

Lucent Technologies
Bell Labs Innovations



MERLIN MAGIX™
Integrated System
Release 1.5

Release Notes

Issue 1
June 2000

Copyright and Legal Notices

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Notice

Every effort has been made to ensure that the information in this guide is complete and accurate at the time of printing. Information, however, is subject to change.

Your Responsibility for Your System's Security

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

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

Federal Communications Commission Statement

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

Canadian Department of Communications (DOC) Interference Information

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

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

Year 2000 Compliance

The MERLIN MAGIX Integrated System is certified to be Year 2000 compliant. Additional information on this certification, and other issues regarding Year 2000 compliance, is available online at <http://www.lucent.com/enterprise/sig/yr2000>.

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Call: BCS Publications Center
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In the continental US, Lucent Technologies provides a toll-free customer helpline 24 hours a day. Call the Lucent Technologies Helpline at **1 800 628-2888** or your Lucent Technologies authorized dealer if you need assistance when installing, programming, or using your system. Outside the continental US, contact your local Lucent Technologies authorized representative.

Network Engineering Group

For assistance in designing a private network, call the Network Engineering Group at **1 888 297-4700**.

Lucent Technologies Corporate Security

Whether or not immediate support is required, all toll fraud incidents involving Lucent Technologies products or services *should be reported* to Lucent Technologies Corporate Security at **1 800 821-8235**. In addition to recording the incident, Lucent Technologies Corporate Security is available for consultation on security issues, investigation support, referral to law enforcement agencies, and educational programs.

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Warranty

Lucent Technologies provides a limited warranty on this product.

MERLIN MAGIX Release 1.5 Enhancements



Overview

Release 1.5 of the MERLIN MAGIX™ Integrated System contains enhancements for hardware, upgrading, features, maintenance, WinSPM™, and the MERLIN Messaging™ System. Also, on page 34, some points of corrected information appear under the heading of “Miscellaneous.”

100 DCD Module

Available in Release 1.5 of the MERLIN MAGIX system is a new 100 DCD module that has a built-in channel service unit (CSU) and data service unit (DSU). Using this module eliminates the need to attach an external CSU/DSU, thereby allowing easier routing of calls.

The 100 DCD module has the same signaling modes as previous 100 DS1 modules, including the ability to use T1 or PRI configuration. As such, the new module counts toward the combined system total of three 100 DS1, 100R INA, and 100 DCD modules.

The 100 DCD module can fit into both metal and plastic carriers. Therefore, it can be added to an existing MERLIN LEGEND Communications System, where it functions like other 100 DS1 modules. The CSU/DSU part of the 100 DCD module, however, only functions with Release 1.5 or later of the MERLIN MAGIX system.

Programming the 100 DCD Module

The 100 DCD modules uses many of the same programming options as the 100D module. However, the 100 DCD module also has additional programming options: Activate/Deactivate the CSU, Activate/Deactivate the DSU, and Program the Data Port Parameters.

NOTE ► Line and trunk administration for the 100 DCD module is the same as the 100D module. The factory setting is T1.

Activate/Deactivate the CSU

The built-in CSU is factory-set as deactivated on the 100 DCD module. Change the setting by using the following sequence:

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SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→
ActivateCSU→Select Activated or Deactivated

NOTE ► Changing the CSU setting may affect voice calls. The system waits until it is idle before activating or deactivating the CSU.

Activate/Deactivate the DSU

The built-in DSU is factory-set to deactivated. Change the setting by using the following sequence:

SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→
ActivateDSU→Select Activated or Deactivated

NOTE ► Changing the DSU setting may affect voice calls. The system waits until it is idle before activating or deactivating the DSU.

Programming Data Port Parameters

You can program the following for the two data ports on the 100 DCD module:

- Assign a data rate
- Assign channels to the data port
- Assign the receive clock
- Invert data
- Invert the clock

Assign a Data Rate

The data rate is factory-set to 56 kbps. Change the setting by using the following sequence:

SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→Data
Port→Type port no.→Enter→Rate→Select 56 kbps or 64 kbps→Enter

NOTE ► If the module is configured for Robbed Bit Signaling, 56 kbps is the only valid entry. Selecting 64 kbps causes an error beep.

Assign Channels to the Data Port

Assign the channels to each data port by using the following sequence:

SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→Data
Port→Type port no.→Enter→Channel→Type channel no.→Enter

View All Data Port Channel Selections

You can view a summary of all channel selections for the data port. Use the following sequence to view all channel selections:

SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→Data Port→Type port no.→Enter→Channel→Inspect

Assign the Receive Clock

The receive clock samples the data coming into the system. The factory setting is DTE (the system). Program the receive clock for each data port by using the following sequence:

SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→Data Port→Type port no.→Enter→Receive Clk→Select DCE or DTE→Enter

Invert Data

The factory setting for inverting data is No. Invert data by using the following sequence:

SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→Data Port→Type port no.→Enter→Invert Data→Select Transmit or Receive→Select Yes or No→Enter

Invert the Clock

The factory setting for inverting the clock is No. Invert the clock by using the following sequence:

SysProg→Lines and Trunks→More→More→CSU/DSU→Type Slot no.→Enter→Data Port→Type port no.→Enter→Invert Clk→Select Transmit or Receive→Select Yes or No→Enter

Demand Tests

Various loopback and demand tests check the functioning of the internal CSU and DSU and the 100 DCD module itself.

Three demand tests apply to both the 100R INA and 100 DCD modules:

- Line loopback
- Payload loopback
- Bit Error Rate Test (BERT)

Four other tests have been added specifically for the 100 DCD module:

- Repeater loopback
- Data-channel loopback

- Data terminal loopback
- Data port local loop

See the *MERLIN MAGIX Integrated System Release 1.5 Installation, SPM, Maintenance, and Troubleshooting Supplement* for further details on these tests.

Upgrading to a MERLIN MAGIX Release 1.5 System

Many customers want to use the capabilities of a MERLIN MAGIX system (especially the 100R INA module) without overhauling their existing MERLIN LEGEND system. All of the modules used in MERLIN MAGIX Release 1.0, the 100 DCD module, and most of the MERLIN LEGEND system modules are supported in Release 1.5 of the MERLIN MAGIX system. With the exception of the 100R INA module, all modules are available in a plastic clamshell, so they can be used in a MERLIN LEGEND system. If you want to add a 100R INA module, you can add a metal expansion carrier to any MERLIN LEGEND system that has one or two carriers. (Three carriers is the maximum for the system.)

The software for Release 1.5 of the MERLIN MAGIX system introduces a new phantom module called the Bridge module. This module does not physically exist and has no lines or extensions. It serves to fill up any empty slots between modules in the MERLIN MAGIX or MERLIN LEGEND systems and any empty slots in the MERLIN LEGEND system before the metal expansion carrier.

NOTE ► The MERLIN LEGEND system must have a CKE4 or CKE5 processor module and a 391C1 power supply.

The following modules are available with or without a plastic clamshell and, therefore, can be used in a plastic or a metal carrier:

- 100 DCD
- 100 DS1
- 400 E&M
- 408 GS/LS-ID-MLX
- 412 LS-ID-TDL
- 800 DID
- 800 LS-ID
- 800 NI-BRI
- 008 MLX
- 008 OPT
- 016 ETR
- 016 MLX
- 016 T/R

- 024 TDL
- MERLIN Messaging System

The MERLIN MAGIX system software also supports modules from the MERLIN LEGEND Communications System that cannot fit into the metal carrier of the MERLIN MAGIX system. However, they are supported by the MERLIN MAGIX Release 1.5 software and can be used when you upgrade a MERLIN LEGEND system to a MERLIN MAGIX system.

The supported MERLIN LEGEND modules are:

- 400 GS/LS/TTR
- 408 GS/LS-MLX
- 800 LS
- 800 GS/LS
- 800 GS/LS-ID
- 008 OPT with ring generator
- 012 T/R with ring generator
- 012 T/R without ring generator
- MERLIN LEGEND Mail[®]

Upgrading to the MERLIN MAGIX Release 1.5 system from a MERLIN LEGEND system involves the following:

1. Remove any of these unsupported modules:
 - 008 (ATL)
 - 400 LS
 - 400 LS/TTR
 - 408 LS (ATL)
 - 408 GS/LS (ATL)
2. If you are upgrading to a MERLIN MAGIX Release 1.0 system, move modules as necessary to eliminate any empty slots.
3. Do a board renumber each time you remove or move a module.
4. Relabel extensions.
5. Back up the system onto a floppy disk or a PC (not onto the PCMCIA card).
6. If you are adding a 100R INA module, which only fits into a metal carrier, attach a MERLIN MAGIX metal expansion carrier to the right of the existing MERLIN LEGEND carrier(s).
7. Insert the MERLIN MAGIX Release 1.5 Upgrade card into the PCMCIA slot in the processor module, and start the upgrade process in System Programming.

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8. As necessary, program Bridge modules to fill up any empty slots in the plastic carrier(s). To add a Bridge module, select "Bridge" from the Boards screen in System Programming. (Bridge module programming is available in Release 1.5 or later of the MERLIN MAGIX system.)

NOTE ► You must be in Surrogate Mode to add Bridge modules. You can program a Bridge module only from a PC running WinSPM.

9. If you are adding a 100R INA module, place it in the first slot of the metal carrier.
10. Add any other modules you want to the metal carrier.
11. Power up the system.
12. Perform a board renumber.
13. If you have added a MERLIN Messaging System Release 2.0 module to the metal carrier, you must program for it in one of the two following ways:
 - If you have chosen to use the existing Voice Mail Calling Group, add the new extension numbers receiving voice mail into this calling group. Also, add the line numbers that go to this calling group. As needed, enable rotary dialing.
 - Run the automatic configuration for Release 2.0 of the MERLIN Messaging System. (See "Automatic Configuration of the MERLIN Messaging System" on page 25.) As necessary, program the restriction for outcalling and program the lines that are to ring in the Voice Mail Calling Group.

See Chapter 6, "Upgrading to a MERLIN MAGIX Release 1.5 System," in the *MERLIN MAGIX Integrated System Release 1.5 Installation, SPM, Maintenance, and Troubleshooting Supplement* for further details.

Feature Enhancements

Release 1.5 of the MERLIN MAGIX system contains a new Automatic Daylight Savings Time feature, an enhanced Automatic Route Selection feature, and an enhanced Allowed List/ Disallowed List feature.

Automatic Daylight Savings Time

At a Glance

Users Affected	All																				
Reports Affected	System Set Up																				
Modes	All																				
Telephones	Display																				
System Programming	<p>Enable Automatic Daylight Savings Time using the USA settings:</p> <ul style="list-style-type: none"> ■ System→Time→ADST→Enable→USA ADST→Enter <p>Enable Automatic Daylight Savings Time using the Custom settings:</p> <ul style="list-style-type: none"> ■ System→Time→ADST→Enable→Custom→Enter→ Select the hemisphere (Northern or Southern)→Enter→ Select Start or End for the start or end parameters→Select the day of the week→Enter→Select the week of the month→Enter→Select the month→Enter→Select the hour→Enter <p>Disable Automatic Daylight Savings Time:</p> <ul style="list-style-type: none"> ■ System→Time→ADST→Disable→Enter 																				
Factory Settings	<p>Enable; USA ADST The USA ADST factory settings are as follows:</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Factory Setting</th> </tr> </thead> <tbody> <tr> <td>Hemisphere</td> <td>Northern</td> </tr> <tr> <td>Start Day</td> <td>Sunday</td> </tr> <tr> <td>Start Week</td> <td>First</td> </tr> <tr> <td>Start Month</td> <td>April</td> </tr> <tr> <td>Start Hour</td> <td>2:00AM</td> </tr> <tr> <td>End Day</td> <td>Sunday</td> </tr> <tr> <td>End Week</td> <td>Last</td> </tr> <tr> <td>End Month</td> <td>October</td> </tr> <tr> <td>End Hour</td> <td>2:00AM</td> </tr> </tbody> </table>	Parameter	Factory Setting	Hemisphere	Northern	Start Day	Sunday	Start Week	First	Start Month	April	Start Hour	2:00AM	End Day	Sunday	End Week	Last	End Month	October	End Hour	2:00AM
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Hemisphere	Northern																				
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End Week	Last																				
End Month	October																				
End Hour	2:00AM																				

Description

The Automatic Daylight Savings Time (ADST) feature allows the system to automatically set the system clock ahead or back one hour when Daylight Savings Time starts or ends. You can use the factory setting of “USA ADST,” or choose to customize the parameters of the feature. If you select “USA ADST,” the system time moves one hour ahead at 2:00 a.m. on the first Sunday in April and moves one hour back at 2:00 a.m. on the last Sunday in October.

If you choose to customize the parameters, you must set each of the following:

- Hemisphere
- Start day
- Start week
- Start month
- Start hour
- End day
- End week
- End month
- End hour

NOTE ► Most Southern Hemisphere countries use Daylight Savings Time from October to April, the opposite of the Northern Hemisphere. For the Southern Hemisphere, start time is the start of Standard Time, and end time is the end of Standard Time. When you select “Southern” as the hemisphere, the system subtracts one hour from the system time at the time defined by the start parameter. The system adds one hour to the system time at the time defined by the end parameter.

Considerations and Constraints

If a power interruption occurs during the time when ADST is scheduled to start or end, the system adjusts to the correct time when power is restored.

MERLIN Messaging Release 2.0 or later is the only voice mail system that automatically updates the time. You must manually update any other voice mail system when ADST occurs.

If the messaging system is processing other tasks when the ADST time change occurs, the messaging clock is not updated to the new time.

If the system time changes during a call, the reported duration of that call will be incorrect.

Feature Interactions

Alarm Clock	Alarm Clock does not beep when it is scheduled during the time that ADST advances one hour. For example, if Alarm Clock is scheduled to sound at 2:30 a.m., but ADST advances the system clock from 2:00 a.m. to 3:00 a.m., Alarm Clock does not beep.
Night Service	Time of Day Operation does not activate when it is scheduled during the time that ADST advances one hour. For example, if the Time of Day Operation is scheduled to begin at 2:30 a.m., but ADST advances the system clock from 2:00 a.m. to 3:00 a.m., Time of Day Operation does not activate.
Reminder Service	Reminder Service does not make a call when it is scheduled during the time that ADST advances one hour. For example, if Reminder Service is scheduled to call at 2:30 a.m., but ADST advances the system clock from 2:00 a.m. to 3:00 a.m., no call is made.
SMDR	If the system time changes during a call, the reported duration of that call will be incorrect.

Automatic Route Selection Enhancements

Because of the changes in facilities and dial plans across the USA and Canada, Release 1.5 of the MERLIN MAGIX Integrated System offers new enhancements to the Automatic Route Selection feature:

- 10- and 11-digit dialing
- 24 programmable tables
- Wild card characters in 6-digit tables
- Enhanced 911 service

10- and 11-Digit Dialing

NOTE ► Skip this section if 10-digit dialing is not allowed in your area.

Some central offices allow users to dial a 10-digit telephone number (area code and telephone number without the leading “1”) to reach a telephone number that requires an area code. In Release 1.5 of MERLIN MAGIX, the MERLIN MAGIX system can route either a 10-digit (without the leading “1”) or an 11-digit (with the leading “1”) dialed call based on both the area code and the exchange code. This has been accomplished by modifying ARS to include a search of 6-Digit tables whether or not the user dials a leading “1.”

The ARS Absorb Digit parameter (the number of user-dialed digits that ARS absorbs, that is, does not dial out) for each route has been enhanced to accommodate the new 10-digit dialing.

If you program the route in the 6-Digit table to absorb N digits, the actual number of digits absorbed will be as follows:

- If the user dials an 11-digit number (including the leading “1”), ARS absorbs N digits. For example, you program the 6-digit table to absorb 4 digits, and the user dials 1-732-555-1234. In this example, 4 digits are absorbed, and 555-1234 is the number that ARS sends as the dialed number to the central office.
- If the user dials a 10-digit number (not including the leading “1”), ARS absorbs N-1 digits. For example, you program the 6-digit table to absorb 4 digits, and the user dials 732-555-1234. In this example, 3 digits are absorbed, and 555-1234 is the number that ARS sends as the dialed number to the central office.

To configure ARS to correctly route 10- and 11-digits numbers, do the following:

- Determine the area codes and exchanges that allow 10-digit dialing and for which you want ARS routing based on 10-digit dialing.
- Determine the routing you want for each area code and exchange in the list.
- Add the area codes and exchanges to the ARS tables:
 - If all the exchanges in an area code should be routed on the same trunk pools, add the area code to an exchange table and to an area code table.
 - If you want only certain exchanges in an area code routed based on 10-digit dialing, add the area code and the exchanges to a 6-digit table.

When you configure a system for 10-digit dialing and a user places an outside call preceded by the ARS dial-out code, the system searches the 6-digit tables for area code and exchange code dialed by the user. If a match is not found, the system does one of the following:

- If the user dialed a leading “1,” the system searches the area code tables. If a match is not found in the area code tables, the call is routed by the Default Toll table.
- If the user did not dial a leading “1,” the system searches the exchange tables. If a match is not found in the exchange tables, the call is routed by the Default Local table.

Figure 1 and Figure 2 show the search algorithms for when a leading “1” is dialed and when it is not dialed.



SECURITY ALERT:

A user restricted from dialing a toll number (11-digit) may be able to dial that same number by using 10-digit dialing when a “leading 1” is not required. Correct this situation by programming the ARS Facility Restriction Level (FRL), the extension restriction level, and/or the Allowed/Disallowed Lists. In addition, because non-matching 10-digit calls go to the Default Local Table with an FRL of 2, users with an FRL of 2 can make 10-digit long distance calls.

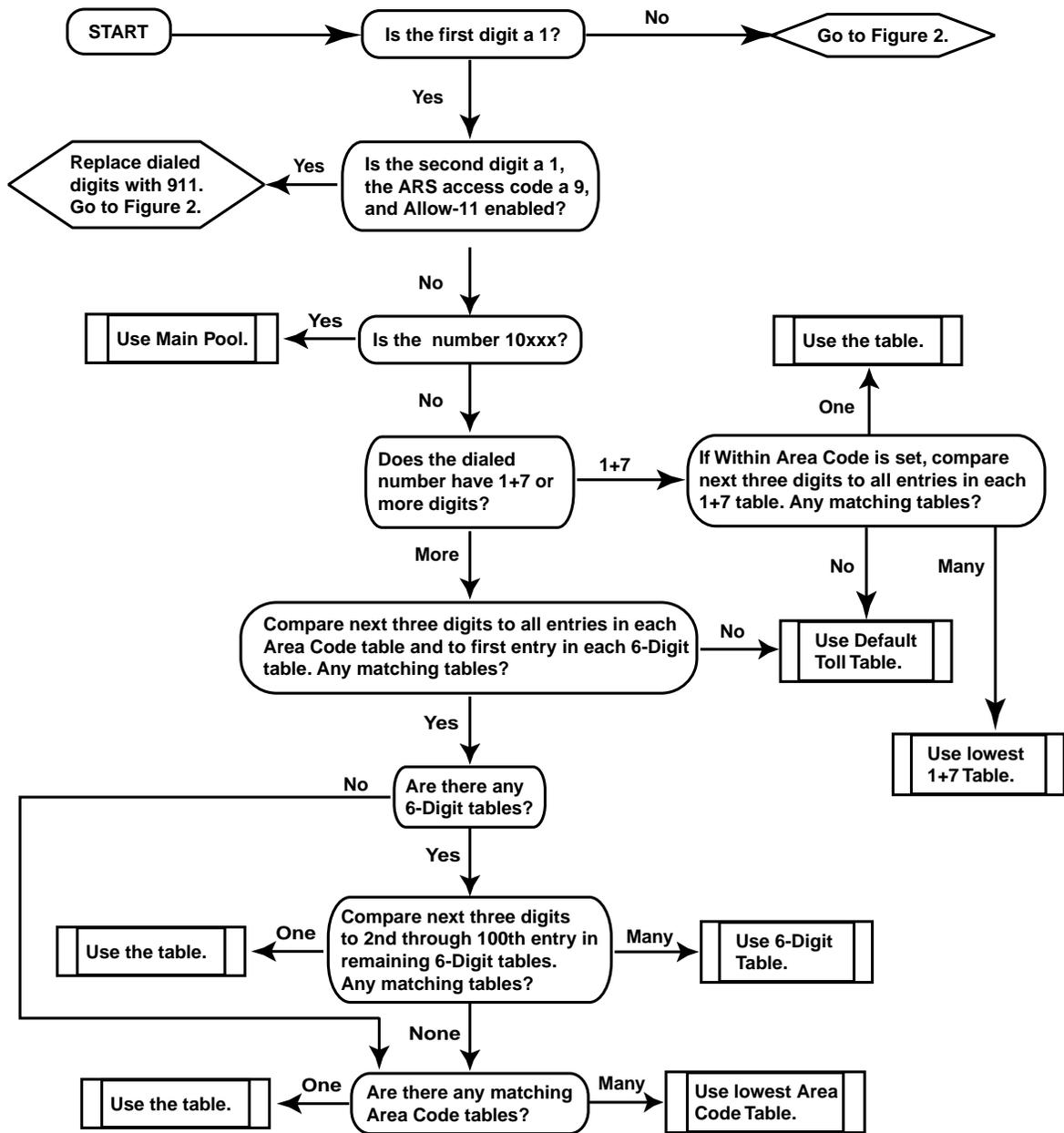


Figure 1. ARS Search Algorithm When Leading “1” is Dialed

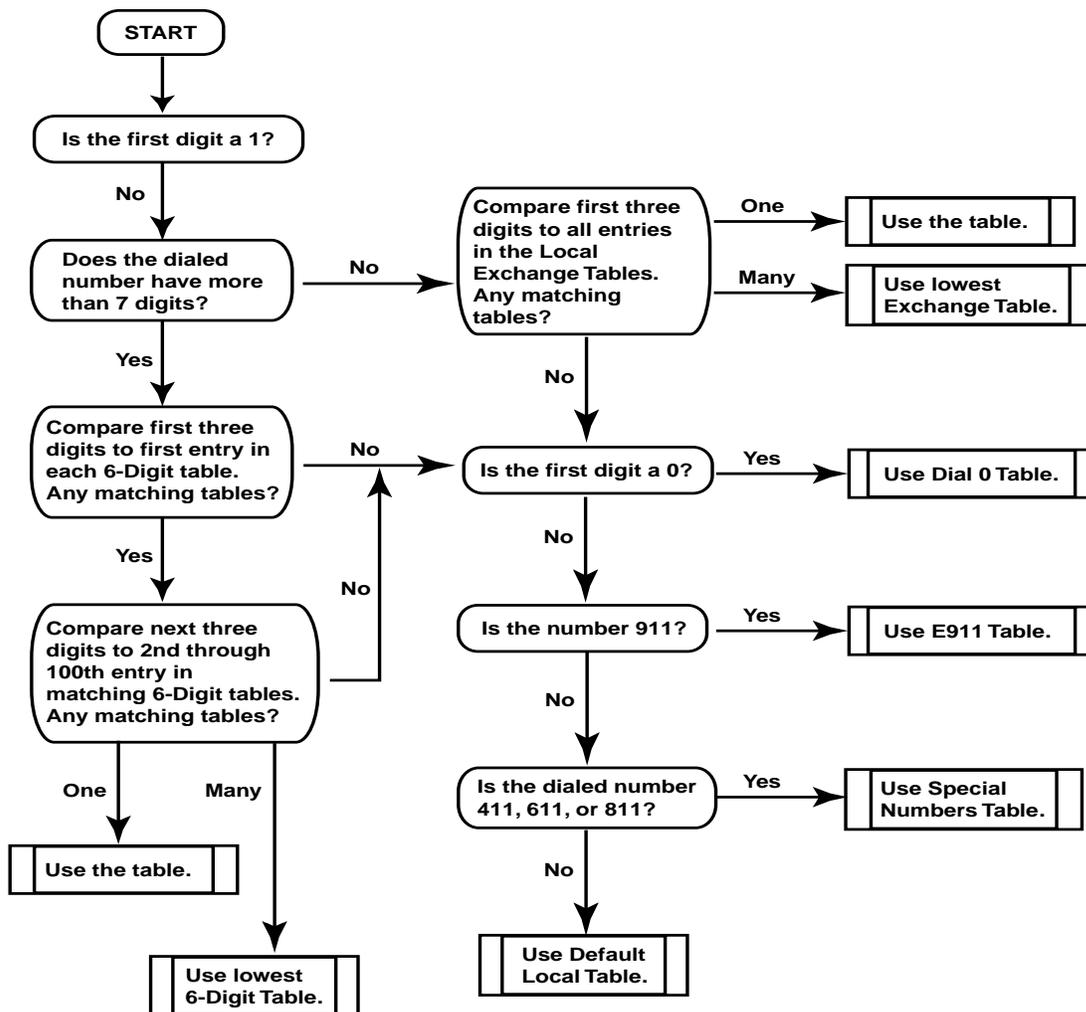


Figure 2. ARS Search Algorithm When No Leading “1” is Dialed

24 Programmable Tables

The number of programmable tables has been increased from 16 to 24 to allow ARS to handle more area codes and exchanges. In addition, a new E911 table has been created, thereby removing 911 from the Special Numbers Table (see “Enhanced 911 Service” on page 13). Table 1 shows the differences in ARS tables between Release 1.0 and Release 1.5 of the MERLIN MAGIX system.

Table 1. ARS Tables

Table Type	R1.5 Table Numbers	R1.0 Table Numbers
Fully Programmable	1–24	1–16
Default Toll	25	17
Default Local	26	18
Special Numbers	27	19
Dial 0	28	20
E911	29	N/A

NOTE ► When you upgrade from MERLIN MAGIX Release 1.0 to Release 1.5, the digits from 911 in the Special Numbers table carry over into the Other Digits of the E911 table during the conversion.

Wild Card Characters in 6-Digit Tables

Release 1.5 of the MERLIN MAGIX system allows one-to-one wild card character matching in the area code entry (not the exchange code entry) of 6-digit tables. This allows ARS to program numbers such as Directory Assistance (xxx-555-1212) for multiple area codes with one entry.



SECURITY ALERT:

Some regions charge for Directory Assistance. Also, many Directory Assistance calls ask you if you want to dial the number for an additional charge. Use Facility Restriction Levels (FRLs) to restrict the user from making Directory Assistance calls.

Use the Hold button to enter a wild card character when you program a 6-digit table. The wild card character appears as “p” on a telephone display and on the printed report.

Enhanced 911 Service

MERLIN MAGIX Release 1.5 in Hybrid/PBX mode supports Enhanced 911 (E911) service that allows the recipient of a 911 call to accurately identify the telephone number and physical location of the calling party. Emergency response personnel cross-check the incoming Automatic Number Identification (ANI) information with the Automatic Line Identification (ALI) or billing information (in

other words, the billing address) associated with the telephone number. If the caller is in a multi-floor office or a multi-building campus, emergency response operators have little idea of the exact location of the caller since the information presented is often just the main billing address of the company. You can use the E911 Partition (the factory setting) or E911 Adjunct options to provide more specific ALI to identify the caller's location.

For the E911 options to function properly, the 911 number has been removed from the Special Numbers Table, and a separate E911 Table, Table 29, has been created in Release 1.5.

MERLIN MAGIX Release 1.5 in Hybrid/PBX mode also supports the Allow-11 feature that lets you dial 911 by dialing the ARS access code of "9" and the digits "11."

E911 Partition

As a building can be partitioned into different floors or different areas on one floor, the extensions in the MERLIN MAGIX system can be grouped ("partitioned") according to their locations. For example, you can place all the extensions in the northeast corner of the second floor of an office building in one partition and all the extensions in the northwest corner in a second partition. You then assign some trunks with an ALI of the northeast corner of the second floor to the first partition. Next, you assign trunks with an ALI of the northwest corner of the second floor to the second partition. When a caller dials "911," the ALI information sent shows the emergency response people exactly where the caller is located.

NOTE ► You must update the partition trunk's ALI to identify the location of the extensions in a partition.

MERLIN MAGIX Release 1.5 supports up to 10 partitions. When you change the system mode to Hybrid/PBX mode, all the extensions and adjuncts in the system are automatically assigned to Partition 1.

An extension can belong to only one partition. If the System Administrator enters an already assigned extension into another partition, the system automatically removes the extension from the previous partition.

Partition trunks can be any type of outcalling facility and can be programmed for other system functionality, such as pools and Personal Lines. Partition trunks cannot be programmed as the following:

- No DID trunks.
- No Music-On-Hold trunks.
- No Loudspeaker Paging trunks.
- No data trunks.
- No maintenance alarm trunks.
- No unassigned T1 trunks.
- No PRI lines that are not assigned to a B-channel group.
- No PRI lines assigned as the D-channel.

You can assign a trunk to only one partition or to the E911 Adjunct. You can assign trunks that are already used in pools or as Personal Lines.

NOTE ► If no trunks are assigned to an extension's partition, a 911 call from that extension is routed through the main pool. If you select E911 Adjunct as your E911 option and no trunks are assigned to the E911 adjunct, 911 calls are routed through the main pool.

**CAUTION:**

Do not assign a trunk that does not work or is unreliable. You should enable system trunk maintenance. The system cannot use trunks that are maintenance busy. If an E911 call fails, the system marks that trunk as maintenance busy. The next E911 call uses another trunk in the partition or overflows to the main pool.

NOTE ► If an E911 call overflows to the main pool, the ALI information sent may not include the exact location of the caller.

Each partition can have up to 20 digits that include digits 0–9, * (but not in the first position), and Pause (entered by pressing the Hold button). If an E911 call overflows to the main pool, the system may add prefixed digits.

Follow these steps to program the E911 Partition option:

1. Assign trunks and extensions to each partition.
2. Check that the trunks are of an eligible type and are not being used as Music-On-Hold, Loudspeaker Paging, data, E911 Adjunct, or maintenance trunks, or are not being used in another partition.
3. Remove any non-working or unreliable trunk from any partition.
4. Verify the ALI or billing information for the trunks in each partition.
5. Remove "911" from any of the programmable ARS tables.
6. Select "Partition" as the E911 option.
7. Enable "Allow-11" as desired.
8. Program system prefix digits for each partition and for the overflow main pool as needed.
9. Create an Allowed List with 911, and assign it to Outward Restricted and Extension Status Restricted extensions that should be allowed to call the 911 Emergency Service.
10. If extensions are Night Service restricted, add a Night Service Emergency Number for "911."

E911 Adjunct

The second way to support Enhanced 911 service is to have calls routed through trunks connected to an auxiliary piece of equipment called the "E911 adjunct." You can assign up to five trunks to be E911 Adjunct trunks.

When a user calls 911, the ground-start or loop-start trunk sends the extension information to the E911 adjunct. The E911 adjunct reads the extension information and sends the appropriate telephone information out to the 911 Emergency Service. If the E911 adjunct cannot decipher the extension information, it should send the main billing telephone number and billing address. If all the trunks programmed for E911 service are busy, the call is routed through the main pool.

NOTE ► If an E911 call overflows to the main pool, the ALI information sent may not include the exact location of the caller.

When the E911 adjunct detects an error condition (such as the disconnection of the trunk cable between the E911 adjunct and the PSTN), the contacts on the front panel ALARM relay close. You must wire this ALARM relay to a system tip/ring extension jack and then program that extension jack as an E911 Adjunct Alarm extension. An E911 Adjunct Alarm extension uses the Hotline feature to place a call automatically to the system operator when the ALARM relay contacts close. This causes an alarm LED to light on the operator's console and places the E911 Adjunct trunks into a Trunk Maintenance Busy state. While the E911 Adjunct trunks are in this state, any 911 calls go directly to the main pool. A major alarm error is also generated. See the "Maintenance and Troubleshooting" chapter in the *MERLIN MAGIX Integrated System Release 1.5 Installation, SPM, Maintenance, and Troubleshooting Supplement* for further information.

E911 Adjunct trunks can be any type of outcalling facility with the following exceptions:

- No DID trunks.
- No Music-On-Hold trunks.
- No Loudspeaker Paging trunks.
- No data trunks.
- No maintenance alarm trunks.
- No unassigned T1 trunks.
- No PRI lines that are not assigned to a B-channel group.
- No PRI lines assigned as the D-channel.
- No trunks used in pools.
- No trunks used as Personal Lines.
- No trunks assigned to an E911 partition.

Follow these steps to program the E911 Adjunct option:

NOTE ► The system must be idle when you program the E911 Adjunct option.

1. Program the E911 adjunct equipment according to its user manual.
2. Assign ground-start (recommended) or loop-start trunks to the E911 adjunct.
3. Connect the E911 adjunct to the ground-start or loop-start trunks assigned to it.

4. Assign the E911 Adjunct Alarm Extension and the extension number (the first operator position is the factory setting) to which the E911 Adjunct Alarm calls will be sent.
5. Connect the E911 adjunct alarm relay to the E911 Adjunct Alarm extension.
6. Change the E911 Option to "E911 Adjunct."

NOTE ► Do not enable the E911 Adjunct option until after the E911 adjunct has been connected and tested, the Adjunct Alarm port has been connected, and the E911 Adjunct trunks and the E911 Adjunct Alarm have been programmed.

7. Enable "Allow-11" as desired.
8. Remove 911 from any of the programmable ARS tables.
9. Create an Allowed List with 911 and assign it to Outward Restricted and Extension Status Restricted extensions that should be allowed to call the 911 Emergency Service.
10. Program an operator Alarm button on any operator Direct-Line Consoles (DLCs).

Allow-11

Release 1.5 of the MERLIN MAGIX offers the Allow-11 function. When you enable Allow-11 and the ARS access code is 9, dialing "911" or "9-911" both place a 911 call. If Allow-11 is enabled and the ARS access code is 9, you cannot use "11" to dial star codes. (Dialing *11 is used for rotary-dial lines.)

Considerations and Constraints

You can direct 911 calls over a private network by prepending digits. Incoming private network 911 calls are sent over the main pool.

NOTE ► Send 911 calls over a private network only when the systems are at the same location and when the main pool's trunks' ALI provides enough information for a rapid response from Emergency Service.

E911 trunks cannot be assigned as Direct Inward Dial (DID), Music-On-Hold, maintenance alarm, or Paging trunks. In addition, E911 adjunct trunks cannot be assigned as Personal Lines or pools.

Do not assign E&M TIE trunk to be E911 Adjunct trunks.

All E911 routes have a Facility Restriction Level (FRL) of 0.

E911 calls are routed through the main pool when any of the following occur:

- No E911 trunks are in a partition, or E911 Adjunct trunks are not programmed.
- All E911 trunks in a partition or all E911 Adjunct trunks are busy.
- The E911 Adjunct Alarm is active.
- All E911 trunks in a partition or connected to the E911 Adjunct are in a Trunk Maintenance Busy or E911 Trunk Maintenance Busy state.

Release Notes

- The call is from a non-local extension or from a Remote Access location.

A 911 call to a disconnected or bad E911 trunk will fail. To prevent further failures of this trunk, the system marks the trunk as E911 Trunk Maintenance Busy and does not use the trunk while it is in an E911 Trunk Maintenance Busy state.

Assign at least two trunks to any partition to minimize overflowing to the main pool.

E911 service cannot be provided if "911" is an entry in a local exchange table.

The system prefixed digits can be programmed for each E911 Partition call but not for E911 Adjunct calls.

If the ARS Special Numbers Table needs system prefixed digits, the E911 Table may also need system prefixed digits for calls that overflow to the main pool.

Enable Trunk Maintenance Busy to allow the system to perform background checks on all ground-start, loop-start, and E&M tie trunks used for E911 service.

An Outward or Extension Status (ES) Restricted user cannot call 911. Assign an Allowed List with "911" to the restricted extensions.

A Night Service Restricted caller cannot dial 911. Program a Night Service Emergency Number for 911.

When Allow-11 is enabled and the ARS access code is "9," the system routes both "911" and "9-911" calls through the E911 table. If Allow-11 is enabled and the ARS access code is "9," rotary-dial lines cannot use "11" for star (*) codes.

When the system mode changes from Hybrid/PBX mode to Key or Behind Switch mode, E911 programmed returns to the factory setting of all extensions assigned to Partition 1.

System Programming

If you want to use enhanced 911 service, you must program the E911 Table for Partition or Adjunct functioning. As desired, you also may enable/disable Allow-11, and you may want to prepend digits to the 911 number.

If you try to program the following trunks as an E911 Partition or E911 Adjunct trunk, you hear an error beep and are denied programming the trunk:

- DID trunks
- Music-On-Hold trunks
- Loudspeaker Paging trunks
- Data trunks
- Maintenance alarm trunks
- Unequipped T1 trunks
- PRI lines that are not assigned to a B-channel group
- The PRI line assigned as the D-channel

Feature Enhancements

In addition, an error beep sounds when you try to program the following as E911 Adjunct trunks:

- Trunks used in pools
- Trunks used as Personal Lines
- Trunks assigned to an E911 partition

To choose the Partition or Adjunct option for E911 service:

Tables→ARS→More→E911→Option→Select Partition or E911 Adjunct→Enter→Back

To enter extensions into a partition:

Tables→ARS→More→E911→Partition→Type the partition table number→Enter→Extensions→Type the extension number→Next to accept the entry and move to the next partition, or Enter to enter another extension number in the same partition→Back

To assign an individual line to a partition:

Tables→ARS→More→E911→Partition→Type the partition table number→Enter→LinesTrunks→Entry Mode→Type the line/trunk number→Next to accept the entry and move to the next partition, or Enter to assign another line/trunk to the same partition→Back

To assign a block of lines to a partition:

Tables→ARS→More→E911→Partition→Type the partition table number→Enter→LinesTrunks→Select the desired block of lines (Doing this maps the 20 lines chosen to the line buttons on your telephone.)→Press the line button for each line you want to add to the partition. (The LED next to the button lights.)→Press Exit (Home on the MLX-20L telephone) to exit

To prepend digits to an E911 Partition call:

Tables→ARS→More→E911→Partition→Type the partition table number→Enter→Other Digits→Type the prepended digits→Enter→Back

To assign lines to the E911 Adjunct:

Tables→ARS→More→E911→Adjunct→LinesTrunks→Type the line/trunk number→Enter→Back

NOTE ► You can program up to five trunks as E911 Adjunct trunks. Valid trunk types are ground-start or loop-start trunks. Analog tie trunks are not blocked from being programmed but are not supported as E911 Adjunct trunks.

To assign an extension to be the E911 Adjunct Alarm extension:

Tables→ARS→More→E911→Adjunct→Alarm Ext→Type the extension number→Enter→Back

NOTE ► If you try to select an extension that is not a tip/ring port, a beep sounds, indicating that you cannot select that extension.

To prepend digits to an E911 overflow call to the main pool:

Tables→ARS→More→E911→OtherDigits→Type the prepended digits→Enter→Back

NOTE ► If you enter a leading * or more than 20 digits, a beep sounds, indicating that your entry is invalid.

To enable or disable Allow-11:

Tables→ARS→More→E911→Allow 11→Select Enable or Disable→Enter→Back

Feature Interactions

Allowed/Disallowed Lists	Assign an Allowed List with “911” to the restricted extensions to allow the dialing of emergency calls. When Allow-11 is enabled even if “11” is in the Disallowed List, users can dial “911” or “9-911.”
Barge-In	Operators can use Barge-In to join E911 Partition or Adjunct calls.
Callback	If an E911 call overflows to a busy main pool, the call may be automatically or manually queued for the first available trunk for a partition, the E911 Adjunct, or the main pool.
Calling Restrictions	An Outward or Extension Status Restricted caller cannot call 911. Assign an Allowed List with “911” to the restricted extensions.
Direct-Line Console	The E911 Adjunct Alarm lights the Attendant Alarm button if the alarm button is programmed.
Direct Station Selector	The LED next to the E911 Adjunct Alarm port lights when there is an Adjunct Alarm.
Extension Status	A user at an extension that is Extension Status restricted cannot make a 911 call. Assign an Allowed List with “911” to the restricted extensions.
Forward/Follow Me	You cannot use an E911 Adjunct trunk to forward a call.
Hotline	The E911 Adjunct Alarm extension is automatically designated as a Hotline extension and appears under “Hotline,” as well as under the E911 Adjunct Alarm extension on the printed reports. If there is an Adjunct Alarm condition, the system operator is automatically called. When answering this call, the operator hears silence.
Labeling	Trunks assigned to the E911 Adjunct are labeled as “E911” by the system. A tip/ring extension assigned to the E911 Adjunct Alarm is labeled as “E911 OS.”
Music-On-Hold	You cannot assign a Music-On-Hold extension to be an E911 Partition or E911 Adjunct. You cannot assign a Music-On-Hold trunk to be an E911 Partition or E911 Adjunct trunk.
Night Service	A Night Service Restricted caller cannot dial “911.” Program a Night Service Emergency Number for 911.

Personal Lines	<p>A trunk programmed for E911 Adjunct use cannot be assigned as a Personal Line.</p> <p>If you program a Personal Line as an E911 Adjunct trunk, the Personal Line is removed from the extension to which it was previously assigned.</p> <p>If you select a Personal Line and dial "911," the system bypasses the E911 service.</p>
Paging	<p>You cannot assign a Paging trunk to be an E911 Partition or E911 Adjunct trunk.</p> <p>You cannot assign an E911 Partition or E911 Adjunct trunk to be a Paging trunk.</p>
Pickup	<p>You can assign a line used for E911 Partition or E911 Adjunct to a Pickup button. You can pick up an E911 call placed on Hold.</p>
Pools	<p>A 911 call placed from a pool button or by dialing a pool code selects a line from that pool and does not use E911 service.</p> <p>You cannot assign a trunk used for an E911 Adjunct to a pool. You can assign a pool trunk to be a partition trunk, and you can assign a partition trunk to be a pool trunk.</p> <p>You cannot assign a pool trunk to be an E911 Adjunct trunk.</p>
Queued Call Console	<p>The E911 Adjunct Alarm lights the Attendant Alarm button.</p>
Remote Access	<p>You can make 911 calls by using Remote Access when the E911 trunks are set for Partition and the barrier codes are Unrestricted or Toll Restricted. However, the calls are routed through the main pool. You cannot make 911 calls when the barrier codes are Outward Restricted.</p> <p>You cannot use Remote Access to dial E911 Adjunct trunks.</p>
SMDR	<p>If Allow-11 is enabled and the ARS access code is "9," the SMDR report shows "11" when "911" is dialed and "911" when "9-911" is dialed.</p>
System Renumber	<p>When a system is renumbered, the extensions and trunks remain in the E911 partition to which they were assigned. However, the dial plan numbers may change.</p> <p>If you use the E911 Adjunct option, you may have to add changed and new extension numbers to the adjunct's data base so it sends the correct information to the Emergency Service.</p>
Touch-Tone or Rotary Signaling	<p>If Allow-11 is enabled and the ARS access code is "9," you cannot use "11" to dial star codes. Dialing "11" for star codes is used for rotary-dial lines.</p>
Transfer	<p>When a call is transferred to 911, the system uses the transferring extension as the call location, not the originating extension.</p>

UDP Features

You can direct 911 calls over a private network by prepending partition or system prefixed digits with the ARS access code for the remote MERLIN MAGIX system. Incoming private network calls are sent over the main pool.

Send 911 calls over a private network only when the systems are at the same location and when the main pool's trunks' ALI provides enough information for a rapid response from Emergency Service.

E911 Error Codes

Three new error codes have been created for E911 service. See "E911 Service Error Codes" on page 33 for a description of each error code. See the "Maintenance and Troubleshooting" chapter of the *MERLIN MAGIX Integrated System Release 1.5 Installation, SPM, Maintenance, and Troubleshooting Supplement* for detailed information. The new error codes are:

- 0802: E911 OVERFLOW
- 4001: E911 ADJUNCT OOS
- 8411: E911 NO OUTGOING SEIZURE

Allowed Lists and Disallowed Lists Enhancements

Two enhancements for Allowed Lists are supported in Release 1.5 of the MERLIN MAGIX system:

- Number of digits has been increased.
- One-to-one wild card character matching is supported.

14-Digit Allowed Lists

The number of digits possible in the Allowed Lists has increased from 7 to 14 digits. Now you have more control when equal access codes are used, for example, 1010xxx-1-xxx-xxx-xxxx. You can allow Outward or Toll Restricted users to dial equal access codes to specific area codes and/or exchanges.

Wild Card for Allowed Lists

Now you can use one-to-one wild card character matching in Allowed List entries. Press Hold to enter a wild card character. The character appears as a "p" on telephone displays and in the printed report.

Consider the following when you use wild card characters in Allowed and Disallowed Lists:

- Disallowed List entries can be from 1 to 12 characters in length.
- Before a dialed number is compared to an entry in the Allowed List, the leading "1" is dropped. Thus, an Allowed List entry of "p67" (where "p" is the wild card character) matches dialed numbers of "267," "367," etc., but not "167."

- When a dialed number is compared to an entry in the Disallowed List, the leading “1” is *not* dropped. Thus, a Disallowed List entry of “p67” matches dialed numbers of “167” and “267,” “367,” etc.
- You cannot use a wild card character to match a * or # in an Allowed List or a Disallowed List.
- A wild card character in any position in a Disallowed List entry matches dialed number 0–9 when the dialed number is not part of a star code.

NOTE ► A star code is a central office code used to perform a specific function, such as *70 to disable Call Waiting.

- A wild card character in positions 2–13 in an Allowed List entry matches dialed numbers 0–9 when the dialed number is not part of a star code.
- A wild card character in position 1 in an Allowed List entry matches dialed number 0 and 2–9.
- If a star code is an entry in an Allowed or Disallowed List, that entry should only have the star code because anything entered in the list after the star code is ignored by the system. The following entries are valid:

- *67
- *69
- *70
- *200

The following are examples of entries that should not be placed in the Allowed or Disallowed List:

- *67201
- *69914
- *702125551212
- *2004319255

- If a star code is an entry in an Allowed or Disallowed List and a dialed number matches the star code, the Allowed/Disallowed process is reset after the match is done. Any digits dialed after the star code are compared to entries in the Allowed/Disallowed Lists for restriction processing.

For example: *67 and 420 are two entries in an Allowed List. If someone at an Outward Restricted extension dials *67 420-1234, the call succeeds. If the person at the same Outward Restricted extension dial *67 431-1234, the call fails (431 is not in the Allowed List). If the person at the same extension dials 420-1234, the call succeeds. This type of processing also applies to Disallowed Lists.

- Disallowed List 7 has a new default entry. Entry 9 has a value of “ppp976” to support the 10-digit dialing available in Release 1.5. When you upgrade from a MERLIN MAGIX Release 1.0 system or from a MERLIN LEGEND system to a MERLIN MAGIX Release 1.5 system, you must add this new entry to Disallowed List 7 during conversion.

WinSPM 4.0

WinSPM 4.0 software offers an automatic conversion program via the DOS-emulator version of SPM and flow control for the programming serial port.

Conversion Using WinSPM 4.0

WinSPM 4.0 contains a new upgrade feature that converts previous releases of the MERLIN MAGIX and MERLIN LEGEND systems to later releases, including Release 1.5 of the MERLIN MAGIX system. With WinSPM 4.0, you can take a backup file of an earlier release of a system and have the file automatically mapped into a version that a later release can use.

NOTE ► Releases 1.4i and BRI of the MERLIN LEGEND Communications System cannot be upgraded.

To use this automatic conversion, you must have a PC loaded with WinSPM 4.0 connected to the System Administration port on the processor module; you cannot convert by using the 4424LD+ or MLX-20L system programming console.

NOTE ► If you are upgrading from a MERLIN LEGEND system to a MERLIN MAGIX system and the MERLIN LEGEND configuration contains modules that are not supported in the MERLIN MAGIX system (such as analog multiline telephone modules), the conversion is blocked. You must remove the unsupported modules, upgrade the system software, and program the MERLIN MAGIX system from scratch.

Follow these steps to convert the backup file of a previous release to Release 1.5 of the MERLIN MAGIX system:

1. Type A +U to start the conversion function from the SPM Main Menu.
2. Select the backup file to convert from (either on a floppy disk or on the PC's hard drive).
3. Select the system to convert to (MERLIN MAGIX).
4. Select the release to convert to.
5. Select a filename to convert to, or create a new file to convert to (either on a floppy disk or on the PC's hard drive).

On the hard drive, the file is placed in the BACKUP directory under the SPM directory. On the floppy disk, the file is placed in whatever directory is currently being used.

NOTE ► Once the conversion process starts, you cannot stop it until it finishes.

6. After the new processor module (CKE4 or CKE5) is installed as necessary, or the system software has been upgraded, start the Restore procedure and select the file you converted to.

7. After the system has been restored, you must manually do the following:
 - Add ppp976 to Disallowed List 7.
 - Check the Special Numbers Table in the Automatic Route Selection to make sure that 911 has been removed and that the other numbers are intact.
 - Set up E911 Service for E911 Partition or E911 Adjunct (see “Enhanced 911 Service” on page 13).

As you follow the procedure, WinSPM prompts you for the necessary entries, such as “Please select file name to convert to, or select NEW FILE to create a new file on selected drive.”

Flow Control

WinSPM 4.0 provides flow control for the programming serial port. The flow control can be turned on or off. The factory setting is off.

Automatic Configuration of the MERLIN Messaging System

To ease the amount of effort during a system installation, Release 1.5 of the MERLIN MAGIX system can automatically configure a voice mail system when Release 2.0 of the MERLIN Messaging System is housed in one of the system’s carriers. This capability takes the current data on the MERLIN MAGIX system and passes it to the MERLIN Messaging System, thereby allowing the System Administrator to configure the messaging system without having to manually enter a lot of data. Although primarily intended for installation, the automatic configuration can be used at any time.

You can start the automatic configuration by using the normal system programming tools: the 4424LD+ or MLX-20L system programming console, or the DOS Emulator part of WinSPM.

There are two forms of the automatic configuration: the Default Configuration and the Custom Configuration.

Default Configuration

The Default Configuration automatically sets up the Voice Mail Calling Group and the coverage group that receives the voice mail. The MERLIN Messaging System clears all current extension mailbox information and sets up mailboxes for those extensions that the MERLIN MAGIX system indicates should have them.

The MERLIN MAGIX system does the following:

- Sets up Calling Group 32 as the Voice Mail Calling Group with extension 7929.
 - Removes all current members and parameters of the group.

Release Notes

- Assigns all the ports on the messaging system to Calling Group 32. The calling group is assigned as an Integrated VMI and Linear Hunt group.
- Makes Calling Group 32 the receiver for Coverage Group 30. If Coverage Group 30 has been programmed to go to another calling group, that programming is removed and coverage is reassigned to extension 7929.
- Sets up all the MERLIN Messaging System ports for rotary-enabled dialing. This allows the out-of-band dialing required by the MERLIN Messaging System.
- Removes any previously assigned lines from Calling Group 32.
- Removes all members from Coverage Group 30.
- Assigns all multiline extensions to Coverage Group 30 (including ETR extensions not programmed for tip/ring operation). Extensions assigned to Coverage Group 30 receive mailboxes from the messaging system.

NOTE ► Tip/ring, MFM, Queued Call Console (QCC), and tip/ring extensions on ETR modules are not assigned to this coverage group. These extensions become transfer-only extensions.

- Sends all the Calling Group 32 and Coverage Group 30 information to the messaging system.
- Sends extension labels to the messaging system, thereby allowing dialing by name. (No labels are sent for the MERLIN Messaging System extensions.)
- Sends system date and time.

The MERLIN Messaging System does the following:

- Clears all extension mailbox information.
- Creates mailboxes for all extensions in Coverage Group 30.
- Sets up tip/ring extensions, MFM extensions, QCC extensions, and ETR extensions programmed for tip/ring operation as transfer-only extensions.
- Sets up the directory based on the label information received, thereby allowing for dialing by name.
- Synchronizes its time and date with that sent by the MERLIN MAGIX system.
- Sets the number of digits in the dial plan to the maximum length of an extension sent by the MERLIN MAGIX system.

Custom Configuration

The Custom Configuration of the automatic configuration function gives the System Administrator more flexibility in setting up or updating the MERLIN Messaging System. (The Custom Configuration is called "Update" on the system programming screens.) Although the Custom Configuration performs many of the same tasks as the Default Configuration, it is different in significant ways:

- Coverage Group 30 is not set up automatically. The current members of the group remain.
- Extension mailbox information is not cleared.
- The System Administrator can keep or delete extension mailboxes that do not match the extensions sent by the MERLIN MAGIX system.
- If a sent extension has a mailbox, that mailbox remains intact.

During the Custom Configuration, the MERLIN MAGIX system does the following:

- Assigns the MERLIN Messaging System ports to Calling Group 32.
- Sets up all the MERLIN Messaging System ports for rotary-enabled dialing. This allows the out-of-band dialing required by the MERLIN Messaging System.
- Sends all current extensions in Coverage Group 30 to the MERLIN Messaging System, indicating that they should receive mailboxes.
- Sends all other extensions, indicating that these should be transfer-only extensions. (MERLIN Messaging System extensions are not sent as transfer-only extensions; they receive no mailbox of any kind.)
- Optionally, sends all labels to the MERLIN Messaging System (except the MERLIN Messaging System labels).
- Sends the system time and date.
- Sends to keep or delete extensions that do not match the system dial plan.

During Custom Configuration, the MERLIN Messaging System does the following:

- Creates mailboxes for new extensions.
- Leaves mailboxes intact for existing extensions.
- Deletes mailboxes for extensions no longer on the system when the System Administrator has chosen to delete extensions that do not match the system dial plan.
- If chosen by the System Administrator, updates the directory entries from the labels sent by the MERLIN MAGIX system.
- Updates the time and date sent by the MERLIN MAGIX system.

Automatic Updating of Time and Date

The MERLIN MAGIX Release 1.5 system sends the time and date to Release 2.0 and later of the MERLIN Messaging System every day at 1:00 a.m. As necessary, the MERLIN Messaging System changes its time and date to match the MERLIN MAGIX system. The MERLIN MAGIX system also sends the time and date when the Automatic Daylight Savings Time feature changes the system time and when the MERLIN Messaging System resets during an automatic audit.

Considerations and Constraints

Automatic configuration of the messaging system requires Release 1.5 or later of the MERLIN MAGIX system and Release 2.0 or later of the MERLIN Messaging System.

If more than one MERLIN Messaging System resides in the MERLIN MAGIX system, the automatic configuration applies only to the first MERLIN Messaging System. The other messaging system(s) must be manually programmed.

In a private network, automatic configuration applies only to the local MERLIN Messaging System.

The automatic configuration cannot be done:

- in Surrogate mode.
- if the MERLIN Messaging System is not in the MERLIN MAGIX system.
- while the MERLIN MAGIX system is resetting.
- if the MERLIN Messaging System has been busied out.

Custom Configuration does not work when:

- Calling Group 32 is not an Integrated VMI group.
- Coverage Group 30 does not have Calling Group 32 as its receiver.

While a Default or Custom Configuration is running, it cannot be interrupted.

Do not change the parameters for Calling Group 32. You can add or subtract members manually or by using the Custom Configuration.

You can manually add or delete mailboxes from Coverage Group 30, but you should run Custom Configuration afterwards to resynchronize the system and the messaging system.

Use the Default Configuration after a frigid start occurs.

After a board renumbering occurs, check to see how much the MERLIN MAGIX system and the MERLIN Messaging System have been affected. Either manually adjust the MERLIN Messaging System or run the Custom Configuration.

If you add a new module to the system, you must add the new extension numbers into Coverage Group 30 and update the extension labels before you can run a Custom Configuration.

Backup and Restore functions may cause the system and the messaging system to get out of sync. You can fix this manually or run one of the automatic configurations, depending on the amount of differences.

System Programming

Although the programming procedures for the Default and Custom Configurations are similar, there are differences.

Default Configuration

To activate the Default Configuration, follow the procedure for the System Programming Console or for the DOS Emulator. While the procedure is running, all softkeys are disabled.

System Programming Console

System→Config M.Msg→Default Configuration→Yes

DOS Emulator

System→O →1 →3

Custom Configuration

To activate the Custom Configuration, follow the procedure for the System Programming Console or for the DOS Emulator. Activating the Custom Configuration includes making a decision to keep or delete non-matching extensions.

Before you activate the Custom Configuration, you must busy out the MERLIN Messaging System. While the procedure is running, all softkeys are disabled.

System Programming Console

System→Config M.Msg→Update with labels OR Update without labels→Keep OR Delete→If Delete chosen, Yes

DOS Emulator

System→O →1 or 3 →3 or 4 →If Delete chosen, 9

Feature Interactions

Calling Restrictions	You must manually change the restrictions for the outcalling port after you use the automatic configuration.
Coverage	<p>During a Default Configuration, multiline extensions are removed from their current coverage groups and assigned to Coverage Group 30.</p> <p>During a Default Configuration, all Group Cover buttons for Coverage Group 30 are removed.</p> <p>During a Default Configuration, QCC coverage for Coverage Group 30 is removed.</p> <p>A member of Coverage Group 30 can have primary and secondary receivers.</p>
Group Calling	<p>During the Default Configuration, Calling Group 32 is set up as an Integrated VMI, Linear Hunt group on extension 7929.</p> <p>During the Default Configuration, Calling Group 32 is set up as the receiver for Coverage Group 30.</p> <p>If you manually change Calling Group 32 to anything other than an Integrated VMI group, you cannot use the Custom Configuration.</p> <p>If you manually change the receiver for Coverage Group 30, you cannot use the Custom Configuration.</p>
Personal Lines	All Personal Lines on MERLIN Messaging System ports are removed by a Default Configuration but are retained by a Custom Configuration.
Ringling Options	You must manually change ringing options on the MERLIN Messaging System ports.
System Renumbering	Perform a System Renumber before you run the automatic configuration.
Touch-Tone or Rotary Signaling	When you use the automatic configuration, all ports on the MERLIN Messaging System have rotary-enabled dialing.

Release 1.5 Upgrade Card

In Release 1.5 of the MERLIN MAGIX system, an Upgrade PCMCIA card is available which allows you to upgrade the entire system software or to upgrade only the firmware on the modules, thereby leaving the system programming intact. See the *MERLIN MAGIX Integrated System Release 1.5 Installation, SPM, Maintenance, and Troubleshooting Supplement* for complete instructions on using the Upgrade card.

Maintenance Enhancements

Release 1.5 of the MERLIN MAGIX Integrated System contains the following maintenance enhancements:

- Station Responding Test
- Touch-Tone Receiver Audit
- Viewing of serial numbers for certain modules
- Demand tests for the 100 DCD module
- New error codes for the Touch-Tone Receiver Audit and the E911 service

See the *MERLIN MAGIX Integrated System Release 1.5 Installation, SPM, Maintenance, and Troubleshooting Supplement* for further details on these maintenance enhancements.

Station Responding Test

Beginning in Release 1.5 of the MERLIN MAGIX system, you can run a Station Responding Test to check the connection between an extension and the system. When you select this test from the maintenance screen, the system sends a request to the telephone at that extension (station), asking for the telephone's classmark. You can request the Station Responding Test locally or remotely.

NOTE ► The Station Responding Test does not work for tip/ring devices because tip/ring devices do not have classmarks.

Touch-Tone Receiver Test

The Touch-Tone Receiver Test runs as an audit on the system. It is not a demand test but runs continuously in the background as a maintenance check. This test checks every touch-tone receiver (TTR) in the system modules, including those in the MERLIN Messaging System.

If a TTR fails the test, a permanent error is logged and the TTR becomes maintenance busy. If 50% or more TTRs become maintenance busy at the same time, another permanent error is logged, and the system alarm LED lights. The Touch-Tone Receiver Test itself does not maintenance busy out 50% or more TTRs.

When a maintenance-busy TTR is retested and passes the test, it is automatically placed back into service.

You can manually place a TTR into a maintenance busy state, and you can also manually restore it and place it back into service.

100 DCD Module Demand Tests

Four new demand tests have been added to the system to test the 100 DCD module.

Repeater Loopback Test

This test loops the T1 network back to the system. It combines a CSU loopback test with a testing of the channels assigned to the data ports.

Data-Channel Loopback Test

This test takes all the channels assigned to a particular data port and loops them towards the T1 network.

Data Terminal Loopback Test

This test loops the data received on one data port to the same data port. All 1's are transmitted to the channels assigned to the data port.

Data Port Local Loop Test

This test loops the data port back to the system. A test pattern is generated on all transmit data channels for the selected port. All receive T1 channels are monitored by the module to determine if the test pattern is being received back accurately.

Viewing Module Serial Numbers

You can view the serial numbers of the following modules in the Maintenance screens:

- Processor module
- 024-TDL
- 100 DCD
- 100R INA
- 412 LS-ID-TDL
- MERLIN Messaging System

New Error Codes

New error codes have been created for Release 1.5 of the MERLIN MAGIX system to support the operation of the Touch-Tone Receiver Audit and the E911 Service. See the *MERLIN MAGIX Integrated System Release 1.5 Installation, SPM, Maintenance, and Troubleshooting Supplement* for further details on these error codes.

Touch-Tone Receiver Audit Error Codes

Two error codes have been added for the Touch-Tone Receiver Audit.

1C08 BAD TTR

1C08 BAD TTR appears in the Permanent Error Log when the touch-tone receiver fails the internal Touch-Tone Receiver Test.

1C09 TTR BUSY-OUT EXCEEDS 50%

TTR BUSY-OUT EXCEEDS 50% appears in the Permanent Error Log when 50% or more TTRs have been busied out.

E911 Service Error Codes

Three error codes have been added for E911 service.

0802 E911 OVERFLOW

E911 OVERFLOW appears in the Permanent Error Log when one of the following has occurred:

- All lines assigned to E911 Partition or E911 Adjunct are busy or bad.
- No lines are assigned to E911 Partition or E911 Adjunct.
- No physical line is connected to the system, the network, or the E911 Adjunct.

4001 E911 ADJUNCT OOS

E911 ADJUNCT OOS appears in the Permanent Error Log when the E911 Adjunct has detected an error condition (such as the disconnection of the trunk cable). This error condition has caused an E911 Adjunct alarm, and the trunks connected to the E911 Adjunct are in the Trunk Maintenance Busy state.

8411 E911 NO OUTGOING SEIZURE

E911 NO OUTGOING SEIZURE appears in the Permanent Error Log when the system has tried to seize a trunk assigned either to E911 Partition or E911 Adjunct for a 911 call and cannot seize the trunk. The trunks assigned to the E911 Partition or to the E911 Adjunct go into a Trunk Maintenance Busy state.

Miscellaneous

As the result of ongoing system testing and the solving of customer problems, new knowledge about the MERLIN MAGIX system occurs. The information provided in the documentation of the system is also subject to change as testing of the system continues.

New Information

The following information does not currently exist in customer documentation.

Pools and DLCs

When a pool is created and new lines are added to the pool, the new lines are automatically added to any Direct-Line Console (DLC). If a feature has been programmed onto a line button needed for an added line, the feature is automatically removed from that button when the new lines are added.

SMDR and Timeout Period for Dialing

If a user does not dial the outgoing number within the programmed timeout period for dialing, not all the dialed digits appear on the SMDR report.

Talk Time

Talk time on the SMDR report appears as minutes and seconds (mm:ss), not as hours and minutes (hh:mm). Consequently, the maximum recorded time for a call is 59 minutes and 59 seconds.

MLX-20L Telephone and Personal Directory

Before you replace an MLX-20L telephone with another telephone, or before you move the MLX-20L telephone to another extension port on the system, you must delete the Personal Directory information on that extension port. Use the following system programming path to delete the Personal Directory information:

SysProgram→Exit→More→Labeling→Directory→Personal→Type extension no.→Type 0 and press Delete→Enter→Back

4424D+ and 4424LD+ Telephones and Drop and Inspect Buttons

When a 4424D+ or 4424LD+ telephone is programmed as a Direct-Line Console (DLC), a programmable Drop button and a programmable Inspect button are assigned as indicated in Figure 3.

<input type="checkbox"/> 21 <input type="checkbox"/>			<input type="checkbox"/> 23 <input type="checkbox"/>	<input type="checkbox"/> 25 <input type="checkbox"/>	Drop	Inspect	<input type="checkbox"/> 27 <input type="checkbox"/>
<input type="checkbox"/> 5 <input type="checkbox"/>			<input type="checkbox"/> 10 <input type="checkbox"/>	<input type="checkbox"/> 15 <input type="checkbox"/>			<input type="checkbox"/> 20 <input type="checkbox"/>
<input type="checkbox"/> 4 <input type="checkbox"/>			<input type="checkbox"/> 9 <input type="checkbox"/>	<input type="checkbox"/> 14 <input type="checkbox"/>			<input type="checkbox"/> 19 <input type="checkbox"/>
<input type="checkbox"/> 3 <input type="checkbox"/>			<input type="checkbox"/> 8 <input type="checkbox"/>	<input type="checkbox"/> 13 <input type="checkbox"/>			<input type="checkbox"/> 18 <input type="checkbox"/>
<input type="checkbox"/> 2 <input type="checkbox"/>			<input type="checkbox"/> 7 <input type="checkbox"/>	<input type="checkbox"/> 12 <input type="checkbox"/>			<input type="checkbox"/> 17 <input type="checkbox"/>
<input type="checkbox"/> 1 <input type="checkbox"/>			<input type="checkbox"/> 6 <input type="checkbox"/>	<input type="checkbox"/> 11 <input type="checkbox"/>			<input type="checkbox"/> 16 <input type="checkbox"/>

Figure 3. 4424D+/4424LD+ DLC Button Assignment

You can reprogram Drop and Inspect buttons onto other buttons on the telephone. If you add more than 22 lines to the DLC, the line assignments overwrite the Drop and Inspect button assignments. You can also overwrite the Drop and Inspect buttons by programming features on these line buttons.

Errata

The following items are information changes to the existing documentation.

Account Code Entry/Forced Account Code Entry

Change the following for the Account Code Entry/Forced Account Code Entry feature in the *MERLIN MAGIX Release 1.0 Feature Reference*:

- Replace the last two sentences of the first paragraph in the Description section on page 28 with the following: “For outgoing calls, you can enter an account code before or during a call or not at all. For incoming calls, you can enter an account code after you answer the call or not at all. For both incoming and outgoing calls, you can change, correct, or cancel an account code while the call is in progress.”
- On page 30 under “Queued Call Consoles,” in the Telephone Differences section, change the last sentence of the first paragraph to “Then select a Call button on which to make the call.” Remove the second paragraph.

Conference and QCCs

On page 154 of the *Feature Reference*, change the last sentence of the first paragraph of the Queued Call Console Feature Interaction for the Conference feature to read: “Since all participants are on one Call button, the operator can drop only the last party added to the conference by first pressing the Drop button and then the Call button used to originate the conference.”

Copying Extension Features

You cannot copy Shared System Access or Primary Coverage buttons from one telephone to another. To correct this in *System Programming*, please remove the entries for Coverage–Primary and Shared System Access buttons in Table 4-2, beginning on page 4-13.

Direct Station Selector and Telephone Programming

On page 227 of the *Feature Reference*, under the Considerations and Constraints section of the Direct Station Selector feature, this paragraph appears: “If a local extension is busy because features are being assigned through system or centralized telephone programming, the red LED next to the associated DSS button is on to indicate the busy condition.”

Add the following paragraphs underneath the one quoted above:

“When you enter centralized telephone programming or extension programming to program the telephone you are on, the LEDs on the DSS(s) attached to the telephone turn off, except for the last two rows of buttons on the DSS(s). This also occurs when you program another telephone through centralized telephone programming: the LEDs on the DSS(s) attached to your telephone turn off, except for the last two rows of buttons.”

“When a telephone is being programmed by someone at the system programming console, all the LEDs (including the last two rows) turn off on the DSS(s) attached to the telephone being programmed.”

Headset Options and the Direct Station Selector

When you have Headset Status activated and have a Headset Hang Up button on the telephone you are using (manually programmed on a DLC, factory-set assignment on a QCC), if you press a button on the DSS for an extension, instead of dialing the extension, you send a manual signal. If you want to dial an extension by using the DSS button, you must manually select the System Access or call button, receive a dial tone, and press the corresponding DSS button for that extension.

Place the paragraph above as a Headset Options Feature Interaction for the following features in the *Feature Reference*:

- Auto-Dial (page 60)
- Direct-Line Console (page 213)
- Direct Station Selector (page 229)
- Queued Call Console (page 550)
- Signal/Notify (page 614)

Also, place the paragraph in the Feature Interactions section of the Headset Options feature (starting on page 362) for each of the features listed above.

Headset Options and Headset Hang Up

The following paragraph appears before the Note on page 358 of the *Feature Reference*:

“To give control of headset/handset operation to an MLX telephone user who has a Headset Hang Up button, a Headset Status button can also be programmed, as described in the next section. On a telephone or console with a Headset Hang Up button but without a Headset Status button, headset operation is always on.”

Please correct the first sentence of this paragraph to read: “To give control of headset/handset operation to a multiline 4400-Series or MLX telephone user who has a Headset Hang Up button, a Headset Status button can also be programmed, as described in the next section.”

Hold and 4400 Telephone

Add the following sentence under “4400 and Single-Line Telephones” in the Telephone Differences section of the Hold feature, found on page 368 of the *Feature Reference*: “On a 4400 telephone, if you retrieve a call from hold and want to place it on hold again, you must press the Flash button twice.”

Inspect Description

Add the following to the Description section of the Inspect feature on page 380 of the *Feature Reference*:

“On a system programming console (4424LD+ or MLX-20L telephone only), you can use Inspect to view the entries you save or to check a value already programmed for a feature. This helps when you are modifying features. Also use Inspect when you program sequential extensions or lines to verify the last number programmed. See Chapter 1 of *System Programming* for more details about using the Inspect feature on the system programming console.”

Inspect and QCCs

On page 381 of the *Feature Reference*, add the following note after the first paragraph for “Queued Call Consoles” in the Telephone Differences section for the Inspect feature.

NOTE ► You cannot assign a Shared Personal Line or a Shared System Access button to a QCC.

Primary Rate Interface and Remote Call Forward

Remove the first sentence, “A PRI line that has been programmed for routing by dial plan cannot have Remote Call Forwarding allowed” from the Feature Interaction for Forward/Follow Me on page 515 of the *Feature Reference*.

Service Observing and 4400-Series Telephones

Add the following note under the paragraph that follows Table 39 on page 601 of the *Feature Reference*.

NOTE ► When a call comes into an observed extension, the LED next to the Mute button on the Service Observer's MLX telephones turns on. If the Service Observer is using a 4400-Series telephone, the LED next to the Speaker button flashes when a call comes into an observed extension, since there is no separate Mute button.

Add the following sentence under "4400-Series Telephone" in the Telephone Differences section on page 605: "When a call comes into an observed extension, the LED next to the Speaker button on the Service Observer's 4400-Series telephone flashes."

Add the following sentence under "Other Multiline Telephones" in the Telephone Differences section on page 605: "When a call comes into an observed extension, the LED next to the Mute button on the Service Observer's MLX telephone turns on."