI → B-ChannlGrp

   Sys Program → LinesTrunks → PRI → NumbrToSend

   Sys Program → LinesTrunks → PRI → Test TelNum

   Sys Program → LinesTrunks → PRI → Protocol

   Sys Program → LinesTrunks → PRI → DialPlanRtg

   Sys Program → LinesTrunks → PRI → OutgoingTbl

   Sys Program → Tables → ARS

Table 5.- *Continued*

DID Emulation on T1
  Sys Program → LinesTrunks → LS/GS/DS1 → Type → **More** → DID/All 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

Glossary

GL

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 communications line, for example, must each have a unique address.

reassignment

Reassignment of the system programming position to any of the first five telephone jacks on the first 008 MLX module in the communications system control unit.

application

Software and/or hardware that adds functional capabilities to the communications system. For example, the Call Management System is a DOS application that simulates the actions of a system operator by answering calls and distributing them to individual telephones.

AUDIX

Audio Information Exchange

Audix Voice Power Package

A voice-processing application, part of Integrated Solution III (IS-III), that provides automated attendant, call answering, voice-mail, message drop, and information services for use with the communications system.

baud In telecommunications applications, a unit of transmission speed equal to the number of signal events per second.

Behind Switch

A mode of operation in which the communications system control unit is connected to (is "behind") another communications system.

binary code

An electrical representation of quantities or symbols expressed in the base-2 number system.

bit (binary digit)

One unit of information in binary notation, having two possible values: zero or one.

bit rate

The speed at which bits are transmitted, usually expressed in bits per second. Also called data rate.

bits per second (bps)

The number of binary units of information that are transmitted or received per second. See also *baud* and *bit rate.*

blocking

A condition in which end-to-end connections cannot be made on calls because of a full load on all possible services and facilities.

board

A module, for example, 100D or 408 MLX GS/LS, that allows you to connect trunks and stations to the communications system.

board assignment

An SPM procedure for assigning trunk and station modules to slots on the control unit.

board renumbering

A system programming procedure for renumbering boards that have already been assigned to specific slots on the control unit.

button

A key on the face of a telephone or console that is used to access a line, activate a feature, or enter a code on a communications system.

byte   A sequence of bits (usually eight) processed together. "Octet" is used instead of "byte" in CCITT (International Telegraph and Telephone Consultative Committee) documentation.

Call Accounting System (CAS)
A vendor-supplied application that monitors and manages telecommunications costs.

Call Management System (CMS)
A DOS-based application that simulates the actions of a system operator by answering and distributing calls. CMS also produces management reports for call analysis.

communications system
The software-controlled processor complex that interprets dialing pulses, tones, and/or keyboard characters and makes the proper interconnections both inside and outside the system. The communications system itself consists of a digital computer, software, a storage device, and carriers with special hardware to perform the actual connections. A communications system provides voice and/or data communications services, including access to public and private networks, for telephones and data terminals on a customer's premises.

control unit
The housing, carriers, power supply, processor, and modules of a communications system.

display buttons
The buttons on an MLX display telephone used to access the telephone's display.

DOS   disk operating system

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

FCC   Federal Communications Commission

Hybrid/PBX

A mode of operation in which the communications system uses trunk pools and Automatic Route Selection (ARS) in addition to personal lines — that is, direct facility terminations (DFTs) on line buttons. The Hybrid/PBX mode also provides a single interface to users for both internal and external calling.

I/O   input/output

Inspect screen

A display screen on MLX telephones that allows users to preview incoming calls and see a list of the features programmed on line buttons.

Integrated Solution III (IS-III)

One or more UNIX-system-based applications for improving voice and data communications and automating office operations.

Integrated Voice Power Automated Attendant

An IS-III application that automatically answers incoming calls with a recorded announcement and directs callers to a department, an extension, or the system operator.

jack   A device, accessed by inserting a plug, that is used to terminate the permanent wiring of a circuit.

kbps   kilobits per second

Key   A mode of operation in which the communications system uses direct facility terminations (DFTs) on line buttons with a separate path for internal calling.

LED (light-emitting diode)

A semiconductor device that produces light when voltage is applied. LEDs show the operational status of hardware components, the results of maintenance tests, the alarm status of circuit packs, and the activation of telephone features.

module

A module in the control unit provides the capability to connect central office lines/trunks and/or telephones to the system.

Mbps
> megabits per second

modem
> A device that converts digital data signals to analog signals for transmission over telephone lines. The analog signals are converted back to the original digital data signals by another modem at the other end of the line.

pass through (pass-thru)
> A connection from an internal modem to a programming port on the communications system.

PBX   private branch exchange

PC   personal computer

port   A point of access into a communications system, computer, network, or other electronic device.

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 the memory.

RS-232
> A physical interface, specified by the EIA (Electronics Industries Association), that transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of 50 feet.

special character
> A pause, stop, or end-of-dialing signal in a programmed dialing sequence such as an Auto Dial or Personal Speed Dial number.

station
> The endpoint on the internal side of the communications system. A station can be a telephone with or without an adjunct or can be a data terminal with a modem (analog) or an ISDN 7500B Data Module (digital) attached.

station jack
> An analog, digital, or tip/ring (T/R) interface on the control unit module for connecting telephones and other equipment.

switchhook flash

> Operation of the telephone switchhook in which the on-hook period is in the range of 250 –500 ms.

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