

MITEL

SX-2000

GENERAL INFORMATION GUIDE

LIGHTWARE 34, Release 1.0



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SX-2000 General Information Guide
LIGHTWARE 34, Release 1.0

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Product Overview

The Mitel SX-2000 LIGHT system is an advanced, fiber-distributed telephone system that is designed for larger organizations or for networked telecommunications environments. The distributed architecture separates the control node from peripheral, application, and network access nodes and links them by multimode fiber optic cable. The system can be configured to meet the communication needs and physical layout of virtually any enterprise -- whether a single office, a campus, or multiple sites spread across a wider geographic area. The Mitel SX-2000 LIGHT system supports up to 3000 telephones in a single system configuration. However, if the number of users exceeds the 3000-user capacity of a single system, a virtually unlimited number of systems can be "clustered" to provide a seamless network by using digital trunking and SX-2000 private network applications.

To provide high reliability, the SX-2000 LIGHT is configured as a multi-cabinet, control redundant system. The redundant main control cabinet provides full back-up, including independent power supplies, so that system operation will not be affected if a main control component fails. When the system switches to the alternate main control, calls in progress are not dropped and callers are unaware of the system event. The redundant main control cabinet can support up to eleven expanded peripheral nodes, page 21, located up to 8.7 miles (14 kilometers) away. The redundant main control cabinet also supports up to five DSU cabinets (see page 30) or Network Services Units (see page 31).

System Architecture

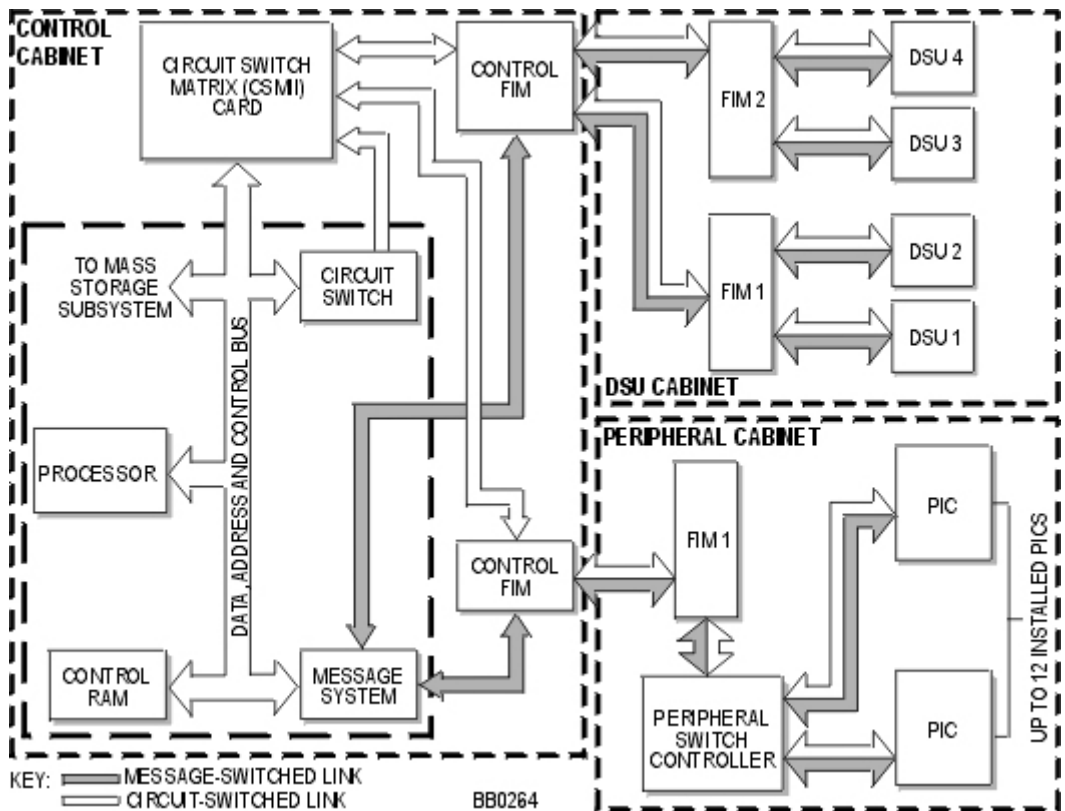
The SX-2000 LIGHT system has two levels of control: main control and peripheral control; the functions are handled by the main controller and peripheral switch controller cards, respectively.

The main control communicates with the peripheral switch and DSUs by using the serial-communication message links and circuit switch links. The main control sets up all calls and establishes the paths through the circuit switch. The main control includes the following functional subsystems:

- **Message System:** The message system links the main control to the intelligent subsystems and handles all protocol control (including handshake, message processing, error check, reformat, redirection, queueing, and maintenance functions). The messages include off-hook, digits, and other signaling information collected by the peripheral switch controller.
- **Circuit Switch:** Based on messages received from the main control, the switching matrix establishes paths between parties or between digital processing equipment. The system circuit links are a shared resource and are allocated to calls as required. The digital signals are typically PCM voice and various control traffic signals.
- **Mass Storage Subsystem:** By using the hard disk module, the mass storage subsystem provides long-term non-volatile bulk memory storage of system information (including system software, database backup, and logs). Operating system, database upgrades, and an additional level of backup are provided through a removeable storage device drive.

The peripheral control substantially reduces the computing load on the main controller by performing all the simple but real-time-intensive tasks that are associated with scanning and

controlling a large number of different Peripheral Interface cards. Following instructions from the main controller, it sets up connections between the Peripheral Interface cards and the circuit switch subsystem.



Basic System Architecture

Call Progression

Each telephone connects to the system through an interface circuit on a Peripheral Interface card. During a simple call, the call progresses as follows:

- When a telephone goes off-hook, the main controller connects the telephone’s receive path to a circuit carrying dial tone and the transmit path to a DTMF receiver circuit.
- As the user dials numbers (DTMF tones) on the telephone keypad, the DTMF receiver translates the tones into digits and passes them over message links to main control.
- The main control collects the digits and identifies the destination; then, it rings the destination by sending a control signal over a message link.
- The peripheral switch controller sends a message to main control when the destination set answers the call.
- The main control establishes a circuit switch voice path by connecting the source to the destination.

- The system's tone generator supplies all audible tones (such as dial tone, busy tone, and ringback tone) to the circuit switch for distribution to callers as required.
- At the Peripheral Interface card, voice signals from each telephone are converted into digital form (pulse code modulation) and routed through the system on the established circuit; signals leaving the switch are decoded back into analog form by the Peripheral Interface card.

Lines and Trunks

Lines

The system supports the following types of internal voice lines:

- **Digital Network Interface (DNI) Lines** provide an interface for Mitel digital telephones, consoles, and datasets. The maximum loop resistance on a DNI line must be 280 ohms or less, and the loop length must be 3300 ft. (1000 m) or less on 26-gauge wire.
- These lines are supported by the Digital Network Interface line card.
- **On-Premise (ONS) Lines** (24 V per port) are for industry-standard rotary dial and DTMF telephones. The external loop resistance on an ONS line must be 600 ohms or less, and the loop length must be 5000 ft. (1500 m) or less on 26-gauge wire.
- These lines are supported by the ONS line card and the ONS CLASS/CLIP line card.
- **Off-Premise (OPS) Lines** (48 V per port) are for industry-standard telephones where the external loop resistance exceeds 600 ohms or where lightning surge protection is required. The maximum loop resistance on an OPS line must be 1800 ohms or less, and the loop length must be 19,000 ft. (5800 m) or less on 26-gauge wire.
- These lines are supported by the OPS line card.
- **Control Over Voice (COV) Lines** provide an interface for voice mail systems. The maximum loop resistance on a COV line must be 280 ohms or less, and the loop length must be 3300 ft. (1000 meters) or less on 26-gauge wire.

Trunks

The system can connect to the public switched network or to private networks over both digital and analog trunks.

The following digital links are supported:

- **DS1 Links:** The system supports CO, DID, E&M, MSDN/DPNSS, and MSAN/APNSS protocols.
- The SX-2000 LIGHT system connects to DS1 links by using a DS1 Formatter or DS1/T1 Formatter II card.
- **CEPT Links:** The system supports MSDN/DPNSS, DASS II (UK only), and Italian CAS (Italy only) protocols.

- The SX-2000 LIGHT system connects to CEPT links by using a CEPT Formatter or CEPT Formatter II card.
- **BRI Links:** The system supports Euro-ISDN 2B+D, Basic Rate, or North American National ISDN-1 and ISDN-2 protocols.

The SX-2000 LIGHT system connects to BRI links by using either a BRI card or BRI NSU, page 34. The BRI link can be either User or Network Termination (for European installations only).

- **PRI Links:** The system supports DMS-100, DMS-250, Bellcore National ISDN, 4ESS, NI-2, 5ESS NI-2, QSIG and Euro-ISDN (CTR4) protocols.

The SX-2000 LIGHT system connects to PRI links by using a PRI card or Universal NSU, page 31.

- **R2 Links:** The system supports the CCITT Blue Book, Volume VI, Fascicle VI.4, Specifications of Signaling System R2, Recommendations Q.440 to Q.490 (with the exception of Echo Suppression (Q.479), Test Calls (Q.490) and international signals).

The SX-2000 LIGHT system connects to the R2 links by using either an R2 card or R2 NSU, page 33.

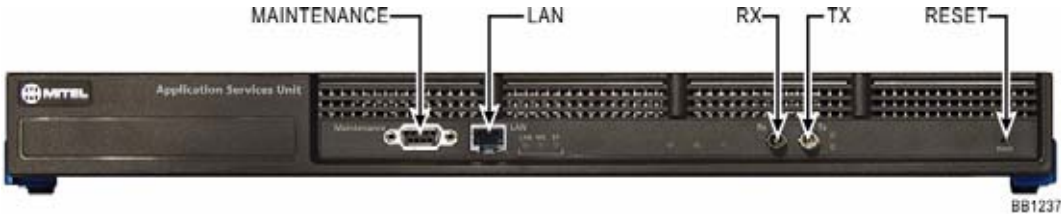
- The following analog trunks are supported:
- **Analog CO Trunks** interface to the system through the Loop Start/Ground Start (LS/GS) trunk card.
- **E&M Trunks** interface to the system through the E&M trunk card (which can be configured for either 2-wire or 4-wire operation). This card supports Type I through Type V circuits.
- **Direct Inward Dial and Tie Trunks** interface to the system through the DID/Loop Tie trunk card, AC15 trunk card, DID/2 trunk card, or DID/3 trunk card (depending on local requirements).

Supporting Applications


Application Services Unit (ApSU®)

The Application Services Unit (ApSU) Release 2.0 is a fiber connected MiTAI server for the SX-2000 that replaces the Application Fiber Card (AFC). It is a low cost and maintenance-free unit that supports:

- MiTAI remote clients Version 10 or later,
- Mitel Client/Server TSP 3.0 or later.

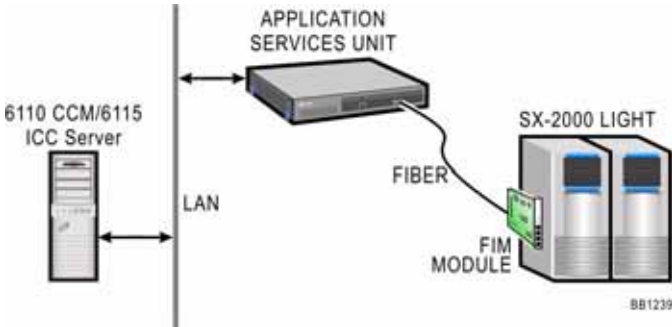


ApSU Front Panel

 **Note:** ApSU Release 2.0 supports a maximum of 222 client connections. Once this maximum limit has been reached, any additional clients attempting to connect to the MiTAI server will receive the error message **SXERR_SERVICE_FULL**.

SX-2000 LIGHT CTI Connectivity

The Application Services Unit provides a MiTAI server that will be able to service multiple MiTAI and TAPI clients over the network using standard network cards. The ApSU reduces the overall cost of hardware and simplifies the deployment and maintenance of telephony applications.



SX-2000 CTI connectivity using the Application Services Unit

R2 Support

The R2 card and R2 NSU, page 33, are protocol converters that allow the SX-2000 system to access an R2 National Public Switched Telephone Network (PSTN) with MF-R2 digital trunk signaling. The protocol converter accepts incoming MF-R2 signals from the PSTN and turns them into signals for the SX-2000 system. Similarly, the converter turns outgoing signals from the SX-2000 into MF-R2 signals for the PSTN.

The R2 protocol converter supports the CCITT Blue Book, Volume VI, Fascicle VI.4, Specifications of Signaling System R2, Recommendations Q.440 to Q.490 (with the exception of Echo Suppression (Q.479), Test Calls (Q.490) and international signals).

Although many countries use R2 signaling, most do not adhere to the CCITT recommendations in their entirety, and there are many protocol variations around the world. R2 support on the SX-2000 system provides exceptional flexibility, which enables you to support the regional variations in the R2 protocol. Line signaling, tone interpretation, and timing parameters for the converter can be adapted to suit any national or regional requirement. For example:

- Line signaling features allow you to program up to four bits to define the incoming and outgoing patterns for line signals such as Idle and Answer.
- Register signaling features allow you to program the type of address signaling termination (signaled or timed) and whether signaling should be fully-compelled or semi-compelled. These features also allow you to define each register signaling tone individually.

Enterprise Manager

Enterprise Manager provides consolidated administration of Mitel's product portfolio. It provides a management desktop, inventory management, configuration and provisioning, Health monitoring, maintenance and diagnostics and system administration.

In addition to onboard device management, a complete management solution for our product portfolio must include an effective way for IT/Telecoms support personnel to manage multiple converged IP gateways and enterprise business applications. These solutions may be organized into a network or may exist as stand-alone devices.

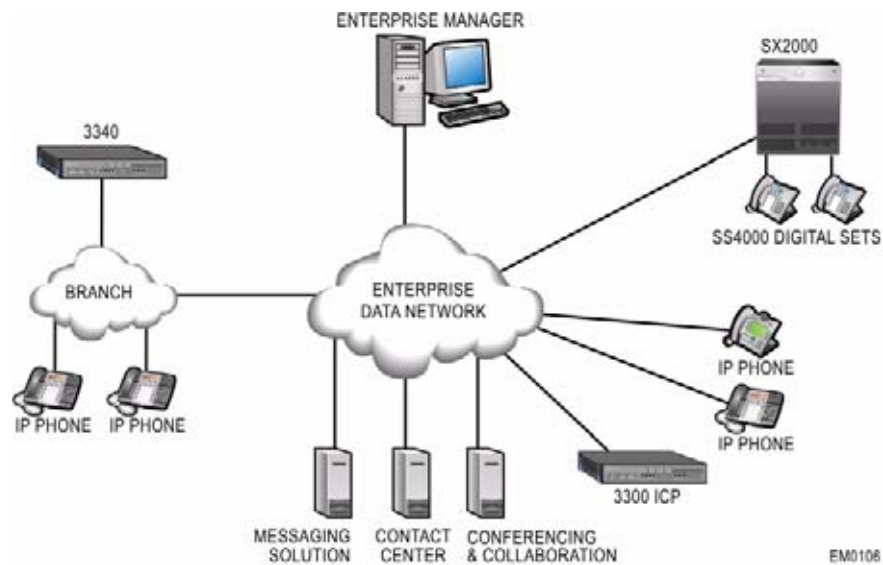
Mitel is evolving its existing Enterprise focused network management tool suite, OPS Manager. OPS manager is tightly integrated with Enterprise Manager. Both Enterprise Manager and OPS Manager are now compatible with Windows 2003 and Windows XP SP2. For more information on OPS Manager, refer to page 14.

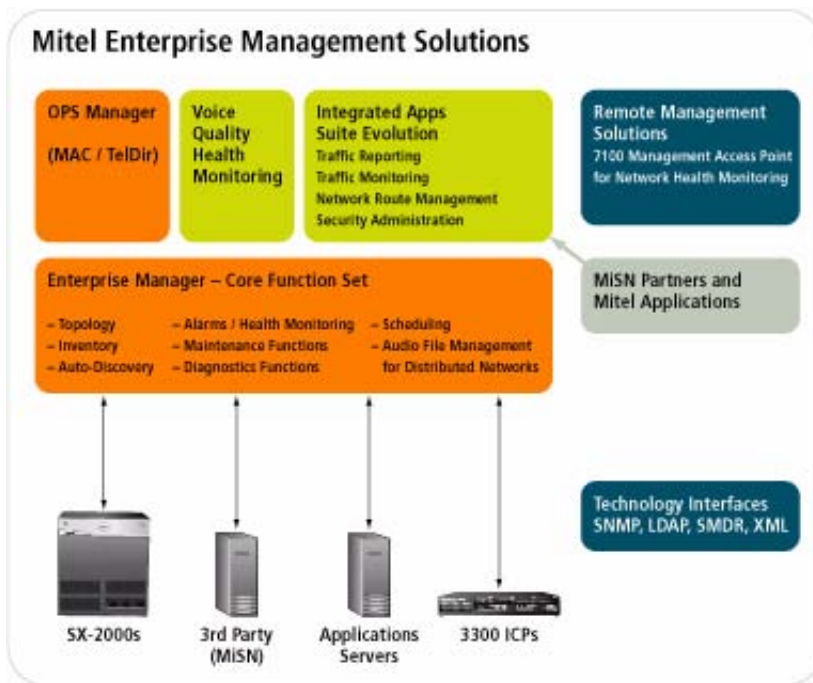
Enterprise Manager includes a number of applications that provide the following:

- Network Inventory and Health Monitoring via basic Enterprise Manager
- Support for Management Access Point.
- Integrated and synchronized with OPS Manager. OPS Manager can be launched separately from the Enterprise Manager client.

- The standalone Mitel Alarm Monitor allows you to monitor alarms on networks that are managed by Enterprise Manager, without having to start the Enterprise Manager client.
- Export capability that allows you to export alarm, event, and inventory data in .csv format to the Enterprise Manager server.
- Alarm history which includes the ability to archive alarms on the server.
- Administrator defined user groups.
- Autodiscovery of SX-2000, 3300 ICP, NuPoint Messenger IP, Teleworker IP Phones, Wireless Access Points and data network devices.

The following figures illustrate the products that comprise the Mitel Enterprise Management solution.





For more information, refer to *Enterprise Manager General Information Guide*.

OPS Manager

OPS Manager is a telecommunications management tool that enables you to control the maintenance and operation of a network of Mitel systems. From the OPS Manager station, you can perform the following functions on a single system or on network of systems:

- Manage a network telephone directory
- Move, add, change, and delete users
- Integrate the network telephone directory with a directory service database
- Schedule automatic upgrades, database saves, and database restores
- Perform remote network element programming and maintenance
- Synchronize the network element clocks with the clock in the OPS Manager server
- Use Station Message Detail Recording (SMDR) to track calls
- Automate day and night service
- Locate unused directory numbers and unused circuits.

OPS Manager is available as software only (installed on a user/dealer provided server). OPS Manager runs on Windows 2000 Server, Windows XP, Windows XP SP2, or Windows 2003. A direct OPS Manager login is provided rather than an Enterprise Manager login. Note that OPS Manager requires the installation of Enterprise Manager.

7100 Management Access Point

The Management Access Point provides secure remote management access and optional alarm monitoring of the SX-2000 over public network connections. It offers access security and customer protection using dial-up or Internet VPN connectivity.

The Management Access Point requires no additional client software. It uses a 10baseT Ethernet connection to the customer network and the dialup versions of the product support connectivity for up to five IP-based systems over standard dialup PSTN V.90 modem. The broadband VPN version, the Management Access Point E/E, provides support for up to 16 IP systems for Internet VPN or dialup modem access. Because it has two IP addresses, a redundant SX-2000 LIGHT appears as two IP systems to the Management Access Point.

Remote service engineers connect to the Management Access Point via a PPP or PPTP connection using standard Windows Network Connectivity capabilities and MS-CHAPv2 authentication. However, in order to connect to the Management Access Point console, the customer must enable a privileged remote session for the engineer. The remote engineer can establish an IP connection only to local IP destinations that are configured in the Management Access Point. The engineer must know the destination IP address in order to reach a managed session. At that point, the engineer must have a valid system login account to access the remote system. Once the engineer is logged into the remote system, any administrative, maintenance or diagnostic task can be performed.



Note: Network Address Translation (NAT) is enabled by default in the Management Access Point which means that only the IP address assigned to the Management Access Point LAN port needs to be routable on the customer network. If NAT is disabled in the Management Access Point, the IP subnet on the PPP connection must be unique within the customer's IP address space, be private (conform to the rules of RFC1918) and be routable within the customer's network (the customer must redistribute the private route into their routing table).

SX-2000 Alarm Monitoring

The SX-2000 alarm application enables the Management Access Point to monitor Ethernet-equipped SX-2000 systems for SNMP alarms and relay them to a remote alarm management system and/or email account. The license key to permanently install this application on a particular 7100 MAP is provided when you order SX-2000 alarm monitoring. SNMP alarms are generated by the SX-2000 any time a change in the overall system alarm condition (Clear, Minor, Major, Critical) occurs (requires SNMP option enabled on SX-2000).

The Management Access Point

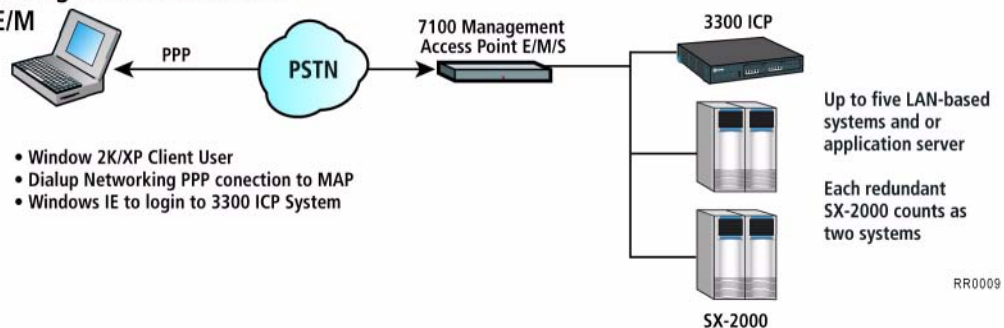
- Supports CLI-based call screening so calls are screened based on the origination of phone numbers. (See the latest Management Access Point FCI for supported countries.)
- Uses Point-to-Point (PPP) and Challenge Handshake Authentication (CHAP) protocols to prevent passwords from being sniffed or captured and replayed.
- Provides an embedded firewall so access is restricted to select devices and the customer LAN is fully protected.

- Prevents remote Management Access Point configuration or firewall changes without the customer granting privilege.
- Tracks configuration changes during privileged connections.
- Supports source IP address screening for VPN connections with the Management Access Point E/E unit.

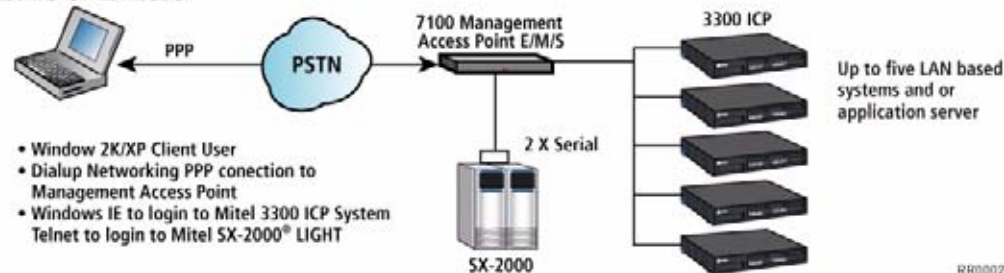
The Management Access Point is available in the following versions:

Management Access Point	Features
Management Access Point E/M (Ethernet/Modem)	<ul style="list-style-type: none"> • access to remotely managed SX-2000s • access to up to 5 IP-based systems or application servers • access to OPS Manager • network ping monitoring of the managed IP systems • optional SNMP alarm monitoring of SX2000 and 3300 ICP
Management Access Point E/M/S (Ethernet/Modem/Serial)	<ul style="list-style-type: none"> • as above plus connectivity to two serial port devices
Management Access Point E/M/S/U (Ethernet/Modem/Serial/UPS)	<ul style="list-style-type: none"> • as above plus an integrated four-hour UPS
Management Access Point E/E (Dual Ethernet and Modem)	<ul style="list-style-type: none"> • same as Management Access Point, but support for 16 IP devices • second Ethernet port to support VPN connections

**Mitel 7100
Management Access Point
E/M**



**Mitel 7100
Management Access Point
E/M/S or E/M/S/U**



Mitel 6100 Contact Center Solutions

6100 Contact Center Solutions combines robust communications platforms, Automated Call Distribution (ACD), and a modular suite of feature-rich, web-based applications for streamlining contact center management, and enabling advanced multimedia customer contacts. The 6100 Contact Center Solutions portfolio includes:

- Mitel 6100 Contact Center is a browser-based application that provides real-time and historical monitoring as well as agent forecasting.
- Mitel 6110 Contact Center Management Enterprise Node is an add-on product to Contact Center that provides multi-switch (remote and/or co-located) enterprise-wide historical reporting and real-time monitoring.
- Mitel 6115 Interactive Contact Center is an application that allows you to control agent and queue states instantly and easily via the Contact Center real-time display. Interactive Contact Center integrates with Contact Center and Mitel 6150 Multimedia Contact Center to provide virtual queuing.
- Mitel 6120 Contact Center Scheduling is an application that integrates with the Contact Center Forecasting functionality to provide automatic agent scheduling, based on business rules and required skills.
- Mitel 6125 Real-time Schedule Adherence is an add-on product to Contact Center Scheduling that allows you to see what agents are doing in relation to what is scheduled and quickly identify areas of non-adherence.
- Mitel 6140 Contact Center Agent Portal is an application that displays caller information on agent desktops via a number of different applications that can be configured to 'pop' or display automatically on any desktop.
- Mitel 6150 Multimedia Contact Center is an advanced contact distribution package that integrates with Microsoft Exchange 2003 to route emails, chats and faxes to the longest idle agents in MS Outlook.
- Mitel 6160 Contact Center Intelligent Queue is a browser-based recorded announcement solution that provides standard recorded announcements, intelligent messaging capabilities, routing and callback.

6100 Contact Center Solutions is described in detail in *6100 Contact Center Solutions General Information Guide*.

NuPoint Messenger™

NuPoint Messenger is a PC-based voice mail and messaging package that works with the Mitel system. It provides online maintenance and configuration, and enhanced security. NuPoint Messenger can support up to four languages per system simultaneously. It also supports individual, workgroup, and enterprise requirements, softkey integration on SUPERSET™ telephones, and allows for centralized voice mail in organizations with multiple systems.

NuPoint Messenger modules offer the following:

- Call Processing and Auto Attendant

- Integrated Fax Messaging and Management
- Paging Support
- Lodging Industry Support
- PC-based Client Applications for Mailbox Control.

Emergency Response Adviser

Emergency Response Adviser is an application that runs on a Microsoft Windows-compatible server and one or more remote terminals. It provides local security personnel with an emergency call display and response console that:

1. Alerts them to new emergency calls
2. Identifies the exact location of the phone that was used to dial the emergency number
3. Lists any helpful extra information
4. Waits until they acknowledge the call
5. Logs the call and time of acknowledgement.

It adds this functionality to the existing Emergency Services feature package offered by the SX-2000 system. The switch performs the actual routing of emergency calls to the Public Safety Answering Point (PSAP) where emergency personnel (such as fire or ambulance) are dispatched by PSAP call-takers.

Emergency Response Adviser has options for alerting mobile personnel via their phones or their pagers. It can also simplify the generation of data files necessary for keeping the PSAP up-to-date with physical plant changes (an essential part of the E-911 management).

For more information, refer to the Emergency Response Adviser Installation and Maintenance Guide. This guide can be downloaded from the Mitel Online web site.

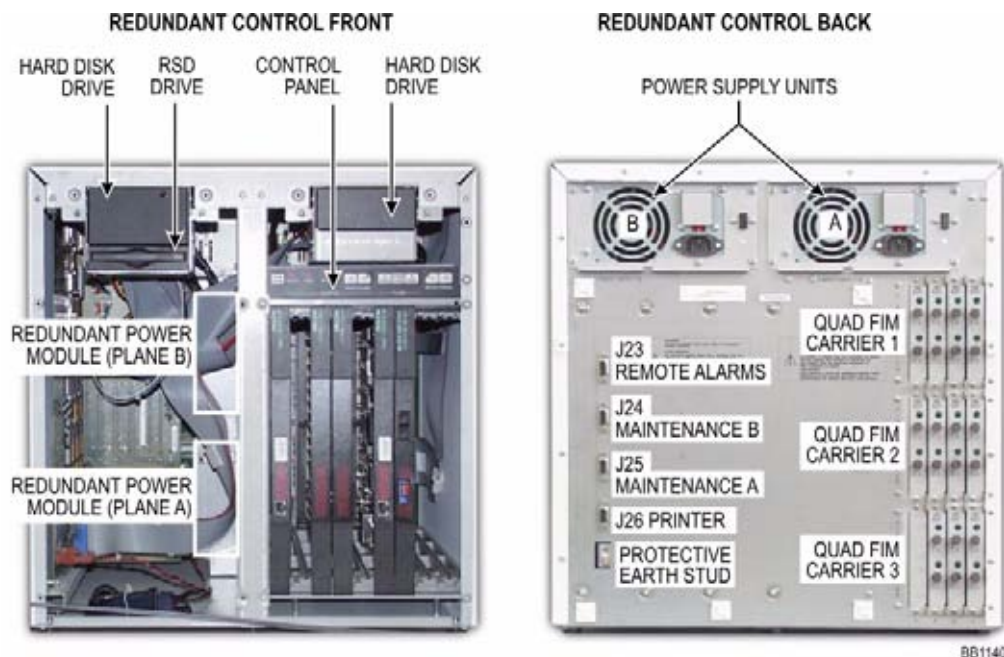
Configuration

The SX-2000 LIGHT system consists of a redundant main control cabinet and associated peripheral cabinets, Digital Service Unit (DSU) cabinets, and Network Services Units (NSUs). Fiber optic cables connect the peripheral cabinets, DSU cabinets, and NSUs to the main control cabinet. Copper cables from the extensions terminate at the peripheral cabinet. Installers do not have to route the extension cables between many floors or run the cables off-premises to a centrally-located system.

Depending on the Fiber Interface Module (FIM) that is used, the peripheral cabinets, DSU cabinets, and NSUs can be located up to 0.62 miles (1 km), 1.9 miles (3 km), or 8.7 miles (14 km) from the main control cabinet. This versatility allows system resources such as lines, trunks, and digital service applications to be physically distributed among several remote locations. For example, one peripheral cabinet might provide the telephone service to a company's head office, while another provides telephone service to a manufacturing facility in a different building. Even though the peripheral cabinets are in different locations, they connect to the same main control cabinet by using a pair of fiber optic cables.

Control Cabinets - Redundant SX-2000 LIGHT System

The Control Redundant SX-2000 LIGHT system supports applications that require up to 3000 lines, page 9. The redundant main control cabinet provides full back-up, including independent power supplies, so that system operation will not be affected if a main control component fails. When the system switches to the alternate main control, calls in progress are not dropped and callers are unaware of the system event. The redundant main control cabinet can support up to eleven expanded peripheral nodes (see page 21), five DSU cabinets (see page 30), or five Network Services Units (see page 31).



The redundant control node consists of the following components:

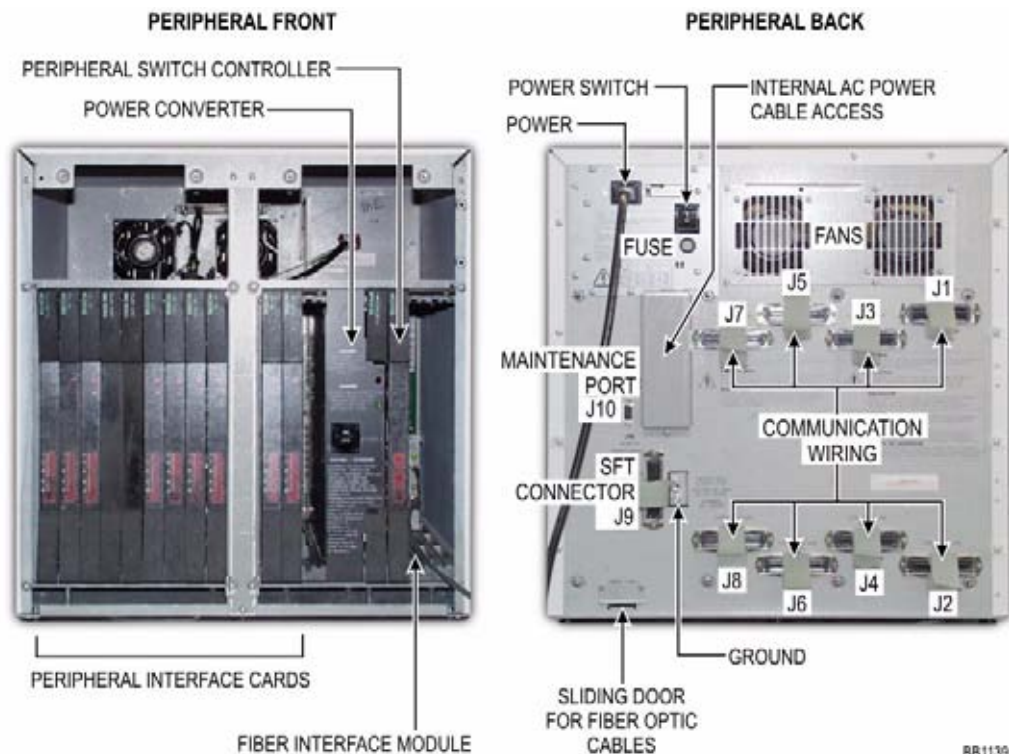
- **Control Cards:** The control node contains two Main Controller cards, two Circuit Switch Matrix cards, a Mass Storage Expander (MSX) card, and a Control Resource card (CRC).
- **Remote Storage Device (RSD) drive:** An ISO-standard, 3.5 inch, magneto-optical disk drive is mounted just below the hard disk drive on the front of the cabinet.
- **Control Panel:** The control panel, located on the right side of the front panel below the hard disk, provides system controls and indicators, page 77. The control panel is not visible unless the front panel of the cabinet is removed.
- **Cabinet Frame:** The redundant control cabinet is separated into three shelves. Shelf 1 and Shelf 2 are located at the front of the cabinet and hold the redundant power modules and control cards. Shelf 3, at the back of the cabinet, holds the FIMs.
- **Two Redundant Power Modules:** Each redundant power module provides power from one of the power supplies to the MSX card, the CRC card, the FIMs, and the RSD drive.
- **Two Power Supplies:** 200 Watt AC or 150 Watt DC power supplies provide redundant power for the cabinet. The power supply fans cool the cabinet.
- **Two Hard Disk Drives:** The 3.5 inch wide x 1 inch high SCSI hard disks are mounted side-by-side at the top of the cabinet. The hard disk drives are visible through openings in the front cover.
- **Fiber Interface Modules (FIMs):** The control node holds up to 11 Fiber Interface Modules.
- **Quad Fiber Interface Module (FIM) Carrier:** Up to three 5 inch wide x 4.5 inch high (12.7 cm x 11.4 cm) Quad FIM Carriers can be set in the rear panel. Each Quad FIM Carrier holds a Quad FIM Carrier card and up to four Fiber Interface Modules (FIMs). The FIMs in a Quad FIM Carrier connect to the control backplane through two ribbon cables. You install four standoffs on the rear panel; you install two in the top corners of the Quad FIM Carrier cards and two in the bottom two corners. These standoffs extend beyond the fiber cable connectors to protect them from being damaged against a wall. You do not install anything on these standoffs.
- **Redundant Control Backplane:** The backplane is designed to accommodate two Main Controller (MC) cards, two CSM cards, the CRC card, the Mass Storage Expander (MSX) card, two redundant power modules, and a landing point for three pairs of FIM Carrier card ribbon cable connectors. The backplane distributes redundant power to the FIM carriers, the MSX card, the CRC card, and the control panel.
- **Rear Panel:** The following switches and connectors are provided on the rear panel of the cabinet:
 - Two power on/off switches (one for each power supply)
 - Two small red sliding-type switches for selecting the input power source. The switch can be set to either 115 Vac, 60 Hz or 230 Vac, 50 Hz.
 - Two 3-conductor male receptacles to connect two independent AC power sources or 2 DC terminal blocks
 - Two 3-conductor female power receptacles

Caution: Do not connect any devices to the female power receptacles.

- Tx and Rx connectors on each Fiber Interface Module
- An RS-232 printer port for call accounting output
- Two RS-232 Maintenance Terminal ports; one for each plane
- A remote alarms port.

Peripheral Cabinets

Each peripheral cabinet holds up to 12 Peripheral Interface Cards and provides up to 192 ONS or DNI ports. By purchasing the Peripheral Node Expansion feature package, a slave cabinet can be added that expands the node up to a total of 384 ports and 24 Peripheral Interface cards (the number of voice channels remains the same). One Peripheral Switch Controller (PSC) card and one Fiber Interface Module (FIM) are installed in the master cabinet of each peripheral node. The PSC card provides control for all Peripheral Interface cards, and a fiber optic cable connects the FIM to the main control.



Peripheral Cabinet II

The peripheral cabinet consists of the following components:

- **Peripheral Interface Cards:** The Peripheral Interface cards connect telephone trunks and peripheral devices (such as SUPERSET telephones) to the system. They are located in slots 1 through 12.
- **Power Converter (AC):** The AC power converter converts AC input power to the voltages required by the circuit cards and FIMs (+5 Vdc, +12 Vdc, -27 Vdc, -48 Vdc and 80 Vac ringing). It is installed in slots 13 to 15.
- **Power Converter (DC):** The DC power converter converts DC input power to the voltages required by the circuit cards and FIMs (+5 Vdc, +12 Vdc, -27Vdc, and 80 Vac ringing). It is installed in slots 13 to 15.
- **Peripheral Switch Controller card (PSC):** The PSC card performs all peripheral switch functions for up to 12 Peripheral Interface cards (or 24 cards with the addition of a peripheral slave cabinet, see Peripheral Node Expansion feature package for details). It is installed in slot 16 of the master peripheral cabinet.
- **Fiber Interface Module (FIM):** The FIM connects the peripheral node to the control node. It is installed in slot 17 of the master peripheral cabinet.
- **Cabinet Frame:** Each peripheral cabinet has 17 slots numbered from left to right. Slots 1 to 12 support Peripheral Interface cards and slots 13 to 15 hold the Power Converter. A master peripheral cabinet also holds a PSC card in slot 16, a FIM in slot 17, and a Peripheral Interconnect card in slot 16B (if your node is expanded). A peripheral slave cabinet holds a Peripheral Interconnect card in slot 16, in addition to the Peripheral Interface cards and Power Converter. Slots 16B and 17 of the slave cabinet are not programmable. For more information on expanded peripheral nodes, see the Peripheral Node Expansion feature package.
- **Power Distribution Unit (PDU) (AC):** The AC PDU filters and switches the 120/240 Vac input power to the Power Converter and fan assembly.
- **Power Distribution Unit (PDU) (DC):** The DC PDU filters and switches the -48 Vdc input power to the Power Converter and fan assembly. Note that the server is available in AC version only.
- **Fan Assembly:** Two fans in the removable fan assembly cool the cabinet.
- **Rear Panel:** The following switches and connectors are located on the rear panel of the cabinet:
 - A power on/off switch
 - A fuse to protect the line lead on the input power (AC systems) or circuit breaker (DC systems)
 - A 3-conductor male receptacle to connect AC input power
 - A sliding door for the Tx and Rx fiber optic cables
 - An RS-232 Maintenance Terminal port for remote access (remote maintenance connections will only work on the master cabinet of a peripheral pair)
 - Nine 25-pair male, filtered, Amphenol connectors are located on the rear panel. All lines and trunks from the main distribution frame connect to the eight horizontally positioned connectors using 25-pair cable. The single vertically positioned 25-pair D-phone connector provides power and contact closure to an optional external system

fail transfer unit.

- A 3-conductor female plug is recessed in the rear panel behind a small cover plate (AC systems only). The plug connects to the power connector on the AC Power converter.
- A ground connector.

SUPERSET HUB

The SUPERSET HUB builds on the distributed system concept by delivering advanced digital telephony functionality for workgroups. It allows SUPERSET telephones to be cost-effectively provided where a distributed system would be too expensive.

The SUPERSET HUB provides DNIC connectivity through an RJ-45 patch panel and Fiber Interface Module (FIM) connection to the host peripheral cabinet. At the peripheral cabinet, a carrier module provides the connection for the FIM and interfaces back into the system. The SUPERSET HUB may be rack-mounted or wall-mounted.



SUPERSET HUB Front Panel



SUPERSET HUB Rear Panel

System Fail Transfer

The SFT maintains telephone service in the event of system failure (such as a power outage). When the system goes into SFT mode, the SFT unit connects up to six internal POTS telephone extensions directly to the CO, bypassing the system completely.

The SFT is an optional, stand-alone, wall-mounted device that connects to the system's peripheral cabinet or main distribution frame (MDF). Each SFT can control six circuits, and up to four SFTs can be daisy-chained together for each zone, providing security for 24 internal extensions.

The SFT switches to SFT mode under the following conditions:

- Failure of the system power converter
- Failure of the system main control (in a redundant system, both main control planes must fail, causing a critical alarm to all zones)
- Interruption of the system AC power
- Failure of the peripheral switch controller (zone)
- Loss of the fiber link between the main control and peripheral cabinets.

Power Supply

All power for the SFT unit is provided from the -48 Vbat source on the system. A source of -12 V powers the electronic circuitry on the card. This supply is derived from the -48 V input and powers all the SFT circuitry except the transfer relays. The relays are powered by a transistor-regulated -41V source, also derived from the -48 Vbat input; therefore, in the event of Vbat varying between the standard -42.5 V to -56.5 V, the current drain remains constant.

Transfer Relays

Each circuit in the SFT uses a four form C relay to transfer between normal and SFT modes of operation.

Loop Detector

When a transfer relay enters SFT mode, the loop detector connects in series with the loop between the extension and CO trunk facility. This circuit prevents the extension from returning to normal operating mode before an SFT mode call is completed. When the SFT mode call is completed, the extension is returned to normal operating mode.

SFT Control Leads

The transfer control sensor on the SFT senses a loop closure across the SFT and SFT return (SFTR) leads. When a loop closure is sensed, the power to the relays is removed, the relays are released, and all circuits enter the transferred state.

Power Consumption

The total current drain for the SFT is typically 80 mA.

Power Dissipation (watts)

Power Supply	TYP. (Watts)	TYP+20%
-48Vbat	3.18	3.81
@Vbat=-56 V	3.71	4.45

Peripheral Cards

Peripheral Interface cards join telephone trunks and peripheral devices (such as SUPERSET telephones) to the system. Peripheral interface cards include line cards, page 25, and trunk cards, page 26.

Line Cards

Line cards connect to single line sets, SUPERSETs, attendant consoles, and DATASETs. They include

- Control Over Voice (COV) Line Card, page 26
- Digital Network Interface (DNI) Line Card, page 26
- On-Premise (ONS) Line Card, page 26
- Off-Premise (OPS) Line Card, page 26.

COV Line Card

The Control Over Voice (COV) line card supports COV voice mail systems and interfaces SUPERSET 4 telephones to the SX-2000 system. The COV line card has 12 circuits.

DNI Line Card

The Digital Network Interface (DNI) line card supports music-on-hold and paging and interfaces with MITEL digital network devices (including SUPERSET telephones, attendant consoles, and DATASETs). The DNI line card provides 16 voice and data lines and has 16 circuits.

ONS Line Card

The On-Premise (ONS) line card has 16 circuits that connect up to 16 standard telephones with line loop resistance usually not exceeding 400 ohms. As such, the ONS line card is used to connect internal telephone extensions close to the system. It also supports modems and fax machines.



Note: The On-Premise (ONS) CLASS/CLIP line card supports the same functionality as the ONS line card, but it also provides Custom Local Area Signaling Service (CLASS) or Caller Line Identification Presentation (CLIP) functionality when enabled by the software.

OPS Line Card

The Off-Premise (OPS) line card is a digital card that has eight circuits and interfaces a maximum of eight outside telephone extensions with the system. The card is meant to interface telephone extensions whose line loop resistance exceeds 400 ohms. As such, the OPS line card is used to connect external telephone systems whose loop resistance is anywhere from 400 to 1600 ohms (external resistance from 600 to 1800 ohms).

Trunk Cards

Trunk cards provide an interface from the system to the public switched network and leased lines. They include

- Loop Start/Ground Start (LS/GS) trunk card, page 26
- Ear & Mouth (E&M) trunk card, page 27
- Direct Inward Dialing/Loop Tie (DID/LT) trunk card, page 27.

LS/GS Trunk Card

The Loop Start/Ground Start (LS/GS) trunk card interfaces to the analog LS/GS Central Office (CO) trunks, and is used to terminate eight CO trunks (non-dial-in trunks). The LS/GS trunk card connects to any Peripheral Interface card slot on the peripheral shelf via connectors J1 and J2. The LS/GS trunk card has eight circuits.

E&M Trunk Card

The Ear and Mouth (E&M) trunk card provides a means of interfacing four external trunk circuits to the system. E&M trunk cards connect to any Peripheral Interface card slot on the peripheral shelf via connectors J1 and J2. The E&M trunk card ties two switches together (tie line), and supports music-on-hold. The E&M trunk card has four circuits.

DID/LT Trunk Card

The Direct Inward Dialing (DID) Loop Tie trunk card terminates a maximum of four trunks. These trunks can be Direct Inward Dialing (DID) trunks, Loop Tie (LT) trunks, or any combination of DID and LT Trunks. Direct Inward Dialing provides direct access to system subscriber lines from the public telephone network. Loop Tie provides a means of connecting two systems together over a common trunk.

The DID Loop Tie trunk card involves renting a group of numbers from the CO. With this card, outside calls are switched directly to the extension called; therefore, no attendant is required.

Migration

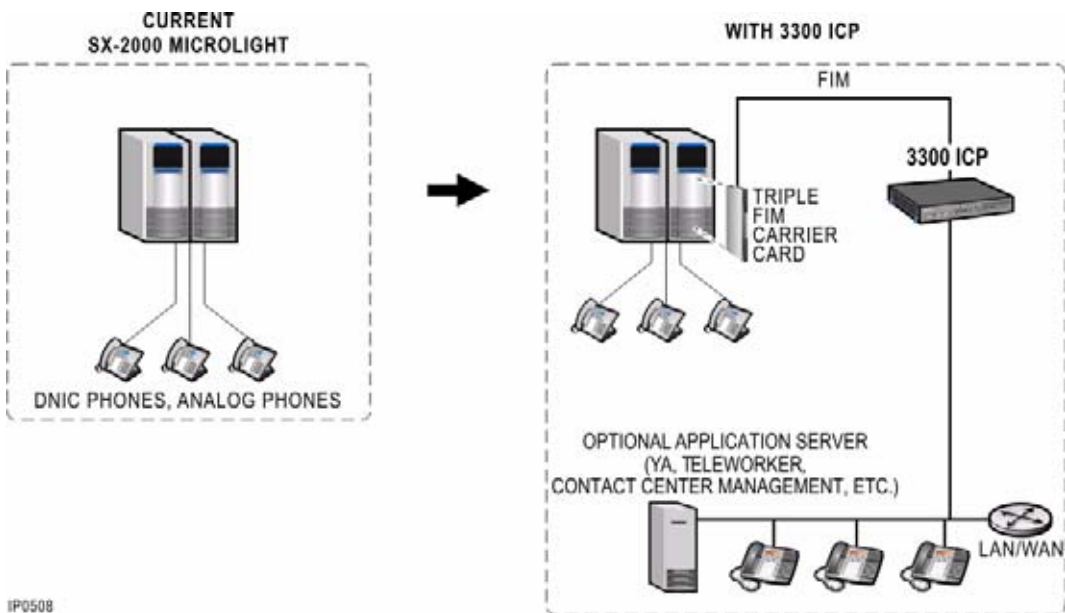
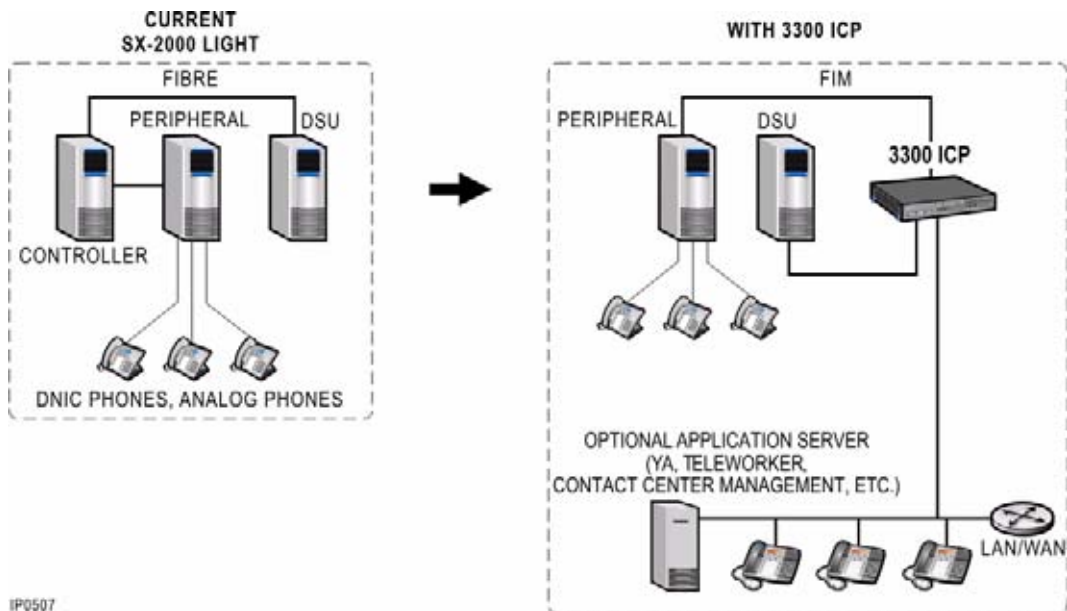
Customers can migrate from an SX-2000 LIGHT or MicroLIGHT to a 3300 ICP. The Mitel 3300 Configuration tool converts and restores an existing SX-2000 database to a 3300 ICP.

For more information, refer to one of the following migration scenarios:

- “Migration of SX-2000 to 3300 ICP (3300 ICP takes control)” on page 28
- “Migration of SX-2000 to 3300 ICP (SX-2000 retains control)” on page 29

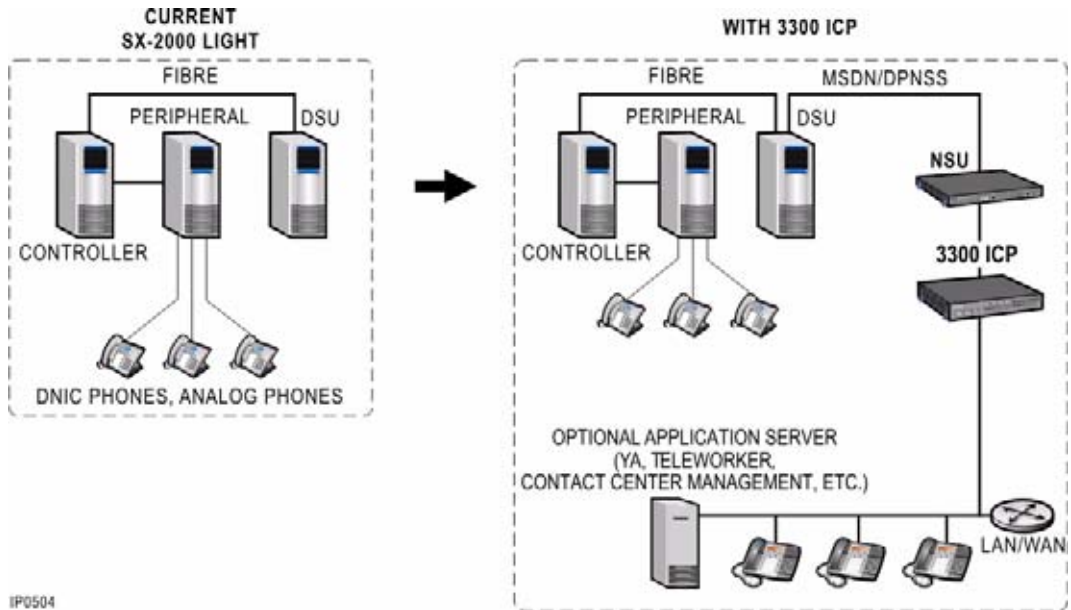
Migration of SX-2000 to 3300 ICP (3300 ICP takes control)

In this migration, the 3300 ICP takes control of the SX-2000 peripherals and provides the same call control functionality as the SX-2000. In addition, the 3300 ICP supports IP phones and applications.

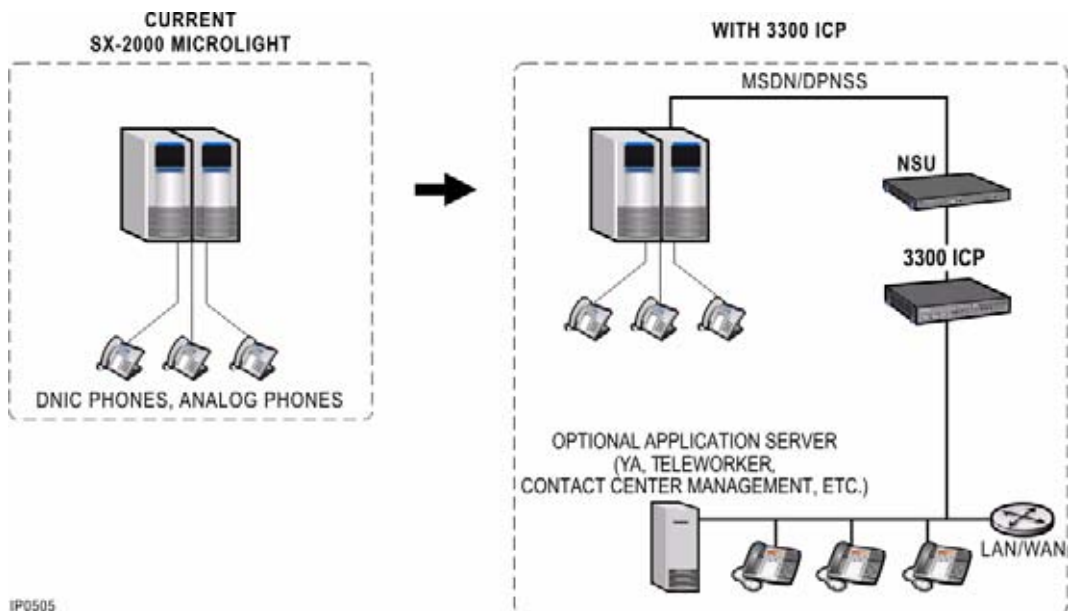


Migration of SX-2000 to 3300 ICP (SX-2000 retains control)

In this migration, the SX-2000 retains control of the existing system, phones and trunks. The 3300 ICP provides control for the IP phones and any required applications. A seamless network exists between the SX-2000 and the 3300 ICP. The following diagrams show migrations of the current SX-2000 LIGHT and MICROLIGHT systems to the 3300 ICP.



IP0504



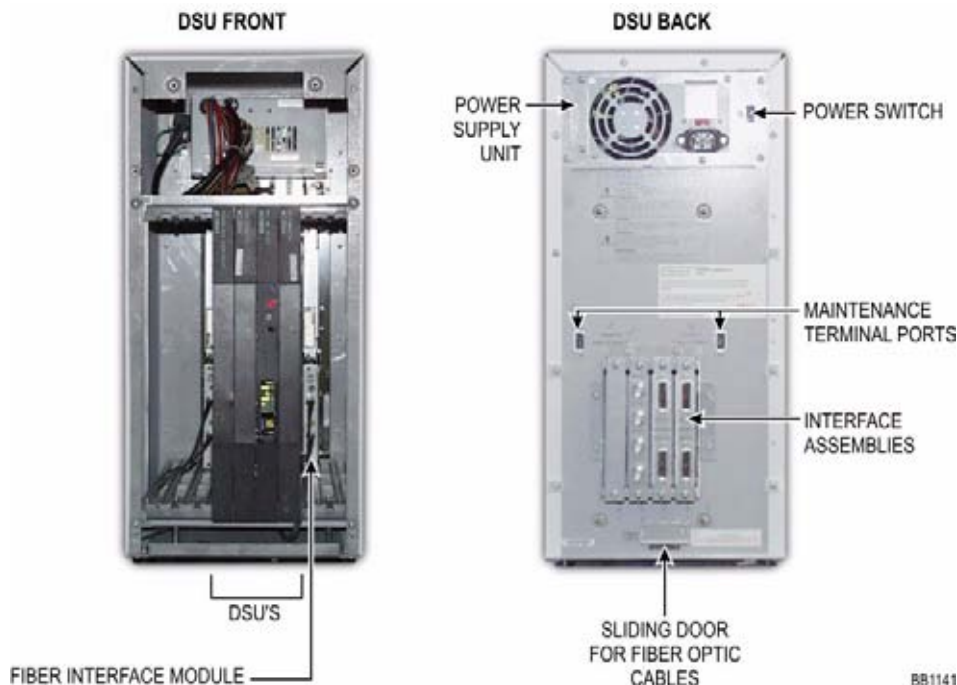
IP0505

Digital Service Unit (DSU) Cabinet



Note: The DSU cabinet has been discontinued; however, it is still supported.

A Digital Service Unit (DSU) cabinet holds up to four DSU cards and two FIMs. The DSU cards provide digital trunk interfaces for public or private network access and specialized digital functions (such as messaging, expanded conferencing, and ISDN service). The FIMs support the transmission of voice and data signals between nodes.



The DSU cabinet consists of the following components:

- **Cabinet Frame:** The DSU cabinet is separated into two shelves. Shelf 1 is located at the bottom of the cabinet and Shelf 2 is located at the top of the cabinet (both shelves are at the front of the cabinet). Shelf 1 consists of slots 1 to 6 and contains 2 FIMs and 4 DSUs. Shelf 2 consists of two Peripheral Resource Cards (PRCs).
- **Power Supply:** The 200 Watt AC or 150 Watt DC power supply provides power for the cabinet. The power supply fan cools the cabinet.
- **Peripheral Resource Cards:** The peripheral resource cards provide additional circuitry to support the distributed architecture. These cards are installed in Shelf 2, slots 1 and 6.
- **Fiber Interface Modules (FIMs):** The DSU cabinet holds up to two fiber interface modules (FIMs). Each FIM supports two DSU cards; the FIM installed in Shelf 1, slot 1 supports the DSU cards in Shelf 1, slots 2 and 3. The FIM in Shelf 1, slot 6 supports the DSU cards in Shelf 1, slots 4 and 5.
- **DSU Cards:** The DSU cabinet holds up to four DSU cards. These are intelligent cards that provide specialized digital functions. The DSU cards are installed in Shelf 1, slots 2 to 5.

- **DSU Backplane:** The backplane holds up to four DSU cards, two fiber interface modules, two peripheral resource cards, the power supply cable, and two Maintenance Terminal ports. The four DSU cards are split into pairs (each pair with a FIM, Peripheral Resource card, and maintenance port). The following switches and connectors are located on the DSU backplane (rear panel):
 - A power on/off switch
 - A small red sliding switch for selecting the input power source. The switch can be set to either 115 Vac, 60 Hz or 230 Vac, 50 Hz (AC systems only).
 - A 3-conductor male receptacle to connect AC power (AC systems only)
 - A 3-conductor terminal block to connect DC power (DC systems only)
 - A sliding panel for the Tx and Rx fiber optic cables
 - Two RS-232 Maintenance Terminal ports
 - A 3 inch wide x 4 inch high (7.6 cm x 10.2 cm) metal box projecting from the middle of the panel. The box holds up to four CEPT or DS1 Interface Assemblies.

Network Services Units

The Network Services Units (NSUs) provide connectivity to digital trunks for public or private networks. Protocol support includes DASS II, PRI, BRI, MSDN/DPNSS, R2, T1/ D4, E1, QSIG, and XNET.

There are three variants of NSU:

- Universal Network Services Unit (NSU), page 31
- R2 Network Services Unit (NSU), page 33
- BRI Network Services Unit (NSU), page 34.



Note: The SX-2000 uses the same NSUs as the Mitel 3300 Integrated Communications Platform.

Universal Network Services Unit

The Universal NSU provides T1 or E1 connectivity and supports up to two T1 or E1 links per unit. The protocols supported by the T1 interfaces are

- T1 CAS - Digital E&M, Digital CO, Digital DID
- T1 CCS - Primary Rate ISDN (4ESS, DMS 100, DMS 250, NI-2, NI-2-5ESS, NI2-GTD5), XNET over PRI, QSIG, and MSDN/DPNSS.

The protocols supported by the E1 interfaces are

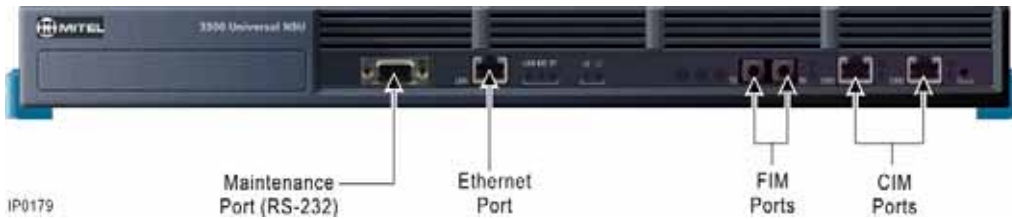
- QSIG, Euro ISDN, XNET over PRI, DASS II, and MSDN/DPNSS.



Note: Both interfaces must run the same protocol.

The Universal NSU connects to an SX-2000 control node through a fiber optic cable. Additional digital trunk capacity can be added to the SX-2000 system by chaining two NSUs together.

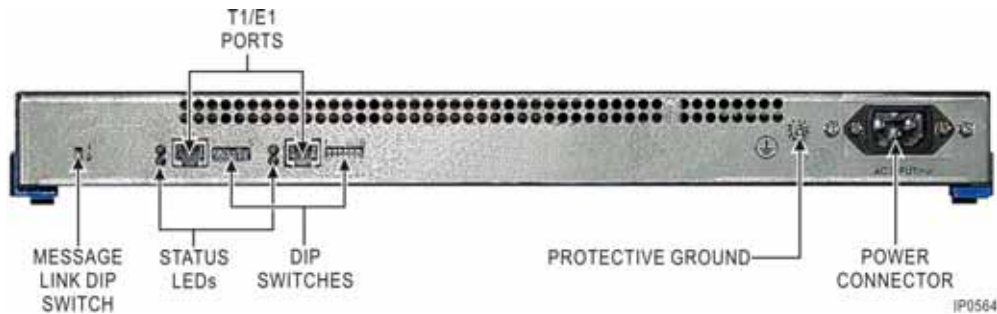
NSUs are chained together by connecting a Category 5 crossover cable from a Copper Interface Module (CIM) port on one NSU to a CIM port on the other.



Universal NSU Front Panel

The Universal NSU front panel consists of the following components:

- RS-232 serial port (DB-9 connector to a PC) for maintenance purposes such as field installation, database upgrade, access to logs, and modem connection for remote access
- Ethernet port (RJ-45 connector) for administration with IMAT
- Two FIM ports (1 Tx, 1 Rx)
- Two CIM ports
- Faceplate LEDs - Miscellaneous, Link Status, and Message Link Controlled
- Reset pin.



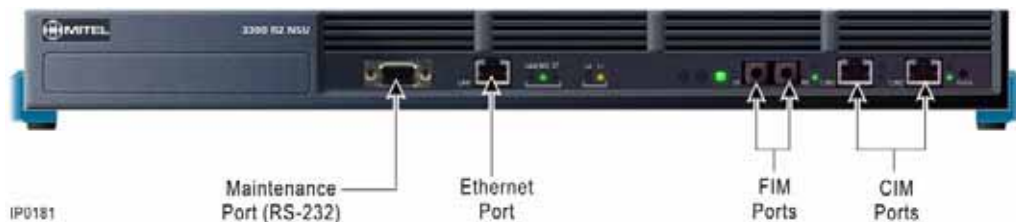
Universal NSU Rear Panel

- The Universal NSU rear panel consists of the following components:
- Message Link DIP switch for designating a unit number (1 or 2) when two NSUs are chained together
- Two T1/ E1 ports for network connection
- Two hybrid port status LEDs
- Two hybrid port DIP switch complexes
- Protective ground for grounding the chassis
- Standard Male IEC AC input power connector.

R2 Network Services Unit

The R2 Network Services Unit (NSU) provides connectivity for R2 National Public Switched Telephone Network (PSTN) using MF-R2 digital trunk signaling. The R2 NSU supports two E1 links.

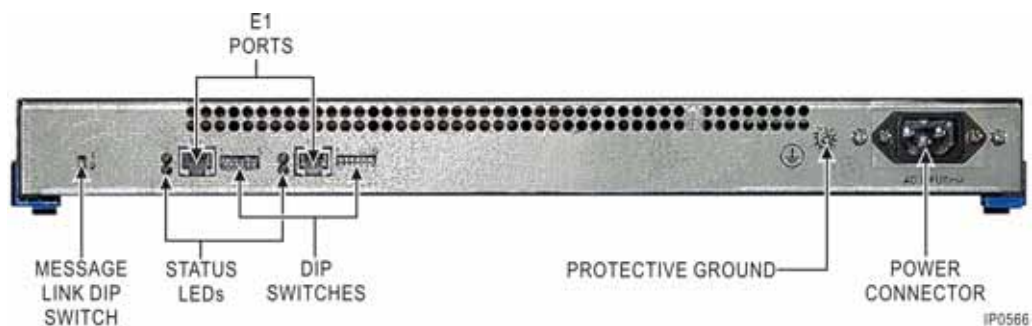
The R2 NSU connects to an SX-2000 control node through a fiber optic cable. Additional digital trunk capacity can be added to the SX-2000 system by chaining two NSUs together. NSUs are chained together by connecting a Category 5 crossover cable from a Copper Interface Module (CIM) port on one NSU to a CIM port on the other.



R2 NSU Front Panel

The R2 NSU front panel consists of the following components:

- RS-232 serial port (DB-9 connector to a PC) for maintenance purposes such as field installation, database upgrade, access to logs, and modem connection for remote access
- Ethernet port (RJ-45 connector) for future use
- Two FIM ports (1 Tx, 1 Rx)
- Two CIM ports
- Faceplate LEDs - Miscellaneous, Link Status, and Message Link Controlled
- Reset pin.



R2 NSU Rear Panel

The R2 NSU rear panel consists of the following components:

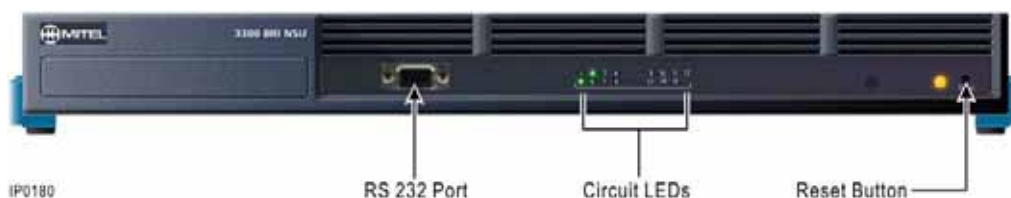
- Message Link DIP switch for designating a unit number (1 or 2) when two NSUs are chained together

- Two E1 ports for network connection
- Two E1 port status LEDs
- Two E1 port DIP switch complexes
- Protective ground for grounding the chassis
- Standard Male IEC AC input power connector.

BRI Network Services Unit

The BRI Network Services Unit (NSU) provides connectivity for Basic Rate ISDN (BRI) transport of both data and voice traffic. This unit is available in North American and European variants. The North American variant supports user-side interface. The European variant supports both network and user-side interfaces.

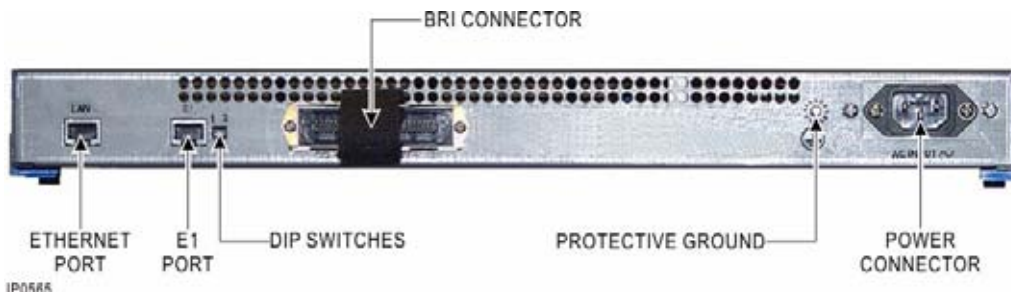
The BRI NSU supports 15 BRI U-interfaces per unit. It does not connect directly to an SX-2000 system but rather to the Universal NSU through a copper cable.



BRI NSU Front Panel

The BRI NSU front panel consists of the following components:

- RS-232 serial port (DB-9 connector) for installation, configuration, and maintenance
- BRI Circuit LEDs
- CEPT link Status LED
- Power LED
- Reset pin.



BRI NSU Rear Panel

The BRI NSU rear panel consists of the following components:

- Ethernet port (RJ-45 connector) for future use

- E1 port to connect to an NSU running E1 DPNSS
- E1 port DIP switches
- BRI connector (25-pair male D-type)
- Protective ground for grounding the chassis
- Standard Male IEC AC input power connector.



Note: UK BRI will drive power to the BRI circuits; the NA BRI will not.

Peripherals

The system connects to any of the following peripheral devices:

Telephones

- SUPERSET 4001, page 38, single-line telephone
- SUPERSET 4015, page 39, SUPERSET 4025, page 40, SUPERSET 4125, page 41, and SUPERSET 4150, page 42, multiline telephones
- SUPERSET 410, page 43, multiline telephones

Programmable Key Modules

- Programmable Key Module 12, page 45
- Programmable Key Module 48, page 46

Digital Line Monitors

- Single-line Digital Line Monitor, page 47

Attendant Consoles

- SUPERCONSOLE 1000®, page 48 attendant console
- SUPERCONSOLE 2000™, page 49, attendant console

Datasets

- Dataset 2103, page 51
- Dataset 2203, page 52

Other Devices

- Console DSS/BLF Interface Unit, page 50
- Analog devices such as the SUPERSET Interface Module 1 (SIM1), ONS telephones, fax machines, or modems
- DNIC Music On Hold /Pager unit, page 53

Discontinued Peripheral Devices

- SUPERSET 401, SUPERSET 401+, SUPERSET 420, and SUPERSET 430 telephones
- SUPERSET 3, SUPERSET 3DN, SUPERSET 4, SUPERSET 4DN telephones
- SUPERSET 7DN attendant console
- MILINK® Data Module
- MILINK Programmable Key Module
- DATASET 1101, DATASET 1102, DATASET 1103, DATASET 2102, and DATASET 2202
- DATA CABINET 9000
- DATASHELF 9100

SUPERSET 4000 Series Telephones

The following are the SUPERSET 4000 series telephones:

- SUPERSET 4001, page 38 single-line telephone
- SUPERSET 4015, page 39 multiline telephone with basic LCD display
- SUPERSET 4025, page 40 multiline telephone with enhanced LCD display
- SUPERSET 4125, page 41, multiline telephone with enhanced LCD display and built-in RS-232 interface for computer connection
- SUPERSET 4150, page 42 multiline telephone with touch-sensitive LCD display and built-in RS-232 interface for computer connection.

The SUPERSET 4000 series telephones can be mounted on a wall and/or tilted.

The SUPERSET 4000 series telephones and the PKM48 are available in light or dark grey.

Adding an Interface Module to a SUPERSET 4025, SUPERSET 4125, or SUPERSET 4150 telephone lets you connect to additional devices.

Interface Modules	Connected Device
SUPERSET Interface Module 1 (SIM1)	PKM12, page 45, PKM48, page 46
SUPERSET Interface Module 2 (SIM2)	analog devices
Note: You cannot connect a PKM48 to a SIM2.	

SUPERSET 4001 Telephone

The SUPERSET 4001 telephone is a single-line, digital telephone that gives users basic access to system functionality. The SUPERSET 4001 telephone has

- Seven Speed Call keys
- Four fixed-function keys: Program, Hold, Flash, and Message
- Handset and ringer volume controls (Up Arrow and Down Arrow)
- Ringer pitch control
- Message waiting lamp.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



ES0007

SUPERSET 4001 Telephone

SUPERSET 4015 Telephone

The SUPERSET 4015 telephone is a multiline, digital telephone with

- Twenty-character alpha-numeric liquid crystal display (LCD)
- Seven line keys, each with a built-in line status indicator
- Six fixed-function keys: SuperKey, Cancel, Hold, Redial, Transfer/Conference, and Message
- Automatic selection of prime line or ringing line
- Key selection of non-prime line
- Handset and ringer volume controls (Up Arrow and Down Arrow)
- Ringer pitch control
- Message waiting lamp.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



SUPERSET 4015 Telephone

SUPERSET 4025 Telephone

The SUPERSET 4025 telephone is a multiline, digital telephone with

- Twenty-character alpha-numeric liquid crystal display (LCD) with contrast control
- Three softkeys for feature access
- Fourteen line keys, each with a built-in line status indicator
- Eight fixed-function keys: SuperKey, Cancel, Hold, Redial, Transfer/Conference, Message, Microphone, and Speaker
- Automatic selection of prime line
- Key selection of non-prime line
- Handsfree operation (half-duplex)
- Handset, speaker, and ringer volume controls (Up Arrow and Down Arrow)
- Ringer pitch control
- Message waiting lamp.

The SUPERSET 4025 supports the SIM1 and SIM2 Interface Modules, page 37 for connection to additional devices.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



E50009

SUPERSET 4025 Telephone

SUPERSET 4125 Telephone

The SUPERSET 4125 telephone is a multiline, digital telephone with

- Twenty-character alpha-numeric liquid crystal display (LCD) with contrast control
- Three softkeys for feature access
- Fourteen line keys, each with a built-in line status indicator
- Eight fixed-function keys: SuperKey, Cancel, Hold, Redial, Transfer/Conference, Message, Microphone, and Speaker
- Built-in RS-232 interface for a computer connection
- Automatic selection of prime line
- Key selection of non-prime line
- Handsfree operation (half-duplex)
- Handset, speaker, and ringer volume controls (Up Arrow and Down Arrow)
- Ringer pitch control
- Message waiting lamp.

The telephone has the same set functionality as the SUPERSET 4025, and has a backlit digital display.

The SUPERSET 4125 supports the SIM1 and SIM2 Interface Modules, page 37 for connection to additional devices.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



SUPERSET 4125 Telephone

SUPERSET 4150 Telephone

The SUPERSET 4150 telephone is a multiline, digital telephone with

- Forty-character alpha-numeric liquid crystal display (LCD) with contrast control and six touch-sensitive softkey areas for feature access
- Fourteen line keys, each with a built-in line status indicator
- Four fixed-function keys: SuperKey, Hold, Redial, Speaker, and Microphone
- Built-in RS-232 interface for a computer connection
- Automatic selection of prime line
- Key selection of non-prime line
- Handsfree operation (full-duplex if AC adapter is plugged in)
- Handset, speaker, and ringer volume controls (Up Arrow and Down Arrow)
- Ringer pitch control
- Message waiting lamp.

The SUPERSET 4150 also accepts a SIM1 and SIM2 Interface Modules, page 37 that lets you connect to additional devices.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



SUPERSET 4150 Telephone

SUPERSET 400 Series Telephones

The SUPERSET 400 series telephones includes the SUPERSET 410, page 43, multiline telephone with LCD display and MILINK network connection.

The SUPERSET 410 telephone is available in light or dark grey.



Note: The SUPERSET 401, SUPERSET 401+, SUPERSET 420, and SUPERSET 430 telephones, and the MILINK Data Module and MILINK Programmable Key Module have been discontinued; however, these peripherals are still supported.

SUPERSET 410 Telephone

The SUPERSET 410 telephone is a multiline, digital telephone with

- Six line keys, each with an LCD line status indicator
- Ten fixed-function keys: SuperKey, Cancel, Hold, Redial, Transfer/Conference, Message, Speaker, Microphone, and two Volume/Tone/Contrast controls
- Automatic selection of prime line or ringing line
- Key selection of non-prime line
- Handsfree operation
- Speaker, handset
- Ringer pitch control
- Message waiting LED
- Optional data access using the MILINK data module.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



SUPERSET 410 Telephone

SUPERSET Interface Module 2

The SUPERSET Interface Module 2 (SIM2) is an Analog Interface Module (AIM) which provides analog interface functionality that lets you connect one or more 2-wire analog devices (such as ONS telephones, fax machines, or modems) to the second B-channel of your SUPERSET 4025, SUPERSET 4125, or SUPERSET 4150 telephone. The sum of the Ringer Equivalence Numbers (REN) of all devices in the loop cannot exceed 2.0 REN. The analog device has its own directory number and operates independently from the host telephone; however, if you attach multiple analog devices in parallel, they share the second B-channel.

The analog device connects to the Analog/Fax/Modem interface on the SIM2/IM, page 37.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



SUPERSET Interface Module 2

Programmable Key Modules

Programmable Key Module 12

The Programmable Key Module 12 (PKM12) is a digital device which provides 12 additional personal keys for SUPERSET 4025, SUPERSET 4125, and SUPERSET 4150 telephones. Each personal key can be programmed as a Feature key, Direct Station Select (DSS) key, Speed Call key, or for other uses. Each key has a Line Status Indicator that behaves the same as the indicators on the SUPERSET 4000 series telephones.

The PKM12 connects to a SUPERSET 4000 series telephone using the included modular cable, and a SIM1 installed in the set. The module supplies power to the PKM12.



Note: The PKM12 and PKM48 are the only programmable key modules qualified by MITEL for connection to SUPERSET 4000 series telephones. The PKM12 is not designed to connect to another PKM12.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



Note: The PKM12 is programmed the same as a PKM48, but do not program keys 13 or above.



ES0124

Programmable Key Module 12

Programmable Key Module 48

The Programmable Key Module 48 (PKM48) provides 48 additional feature keys for SUPERSET 4025, SUPERSET 4125, and SUPERSET 4150 telephones. Each feature key has a Line Status Indicator that behaves the same way as those on SUPERSET 4000 series telephones.

The PKM48 connects to the PKM interface on the SIM1. A second PKM48 can connect to the first to provide for 96 additional feature keys for the SUPERSET 4025 and SUPERSET 4150 telephones. You cannot connect a PKM48 to an AIM device, page 37.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



Programmable Key Module 48

Digital Line Monitor

Single-line Digital Line Monitor

The Single-line Digital Line Monitor (DLM) is used to record voice information from Mitel DNIC-based digital telephones or consoles on an externally connected tape recorder (not included). The unit records calls to/from the associated telephone only. The unit can be located anywhere within the building, wall mounted, or placed under a SUPERSET telephone. No system programming is required.

A default warning tone is repeated on the line every 15 seconds, which can be heard by all parties in a monitored conversation and on the recording (the tone can be disabled). The DLM is transparent to the signals passing between the system and DNIC telephones, unless the warning tone is enabled.

When power is removed from the DLM, the unit is by-passed internally. The DNIC telephone or console will continue to work, but the conversation will no longer be recorded.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



CC0621

Single-line Digital Line Monitor

Attendant Consoles

SUPERCONSOLE 1000 Attendant Console

The SUPERCONSOLE 1000 attendant console is used to perform call handling functions as well as some maintenance and administrative functions (such as moves and changes). The 4-line by 80-character alphanumeric display shows source and destination information, time and date information, call waiting information, and station information (such as COS and COR values). Macros can be programmed to facilitate the transfer of calls to voice mail, recover calls released to the wrong extension, dial frequently called numbers using one button.

The console has

- Fourteen hardkeys
- Four programmable firmkeys (for access to purchased options such as Hotel/Motel)
- Ten softkeys
- A dial pad (for both alphabetic and numeric input)
- Backlit display
- Volume controls
- Integral handset
- Connector for a headset
- An RS-232 serial printer port.



Note: A PKM port is located on the back of the unit which can only be used with the SX-200 system.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



SUPERCONSOLE 1000 Attendant Console

SUPERCONSOLE 2000 Attendant Console

The SUPERCONSOLE 2000 (SC2000) is an attendant console and administration application for the SX-2000 telephone system. It features a specialized keypad and intuitive user interface for smooth, efficient call handling. The SC2000 is intended as a replacement for the SS700 product and delivers the same functionality with the following exceptions:

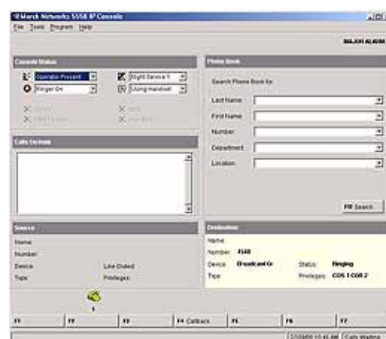
- The SUPERSET 700 Colour system options do not apply. Colour for the SC2000 is manipulated through the host PC.
- Bulletin Board can be used to exchange messages between SC2000 consoles.
- The version command is not changed to show an SC2000 version as the SC2000 resident code is on the host PC, obtained from the SUPERCONSOLE 2000 application.
- The SC2000 does not support Message Centre functionality.

The SC2000 console consists of

- A keypad with jacks for connecting a handset or headset. Used for dialing, call handling and processing activities, and accessing features.
- Programmable keys
- AC power adapter
- Mitel 4000 series handset and cord
- Handset cradle
- USB and telephone line cords
- Application software CD-ROM

The SC2000 software will operate with Microsoft Windows 2000 and Windows XP Professional.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



EE0527

SUPERCONSOLE 2000 Attendant Console

Console DSS/BLF Interface Unit

The Console Direct Station Select/Busy Lamp Field (DSS/BLF) Interface Unit allows the association of one PKM48 with an attendant console. The PKM48 provides the attendant console user with the ability to determine which extensions are busy by glancing at the LED indicators. The unit provides additional line monitoring of directory numbers for speedy call flow and functions as a stand-alone BLF interface unit (DSS functionality is not provided).



Note: Headsets and handsets cannot be attached to this unit.

The Console DSS/BLF Interface Unit uses a separate line connection to a DNIC port. The PKM48 attaches to the Console DSS/BLF Interface Unit and is associated with the attendant console through Customer Data Entry (CDE). The maximum cable length between the unit and the PKM48 is 5m (16.4 ft).

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



CC0864

Datasets

Datasets provide data communication facilities for terminals, computer ports, and other types of data circuits that are switched through the system. These datasets are the interface between the Digital Network Interface Circuit (DNIC) and the data devices connected to the system. The datasets transmit data and control signals over a single twisted pair of wires. Using a Mitel Dataset will allow you to carry voice and data communication over the same line.

The system supports the following datasets:

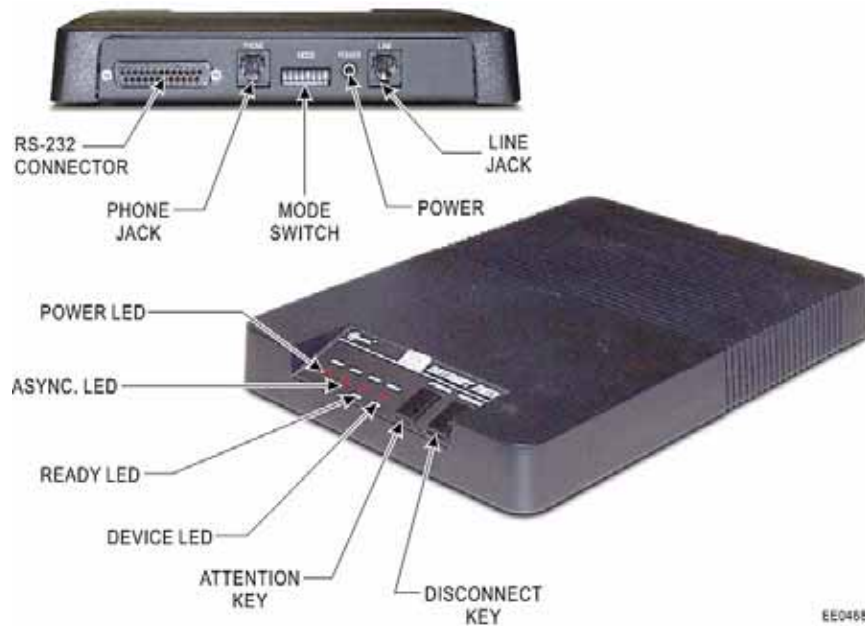
- DATASET 2103, page 51,
- DATASET 2203, page 52,
- MILINK Data Module (North America only)

DATASET 2103

The stand-alone DATASET 2103 is a synchronous/asynchronous dataset which is used to connect peripheral data devices to the system.

The DATASET 2103 is available in black only.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



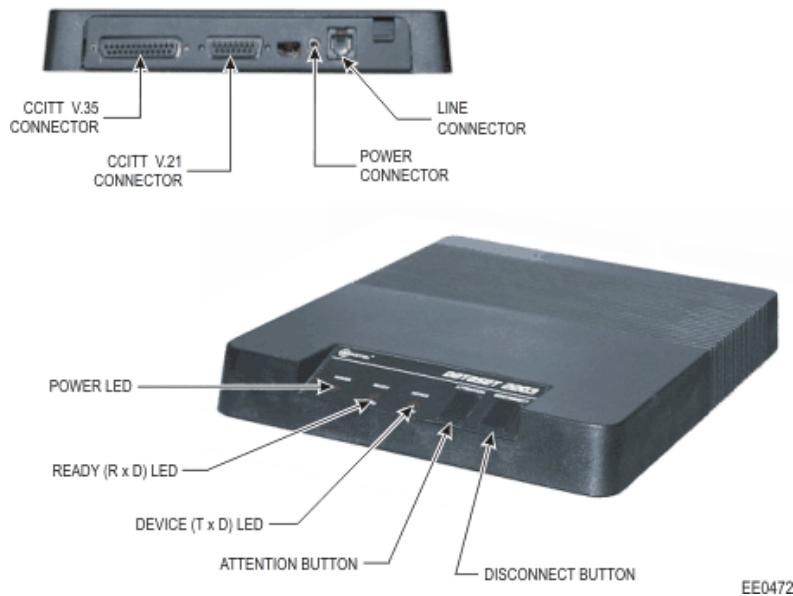
DATASET 2103

DATASET 2203

The stand-alone DATASET 2203 is a synchronous dataset which provides transparent synchronous communications for X.21 and V.35 compatible terminals.

The DATASET 2303 is available in black only.

For installation instructions, see the SX-2000 Install Peripherals section of the Technical Documentation CD-ROM.



EE0472

DATASET 2203

DNIC Music On Hold/Pager Unit (DMP)

The DNIC Music On Hold/Pager (DMP) unit interfaces a port on the DNI Line card to

- an external music source for Music On Hold
- an external paging amplifier for Paging.

The unit is powered by the system and does not require a separate power source. A single 25-pair amphenol cable connects to the system via the main distribution frame (MDF); the unit can be wall-mounted. A single LED indicator provides basic status information.

Each DMP supports one music source and one paging zone, and the system supports one music source and 16 paging zones (15 individual zones and 1 "all" zone). If you need more than one paging zone, you can use multiple units; for example, for 16 paging zones, you need 16 DMP units.



Note: You can combine E&M paging with DMP Paging.

For installation instructions, see the SX-2000 Install System section of the Technical Documentation CD-ROM.



CC0863

DNIC Music On Hold / Pager Unit

Features

Standard Features

The following table lists the standard features available on the SX-2000 system.

Standard Features

Feature Name	Description
Abandoned Call Against Attendant Group	When a caller terminates a call while waiting for an attendant group, SMDR logs report the attendant group's 4 to 7 digit directory number in the Called Party field. The letters "ATT" or "AT" are not displayed.
Account Codes - Default	Default Account Codes are entered automatically by the system each time a user dials an external number. They may be used to segregate groups in SMDR for billing.
Account Codes - Verified and Non-verified	Verified Account Codes allow you to access features that are not normally available at a station. These Account Codes can be used at any station to change the COS and COR. Non-verified Account Codes allow you to enter codes on the SMDR record for billing and/or call management.
Account Codes - System	System Account Codes are automatically outpulsed by the system when outgoing calls are made on a specialized carrier trunk circuit.
Add Held	Add Held allows you to move a call on Hold to another line appearance, form a conference with a call on Hold, or add a call on Hold to an existing conference.
Advice of Charge	Advice of Charge (AOC) allows the caller to determine the cost of a toll call.
Attendant Access	See Attendant Directory Number, page 55.
Attendant Alarm Indications	See Attendant Console Status Display, page 55.
Attendant Bulletin Board	The Attendant Bulletin Board is shared by all SUPERCONSOLE 2000s on the system and is used to both post information that you want other attendants to see and to store speed dial numbers that all attendants can access
Attendant Busy-Out (Console)	Attendant Busy-Out (Console) places your attendant console in a busy-out condition (absent status) under certain circumstances. In the busy-out condition, incoming calls are automatically rerouted.
Attendant Busy-Out (Station)	Attendant Busy-Out (Station) lets you busy-out a specific station by using the attendant console. When you busy-out the station, it cannot be used or accessed.
Attendant Call Answering Priority	Priority can be assigned to calls based on their destination.
Attendant Call Information Display	The Attendant Call Information Display provides the attendant with information about called and calling parties.
Attendant Call Selection	Attendant Call Selection lets you choose which group of incoming calls to answer first; each group is selected by pressing a softkey on the attendant console.

Standard Features (continued)

Feature Name	Description
Attendant CAS Interface	Centralized Attendant Service (CAS) Interface allows the system to be a remote node for a CAS site. CAS is an attendant call handling service that is provided at a central office switch for calls from both public and private networks.
Attendant Conference	Attendant Conference lets the attendant set up one or more conference connections between central office trunks and internal stations.
Attendant Consoles	See Peripherals, page 36.
Attendant Consoles (Multiple)	Multiple Attendant Consoles can be supported on the system. The number of consoles required must be determined by the customer prior to system installation.
Attendant Console Firmkeys	Attendant Console Firmkeys on your console can be programmed as one of the following feature keys: Phonebook, Guest Service (Hotel/Motel), Group Page, Trunk Status, Trunk Flash, Alarm, SMDA, Select Option, or blank (no application).
Attendant Console Status Display	Attendant Console Status Display on each attendant console displays various parameters such as Day/Night Service, Attendant Status, and Alarm Status.
Attendant Directory Number	Attendant Directory Number lets you dial an attendant directory number (typically "0") to reach the attendant. Separate directory numbers can be programmed for each attendant console.
Attendant Help	Attendant Help provides you with online assistance. You do not have to terminate the current session to use Attendant Help; however, you must be in desktop or CDE mode.
Attendant Hold	Hold lets you temporarily suspend a telephone call. While the call is on Hold, you can use the other telephone features. SUPERCONSOLE 2000 consoles can Hold up to six calls; SUPERCONSOLE 1000 consoles can Hold up to eight calls.
Attendant Identity Information Display	Attendant Identity Information Display lets you view the console's prime directory number, the system software version, and the console's hold slot number.
Attendant Lockout	Attendant Lockout prevents the attendant from re-entering a call once the attendant has released.
Attendant Messaging	Attendant Messaging lets you activate a message waiting condition on a station from the attendant console. The condition can be queried or canceled by the attendant or by a station user with the appropriate Class of Service.
Attendant Metered Calls	Attendant Metered Calls lets you use the attendant console to track the cost of outgoing trunk calls.
Attendant New Call Tone	Attendant New Call Tone notifies you of new calls to the attendant console through an audible indication.
Attendant Position Busy-Out	See Attendant Busy-Out (Console), page 54.

Standard Features (continued)

Feature Name	Description
Attendant Recall	Attendant Recall automatically alerts the attendant when a trunk call has been extended to an idle station and not answered within a specified time-out period or when a call on Hold at the console has not been answered within a selected time.
Attendant Ringer Control	Attendant Ringer Control lets you mute the attendant console ringer. When the attendant console ringer is muted, incoming calls continue to be indicated by the Call Waiting prompt at the top of the display.
Attendant Scratch Pad	The Attendant Scratch Pad is your own personal telephone directory and Speed Dial list. Use it to save telephone numbers for faster dialing or to store the names and numbers of callers for future reference.
Attendant Serial Call	Attendant Serial Call automatically returns a call to the attendant console when the caller finishes with the called party.
Attendant Setup and Cancellation of Station Features	The attendant can setup and cancel certain station features such as Call Forward, Do Not Disturb, Callback, and Reminder.
Attendant Station Busy-Out	See Attendant Busy-Out (Station), page 54.
Attendant System Login	The attendant has Terminal access to some system programming functions from the attendant console. To access these programming functions, the attendant must log on.
Attendant Tone Signaling	Attendant Tone Signaling lets the attendant send tones over the circuit once a call has been established.
Attendant Trunk Group Busy Status	Attendant Trunk Busy Status Display lets you display and/or print the busy status of the system trunk groups from the attendant console.
Auto-Answer	Auto-Answer lets you automatically answer calls that ring your Prime line.
Auto-Hold	Auto-Hold lets you automatically place an active call on Hold when you press a line key to originate or receive another call.
Automatic Route Selection (ARS)	Automatic Route Selection (ARS) simplifies local and long distance dialing by automatically selecting the most convenient and cost-effective route and by inserting and/or deleting the proper routing digits.
Broadcast Groups	See Groups - Key System and Multicall, page 60.
Broker's Call	Broker's Call lets you temporarily suspend a telephone call while you originate a new call. Once the new call has been established, you can alternate between the two calls.
Busy Dial Through	Busy Dial Through lets you dial a Feature Access code sequence when a busy condition is encountered. See Callback, page 57, and Camp-on, page 58.
Busy Override	See Override, page 62.
Calculator	Calculator lets you use your telephone as a basic four function calculator by using the telephone keypad, display, and softkeys.
Calibrated Flash	See Flash - Calibrated, page 60.

Standard Features (continued)

Feature Name	Description
Call Announce	Call Announce lets you make an announcement to a busy party. The busy party automatically answers the call Handsfree.
Callback	Callback lets you request that the system notify you when a busy line becomes idle or when an unanswered station goes off-hook and on-hook.
Callback - System Programmable	Callback - System Programmable lets you program the destination of a matured callback set against a key line or multicall line group.
Call By Name	See Phonebook, page 62.
Call Coverage	Call Coverage is provided through a combination of features: Call Rerouting, Call Forward, Do Not Disturb, and ANSWER PLUS® - Mitel Call Distribution.
Call Duration Control	Call Duration Control allows a maximum time limit to be set on telephone calls.
Call Duration Display	Call Duration Display provides you with an indication of the call duration for incoming and outgoing calls. The display is incremented in one minute increments (commencing at 0:00) from the beginning of the call to the end of the call.
Call Forward	Call Forward lets you redirect incoming calls to an alternate number.
Call Forward - Cancel All	Call Forward - Cancel All lets you cancel all types of Call Forward.
Call Forward - Delay	Call Forward - Delay provides an opportunity to answer an incoming call before the calling party is forwarded to an alternate answer point.
Call Forward - Follow Me - End Chaining	Call Forward - Follow Me - End Chaining ensures that calls are not further redirected.
Call Forward - Follow Me - Reroute When Busy	Call Forward - Follow Me - Reroute When Busy forwards the call to the original set's First Alternative Rerouting if the call forward destination is busy.
Call Forward - Forced	Call Forward - Forced lets you manually redirect an incoming call on your Prime or private line to another number.
Call Forward - Override	Call Forward - Override lets you bypass any Call Forward condition that is set at the station that you are calling.
Call Hold	See Hold, page 60.
Call Park	Call Park lets the attendant Hold a call so that a telephone user can remotely retrieve the call.
Call Pickup	Call Pickup lets you answer an incoming call that is ringing at another station.
Call Privacy	Call Privacy protects a call from audible Call Waiting tones, as the result of a camp-on, and prevents intrusion of any kind (for example, busy override).
Call Release	See Release, page 63.
Call Rerouting	Call Rerouting lets the system redirect calls to alternate answering points or devices under specified conditions. Call Rerouting may be used to redirect calls always (in Day, Night 1, and/or Night 2 mode) or under busy, no answer, or Do Not Disturb conditions.

Standard Features (continued)

Feature Name	Description
Call Split	See Conference Split, page 58.
Call Swap	See Swap, page 64.
Call Transfer	See Transfer, page 65.
Call Waiting - Swap Automatic	Call Waiting - Swap Automatic lets you use the switch hook to alternate between two calls when a party is trying to call your station or when you have a call on Consultation Hold.
Camp-on (Call Waiting)	Camp-on, or Call Waiting, lets you notify a busy party that you are waiting. An attendant may also put a call through to a busy station to indicate they are waiting. Upon hearing the Call Waiting tone, the busy party can either respond or finish the current call.
Camp-on Tone Security	Camp-on Tone Security prevents you from hearing the Camp-on or Call Waiting tone. If any party in a call has this option enabled, no Camp-on tone is returned to anyone in the call.
Centralized Attendant Service (CAS) Interface	See Attendant CAS Interface, page 55.
Class of Restriction	Class of Restriction (COR) limits a station's access to specified numbers. A station may have three CORs (Day/Night1/Night2 service), and the COR may also be changed by using a Verified Account Code.
Class of Service	Class of Service (COS) defines a station's feature and timer options. A station may have three COSs (Day/Night1/Night2 service), and the COS may also be changed by using a Verified Account Code.
Clear All Features	Clear All Features lets you cancel most of the features activated on your extension or another user's extension.
Conference	Conference lets you connect three or more people into a single telephone conversation. While you are in a Conference, you can use any of the features that would normally be available during a two-party call.
Conference Split	Conference Split lets you separate a 3-party conference so that you can speak privately with one of the parties. While you are speaking privately with one party, the other party is on Consultation Hold.
Data Applications	Data Applications include many data features, which provide data-switching facilities for local and remote data terminals, and/or computers.
Date and Time	The date and time may be set from any attendant console. This data appears on all Station Message Detail Recording (SMDR), traffic measurements, data dumps, SUPERSET display telephones, and attendant consoles.
Day/Night Service Control	See Night Service, page 62.
Dial Pulse Signaling	The system can accept or generate rotary dial pulses. The system automatically detects which type of signaling is used by an individual station when a call is dialed. It will automatically output rotary dial or DTMF signals according to the requirements of the particular interconnection.
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Standard Features (continued)

Feature Name	Description
Dial Tone	You will normally hear continuous dial tone when you lift the handset. You will hear discriminating dial tone (also called interrupted dial tone) or transfer dial tone under certain conditions.
Dial Tone - Outgoing Calls	The system can provide a pseudo-CO dial tone to prevent possible confusion to station users.
Dialed Number Editing	Dialed Number Editing lets you edit numbers during dialing.
Dialing - Conflicting Numbers	The system can differentiate between conflicting numbers such as 1-0-0-0-0 and 1-0-0-0. In this example, if the 5th digit is not dialed within a time-out period, the system assumes that the dialed sequence is complete and makes the call.
Direct-In Lines (DIL)	Direct-In Lines (DIL) allow incoming trunks to be assigned to a specific station or hunt group so that calls from the trunk ring the station or hunt group directly.
Direct Inward Dialing (DID)	Direct Inward Dialing (DID) allows incoming calls on designated trunks to directly access predefined stations (or other answering points) on the system.
Direct Inward Dialing (DID) - Germany	Direct Inward Dialing (DID) - Germany allows incoming calls on designated trunks to directly access predefined stations (or other answering points) on the system. For the German requirements, this feature provides specific DID call processing functionality.
Direct Inward Dialing/3 (DID/3) Protocol Test	The DID/3 protocol test is a test of protocol operation. This test lets the PTT access an incoming DID/3 trunk, have the DID/3 trunk answered within a specific answer time, and monitor the signals while being connected to silence within the system.
Direct Inward System Access (DISA)	Direct Inward System Access (DISA) lets external callers access the system by using a special trunk. The system sees the DISA trunk as a station with its own Class of Service and Class of Restriction. Calls that enter the system on DISA trunks have access to a variety of system features. In all cases, the DISA trunk can be assigned account codes to provide a high degree of security or additional options.
Direct Outward Dialing (DOD)	Direct Outward Dialing (DOD) lets you make external calls without the assistance of the attendant.
Direct Page	Direct Page allows you to page another telephone over its built-in speaker. See Off-Hook Voice Announce, page 62.
Display Contrast Control	Display Contrast Control lets you adjust the contrast of the alphanumeric display.
Do Not Disturb	Do Not Disturb (DND) lets you place your set in an apparent busy condition without affecting the outgoing functionality. If someone calls your set while DND is activated, he or she will hear a special busy tone.
DPNSS Call Diversion	DPNSS Call Diversion offers users, who are absent or busy, the capability of having their calls forwarded to a third party.
DTMF Keypad Support	DTMF Keypad Support lets ONS/OPS extensions use all 16 keys on a 4x4 DTMF keypad. The additional row of four keys (ABCD) is used to access features in the system.

Standard Features (continued)

Feature Name	Description
DTMF To Rotary Dial Conversion	See Tone-To-Pulse Conversion, page 65.
Feature Keys	Feature Keys let you activate features without dialing Feature Access codes.
Flash - Calibrated	Calibrated Flash provides an alternative method of generating a Switchhook Flash.
Flash - Switchhook	Switchhook Flash lets you place a call on Consultation Hold and return to dial tone so that you can invoke station features.
Flash - Trunk	Trunk Flash lets you single or double flash a trunk in order to access Centrex™ features.
Flexible Answer Point	Flexible Answer Point lets station and console users program a night answer point for their incoming trunk calls.
Ground Button	A Ground Button (Recall Button) lets you place a call on Consultation Hold and return to dial tone so that you can invoke station features. The Ground Button provides an alternative method of producing a Switchhook Flash.
Group Page	Group Page lets you page a group of telephones over their built-in speakers.
Groups - Key System and Multicall	Key System Groups and Multicall Groups let multiple telephones share the same extension number. Incoming calls ring all of the idle stations, and the stations stop ringing when one member answer the call.
Handset Receiver Volume Control	Handset Receiver Volume Control lets you adjust the volume of the handset receiver.
Handsfree Operation	Handsfree Operation lets you use your telephone without lifting the handset.
Headset Operation	Headset Operation lets you use a Headset to make and receive telephone calls.
Hold	Hold lets you temporarily suspend a telephone call. While the call is on Hold, you can use the other telephone features. The call can be either retrieved at the originating telephone or another telephone.
Hotline	Hotline limits your access to a designated answer point. The system automatically dials the answer point when you go off-hook. The designated answer point can be another station, an attendant, a trunk, or a hunt group.
Hunt Groups	Hunt Groups let you dial a pilot number and have the call completed to the first idle station in a group of stations. Any station within a Hunt Group may be accessed directly by dialing the station number.
Intercept Handling	Intercept Handling lets the system control what happens to a call when the call cannot be completed to the required destination. A call may be routed to a tone or to a directory number. Two alternate destinations may be programmed for each condition.
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Standard Features (continued)

Feature Name	Description
Interconnect Restrictions	Each peripheral device is assigned an Interconnect Number that is used to restrict one device from connecting with another. Interconnect Restrictions can be used to restrict access to certain trunks, stations, or equipment (i.e. data communications equipment). The restriction is also a function of the direction of the call.
Key System Groups	See Groups - Key System and Multicall, page 60.
Language Change	Language Change lets you change the language of the telephone softkeys and prompts to any one of the following languages: English, French, Italian, German, LA Spanish (Latin America), EU Spanish (European), Dutch, BR Portuguese, PT Portuguese, or Romanian. Note: The SUPERCONSOLE 2000 allows for English or French only.
Line Types and Appearances	Line appearance keys are single or shared lines that appear on the SUPERSET telephone programmable keys. There are three types of lines: Prime, Non-Prime, and No Where Prime.
Line Appearance Ring Types	Each line appearances can be programmed to ring in a different manner.
Maintenance	The SX-2000 system provides extensive maintenance coverage. All types of peripheral hardware are periodically tested by the system. Maintenance users may also test individual circuits on demand.
Meet Me Answer	Meet Me Answer lets paged parties respond to a Group Page even if they do not know the identity or location of the paging party.
Messaging - Advisory	Messaging - Advisory lets you select a short advisory message to show display set users who call your telephone.
Messaging - Callback	Callback Messaging lets you leave a callback message on a telephone when the called party is busy or does not answer. When you receive a callback message, you can review the message on the display (if applicable) and/or call the sender back.
Messaging - Dialed	Dialed Messaging lets you leave a message waiting indication on a telephone. When you receive a message waiting indication, you call your message taker to accept the message.
Mixed Station Dialing	Mixed Station Dialing lets you use both rotary dial and DTMF telephones within the system and on the same line.
Multicall Groups	See Groups - Key System and Multicall, page 60.
Multiple Consoles	See Attendant Consoles (Multiple), page 55.
Music	Music lets you listen to the Music On Hold music source through the speaker of the telephone.
Music On Hold	Music On Hold provides callers with music while they are waiting for a call to be completed. Music On Hold is provided when a call is on Hold, when a call is transferred to a busy party, or is in Call Waiting. The music source is provided by the customer.
Networking	The SX-2000 system supports both analog and digital networking. See Node ID Recognition, page 62, and Uniform Numbering Plan, page 65.
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Standard Features (continued)

Feature Name	Description
NI3 Calling Name Delivery	NI3 Calling Name Delivery allows the called party to see the name of the caller on the telephone display screen if the caller has programmed Calling Name to "Allow" through IMAT. The NI3 feature supports both incoming and outgoing calls for the PRI card and Universal NSU, page 31.
Night Service	Night Service lets you redirect calls to alternate answer points for individual trunks. The answer point used depends on the selected mode of operation (Day, Night 1, or Night 2).
Night Service - Automatic	Automatic Night Service places the system into Night service automatically if all attendant consoles are unable to receive calls or if all attendant consoles are inactive and the time-out period has expired.
Node ID Recognition	Node ID Recognition lets a system in a network determine if an incoming call applies to it or to another system in the network.
Non-Busy Station	Non-Busy Station lets you program an extension never to return busy tone. This feature is used for special situations (e.g., as emergency stations).
Non-DID Extension	Non-DID Extension allows the system to support sets that are not directly accessible to DID trunks. These calls are transferred to Non-DID Extensions by an Intercept Handling point (such as an attendant or a station).
Off-Hook Voice Announce	Off-Hook Voice Announce lets you receive a Direct Page during a handset or headset call. See Direct Page, page 59.
Overlap Outpulsing	Overlap Outpulsing reduces post-dialing delay when trunk calls are originated. Once a route has been determined by ARS, a trunk is seized and dial pulses or tones are outpulsed to the CO. These outpulses are sent before the user has finished dialing to allow faster call setup on analog trunks.
Override	Override lets you enter a conversation at a busy station or ring a station with Do Not Disturb activated. Before you enter the conversation, all parties receive a warning tone.
Override Security	Override Security prevents users from using Override on your station.
Paging	Paging lets you connect to loudspeaker/paging equipment to access individual paging zones or all paging zones simultaneously. Before you are connected to the paging equipment, you will hear a two-second burst of tone.
Phonebook	Phonebook lets you locate and telephone a system user based on his or her name, extension number, department, and/or location.
Printer Support	The SX-2000 system has complete RS-232 printer flexibility. Any printer port may be programmed for any application. The system supports both system printers for its own applications (such as SMDR and maintenance) and dedicated data communications printers.
Priority Queuing	Priority Queuing ensures that calls are handled in order of priority. When internal or external callers must wait for calls to be completed, they are placed into a queue and assigned an access priority.

Standard Features (continued)

Feature Name	Description
Privacy Release	Privacy between users who share line appearances in key systems groups is automatic. The privacy release feature allows users to release privacy during a call to allow another member of the key system group to intrude on the call.
Pulse-To-Tone Conversion	Pulse-To-Tone Conversion automatically converts rotary dial pulses from stations, lines, and trunks to DTMF tones on outgoing trunks that have been programmed as DTMF trunks.
Recall	Recall lets an incoming caller, who has been transferred to an idle station and not answered within a specified time-out period, call back the last party who handled the call. Similar time-out Recalls occur for parties who were transferred to busy stations or who were placed on Hold.
Recall Button	See Ground Button, page 60.
Redial	Redial lets you automatically dial the last number that you manually dialed.
Redial - Saved Number	Redial - Saved Number lets you save a number for future dialing. The number remains saved until a replacement number is saved.
Release	Release lets you release from an attempted call transfer or conference call without going on-hook. Release is useful when you encounter a busy or unavailable external party.
Reminder	Reminder lets you program your set to ring and provide a message at a specified time within the 24-hour period.
Ringer Control	Ringer Control lets you adjust the volume and pitch of the telephone ringer.
Ringing - Discriminating	Discriminating Ringing lets you distinguish between incoming internal calls, incoming trunk calls, tie line calls, and Callbacks by using different ringing patterns (cadences).
Ringing - Discriminating (Optional)	Optional Discriminating Ringing lets you change the Discriminating Ringing patterns on ONS/OPS lines so that you hear internal ringing (1 second on and 3 seconds off) for both internal and external calls.
Ringing Line Select	Ringing Line Select lets you answer any ringing line by going off-hook.
Rotary Dial to DTMF Conversion	See Pulse-To-Tone Conversion, page 63.
SNMP Agent	Simple Network Management Protocol (SNMP) governs the management and monitoring of network devices and their functions.
Speaker Volume Control	Speaker Volume Control lets you adjust the volume of the telephone speaker.
Speed Call Keys	Speed Call Keys let you store and dial frequently-used numbers by using the personal keys on your telephone.
Speed Call - Pause	When the system encounters a Pause while dialing a Speed Call string, the system ceases dialing for the duration of the Pause. When the Pause ends, dialing resumes.
Speed Call - Personal	Personal Speed Calls let you store and dial frequently-used numbers by using access codes and index numbers.

Standard Features (continued)

Feature Name	Description
Speed Call - System	System Speed Call lets you dial stored system numbers.
Speed Dial	See Speed Call (above).
Station Message Detailed Accounting (SMDA)	Station Message Detailed Accounting (SMDA) lets the system accumulate meter pulses (up to an assigned buffer size) that can be read, printed, and cleared from a console. You can collect meter pulses by using either a device (device meter unit accumulation) or an account code (account code meter unit accumulation).
Station-To-Station Dialing	Station-To-Station Dialing lets you dial any other station directly.
Suite Service	Suite Service is provided by Pickup Groups (set Auto Answer On to "Yes").
SUPERSET Loop Test	The SUPERSET Loop Test lets you verify the operation of the telephone keys and displays and the integrity of the data path to the switch. The tests are performed from the set (normally after initial system installation).
Swap	Swap lets you temporarily suspend a telephone call while you originate a new call. Once the new call has been established, you can alternate between the two calls.
Switchhook Flash	See Flash - Switchhook, page 60.
System Access Authorization	Administrative access to the SX-2000 system is controlled by passwords. Different passwords are assigned for each of the five levels of access.
System Alarm Indications	See Alarms and Attendant Console Status Display, page 55.
System Fail Transfer	The SFT maintains telephone service in the event of system failure (such as a power outage).
Tandem Trunking	Trunk circuits originating from one CO or system and terminating on another can be transparently interconnected (tandem trunking) without attendant intervention.
Telephone Directory - Privacy Option	Any extension number in the system telephone directory can be designated as private. When an extension number is private, the number is not displayed on other users' telephones.
Tie Trunk Support	Tie trunks terminate on the attendant console, at station sets, in hunt groups, or on night bells. They may also be arranged as dial-in tie trunks or tandem trunks. Like CO trunks, tie trunks are arranged in groups.
Timed Reminder	See Reminder, page 63.
Toll Control	Toll control allows or denies access to specified routes, CO exchanges, and directory numbers.
Tone Demonstration	Tone Demonstration lets you hear the tones provided on the SX-2000 system.
Tone Detection	The SX-2000 system can detect and analyze call progress tones that originate from the central office during the course of a trunk call.
Tone Plan Flexibility	Call progress and supervisory tones generated within the system are programmed to meet the requirements of the telephone authorities of the country in which the SX-2000 system is installed.

Standard Features (continued)

Feature Name	Description
Tone-To-Pulse Conversion	Tone-To-Pulse Conversion automatically converts DTMF tones from stations, lines, and trunks to rotary dial pulses on outgoing trunks that have been programmed as rotary dial trunks.
Transfer	Transfer lets you move a call from one telephone to another. Before completing a Transfer, you can consult privately with the third party and swap between private conversations with each of the parties.
Transmission Tests	Transmission Tests let you perform the following tests on a trunk: milliwatt test, balance test, and 100 test.
Trunk Access	Trunk Access lets you access a specific trunk directly. No toll control or ARS checking is done when you use Trunk Access. This feature is used when a maintenance telephone is required.
Trunk Answer From Any Station (TAFAS)	Trunk Answer From Any Station (TAFAS) lets you answer any call that rings a night bell. Once you answer the call, you can use any of the features that are normally available at the station.
Trunk Busy-Out	Trunk Busy-Out lets you busy-out a specific trunk. When you perform a Trunk Busy-Out, the trunk is busied out if it is idle; if the trunk is in use, it is busied out as soon as it becomes idle. When you busy-out the trunk, it cannot be accessed.
Trunk Group Hunting	Trunk Group Hunting lets you search for trunk groups in either a terminal or circular pattern. In a terminal hunt group, trunks are always selected in a predetermined order. In a circular hunt group, trunks are selected in a distributed manner (the first free trunk after the last one used becomes the new first choice).
Trunk Labels	Trunk Labels may be assigned to individual trunks or groups of trunks. When a trunk call appears at an attendant console, the trunk label and trunk number are displayed.
Trunk Select - Direct	Direct Trunk Select lets you access an outside trunk for the purposes of originating and receiving external calls. Because the trunk is assigned to a line appearance, you can access the trunk to make or answer calls without the need for trunk access codes.
Trunk Support	The SX-2000 system supports most public network trunk types (both analog and digital).
Uniform Numbering Plan	The SX-2000 system supports the use of a network Uniform Numbering Plan that allows you to use the same digits to reach a station from any location in the network.
Universal Port Orientation	Common Peripheral Interface ports allow the system to be very flexible and accommodate various different system configurations.
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Standard Features (continued)

Feature Name	Description
Voice Mail	<p>Most voice processing systems work in conjunction with the SX-2000 system. The system provides the following voice processor interfaces:</p> <ul style="list-style-type: none"> • Voice Mail - COV Interface • Voice Mail - Digital E&M Interface • Voice Mail - E&M Interface • Voice Mail - ONS Interface. <p>The SX-2000 system will typically use MSDN or MSAN facilities to network other SX-2000 systems. Various types of tie trunks are also used to link systems; however, they offer less functionality between sites. These facilities can be configured to provide voice mail functionality from a centralized voice processor. For more information, see the Voice mail - Centralized E&M Interface section of the Technical Documentation CD-ROM.</p>
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Optional Features

The following table lists the optional features available on the SX-2000 system.

Optional Features

Feature Name	Description
ACD 2000 Extended Agent Groups	The ACD 2000 feature package lets you program a maximum of 64 agent groups with up to 150 agents in each group. By using the ACD 2000 Extended Agent Groups feature package, you can assign up to 500 agents to each group; however, the maximum number of agent groups is reduced to 32.
ACD 2000 Skill-Based Routing	Each agent in an agent group is assigned a skill level. Calls to the group are routed to the most skilled available agent. If agents of equal skill are available, the call is routed to the longest-idle agent. To facilitate skill-based routing, agent IDs can appear in more than one agent group.
ACD Real Time Event	Makes the ACD Real Time Event stream a purchasable option.
Advanced Analog Networking	Provides calling line identification and travelling class marks across analog trunks.
Advanced ARS	Allows day and time zones, route plans, and ARS assignment to be programmed.
Advanced Data	Enables data transceiver functionality for access to all of the DTRX features.
ANI/DNIS/ISDN Number Delivery	Automatic Number Identification and Dialed Number Identification Service identify numbers that are transmitted on an incoming trunk.
ANSWER PLUS Automatic Attendant	Allows an external system environment caller to dial through to an extension without having to go through an attendant.
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Optional Features (continued)

Feature Name	Description
ANSWER PLUS Automatic Call Distribution I	Provides the following features: <ul style="list-style-type: none"> - Silent monitoring - Agent help - Agent log on and log out - Modified DND for ACD agents - Longest idle agent queuing - Real time event records - Work timer - Programmable threshold alert - RAD groups.
ANSWER PLUS Automatic Call Distribution II (ACD 2000)	Consists of four main components: call distribution, agent mobility, management and reporting, feature configuration and administration. Each of these components offers many features not available with ANSWER PLUS - Automatic Call Distribution.
ANSWER PLUS Mitel Call Distribution	Permits the use of Recorded Announcement Devices (RADs) and a uniform call distribution to hunt groups.
Attendant Language Selection	Enables attendant to choose language of operation for the attendant console (English, French, German, or Italian).
CLASS/CLIP Station Side Software Support	See ONS CLASS/CLIP Station Side Software Support, page 70.
COV	Allows you to program SUPERSET 4 telephones as well as voice mail applications that require a COV interface.
DASS II Voice I	Allows basic calls to be made from the SX-2000 system to a DASS II protocol Central Office, using CEPT Digital Trunks and DASS II signaling.
DNI	Allows you to program Mitel digital network devices including SUPERSET telephones, attendant consoles, and datasets.
Direct Station Select/Busy Lamp Field (DSS/BLF)	A Busy Lamp Field (BLF) allows the status of a directory number to appear on the line status indicator of a SUPERSET or Programmable Key Module. The monitored device may be on the same system or another system within the same cluster. The key associated with the busy lamp acts as a Direct Station Selection (DSS) key.
Emergency Services	Enables Emergency Services support so when an Emergency Services number is dialed, a Customer Emergency Services ID (CESID) is sent from the system to the Public Safety Answering Point (PSAP). The CESID is used as a key in the Automatic Location Information (ALI) database to retrieve information indicating the precise location of the caller.
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Optional Features (continued)

Feature Name	Description
Feature Level Optioning	<p>Selected features are grouped together under purchasable levels (they cannot be purchased separately).</p> <p>Feature Level 1 content has been part of the base software load since LIGHTWARE 31 Release 1.0: Networked Group Page Hold on Hold (internal and networked) Call Forward - Delay ACD Make Busy Reason Codes Telephone Usage Restriction (Curfew Control) Call Duration Control</p> <p>Feature Level 2 content has been part of the base software load since LIGHTWARE 32 Release 1.0: DNIC RAD Multiple Message Waiting Indications Remote Wake-up Calls Hotel/Motel Multiple Wake-up Support SMDR Extended Reporting Level 1</p>
Feature Level Optioning (cont'd)	<p>Feature Level 3 content has been part of the base software load since LIGHTWARE 32 Release 1.0: Report Attendant Name Simplified Account Codes Maintain Calling Line ID Dial out of an ACD Queue Call Clearing on LS/GS Trunks Interconnect Restriction Override Headset Mute Switch Emergency Call Notification on Display Sets Hotel/Motel Multiple Wake-up Support on Consoles SMDR Path Reporting for Internal ACD2 Calls ACD Hold Retrieve/Abandon Event Shared Telephone Service for a Single Suite Disabled Account Code Reporting for Internal SMDR Tag Call (malicious call trace)</p> <p>Feature Level 4 includes: Disable Wakeup on Check-Out Hold Key Retrieves Last Held Call Tenanting</p>
Flexible Dimensioning	<p>Allocates database memory to each feature resource. The amount of memory determines the maximum size of the feature resource; the system borrows memory from other resources that are not in use.</p>
HCI®/CTI™ Advanced Telephony	<p>Allows monitoring of the activity and state transitions of extensions.</p>
HCI/CTI Basic Telephony	<p>Permits a host computer application to initiate and clear calls on behalf of an extension on the SX-2000 system through X.409, X.410, and X.25 protocols.</p>
Hotel/Motel	<p>Provides features commonly used by hotels, motels, hospitals, and Property Management Systems.</p>
Italian CAS	<p>Provides simulation of analog signaling over CEPT digital trunk facilities.</p>
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Optional Features (continued)

Feature Name	Description
Main Control Redundancy	Duplicates the main control hardware of the SX-2000 system so that the system can remain operational if one of the Main Control complexes fails.
Message Center	An automated messaging service.
MNMS Configuration Management I	Supports telephone directory management within the OPS Manager, page 14, application.
MNMS Configuration Management III	Supports the following OPS Manager, page 14, functionality: automated software upgrades, scheduled automatic database backups, and automatic data saves and data restores.
MNMS Database Access	Supports the following OPS Manager, page 14, functionality: network moves, adds, and changes, single network system support, and moves, adds, and changes templates.
MNMS/SNMP Fault Management I	Supports alarm management within the OPS Manager, page 14, application, including the following features: viewing network alarms, alarm paging, demand paging, and history reports.
MSAN/APNSS	Provides call set-up capabilities between systems connected in an MSAN/APNSS network.
MSDN/DPNSS Data	Provides data calls over digital network links, fast data call setup, and nailed-up data calls through MSDN/DPNSS links.
MSDN/DPNSS Public Network Access	Allows or denies access to the public network, preventing users from bypassing the toll network and ensuring a trunk entering a private network cannot re-enter the public network.
MSDN/DPNSS Redirection	Allows a call which is awaiting connection or reconnection to an extension to be redirected by the terminating system in an SX-2000 network.
MSDN/DPNSS Voice I	Provides the following features: <ul style="list-style-type: none"> - 2.048 or 1.544 Mb/s digital multiplexed interface - Fast call setup for voice - 3-party and multi-party conferences - Camp-on (call waiting) - Transfer to busy - Hold, swap capabilities - Supervised/unsupervised transfer - No access to public network via private network - All analog trunks functionality - Network voice mail functionality.
MSDN/DPNSS Voice II	Provides the following features: <ul style="list-style-type: none"> - Callback - Override across a network.
MSDN/DPNSS Voice III	Displays calling party's name, trunk labels, and SUPERSET display telephone status messages across a network. Provides some network voice mail functionality.
MSDN/DPNSS Voice IV	Provides Serial Call, Call Split, Route Optimization, and three-party conferencing across digital links.
MSDN/DPNSS Voice V	Provides Stepback and Network SMDR features to operate on nodes of an SX-2000 digital network. Provides some network voice mail functionality.
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Optional Features (continued)

Feature Name	Description
MSDN/DPNSS Voice VI	Provides the Portable Directory Number feature for OPS Manager, page 14.
MSDN Release Link Trunks	Permits the attendant to reroute calls between systems without consuming additional trunk resources.
Multi-Level Precedence and Preemption (MLPP)	Connects the SX-2000 system with the Defense Switched Network (DSN), which enables users to specify a precedence level when making a call and to preempt lower priority calls.
Networked ACD	Networked ACD supports ACD functions over a Mitel Switched Digital Network (MSDN). Agent groups at different locations (on different systems) may service calls on the network independently of where the call first entered the network.
ONS CLASS/CLIP Station Side Software Support	Allows ONS CLASS/CLIP sets using CLASS/CLIP protocol to receive Caller Line Identification Delivery (CLID) information, and the time and date of a call.
Peripheral Node Expansion	Allows the peripheral node capacity to be expanded to 384 ports, controlling up to 24 Peripheral Interface cards.
PRI	Describes the purchasable options supported by the PRI card and Universal NSU, page 31. These options include Min/Max, Automated Min/Max, NFAS (Non-Facilities Associated Signaling), D-channel Backup and Remote LAN Access.
QSIG	A protocol that allows you to connect a minimum of two systems together to form a private network. QSIG supports both incoming and outgoing calls for the PRI card and Universal NSU, page 31.
SMDR - External	Collects data for outgoing and incoming trunk calls.
SMDR - Internal	Collects data for calls made between stations within the system.
Speak@Ease™ Softkey Support	Provides quick and easy access to the Mitel 6500 Speech-Enabled Applications.
Suite Services	Provides the ability to group a number of telephone lines through interconnected hotel/motel rooms, or suites, for the purposes of billing and shared telephone service.
SUPERSET 700 Color	Allows you to change the screen background color and alarm display color on a SUPERSET 700 attendant console.
T1/D4	Provides support for T1 Channel Associated Signaling. The DS1 Formatter card is required.
TAPI™ Support	Supports MiTAI and TALK TO TAPI computer telephony interfaces.
Traffic Reporting	Provides traffic reports based on system usage to allow better system resource management.
Trunk Group Busy Status	Enables attendants to query the status of trunk groups from the attendant console.
Visually Handicapped Operator Console	Enables blind attendants to operate a SUPERSET 700 attendant console by having information announced in the receiver.
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Optional Features (continued)

Feature Name	Description
Voice Mail Softkeys	Provides the SUPERSET user with a quick and convenient method to access NuPoint Messenger. Access to the system is provided through context sensitive softkeys presented on the SUPERSET.
XNET	Proprietary switched MSDN/DPNSS networking over the PSTN.
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Security

Toll Control

Comprehensive toll control is an integral part of the Advanced Automatic Route Selection feature package. It allows the customer to restrict user access to trunk routes and/or specific external directory numbers. The key to toll control is the use of Class of Restriction (COR) values.

All systems with any combination of Direct Inward System Access (DISA), integrated auto attendant, or RAD groups and peripheral interfaced auto attendant or voice mail are susceptible to being "hacked into" by external callers. In addition, internal users could abuse telephone privileges by using external call forward, trunk-to-trunk connection without third party, or 1-800 and 1-900 numbers.

It is very important to assign telephone privileges that relate to toll only to the employees who require it to do their job. In addition, a lobby telephone would be denied toll access unless authorized through an attendant.

Class of Service options, such as Individual Trunk Access, bypass all ARS and COR restrictions. Features carrying a risk of toll abuse include:

- Public Network to Public Network Connection Allowed permitting trunks to be connected together without a third party
- Call Forwarding External Destination feature allowing an extension user to forward calls to external trunks
- 800 numbers, usually free calls, but some central offices can allow the reversal of 800 charges, making it a toll call for your company
- 900 numbers, should be restricted from all users except those who require it for their job function.

Another method of toll control is Station Message Detailed Recording (SMDR) which can be used to track internal users and control their calls. Tracking is a deterrent to toll abuse by internal callers; however, these records may also be used to identify account codes. For more information on suppressing private strings from records, see the Digit Modification Assignment section of the Technical Documentation CD-ROM.

Authorized Maintenance Access

Authorized maintenance access provides protection (restricted access) for various administration commands from unauthorized users.

The six levels of authorization are:

- System
- Installer
- Maintenance2
- Maintenance1
- Supervisor
- Attendant.

These levels provide a means of differentiating the capabilities of the various types of users who administer the system.

Newly installed systems include four default user accounts (SYSTEM, INSTALLER, MAINTENANCE1, and MAINTENANCE2), which should be programmed with unique, secure usernames and passwords before being used to access the system. Additional new user accounts (64 in total) can be programmed using CDE procedures.

Passwords can be changed by their owners or by the system-level user. Usernames can be changed by administrators with higher authorization levels (for example, a Supervisor can change an Attendant's username but not an Installer's username).

All systems with modems connected to the maintenance port should have all levels of passwords and usernames changed from the default value on an irregular schedule. In the Form Access Authorization form there are different levels of access (MAINTENANCE1, MAINTENANCE2, SUPERVISOR, and ATTENDANT). Special attention should be given to these users and only allow access to the required forms.

Another area of concern is the User Authorization Profile form. The name and authorization level is accessible from anywhere (i.e., Maintenance Terminal and modems). Therefore, the authorization level should be kept to a minimum to keep "hackers" from accessing certain forms through CDE.

Voice mail systems connected directly to modems should employ a surveillance device. Also, most voice mail systems require a password to gain access; therefore, make sure this password is difficult to guess and is changed frequently. Any user no longer authorized to use the system should have password privileges revoked.

For more information, see the RESET PASSWORD, RESET USERNAME, and CHANGE PASSWORD sections of the Technical Documentation CD-ROM.

Enhanced Login Security

When Enhanced Login Security (ELS) is enabled, the system enforces tighter control of user identification and login authorization.

Security Functions - ELS Enabled/Disabled

Security Function	ELS Enabled	ELS Disabled
Administrator accounts can be enabled/disabled	Yes	No
Account Inactivity Timer	Accounts are disabled after being inactive 30 - 90 days.	No
Minimum password length	Minimum password length is programmable in a range of 6 - 8 characters.	Minimum password length is programmable in a range of 1 - 8 characters.
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Security Functions - ELS Enabled/Disabled

Security Function	ELS Enabled	ELS Disabled
Limit to reuse of passwords	System can retain a history of 1 - 8 "old" passwords and prevent their reuse.	No
Password change waiting period	System can prevent a password from being changed for 1 - 20 days	No
Password expiry interval	Default and per-user expiry intervals are programmable.	Default expiry interval is programmable.
Strict password content	Passwords must contain at least one upper case and one lower case alphabetic character, one numeric character, and one special character. Passwords are case sensitive and cannot contain repeating characters such as "aaa", spaces, or the username.	Passwords are case sensitive and cannot contain spaces.
System response to use of default username or password	The system raises a security alarm (based on alarm threshold programming), displays a warning message, and prevents the user from logging in.	The system raises a security alarm, displays a warning message, and allows the user to log in.
System response to use of expired password	The system displays a warning message and prevents the user from logging in.	The system displays a warning message but allows the user to log in.
Support for multiple maintenance sessions (maximum four telnet and one RS-232)	Multiple sessions are supported. To log in, users must have a higher authorization level than the user who logs in first.	Multiple sessions are supported. All users can log in, and are assigned the same authorization level as the user who logs in first.
System response to maintenance commands entered by a user who is not logged in	The user is prevented from executing commands. A warning message displays.	The user can traverse the command graph but is prevented from executing complete commands.
Security-related events recorded to a separate log file	Yes	Yes
Telnet and consoles are locked out when failed locked attempts threshold passed	Yes	Yes

Mitel Options Password

New Mitel Options Passwords (MOP) are not required for software stream upgrades from LIGHTWARE 30 Release 2.0 to further streams, when no new purchasable software options are enabled on the system. If new software options are purchased, a new MOP is always required.

Maintenance

Reliability

All specifications in this section assume that the SX-2000 system is operating within its specified environmental limits. No reliability performance can be defined outside those limits. Some degradation of the quoted failure rates can be expected when a system operates at the extremes of the environmental specification, page 79. MILITARY HANDBOOK 217D has been used for failure rate calculations. Degradation from the nominal failure rates is approximately double the calculated failure rate for every 18°F (10°C) rise above the external room ambient of 68°F (20°C).

Early life effect is defined as the first six months after installation, where hardware reliability performance is affected by the component's infant mortality and production quality defects. After the early life period, the average number of maintenance actions do not exceed 0.200 per 100 stations per month. Early life effects are determined in terms of hardware early life effect and system early life effect.

- **Hardware:** The early life effect for hardware failure is less than twice the useful life failure rate averaged over the first six months of operation. This is equivalent to 0.40 failures/100 stations/month. This does not include Dead On Arrivals or No Faults Found.
- **System:** The system outages or downtimes are also affected during the early life period. This affects all newly installed systems and is greater than three times that specified as the nominal. This is averaged over the first six months after installation, and does not exceed 0.90 failures/100 stations/month.

Program Load Times: The time required to reload the subsystems of the SX-2000 system does not exceed 10 minutes. The time required from attendant console power-on to being able to process simple calls is less than 5 minutes, not including cold system start-up time.

Maintenance and Service

General

- Service documentation is structured so that personnel with varying levels of experience or technical knowledge can easily locate and understand the desired information. The documentation is targeted at technically qualified service personnel.
- All system-detected errors (both software and hardware) are automatically entered in an Error Log which is maintained in non-volatile storage. All pertinent information necessary to uniquely identify the elements associated with the error is logged in the file or pointers are provided to identify its location in storage.
- Maintenance activity can be performed concurrently, with no perceived impact on user operations, except for those resources required to correct the malfunction.

Hardware

- Hardware units are easily removed and replaced.



Note: Defective items should be repaired by an Authorized Repair Center (not by field personnel).

- The FRUs (power supply, cards, converters, etc.) are easy to change, easily accessible for service, and their locations are readily identified
- FRUs within the hardware unit can be easily plugged into place and require no soldering to facilitate their replacement
- Doors can be removed quickly and require no critical alignment or special tools to re-install
- Cables which connect the FRUs use connectors which can be easily detached, securely fastened, and readily identified
- Software/firmware visibility is provided for the use of service and support personnel.

Software

The software provides

- a means to readily identify software modules and their modification level
- a means to readily identify the software release level
- a software fix (patches or modules) procedure that allows easy application (either locally or remotely)
- captured software diagnostic data (error logs/data, dumps, traces, etc.) which can be easily retrieved (either locally or remotely).

Printer Support

You can print a file from anywhere in the system. There is a separate print queue for each printer in the main controller mass storage system. Any console or Maintenance Terminal user may print a file on any printer in the system. After a requested file is printed the system displays a message for the user.

Diagnostics

The system performs four types of on-line and off-line diagnostic check to ensure that all aspects of the system are functioning properly. Faulty units are removed from service. Tests include the following:

- Power-up
- Warm start
- Background
- Directed.

Alarms

An alarm is an event that takes place when an anomaly is detected and corrective action is required.

Alarm Classes: There are three classes of alarms: CRITICAL, MAJOR, and MINOR. Alarm threshold levels are programmable.

- **Critical:** A critical alarm is a total loss of service which demands immediate attention. A critical alarm invokes system fail transfer.
- **Major:** A major alarm is a fault which affects service to many users. This usually results in a major degradation in service and needs attention to minimize customer complaints.
- **Minor:** A minor alarm is any fault which does not fall in either of the above two classes. Whenever the system is not 100% operational a minor alarm is raised. This normally requires the attention of a repair person but is not urgent. Examples of a minor alarm include the loss of a single line or trunk circuit or the loss of one circuit switch link.

Alarm Routing: All attendants are alerted when an alarm is raised. To determine the alarm status, log on to the Maintenance Terminal and enter the ALARMS command. An alarm condition is CLEARED when the fault or condition which caused it is corrected, or the threshold is reprogrammed outside of that which caused the alarm.

Remote Alarms: Each class of alarm has a set of contacts to activate external audible or visual indicators or for use as control points for remote surveillance systems, data loggers, etc.

Controls and Indicators

The SX-2000 system attempts to detect, isolate, and recover from a fault before the fault condition affects the user. The system also isolates a fault down to the smallest field-replaceable module.

The SX-2000 LIGHT Control Panel is located in the control cabinet, above the card slots. The panel provides faceplate push button switches and LED indicators for

- system reset (Planes A and B)
- activity switch
- activity freeze enable/disable
- alarm indicators (critical, major, and minor)
- remote alarms enable/disable
- panel enable/disable.

Circuit Card Indicators

All Printed Circuit Board (PCB) cards in the system have a series of LED indicators and/or numeric displays mounted on their front panels. For maintenance instructions, see the Circuit

Card Indicators section of the Technical Documentation CD-ROM. The PCB card LEDs can be grouped into three categories:

- **Card Status LEDs:** common to all cards
- **Circuit Status Bar LEDs:** found on line, trunk, and DTMF Receiver cards
- **Numeric Displays:** found only on processor cards

Specifications

Environment

System

Storage Environment

Condition	Specification
Temperature	-40° to 150°F (-40° to 66°C)
Humidity	5-95% Relative Humidity, non-condensing
Vibration (FCC Part 68, Sections 6&7)	0.5 g, 5 to 100 Hz, any orthogonal axis 1.5 g, 100 to 500 Hz, any orthogonal axis
Mechanical Stress (FCC Part 68, Sections 6&7)	One 20.3 cm (8 inch) drop, each edge and corner adjacent to the rest face
Horizontal Transportation Impact Stress	One shock pulse applied on each face perpendicular to the direction of motion of the transporting vehicle; the shock pulse is a half-sine acceleration 30 g peak, 20 ms duration

Operational Environment

Condition	Specification
Temperature	39° to 120°F (4° to 49°C) Peripheral cabinet and DSU cabinet 32° to 104°F (0° to 40°C) SX-2000 Redundant Control cabinet
Humidity	5-95% Relative Humidity, non-condensing
Maximum Heat Dissipation - fully loaded (see Note)	
Redundant Control Cabinet	386 BTUs per hour
Peripheral Cabinet	724 BTUs per hour
DSU Cabinet	266 BTUs per hour
Air Flow	150 cubic feet per minute at maximum output of the fans
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Operational Environment (continued)

Condition	Specification
Standards and Specifications	The Peripheral and DSU Cabinets conform to the following specifications: CFR Title 47, Part 15 ICES-003 EN55022 EN55024 EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-11 EN61000-3-2 EN60950 CSA - UL 60950
Note: Conversion factors: 1 watt is equal to 3.412 BTUs per hour, 1 ton of refrigeration is equal to 12,000 BTUs per hour or 3.516 Kilowatts, and 3/4 Kilowatt-hour is equal to 1 ton of refrigeration.	
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Network Services Unit (NSU)

Storage Environment

Condition	Specification
Temperature	-40° to 150°F (-40° to 66°C)
Humidity	15-95% Relative Humidity, non-condensing
Vibration	0.5 g, 5 to 100 Hz, any orthogonal axis 1.5 g, 100 to 500 Hz, any orthogonal axis
Mechanical Stress	One 15.3 cm (6 in.) drop, each edge and corner adjacent to the rest face (unpackaged) One 76.2 cm (30 in.) drop, each edge and corner packaged in cardboard and foam

Operational Environment

Condition	Specification
Temperature	39° to 120°F (4° to 49°C)
Humidity	34-95% Relative Humidity, non-condensing
Maximum Heat Dissipation - fully loaded (see Note)	170 BTUs per hour
Note: Conversion factors: 1 watt is equal to 3.412 BTUs per hour, 1 ton of refrigeration is equal to 12,000 BTUs per hour or 3.516 Kilowatts, and 3/4 Kilowatt-hour is equal to 1 ton of refrigeration.	

Peripherals

SUPERSET 4000 and SUPERSET 400 Telephones Programmable Key Modules (12 and 48)

	Temperature	Humidity
Operating Environment	32° to 122°F (0° to 50°C)	0% to 90% RH, non-condensing
Shipping/Storage Environment	-13° to 158°F (-25° to 70°C)	0% to 90% RH, non-condensing

SUPERCONSOLE 1000

	Temperature	Humidity
Operating Environment	32° to 86°F (0° to 30°C)	20% to 80% RH, non-condensing
Shipping/Storage Environment	-4° to 140°F (-20° to 60°C)	10% to 70% RH, non-condensing

Single-line DLM

	Temperature	Humidity
Operating Environment	32° to 104°F (0° to 40°C)	5% to 95% RH, non-condensing

Dimensions and Weights

Component	Height	Width	Depth	Weight (fully loaded)
Redundant Control Cabinet	19.25 inches (48.9 cm)	17.25 inches (43.8 cm)	19 inches (48.3 cm)	67.4 lbs (30.6 kg)
Peripheral Cabinet	19.25 inches (48.9 cm)	17.25 inches (43.8 cm)	19 inches (48.3 cm)	72.8 lbs (33.0 kg)
DSU Cabinet	19 inches (48.3 cm)	9 inches (22.9 cm)	19 inches (48.3 cm)	31.3 lbs (14.2 kg)
NSU (see note)	1.75 inches (4.5 cm)	17.75 inches (45.1 cm)	15.5 inches (39.4 cm)	9.4 lbs (4.3 kg)
SUPERCONSOLE 1000	4 inches (10.2 cm)	15.5 inches (39.4 cm)	9 inches (22.9 cm)	5 lbs (2.27 kg)
Single-line DLM	1.4 inches (3.6 cm)	8.1 inches (20.6 cm)	10.6 inches (26.9 cm)	2.6 lbs (1.2 kg)
<p>Notes:</p> <ul style="list-style-type: none"> • The Network Services Unit (NSU) is 19" rack mountable. • The Peripheral Cabinet (19") can be stacked in a 19" rack; however, it cannot be rack mounted. • Because of their narrow width (9"), the DSU cabinet can only be stacked at the top of the pile. 				

Power

System Input Power Requirements

Component	Input / Disconnect	Input Voltage / Frequency Rating	Input Power	AC Source Range
Redundant SX-2000 LIGHT	IEC320-C14 Class 1 AC Receptacle Switch	100-127 Vac 50/60 Hz 200-240 Vac 50/60 Hz	200 W	90-132 Vac 47-63 Hz 187-264 Vac
Peripheral Node	IEC320-C14 Class 1 AC Receptacle Switch	102-120 Vac 50/60 Hz (MP914AA psu) 200-240 Vac 50/60 Hz (MP914AD psu)	750 W max 540 W typical (see note)	102-132 Vac 47-63 Hz (MP914AA psu) 187-264 Vac 47-63 Hz (MP914AD psu)
DSU Node	IEC320-C14 Class 1 AC Receptacle Switch	100-127 Vac 50/60 Hz 200-240 Vac 50/60 Hz switchable	120 W max 80 W typical (see note)	90-132 Vac 47-63 Hz or 187-265 Vac
NSU	IEC320-C14 Class 1 AC Receptacle	100-120 Vac 200-240 Vac 50/60 Hz	20 W (Universal) 30 W (R2) 20 W (BRI - NA) 40 W (BRI - UK)	90-264 Vac 47-63 Hz
Notes:				
<ul style="list-style-type: none"> The typical input power applies to cabinets that use about half of the card slots only. All Peripheral Node numbers assume normal business traffic on the lines. 				

Equipment	Power Requirements
AC Control Cabinet, DSU Cabinet, and Peripheral Cabinet For more information, see the AC Power Converter section of the Technical Documentation CD-ROM.	120 Vac, 6 amps 240 Vac The input power is converted to ± 5 , ± 12 , -27 and -48 Vdc, and 80 Vac ringing voltage by the power converter (AC)
DC Control Cabinet, DSU Cabinet, and Peripheral Cabinet For more information, see the DC Power Converter section of the Technical Documentation CD-ROM.	-48 Vdc In a DC powered peripheral, the -48 V power is used directly. In a control or DSU node, the input power (AC or DC) is converted to ± 5 and ± 12 Vdc and output by the PSU.

Equipment	Power Requirements
SUPERCONSOLE 1000	The console is powered from the line feed (-48 V). It has an on-board power supply that converts the input voltage to +5, +15 and -8.0 Volts. The on-board power supply draws 27 mA from input supply, $\pm 10\%$ at -48 Volts. The Input voltage range is from 35 to 60 Vdc.
SUPERCONSOLE 2000	120/240 Vac
Datasets	Dataset receives power from a plug-in transformer which supplies 9 Vac to a power connector on the back of the dataset. Circuitry in the dataset converts this power to the required DC voltages. The digital telephone voice operation receives its power from the system.

SUPERCONSOLE 2000 Reserve Power Units

When battery backup for the system is provided, reserve power for the consoles should also be considered. If AC power is lost, the console loses its communications functions, video functions, and data interfaces. You can provide back-up power to the consoles with an uninterruptible power supply (UPS).

SUPERCONSOLE 2000 Console UPS - Recommended Models

Manufacturer	Pylon	Sola	PTI
Model	UPS250	26-00-50730-300-00	AT-800
Workstations Supported	One	Four/Five	One-Four
117 V, 60 Hz	Yes	Yes	Yes
220 V, 50 Hz	Yes	Yes	No
Battery voltage	48 V	72 V	24 V
Nominal Discharge Time	15 minutes	10 minutes	120 min (1)20 min (4)
Maximum Discharge Time*	8.5 hr	Indefinite	No external battery pack available
Nominal Recharge Time	2.5 hr	1.5 hr	11 hr
Length	16 in. (40.6 cm.)	19 in. (48.3 cm.)	15.5 in. (39.4 cm.)
Width	17 in. (43.2 cm.)	12 in. (30.5 cm.)	12 in. (30.5 cm.)
Height	10.7 in. (27.2 cm.)	10.5 in. (26.7 cm.)	8.6 in. (21.8 cm.)
Weight	72 lb. (32.7 kg.)	120 lb. (54.5 kg.)	72 lb. (32.7 kg.)
Operating Temperature	32°-104°F (0°-40°C)	32°-104°F (0°-40°C)	32°-104°F (0°-40°C)
Humidity Level	0-95% RH	0-95% RH	0-95% RH
*Only if external battery packs (available from manufacturer) are used. Consult manufacturer if you need to extend nominal discharge time.			
Note: Consult the UPS manufacturer and local electrical authority to make certain that a customer-installed UPS complies with the local Electrical Code.			

Traffic and Performance

Criteria	Result
Busy Hour Call Completions (BHCC)*	9.44 per second 33970 per hour
Both Way Traffic Per Station	At 1200 ONS/OPS lines and 12% analog trunking with analog signaling, the following should not be exceeded: Call/Hr 25.28 Erlang 0.81 CCS 29
Response Time Specification	Delay to Dial Tone 1 s Dial Tone Cut Off Delay 500 ms Post-Dialing Delay 1.5 s
Data Blocking Possibilities	Software <0.0001 Blocking Probability DTMF, Trunks Provisioning dependent DSU Provisioning dependent
Note: The BHCC will vary according to individual customer configuration and usage.	

Attendant Console Requirements

Number of Lines Supported	Average Number of Attendants Required		
	Light Traffic (1.4)	Medium Traffic (2.8)	Heavy Traffic (5.3)
100	1	1	2
200	1	2	3
240	1	2	3
300	2	2	3
400	2	3	4
500	2	3	4
600	2	3	5
700	2	3	5
800	2	4	6
900	3	4	6
1000	3	4	7
1100	3	5	7
1200 ²	3	5	8
1300	3	5	8

Notes:

1. These figures based on originating CCS/line.
2. The maximum number of lines supported on SX-2000 LIGHT systems is 1200.

Tone Plan Support

The system supports tone plans for the following countries:

- China
- Germany
- Hong Kong
- Italy
- Malaysia
- New Zealand
- North America
- Taiwan
- United Kingdom.
- For more information, see the Tone Plans section of the Technical Documentation CD-ROM.

Capacity Levels, Software Configurations, and Dimensions

The dimensions and feature allocations determine the “size” of the system in terms of its ability to support peripheral devices and features. The capacity levels, software configurations, and dimensions are divided into the following classes:

- MITEL Feature Resource Dimensions (MFRDs), page 88
- MSDN/DPNSS Network Resource Dimensions (MNRDs), page 97
- MITEL Traffic Capacity Levels (MTCLs), page 98,
- Application Capacity Levels
 - MITEL HCI Capacity Level (MHCL), page 99
 - MITEL TAPI Service Provider (MTSPs), page 99
 - MITEL ACD Agent Capacity Level (MACLs), page 99,
 - MITEL Agent ID Appearance Capacity Level (MAIACLs), page 100
 - MITEL Maximum Line appearances Capacity Level (MLCLs), page 100,
- MITEL Software Applications (MSAs), page 101

Options can be purchased individually or as part of a MITEL Software Bundle (MSB), page 104, or MITEL Core Package (MCP), page 104.

MITEL Feature Resource Dimensions (MFRDs)

MITEL Feature Resource Dimensions (MFRDs)	
MFRD-A-14	Small Business Package (352 ONS/OPS)
MFRD-A-16	Medium Business Package (1360 ONS/OPS)
MFRD-A-18	Large Business Package (2500 ONS/OPS)
MFRD-A-20	ONS/OPS Package (3500 ONS/OPS)
MFRD-A-21	Multiline Set Package (455 ONS/OPS)
MFRD-A-22	Dataset Package (1000 datasets)
MFRD-A-23	Resale/Tandem Package (1300 trunks and 11,000 account codes)
MFRD-A-24	Centralized Attendant Package (9300 TEL DIR)
MFRD-A-26	Large Centralized Attendant Package (22500 TEL DIR)
MFRD-A-40	32-Station Package
MFRD-A-42	48-Station Package
MFRD-A-44	96-Station Package

The following tables provide the maximum number of resources available for the various parameters of each MITEL feature resource dimension (MFRD).



Note: Some system dimensions can be tailored to meet specific business needs by using the Flexible Dimensioning optional feature package. For more information, see the Flexible Dimensioning section of the Technical Documentation CD-ROM.

Hardware Dimensions

Hardware Dimensions

Parameter Name	MFRD Level (see Note 1)											
	14	16	18	20	21	22	23	24	26	40	42	44
Attendant Consoles, page 36, (Note 2)	8	16	24	24	24	24	48	48	24	2	4	6
DNI Channels (Note 3)	448	864	2368	1764	3988	3552	1504	1120	2368	64	96	192
DTRX Service (Data Transceiver Circuits)	24	24	48	48	48	48	48	48	48	24	24	24
Modems	2	20	40	40	30	100	40	40	40	4	4	2
Programmable Key Modules (PKMs), page 36	15	30	75	45	150	75	50	30	10	16	24	32
SUPERCONSOLE 2000 Consoles, page 49, (Note 4)	8	16	16	16	16	16	16	16	16	2	4	6
System Ports (Note 5):												
- Datasets, page 51	16	16	16	400	362	1000	200	200	400	16	16	16
- DTMF Receivers	64	128	128	160	128	128	128	128	128	64	64	64
- Multiline Sets, page 36	144	300	756	450	1600	756	504	300	756	32	48	96
- Single Line Sets (ONS/OPS Lines, page 9,)	352	1360	2504	3500	456	1504	1504	1360	2504	32	48	96
- Trunks, page 9, (Note 6)	144	312	628	628	400	628	1300	628	628	128	128	128
Tone Detector Circuits (Note 7)	32	32	32	32	32	32	32	32	32	32	32	32
Notes:	<ol style="list-style-type: none"> Each MFRD provides support for all of the parameters at the listed levels. These numbers are not mutually exclusive; for example, at MFRD 40, you can have 32 multiline sets and 32 single line sets for a total of 64. The difference between the maximum number of SUPERCONSOLE 2000 consoles allowed and the total number of attendant consoles allowed may be made up with SUPERCONSOLE 1000 units without the printer port enabled. A DNI line card provides 16 DNI circuits with 2 DNI channels per circuit. Given the total number of DNI channels, you can determine the maximum number of DNI line cards. For example, with MFRD 14, you can have 448 DNI channels or 14 DNI line cards (448 divided by 2 x 16). The maximum number of SUPERCONSOLE 2000 consoles that can be used in the system depends on the Main Controller card and MITEL Traffic Capacity Level (MTCL). For the purposes of hardware dimensions, a SUPERCONSOLE 1000 attendant console with its printer port enabled is treated as a SUPERCONSOLE 2000 console. Although the system dimensions permit support for these figures, each peripheral cabinet has a physical maximum of 192 ports and each DSU cabinet has a physical maximum of 240 (multiplexed) ports. When a trunk card is programmed in the System Configuration form, the maximum number of trunks is allocated automatically. For example, 8 trunks will be allocated for the LS/GS card, and 4 trunks will be allocated for the E&M card. A Tone Detector card must be used to achieve the maximum 32 circuits. The 32 circuits on the Tone Detector card replace the 10 tone detection resources on the Main Controller card. 											

Feature Dimensions

Feature Dimensions

Feature Name	MFRD Level											
	14	16	18	20	21	22	23	24	26	40	42	44
Attendant Console Groups	12	24	48	36	36	36	60	60	48	12	12	12
Attendant Console Calls Waiting	26	48	72	72	72	72	99	99	72	99	99	99
Broadcast Groups	360	750	1875	1126	3200	1875	1250	750	1875	240	360	480
Busy Lamp Groups (Monitored Devices)	71	184	438	462	365	338	275	211	438	28	42	59
Call Reroute Always	20	64	176	210	120	150	150	176	176	32	32	32
Call Reroute 1st Alternates	500	500	500	400	336	336	336	336	336	256	256	256
Call Reroute 2nd Alternates	16	16	32	38	32	32	32	42	32	32	32	32
Class of Restriction (COR) Numbers	64	64	96	96	96	96	96	96	96	96	96	96
Class Of Service (COS)	64	64	96	96	96	96	96	96	96	96	96	96
Dataset Groups	2	2	2	45	35	160	45	45	45	4	4	4
Default Account Codes	50	100	225	200	200	190	400	225	225	255	255	255
Departments (in Tel Dir)	50	50	700	700	700	700	700	1500	700	700	700	700
Digit Modification Tables	256	256	256	256	256	256	256	256	256	256	256	256
Digit Blocks	600	600	2000	2000	2000	2000	2400	2000	2000	2000	2000	2000
Digital Links (Note 1)												
DTS Service Numbers	10	32	64	64	200	64	64	64	64	16	24	36
Group Page groups	4	12	16	16	16	16	16	16	16	2	3	4
Hunt Groups (Note 2)	20	64	176	200	120	150	150	176	176	16	24	48
Independent Account Codes	400	572	3000	1000	1000	1000	11000	1000	1000	1000	1000	1000
Locations (in Tel Dir)	30	50	70	70	70	70	70	150	70	70	70	70
Modem Groups	2	10	15	15	10	20	15	10	15	4	4	4
Modems per Modem Group	8	20	40	40	40	40	40	40	40	4	4	4
Page Groups (Zones)	2	16	16	16	16	16	16	16	16	4	4	8
Personal Speed Call Users (Note 3) (blocks of 10 speed calls per user)	100	500	500	700	100	500	500	300	500	16	24	48
Pickup Groups	48	100	200	150	130	170	170	200	200	16	24	48
Routes	200	200	200	200	200	200	200	200	200	200	200	200
Route Lists	128	128	128	128	128	128	128	128	128	128	128	128
Speed Call Digit String (avg. 12 digits)	500	2500	2500	3500	500	2500	2500	1500	2500	420	420	420
Suite Services - Single	124	415	815	987	514	565	502	415	815	16	24	48

Feature Dimensions (continued)

Feature Name	MFRD Level											
	14	16	18	20	21	22	23	24	26	40	42	44
Suite Services - Linked	41	138	271	329	171	188	167	138	271	5	8	16
SUPERSET Callback Messages per System (see Note 4)	96	200	500	200	1100	500	500	200	500	64	96	144
System Account Codes	16	16	24	24	24	24	30	24	24	16	16	16
System Digit Strings (Note 5)	1049	3306	6814	8091	4517	6074	4188	9999	32280	6814	6814	6814
System Speed Call	150	500	600	500	400	600	600	600	600	600	600	600
Telephone Directory Entries	500	1360	3600	4500	3000	3070	3070	9300	22500	3600	3600	3600
Trunk Groups	20	64	112	112	71	112	212	112	112	64	64	64
Trunks per Trunk Group	60	96	175	175	175	175	175	175	175	64	64	64
Trunk Service Numbers	40	64	150	150	150	150	312	150	150	64	64	64
Notes:												
1. MFRD packages no longer include a set threshold limit for digital links. They are automatically enabled by the software and appear on the SX-2000 Feature Options Record sheet, included with your system package. The following table describes supported Digital Link values (for the corresponding MFRD level) as a reference for those not performing software upgrades:												
Digital Links	8	13	27	26	26	26	40	26	26	4	4	4
<p>When programming digital trunk cards, do not exceed the number of trunks allowed and available within the MFRD level. Trunks are allocated when the digital trunk card is added to the System Configuration form. For example, 48 trunks are allocated when a DS1 Formatter card is added and 60 trunks are allocated when a CEPT Formatter card is added. The Dimension and Feature Display form shows the number of allocated trunks.</p> <p>2. With ACD 2000 Hunt Mode, up to 150 telephones may be programmed in one hunt group (at MFRD 12 or higher). A maximum of 64 of the available hunt groups can be programmed as ACD groups. For example, MFRD 24 allows 175 hunt groups, but only 64 of the available 175 hunt groups can be programmed as ACD groups.</p> <p>3. The Personal Speed Call Users value is calculated using a default of 10 personal speed calls per user. If you allow each user more than 10 personal speed calls, your allowable block of personal speed calls is used up faster. This results in a lower number of users with a higher number of personal speed calls.</p> <p>4. The number of messages includes both callback messages and voice mail messages.</p> <p>5. Each digit string pool entry can hold up to seven digits but can be used for only one SWID. Numbers larger than seven digits require more than one digit string pool entry (one for each seven digits).</p>												
												Page 2 of 2

Other Parameters

The parameters described below are also features that are provided with each MFRD package; however, the resource limitations for these features are not MFRD dependant (i.e. the maximum resource values remain consistent across all MFRDs).

Consoles Per Attendant Console Group - The maximum number of attendants in each attendant console group is 15.

Sets per Broadcast Group - The maximum number of telephones per broadcast group is 16, 20, 24, 28, or 32 (depending on the purchased option).

Call Progress Tone Plans - Call progress and supervisory tones generated within the system are programmed to meet the requirements of the telephone authority of the country in which the system is installed. The tones generated are not programmed by the installer; they are part of the country option of the core package software load. The system provides 100 different tone plans.

Conferees per Conference - The maximum number of conferees per conference is 8 (any combination of internal or external conferees as long as one is internal).

Conferees Per System - Without the Conference card, the maximum number of conferees per system is 24 (at one time). With the Conference card, the maximum number of conferees per system is 64.

Conferences Per System - Without the Conference card, the maximum number of three-party conferences per system is 8. With the Conference card, the maximum number of conferences per system is 21.

Dataset Circuit Descriptors - Dataset circuit descriptors are used to define dataset circuits by specifying the parameters used by the various datasets supported by the system. One circuit descriptor is assigned to each similarly configured groups of dataset circuits. Default dataset descriptors for specified device classes and usage types may be used, or individual parameters may be programmed. A total of 32 dataset circuit descriptors may be programmed.

Datasets Per Dataset Group - The maximum number of datasets that can be programmed into one dataset hunt group is 50.

Day Zones per Week - There are 3 day zones available, and each of the day zones can be divided into 4 time zones (12 individual day/time zones). These zones are used with the Automatic Route Selection (ARS) feature and the Advanced Automatic Route Selection feature package (MSA 2) to implement Day and Time Zones.

DTE Terminal Profiles - DTE (data terminal equipment) terminal profiles are used with the advanced data application. There are 16 DTE terminal profiles available.

Sets per Hunt Group - The maximum number of telephones allowed in each hunt group is 64; however, with ACD 2000 hunt mode at MFRD 12 or higher, up to 150 telephones may be programmed in one hunt group.

Intercept Numbers - Intercept numbers (maximum of 32) are used to control what happens to a call when the call cannot be completed to the required destinations. A call may be routed to a tone or to a directory number. Two alternate destinations may be programmed for each condition.

Interconnect Numbers - Each peripheral device is assigned an interconnect number (maximum of 64) which is used to bar the connection of one device and another. The interconnect number is an index to the Interconnect Restriction Table that is programmed in CDE.

Multiline Set Status Message Languages - Advisory (status) messages can be programmed in different languages on multiline display telephones. The languages supported are English, French, Italian, German, European Spanish, Latin American Spanish, or Dutch. Only three languages can exist on the system at one time.

Multiline Set Status Messages per Language - Up to 20 advisory (status) messages in each of three languages can be programmed. Each advisory message may be up to 13 characters in length.

Node Identifiers - The node identifiers let each system operate as a tandem switch in a network to determine if an incoming call applies to it or to another system in the network. Up to 5 local node identifiers and 50 remote leading digits are permitted. Each node identifier is a number with 7 or fewer digits.

Sets per Pickup Group - A maximum of 75 users can be programmed in each pickup group.

Routes per Route List - There can be up to 6 routes in each route list.

Route Plans - Route plans provide a method of presenting different routes to calls as a function of day and time. There are 32 route plans. For additional information, see the Route Plan Assignment form in the Mitel Documentation CD-ROM.

Station Circuit Descriptors - Station circuit descriptors are used to assign the operational (signaling and timing) parameters to ONS and OPS circuits. They are not used for DNI circuits. There is a maximum of 16 station circuit descriptors available.

Supported MFRDs (no longer sold)

The following MFRDs are no longer sold, but are supported:

- MFRD-A-01
- MFRD-A-02
- MFRD-A-03
- MFRD-A-07
- MFRD-A-12
- MFRD-A-25
- MFRD-A-27.

Hardware Dimensions (no longer sold)

Parameter Name	MFRD Level						
	1	2	3	7	12	25	27
Attendant Consoles (Note 1)	4	8	8	16	24	24	32
DNI Channels (Note 2)	256	448	704	864	2368	1764	1504
DTRX Service (Data Transceiver Circuits)	24	24	24	24	48	48	48
Modems	6	8	12	20	40	10	40
Programmable Key Modules (PKMs)	10	15	25	30	75	65	50
SUPERSET 700 Consoles (Note 3)	8	8	8	16	16	16	16
System Ports (Note 4):							
- Datasets	48	64	96	112	400	100	208
- DTMF Receivers	64	128	128	128	128	160	128
- Multiline Sets	72	144	240	300	756	675	500
- Single Line Sets (ONS/OPS Lines)	192	352	752	1360	2504	2800	1000
- Trunks (Note 5)	112	144	204	312	628	628	1600
Tone Detector Circuits (Note 6)	32	32	32	32	32	32	32

Notes:

1. The difference between the maximum number of SUPERSET 700 consoles allowed and the total number of attendant consoles allowed may be made up with SUPERCONSOLE 1000 units without the printer port enabled.
2. A DNI line card provides 16 DNI circuits with 2 DNI channels per circuit. Given the total number of DNI channels, you can determine the maximum number of DNI line cards. For example, with MFRD 2, you can have 448 DNI channels or 14 DNI line cards (448 divided by 2 x 16).
3. The maximum number of SUPERSET 700 consoles that can be used in the system depends on the Main Controller card and MITEL Traffic Capacity Level (MTCL). For the purposes of hardware dimensions, a SUPERCONSOLE 1000 attendant console with its printer port enabled is treated as a SUPERSET 700 console.
4. Although the system dimensions permit support for these figures, each peripheral cabinet has a physical maximum of 192 ports and each DSU cabinet has a physical maximum of 240 (multiplexed) ports.
5. When you program a trunk card in the System Configuration form, the maximum number of trunks is allocated automatically. For example, 8 trunks will be allocated for the LS/GS card and 4 trunks will be allocated for the E&M card.
6. A Tone Detector card must be used to achieve the maximum 32 circuits. The 32 circuits on the Tone Detector card replace the 10 tone detection resources on the Main Controller card.

Feature Dimensions (no longer sold)

Parameter Name	MFRD Level						
	1	2	3	7	12	25	27
Attendant Console Groups	8	12	12	24	48	36	60
Attendant Console Calls Waiting		26	26	48	72	72	96
Broadcast Groups	180	360	600	750	1875	1688	500
Busy Lamp Groups (Monitored Devices)	37	71	135	184	438	449	150
Call Reroute Always	16	20	36	64	176	209	200
Call Reroute 1st Alternates	26	60	110	256	336	400	336
Call Reroute 2nd Alternates	16	16	16	16	32	38	32
Class of Restriction (COR) Numbers	64	64	64	64	96	96	96
Class Of Service (COS)	64	64	64	64	96	96	96
Dataset Groups	10	10	10	10	45	8	45
Default Account Codes	20	50	70	100	225	200	400
Departments (in Tel Dir)	50	50	50	50	700	700	700
Digit Modification Tables	256	256	256	256	256	256	256
Digit Blocks	600	600	600	600	2000	2000	2400
Digital Links (Note 1)	2	8	8	10	26	26	40
DTS Service Numbers	8	10	16	32	64	64	64
Group Page groups	2	4	8	12	16	16	8
Hunt Groups (Note 2)	14	20	36	64	176	99	150
Independent Account Codes	400	400	400	512	1000	1250	8000
Locations (in Tel Dir)	20	30	35	50	70	70	70
Modem Groups	4	4	6	10	15	10	15
Modems per Modem Group	6	8	12	20	40	40	40
Page Groups (Zones)		2	2	16	16	16	16
Personal Speed Call Users (Note 3) (blocks of 10 speed calls per user)	36	100	200	500	500	700	500
Pickup Groups	15	50	70	100	200	240	170
Routes	200	200	200	200	200	128	200
Route Lists	128	128	128	128	128	64	128
Speed Call Digit String (avg. 12 digits)	420	900	1000	2500	2500	3500	2500
SUPERSET Callback Messages per System (see Note 4)	48	96	160	200	500	200	500
System Account Codes	16	16	16	16	24	24	30

Feature Dimensions (no longer sold) (continued)

Parameter Name	MFRD Level						
	1	2	3	7	12	25	27
System Digit Strings (Note 5)	584	1049	2027	3306	6814	8091	30000
System Speed Call	100	150	250	500	600	500	600
Telephone Directory Entries	300	500	900	1360	3600	4600	20000
Trunk Groups	14	20	34	64	112	100	212
Trunks per Trunk Group	50	60	70	96	175	175	175
Trunk Service Numbers	18	40	50	64	150	150	312
Verified Account Codes		400	400	512	1000	1250	n/a
<p>Notes:</p> <ol style="list-style-type: none"> 1. When programming a digital trunk card, you must not exceed the number of trunks allowed and available within your MFRD level. Trunks are allocated as soon as a digital trunk card is added to the System Configuration form. For example, 48 trunks are allocated when a DS1 Formatter card is added and 60 trunks are allocated when a CEPT Formatter card is added. The Dimension and Feature Display form shows the number of allocated trunks. 2. With ACD 2000 Hunt Mode, up to 150 telephones may be programmed in one hunt group (at MFRD 12 or higher). A maximum of 64 of the available hunt groups can be programmed as ACD groups. For example, MFRD 24 allows 175 hunt groups, but only 64 of the available 175 hunt groups can be programmed as ACD groups. 3. The number of messages includes both callback messages and voice mail messages. 4. Each digit string pool entry can hold up to seven digits but can be used for only one SWID. Numbers larger than seven digits require more than one digit string pool entry (one for each seven digits). 							
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MSDN/DPNSS Network Resource Dimensions (MNRDs)

MSDN/DPNSS Network Resource Dimensions (MNRDs)		Prerequisites
MNRD-A-02	2 PBXs	MSA-A-41
MNRD-A-03	3 PBXs	MNRD-A-02
MNRD-A-04	4 PBXs	MNRD-A-03
MNRD-A-05	5 PBXs	MNRD-A-04
MNRD-A-10	6-10 PBXs	MNRD-A-05
MNRD-A-30	11-30 PBXs	MNRD-A-10
MNRD-A-60	31-60 PBXs	MNRD-A-30

Resource	MSDN/DPNSS Network Resource Dimensions (MNRDs)						
	2	3	4	5	10	30	60
PBXs in the cluster (Note 1)	2	3	4	5	10	30	60
Telephone Directory Records	3000	4500	6000	7500	12000	20000	30000
Remote Device Records	1500	3000	4500	6000	10500	18500	28500
System Dspool Records	3000	4500	6000	7500	12000	20000	30000
Additional Digit Tree Records (Note 2)	167	333	500	677	1167	2055	3167
Locations	150	200	250	250	250	250	250
Departments	700	750	800	850	1200	2000	2000
Notes:							
1. If the existing resource dimension for the cluster element is larger than the MSDN/DPNSS resource dimension listed, the existing dimension is allocated.							
2. The total number of digit tree records is the number of records allocated by the existing resource dimension plus the number of records for the specified MSDN/DPNSS resource dimension.							

MITEL Traffic Capacity Levels (MTCLs)

MITEL Traffic Capacity Level (MTCL)	
MTCL-A-05	100 simultaneous two-party connections
MTCL-A-10	180 simultaneous two-party connections
MTCL-A-15	230 simultaneous two-party connections
MTCL-A-20	640 simultaneous two-party connections
MTCL-A-30	760 simultaneous two-party connections
MTCL-A-31	640 simultaneous two-party connections
MTCL-A-32	860 simultaneous two-party connections

Resource	MITEL Traffic Capacity Levels (MTCL)							
	1	5	10	15	20	30	31	32
Call Processes (Note 1)	120	200	360	460	1280	1520	1280	1720
Callbacks per System	30	40	100	128	260	350	260	240
Device Campons per System	16	24	48	64	144	250	144	130
Group Campons per System	5	8	20	30	70	140	140	50
Hard Holds per System	30	40	100	128	260	350	260	240
Simultaneous two-party connections	60	100	180	230	640	760	640	860
Telephone Mode Processes (Note 2)	6	6	12	14	37	25	50	37
Wake-up Calls in 1 Minute	15	20	38	50	100	120	90	75
Wake-up Calls in 5 Minutes	60	80	152	200	400	480	360	300
Notes:								
1. A call process is equivalent to one party in a call. For example, in a call where two parties are talking and a third is on hold (consultation call), three call processes are involved; an eight-party conference consists of eight call processes.								
2. The following telephone keys (on SUPERSET 430, SUPERSET 4025, SUPERSET 4125, and SUPERSET 4150 telephones) are considered Mode Processes: SUPERKEY, Messaging softkey, Phonebook softkey, and Account Code softkey.								

Application Capacity Levels

The Application Capacity Levels determine the system's ability to support various software applications and features.

MHCL: MITEL HCI Capacity Level

MITEL HCI Capacity Level (MHCL)		Prerequisites
MHCL-A-1	1 HCI session and 100 call monitors	MSA-A-25 and MSA-A-26
MHCL-A-2	2 HCI sessions and 200 call monitors	MHCL-A-1
MHCL-A-3	3 HCI sessions and 300 call monitors	MHCL-A-2
MHCL-A-4	4 HCI sessions and 400 call monitors	MHCL-A-3
MHCL-A-5	5 HCI sessions and 500 call monitors	MHCL-A-4
MHCL-A-10	10 HCI sessions and 1000 call monitors	MHCL-A-5
MHCL-A-15	15 HCI sessions and 1500 call monitors	MHCL-A-10
MHCL-A-20	20 HCI sessions and 2000 call monitors	MHCL-A-15
Note: MHCLs 1 through 5 may be intermixed with all MACLs and MLCLs.		

MTSP: MITEL TAPI Service Provider

MITEL TAPI Service Provider		Prerequisites
MTSP-A-10	1 to 10 users	MSA-A-47
MTSP-A-20	11 to 20 users	MTSP-A-10
MTSP-A-40	21 to 40 users	MTSP-A-20
MTSP-A-60	41 to 60 users	MTSP-A-40
MTSP-A-80	61 to 80 users	MTSP-A-60

MACL: MITEL ACD Agent Capacity Level

MITEL ACD Agent Capacity Level (MACL)		Prerequisites
MACL-A-005	1 - 5 ACD agents	MSA-A-40
MACL-A-010	6 - 10 ACD agents	MACL-A-005
MACL-A-015	11 - 15 ACD agents	MACL-A-010
MACL-A-020	16 - 20 ACD agents	MACL-A-015
MACL-A-025	21 - 25 ACD agents	MACL-A-020
MACL-A-030	26 - 30 ACD agents	MACL-A-025
MACL-A-035	31-35 ACD agents	MACL-A-030
MACL-A-040	36-40 ACD agents	MACL-A-035
MACL-A-045	41-45 ACD agents	MACL-A-040

MITEL ACD Agent Capacity Level (MACL)		Prerequisites
MACL-A-050	46-50 ACD agents	MACL-A-045
MACL-A-060	51-60 ACD agents	MACL-A-050
MACL-A-070	61-70 ACD agents	MACL-A-060
MACL-A-080	71-80 ACD agents	MACL-A-070
MACL-A-090	81-90 ACD agents	MACL-A-080
MACL-A-100	91-100 ACD agents	MACL-A-090
MACL-A-150	101-150 ACD agents	MACL-A-100
MACL-A-200	151-200 ACD agents	MACL-A-150
MACL-A-350	201-350 ACD agents	MACL-A-200

Note: If you program agents as members of more than one ACD group the ACD agent resource level may determine the maximum number of agents that you can have. Each agent uses one resource. Each time an agent appears in another group it uses up another resource. For example, one agent in one ACD group uses one resource; one agent in two groups takes up two resources; one agent in three groups takes up three resources, and so forth.

MAIACL: MITEL Agent ID Appearance Capacity Level

MITEL Agent ID Appearance Capacity Level (MAIACL)		Prerequisites
MAIACL-A-02	2 agent appearances	MSA-A-40
MAIACL-A-04	4 agent appearances	MSB-A-07
MAIACL-A-08	8 agent appearances	MAIACL-A-04

MLCL: MITEL Maximum Line Appearances Capacity Level

MITEL maximum Line appearances Capacity Level (MLCL)	
MLCL-A-16	16 maximum line appearances
MLCL-A-20	20 maximum line appearances
MLCL-A-24	24 maximum line appearances
MLCL-A-28	28 maximum line appearances
MLCL-A-32	32 maximum line appearances

MITEL Software Applications (Optional Features)

MITEL Software Applications (MSAs) are optional feature packages that enhance system functionality. The following MSAs are currently available:

MITEL Software Applications (MSAs)

Number	Option Name	Prerequisites	Notes
MSA-A-01	COV Set		
MSA-A-02	Advanced ARS		
MSA-A-03	SMDR - External		
MSA-A-04	Advanced Data		
MSA-A-05	Message Center		
MSA-A-06	T1/D4		
MSA-A-07	Hotel/Motel		
MSA-A-08	Traffic Reporting		
MSA-A-09	Trunk Group Busy Status		
MSA-A-10	Attendant Language Selection		
MSA-A-11	Advanced Analog Networking		
MSA-A-12	Main Control Redundancy		
MSA-A-14	Digital Network Interface (DNI)		
MSA-A-15	MSDN/DPNSS Voice I		
MSA-A-16	MSDN/DPNSS Voice II	MSA-A-15 or MSA-A-31	
MSA-A-17	MSDN/DPNSS Voice III	MSA-A-15 or MSA-A-31	
MSA-A-18	MSDN/DPNSS Data	MSA-A-15 or MSA-A-31	
MSA-A-19	MSDN/DPNSS Public Network Access	MSA-A-15 or MSA-A-31	
MSA-A-20	ANSWER PLUS - MITEL Call Distribution (MCD)		
MSA-A-21	MSDN/DPNSS Voice IV	MSA-A-15 or MSA-A-31	
MSA-A-22	MSDN/DPNSS Redirection		
MSA-A-23	ANSWER PLUS - Automatic Attendant	MSA-A-20	
MSA-A-24	DASS II Voice I		EMEAAP only
MSA-A-25	HCI/CTI Basic Telephony Control		
MSA-A-26	HCI/CTI Advanced Telephony Control	MSA-A-25	

MITEL Software Applications (MSAs) (continued)

Number	Option Name	Prerequisites	Notes
MSA-A-27	ANSWER PLUS - Automatic Call Distribution (ACD) I	MSA-A-20	Superseded See MSA-A-40
MSA-A-28	MSDN Release Link Trunks	MSA-A-15 or MSA-A-31	
MSA-A-30	Visually Handicapped Operator Console (VHOC)		EMEAAP only
MSA-A-31	MSAN/APNSS		
MSA-A-32	MSDN/DPNSS Voice V	MSA-A-15 or MSA-A-31	
54002180	Multi-Level Precedence and Preemption (MLPP) Application		
MSA-A-34	SMDR - Internal		
MSA-A-35	Flexible Dimensioning	MFRD-A-07 or MFRD-A-16 (minimum)	
MSA-A-36	ANI/DNIS/ISDN Number Delivery		
MSA-A-37	MNMS/SNMP Fault Management I		For OPSMan alarms Management.
MSA-A-38	MNMS Configuration Management I		For OPSMan Directory Mgmt.
MSA-A-39	SUPERSET 700 Color		
MSA-A-40	ANSWER PLUS - Automatic Call Distribution II (ACD 2000)	MSA-A-20	
MSA-A-41	MSDN/DPNSS Voice VI	MSA-A-15 MNRD-A-02	For OPSMan Portable Directory Number Operation
MSA-A-42	MNMS Configuration Management III		For OPSMan Configuration Mgmt.
MSA-A-43	Networked ACD	MSA-A-41	
MSA-A-44	MNMS Database Access		For OPSMan Database Access
MSA-A-45	DSS/BLF	MSA-A-41 (for network version only)	Network DSS/BLF must be used with OPSMan
MSA-A-46	ACD 2000 Skill-Based Routing	MSB-A-07	
MSA-A-47	TAPI Support		
MSA-A-48	ACD 2000 Extended Agent Groups	MSA-A-40	
MSA-A-49	Emergency Services	Universal NSU or PRI card	Local Notification available in LIGHTWARE 30 Release 3.1

MITEL Software Applications (MSAs) (continued)

Number	Option Name	Prerequisites	Notes
MSA-A-50	Peripheral Node Expansion		Required when ordering the first Peripheral Expansion Node II in the system
MSA-A-51	XNET	Universal NSU or PRI Card	Does not work with Network Gateway
MSA-A-52	QSIG		Works with Universal NSU or PRI card. Enhanced portion needs ISDN R 7.0.
MSA-A-53	Voice Mail Softkeys		
MSA-A-54	ACD Real Time Events	MSA-40 or MSA-A-27	
MSA-A-61	CLASS/CLIP Station Side Software Support	ONS CLASS /CLIP line card	
MSA-A-62	Speak@Ease Integration		
9125-501-001-NA	PRI - Min/Max		
9125-501-002-NA	PRI - Auto Min/Max		
9125-501-003-NA	PRI - NFAS		
9125-501-004-NA	PRI - D-channel Backup		
9125-501-005-NA	PRI - Remote LAN Access		
54000094	Suite Services	MSA-A-07	
54000280	Feature Level 1 (Feature Level 1 content is part of the base software load from LIGHTWARE 31 Release 1.0.)		Includes: <ul style="list-style-type: none"> • Networked Group Page • Hold on Hold • Call Forward - Delay • ACD Make Busy Reason Codes • Telephone Usage Restriction (Curfew Control) • Call Duration Control
54000450	Feature Level 2 (Feature Level 2 content is part of the base software load from LIGHTWARE 32 Release 1.0.)		Includes: <ul style="list-style-type: none"> • DNIC RAD • Multiple Message Waiting Indications • Remote Wake-up Calls • Hotel/Motel Multiple Wake-up Support • SMDR Extended Reporting Level 1

MITEL Software Applications (MSAs) (continued)

Number	Option Name	Prerequisites	Notes
54000510	Feature Level 3 (Feature Level 3 content is part of the base software load from LIGHTWARE 32 Release 1.0.)		Includes: <ul style="list-style-type: none"> • Report Attendant Name • Simplified Account Codes • Maintain Calling Line ID • Dial out of an ACD Queue • Call Clearing on LS/GS Trunks • Interconnect Restriction Override • Headset Mute Switch • Emergency Call Notification on Display Sets • Hotel/Motel Multiple Wake-up Support on Consoles • SMDR Path Reporting for Internal ACD2 Calls • ACD Hold Retrieve/Abandon Event • Shared Telephone Service for a Single Suite Disabled • Account Code Reporting for Internal SMDR • Tag Call (malicious call trace)
54000691	Feature Level 4		<ul style="list-style-type: none"> • Disable Wake-up on Check-In • Hold Key Retrieves Last Held Call • Tenanting

MITEL Software Bundles (MSBs)

MITEL Software Bundles (MSBs) are groups of MSAs that are suited to specific markets and applications. Depending on your country and region, these packages vary. See your authorized MITEL representative for further details.

MITEL Core Packages (MCPs)

MITEL Core Packages (MCPs) determine the basic configuration of the system. Depending on your country and region, these packages vary. See your authorized MITEL representative for further details.