AVAYA
communication

MERLIN MAGIX™ Integrated System

Pocket Reference
Release 2.0 or Earlier

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. See Appendix A, "Customer Support Information," in Feature Reference for important information.

Avaya Web Page

The world wide web home page for Avaya is http://www.avaya.com.

Heritage Statement

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Preventing Toll Fraud

Toll Fraud is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or working on your company's behalf). Be aware that there is a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

Avaya Fraud Intervention

*If you suspect that you are being victimized by toll fraud and you need technical assistance or support, call the Avaya Customer Care Center at **1 800 628-2888**.*

Providing Telecommunications Security

Telecommunications security of voice, data, and/or video communications is the prevention of any type of intrusion to, that is, either unauthorized or malicious access to or use of, your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or working on your company's behalf. A "malicious party" is anyone, including someone who may be otherwise authorized, who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- *Utilization (of capabilities special to the accessed equipment)*
- *Theft (such as, of intellectual property, financial assets, or toll-facility access)*
- *Eavesdropping (privacy invasions to humans)*
- *Mischief (troubling, but apparently innocuous, tampering)*
- *Harm (such as harmful tampering, data loss, or alteration, regardless of motive or intent).*

Be aware that there may be a risk of unauthorized or malicious intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company, including, but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs.

Your Responsibility for Your Company's Telecommunications Security

The final responsibility for securing both this system and its networked equipment rests with you—an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources, including, but not limited to:

- *Installation documents*
- *System administration documents*
- *Security documents*
- *Hardware-/software-based security tools*
- *Shared information between you and your peers*
- *Telecommunications security experts*

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure your:

- *Avaya provided telecommunications system and its interfaces*
- *Avaya provided software applications, as well as their underlying hardware/ software platforms and interfaces*
- *Any other equipment networked to your Avaya products*

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 Feature Reference.

Canadian Department of Communications (DOC) Interference Information

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

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A préscrites dans le réglement sur le brouillage radioélectrique édicté par

Contents

Release 2.0 Enhancements
(January 2001)

Release 2.0 includes all Release 1.5 functionality, plus the enhancements listed below.

- *Enhanced CSTA services to provide more flexibility for lines and features and to provide new services and events to help support a Customer Relationship Management application*

- *More TSAPI events and services that aid the application in real-time reporting and routing*

- *New current delay announcement unit (DAU) functionality through the MERLIN Messaging System Release 2.5 and later. There is a new system programming option added to associate an announcement number with a particular delay announcement number.*

- *Support for the TransTalk 9040, a digital wireless telephone with programmable buttons, on 412 LS-TDL and 024 TDL modules for Release 1.5 and later systems, and on 016 ETR modules for all releases.*

- *Support for the conversion feature that allows a user to take a backed-up configuration of an earlier release of a MERLIN LEGEND system or MERLIN MAGIX system and have the file automatically mapped into a version that the new release can use. This functionality is provided as part of the WinSPM software.*

- *The user can select a backup file, select the desired product to CONVERT TO, and then select the Release number of that product. The user is prompted for all these inputs; choices for upgrades are based on the version of the backup file chosen to convert. In Release 2.0 of the MERLIN MAGIX system, there is an upgrade path from prior releases of MERLIN MAGIX and MERLIN LEGEND systems to MERLIN MAGIX Release 2.0.*

- *Display integration with MERLIN Messaging System Release 2.5 and later that allows users with display telephones to view basic voice mail message information such as the number of New and Old Messages.*

- *MERLIN MAGIX system enhanced functionality that forwards Caller ID information to the MERLIN Messaging system for use with other messaging system features.*

Release 1.5 Enhancements
(June 1999)

Release 1.5 includes all Release 1.0 functionality, plus the enhancements listed below.

- **100 DCD Module**
  The 100 DCD module provides 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 the 100D and 100R INA modules, including the ability to use T1 or PRI configuration. As such, the new module counts toward the combined system total of three 100D, 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 100D 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 Options for 100R INA and 100 DCD Modules**
  The 100R INA and 100 DCD modules use many of the same programming options as the 100D module. However, the 100R INA module has two new programming options: Activate/Deactivate the On-Board CSU and Channel Selection. The 100 DCD module has the same programming options, plus two additional ones: Activate/Deactivate the DSU and Programming Data Port Parameters.

- **Tests for the 100R INA and 100 DCD Modules**
  Three new Tests apply to both the 100R INA and 100 DCD modules:
  — Line Loopback Test
  — Payload Loopback Test
  — Bit Error Rate Test (BERT)

  Three other tests have been added specifically for the 100 DCD module:
  — Data-channel Loopback Test
  — Data Terminal Loopback Test
  — Data Port Local Loop Test

- **Automatic Daylight Savings Time Feature**
  This new 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.

- **Automatic Route Selection Feature Enhancement**
  Because of the changes in facilities and dial plans across the USA and Canada, Release 1.5 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*

■ ***Allowed Lists and Disallowed Lists Feature Enhancement***
Two enhancements for Allowed/Disallowed Lists are supported in Release 1.5:

- *Maximum number of digits in Allowed Lists has been increased from 7 to 14.*

- *One-to-one wild card character matching is supported.*

With the increase number of digits in Allowed Lists, you can allow Outward or Toll Restricted users to dial equal access codes to specific area codes and/or exchanges, for example, 1010xxx-1-xxx-xxx-xxxx.

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

■ ***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.

■ ***Automatic Configuration of the MERLIN Messaging System***
To ease the amount of effort during a system installation, MERLIN MAGIX Release 1.5 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.

■ ***Release 1.5 Upgrade Card***
In Release 1.5, 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.

■ ***Maintenance Enhancements***
In addition to the new tests for the 100R INA and 100 DCD modules described earlier, Release 1.5 provides the following maintenance enhancements:

- ***Station Responding Test***. *Beginning in Release 1.5, 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. This test does not work for tip/ring devices because they do not have a classmark.*

- ***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.

— ***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*

— ***E911 Service Error Codes***. *Three new error codes have been added for E911 service.*
  — *E911 OVERFLOW (Error Code 0802)*
  — *E911 ADJUNCT OOS (Error Code 4001)*
  — *E911 NO OUTGOING SEIZURE (Error Code 8411)*

■ *Support for the TransTalk 9031 and 9040 telephones, digital wireless telephones with programmable buttons, on 016 ETR modules.*

Design Benefits

Modular components *allow easy, cost-effective growth in both size and function.*

Menu-driven system programming *maintains the customer's command of business operations.*

Built-in 1200/2400 bps modem *allows fast access to the system by customers, Avaya personnel, or authorized dealers from a remote location for system programming and maintenance.*

Flexible mode of operation *saves upgrade costs by allowing system configuration in one of three modes: Hybrid/PBX, Key, and Behind Switch.*

Connectivity to other systems *in the Behind Switch mode optimizes existing resources by allowing the system to work as part of another MERLIN MAGIX Integrated System, MERLIN LEGEND Communications System, System 25, System 75, System 85, DEFINITY 75/85, or other communications system. The control unit can connect to another system's control unit via either an off-premises telephone (OPT) line or an analog or digital tie trunk.*

Digital 2.048MHz bus *supplies a 64Kbps channel on each of the 216 time slots.*

68EC020 Motorola CPU *running at 16MHz with zero wait states provides fast system performance.*

Memory data retention *saves time by ensuring that system and extension programming information is retained for five (5) days, depending on the system configuration, in case of power failure or system shutdown.*

Integrated voice and data capabilities *allow users to talk while transmitting data at speeds up to 64Kbps.*

DS1 interface *can be configured for connection of either T1 or PRI for basic call control with the 4ESS or 5ESS PRI service specifications.*

Basic Rate interface (BRI) S/T protocol *supports premier 4400-Series and digital multiline (MLX) telephones with superior display capabilities and supports the ISDN terminal adapter Data Module for the connection of adjuncts.*

Environmental Specifications

The control unit requires a regulated environment and can be located in any room or closet that is temperature-controlled and clean. Do not mount the control unit where it will be exposed to direct sunlight.

In addition, the control unit should not be co-located with air conditioning or ventilation units, compressors, fans and blowers, heaters, arc welders, or other machinery that produces electrical interference.

The control unit is mounted on an Avaya pre-drilled backboard.

Once the control unit is installed, it is important to keep the control unit site clear of hazards, such as stacked paper or boxes, that block ventilation. Installing any machinery in the vicinity of the control unit should be avoided. If any pollution-producing work (such as sanding or spray painting) is to be done in the area, care should be taken to protect the unit.

The following table gives the environmental specifications for the control unit.

Control Unit

Fully loaded basic carrier

Weight:	*45 lb. (20.4 kg)*
Dimensions:	*11 inches wide x 19 inches high x 11 inches deep* *(27.9 cm x 48.3 cm x 27.9 cm)*

Fully loaded 2-carrier system
(basic carrier plus 1 expansion carrier)

Weight:	*90 lb. (40.8 kg)*
Dimensions:	*22.5 inches wide x 19 inches high x 11 inches deep* *(57.2 cm x 48.3 cm x 27.9 cm)*

Fully loaded 3-carrier system
(basic carrier plus 2 expansion carriers)

Weight:	*135 lb. (61.2 kg)*
Dimensions:	*34 inches wide x 19 inches high x 11 inches deep* *(86.4 cm x 48.3 cm x 27.9 cm)*

Mean Time between Failures

(mean/average time the system is expected to operate before any type of failure occurs)

MTBF without telephones					
Construct: 10 lines X 20 extensions			*Construct: 20 lines X 50 extensions*		
MERLIN LEGEND using MLX modules	*MERLIN MAGIX using TDL modules*	*% MERLIN MAGIX Improved over MERLIN LEGEND*	*MERLIN LEGEND using MLX modules*	*MERLIN MAGIX using TDL modules*	*% MERLIN MAGIX Improved over MERLIN LEGEND*
11.86 Years	*17.42 Years*	*47%*	*13.92 Years*	*16.31 Years*	*17%*

MTBF with telephones					
Construct: 10 lines X 20 extensions			Construct: 20 lines X 50 extensions		
MERLIN LEGEND using MLX 10D telephones	MERLIN MAGIX using 4412D+ telephones	% MERLIN MAGIX Improved over MERLIN LEGEND	MERLIN LEGEND using MLX 10D telephones	MERLIN MAGIX using 4412D+ telephones	% MERLIN MAGIX Improved over MERLIN LEGEND
3.53 Years	4.14 Years	17%	1.88 Years	1.91 Years	2%

Backboard Mounting Hardware Requirements

This refers to the types of wall construction to which the backboard will be attached.

Type of material	Mounting Hardware
Wood surface	Wood screws
Concrete surface, brick, cinder block	Masonry anchors
Plaster, plasterboard	Toggle bolts
Sheet-metal surface	Sheet-metal screws

Hardware has a combined pullout force of 650 lb. (294.8 kg). When mounting to sheet-metal walls, attach to structural members.

Location

Within 5 feet (1.5 m) of dedicated AC power outlet (1 plug per carrier).

Within 1000 cable feet (304.8 m) of telephones.

Heat Dissipation

Fully loaded basic carrier	500 Btu/hr (35 cal/sec)
Fully loaded 2-carrier system	1000 Btu/hr (70 cal/sec)
(basic carrier with one expansion carrier)	
Fully loaded 3-carrier system	1500 Btu/hr (105 cal/sec)
(basic carrier plus two expansion carriers)	

Power Requirements

Basic carrier 117 VAC	60 Hz -15% to 10% 5.4A
2-carrier 117 VAC	60 Hz -15% to 10% 10.8A
3-carrier 117 VAC	60 Hz -15% to 10% 16.2A

Temperature/Humidity Range

40°–104°F (4°–40°C)

20%-80% relative humidity

Ventilation Clearances

1 inch (2.5 cm) on right and left sides

Radio Frequency Interference, Tolerance

1.0 V/m

⚠ CAUTION:

■ *For the control unit, do not use an AC outlet that is controlled*

by a wall switch or some other switch.

- *Use an approved ground (AC receptacle for 3-prong plug).*
- *Do not install the control unit outdoors.*
- *Do not place the control unit near extreme heat (furnaces, heaters, attics, or direct sunlight).*
- *Do not expose the control unit to devices that generate electrical interference (such as arc welders or motors).*
- *Do not place anything on top of carriers.*
- *Do not install the control unit under any device that may drip fluid, such as an air conditioner.*
- *Do not expose the control unit to moisture, corrosive gases, dust, chemicals, spray paint, or similar materials.*

Power and Grounding

Proper power and grounding are essential for correct and safe functioning of the system.

Power Specifications

The system control unit plugs into a 117-VAC outlet. To avoid accidental disconnection of the system, this outlet should not be controlled by a wall switch.

Each carrier unit requires its own power supply. Each power supply requires a maximum current of 5.4 amps. Therefore, if expansion carrier units are added to the system, extra AC outlets may be needed.

Grounding Requirements

Proper grounding of the installation site protects the system against the following:

- *Lightning*
- *Power surges*
- *Power crosses on outside lines/trunks*
- *Electrostatic discharge (ESD)*

The local telephone company is responsible for providing protection of outside lines/trunks at the entrance to the site. The protection should consist of the following:

- *Carbon blocks or gas discharge tubes connected to an approved ground*
- *Adequate bonding of the outside line/trunk protector ground and the power company ground*

⚠️*WARNING:*

An improper ground can result in equipment failures and service outages. Verify that the AC power uses an approved ground for its primary ground, that all voltage-limiting devices are grounded to an approved ground, and that the ground is one of the approved grounds listed below.

The following is a list of approved grounds, starting with the most preferred:

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- *Building steel.*
- *Acceptable water pipe; must be a metal, underground water pipe at least 1/2-inch (30.4 cm) in diameter, and in direct contact with the earth for at least 10 feet (3 m).*
- *It must be electrically continuous so that the protector ground is connected. (Check for insulated joints, plastic pipe, and plastic water meters that might interrupt electrical continuity.)*
- *A metallic underground water pipe must be supplemented by the metal frame of the building, a concrete-encased ground, or a ground ring.*
- *Other local metal underground systems or local underground structures such as tanks and piping systems.*
- *Rod and pipe electrodes, a 5/8-inch (1.6-cm) solid rod or 3/4-inch (1.9-cm) conduit or pipe electrode driven to a minimum depth of 8 feet (244 cm).*
- *Plate electrode, a minimum of 2 square feet (61 square cm) of metallic surface exposed to the exterior soil.*
- *Concrete-encased ground, which must be an electrode, consisting of one of the following:*
  - *At least 20 feet (6.1 m) of one or more steel reinforcing rods, each being at least 1/2-inch (1.27 cm) in diameter.*
  - *20 feet (6.1 m) of bare copper conductor not smaller than #4 AWG, encased in 2 inches (5 cm) of concrete. This electrode must be located within and near the bottom of a concrete foundation or roofing that is in direct contact with the earth.*
  - *Ground ring, consisting of at least 20 feet (6.1 m) of bare copper conductor not smaller than #2 AWG, encircling the building. The ground ring must be in direct contact with the earth and buried at least 2.5 feet (77 cm) below the earth's surface.*

⚠ WARNING:

Do not use a metal underground gas piping system. This is a safety risk.

For most power surges, the following standard grounding requirements provide adequate lightning and surge protection:

- *Properly wired/grounded/bonded outside line protectors.*
- *Properly wired/grounded AC outlet.*
- *Properly grounded single-point ground bar.*
- *Properly wired connection between single-point ground and power supplies.*

Additional Power Surge Protection

The 491D1 power supply has built-in AC line protection. This built-in protection handles almost all situations.

Occasionally, additional protection may be needed if the customer is located in a heavy lightning area. The following products are available:

- *The 145D protector provides AC surge protection for the entire system, including the power supply module. One unit*

provides protection for six outlets.

— *The 146C protector provides Central Office (CO) line surge protection. One unit covers four CO lines.*

— *The 146D protector provides surge protection for two tip/ring, MLS, or ETR telephones.*

— *The 146E protector provides surge protection for two 4400-Series or MLX telephones.*

— *The 146F protector provides Central Office (CO) line surge protection. One unit covers 25 CO lines.*

Complete installation instructions are provided with the surge protectors.

Control Unit Interfaces

Interface	Applications	Signaling Channel Rate	Audio/ Data Rate
BRI S/T[1]	Control unit to 4400-Series and MLX telephones	16Kbps (D) 64Kbps (B)	
	ISDN Terminal Adapter	64Kbps (B) and (D)	
DS1	Control unit to the following services:	64Kbps	
	T1 Emulated tie trunk Emulated DID Emulated loop-start Emulated ground-start		
	PRI services ACCUNET® switched digital service MEGACOM® WATS MEGACOM 800 Software Defined Network (SDN) MultiQuest® 900 number services Connectivity to 5ESS Generic 6/7/8/FTS 2000 Multiple incoming calls to directory number Call-by-Call Service Selection Password handling for FTS 2000 SID-ANI as Calling Party Number		
RS-232-C	Control unit to PC connected to system programming port	2400bps or 1200bps	2400bps or 1200bps
	Control unit to Avaya model 572 printer, PC with CAS, or CAT connected to RS-232-C port	1200bps	1200bps
Tip/Ring	Control unit to single-line telephone, modem, fax, OPT, or voice mail system	40 KHz	300– 3400 Hz
ETR	Control unit to ETR telephone or MLS telephone	40 KHz	300– 3400 Hz

1   Call handling derived from CCITT recommendation Q.931.

Network Interface Requirements

Line/Trunk Type	Facility Interface Code	Network Interface
Loop-start	02LS2	RJ11C, RJ14C, RJ21X
Ground-start	02G S2	RJ11C, RJ14C, RJ21X
DID	02RV2-T	RJ11C, RJ14C, RJ21X
OPT	OL13C	RJ11C, RJ14C
Tie	TL31M	RJ2GX
T1	04DU9-B 04DU9-C	RJ48C/X
PRI	04DU9-BN (D4 with AMI)	RJ48C/X
	04DU9-DN (D4 with B8ZS)	
	04DU9-IKN (ESF with AMI)	
	04DU9-ISN (ESF and B8ZS)	
BRI	021S5	RJ49

FCC Registration

Registration Number	REN	Type
AS593M-72682-MF-E	1.5A	Multi-function
AS593M-72914-KF-E	1.5A	Key only
AS5USA-65646-PF-E	1.5A	Hybrid/PBX

DOC Registration

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

Hardware and Software Capacities

You can configure the system as a stand-alone unit or as part of a private network. Maximum system capacities are as follows:

— *Up to 108 simultaneous two-party conversations*

  NOTE:
  If more than 108 conversations are in progress at the same time, blocking can occur.

— *Up to 80 line/trunk jacks, including loop-start, ground-start, DID, tie, and DSI.*

— *Up to 400 extension endpoints that support a combination of the following:*

  — *Up to 272 physical extension jacks for telephones and adjuncts.*

  — *Up to 200 logical digital data ports (through ISDN terminal adapters connected to jacks on the MLX module) providing RS-232 connections to data terminals and personal computers.*

— *System call-handling capability of 3828 hundred call seconds per hour (ccs/hr).*

— *Up to three 100 DS1, 100R INA, or 100 DCD modules, maximum two per carrier; the 24 channels on each 100 DS1, 100 DCD, or 100R INA module count toward the 80 line/trunk capacity.*

— *Up to five 800 NI-BRI modules, maximum two per carrier.*

— *One CTI link when operating in Hybrid/PBX mode.*

The system has a total capacity of 352 physical jacks (80 outside lines/trunks plus 272 extensions); however, each TDL and MLX module extension jack supports two logical endpoints (extension devices that can operate simultaneously and independently of each other). For example, an MLX telephone with a Multi-Function Module (MFM) plugs into one extension jack, but the jack supports both the telephone and the equipment (for example, a fax or an analog modem) connected to the MFM.

Similarly, although a 100 DS1, 100 DCD, or 100R INA module has only one jack, each can serve up to 24 endpoints (emulated lines/trunks or PRI lines/trunks). Thus, you can configure the system to connect up to 80 lines/trunks and 400 extension endpoints—a total of 480 endpoints.

*The next table, **Hardware and Software Capacities**, lists the hardware and software capacities of the system. Constraining Factors appear with a checkmark (3) and are explained at the end of the table.*

Hardware and Software Capacities

	Limit	Constraining Factor
100 DS1 Module (maximum 2 per carrier)	3	
100R INA Module (maximum 2 per carrier)	3	
100 DCD Module (maximum 2 per carrier)	3	
800 NI-BRI Module (maximum 3 per carrier)	5	
Account Codes		
Characters per code	16	
Allowed/Disallowed Lists		
Number of lists	8	
Entries per list	10	
Digits per Allowed List entry	14[1]	
Digits per Disallowed List entry	7	
Authorization Codes	400	
Digits per code	11	
Automatic Route Selection (ARS)		
Number of programmable ARS tables	24[2]	
Subpatterns per table	2	
Routes per subpattern	6	
Entries per table	100	
Entries across all tables	1600	
Default tables	5[3]	
Callback Calls in Queue	64	
Calling Groups		
Number of groups	32	
Members per group		3
Local extensions only	20	
Non-local extensions only	1	
Total agents and supervisors	200	
Total supervisors	8	
Groups per member	1	
Primary delay announcements per system	200	3
Secondary delay announcements per system	32	3
Primary delay announcements per group	10	
Secondary delay announcements per group	1	
Groups per delay announcement	32	
External alerts per group	1	
Coverage groups per group	1	
Priority Queuing		
Support Group	31	home
Home Group	1	support
Carriers	3	
Line/trunk and extension module slots per basic carrier	5	3
Line/trunk and extension module slots per expansion carrier	6	
Maximum slots available for line/trunk and extension modules	17	
Coverage Groups		
Number of groups	30	
Senders per group	400	3
Groups per sender	1	
Receiver buttons per group	8	
Groups per QCC receiver	30	

	Limit	Constraining Factor
CTI Link	1	3
Data Hunt Groups		
Number of groups	32	
Members per group	20	
Groups per member	1	
Direct Inward Dialing		
Number of blocks	2	
Number of trunks	80	
Directories		
System Directory	1	
Listings	130	
Extension Directory	1	
Listings	200	
Personal Directory (4424LD+ and MLX-20L only)	48	
Listings	50	
Endpoints (devices)	400	
Extensions		
Total physical jacks	200	
Total endpoints	400	
Fax Machines with Message Waiting	16	3
Lines/Trunks	80	
Message Waiting Lamp Messages	1499	
Night Service		
Groups	8	
Members per group	400	
Calling groups per group	1	
Groups per member	8	
Emergency Allowed List entries	10	
Park codes (number of codes)	8	
Personal Lines	64	
Pool Buttons	64	
Ports (not simultaneously)		
Voice Announce to Busy extensions	200	
Voice Messaging interface (VMI)	24	3
ISDN Terminal Adapter	200	
Paging	3	
Primary delay announcements	200	3
Secondary delay announcements	32	3
Remote Access		
Number of barrier codes	16	
Digits per code, systemwide	4–11	
Service Observing Groups		
Number of groups	16	
Observers per group	1	3
Members per group	200	3
Shared System Access Buttons		
Number of buttons per principal extension	27	

	Limit	Constraining Factor
Speed Dial		
Personal Speed Dial		3
Entries per telephone	24	
Entries per system	1200	
Digits per entry	28	
System Speed Dial		
Entries per system	130	
Digits per entry	40	
System Operating Consoles		
Direct Line Consoles (DLCs)		3
4424D+ or 4424LD+	8	
MLX-20L or MLX-28D	8	
Queued Call Consoles (QCCs)		3
4424LD+ or MLX-20L	4	
Combination of DLCs plus QCCs	8	
DSSs	16	
Number of consoles per module		
412 LS-ID-TDL, 408 GS/LS-ID-MLX, or 008 MLX	2	
024 TDL or 016 MLX	4	
System Programming Equipment		3
4424LD+ or MLX-20L	1	
RS-232 jack for PC with WinSPM	1	
Modem (built-in processor module)	1	
Telephones (not simultaneously)		
4424LD+ or MLX-20L	48	3
All other 4400-Series telephones	200	
All other MLX telephones		3
(with/without ISDN terminal adapter/MFM)	200	3
Single-line	200	3
ETR/MLS	200	3
TransTalk 9031/9040	200	3
Business Cordless 905	200	3
Power-failure transfer	20	3
Two-Party Conversations	108	3
Voice Messaging Systems	24	

1 In Release 1.0 systems, an Allowed List entry may have only 7 digits.
2 In Release 1.0 systems, there are 16 programmable ARS tables.
3 In Release 1.0 systems, there are 4 default ARS tables.

Constraining Factors

This section describes the constraining factors that limit the capabilities supplied in the previous table.

Calling Groups

Members of groups. QCCs cannot be members of calling groups because the QCC position is set up as a system operator and has its own queue, which is different from the group's queue.

Members per group. The maximum number of local extensions in a calling group is 20. The maximum number of non-local extensions in a calling group is 1. A calling group cannot contain both local and non-local extensions.

Primary and secondary delay announcements per system. Up to 10 primary and one secondary announcement device can be designated for each calling group. Each announcement device decreases the 200 tip/ring station capacity.

Carriers

The first slot of the basic carrier is used for the processor module, with a maximum of 5 line/extension module slots.

Coverage Groups

Senders per group. QCCs cannot be senders because they do not have coverage available and use Position-Busy instead.

CTI Link

One CTI link is supported in Hybrid/PBX mode only.

Fax Machines with Message Waiting

The system can support more than 16 fax machines, but those in excess of 16 cannot use fax message waiting indication.

Ports (not simultaneously)

Voice Messaging Interface. Although the system software supports up to 24 VMI ports, all VMI ports must be in the same calling group, and the maximum number of extensions in a calling group is 20.

Service Observing Groups

A Service Observer station must be a 4406D+, 4412D+, 4424D+, 4424LD+, or MLX telephone (except QCC or CTI link). A Service Observing group member station can be any telephone except a QCC or CTI link. The maximum number of members per Service Observing group is equal to the maximum number of extensions in the system.

> #### NOTE:
> *Service Observing may be subject to federal, state, or local laws, rules, or regulations or require the consent of one or both of the call parties. You must check in your jurisdiction and comply with all applicable laws, rules, and regulations before using this feature. Failure to comply may result in severe penalties.*

Speed Dial

Personal Speed Dial. Single-line and 5- or 10-button telephones.

System Operator Consoles

DLCs. Two consoles are allowed for each 412 LS-ID-TDL, 408 MLX, or 008 MLX module, and four consoles are allowed for each 024 TDL or 016 MLX module. A maximum of eight DLC consoles are allowed per system. Up to two DSSs can be attached to a 4400-Series or MLX operator console.

QCCs. Two consoles are allowed for each 412 LS-ID-TDL, 408 MLX, or 008 MLX module, and four consoles are allowed for each 024 TDL or 016 MLX module. A maximum of four QCC consoles are allowed per system.

System Programming Equipment

Remote access overrides onsite programming except during backup or restore.

Telephones (not simultaneously)

4424LD+. RAM limit and the total includes the 4424LD+ telephone used for system programming. Beginning with Release 1.0 of MERLIN MAGIX, all features of the MERLIN LEGEND Release 7 are offered, in addition to the ability to support the TDL sets.

All other 4400-Series telephones. RAM limit.

MLX-20L. RAM limit and the total includes the MLX-20L telephone used for system programming.

All other MLX telephones. RAM limit. An MFM and an ISDN terminal adapter cannot be connected to the same telephone (including the MLX-20L) at the same time.

Single-line. Software dial plan limit.

Power failure transfer. 1 for each 4 LS or GS line/trunk jacks.

ETR/MLS. RAM limit.

TransTalk 9031/9040. RAM limit.

Business Cordless 905. RAM limit.

Two-Party Conversations

216 time slots.

Ordering Codes

Component	PEC/SAP	Comcode	App. Code
MODELS			
MERLIN MAGIX Integrated System			
MERLIN MAGIX R2.0 V9.0 CKE5 Processor for MAGIX (no clamshell) & used for new system sales only. Kit includes: Back-up/Restore PCMCIA Card.	6180-PR2	108871005	
PCMCIA Back-up/Restore Card w/label for how to insert	61475/A	108588468	10A4
R1.5 CKE5 Processor w/faceplate		108719170	617T33
MERLIN MAGIX R2.0 V9.0 CKE5 Processor for plastic carrier (clamshell included). Used for upgrades from MERLIN LEGEND R1-R6.1 systems that do not already have a CKE4 or CKE5 processor. Kit includes: Back-up/Restore PCMCIA Card	6140-PR2	108871013	
Memory Translation Card w/label for how to insert		108588468	10A4
R1.5 CKE5 Processor w/clamshell		108719196	617T33-ML
Basic Carrier (also needs PEC 6180-PR2) Kit includes: Backup/Restore PCMCIA Card	6180-CAR	108871005	Kit: KX-CU-BASIC
Basic Carrier		108268053	403L
110/220V Power Unit		108508938	491D1
Power Supply Safety Instructions		108576182	CIB 3191
Kit of Parts, includes:		848408019	
MLX QCC Button Assign. Card		106587611	CIB 3147 Issue 2
4424LD+ QCC Button Assign. Card		108493214	CIB 3201 Issue 1
FCC Documentation		107492787	CIB 3134
Blue Station Cord Labels (1-80)		846646248	
Green Line Cord Labels (1-80)		846646263	
4424LD+ Overlay		848410130	
MLX Set Overlay		848407961	
Jack Number Labels (1-200)		848407995	
WinSPM R5 & MAGIX R2.0 Customer Documentation on CD-ROM[1] and the System Manager's Quick Reference Guide (on paper)	6180-DW2	108885260	
WinSPM R4 CD-ROM		408124311	
WinSPM R5	K-CDR7-SPM5	108885252	6140-DWS 6140-DWSP
Customer documentation R1.5 CD-ROM		108522368	
System Manager's Quick Reference (paper)		108522335	
MERLIN MAGIX R2.0 PCMCIA Upgrade Card. Used to upgrade a MERLIN MAGIX CKE5 R1.0–R1.5 Processor and MERLIN LEGEND CKE4 & CKE5 Processor to MERLIN MAGIX R2.0	6181-SW2	108871021	11MX20-A1
MERLIN MAGIX R1.5 V6.1 PCMCIA Upgrade Card	6181-S15 6181-S15P	108923483	

Component	PEC/SAP	Comcode	App. Code
MERLIN MAGIX R1.5 PCMCIA Upgrade Card	6181-S15 6181-S15P	108719204	
MERLIN MAGIX R1.0 PCMCIA Upgrade Card	6181-S15 6181-S15P	108514589	
Expansion Carrier Kit (metal), includes:	61890/A	108588567	Kit: KX-CU-EXP
Power Unit		108508938	491D1
Power Supply Safety Instructions		108576182	CIB 3191
Expansion Carrier		108268061	403M
Blue Station Cord Labels (81-200)		846646255	
Expansion Carrier Kit (plastic), includes:	61490/A	108588567	Kit: KX-CU-EXP
Expansion Wall Mount with Top/Front Cover		107007122	403H
Power Supply		107793275	391C1
Top/Front Cover (Choose One)		106905953	18A
MERLIN MAGIX 1.0i			
(110/220) Power Supply		108508938	491D1
Metal Basic Carrier Dkit	6180-CAR	108588542	
Metal Expansion Carrier Kit	61890/A	108588567	
R1.0 Processor DKit	6180-PR1	108588518	
R1.5 Processor Dkit for metal carrier	6180-P15	108719147	
R2.0 Processor Dkit for metal carrier	6180-PR2	108871055	
MERLIN LEGEND Equipment			
R7.0 V12 Minor Software Fixes	6140-PR7	108923509	617R33-2-ML
R7.0 V12 Minor Software Fixes & Firmware fixes (including TTRs)	6141-SW7 6141-SW7P	108923475	11ML70-D5
R7.0 V11 Processor Dkit	6140-PR7	108867979	617R33-1-ML
R7.0 V9 Processor Dkit	6140-PR7	108574567	
R7.0 V10 Upgrade Card	6141-SW7 6141-SW7P	108515073	
R7.0 V11 Upgrade Card			
B3	6141-SW7	108725441	
C4	6141-SW7P	108834326	
Plastic Expansion Carrier Kit	61490	108574427	K-CU-EXP-1
R7 Documentation - Paper		108370255	
R7.0 Documentation and WinSPM R3 CD	6140-DWS 6140-DWSP	108642752	
R7.0 Documentation and WinSPM R4 CD		108733627	
110/220V Power Supply	61477/A	107793275	391C1
008 ATL Module	61485/A	105351092	
Inactive MERLIN LEGEND Equipment			
R1 Documentation - Paper	61812/A	108522277	
R1.5 Documentation - Paper	61812/A	108736950	
R7.0 V9 Processor Dkit (only available by GEM until CKE4's are used up; then switch to CKE5)		108515032	6140-PR7A
ADDITIONAL CONTROL UNIT COMPONENTS			
2 MB Blank PCMCIA Backup/Restore Card	61475/A	107779878	10A2
4 MB Blank PCMCIA Backup/Restore Card	61501	107245243	10A1
Line/Trunk and Extension Modules			
008 MLX	61886/A	108333725	617C21
008 OPT	61879/A	108318460	617E28
016 T/R	61807/A	108514159	617E34
		108737065	617E34A
		108514183	617F34 (fix TTRs)

Component	PEC/SAP	Comcode	App. Code
016 ETR	61851/A	108359589	B17A56
		108514498	617B56 (fix TTRs)
016 MLX	61811/A	108333667	617A54
024 TDL	61804/A	108514522	617B58
100D Module	61891/A	108458530	617N15
		108725458	617N15A
100R INA	6158-001	108515099	617A59
100 DCD	6158-001	108515107	617B59
		108513656F	617B59
400 E&M (tie trunk)	61892/A	108333634	617D14
408 GS/LS-ID-MLX	61805/A	108333741	617E29
		108829383	617F29 (firmware for E911 Adjunct)
412 LS-ID-TDL	61803/A	108306036	617A52 (fix TTRs)
		108514423	617B52 (fix T/R plug-in)
800 NI-BRI	61810/A	108318502	617B35
800 DID	61888/A	108318486	617G20
800 GS/LS-ID	61802/A	108357617	617B31
		108829375	617C31 (firmware for E911)
Backboard for MERLIN MAGIX & PARTNER ACS	61813	848556148	
Empty clamshell to enable modules to be compatible with MERLIN LEGEND	61899/A	108541343	
B25A DE cable for TDL modules (15 ft. in length)	2720-01P	846301000	
B25A DE cable for TDL modules (20 ft. in length)	2720-01R	846301000	
Connecting block for TDL modules (Prewired 66 type block)	2750-D02	101238178	
Cinch Super MOD 25, 25 Jack Adapter		2992400125	

Inactive Control Unit Components

Component	PEC/SAP	Comcode	App. Code
Backboard for MERLIN LEGEND & Partner ACS	94958	847007523	
Documentation & WinSPM R3 Dkit (CD ROM)	6180-DWS	108588559	
Documentation & WinSPM R4 Dkit (CD ROM)	6180-DWSP	108719121	

Telephones

4400-Series Telephones

Component	PEC/SAP	Comcode	App. Code
4400			
English (black)	4400-B0N	108198961	4400A01A-003
English (white)	4400-W0N	108198953	4400A01A-264
Canadian French (black)	4400-C0B	108463308	4400A01A(48)-003
Canadian French (white)	4400-C0W	108463290	4400A01A(48)-264
4400D			
English (black)	4400-B0D	108198995	4400A02A-003
English (white)	4400-W0D	108198987	4400A02A-264
Canadian French (black)	4400-CDB	108463332	4400A02A(48)-003
Canadian French (white)	4400-CDW	108463324	4400A02A(48)-264
4406D+			
English (black)	4400-B06	108199027	4406A01A-003
English (white)	4400-W06	108199019	4406A01A-264
Canadian French (black)	4400-C6B	108463365	4406A01A(48)-003
Canadian French (white)	4400-C6W	108463357	4406A01A(48)-264
4412D+			
English (black)	4400-B12	108199050	4412A01A-003
English (white)	4400-W12	108199043	4412A01A-264
Canadian French (black)	4400-C2B	108463407	4412A01A(48)-003
Canadian French (white)	4400-C2W	108463381	4412A01A(48)-264
4424D+			

Component	PEC/SAP	Comcode	App. Code
English (black)	*4400-B24*	*108199084*	*4424A01A-003*
English (white)	*4400-W24*	*108199076*	*4424A01A-264*
Canadian French (black)	*4400-C4B*	*108463431*	*4424A01A(48)-003*
Canadian French (white)	*4400-C4W*	*108463423*	*4424A01A(48)-264*
4424LD+			
English (black)	*4400-BLD*	*108429580*	*4424A02A-003*
English (white)	*4400-WLD*	*108429598*	*4424A02A-264*
Canadian French (black)	*4400-CLB*	*108463464*	*4424A02A(48)-003*
Canadian French (white)	*4400-CLW*	*108463456*	*4424A02A(48)-264*
MLX Telephones			
MLX-5®			
English (black)	*3156-0BB*	*107894719*	*7712D05D-003*
English (white)	*3156-0BW*	*107894727*	*7712D05D-264*
MLX-5D®			
English (black)	*3156-0DB*	*107894735*	*7712D06D-003*
English (white)	*3156-0DW*	*107894743*	*7712D06D-264*
MLX-10			
English (black)	*3156-02B*	*107108722*	*7712D01D-003*
English (white)	*3156-02W*	*107108748*	*7712D01D-264*
French (black)	*3156-F2I*	*107108797*	*7712D01D(29)-003*
French (white)	*3156-F2I*	*107108789*	*7712D01D(29)-264*
Spanish (black)	*3156-S2I*	*107108755*	*7712D01D(22)-003*
Spanish (white)	*3156-S2I*	*107108771*	*7712D01D(22)-264*
MLX-10D			
English (black)	*3156-03B*	*107108870*	*7712D02D-003*
English (white)	*3156-03W*	*107108888*	*7712D02D-264*
French (black)	*3156-F3I*	*107108938*	*7712D02D(29)-003*
French (white)	*3156-F3I*	*107108920*	*7712D02D(29)-264*
Spanish (black)	*3156-S3I*	*107108904*	*7712D02D(22)-003*
Spanish (white)	*3156-S3I*	*107108912*	*7712D02D(22)-264*
MLX-10DP			
English (black)	*3156-06B*	*107108946*	*7712D04D-003*
English (white)	*3156-06W*	*107108953*	*7712D04D-264*
MLX-16DP®			
English (black)	*3156-07B*	*106922271*	*7715D01D-003*
English (white)	*3156-07W*	*106922289*	*7715D01D-264*
Spanish (black)	*3156-S7I*	*106987423*	*7715D01D(22)-003*
Spanish (white)	*3156-S7I*	*106987456*	*7715D01D(22)-264*
French (black)	*3156-F7I*	*106987472*	*7715D01D(29)-003*
French (white)	*3156-F7I*	*106987498*	*7715D01D(29)-264*
East. Europe (black)	*3156-S7I*	*106987506*	*7715D01D(22)-003*
East. Europe (white)	*3156-S7I*	*106987514*	*7715D01D(22)-264*
MLX-20L			
English (black)	*3156-05B*	*107108979*	*7713D01D-003*
English (white)	*3156-05W*	*107108987*	*7713D01D-264*
French (black)	*3156-F5I*	*107109027*	*7713D01D(29)-003*
French (white)	*3156-F5I*	*107109019*	*7713D01D(29)-264*
Spanish (black)	*3156-S5I*	*107108995*	*7713D01D(22)-003*
Spanish (white)	*3156-S5I*	*107109001*	*7713D01D(22)-264*
MLX-28D			
English (black)	*3156-04B*	*107115800*	*7713D02D-003*
English (white)	*3156-04W*	*107115818*	*7713D02D-264*
French (black)	*3156-F4I*	*107115842*	*7713D02D(29)-003*
French (white)	*3156-F4I*	*107115859*	*7713D02D(29)-264*
Spanish (black)	*3156-S4I*	*106613599*	*7713D02D(22)-003*
Spanish (white)	*3156-S4I*	*106613607*	*7713D02D(22)-264*
MLX Secure Telephones			
MLX-10DS			
English (black)	*3156-03S*	*107185076*	*7712DO2D1-003*
MLX-28DS			
English (black)	*3156-04S*	*107185050*	*7713D02D1-003*
MLX-20LS			
English (black)	*3156-05S*	*107185068*	*7713D01D1-003*

Ordering Codes—*Continued*

Component	PEC/SAP	Comcode	App. Code
Fiber Interface Card	*61393*	*406981217*	*93030.2 FIB INT PRN*
with Ring Generator			
Chassis with Power			
Supply, Blank Cover	*6139-SFS*	*406981225*	*93030.8C MINI*
800 LS Card	*61394*	*406981241*	*903030.3 2 WIRE PRN*

Inactive MLX Telephones

MLX-5			
French (black)		*107926834*	*7712D05D(29)-003*
French (white)		*107926842*	*7712D05D(29)-264*
Spanish (black)		*107926859*	*7712D05D(22)-003*
Spanish (white)		*107926867*	*7712D05D(22)-264*
Hungarian (black)		*107926875*	*7712D05D(30)-003*
Hungarian (white)		*107926883*	*7712D05D(30)-264*
MLX-5D			
French (black)		*107926891*	*7712D06D(29)-003*
French (white)		*107926909*	*7712D06D(29)-264*
Spanish (black)		*107926917*	*7712D06D(22)-003*
Spanish (white)		*107926925*	*7712D06D(22)-264*
Hungarian (black)		*107926933*	*7712D06D(30)-003*
Hungarian (white)		*107926941*	*7712D06D(30)-264*

ETR (PARTNER) Telephones

ETR-6 (black)	*3158-04B/A*	*107854788*	*7311H12A-003*
ETR-6 (white)	*3158-04W/A*	*107854796*	*7311H12A-264*
ETR-6 (gray)	*3158-04G/A*	*107854804*	*7311H12A-323*
ETR-18 (black)	*3158-05B/A*	*107854812*	*7311H13A-003*
ETR-18 (white)	*3158-05W/A*	*107854820*	*7311H13A-264*
ETR-18 (gray)	*3158-05G/A*	*107854838*	*7311H13A-323*
ETR-18D (black)	*3158-07B/A*	*107854846*	*7311H14A-003*
ETR-18D (white)	*3158-07W/A*	*107854853*	*7311H14A-264*
ETR-18D (gray)	*3158-07G/A*	*107854861*	*7311H14A-323*
ETR-34D (black)	*3158-08B/A*	*107854054*	*7515H04A-003*
ETR-34D (white)	*3158-08W/A*	*107854062*	*7515H04A-264*
ETR-34D (gray)	*3158-08G/A*	*107320749*	*7515H04A-323*

MLS Telephones (Inactive)

MLS-6 (black)	*3151-04B/A*	*107092165*
MLS-6 (white)	*3151-04W/A*	*107092181*
MLS-12 (black)	*3151-05B/A*	*107092116*
MLS-12 (white)	*3151-05W/A*	*107092124*
MLS-12D (black)	*3151-06B/A*	*107092157*
MLS-12D (white)	*3151-06W/A*	*107092132*
MLS-18D (black)	*3151-07B/A*	*107092215*
MLS-18D (white)	*3151-07W/A*	*107092207*
MLS-34D (black)	*3151-08B/A*	*106927551*
MLS-34D (white)	*3151-08W/A*	*106927569*

Single-Line Telephones

2500 YMGL	*3101-KFD/A*		
Black		*107005043*	*2500YMGL-003*
Misty cream		*107005050*	*2500YMGL-215*
2500 YMGM			
Black		*107732422*	*2500YMGM-003*
Misty cream		*107732430*	*2500YMGM-215*
2500 MMGL	*3101-KBD/A*		
Black		*107023236*	*2500MMGL-003*
Misty cream		*107023277*	*2500MMGL-215*
6210			
Deep gray	*3198-10G/A*		
Avaya white	*3198-10W/A*		
6220			
Deep gray	*3198-20G/A*		
Avaya white	*3198-20W/A*		

Inactive Single-Line Telephones

2500 YMGK

(message waiting, recall,

Component	PEC/SAP	Comcode	App. Code
touch-tone, desk)			
Black		105480578	2500YMGK-003
Misty cream		105480560	2500YMGK-215
2500 MMGK			
(recall, touch-tone, desk)			
Black		105414130	2500MMGK-003
Misty cream		105414122	2500MMGK-215
2500 MMGJ			
(touch-tone, desk)			
Black		105414155	2500MMGJ-003
Misty cream		105414148	2500MMGJ-215
2554 MMGJ			
(touch-tone, wall)			
Black		105480081	2554MMGJ-003
Misty cream		105480032	2554MMGJ-215
500 MM			
(rotary, desk)			
Black		103870234	500MM-03
Ivory		103870226	500MM-50
Beige		103870267	500MM-60
554 BMPA			
(rotary, wall)			
Black		103823498	554BMPA-3
Ivory		103823506	554BMPA-50
8110M Analog Voice	3193-001		
Black		107535841	8110A01D-003 811
Kit (4 black sets)		107538399	8110A01D-003
White		107535858	8110A01D-264 811
Kit (4 white sets)		107538401	8110A01D-264
8102M Analog Voice	3192-001		
Black		107538357	8102A01C-003 810
Kit (4 black sets)		107538373	8102A01C-003
White		107538365	8102A01C-264 810
Kit (4 white sets)		107538381	8102A01C-264
8101 Analog Voice	3192-101		
Black		107730475	8101A01-B003
White		107730483	8101A01-B264
Wireless Telephones			
BC 905 Business Cordless	3206-02B	1081660 59	
Battery	32091	407759729	
Belt Clip	3206-CLP	847903614	
Wireless Telephone			
(stand-alone product			
shipped w/ power pack)			
Black			
TransTalk™ 9031			
Wireless Telephone Set			
(stand-alone product			
shipped w/ power pack)			
Black	3204-07B		
TransTalk™ 9031			
Wireless Telephone Set			
(for use with wireless			
carrier assembly)			
Black	3204-W7B		
TransTalk Wireless			
Carrier Assembly	3204-CR3		117A1
Headset	3122-042		
Headpiece		407713718	
QD Cord		407714401	
Headset (packaged with			
an adapter)	3122-043		
Headpiece		407720739	
QD Cord		407714401	

Ordering Codes—Continued

Component	PEC/SAP	Comcode	App. Code
Battery Pack			
Black	32045	107733107	
Extended Life Battery	32049	107733115	
Carrying Case (Holster)	32090	848026092	
Inactive Cordless/Wireless Telephones			
Model 5405		106440472	CS6300U30A-2292
Model 5455		106440464	CS6300U29A-2292
MDC 9000 Business			
Cordless Telephone Set			
White		107304982	7311H11B-264
Black		107304974	7311H11B-003
Battery Pack for MDW 9010			
White		106760812	
Black		106760804	
Special-Purpose Telephones			
Touch-tone Outdoor WL	8800-031	407380922	2526
Manual Dial Outdoor WL	8800-002	407380955	526
Auto-Dial Outdoor WL	8800-003	407380930	526 AMACADL
Explosive Atmosphere			
Telephones			
2520B			
Touch-tone, Wall	3129-ETW	103873030	2520B-3
Inactive Special-Purpose Telephones			
520B			
Rotary, Desk		103873048	520B-3
Rotary Outdoor WL		105727444	526
Consoles			
DSS 4450			
(4400-Series telephones)			
English (black)	4400-B50	108199696	200A-003
English (white)	4400-W50	108199407	200A-264
Canadian French (black)	4400-C5B	108463498	200A(48)-003
Canadian French (white)	4400-C5W	108463480	200A(48)-264
DSS (MLX telephones)			
English (black)	3156-DCB	106902463	604B1-003
English (white)	3156-DCW	106902489	604B1-264
Spanish (black)	3156-SDI	107013294	604B1(22)-003
Spanish (white)	3156-SDI	107013302	604B1(22)-264
Applications			
WinSPM CD ROM – External Use		408124311	
WinSPM CD ROM –			
Internal Services Use		408059392	555-670-804
Call Accounting System (CAS)			
CAS for Windows			
50-station	1202-651/A		
100-station	1202-652/A		
200-station	1202-653/A		
Custom Rate Table (mandatory)	12055		
HACKERTRACKER for	1202-660/A		
Windows			
Supplemental Initialization	12057		
Support			
Parallel Printer (optional)			
dot matrix	69769		
Parallel Printer Cable	69641	846943298	
Serial Printer	4200-572		
Parallel Printer	4200-570		
Hacker/Tracker	12014	406806166	PCCB6201
Fax/Modem SW		407046317	92193WP
INTUITY CAS 50 Station	1201-052/A		
INTUITY CAS			
HACKERTRACKER	1201-054/A		

Ordering Codes—*Continued*

Component	PEC/SAP	Comcode	App. Code
INTUITY CAS 50 Station Upgrade	1201-053/A		
INTUITY CAS Custom Rates	12054		
Inactive Applications			
WinSPM R3 (customer version, floppy disk)	6181-SPM	408124303	
Inactive CAS			
CAS Plus V3.1.1 Bundle, Model 300 (does not include a printer)			
Custom Rate Table			
CAS Plus V3 Bundle w/ 80-col. Parallel Printer			
CAS Plus V3 Bundle w/ 132-col. Parallel Printer			
CAS Plus V3 Software Rate Table[2]		406362244	
CAS Plus V3 Update (SW)		406158444	3300EA51
CAS Plus Upgrade		406025916	3300KA2U
CAS V3 Hacker Tracker (MS-DOS)		406774513	3399EA
IS-III UNIX CAS 250	1201-U14A	407243187	ISIII CAS 250
UNIX CAS Rate Tables		406140764	3.5 SW ATT MTS
IS-III UNIX CAS Upgrade 500 (250-500)	1201-U15A	406898254	UN/CAS UPGR
IS CAS Upgrade to NANP	1201-U16A		IS CAS NANP
M/L&S – 25 Upgrade NANP	1201-U17A		
IS II CAS Upgrade to IS III	1201-U18A		
UNIX HackerTracker	1201-U13A	406898270	SFTW-ISIII
Call Accounting Terminal (CAT)			
CAT BASIC/B (LEGEND)	3600-010/A		
Printer		406716464	PRNTR-ML182-R2
Processor		406669769	PROCR-36001-C1
CAT + LEGEND/H	3600-024/A		
Printer		406716464	PRNTR-ML182-R2
Processor		406478818	PROCR-37000-C6-HQU
CAT + LEGEND/B	3600-023/A		
Printer		406716464	PRNTR-ML182-R2
Processor		406478800	PROCR-37000-C6-BQU
CAT Basic Rate Table[2] (Update Chip)	36014A	406669739	
CAT/B Rate Table[2] (Update)	36023A	406478792	
CAT/H Rate Table[2] (Update)	36024A	406478784	
MERLIN LEGEND Reporter			
Single Site, 50 stations	1201-011		
Single Site, 200 stations	1201-012		
PassageWay Direct Connect (R2)	**8302-500**	**407214782**	
PassageWay 4-Wire for PC-Console	8302-720		
PassageWay 2-Wire for PC-Console	8302-721		
Power Kit	8302-901		
9M to 25F Cable	8302-903		
TAPI service provider	8302-112		
Inactive Telephony Services Netware for MERLIN MAGIX	**8320-500/A**		
PassageWay Telephony Services R2.21D for Netware (core/clients)		407556364	

Ordering Codes—*Continued*

Component	PEC/SAP	Comcode	App. Code
PassageWay Telephony Services R2.21D for Netware (250+user license)		407465558	
PassageWay Telephony Services Netware Driver for MERLIN LEGEND		108027368	
EICON ISDN Board for MERLIN LEGEND PassageWay Telephony Services		407556364	
MERLIN Messaging System			
2-port MERLIN Messaging System	7107-502	108541467	385A
Circuit board w/faceplate for metal housing		108333642	617A49
2-port PC card (backup and remote access card)		108491358	12H1
Customer doc. kit (20 end-user guides; Sys. Admin. Quick Ref. CD-ROM; and Safety doc.		108594813	585-323-200
4-port MERLIN Messaging System	7107-504	108541475	385B
Circuit board w/faceplate for metal housing		108333642	617A49
4-port PC card (4-port license, backup and remote access card)		108491366	12H2
Customer doc. kit (20 end-user guides; Sys. Admin. Quick Ref.; CD-ROM; and Safety doc.)		108594813	585-323-200
User guide kit (20 end-user guides; Safety Doc.; and PC Card Installation Sheet)		108594763	585-323-204
6-port MERLIN Messaging System	7107-506	108541483	385C
Circuit board w/faceplate for metal housing		108333642	617A49
6-port PC card (6-port license, backup and remote access card)		108491374	12H3
Customer doc. kit (20 end-user guides; Sys. Admin. Quick Ref.; CD-ROM; and Safety doc.)		108594813	585-323-200
User guide kit (20 end-user guides; Safety Doc.; and PC Card Installation Sheet)		108594763	585-323-204
4-port License and Backup	7107-503	108501594	382E
User guide kit (20 end-user guides; Safety Doc.; and PC Card Installation Sheet)		108594763	585-323-204
4-port PC card (4-port license, backup and remote access card)		108491366	12H2
6-port License and Backup	7107-505	108501602	382F
User guide kit (20 end-user guides; Safety Doc.; and PC Card Installation Sheet)		108594763	585-323-204
6-port PC card (6-port license, backup and remote access card)		108491374	12H3
Repair Parts			
Circuit board w/faceplate for metal housing		108333642	617A49
2-port PC card		108491358	12H1
4-port PC card		108491366	12H2
6-port PC card		108491374	12H3

Ordering Codes—*Continued*

Component	PEC/SAP	Comcode	App. Code
MERLIN Messaging Administration GUI and Documentation CD-ROM	7107-510	108873894	
MERLIN Messaging Module	7107-R25	108514316	
Delay Announcement Service (DAS) Only Card	7107-537	108850454	
Octel 100 Voice Messaging System			
4-port voice messaging system[3]	7052-004 106217		
4 port dialog4		407909993	
Monitor – color		407900547	
6-port voice messaging system[3]	7052-006 106218		
6 port dialog4		407910009	
Monitor – color		407900547	
8-port voice messaging system[3]	7052-008 106219		
8 port dialog4		407910017	
Monitor – color		407900547	
12-port voice messaging system[3]	7052-012 106220		
12 port dialog4		407910025	
Monitor – color		407900547	
4-port voice/2-port fax messaging system[3]	7052-204 106221		
4 port dialog4, 2 port fax		407910033	
Monitor – color		407900547	
6-port voice/2-port fax messaging system[3]	7052-206 106222		
6 port dialog4, 2 port fax		407910066	
Monitor – color		407900547	
8-port voice/2-port fax messaging system[3]	7052-208 106223		
8 port dialog4, 2 port fax		407910082	
Monitor – color		407900547	
12-port voice/2-port fax messaging system[3]	7052-212 106224		
12 port dialog4, 2 port fax		407910108	
Monitor – color		407900547	
4-port voice/4-port fax messaging system[3]	7052-404 106225		
4 port dialog4, 4 port fax		407910058	
Monitor – color		407900547	
6-port voice/4-port fax messaging system[3]	7052-406 106226		
6 port dialog4, 4 port fax		407910074	
Monitor – color		407900547	
8-port voice/4-port fax messaging system[3]	7052-408 106227		
8 port dialog4, 4 port fax		407910090	
Monitor – color		407900547	
4- to 6-port voice upgrade	7052-606U 106234		
Dialog4 board		407901412	
4 to 6 Port License/Sentinal Disk Utility		407920792	
6- to 8-port voice upgrade	7052-608U 106235		
Dialog4 board		407901412	
6 to 8 Port License/Sentinal Disk Utility		407920800	

Component	PEC/SAP	Comcode	App. Code
8- to 12-port voice upgrade	7052-612U 106236		
Dialog4 board		407901412	
8 to 12 Port License/Sentinal Disk Utility		407920818	
12- to 16-port voice upgrade	7052-616U 106237		
Dialog4 board		407901412	
12 to 16 Port License/Sentinal Disk Utility		407920826	
2-port fax upgrade	7052-200U 106238		
2 port Brooktrout fax board		407914423	
Port License/Sentinal Disk Utility		407914498	
2- to 4-port voice upgrade	7052-400U 106239		
2 port Brooktrout fax board		407914423	
Port License/Sentinal Disk Utility		407923770	
Visual Mailbox Starter Kit	7052-700 407914445	407914415	
Visual Mailbox Software License			
10 Seats	7052-710U 106240	407914431	
25 Seats	7052-725U 106241	407914449	
50 Seats	7052-750U 106242	407914464	
100 Seats	7052-752U 106243	407914472	
250 Seats	7052-755U 106244	407914480	
Intuity Voice System			
4-port	7055-004		
6-port	7055-006		
8-port	7055-008		
10-port	7055-010		
12-port	7055-012		
Administration	6128-KBD	406891556	
Controller Assembly with PC Administration	6128-PCA	406891564	
DISCONTINUED			
Controller Assembly with Display Keyboard			
Display Assembly with Wall-Mounting		406891572	
Call Alert Software		406891721	
Bracket Assembly, ATL Telephone Mounting		406891937	
Fixture, Display Wallmount		406891929	
PC Administration Adapter Kit		406960930	
Printer Adapter Kit		406960948	
Printer Port to PC Adapter Kit		406960955	
Installation and System Administration Manual		406891713	
Quick Reference Card for MERLIN Identifier Users		406891705	
Display Unit		406891663	
Keyboard 101		406891655	
Controller with Mounting Panel		406891648	
Cable, Serial RS-232, Controller to PC		406891903	

Component	PEC/SAP	Comcode	App. Code
MERLIN LEGEND R5.0 TSAPI Offers			
In all R5.0 PECs where paper and CD-ROM are options, add attributes:			
Paper (attribute: doc51)			
CD-ROM (attribute: doc52)			
default			
MERLIN LEGEND R5.0 Documentation			
End-user CD-ROM		108289034	
Internal CD-ROM (Avaya Associates only)		108007964	
MERLIN LEGEND TSAPI			
Solution	8320-500		
PassageWay Telephony Services R2.21D for NetWare Core/Clients)		407556364	
PassageWay Telephony Services R2.21D for NetWare - 250+User License		407465558	
Legend Driver Software		108027368	
EICON Card		407556364	
MERLIN MAGIX/LEGEND TSAPI with NT Driver	6156-500/A	407968882 (EICON card) 408009926 (NT software)	115638
MERLIN MAGIX CTI Link Includes: EICON Board & NT Driver	6180-CTI	108923517	
EICON Card		408458032	
NT R2.0 Driver Software		108894619	
CCOM Application (PhoneLine) (does not include Professional Services)			
5 Users License			
10 Users License			
25 Users License			
50 Users License			
Q.SYS Application (PhoneWare) (does not include Professional Services)			
5 Users License			
10 Users License			
25 Users License			
50 Users License			
CALLWARE Application (Phonetastic) (does not include Professional Services)			
5 Users License			
Phonetastic Admin Guide			
User Guide			
Application (core)			
10 Users License			
Phonetastic Admin Guide			
User Guide			
Application (core)			
25 Users License			
Phonetastic Admin Guide			
User Guide			
Application (core)			
50 Users License			
Phonetastic Admin Guide			

Component	PEC/SAP	Comcode	App. Code
User Guide			
Application (core)			
100 Users License			
Phonetastic Admin Guide			
User Guide			
Application (core)			
Professional Services Offers			
1 Application			
2 Applications			
Custom Contract			
MERLIN MAGIX Enhanced Customer Care Solution (ECCS)			
12-port System	61516		
2.5GB Blank Tape (QTY: 3)		407557073	
Color Monitor		406504571	
Snap-on Ferrite (QTY: 4)		407616846	
Keyboard		407681907	
UNIXWare Base Sftwr Tape 5P	ED5P91260 G-18		
Map/5P Tower	J1P260F1 L-1		
V6.0 Map/5P New System			
Install & Maint Doc	J1P260F1 L-AG		
Base System Boot Sftwr	J1P260TH1 L-1		
INTUITY Bkp/Res Util	J1P260TH1 L136		
ENH Sft Tech Bkp/Res	J1P260TH1 L137		
INTUITY UNIX Mang Scn Pkg	J1P260TH1 L138		
Oracle for W95, NT, 3.1		108007758	
Data Collection Pkg	J1P260TH1 L-28		
Veritas Sftwr	J1P260TH1 L3		
Generic SoftTape	J1P260TH1 L4		
Configuration Data Pkg	J1P260TH1 L5		
Hardware Res	J1P260TH1 L7		
INTUITY CONVERSANT VIS	J1P260TH1 L-76		
V6.0 Set-Update+			
Tip/Ring Board Driver	J1P260TH1 L-88		
Fea. Test Script Pkg	J1P260TH1 L9		
Call Bridge Application Pkg	J1P260TH1 L-90		
UNIXWare 1.1.2 Enhance Set	J1P260TH1 L-94		
CA Assy-84000		407265529	
Analog Adap Kit 885A (QTY:2)		601419666	
IVC6 Card (AYC10) (QTY:2)		106406580	
25 ft Tel Cord (QTY:4)		103612195	
3 ft Lt Mtg Cord (QTY:4)	ED5P20830 G-16		
BUS Cable	J1P260F1 L8		
Analog Switch Interface US	J1P260TH1 L-70		
RMB/Modem	J1P260AA1 L-10		
RMB Software Utilities-Boot		107397929	
RMB Utilities (QTY:3)	J1P260TH1 L-73		
8-Port Serial Card and Cable	J1P260AA1 L-34		
Board		407788439	
Cable		407789080	
Terranova Software		107087280	
25-Pin ESF Int. Adapter		407814201	
9-Pin ESC PC Int. Adapter		407814219	
25-Pin ESC PC Int. Adapter		407814227	
DW8 Cord 14 ft (QTY:2)		103786802	
Passage Direct Connect		407214782	
MERLIN MAGIX ECCS Software		407799857	
RMB Integration Sftwr V1.0	J1P260TH1 L-80		
18-port System	61517		
2.5GB Blank Tape (QTY: 3)		407557073	
Color Monitor		406504571	
Snap-on Ferrite (QTY: 6)		407616846	
Keyboard		407681907	
UNIXWare Base Sftwr Tape 5P	ED5P91260 G-18		
Map/5P Tower	J1P260F1 L-1		

Ordering Codes—*Continued*

Component	PEC/SAP	Comcode	App. Code
V6.0 Map/5P New System			
Install & Maint Doc		J1P260F1 L-AG	
Base System Boot Sftwr		J1P260TH1 L-1	
INTUITY Bkp/Res Util		J1P260TH1 L136	
ENH Sft Tech Bkp/Res		J1P260TH1 L137	
INTUITY UNIX Mang Scn Pkg		J1P260TH1 L138	
Oracle for W95, NT, 3.1		108007758	
Data Collection Pkg		J1P260TH1 L-28	
Veritas Sftwr		J1P260TH1 L3	
Generic SoftTape		J1P260TH1 L4	
Configuration Data Pkg		J1P260TH1 L5	
Hardware Res		J1P260TH1 L7	
INTUITY CONVERSANT VIS			
V6.0 Set-Update+		J1P260TH1 L-76	
Tip/Ring Board Driver		J1P260TH1 L-88	
Fea. Test Script Pkg		J1P260TH1 L9	
Call Bridge Appl Pkg		J1P260TH1 L-90	
UNIXWare 1.1.2 Enhance Set		J1P260TH1 L-94	
CA Assy-84000		407265529	
Analog AdapKit 885A (QTY:3)		601419666	
IVC6 Card (AYC10) (QTY:3)		106406580	
25 ft Tel Cord (QTY:4)		103612195	
3 ft Tel Mtg Cord (QTY:6)		ED5P20830 G-16	
BUS Cable		J1P260F1 L8	
Analog Switch Interface US		J1P260TH1 L-70	
RMB/Modem		J1P260AA1 L-10	
RMB Software Utilities-Boot		107397929	
RMB Utilities (QTY:3)		J1P260TH1 L-73	
8-Port Serial Card and Cable		J1P260AA1 L-34	
Board		407788439	
Cable		407789080	
Terranova Software		107087280	
25-Pin ESF Int. Adapter		407814201	
9-Pin ESC PC Int. Adapter		407814219	
25-Pin ESC PC Int. Adapter		407814227	
DW8 Cord 14 ft (QTY:2)		103786802	
Passage Direct Connect		407214782	
MERLIN MAGIX ECCS			
Software		407799857	
RMB Integration Sftwr V1.0		J1P260TH1 L-80	
Optional Equipment			
Additional Supervisor Software			
Terranova Software and cables	61522	107087280	
25-Pin ESF Int. Adapter		407814201	
9-Pin ESC PC Int. Adapter		407814219	
25-Pin ESC PC Int. Adapter		407814227	
Printer and Cable	4200-570	406637314	
Wallboard[4]	5340-WB4/A	407753243	
Wallboard Master Kit	5340-KIT/A	407679174	
Wallboard Stand-alone			
(within 50 ft)	5340-SKT/A	407743525	
Wireless Keyboard for			
Wallboard	5332-905/A	407245513	
Right to Use Wallboard			
Software	61518/A	407799782	
Mandatory Turnkey Install			
(Sftwr)	61519	407799808	
Incremental Training (1 Day)	61520	407799790	
Incremental Training (2 Days)	61521	407799816	
Sftwr RTU from 5 up to			
12 queues	61534/A	407885714	
Sftwr RTU from 5 up to			
30 queues	61535/A	407885648	

Component	PEC/SAP	Comcode	App. Code
Sftwr RTU from 13 up to			
30 queues	61536A	407885706	
CTI Applications			
Group Phoneware			
5 Seats	6156-205		
10 Seats	6156-210		
25 Seats	6156-225		
50 Seats	6156-250		
Phonetastic			
5 User Right-to-Use	6156-305		
10 User Right-to-Use	6156-310		
25 User Right-to-Use	6156-325		
50 User Right-to-Use	6156-350		
100 User Right-to-Use	6156-400		
System Adjuncts and Adapters			
Channel Service Units (CSUs)			
T1 CSU (3150 CSU)	21581	107087546	
T1 ESF CSU Stand-alone		107063828	21581-00001
115VAC in line Transformer		406942284	
Converter Cable		107083711	3100-F1-560
RJ48M to RJ48M Unshielded			
Twisted Pair Cable (T1)		406941559	3110-F1-500
3160-DSU	2151-DP2	107115784	3160-A1-DSU
3164-DSU	2151-DP4	107115792	3164-A1-DSU-CSU
Inactive			
Auxiliary Power Unit 9024		406467142	9024
T1 ESF CSU Stand-alone		107063828	21581-00001
115VAC in line Transformer		406942284	
Converter Cable		107063711	3100-F1-560
RJ48M to RJ48M Unshielded			
Twisted Pair Cable (T1)		406941559	3110-F1-500
Optional Equipment:			
Unshielded TW Pair Cable (T1)			
Canada		107063703	3100-F1-510
Straight-Thru Cable PC Serial			
Port		406941542	3100-F1-550
Straight-Thru Cable			
Terminal/Printer		406941534	3100-F1-540
Modular DC Voltage Adapter		406941492	3100-F1-250
Wall Mount Kit		406941674	3100-F1-400
Cables for Mounting			
25' D4BU-29 Cord		106472921	ASSY-4400-F1-533
2' D4BU-29 Cord		106472905	ASSY-4400-F1-530
Dial Back Modem FLD		106842271	ASSY-3400-F2-201
Dial Back Modem FAC		106842289	ASSY-3400-G2-201
Dial Back Modem NFLD		106842305	ASSY-4000-F2-201
Dial Back Modem NFAC		106842297	ASSY-4000-G2-201
Prism MUX Field		106842313	ASSY-3400-F2-200
Optional Equipment:			
Peripheral Interface	62515	105179303	KIT PRTS-D181558
Async. Data Unit, Receptacle	2169-004	103963971	Z3A2
RS232 Connector/Cord		105388474	CORD M8AJ-87
Async, Data Unit, Plug	2169-001	103963971	Z3A2
RS232 Connector/Cord		105388466	CORD M8AK-87
Aux Power (2 required)	21691		
Transformer (2012-D)		102599354	TRNSF-2012D-49
Adapter (248B)		102802113	ADPTR-248B-50
Cord		102937620	CORD-D6AP-87
Adapter (400B)		104152558	ADPTR-400B2

Ordering Codes—*Continued*

Component	PEC/SAP	Comcode	App. Code
Electrostatic discharge/			
(ESD) suppression kits			
D-181574		105179329	D181574
D-181589		105201891	D181589
D-181590		105201909	D181590
D-181591		105201917	D181591
D-181593		105201933	D181593
EMI filter		103965208	Z200A
In-Range Out-of-Building[5]			
146E (IROB) unit			
IROB unit-MLX	8310-013	407568161	505A ASSY 0A WD
Fuse block 505A for IROB			
(8 fuse blocks per box)		406610337	
2 IROBs	8310-020		
4 IROBs	8310-021		
6 IROBs	8310-022		
8 IROBs	8310-023		
Off-Premises Range Unit	2302-OPT	107531337	122A-215
Digital Magic on Hold®			
Basic Prerecorded			
Package	3128-020		
Digital Deck		407464684	DMOH1DIGITAL
Cassette		407166941	DMOH-02 GENERIC
Personalized Recording			
Package	3128-030/A		
Digital Deck		407464684	DMOH1 DIGITAL
Cassette		406876664	DMOH-01 PERSONALIZE
Custom Production			
Package (Std. Tape program)	3128-040/A		
Digital Deck		407464684	DMOH1 DIGITAL
Cassette		406876680	DMOH-05 SIN F/CUST
Stand-alone Package of 4			
Custom Productions	31280/A	405126632	M4 FOUR
Package of 6 Custom			
Recordings	31281/A		
Package of 12 Custom			
Recordings	31282/A		
Stand-alone Package of 3			
Custom Productions	31283/A	406876649	DMOH-03
Stand-alone Single			
Custom Production			
Package	31284/A	405135344	INDIV
Duplicate of a Custom			
Production (for			
Second Location)	31289	405127945	D-IP/EM DUB IND MSTR
Package of 4 Duplicate			
Recordings	31285/A		
Package of 6 Duplicate			
Recordings	31286/A		
Package of 12 Duplicate			
Recordings	31287/A		
Re-License of Music	31288	405127879	D24 24 DUB
Melody System	3128-015/A		
Algorithm System and Custom			
Production	3128-080/A		
Algorithm System and Duplicate			
Production	3128-085/A		
Express Custom Recording	3128-001/A		
Package of 4 Express			
Custom Recordings	3128-004/A		

Component	PEC/SAP	Comcode	App. Code
Magic Messenger Personalized Recording	3128-125/A		
Magic Messenger Customized Recording	3128-130/A		
Package of 3 Magic Messenger Custom Recordings	3128-133/A		
Digital Announcer Unit (one minute)	3119-001		
Announcer		407344365	
Recorder		406659342	RCDR-DMOH2
Cassette		406769455	CSTT-DMOH5
Digital Announcer Unit (three minute)	3119-003		
Announcer		407344357	
Recorder		406659342	
Cassette		406659359	
Four Channel System (1-minute recording per channel)	3119-141	407716638	
Four Additional Channels (1-minute recording per channel)	3119-041		
Four Channel System (1-minute recording per channel, remote recording capability)	3271-141	407038512	ADP02/A
Eight Channel System (1-minute recording per channel, remote recording capability)	3271-241	407079003	
Four Channel System (2-minutes recording per channel, remote recording capability)	3271-142	407556232	
Package of 12 Headset Prong Adapters	3122-012		
Package of 12 Headset Modular Adapters (for MLX sets)	3122-024		
Package of 12 Supra Noise Canceling Headpieces	3122-155		
Modem 2224G (limited availability)	2224-CEO	105659965	2224C-L1 D/2
Music Coupler	61398	406143925	ASSY-K23395 L3
PagePac Plus			
PagePac Plus Controller	5323-100	406914598	UNIT-22051-000
PagePac Plus Controller with Power	5323-105		
PagePac Plus 16 Zone	5335-100	406914614	UNIT-22051-016
D20 PagePac Plus Amplicenter	5328-020	406915280	UNIT-22051-020
D100 PagePac Plus Amplicenter	5328-100	406915264	UNIT-22051-100
D300 PagePac Plus Amplicenter	5328-300	406915330	UNIT-22051-300
Universal 70V Door Spkr.	5330-230	406914630	UNIT-22050-070
SMDR Printers			
AP Printer (80-column)	4200-570	406637314	ML182
571 Parallel Printer		406516989	571-MCII 6FT
(132-column)	4200-571	406712067	ML321P
AP CAT Printer (serial)	4200-572	406716464	571-MCII 6FT
Uninterruptible Power Supply		406716464	ML182-R2
500 VA (15 min)(inactive)		105610141	515005C111
Reserve (1 hr) (inactive)		105610174	0053150
PagePal Interface	5335-700	407120716	

Component	PEC/SAP	Comcode	App. Code
Audio Visual Paging			
215C Message Center	5332-100		
4120C Message Center	5332-150		
Connector Kit	5332-900		
Wireless Keyboard	5332-905		
Alpha Net Plus Software	5332-910		
R2485 Repeater	5332-915		
External Alerts			
Loud external ringer	31016	407105691	RINGER-L1AMP-49
External ringer	31019		
Supplemental Alerts			
Universal Alert	5580-001		
Alert Horn	5580-021	406207217	THET4-1
Alert Strobe	5580-041	403319197	AT-WHL LK
Inactive System Adjuncts and Adapters			
ExpressRoute 1000 Data Unit		107651796	
V.35 Cable		107651275	
7500B data module		105657639	7500B-L1
Stand-alone power supply		405509852	WP90110L7
Multiple mounting		105441166	Z77A
7500A upgrade kit		105688501	D182208
Ring generator unit		105213201	129B RING GEN
Universal Paging		405891698	KIT-UPAM
Access Module (UPAM)			
TAM-B		405899972	D181900
PRS-48		405742735	D181900
WMT-1A		405891680	D181900
Zonemate™ 9			
Dialer unit		404057911	DIAL UNIT-9ZONE
Control unit		405024134	CNTL 22050-020
Zonemate 39			
Dialer unit		404057929	39 ZONE SELECT
Control unit		405024134	CNTL-22050-020C
E1CM ringer and parts	61211		D-181233
290A adapter		102992252	290A ADPTR
Ringer		407105683	E1CM-49
Mounting plate		102988466	1049A
Cord		103938494	CORD-D4CH-87-25
Network Interface Alert Bell	61211	407105683	RINGER-E1CM-49
Telephone Adjuncts and Adapters			
Multi-Function Module (digital)	3156-MFM	105746474	540A1
Supplemental Alert Adapter (SAA)	2301-SSA	105031199	ADPTR-856A
MLX-10/MLX-10D cover		406648469	
MLX Telephone Power Supply	2404-010		
MSP1 Power Supply		406743419	WP92464L1
7' Cord		103786778	
Single-line telephones			
S202A Speakerphone	3152-008		
Black		105721088	TEL-S202A-003
Misty cream		105721096	TEL-S202A-215
Message-Waiting Indicator	3152-004	103966396	Z34A
Polycom Speakerphones			
Standard	3127-STD	407428697	
Sound Station EX	3127-EXP	407428739	
Lapel Microphone	3127-MIC	407428432	
Avaya Analog Premier EX			
Without Microphone	3127-APE	407795251	
With Microphone	3127-APX	407795269	

Ordering Codes—Continued

Component	PEC/SAP	Comcode	App. Code
Inactive Single-line Telephones			
Program, Pause, and			
Auto Dial button conceal			
kit for 8100-series			Kit-D 182363
telephones		106248370	Analog
Speakerphone	3131-004	103786786	D8W-87 7FT
Black		106270325	MOD-CS201A-003
Misty cream		106270333	MOD-CS201A-215
4A Speakerphone			4A
Power unit		102139938	PWR UNIT-85B1
Block connector		102434925	BLK CON-82B-49
Adapter for single-line			
telephone		102813888	ADPTR-223C
Adapter for multiline			
telephone		102949013	ADPTR-223D IP
Transmitter (black)		103971891	TRMR-680AF-03
Transmitter (ivory)		103971909	TRMR-680AF-50
Loudspeakers			
Black		103873873	LSPK-108AA-03
Ivory		103873881	LSPK-108AA-50
Green		103873899	LSPK-108AA-51
Beige		103873907	LSPK-108AA-60
White		103873964	LSPK-108AA-58
S201 Speakerphone		103786786	D8W-87 7FT
Black		106192651	MOD-S201AP-003
Misty cream		106192693	MOD-S201AP-215
CS201 Conference			
S203A Speakerphone			
Black		106058340	MOD-S203A-003
Misty cream		106508365	MOD-S203A-215
Hands-Free Unit (HFU)		103814356	MOD-S102A
Headsets and Adapters			
Modular Base Unit for Headset (M10L)	3122-022	407639715	KS23822L26
Modular Base Unit for Headset (M12LU)	3122-022	408094704	KS23822L26LU
Headset Adapter Cord	3124-HIC	408122950	45283-01
StarSet® Headpiece	3122-030/A	406445627	KS23822L3
Mirage® Ultra Headpiece	3122-050	406445783	KS23822L4
Mirage® Ultra NC Headpiece	3124-050	408020998	KS23822L48NA
Supra® Ultra Headpiece	3122-040	406445791	KS23822L5
Supra® Starter Headpiece	3122-046	408018943	KS23822L59VA
Supra® Starter (NC) Headpiece	3122-047	408001436	KS23822L59NA
Supra® Ultra NC Headpiece	3122-055	406445809	KS23822L6
Supra Ultra II Twin Top Headpiece	3122-045	406976076	KS23822L13
Supra Ultra II (NC) Headpiece	3122-060	406445817	KS23822L7
Modular Amplifier	3122-020/A	406741900	KS23822L2
Plug Prong Amplifier	3122-010	406445601	KS23822L1
Earset Starter Headpiece	3122-031	408018901	KS23822L58VA
Earset Starter Headpiece with	3122-032	408001428	KS23822L58NA
Noise Canceling Feature			
Starter Duoset	3122-048	408018869	KS23822L57VA
Starter Special NC Duoset	3122-049	408001386	KS23822L57NA
Tristar Ultra Headpiece	3124-035	407547058	KS23822L17
Tristar Ultra NC Headpiece	3124-036	408020758	KS23822L56NA
Encore Ultra VT Headpiece	3124-062	408021004	KS23822L49VA
Encore Ultra (NC) Headpiece	3124-065	408020980	KS23822L46NA
Encore Ultra II Headpiece	3124-067	408021095	KS23822L55VA
Encore Ultra II (NC)	3124-070	407547074	KS23822L20

Component	PEC/SAP	Comcode	App. Code
Inactive Headsets and Adapters			
Headset Adapter		105752042	ADPTR-502C-003
500A Headset Adapter		106690043	Adapter EL-500A-265
		405331711	Pwr Sup-KS2291 1L2
		102479904	Cord-D4BU-29 Std 7FT
		104152558	Adapter-40082
4400-Series Telephones—Miscellaneous Add-Ons/Replacement Parts			
Cords			
D2R 14-ft. Line Cord/Clear[6]	4499-D2R	408191302	D2R-029
D4BU 14-ft. Line Cord/Satin[7] Silver	4499-D4B	102803277	D4BU-87
D8Y 3-ft. Interface Cord for 4450	4499-D8Y	108489972	D8Y
H4DU 9-ft. Handset Cord, black (quantity: 1)	26300	108004292	H4DU-003-9
H4DU 9-ft. Handset Cord, black (quantity: 3)	26315	108004292	H4DU-003-9
H4DU 12-ft. Handset Cord, black (quantity: 1)	26301	108004300	H4DU-003-12
H4DU 12-ft. Handset Cord, black (quantity: 3)	26316	108004300	H4DU-003-12
H4DU 25-ft. Handset Cord, black (quantity: 1)	26302	108004318	H4DU-003-25
H4DU 25-ft. Handset Cord, black (quantity: 3)	26317	108004318	H4DU-003-25
H4DU 9-ft. Handset Cord, white (quantity: 1)	26303	108004326	H4DU-264-9
H4DU 9-ft. Handset Cord, white (quantity: 3)	26318	108004326	H4DU-264-9
H4DU 12-ft. Handset Cord, white (quantity: 1)	26304	108004334	H4DU-264-12
H4DU 12-ft. Handset Cord, white (quantity: 3)	26319	108004334	H4DU-264-12
H4DU 25-ft. Handset Cord, white (quantity: 1)	26305	108004342	H4DU-264-25
H4DU 25-ft. Handset Cord, white (quantity: 3)	26326	108004342	H4DU-264-25
Handsets			
Replacement Handset-Standard (Black)	33082	108216177	AB1C-003
Replacement Handset-Standard (White)	33080	108216185	AB1C-264
Specialty Handsets			
Push-to-Talk Handset, black	33120	408117950	AJ5A-003
Push-to-Talk Handset, white	33121	408117968	AJ5A-264
Amplified Receive Handset, black	33114	408057479	AJ6A-003
Amplified Receive Handset, white	33115	408056487	AJ6A-264
Noisy Location Handset, black	33117	408057503	AJ8A-003
Noisy Location Handset, white	33118	408057511	AJ8A-264
K-Style Push-to-Talk Handset, black	31055A-09	406712430	K5H1 (KS23843L4)
K-Style Push-to-Talk Handset, white	31055A-10	406712448	K5H1 (KS23843L5)
K-Style High Noise-Canceling Handset, black	31057A-09	406712497	K6S2 (KS23843L10)
K-Style High Noise-Canceling Handset, white	31057A-10	406712505	K6S2 (KS23843L11)
K-Style Amplified Speech, black	31054A-09	406712406	K7S2 (KS23843L1)
K-Style Amplified Speech, white	31054A-10	406712414	K7S2 (KS23843L2)
K-Style Noise-Canceling Handset, black	31056A-09	406712463	K8S1 (KS23843L7)
K-Style Noise-Canceling Handset, white	31056A-10	406712471	K8S1 (KS23843L8)

Component	PEC/SAP	Comcode	App. Code
K-Style Amplified, Push-to-Listen Handset, black	31053A-09	407327212	K8S2
K-Style Amplified, Push-to-Listen Handset, white	31053A-10	106382369	K8S2
Shoulder Rest	33112	108357369	35A-264
Auxiliary Power Supply for 4424LD+/4450 DSS Power Supply	4499-PWR	108596412	D183028
Wall Mounting Stands for 4400-Series Telephones			
Small 4400 Wall Mounting Stand	4499-SML	108541210	15A
Large 4400 Wall Mounting Stand	4499-LRG	108541293	16A
Designation Cards and Covers			
4406D+ Designation Cards (10 per package)	CIB 3205	108522855	
4412D+/4424D+ Designation Cards (10 per package)	CIB 3208	108522889	
4424LD+ Designation Cards (10 per package)	CIB 3209	108522897	
4450 DSS Designation Cards (10 per package)	CIB 3211	108523010	
QCC Button Designation Cards (2 cards per package)	CIB 3201	108493289	
4406D+ Designation Card Covers (5 per package)	4499-CVS	848410940	
4412D+/4424LD+/4424D+ Designation Card Covers (10 per package)	4499-CVL	848410957	
4450 Designation Card Covers (25 per package)	4499-CVD	848410965	
4424LD+ System Programming Overlay		848410130	
MLX Telephones—Miscellaneous Add-Ons/Replacement Parts			
Handsets and Cords			
Handset Hook (black)		845544998	
Handset Hook (white)		845545003	
Handset (black)		106050065	K2S1-003
Handset (white)		106053408	K2S1-264
Handset, amplified hearing	31052		
Black		105581896	K6S2-003
White		106248248	K6S2-264
Misty cream		105581904	K6S2-215
Noise Canceling Handset	31056		
Black		406712463	KS23843L7
White		406712471	KS23843L8
Misty cream		406712489	KS23843L9
High-Noise Canceling Handset	31057		
Black		406712497	KS23843L10
White		406712505	KS23843L11
Misty cream		406712513	KS23843L12
Amplified Speech Handset	31054		
Black		406712406	KS23843L1
White		406712414	KS23843L2
Misty cream		406712422	KS23843L3
Push-to-Talk Handset	31055		
Black		406712430	KS23843L4
White		406712448	KS23843L5
Misty cream		406712455	KS23843L6
Push-to-Listen Handset	31053		
Black		406382344	K8S2-003
White		406382369	K8S2-264
Misty cream		406382351	K8S2-215
Handset cord, 9' (2.74 m), black		105635429	H4DU-003 9 FT
Handset cord, 9' (2.74 m), white		105701809	H4DU-264 9'BULK
Handset cord, 12' (3.66 m), black		102401445	H4DU-3 12FT IP

Ordering Codes—Continued

Component	PEC/SAP	Comcode	App. Code
Handset cord, 12' (3.66 m), white		102402609	H4DU-26412'IP
Handset cord, 25' (7.62 m), black		105523866	H4DU-3 25'
DSS line cord, 2' (61 cm)		106187545	CORD D8AC-87
Desk Stands and User Trays			
Stand (large, black)		846320851	STAND-LARGE BL
Stand (large, white)		846320844	STAND-LARGE WH
Stand (small, black)		846320810	STAND-SMALL BL
Stand (small, white)		846320802	STAND-SMALL WH
User tray (black)		846320240	USER TRAY DWR B
User tray (white)		846320232	USER TRAY DWR W
Designation (Button Assignment) Cards and Covers			
Card[8]—MLX-10, MLX-10D, MLX-10DP, MLX-16DP, MLX-20L, MLX-28D		847355559	
Card set-DSS[9]		106448756	KIT-D182464
Card covers-DSS (black)[9]		106448731	KIT-D182462 PRT
Card covers-DSS (white) [9]		106448749	KIT-D182463 PRT
Card set-QCC [10]		106561673	KIT-D182562 PRT
Card covers[11]—MLX-10, MLX-10D, MLX-20L		106448681	KIT-D182457 PRT
Card covers[11]—MLX-16DP		107499162	KIT-D182846 PRT
Card covers[11]—MLX-28D		106448699	KIT-D182458 PRT
Single-Line Telephones—Miscellaneous Add-Ons			
Ground-Start Button	31021	405792839	Key-KS23566L1
Wiring Kits			
Interconnect Wiring Kit			
110AB1-100JP12		104409396	
110A1 trough		104407960	
D-Rings		842139248	
D8W cords		103786802	
Parts list			
SYSTIMAX®			
MERLIN Wiring Kit	3103-MER	106393671	
110A1 trough (5)		104407960	
110AB1-100JP12 modular block (2)		104409960	
110AB1-100 FT punch down block (1)		103823845	
D-Rings (6)		842139248	
Patch cords 12 cords, 4-pair, 5' (1.5 m)		846619989	
D8W cords 24 cords, 14' (4.3 m)		103786802	
Template		846613933	
Instruction sheet		846613941	
Parts List		846623924	
CAT 3 Standard 4-Pair Wire	2782-004		
CAT 3 Additional 4-Pair Run	2783-MU3		
CAT 5 Standard 4-Pair Wire	2782-CT5		
CAT 5 Additional 4-Pair Run	2782-MU5		

1 Contains the Feature Reference, System Programming, and System Manager's Quick Reference.
2 Consult Avaya for other area-specific information.
3 Includes the following documentation: the System Manager's Manual, the Implementation and Service Manual, the Quick Reference Guide, Wallet Cards, Worksheets, and Implementation and Service Release Notes.
4 Wallboard also referred to as "Readerboard."
5 Any multiline off-premises telephone must have an appropriate IROB protector both at the control unit location and at the off-premises location.

6   6-position, 2-conductor cord for connection of 4400 telephone to line interface when
    auxiliary power is not required.
7   6-position, 4-conductor cord for connection of 4400 telephone to auxiliary power
    supply.
8   Ten sheets per package.
9   Includes both top and bottom cards or covers.
10 Eight cards per kit (four sets).
11 Four per package.

Control Unit Modules

Module	Trunk Type	Extension Type
Processor	N/A	N/A
Power supply	N/A	N/A
008 MLX[1]	N/A	MLX extensions, including: ■ MLX voice only ■ MLX voice with Voice Announce ■ MLX voice and Multi-Function Module (MFM) with T/R adjunct ■ MLX voice and MFM with Supplemental Station Adapter (SSA) ■ ISDN terminal adapter only ■ Access device for data communications between a PC on the system and a high-speed Internet connection, connection to remote node LAN access server, or ISDN router ■ Computer Telephony Integration (CTI) link ■ Videoconferencing systems using one jack and 2B data feature or 2 jacks with ISDN terminal adapters (depending on video system)[2]
008 OPT[2]	N/A	On-premises or off-premises single-line telephones

1 Frmware can be upgraded by using a PCMCIA card.
2 Even though the OPT module has only 8 jacks, it uses 12 ports of capacity, thereby decreasing overall extension capacity by 4 extensions for every OPT module.

Specifications

Highlights: 68EC020 processor at 16 MHz, built-in 1200/2400-bps modem; built-in diagnostics; Hybrid/PBX, Key, or Behind Switch mode option; 1.5 MB RAM backup for 4 days; PCMCIA interface
Ports: 3 RS-232-C ports—1 for debugging (plugged to prevent access), one for SMDR, and 1 for system administration

Power input: 117 VAC
Power output: +5 VDC (10 A), -5 VDC (2.50 A), -48 VDC (2.05 A)
Capacity: 54 unit loads

Capacity: 8 digital extension jacks, each with 1 or 2 extensions (each extension is assigned an individual extension number)
Signaling: BRI S/T protocol (two 64-kbps B channels, one 16-kbps D channel) on a passive bus
Power: 48 VDC phantom power to telephone, 48 VDC over a separate pair (7–8) to an operator console with a DSS
Loop range: 3000 feet (914 m), in-building or in-range out-of-building (with MLX IROB protectors) service only

Capacity: 8 T/R extensions on 2-way voice transmission path with support for telephones with message waiting lights, 2 TTRs
Ringing current: 75-Vrms, 20-Hz trapezoidal ringing superimposed on -48 VDC.
REN: ≤ 1.0 per port
Disconnect signal: 900 ms (T/R short for analog modem, G3 fax, etc.)
Switchhook flash detection: 300–1200 ms
Loop resistance: Serves 2-wire loops to 1300 ohms, including extensions
dB loss[1]: 3dB (factory setting), 0dB if all calls are to another OPT station.

1   If one OPT station calls another OPT station, the loss values of the two OPT stations are added resulting in transmission levels that are too low. 008 OPT modules (517D28) may be hardware configured to 0dB loss, however this should only be done if all or the majority of calls from the OPT stations are to other OPT stations. Setting the loss value to 0dB violates EIA-464-A-1 specifications. Contact Tier 4 before modifying the loss value settings of 008 OPT modules.

Module	Trunk Type	Extension Type
016 T/R	N/A	Single-line telephones; Intuity AUDIX®; Octel 100; T/R adjuncts (such as answering or fax machine); analog data devices (such as modems)
016 ETR[1]	N/A, TTR	All ports, when programmed for ETR: MLS, ETR, Business Cordless 905, and TransTalk 9031/9040 telephones. Ports 11–16 when programmed for T/R: any T/R device such as single-line telephones; Intuity AUDIX®; Octel 100; T/R adjuncts (such as answering or fax machine); analog data devices (such as modems)
016 MLX[1]	N/A	MLX extensions, including: ■ MLX voice only ■ MLX voice with Voice Announce ■ MLX voice and MFM with T/R adjunct ■ MLX voice and MFM with SSA ■ ISDN terminal adapter only ■ Access device for data communications between a PC on the system and a high-speed Internet connection, connection to remote node LAN access server, or ISDN router ■ CTI link ■ Videoconferencing systems using one jack and 2B data feature or 2 jacks with ISDN terminal adapters (depending on video system)[1]
024 TDL	N/A	TDL extensions for 4400-Series and TransTalk 9040 telephones. Access device for data communications between a PC on the system and a high-speed Internet connection, connection to remote node LAN access server, or ISDN router

1 Firmware can be upgraded by using a PCMCIA card.

Specifications

Capacity*: 16 T/R extensions on 2-way voice transmission path with support for telephones with message waiting lights, 4 TTRs*
Power*: 40-VDC, 600-ohm battery source*
Ringing current*: 105-Vrms, 30-Hz sinusoidal ringing superimposed on -48 VDC*
REN*: ≥ 4.0 per port*
Disconnect signal*: 900 ms (T/R short for analog modems, G3 fax, etc.)*
Switchhook flash detection*: 300–1200 ms*

Capacity*: 16 ETR station ports including 6 with T/R functionality and 4 TTRs. First 10 ports are ETR ports only; remaining 6 ports can support either T/R or ETR, but not both simultaneously*
Power*: -48V for ETR and -49V normal for T/R*
Ringing current*: 20/25 Hz balanced trapezoidal ring signal*
REN*: 2 per port*
Off-hook detection*: ≥18mA, ≤30ma, ≥20 msec for T/R; massage control for ETR*
On-hook detection*: ≤14mA for T/R; massage control for ETR*
T/R switchhook flash detection*: 300-1200 ms*

Capacity*: 16 digital station ports*
Signaling*: BRI S/T protocol (two 64-kbps B channels, one 16-kbps D channel) on a passive bus*
Power*: 48 VDC phantom power to telephone, 48 VDC over a separate pair (7–8) to an operator console with a DSS*
Loop range*: 3000 feet (914 m), in-building or in-range out-of-building (with MLX IROB protectors) service only*

Capacity*: 24 digital station ports and 8 TTRs*
Signaling*: BRI S/T protocol (two 64-kbps B channels, one 16-kbps D channel) on a passive bus*
Power*: 48 VDC phantom power to telephone, 48 VDC over a separate pair (7–8) to an operator console with a DSS*
Loop range*: 3000 feet (914 m), in-building or in-range out-of-building (with IROB protectors) service only*

Control Unit Modules—*Continued*

Module	Trunk Type	Extension Type
100 D[1]	T1 or PRI	T1 emulates 24 lines/trunks: loop-start, ground-start, tie, and Direct Inward Dial (DID; Hybrid/PBX mode only); can also supply subscriber services. T1 can also provide high-speed (56K) data communications and digitally emulated tie trunks for data communications. PRI supports subscriber services, allows high-speed digital data communications, and includes special features.
100R INA[1]	T1 or PRI	T1 emulates 24 lines/trunks: loop-start, ground-start, tie, and Direct Inward Dial (DID; Hybrid/PBX mode only); can also supply subscriber services. T1 can also provide high-speed (56K) data communications and digitally emulated tie trunks for data communications. PRI supports subscriber services, allows high-speed digital data communications, and includes special features. Channels can be dedicated for data only to provide high-speed access to the Internet. Contains built-in Channel Service Unit.
100 DCD[1]	T1 or PRI	T1 emulates 24 lines/trunks: loop-start, ground-start, tie, and Direct Inward Dial (DID; Hybrid/PBX mode only); can also supply subscriber services. T1 can also provide high-speed (56K) data communications and digitally emulated tie trunks for data communications. PRI supports subscriber services, allows high-speed digital data communications, and includes special features. Contains built-in Channel Service Unit (supported in Release 1.5 and later systems).
400 E&M	Tie trunk	N/A

1 Firmware can be upgraded by using a PCMCIA card.

Specifications

Capacity: *24 channels ("virtual" lines/trunks) for voice and analog data or for digital data only (T1); or 23 B-channels for voice and data, and 1 channel used for signaling (PRI). Supports networking in Hybrid/PBX mode only.*
Mode: *Multiplexes up to 24 channels into 1 facility and demultiplexes 1 facility into up to 24 channels.*
Speed: *Up to 64 kbps*
Signaling: *DS1 over 4-wire; common channel is not an option for T1; PRI uses 23 B+D*

Capacity: *24 channels ("virtual" lines/trunks) for voice and analog data or for digital data only (T1); or 23 B-channels for voice and data, and 1 channel used for signaling (PRI). Supports networking in Hybrid/PBX mode only.*
Mode: *Multiplexes up to 24 channels into 1 facility and demultiplexes 1 facility into up to 24 channels.*
Speed: *Up to 64 kbps*
Signaling: *DS1 over 4-wire; common channel is not an option for T1; PRI uses 23 B+D*

Capacity: *24 channels ("virtual" lines/trunks) for voice and analog data or for digital data only (T1); or 23 B-channels for voice and data, and 1 channel used for signaling (PRI). Supports networking in Hybrid/PBX mode only.*
Mode: *Multiplexes up to 24 channels into 1 facility and demultiplexes 1 facility into up to 24 channels.*
Speed: *Up to 64 kbps*
Signaling: *DS1 over 4-wire; common channel is not an option for T1; PRI uses 23 B+D*

Capacity: *4 analog tie trunks. Supports networking in Hybrid/PBX mode only*
Method of completion: *Automatic start, immediate-start, wink-start, or delay-dial-start*
Signaling: *E&M type 1S, type 1C, type 5*

Module	Trunk Type	Extension Type
408 GS/LS-ID-MLX[1]	Loop-start or ground-start	1 PFT telephone; Caller ID
412 LS-ID-TDL[1]	Loop-start	1 PFT telephone; Caller ID

1 Firmware can be upgraded by using a PCMCIA card.

Specifications

Capacity*: 4 ground-start and/or loop-start lines/trunks, 8 digital extension jacks for MLX extensions, including:*

- *MLX voice only*
- *MLX voice with Voice Announce*
- *MLX voice and MFM with T/R adjunct*
- *MLX voice and MFM with SSA*
- *ISDN terminal adapter only*
- *Access device for data communications between a PC on the system and a high-speed Internet connection, connection to remote node LAN access server, or ISDN router*
- *CTI link*
- *Videoconferencing systems using one jack and 2B data feature or 2 jacks with ISDN terminal adapters (depending on video system)*

Extension signaling*: BRI S/T protocol (two 64-kbps B channels, one 16-kbps D channel) on a passive bus*

Trunk signaling*: Loop-start or ground-start trunk (optional per port), analog voice*

Loop range*: 3000 feet (914 m), in-building or in-range out-of-building (with MLX IROB protectors) only. If adjuncts (MFM or DSS) are used, auxiliary power must be in place*

Protocol: *Requires calling name and/or number identification service from central office*

Capacity*: 4 loop-start lines/trunks, 12 digital extension jacks for TDL extensions. Access device for data communications between a PC on the system and a high-speed Internet connection, connection to remote node LAN access server, or ISDN router*

Extension signaling*: BRI S/T protocol (two 64-kbps B channels, one 16-kbps D channel) on a passive bus*

Trunk signaling*: Loop-start trunk (optional per port), analog voice*

Loop range*: 3000 feet (914 m), in-building or in-range out-of-building (with IROB protectors) only. If DSS is used, auxiliary power must be in place*

Protocol: *Requires calling name and/or number identification service from central office*

Control Unit Modules—*Continued*

Module	Trunk Type	Extension Type
800 DID	Direct Inward Dialing and TTR	N/A
800 GS/LS-ID	Loop-start or ground-start	2 PFT telephones; Caller ID (loop-start trunks only), if you subscribe to caller identification from the local telephone company, displays the number of incoming callers and the name of incoming callers as well, on MLX, MLS, TransTalk 9031/9040, Business Cordless 905, and ETR display telephones
800 NI-BRI	T1 NI-BRI interface	Voice, data, video, and other services at 64 kbps over standard ISDN lines/trunks
MERLIN Messaging[1]	none	MERLIN Messaging System resides on this module

1 The system assigns 12 logical IDs and extensions to the MERLIN Messaging module. The first 6 are available for use as MERLIN Messaging ports and the 12th is used by the Remote Maintenance Device (RMD). The 7th –11th are not used and are not available for other tip/ring devices or applications.

Specifications

Capacity: 8 lines/trunks, 2 TTRs
Transmission: Incoming calls only; 2-way (1-pair) fixed impedance to DID trunks; no outgoing calls
Signaling: Loop-reverse battery; wink-start or immediate-start; accepts touch-tone dialing

Capacity: 8 ground-start and/or loop-start lines/trunks; 2 TTRs
Signaling: Loop-start or ground-start
Protocol: Requires calling name and/or number identification service from central office

Capacity: 8 BRI facilities, each with 2 B-channels ("virtual" lines) for voice and data and 1 channel used for signaling
Speed: Up to 64 kbps
Signaling: ISDN Basic Rate 2B+D

Capacity: 7 internal, system-defined T/R jacks; 2 TTRs; internal remote maintenance device; serial port for PC connection

Adjunct Summary

Equipment Type	Specifications	Avaya Products
Alerts (AC)[1]	■ Any audible or visual alert that operates on 20–30 Hz ringing signals. ■ Associated with a specific extension (supplemental alert) or works on a programmed trunk port (external alert).	External Ringer—Loud External Ringer
Alerts (DC)	■ Any audible or visual alert that operates on 48-VDC signals. ■ Associated with a specific extension (supplemental alert) or works on a programmed trunk port (external alert). **Note:** 48-VDC is supplied via the white/green pair on an MFM in SSA mode	Alert bell Alert horn Alert strobe Alert chime Alert deluxe horn Alert switch
Answer/record machine[1]	■ Industry-standard machine. ■ Low ringer equivalence (less than 0.15 or (4.0 total REN for T/R port.) ■ Ability to recognize 600-ms disconnect signal or other means of automatic disconnect (such as voice reset disconnect timer, fixed recording time).	Model 1300 Answering Machine Model 1531 Remote Answering System telephone

1 Cannot be connected to a QCC.

Interface		
LS or GS/LS	T/R	MFM
Line/Trunk Jack	T/R Extension Jack[1]	MLX Extension Jack
	3	3
3		3
	3	3

1 T/R jacks on a 016 T/R module or jacks programmed for T/R operation on a 016 ETR module.

Equipment Type	Specifications	Avaya Products
Cordless Telephone[1]	■ Must have touch-tone dialing capability when connected via MFM; rotary or touch-tone dialing can be used on T/R port. ■ Single line.	5650 Cordless Telephone 5481 Cordless Telephone 5552 Cordless Telephone
Credit Card Verification Terminal[1]	■ Must have touch-tone dialing capability when connected via MFM; rotary or touch-tone dialing can be used on T/R port.	N/A
Dial Dictation[1]	■ A device that requires contact closure can be used on LS/GS line jack only with UPAM.	N/A
Direct Station Selector	■ A maximum of 2 DSSs can be connected to an operator console. ■ A 4499-PWR power unit must be added to a 4400-Series operator console having 1 or 2 DSSs. ■ A 329A power unit must be added to an MLX operator console having 2 DSSs. ■ Connects to DSS jack on operator console.	Direct Station Selector (DSS)

1 Cannot be connected to a QCC.

Interface		
LS or GS/LS	T/R	MFM
Line/Trunk Jack	T/R Extension Jack[1]	MLX Extension Jack
	3	3
	3	3
3	3	3

1 T/R jacks on a 016 T/R module or jacks programmed for T/R operation on a 016 ETR module.

Equipment Type	Specifications	Avaya Products
Fax[1]	■ Must have touch-tone dialing capability when connected via MFM; rotary or touch-tone dialing can be used on T/R port. ■ Industry-standard analog interface.	
Group Calling Delay Announcement[1]	■ Industry-standard announcement device. ■ Must provide automatic disconnect. ■ Each calling group can have its own announcement (maximum 32). Each calling group can have 10 primary announcement devices and 1 secondary announcement device. ■ A device can provide delay announcement for more than one group.	Model 1330 Answering Machine Digital Announcement Device, Model 18A for single unit; Model 15A for 4-port unit

1 Cannot be connected to a QCC.

Interface		
LS or GS/LS	T/R	MFM
Line/Trunk Jack	T/R Extension Jack[1]	MLX Extension Jack
	3 *(can also use 008 OPT Extension Jack)*	3
	3	3

1 T/R jacks on a 016 T/R module or jacks programmed for T/R operation on a 016 ETR module.

Equipment Type	Specification	Avaya Products
Headset for 4400-Series and MLX telephones	(N/A)	Starset Mirage Supra Supra NC Tristar Ultra Encore Ultra
Headset Adapter	■ Connects directly to telephone OTHER jack.	
Loudspeaker Paging	■ External paging system using DTMF signaling connected to LS or GS line jack. ■ CPE paging systems require an interface unit; if CPE has 2-wire input, the PagePal interface (5335-700) can be used.	PagePac Plus Amplicenters D20, D100, D300 PagePac Plus Controller PagePac 6 PagePac 6 Plus
Message Waiting Indicator	■ For single-line telephones. ■ Connects directly to telephone.	Z34A (PEC 3 1032)
Modem	■ If the modem supports touch-tone dialing via the associated data terminal, the keyboard can be used for dialing. ■ If the modem does not support touch-tone dialing, an associated basic (single-line) telephone can be used for dialing.	

Interface		
LS or GS/LS	**T/R**	**MFM**
Line/Trunk Jack	**T/R Extension Jack[1]**	**MLX Extension Jack**
3		
	3	
	3	3

1 T/R jacks on a 016 T/R module or jacks programmed for T/R operation on a 016 ETR module.

Equipment Type	Specifications	Avaya Products
Music-On-Hold[1]	■ Any FCC-registered 8-ohm music source or recorded announcement device.	Magic On Hold
Speakerphone	■ Connect directly to telephone. ■ For single-line telephones only.	203A (PEC 3131-008)
SMDR Printer	■ Connects to upper RS-232-C jack on processor module. ■ Must be located within 50 feet (15 m) of control unit or use ADU to extend distance.	CAT Terminal printers

1 If you use equipment that rebroadcasts music or other copyrighted materials, you may be required to obtain a copyright license from and pay license fees to a third party, such as the American Society of Composers, Artists, and Producers (ASCAP) or Broadcast Music Incorporated (BMI). Or you can purchase a Magic on Hold system, which does not require you to obtain such a license, from Avaya or an authorized dealer.

Interface		
LS or GS/LS	**T/R**	**MFM**
Line/Trunk Jack	**T/R Extension Jack[1]**	**MLX Extension Jack**
✓[2]		
	3	

1 T/R jacks on a 016 T/R module or jacks programmed for T/R operation on a 016 ETR module.
2 Music Coupler required (PEC 61398).

Power Supply Unit Load Requirements

Unit Load Calculation Rules

Mode	Installed Modules	Calculation
Hybrid/PBX, Modified Key, or Behind Switch	6	Not required.
Square Key or Behind Switch	5 or more	Use the "Unit Load Rating of System Modules" table and the instructions below to determine the estimated unit loads (ULs): ■ If ULs > 96, reconfigure the system so that the total ULs does not exceed 96 per carrier. For more information on unit load calculation, refer to Appendix F of System Planning.

Unit Load Rating of System Modules

Module	Unit Load	Module	Unit Load
008 MLX	13.5	400 E&M	8.0
008 OPT	8.0	408 GS/LS-ID-MLX	13.5
016 ETR	24	412 LS-ID-TDL	13.0
016 T/R	12.8	800 GS/LS-ID	0.0
016 MLX	27	800 DID	8.0
024 TDL	26	800 NI-BRI	0.0
100 DS1	0.0	Processor	0.0
100R INA	0.0		

Notes

Telephone and Operator Features for Multiline 4400-Series and TransTalk 9040 (on a TDL Port) Telephones

Feature	Program Code	Feature Code
Account Code Entry	*82	82 + code
Alarm [2]	*759	
Alarm Clock		
Authorization Code	*80	80
Auto Dial		
Inside (ext., group, zone)	*22 + ext. no.	
Outside	*21 + tel. no.	
Automatic Line Selection		
Begin Sequence	*14	
End Sequence	**14	
Barge-In [2, 3, 4]	*58	
Call Waiting		
On	*11	
Off	**11	
Call Waiting Pickup		87
Callback		
Automatic		
On	*12	
Off	**12	
Selective	*55	55
Cancel selective		*55
Caller ID Number/ Name Toggle Button	*763	763
Camp-On	*57	57
Conference	*772	772
Coverage		
Cover inside and outside calls	*48	
Cover outside calls only	**48	
Receiver Buttons		
Group	*42 + ext. no.	
Primary	*40 + ext. no.	
Secondary	*41 + ext. no.	
Sender Buttons		
Coverage Off	*49	
Coverage VMS Off	*46	
Direct Voice Mail	*56	56
Directories		
Extension Directory	(display only)	
Personal Directory	(display only)	
System Directory	(sys. prog.)	
Do Not Disturb	*47	
Drop	*771	771
4400-Series Drop	*787	787

TransTalk 9040, 4406D+[2]	4412D+, 4424D+	4424LD+
KPB	KPB	KPB
	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
B	B	B
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KP	KP	KP
KPB	KPB	KPB
		KPB
KPB	KPB	KPB
KPB	KPB	KPB
B	B	B
KPB	KPB	KPB

Telephone and Operator Features for Multiline
4400-Series and TransTalk 9040 (on a TDL Port)
Telephones—Continued

Feature	Program Code	Feature Code
Extension Status		
Direct-Line Console[3]		
Status Off	*760	760 + *DSS button*
Status 1	*761	761 + *DSS button*
Status 2	*762	762 + *DSS button*
Telephones (rooms or agents)		
Status Off		*44
Status 1	*45	45
Status 2	*44	44
Feature Button	*20	20
Forward and Follow Me		
Activate		
Forward (inside)	*33	33 + *ext. no.*
Remote Call Forward (outside)	*33	33 + *tel. no.*
Centrex Transfer via	*33 + *dial-out*	
Remote Call Forward	*code or * +*	
	optional pauses	
	+ tel. no. + #	
Follow Me		34 + *ext. no.*
Cancel		
Cancel sending from your telephone		33 + *your ext. no.*
Cancel sending from one extension		***34 + *ext. no.*
Cancel sending from all extensions		*34*
Group Calling		
In-Queue Alarm Button	*22 + *calling group ext. no.*	
Calling Group Supervisor[3]		
Enter supervisor mode[3]		32 + *Hold*
Exit supervisor mode [3]		32 + *Drop*
Available (ES Status 2)	*762	762 + *DSS button*
Unavailable (ES Status Off)	*760	760 + *DSS button*
Calling Group Members		
Sign in (Available)	*44	44
Sign out (Unavailable)		*44
Group Page Auto Dial button	*22 + *Paging Group ext. no.*	
Headset Options[2]		
Auto Answer	*780	
Hang Up [4]	*781	
Mute (Headset/Handset)	*783	
Status	*782	
HFAI Button	*779	779
Hold		771
Hold Release		**

TransTalk 9040, 4406D+[2]	4412D+, 4424D+	4424LD+
	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
B	B	B
B	B	B

Feature	Program Code	Feature Code
Inspect Button[2]	*778	778
Intercom Buttons		
Assign Buttons		
ICOM (Default Ring)	*16	
ICOM Originate Only	*18	
Change Button Type		
Ring	**19	
Voice	*19	
Language Choice		
English		790
French		791
Spanish		792
Messaging		
Leave Message		
After calling	*25	25
Without calling		53 + ext. no.
Cancel message left		*53 + ext. no.
Message LED off	*54	54
Posted Message	*751	
Send/Remove Message[2]	*38	38 + ext. no.
Receiving Messages		
Delete Messages	*26	26
Next Message	*28	28
Return Call	*27	27
Scroll	*29	29
Night Service[3]	*39	39
Notify[2]		
Send	*757 + ext. no.	
Receive	*758 + ext. no.	
Paging		
Group Paging		
Loudspeaker		
Paging		
Park	*86	
Park Zone Auto Dial[3]	*22 + Park Zone	
Personal Speed Dial	# + (01–24) + *21 + tel no. + ##	
Personalized Ringing	*32 + ring (1–8)	
Pickup		
General Use	*9	
Specific Extension	*9 + ext. no.	9 + ext. no.
Specific Line	*9 + line no.	9 + line no.
Group	*88	88
Privacy		
On	*31	31
Off		*31
Recall[2]	*775	775
Redial[2]	*84	84

TransTalk 9040[1], 4406D+[2]	4412D+, 4424D+	4424LD+
KPB	KPB	KPB
KB	KB	KB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
	KPB	KPB
KPB		
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB

*Telephone and Operator Features for Multiline
4400-Series and TransTalk 9040 (on a TDL Port)*
***Telephones**—Continued*

Feature	Program Code	Feature Code
Reminder Service		
Set[6]	*81	81 + *time* + A or P
Operator Set[3, 6]		81 + *ext. no.* + *time* + A or P
Cancel	**81	*81
Operator Cancel[3]		*81 + *ext. no.*
Missed[2]	*752	
Ringing/Idle Line Preference		
On	*343	
Off	*344	
Ringing Options		
Individual Lines		
Immediate ring	*37	
Delay ring	*36	
No ring	*35	
All Lines		
Immediate ring	*347	
Delay ring	*346	
No ring	*345	
Abbreviated Ring		
On	*341	
Off	*342	
Send Ring (Shared SA)		
On	*15	
Off	**15	
Saved Number Dial	*85	
Service Observing[4]	*59	
Signal (manual)[2]	*23 + *ext. no.*	
System Access Buttons		
Assign buttons[3]		
SA (Default Ring)	*16	
SA Originate Only	*18	
Shared SA	*17 + *primary ext. no.*	
Change type (SA or Shared SA)		
Ring	**19	
Voice	*19	
System Speed Dial	*24 + *code* (*600-729*)	600-729
Transfer	*774	774
Voice Announce[2]		
On	*10	
Off	**10	

1 You cannot select features from the display of a 4406D+ telephone.
2 System operator feature only.
3 Not on TransTalk 9040 telephone connected to a TDL port.
4 Centralized telephone programming only.
5 U.S. English only; time is 12-hour (0100–1159) + 2 (A) or 7 (P). French and
   Spanish: time is 24-hour (0000–2359).

TransTalk 9040[1], 4406D+[2]	4412D+, 4424D+	4424LD+
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
P	P	P
KPB	KPB	KPB
KPB	KPB	KPB
KPB	KPB	KPB
P	P	P
KPB	KPB	KPB
B	B	B
KPB	KPB	KPB

Telephone Features for 4400, 4400D, and Single-Line Telephones

Feature	Program Code	Feature Code	4400, 4400D[1]	Single-Line
Account Code Entry	*82	82 + code	KPB	KP
Authorization Code	*80	80	KPB	KPB
Call Waiting			KPB	KPB
On	*11			
Off	**11			
Call Waiting Pickup		87		
Callback			KPB	KPB
Automatic				
On	*12			
Off	**12			
Selective	*55	55		
Cancel Selective		*55		
Caller ID Name[2]	*763	763	KPB	N/A
Camp-On	*57	57	KPB	KPB
Conference	*772	772	B	B
Coverage			KPB	KPB
Cover Inside and Outside Calls				
Cover Outside Calls only				
Receiver Buttons				
Group			KPB	KPB
Primary			KPB	KPB
Secondary			KPB	KPB
Direct Voice Mail	*56	56	KP	KP
Directories				
System Directory	(sys. prog.)		KPB	KPB
Extension Status Telephones (rooms or agents)			KPB	KPB
Status Off	*44			
Status 1	45			
Status 2	44			

Feature	Program Code	Feature Code	4400, 4400D[1]	Single-Line
Forward and Follow Me			KPB	KPB
Activate				
Forward (inside)		33 + ext. no.		
Remote Call Forward (outside)		33 + tel. no.		
Centrex Transfer via Remote Call Forward	*33 + dial-out code or *+ optional pauses + tel. no. + #			
Follow Me		34 + ext. no.		
Cancel				
Cancel sending from your telephone		33 + your ext. no.		
Cancel sending from one extension		*34 + ext. no.		
Cancel sending from all extensions		*34*		
Group Calling			KPB	KPB
Calling Group Members				
Sign In (Available)		44		
Sign out (Unavailable)		*44		
		45		
Hold		771	PB	PB
Hold Release		**	PB	PB
Paging			KPB	KPB
Group Paging				
Loudspeaker Paging				
Park	4400 and single-line: Recall or Flash + your ext. 4400D: Trnsfr + your ext. + Trnsfr		KPB	KPB
Personal Speed Dial	# + (01-24) + *21 + tel. no. + ##		KPB	KPB
Pickup			KPB	KPB
General Use				
Specific Extension		9 + ext. no.		
Specific Line		9 + line no.		
Group		88		
Privacy			KPB	KPB
On		31		
Off		*31		
Recall		775	KPB	KPB
Redial		84	KPB	KPB

Feature	Program Code	Feature Code	4400, 4400D[1]	Single-Line
Reminder Service			KPB	KPB
Set [3]		81 + *time* + A or P		
Cancel		*81		
Ringing/Idle Line			KPB	KPB
Preference	*343			
On	*344			
Off				
Ringing Options				
Individual Lines			KPB	KPB
Immediate ring	*37			
Delay ring	*36			
No ring	*35			
System Speed Dial		600-729	KPB	KPB
Transfer		774	B	B

1 You cannot select a feature from the display of a 4400D telephone.
2 4400D telephone only.
3 U.S. English only: time is 12-hour (0100-1259) + 2 (A) or 7 (P). French and Spanish: time is 24-hour (0000-2359).

Telephone Features for ETR, MLS, TransTalk 9031/9040 (on an ETR Port), and Business Cordless 905 Telephones

Feature	Program Code	Feature Code	ETR	MLS
Account Code Entry	*82	82 + code	KPB	KPB
Authorization Code	*80	80	KPB	KPB
Auto Dial			KPB	KPB
Inside (ext., group, zone)	*22 + ext. no.			
Outside	*21 + tel. no.			
Automatic Line Selection			KPB	KPB
Begin Sequence	*14			
End Sequence	**14			
Barge-In[1]	*58		KPB	KPB
Call Waiting			KPB	KPB
On	*11			
Off	**11			
Call Waiting Pickup		87		
Callback			KPB	KPB
Automatic				
On	*12			
Off	**12			
Selective	*55	55		
Caller ID Number/	*763	763	KPB	KPB
Name Toggle Button				
Camp-On	*57	57	KPB	KPB
Conference	*772	772	B	B
Contrast[2]				
Coverage			KPB	KPB
Cover Inside and Outside Calls	*48			
Cover Outside Calls Only	**48			
Receiver Buttons				
Group	*42 + ext. no.		KPB	KPB
Primary	*40 + ext. no.		KPB	KPB
Secondary	*41 + ext. no.		KPB	KPB
Sender Buttons				
Coverage Off	*49		KPB	KPB
Coverage VMS Off	*46		KPB	KPB
Data Status	*83 + ext. no.		KPB	KPB
Direct Voice Mail	*56	56	KPB	KPB
Do Not Disturb	*47		KPB	KPB
Drop	*773	773	B	B
ETR Drop Button	*777	777	KPB	KPB

Feature	Program Code	Feature Code	ETR	MLS
Forward and Follow Me			KPB	KPB
Activate				
Forward (inside)	*33	33 + ext. no.		
Remote Call Forward (outside)	*33	33 + tel. no.		
Centrex Transfer via Remote Call Forward	*33 + dial-out code or * + optional pauses + tel. no. + #			
Follow Me		34 + ext. no.		
Cancel				
Cancel sending from your telephone		33 + your ext. no.		
Cancel sending from one extension		*34 + ext. no.		
Cancel sending from all extensions		*34*		
Group Calling			KPB	KPB
In-Queue Alarm Button	*22 + Calling Group ext. no.			
Calling Group Members				
Sign In (Available)	*44	44	KPB	KPB
Sign out (Unavailable)		*44	KPB	KPB
Group Page Auto Dial Button	*22 + Paging Group ext. no.		KPB	KPB
Hold		771	B	B
Hold Release		**	B	B
Intercom Buttons			KPB	KPB
Assign Buttons[2]				
ICOM (Default Ring)	*16			
ICOM Originate Only	*18			
Change Button Type				
Ring	**19			
Voice	*19			
Language Choice			KPB	KPB
English		790		
French		791		
Spanish		792		

Feature	Program Code	Feature Code	ETR	MLS
Messaging				
Leave Message	*25		KPB	KPB
After calling		25	KPB	KPB
Without calling		53 + ext. no.	KPB	KPB
Cancel message left		*53 + ext. no.	KPB	KPB
Message LED Off	*54	54	KPB	KPB
(non-display telephones)				
Message Operation	*54	54	KPB	KPB
Mode (display				
telephones)[3]				
Posted Message	*751		KPB	KPB
Receiving Messages				
Delete Message[4]	*26	26	KPB	KPB
Next Message[4]	*28	28	KPB	KPB
Return Call[4]	*27	27	KPB	KPB
Scroll[4]	*29	29	KPB	KPB
Notify[5]			KPB	KPB
Send	*757 + ext. no.			
Receive	*758 + ext. no.			
Paging			KPB	KPB
Group Paging				
Loudspeaker Paging				
Park	*86		KPB	KPB
Personal Speed Dial	# + (01-24) + *21 + tel. no. + ##		KPB	KPB
Personalized Ringing	*32 + ring (1–8)		KPB	KPB
Pickup			KPB	KPB
General Use	*9			
Specific Extension	*9 + ext. no.	9 + ext. no.		
Specific Line	*9 + line no.	9 + line no.		
Group	*88	88		
Privacy			KPB	KPB
On	*31	31		
Off		*31		
Recall[5]	*775	775	KPB	KPB
Redial[5]	*84	84	KPB	KPB
Reminder Service			KPB	KPB
Set[6]	*81	81 + time + A or		
Cancel	**81	P *81		
Ringing/Idle Line Preference			KPB	KPB
On	*343			
Off	*344			

Feature	Program Code	Feature Code	ETR	MLS
Ringing Options			KPB	KPB
Individual Lines[7]			KPB	KPB
Immediate ring	*37		KPB	KPB
Delay ring	*36		KPB	KPB
No ring	*35		KPB	KPB
All Lines			KPB	KPB
Immediate ring	*347		KPB	KPB
Delay ring	*346		KPB	KPB
No ring	*345		KPB	KPB
Abbreviated Ring			KPB	KPB
On	*341		KPB	KPB
Off	*342		KPB	KPB
Send Ring (Shared SA)			P	P
On	*15		P	P
Off	**15		P	P
Saved Number Dial	*85		KPB	KPB
Signal (manual)	*23 + ext. no.		KPB	KPB
System Access Buttons			P	P
Assign Buttons[2]				
SA (Default Ring)	*16		P	P
SA Originate Only	*18		P	P
Shared SA	*17 + primary ext. no.		P	P
Change Type (SA or Shared SA)				
Ring	**19		KPB	KPB
Voice	*19		KPB	KPB
System Speed Dial	*24 + code (600-729)	600-729	KPB	KPB
Transfer	*774	774	B	B
Voice Announce			KPB	KPB
On	*10			
Off	**10			

1 Centralized telephone programming only.
2 Press the * button and use the volume up and down key; for ETR
   telephones only.
3 For 4406D+, ETR, and MLS display telephone users, pressing *54 enters/
   exits Message operation mode. MLS telephones return to normal call
   handling after 15 seconds if the user has no messages. If an MLS telephone
   user has messages, he or she must delete the messages or use the feature
   code or programmed button to exit Message operation. A 4406D+ or ETR
   telephone user must use the feature code or the programmed button to exit
   Message operation whether or not he or she has messages.
4 Display telephones only. Programming and feature codes are used with
   ETR, TransTalk 9031/9040, Business Cordless 905, and MLS telephones.
5 Not on TransTalk 9031/9040 or Business Cordless 905 telephones.
6 U.S. English only: time is 12-hour (0100-1259) +2 (A) or 7 (P). French and
   Spanish: time is 24-hour (0000-2359).
7 With Immediate Ring (steady red LED), incoming calls are immediately
   delivered. With Delay Ring (slow red LED), incoming calls are delayed
   (default is 2 rings). With No Ring (LED off), no calls are delivered.

Telephone and Operator Features for MLX Telephones

Feature	Program Code	Feature Code
Account Code Entry	*82	82 + code
Alarm[1]	*759	
Alarm Clock		
Authorization Code	*80	80
Auto Dial		
Inside (ext., group, zone)	*22 + ext. no.	
Outside	*21 + tel. no.	
Automatic Line Selection		
Begin Sequence	*14	
End Sequence	**14	
Barge-In[1,2]	*58	
Call Waiting		
On	*11	
Off	**11	
Call Waiting Pickup		87
Callback		
Automatic		
On	*12	
Off	**12	
Selective	*55	55
Cancel selective		*55
Caller ID Number/ Name Toggle Button	*763	763
Camp-On	*57	57
Conference	*772	772
Contrast		
Coverage		
Cover inside and	*48	
outside calls	**48	
Cover outside calls only		
Receiver Buttons	*42 + ext. no.	
Group	*40 + ext. no.	
Primary	*42 + ext. no.	
Secondary		
Sender buttons	*49	
Coverage Off	*46	
Coverage VMS		
Off		
Data Status	*83 + ext. no.	
Direct Voice Mail	*56	56
Directories		
Extension Directory	(display only)	
Personal Directory	(display only)	
System Directory	(sys. prog.)	
Do Not Disturb	*47	
Drop	*773	773

MLX-5D, MLX-10D	MLX-16DP, MLX-28D	MLX-20L	MLX-5, MLX-10
KPB	KPB	KPB	
	KPB	KPB	
KPB	KPB	KPB	
KPB	KPB	KPB	
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	PB
KPB	KPB	KPB	KPB
B	B	B	B
KPB	KPB	KPB	
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KP	KP	KP	KP
KPB	KPB	KPB	
		KPB	
KPB	KPB	KPB	
KPB	KPB	KPB	KPB
B	B	B	B

Feature	Program Code	Feature Code
Extension Status		
Direct-Line Console[1]		
Status Off	*760	760 + *DSS button*
Status 1	*761	761 + *DSS button*
Status 2	*762	762 + *DSS button*
Telephones		
(rooms or agents)		
Status Off		*44
Status 1	*45	45
Status 2	*44	44
Forward and Follow Me		
Activate		
Forward (inside)	*33	33 + *ext. no.*
Remote Call Forward (outside)	*33	33 + *tel. no.*
Centrex Transfer via	*33 + *dial-out*	
Remote Call Forward	*code or * +*	
	optional pauses	
	+ tel. no. + #	
Follow Me		34 + *sending ext. no.*
Cancel		
Cancel sending from your telephone		33 + *ext. no.*
Cancel sending from one extension		*34 + *ext. no.*
Cancel sending from all extensions		*34*
Group Calling		
In-Queue Alarm button	*22 + *calling group ext. no.*	
Calling Group Supervisor[1]		32 + *Hold*
Enter supervisor mode[1]		32 + *Drop*
Exit supervisor mode[1]	*762	762 + *DSS button*
Available (ES Status 2)	*760	760 + *DSS button*
Unavailable (ES Status Off)		
Calling group members	*44	44
Sign in (Available)		*44
Sign out (Unavailable)		
Group Page Auto Dial button	*22 + *paging group ext. no.*	
Headset Options		
Auto Answer	*780	
Hang Up[2]	*781	
Mute (Headset/Handset)	*783	
Status	*782	
Hold		771
Hold Release		**

MLX-5D, MLX-10D	MLX-16DP, MLX-28D	MLX-20L	MLX-5, MLX-10
	KPB	KPB	
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
	KPB	KPB	
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
PB	PB	PB	PB
B	B	B	B

Feature	Program Code	Feature Code
Intercom Buttons		
Assign Buttons[2]		
ICOM (Default Ring)	*16	
ICOM Originate Only	*18	
Change Button Type		
Ring	**19	
Voice	*19	
Language Choice		
English		790
French		791
Spanish		792
Messaging		
Leave Message	*25	
After calling		25
Without calling		53 + *ext. no.*
Cancel message left		*53 + *ext. no.*
Message LED off	*54	54
Posted Message	*751	
Send/Remove Message[1]	*38	38 + *ext. no.*
Receiving Messages		
Delete Messages[3]	*26	26
Next Message[3]	*28	28
Return Call[3]	*27	27
Scroll[3]	*29	29
Night Service[1]	*39	39
Notify		
Send	*757 + *ext. no.*	
Receive	*758 + *ext. no.*	
Paging		
Group Paging		
Loudspeaker		
Paging		
Park	*86	
Park Zone Auto Dial[1]	*22 + *Park Zone*	
Personal Speed Dial	# + (01–24) + *21 + *tel no.* + ##	
Personalized Ringing	*32 + *ring (1–8)*	
Pickup		
General use	*9	
Specific extension	*9 + *ext. no.*	9 + *ext. no.*
Specific line	*9 + *line no.*	9 + *line no.*
Group	*88	88
Privacy		
On	*31	31
Off		*31
Recall	*775	775
Redial	*84	84

MLX-5D, MLX-10D	MLX-16DP, MLX-28D	MLX-20L	MLX-5, MLX-10
K B	K B	K B	K B
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	
KPB	KPB	KPB	
KPB	KPB	KPB	
	KPB	KPB	
	KPB	KPB	
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
	KPB	KPB	
KPB			KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB

Feature	Program Code	Feature Code
Reminder Service		
Set[4]	*81	81 + *time* + A or P
Operator Set[1,4]		81 + *ext. no.* + *time* + A or P
Cancel	**81	*81
Operator Cancel[1]		*81 + *ext. no.*
Missed[1]	*752	
Ringing/Idle Line Preference		
On	*343	
Off	*344	
Ringing Options		
Individual Lines		
Immediate ring	*37	
Delay ring	*36	
No ring	*35	
All Lines		
Immediate ring	*347	
Delay ring	*346	
No ring	*345	
Abbreviated Ring		
On	*341	
Off	*342	
Send Ring (Shared SA)		
On	*15	
Off	**15	
Saved Number Dial	*85	
Service Observing[2]	*59	
Signal (manual)	*23 + *ext. no.*	
System Access Buttons		
Assign buttons[2]		
SA (Default Ring)	*16	
SA Originate Only	*18	
Shared SA	*17 + *primary ext. no.*	
Change type (SA or Shared SA)		
Ring	**19	
Voice	*19	
System Speed Dial	*24 + *code* (600-729)	600-729
Transfer	*774	774
Voice Announce		
On	*10	
Off	**10	
VA on Idle Only	*130	

1 *System operator features only.*
2 *Centralized telephone programming only.*
3 *Display telephones only.*
4 *U.S. English only: time is 12-hour (0100-1259) + 2 (A) or 7 (P). French and Spanish: time is 24-hour (0000-2359).*

MLX-5D, MLX-10D	MLX-16DP, MLX-28D	MLX-20L	MLX-5, MLX-10
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
P	P	P	P
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
KPB	KPB	KPB	KPB
P	P	P	P
KPB	KPB	KPB	KPB
B	B	B	B
KPB	KPB	KPB	KPB

System Feature Availability by Operating Mode

Feature	Mode		
	PBX	Key	Behind Switch
Account Code Entry	3	3	3
Authorization Codes	3	3	3
Automatic Configuration of MERLIN Messaging System	3	3	3
Automatic Daylight Savings Time	3	3	3
Automatic Maintenance Busy	3	3	3
Automatic Route Selection	3		
Callback	3	3	3
Calling Restrictions	3	3	3
Centralized Voice Messaging	3		
Centrex Transfer via Remote Call Forwarding	3	3	3
Copy Options for Lines/Trunks	3	3	3
Coverage	3	3	3
Coverage VMS Off	3	3	3
CTI Link	3		
Delayed Ring interval	3	3	3
Direct Inward Dialing	3		
Direct-Line Console options	3	3	3
Direct Voice Mail	3	3	
Directory	3	3	3
Extension Status	3	3	3
Feature Button	3	3	3
Forced Account Code Entry	3	3	3
Group Calling[1]	3	3	3
Hands-Free Answer Intercom (HFAI)	3	3	3
Headset Status	3	3	3
Hold disconnect	3	3	3
Inside dial tone	3	3	3
Inspect	3	3	3
Labeling	3	3	3
Language selection	3	3	3
Loudspeaker Paging	3	3	3
Microphone Disable	3	3	3
Night Service	3	3	3

System Feature Availability by Operating Mode—*Continued*

Feature	PBX	Key	Behind Switch
		Mode	
Paging groups	3	3	3
Park	3	3	3
Pickup groups	3	3	3
Pools (trunk groups)	3		
Queued Call Console options	3		
Recall	3	3	3
Redial	3	3	3
Reminder Cancel	3	3	3
Remote Access	3	3	3
Remote Call Forward	3	3	3
Service Observing	3	3	3
Station Message Detail Recording	3	3	3
System Numbering	3	3	3
System Restart	3	3	3
System Speed Dial	3	3	3
Tandem Trunking	3	3	3
Toll Type	3	3	3
Touch-tone or rotary signaling	3	3	3
Transfer options	3	3	3
Uniform Dial Plan (UDP)	3		
Voice Announce	3	3	3
Volume	3	3	3

1 Non-local members may be assigned to calling groups in Hybrid/PBX mode
   only.

Reference Documents

Document Number No.	
555-710-100	Customer Documentation Package: Consists of paper versions of the System Manager's Quick Reference and the Feature Reference
555-720-110	Feature Reference
555-720-112	System Planning
555-720-113	System Planning Forms
555-720-119	System Manager's Quick Reference
555-661-150	Network Reference
555-720-800	Customer Reference CD-ROM : Consists of the System Manager's Quick Reference, and the Feature Reference

Telephone User Support	
555-710-123 (U.S. English)	4400/4400D Telephone User's Guide
555-710-123FRC (Canadian French)	4400/4400D Telephone User's Guide
555-710-127 (U.S. English)	4406D+/4412D+/4424D+/4424LD+ Telephone User's Guide
555-710-127FRC (Canadian French)	4406D+/4412D+/4424D+/4424LD+ Telephone User's Guide
555-660-122	MLX Display Telephones User's Guide
555-630-150	MLX, MLX-10D and MLX-10DP Display Telephone Tray Cards (5 cards)
555-630-152	MLX-28D and MLX-20L Telephone Tray Cards (5 cards)
555-660-124	MLX-5 ® and MLX®-10 Nondisplay Telephones User's Guide
555-630-151	MLX-5 and MLX-10 Nondisplay Telephone Tray Cards (6 cards)
555-630-155	MLX-16DP Display Telephone Tray Cards (5 cards)
555-670-151	MLS and ETR Telephone Tray Cards
555-670-152	MLS and ETR Telephone Tray Cards (16 cards)
555-660-126	Single-Line Telephones User's Guide
555-660-138	MDC and MDW Telephones User's Guide

System Operator Support	
555-710-134	Digital Direct Line Console Operator's Guide
555-710-136	Digital Queued Call Console Operator's Guide

Miscellaneous User Support	
555-661-130	Calling Group Supervisor and Service Observer User Guide
555-650-105	Data and Video Reference
555-661-140	Installation, SPM, Maintenance and Troubleshooting
555-720-140	Installation, Programming Basics, Maintenance and Troubleshooting
555-720-116	Pocket Reference

Toll Fraud Security	
555-025-600	BCS Products Security Handbook

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150 Allen Road, Room C-19
Liberty Corner, New Jersey 07938

Maintenance Error Codes

Error Code	Description	Action
0001	TIMEOUT COLD START: *System programming OK.*	*No action required; however, if problem persists, troubleshoot the processor.*
0002	POWER UP WARM START: *System programming OK.*	*No action required; however, if problem persists, troubleshoot the processor.*
0003	SOFTWARE COLD START: *System programming OK.*	*If problem persists, troubleshoot the processor.*
0004	SOFTWARE WARM START: *System programming OK.*	*If problem persists, troubleshoot the processor.*
0005	Reset - DIAGNOSTIC SWITCH:	
0006	INCOMPLETE COLD START: *System cold-started while restart in progress.*	*If problem persists, troubleshoot the processor.*
0007	SANITY TIMEOUT RESET: *Faulty software, module, carrier, or processor sanity timer.*	*Check module and/or processor.*
0008	MAX RESET COUNT EXCEEDED: *System cold-started because of too many warm starts.*	*If problem persists, troubleshoot the processor.*
0009	FRIGID START: *System restarted and initialized to defaults; also logged after System Erase.*	*If processor was removed while in use, system may perform frigid start because of loss of system programming. Restore system as described in System Programming and Maintenance (SPM).*
000A	POWER UP COLD START: *RAM failure in processor; system programming OK.*	*If problem persists, check processor.*
000B	CARD INSERTED/REMOVED:	*None.*
000C	SLOT STREAM CNT EXCEEDED: *Slot generated excessive interrupts.* *or* *The system was powered down incorrectly; for example, carrier 2 was powered down before carrier 1. If errors exist because of the improper power-down, no action is required.*	*If problem persists, check module.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
000D	FMWR NOT IN STANDBY MODE: *Module firmware not in standby mode.*	*If problem persists, check module.*
000E	COMMAND BUFFER FULL:	*If problem persists, check processor and module.*
000F	TASK RUNNING TOO LONG	*None; if problem persists, check processor.*
00DE	*MERLIN Messaging System (M1000) was upgraded.*	*None.*
0010	INVALID SLOT INTERRUPT: *Cannot determine module responsible for interrupt.* or *The system was powered down incorrectly; for example, carrier 2 was powered down before carrier 1. If errors exist because of the improper power-down, no action is required.*	*Check modules and replace if necessary; if problem persists, check processor.*
0011	STACK OVERFLOW: *Processor problem.*	*Check processor.*
0012	INVALID RESET FLAG: *Processor problem.*	*Check processor.*
0013	DUART STREAMING INT: *Processor problem.* or *The system was powered down incorrectly. If errors exist because of the improper power-down, no action is required.*	*Check processor.*
0014	PROCESSOR ERR INTERRUPT: *Processor problem.*	*Check processor.*
0015	MODULE MISMATCH: *Module inserted into wrong slot.*	*Change system programming for proper module or install proper module.*
0016	POWER UP COLD START: *Module dual port ram failure; system programming OK.*	*If problem persists, check module for slot indicated.*
0017	REAL TIME CLOCK FAULT: *Date and/or time incorrect or unreadable.*	*If problem persists, replace processor module.*
0018	RTC COLD START: *This error is not displayed.*	

Maintenance Error Codes—*Continued*

Error Code	Description	Action
0019	RESET TIME & DATE: *System cold-starts because real-time clock chip is not working correctly.*	*If problem persists, replace processor module.*
0401	ABK CARD NOT INSERTED: *PCMCIA memory card for translation is not inserted.*	*Insert a translation card or an unformatted card.*
0402	ABK INCORRECT CARD TYPE: *PCMCIA memory card for non-translation is inserted.*	*Remove current card and insert a translation card or an unformatted card.*
0403	ABK CARD WRITE-PROTECTED: *Translation card has write-protected switch on.*	*Turn write-protection switch to off. If problem persists, try another card. If still not working, replace processor module.*
0404	ABK EXTENSION BUSY: *A station is in program, administration, or maintenance mode.*	*Wait until station changes mode.*
0405	ABK FAULTY CARD: *Unknown cause of a bad card.*	*Reset card and retry. If problem persists, try another card. If still not working, replace processor module.*
0801 and 1C07 and 5801	CTI LINK DELETED: *A board renumber or slot restore moved the CTI link to an unacceptable port and the system has removed the link.*	*Check that the following are true:* ■ *The system is in Hybrid/PBX mode.* ■ *The link is on a 008 MLX or 408 MLX board.* ■ *The MLX board firmware vintage is not 29.* ■ *The extension is not an operator position.* ■ *An MLX telephone is not connected to that port.* ■ *Board renumber has not moved the MLX extension to the system programming port.*
0802	E911 OVERFLOW: *One of the following has occurred:* ■ *All lines assigned to the E911 Partition or Adjunct are busy or bad.* ■ *No lines are assigned to E911 Partition or Adjunct.* ■ *No physical line is connected to the system, the network, or the E911 Adjunct.*	*Do the following:* ■ *Make sure the proper number of trunks are assigned to E911 Partition or Adjunct.* ■ *Assign lines to E911 Partitions or Adjunct.* ■ *Check that ground-start or loop-start trunks are connected to the E911 Adjunct.* ■ *Check the network interface connection.* *When the condition returns to normal, the external alarm turns off automatically. You must remove the entry from the permanent error log.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
0C01	NO I-VMS PORT IN SERV: *vms machine may be down.*	*None*
0C02	DID INTERDIGIT TIMEOUT: *Noisy line or central office problem.*	*None; if problem persists, check DID line and inform Central Office, if necessary.*
0C03	ALL TTRs UNAVAILABLE: *System needed to use a TTR, but one was not available for any and all reasons including: in use, not physically present, out of service.*	*Check count and first and last occurrences to determine if error occurs too frequently. If so, check to see if you can add TTRs to the system.* *If prompt out of queue is active, shorten the delay announcement message length.* *If prompt out of queue feature and secondary announcement(s) are active, increase the interval between the announcements.* *If you reprogram the delay announcement device, recheck it to verify that the problem no longer exists.*
0C04	MWL Fac Timeout: *Two consecutive messages to update Message Waiting lights have been sent across the private network for the same tandem trunk and have not been acknowledged. When this happens three times, the error becomes permanent. The alarm remains in the log until a message is acknowledged or five days pass.*	*Check the error log for additional error codes. If the error log also contains errors indicating problems with the 100 DS1 and/or 400 E&M module, troubleshoot the 100 DS1 and/or the 400 E&M module (see Chapter 4 of Maintenance and Troubleshooting).* *If the 100 DS1 and/or the 400 E&M module are functioning properly, troubleshoot the trunks using instructions in Chapter 5 of Maintenance and Troubleshooting.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
0C05	MWL Delivery Delay: *A message to update the Message Waiting lights has exceeded the time period for delivery. A transient alarm occurs after one minute, and a permanent alarm occurs after 15 minutes. The alarm remains in the error log until a message is delivered or five days pass.*	*Check the error log for additional error codes. If the error log also contains errors indicating problems with the 100 DS1 and/or 400 E&M module, troubleshoot the 100 DS1 and/or the 400 E&M module using instructions in Chapter 4 of Maintenance and Troubleshooting. If the 100 DS1 and/or the 400 E&M module are functioning properly, troubleshoot the trunks using instructions in Chapter 5 of Maintenance and Troubleshooting. Check that the system receiving the message had enough TTRs to handle the volume of calls. Check the error log on the sending system and then on the receiving system. More facilities or TTRs may be needed.*
1C01	POOL M-BUSY EXCEEDS 50%: *more than half the trunks in pool are busy.*	*Check trunk.*
1C02	DPR TEST NOT COMPLETED:	*Slot did not complete initializing.*
1C03	FW UPGRADE ATTEMPT:	*No action required.*
1C04	FW UPGRADE COMPLETE	*No action required.*
1C05	INVALID FMW 29 DETECTED: *Incompatibility problem; specified video endpoint or UDM is connected to a 008 or 408 MLX module with firmware of vintage 0x29.*	*Replace 008 or 408 MLX module with one of another firmware vintage. Retire permanent alarm manually.*
1C06	BAD BOARDS IN SYSTEM: *At least one incompatibility problem of type HER 0x1C05 detected. Turns on red LED on processor.*	*Replace 008 or 408 MLX module with one of another firmware vintage. Retire permanent alarm manually.*
1C07	*See error code 0801*	
1C08	BAD TTR: *Touch-Tone receiver failed the internal Touch-Tone Receiver Test.*	*If TTR passes the next test, the system automatically restores it.*
1C09	TTR BUSY-OUT EXCEEDS 50%: *50% or more TTRs have been busied out.*	*Check the modules containing the TTRs. Try to manually restore some TTRs. If necessary, replace the modules.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
2C01	T1 ACCESS VIOLATION: *T1 services (channels-voice/ data) programmed incorrectly.*	*Check facility provisioning and re-administer channels for voice or data. Ensure that T1 data facilities are accessed from data terminals only (such as UDMs or desktop video systems) and that T1 voice facilities are accessed from telephones only (such as MLX telephones).*
2C02	Bearer Capability Incompatibility: *A 64 kbps clear-channel data call was routed to a facility that does not have sufficient bandwidth to handle the call.*	*Verify that the ARS or UDP routing tables route a data call to a DS1 facility. Check the DS1 Type administration item for the specified facility. If the programmed value is T1, the caller must initiate a 56 kbps call. Check the DS1 Suppression administration item for the specified facility. If the programmed value is AMI-ZCS, the caller must initiate a 56 kbps call.*
3001	ALARM TABLE FULL: *error logs are full; turns on processor led.*	*Correct indicated errors, and then remove entries from the transient system error log. If problem persists, cold-start the system.* SysProgram→System→ Restart
4001	E911 ADJUNCT OOS: *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.*	*Check the E911 Adjunct to make sure it is in working condition. Check the cable connections to this unit.* *The alarm and Trunk Maintenance Busy state automatically clear when the E911 Adjunct returns to normal operation.*
4401	USER REQUESTED SYS ERASE: *Logged after System Erase. If System Erase is successful, this error is removed immediately.*	*If error remains in transient log, repeat System Erase. If problem persists, check processor.*
4402	USER REQST UPGRD/INSTALL:	*None.*
4C01	POOL EMPTY: *System needed to use a trunk in a pool but no trunks were physically present in the pool— i.e., all of the boards were removed from the system.*	*Replace boards.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
4C02	POOL BUSY: *System needed to use a trunk in a pool. Trunks are physically present; however, none are idle and available for use—i.e., they may be in use or out of service.*	
4C03	POOL BUSY &/OR OOS: *System needed to use a trunk in a pool. Trunks are physically present; some may be busy but some are idle. However, the idle trunks are not in service.*	Restore if out of service.
5801	*See error code 0801*	
5802	Board Renumber *Board renumber took place.*	If the system is functioning properly, simply remove the error from the Transient Error Log. If the system is not functioning properly, check the Transient Error Log to verify that a board renumber took place. Then compare the system's previous configuration to the one after board renumbering to determine if the board renumber caused logical IDs to shift.
6C01	DS1 LOSS OF SIGNAL ALARM: *Service on link has been lost.*	Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.
6C02	DS1 BLUE ALARM: *All 1s being received; service on link has been lost.*	Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.
6C03	DS1 RED ALARM: *Invalid framing information on incoming signal; service on link has been lost.*	Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.
6C04	DS1 YELLOW ALARM: *Far end of network interface has lost frame synchronization; service on link has been lost.*	Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.
6C05	DS1 LOSS OF MULTIFRAME: *Service on link has been lost.*	Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.
6C06	DS1 REMOTE MULTIFRAME: *Far end of network interface is experiencing loss of multiframe; service on link has been lost.*	Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.

Maintenance Error Codes—*Continued*

Error Code	Description	Action
6C07	DS1 MAJOR ALARM: *Average bit error rate exceeds 10E-3; service on link has been lost.*	*Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.* Maintenance→Slot→ Error Events→ Current hr
6C08	DS1 MINOR ALARM: *Average bit error rate exceeds 10E-6.*	*Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.* Maintenance→Slot→ Error Events→ Current hr
6C09	DS1 MISFRAME ALARM: *Misframe count reached 18.*	*Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.* Maintenance→Slot→ Error Events→ Current hr
6C0A	DS1 SLIP ALARM: *Slip count reached 88.*	*Usually no action. Check T1 facility. If problem persists, contact NSAC Tier III.* Maintenance→Slot→ Error Events→ Current hr
6C0B	HARDWARE INOPERATIVE: *Hardware not operating properly. If this is the only 100 DS1 module or 800 NI-BRI module, or if this is the designated clock module, its tdm bus clock generator was not activated.*	*A Busy-Out/Restore or Reset/ Restore may clear problem. If problem persists, contact NSAC Tier III.*
6C0C	BRI LOSS OF SYNC: *Service on link has been lost.*	*Usually none; check BRI facility. If problem persists, contact NSAC Tier III.*
6C0D	BRI SLIPS > 88: *Slip count > 88. Service on link is still operative.*	*Usually none; check BRI facility. If problem persists, contact NSAC Tier III.*
6C0E	BRI NET REQUESTED CCRCs: *Outgoing signal to the network does not have valid framing information. Service on link is still operative.*	*Usually none; link should return to normal once test is completed. If problem persists, contact NSAC Tier III.*
6C0F	BRI NET DEACTIVATE: *Layer 1 of the link is down. Service on link has been lost.*	*Usually none; link should return to normal once test is completed. If problem persists, contact NSAC Tier III.*
6C10	BRI NET INV 2B+D LB ACT: *Service on link has been lost.*	*Usually none; link should return to normal once test is completed. If problem persists, contact NSAC Tier III.*

Maintenance Error Codes—Continued

Error Code	Description	Action
6C11	BRI NET INV B1 LB ACT: *Service on link has been lost.*	*Usually none; link should return to normal once test is completed. If problem persists, contact NSAC Tier III.*
6C12	BRI NET INV B2 LB ACT: *Service on link has been lost.*	*Usually none; link should return to normal once test is completed. If problem persists, contact NSAC Tier III.*
6C13	BRI NET INV IL LB ACT: *Service on link has been lost.*	*Usually none; link should return to normal once test is completed. If problem persists, contact NSAC Tier III.*
6C14	BRI NET INV QM LB ACT: *Service on link has been lost.*	*Usually none; link should return to normal once test is completed. If problem persists, contact NSAC Tier III.*
7001	PRI SVC AUDIT TIMEOUT:	*Check PRI facility and report to service provider; otherwise, no action is needed. If problem persists, contact NSAC Tier III.*
7002	PRI SVC STATE INCONSIST:	*Check PRI facility and report to service provider; otherwise, no action is needed. If problem persists, contact NSAC Tier III.*
7003	PRI D-CHNL INOPERATIVE:	*Check PRI facility and report to service provider; otherwise, no action is needed. If problem persists, contact NSAC Tier III.*
7004	PRI B-CHNL NOT RELEASED:	*Check PRI facility and report to service provider; otherwise, no action is needed. If problem persists, contact NSAC Tier III.*
7005	PRI B-CH GROUP INCONSIST:	*Check PRI facility and report to service provider; otherwise, no action is needed. If problem persists, contact NSAC Tier III.*
7006	PRI PROTOCOL MISMATCH: *A mismatch in the protocol being supplied versus the protocol expected by the MERLIN MAGIX system.*	*Inform the service provider to change the administration for this circuit. After the service provider restarts the circuit, verify that all alarms for this slot are cleared.*
7401	TRK UPLINK MESSAGE ERROR: *Communication problems between processor and modules; unrecognized message from module to processor.*	*Test trunk with single-line telephone. If problem is not in trunk, replace module with one known to work. If problem is not seen with known working module, replace module and restart.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
7402	LOOP CONTROL BIT NOT SET: *No loop current on outgoing call. If error occurs four times consecutively, and if automatic maintenance-busy is enabled with less than 50% maintenance busy, trunk is busied-out automatically.*	*Test trunk with single-line telephone. If problem is not in trunk, replace module with one known to work. If problem is not seen with known working module, replace module and restart.*
7403	NO LOOP CURRENT: *Communication problems between module and CO. No loop current. If error occurs four times consecutively, and if automatic maintenance-busy is enabled with less than 50% maintenance busy, trunk is busied-out automatically.*	*Test trunk with single-line telephone. If problem is not in trunk, replace module with one known to work. If problem is not seen with known working module, replace module and restart.*
7404	STUCK RINGING: *Communication problems between module and CO. If error occurs two times consecutively, trunk is busied-out automatically whether or not automatic maintenance-busy is enabled.*	*Test trunk with single-line telephone. If problem is not in trunk, replace module with one known to work. If problem is not seen with known working module, replace module and restart.*
7801	*The MERLIN Messaging System (M1000) reset at 2:00 a.m.* or *The MERLIN Messaging System software was upgraded.*	*If the M1000 software was upgraded, no action is required.*
7802	SANITY INT NOT GENERATED: *Applies only to modules with extension jacks.* or *The MERLIN Messaging System (M1000) software was upgraded.*	*Reset module. If problem persists, check module.* *If the M1000 software was upgraded, no action is required.*
7803	NO PORT BOARDS AVAILABLE: *Modules not present.*	*None; delete entry from transient log.*
7804	INVALID SANITY RESPONSE: *Sanity test received invalid responses; applies only to modules with extension jacks.* or *The MERLIN Messaging System (M1000) software was upgraded.*	*Reset board. If problem persists, check module.* *If the M1000 was upgraded, no action is required.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
7805	INVALID SLOT NUMBER: *Rare; software could not process an event detection because slot number was invalid.*	*None; if problem persists, restart system.*
7806	NOT IN STANDBY MODE: *Reported during cold start or background check.*	*Reset board. If problem persists, check module.*
7807	SELF TEST NOT COMPLETED: *Reported during cold start.*	*Reset board. If problem persists, check module.*
7808	TEST RESULT REGISTER BAD: *A module or processor error during test run.*	*Reset board. If problem persists, check module.*
7809	TEST STATUS REGISTER BAD: *A module or processor error during test run.*	*Reset board. If problem persists, check module.*
780A	DPR TEST NOT COMPLETED: *Reported during cold start.*	*If problem persists, check module.*
780C	RAM TEST FAILURE: *Memory failed ram test; turns on processor led.*	*If problem persists, replace processor.*
780D	UPPER ROM FAILURE: *Memory failed rom test; turns on processor led.*	*If problem persists, replace processor.*
780E	LOWER ROM FAILURE: *Memory failed rom test; turns on processor LED.*	*If problem persists, replace processor.*
8001	UNEXPECTED ETR MESSAGE *Indicates one of the following:* ■ *An unsupported ETR telephone was connected.* ■ *An ETR/MLS telephone is faulty.* ■ *An ETR board is faulty.* ■ *The software is showing the message in error.*	*If a single user is complaining about an ETR/MLS telephone not working properly, check to be sure the telephone is a supported model. If the ETR/MLS telephone is supported, replace the faulty telephone. If multiple ETR/MLS telephone users connected to the same ETR module are complaining that the telephones are not working properly, troubleshoot the module and replace it if necessary. If no users are complaining, simply clear the error.*
8401	MISCELLANEOUS ERROR: *Not reported.*	*None.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
8402	WINK TOO SHORT: *Outbound dialing problems on tie trunks. Wink from the far end of network interface is less than 100 ms, the minimum for delay-dial or wink-start tie trunks. Tie trunk waits for valid signal.*	*Check far end of network. Check for faulty cable. Replace module.*
8403	NO EXTERNAL RELEASE: *Communication problems between module and CO. Far end has not disconnected within 4 minutes. If error occurs twice consecutively, trunk is busied-out automatically whether or not automatic maintenance-busy is enabled.*	*Check far end of network interface. Check for faulty cable.*
8404	ON HOOK BEFORE WINK: *Outbound dialing problems on tie trunks. Far end of network interface went on-hook before handshake was completed (for delay-dial or wink-start tie trunk).*	*If problem persists, check tie trunk configuration. Check far end. Check for faulty cable. Replace module.*
8405	ON HOOK BEFORE READY: *Outbound dialing problems on tie trunks. Far end of network interface went on-hook before guard time elapsed (for delay-dial or wink-start tie trunk).*	*Check far end of network interface. Check wink start and for faulty cable. Check far end of network. Replace module.*
8406	INTERDIGIT TOO SHORT: *Inbound dialing problems on tie and DID trunks.*	*Check far end of network interface. Check for faulty cable. Replace module.*
8407	BAD UPDATE: *Communication problems between processor and modules; module may need to be replaced.*	*Turn processor off and then on. Repeat system programming procedure. If problem persists, contact NSAC Tier III.*
8408	ROTARY RATE > 12PPS: *Inbound dialing problems on tie and did trunks.*	*Check far end of network interface. Check for faulty cable. Replace module.*
8409	ROTARY RATE < 8PPS: *Inbound dialing problems on tie and did trunks.*	*Check far end of network interface. Check for faulty cable. Replace module.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
8411	E911 NO OUTGOING SEIZURE: 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 (TMB) state. **NOTE:** An E911 Partition trunk in a Trunk Maintenance Busy state can still be used to make and receive non-E911 calls.	For an E911 Partitions trunk, any one of the following can occur: ■ The trunk may automatically clear if the line is seized for an outgoing call. ■ Manually seize the trunk by dialing *03 and dialing some digits. ■ The trunk may automatically clear if the line is used for an incoming call. ■ The error message is dropped, and the trunk clears. For an E911 Adjunct trunk, do the following: ■ Check the connections on the E911 adjunct. If the situation is corrected, the TMB state ends during the system's TMB recovery. ■ Manually drop the error message. ■ Manually seize the trunk by dialing *03. If you manually seize the E911 Adjunct trunk, the adjunct may place a call to the E911 Service.
840A	BAD DOWNLINK MESSAGE: Communication problems between processor and modules; module received an unrecognized message from processor.	Turn processor off and then on. Repeat system programming procedure. If problem persists, replace module.
840B	NO LOOP CURRENT: Communication problems between module and CO; no loop current. If error occurs four times consecutively and if automatic maintenance-busy is enabled and maintenance-busy limit is less than 50%, trunk is busied-out automatically.	Replace module with similar module and test. If problem is resolved, replace bad module. If problem persists, reinstall old module and test trunk.
840C	STUCK RINGING: Communication problems between module and CO; no loop current. If error occurs four times consecutively and if automatic maintenance-busy is enabled and maintenance-busy limit is less than 50%, trunk is busied-out automatically.	Replace module with similar module and test. If problem is resolved, replace bad module. If problem persists, reinstall old module and test trunk.

Maintenance Error Codes—Continued

Error Code	Description	Action
840D	INCORRECT FIRMWARE STATE: *If error occurs four times consecutively and if automatic maintenance-busy is enabled and maintenance-busy limit is less than 50%, trunk is busied-out automatically.*	*Turn power off for at least one second, and then turn it on. Repeat system programming procedure. If problem persists, replace module.*
840E	UPLINK MESSAGE ERROR: *Communication problems between processor and modules. Module received unrecognized message from processor.*	*Turn processor off and then on. Repeat system programming procedure. If problem persists, replace module.*
840F	LOST IDLE MESSAGE ERROR: *Loop start trunk lost an idle message during glare timing.*	*System has taken corrective action. If problem persists, contact NSAC Tier III.*
8C01	SLOTS NOT EQUAL: *Module that occupies indicated slot does not match slot information contained in PC or PCMCIA card backup file.*	*Check slot descriptions in backup file against actual system modules that occupy slots. After mismatch is corrected, restore.*
9801	MCARD WRITE ERROR: *Write to memory card is unsuccessful or too slow.*	*Reset card and try again. If problem persists, replace card and try again. If problem continues, replace processor module.*
9802	MCARD ERASE ERROR: *Erasure of memory card is unsuccessful or too slow.*	*Reset card and try again. If problem persists, replace card and try again. If problem continues, replace processor module.*
9803	MCARD 12-VOLT ERROR: *Memory card voltage is incorrect.*	*Reset card and try again. If problem persists, replace card and try again. If problem continues, replace processor module.*
9C01	NW REJECTS SPID: *Service on link has been lost.*	*Check programmed line. Modify if required, or call Central Office to correct.*
9C03	LINK ESTABLISHMENT FAIL: *Service on link has been lost.*	*Check that line is securely connected to port and that LEDs on module show proper operation. If card appears to work properly, line may not have been activated by Central Office.*
9C04	NW NOT RESPOND TO SETUP: *Service on link has been lost.*	*Network not responding to LEGEND messages. Contact Central Office.*
9C05	NW NOT RESPOND TO RELEASE: *Service on link has been lost.*	*Network not responding to LEGEND messages. Contact Central Office.*

Maintenance Error Codes—*Continued*

Error Code	Description	Action
9C07	ENDPOINT UNINIT (L2/L3): *Service on link is uninitialized.*	*If this lasts more than three minutes, replug the DSL. If the error remains, contact Central Office.*
9C08	PROTOCOL ERROR: *Service on link may be affected.*	*Verify line provisioning. If correct, contact NSAC Tier III.*
00DE	*MERLIN Messaging System (M1000) software was upgraded.*	*If the M1000 software was upgraded, no action is required.*
A401	CTI LINK BROADCAST RESET: *Occurs during a broadcast reset.*	*If several of these occur:* ■ *Check that the system is in Hybrid/PBX mode.* ■ *Validate the wiring and the connections.* ■ *Press the Restart Button (see the procedure "Restart" in Chapter 4 of Maintenance and Troubleshooting).* ■ *Call the TSO's Telephony Services Maintenance Group (800 242-2121) for procedures to unload and reload the PBX driver.*
A801	CTI LINK HIDDEN RESET: *Occurs during a hidden reset.*	*If several of these occur, and the client application has "slow" response time:* ■ *Validate the wiring and the connections.* ■ *Press the Restart Button (see the procedure "Restart" in Chapter 4 of Maintenance and Troubleshooting).* ■ *Call the TSO's Telephony Services Maintenance Group (800 242-2121) for procedures to unload and reload the PBX driver.*

Telephone LEDs

4424LD+ or MLX-20L Console

System Programming Menu Option	Option	LED Status Green LED ON	Green LED OFF	Red LED ON	Red LED OFF
Lines Trunks	Tie Lines				
	Inmode	Incoming tie line is touch-tone	Incoming tie line is rotary dial[1]		
	Outmode	Outgoing tie line is touch-tone	Outgoing tie line is rotary dial[1]		
	Dialtone	Remote dial tone[1]	Local dial tone		
Lines Trunks	TT/LS Disc				
	Outmode	Line/trunk is touch-tone[1]	Line/trunk is rotary dial		
Lines Trunks	Pools			Trunk is in pool	Trunk is not in pool
Lines Trunks	Toll Type	Must dial 1 + area code[1]	1 + dialing is not needed		
Lines Trunks	Hold Disconc	Long— 450 ms[1]	Short— 50 ms		
Lines Trunks	LS-ID Delay	LS-ID Delay is on	LS-ID Delay is off[1]		
Extensions	Lines Trunks	Line/trunk or pool is assigned to button	Line/trunk or pool is not assigned to button	Trunk is assigned to a pool	

1 Factory setting

Telephone LEDs—*Continued*

DSS Console

System Programming Menu		Red LED Status		
Option	**Option**	**ON**	**OFF**	**FLASHING**
Extensions	Account (FACE)	Forced Account Code Entry assigned	Forced Account Code Entry not assigned[1]	
Extensions	Call Pickup	Telephone is assigned to Call Pickup Group	Telephone is not assigned to Call Pickup Group[1]	
Extensions	VoiceSignl	Voice Announce assigned	Voice Announce not assigned[1]	
Extensions	Ext status	Extension Status assigned	Extension Status not assigned	Extension Status can be assigned
Extensions	Group Page	Telephone is in group	Telephone is not in group[1]	
Extensions	Group Cover	Telephone is in coverage group	Telephone is not in coverage group[1]	
Extensions	Group Calling Members	Telephone is assigned to group	Telephone is not assigned to group[1]	
Extensions	Mic Disable	Telephone microphone is disabled	Telephone microphone is enabled	
Extensions	Remote Frwd	Telephone can transfer calls to a remote telephone number	Telephone cannot transfer calls to a remote telephone number[1]	
Night Service	Group Assign	Telephone is in group	Telephone is not in group[1]	
Night Service	Exclude List	Telephone is excluded	Telephone is not excluded[1]	
Aux Equip	Msg Waiting	Station is a fax message-waiting station	Station is not a fax message-waiting station	
Aux Equip	Fax Extension	Extension is a fax machine	Extension is not a fax machine	
Tables	AllowTo	Allowed List assigned to telephone	Allowed List is not assigned to telephone[1]	

DSS Console—*Continued*

System Program-ming Menu		*Red LED Status*		
Option	*Option*	*ON*	*OFF*	*FLASHING*
Tables	*DisallowTo*	*Disallowed list assigned to telephone*	*Disallowed list is not assigned to telephoneAppendix*	
Data	*Voice/Data*	*Voice/data pair*	*Not voice/data pair[1]*	
Operator	*Direct Trunk Queued Call*	*Operator position*	*Other*	*Can be assigned as operator position*
Operator	*Queued Call Message Center*	*Message Center position*	*Other*	*Can be assigned as Message Center*
Operator	*In Queue Alert*	*Position receives In-Queue alert*	*Other*	*Position can receive In-Queue alert*
	Call Types— Dial 0, LDN Unassigned, DID, Grp Coverage	*Position receives call type*	*Other*	*Position can receive call type*

1 Factory setting

Wiring Constraints

System Wiring

- *System within 5 feet of dedicated AC power outlet.*
- *System within 25 feet of the network interface.*
- *Telephones within 1000 cable feet (304.8 m) of all telephones except MLX telephones. MLX telephones within 3000 feet of control unit. IROBs if needed. Distance for the 4400-Series telephones varies according to the gauge of the wire:*
    - *26 gauge—2000 feet*
    - *24 gauge—3000 feet*
    - *22 gauge—5000 feet*
- *MLX telephones using 24 gauge wire have a distance limitation of 3,000 feet.*
- *PARTNER ETR telephones using 24 gauge have a distance limitation of 1,000 feet.*
- *PARTNER ETR ports programmed for Tip/Ring using 24 gauge wire have a distance limitation of 3,000 feet.*
- *Ground wire for the power supply cannot be over 10 feet.*
- *If the SMDR printer is over 50 feet from the control unit, use an Asynchronous Data unit (ADU).*
- *Back-to-back connection of the DS1 facility with another system's facility is possible when the cable distance is less than 1300 feet.*
- *Telephone Wiring.*
- *Maximum cord length from an MLX telephone to a ISDN data module is 80 feet (24 m).*
- *Total length of cords between the KS22911-L2 or 406743419 power supply and the MLX telephone cannot be more than 50 feet.*
- *Do not replace the 2-foot. D8AC cord (packaged with the DSS) with a longer cord.*
- *Radio base of the TransTalk 9031/9040 telephone must be at least 25 feet from the control unit.*

PC Connections

To use the WinSPM software, you must install the software using the directions packaged with the software. Also, your PC must be connected to the MERLIN MAGIX system directly via a serial port on your PC, or you must connect to the MERLIN MAGIX system internal modem using your PC's modem:

- ***Direct Connection.*** *A serial port on your PC is connected directly to the MERLIN MAGIX system programming jack—the lower modular RS-232 jack on the processor module.*
- ***Internal Connection.*** *You are using a modem (either connected to or built into your PC) that is connected to the MERLIN MAGIX system (for example, via a 016 T/R module) to access the MERLIN MAGIX system internal modem.*

- **External Connection**. *You are using a modem (either connected to or built into your PC) and using a dial-up connection to access the MERLIN MAGIX system internal modem. The External Connection type requires use of the Remote Access feature to allow you to connect to the MERLIN MAGIX system programming port without human intervention.*

- **Manual Connection**. *You are using a modem (either connected to or built into your PC) and using a dial-up connection to access the MERLIN MAGIX system internal modem. The Manual Connection is used when you must reach the MERLIN MAGIX system programming port by placing a call to the site and the person that answers transfers your call to the programming port.*

Direct Connection

To set up a site for a Direct Connection, do the following:

1. *From the Site Setup screen, click Add. The cursor moves to the Site Name field.*
2. *Type in the Site Name you wish to use and press the TAB key. Site Names are limited to 30 characters. You may only use characters that are acceptable for file names in the Windows environment.*
3. *Complete the following fields to help differentiate this site from any other site(s) you may want to add. These fields are not required; therefore, you may fill in as many or as few as you determine necessary:*
   - *Address*
   - *City*
   - *State*
   - *Postal Code*
   - *Country*
   - *Contact*
   - *Telephone*
   - *Notes*
4. *Click the Direct tab.*
5. *Select the Enabled check box. A check mark appears in the box and the COM Port drop-down list box is no longer grayed out.*
6. *Click the arrow located on the right-hand side of the COM Port drop-down list box to get a list of the available COM ports on your PC. Click once on the number that corresponds to the COM port on your PC that is connected to the MERLIN MAGIX administration port.*
7. *Set the COM port speed to 2400 (most instances).*
8. *If you want to add another site, click Add and begin on Step 2 in the process for the appropriate connection type for the next site.*
9. *When you finish adding sites, click OK.*

   NOTE:
   If you have multiple modems installed in your system, after clicking OK, you may be prompted to select the modem you

want to connect with.

Clicking CANCEL from the Connection Selection screen causes you to return to either the Main screen or the First-Time User Wizard, depending from where the screen was started.

Internal Connection

To set up a site for an Internal Connection, do the following:

1. From the Site Setup screen, click Add. The cursor moves to the Site Name field.
2. Type in the Site Name you wish to use and press the Tab key. Site Names are limited to 30 characters. You may only use characters that are acceptable for file names in the Windows environment.
3. Complete the following fields to help differentiate this site from any other site(s) that you may want to add. These fields are not required; therefore, you may fill in as many or as few as you determine necessary:
   — *Address*
   — *City*
   — *State*
   — *Postal Code*
   — *Country*
   — *Contact*
   — *Telephone*
   — *Notes*
4. Click the Internal tab.
5. Select the Enabled check box. A check mark appears in the box and the Dial String dialog box is no longer grayed out.
6. Be sure that the Dial String check box displays *10.
7. If you want to add another site, click Add and begin on Step 2 in the process for the appropriate connection type for the next site.
8. When you finish adding sites, click OK.

   NOTE:
   If you have multiple modems installed in your system, after clicking OK, you may be prompted to select the modem you want to connect with.

   Clicking CANCEL from the Connection Selection screen causes you to return to either the Main screen or the First-Time User Wizard, depending from where the screen was started.

External Connection

To set up a site for an External Connection, do the following:

1. From the Site Setup screen, click Add. The cursor moves to the Site Name field.

2. *Type in the Site Name you wish to use and press the Tab key. Site Names are limited to 30 characters. You may use only characters that are acceptable for filenames in the Windows environment.*

3. *Complete the following fields to help differentiate this site from any other site(s) that you may want to add. These fields are not required; therefore, you may fill in as many or as few as you determine necessary:*
   — *Address*
   — *City*
   — *State*
   — *Postal Code*
   — *Country*
   — *Contact*
   — *Telephone*
   — *Notes*

4. *Click the External tab.*

5. *Select the Enabled check box. A check mark appears in the box and the Dial String dialog box is no longer grayed out.*

6. *Edit the contents of the Dial String dialog box for the exact dial string the modem will need to dial to access the remote MERLIN MAGIX administration port. The dial string must include the Remote Access line, the barrier code (if required), and the dial code for the MERLIN MAGIX admin port (*10). Use commas to create necessary pauses in the dial string.*
   Example: *You are connecting to a remote MERLIN MAGIX Integrated System via a modem through the Remote Access line 800 555-9999. The Remote Access line is set up with barrier code 1234 for access to the remote dial tone. The site from which you are dialing requires you to dial 9 to get an outside line. If you use commas for pauses in the dial string, the dial string is 918005559999,,,,1234,*10.*

7. *If you want to add another site, click Add and begin on Step 2 in the process for the appropriate connection type for the next site.*

8. *When you finish adding sites, click OK.*

   NOTE:
   If you have multiple modems installed in your system, after clicking OK, you may be prompted to select the modem you want to connect with.

   Clicking CANCEL from the Connection Selection screen causes you to return to either the Main screen or the First-Time User Wizard, depending from where the screen was started.

Manual Connection

To set up a site for a Manual Connection, do the following:

1. *From the Site Setup screen, click Add. The cursor moves to the Site Name field.*

2. *Type in the Site Name you wish to use and press the Tab key. Site Names are limited to 30 characters. You may use only characters that are acceptable for filenames in the Windows environment.*

3. *Complete the following fields to help you differentiate this site from any other site(s) that you may want to add. These fields are not required; therefore, you may fill in as many or as few as you determine necessary:*
    — *Address*
    — *City*
    — *State*
    — *Postal Code*
    — *Country*
    — *Contact*
    — *Telephone*
    — *Notes*

4. *Click the Manual tab.*

5. *Click the Enabled check box. A check mark appears in the box and the Dial String dialog box is no longer grayed out.*

6. *When you try to connect by using the Manual Connection type, WinSPM displays a dialog box with an OK button. Place a voice call to the system on a regular line, and ask the operator to transfer you to the MERLIN MAGIX admin port by dialing *10. When you hear the modem answer tone, click OK to complete the connection and then hang up the handset.*

7. *If you want to add another site, click Add and begin on Step 2 in the process for the appropriate connection type for the next site.*

8. *When you finish adding sites, click OK.*

    NOTE:
    If you have multiple modems installed in your system, after clicking OK, you may be prompted to select the modem you want to connect with.

    Clicking CANCEL from the Connection Selection screen causes you to return to either the Main screen or the First-Time User Wizard, depending from where the screen was started.

    While setting up a Manual Connection, you will also be prompted to set the Maximum Speed for connection. It is recommended that you select 2400.

When Calling NSAC

Do the following before you call Tier III for troubleshooting:

1. Check and recreate the problem.
2. Connect your laptop or PC so you are ready.
3. Know the software version of your system (Dial *05 on an ETR, 4400-Series, or MLX display telephone ICOM or SA button).
4. Write down the errors in the Error Logs.
5. Know the configuration of the system operator console (DLC or QCC).
6. Know the type of tie lines (emulated or not, wink-start, etc.).

QPPCNs on the NSAC Bulletin Board

Follow these steps to review QPPCNs on the NSAC bulletin board:

1. Dial 800 241-3375.
2. At the first screen, select F for File Section.
3. At the next screen, select N for Non-Tier III Tips.
4. At the next screen, select 8 for QPPCNs.

QPPCNs Online

QPPCNs are available online at:

> **NOTE:**
> http://www.bcs.com/tech_info/qppcn

Technical Support Telephone Numbers

Product or Service	Comments	Telephone Number
Avaya Equipment		
NSAC Tech Support	PARTNER, MERLIN, VINTAGE, CLASSIC	800-552-3293
TSC Tech Support	DEFINITY	800-248-1234
Network Systems (RTAC)	DACS, SLC, ESS, DDM	800-225-7822
Network Systems	ISDN Sets (6500/7500)	800-225-4672
Network Engineering Group	MERLIN LEGEND private networking	888-297-4700
AT&T Paradyne	CSU, DSU, MUX, Hubs, Routers	800-237-0016
Long Distance		
Over Local Lines/Trunks		
AT&T		800-222-3000
MCI		800-444-2222
SPRINT		800-877-4646
T1 Service		
AT&T	800/MEGACOM/ISDN	800-222-1000
AT&T	Data	800-325-1230
MCI		800-444-8722
SPRINT		800-877-5045 or 6277
To identify your long distance carrier		700-555-4141
To identify the telephone # from which you are calling		10732-1-404-988-9664
Other GBCS Support		
NSAC QPPCN Coordinator	Small Business Products	303-843-5204
TSC QPPCN Coordinator	Large Business Products	800-248-1234
BCS Publications Center	Documentation on all BCS products	800-457-1235
NSAC Bulletin Board	On-line technical/product information	800-241-3375
TIER III TIPS publication	Sue Williams Publication Manager	303-843-5921
Tech Quarterly publication	Production Editor	303-850-8898
Comcode Hotline	PEC/Comcode/Part Cross-Reference	800-654-5832