CHAPTER 1

Preparing for Configuration

This chapter introduces the MGX 8850 and the MGX 8950 multiservice switches and common switch topologies, provides an overview of the configuration process, and presents guidelines for collecting the information you will need to complete the configuration.

The MGX 8850 and MGX 8950 Switches

The MGX 8850 multiservice switch and the MGX 8950 multiservice switch provide support for the following features:

- Permanent Virtual Circuits (PVCs)
- Soft Permanent Virtual Paths (SPVPs)
- Soft Permanent Virtual Circuits (SPVCs)
- Switched Virtual Circuits (SVCs)

The MGX 8950 switch includes a cell bus to operate the combination of the PXM45 and the new XM60 card, which provides 240 Gbps as opposed to 45 Gbps on the PXM45 in the MGX 8850.

The following table identifies the capabilities supported in the Cisco MGX 8850 and 8950 switches.

Table 1-1 MGX 8850 vs. MGX 8950 Capabilities

Feature	MGX 8850	MGX 8950
Total Number of Slots	32 single height or 16 double height or combination.	32 single height or 16 double height or combination.
Slots for Processor Cards	2 double height.	2 double height.
Slots for Service Modules	24 single height or 12 double height or combination.	24 single height or 12 double height or combination.
Physical Attributes		
Height	29.75	29.75
Width	17.72	17.72
Depth	21.5	21.5

Table 1-1 MGX 8850 vs. MGX 8950 Capabilities (continued)

Feature	MGX 8850	MGX 8950
Services		
Local Switching	Yes	Yes
PNNI Routing	Yes	Yes
Feeder to BPX 8600	Yes	
Feeder to MGX 8850 PXM-45	Yes	Yes
Feeder to IGX	Yes	
Automatic Protection Switching (APS 1+1)	Yes	Yes
Switching Capacity	45 Gbps	240 Gbps
Trunk/Port Interfaces		
T1/E1	16/AXSM-E card	
T3/E3	16/card; AXSM, AXSM/B, or AXSM-E	16/AXSM/B card
OC-3c/STM-1	8/AXSM-E card 16/AXSM or AXSM/B card	16/AXSM/B card
OC-12c/STM-4	2/AXSM-E card 4/AXSM or AXSM/B card	4/AXSM/B card
OC-48c/STM-16	1/AXSM or AXSM/B card	1/AXSM/B card
Front Cards		
PXM45	Yes. Supports up to 99 interfaces.	No.
PXM45/B	Yes. Supports up to 192 interfaces. Up to 99 of these interfaces can be used for NNI trunks. The remaining interfaces are used for UNI trunks.	Yes. Supports up to 192 interfaces. Up to 99 of these interfaces can be used for NNI trunks. The remaining interfaces are used for UNI trunks.
AXSM	Yes.	No.
AXSM/B	Yes.	Yes.
AXSM-E	Yes.	No.
RPM-PR	Yes.	Yes.
XM-60	No	Yes.

Typical Topologies

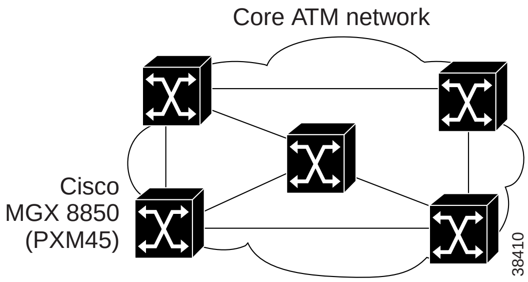
Release 2.1 of the MGX 8850 and MGX 8950 switches support the following topologies:

- Core switch
- Multiservice edge aggregation
- DSL edge aggregation

Core Switch

Figure 1-1 shows the switch operating in a core switch topology.

Figure 1-1 Core Switch Topology



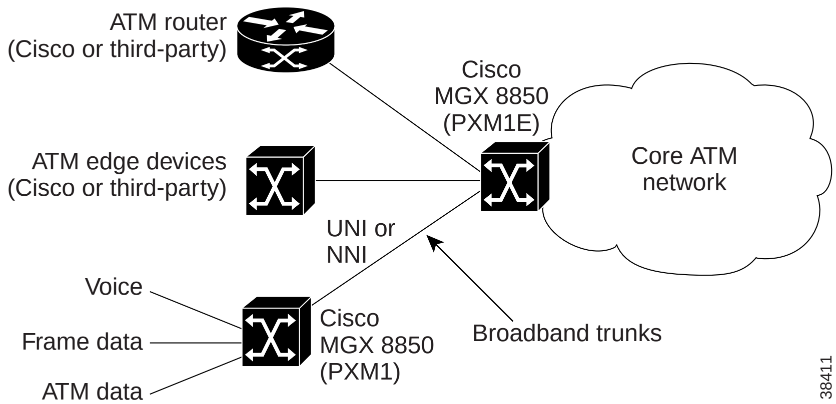
In the core switch topology, the switch works with other ATM switches to transfer broadband ATM traffic from one ATM edge device to another. The core acts like a freeway, and the edge devices act like freeway on-ramps.

The MGX 8850 and MGX 8950 switches support the following types of trunks: T1 and E1 (MGX 8850 only), DS3, E3, OC-3, OC-12, OC-48, STM-1, STM-4, and STM-16. Typically, core edge nodes communicate with multiple external nodes over relatively slow broadband trunks such as DS3, OC-3, and STM-1 trunks. The internal core node communicates with other core nodes using relatively fast links such as OC-12, OC-48, and STM-16 trunks.

Multiservice Edge Aggregation

Figure 1-2 shows the switch operating in a multiservice edge aggregation topology.

Figure 1-2 Multiservice Edge Aggregation Topology



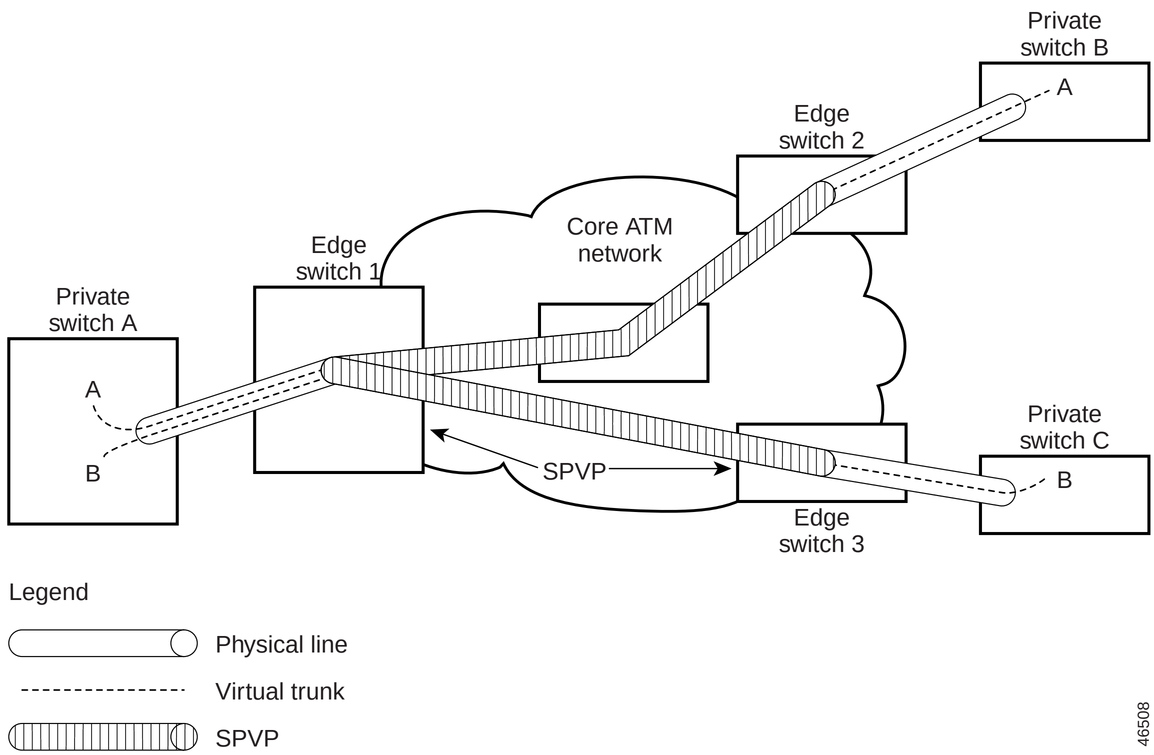
In the multiservice edge aggregation topology, the switch is colocated with other ATM equipment and communicates with one or more core switches at remote locations. The switch aggregates the traffic from local ATM devices, and packages it for high-speed communications over the core.

Typically, multiservice edge nodes communicate with colocated ATM devices over relatively slow broadband trunks such as DS3 and E3 trunks. The multiservice edge node communicates with core nodes using relatively fast links such as OC-12, OC-48, and STM-16 trunks.

The MGX 8850 Release 1 node shown in Figure 1-2 is called a feeder node. For instructions on configuring the MGX 8850 Release 2.1 switch to communicate with an MGX 8850 Release 1 feeder node, see Chapter 5, "Provisioning AXSM Communication Links."

MGX 8850 and MGX 8950 edge nodes also support virtual trunks as shown in Figure 1-3.

Figure 1-3 Virtual Trunk Topology



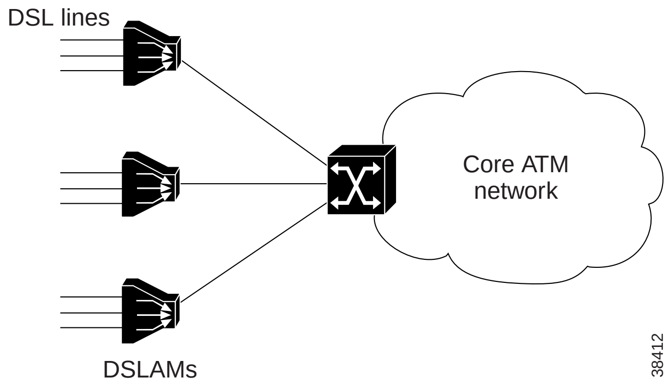
A virtual trunk provides a private virtual network path through an independent network such as a public ATM network. Using virtual trunks, Company A can establish a private virtual path between two sites using a public ATM network that supports this feature. From Company A's point of view, they have a private virtual path between the two sites that can support multiple virtual circuits (VCs). Company A's network topology is completely private, as all communications are simply passed between edge devices, with no need for translation or routing. To accomplish this, the virtual trunk supports the Service Specific Connection Oriented Protocol (SSCOP) (virtual channel identifier [VCI=5]), Private Network-to-Network Interface (PNNI) (VCI=18) and Integrated Local Management Interface (ILMI) (VCI=16) signaling protocols.

Figure 1-3 shows two virtual trunks, Virtual Trunk A and Virtual Trunk B. At Private Switch A, both virtual trunks use the same line to connect to the core ATM network. Within the core ATM network, Soft Virtual Permanent Paths (SPVPs) are defined to enable direct communications between the core edge nodes. The result is that Private Switch A has virtual trunks to Private Switches B and C and communicates with them as though they were directly connected.

DSL Aggregation

Figure 1-4 shows the switch operating in a Digital Subscriber Link (DSL) edge aggregation topology.

Figure 1-4 DSL Edge Aggregation Topology



In the DSL edge aggregation topology, the switch is colocated with Digital Subscriber Line Access Multiplexers (DSLAMs) and communicates with one or more core switches at remote locations. The switch aggregates the DSL traffic from multiple DSLAMs and packages it for high-speed communications over the core.

Typically, DSL edge nodes communicate with colocated DSLAMs over relatively slower broadband trunks such as DS3 and E3 trunks. The DSL edge node communicates with core nodes using relatively faster links such as OC-3, OC-12, and OC-48 trunks.

Routing Technologies

This release of the MGX 8850 and MGX 8950 switches supports both Private Network-to-Network Interface (PNNI) and Multiprotocol Label Switching (MPLS) routing. These protocols can be used simultaneously on the same switch and on the same link.

Configuration Tasks

Switch configuration is easier if you are familiar with the overall configuration process. To configure and start up the switch, you need to do some or all of the following:

- Configure general switch features
- Configure the physical connections to other devices
- Provision ATM connections to other devices
- Enable MPLS or PNNI call routing

This chapter describes how to collect or create the information you need to complete these tasks. These tasks are described in the following chapters:

Chapter 2, "Configuring General Switch Features," describes how to set up general switch features such as the date, the PNNI controller, and network management. You need to follow the procedures in this chapter to prepare your switch for general operation.

Chapter 3, "Preparing AXSM Cards and Lines for Communication," describes how to configure card and line redundancy, and how to bring up lines for physical layer communications.

Chapter 4, "Preparing RPM-PR Cards for Operation," describes how to initialize RPM cards and configure card redundancy to support of MPLS routing and communications.

Chapter 5, "Provisioning AXSM Communication Links," describes how to configure ATM communications on ATM Switching Service Module (AXSM) lines and how to configure different types of connections to other ATM devices.

For instructions on configuring different ways to manage the MGX 8850 and MGX 8950 switches, see Appendix C, "Supporting and Using Additional CLI Access Options."

Collecting Information

To successfully configure the MGX 8850 and MGX 8950 switches, you must collect information about the other devices to which it will connect. Also, you need to know the line speeds and protocols used on the trunks that connect to the switch. For PNNI routing, you also need to have an addressing plan for the network in which the switch is installed. This information can be grouped into the following categories:

- General configuration data
- Edge device and ATM device trunk data
- Core node trunk data

The following sections introduce these types of data and provide guidelines for collecting the data.

General Configuration Data

During configuration, you will need to enter general configuration data that describes the switch and how it will be used in the network. This data includes

- Unique switch name
- ATM addressing plan
- IP addressing plan
- Administrator data
- Network clock source plan
- Network management plan
- Line and trunk data

The following sections describe these topics in more detail.

Unique Switch Name

Each switch must have its own name (which consists of up to 32 characters), unique within the ATM network. If you are adding a switch to a network, find out if the network administrator has established switch naming conventions, and find out which names have already been used. It is a good practice to name switches according to location, as such names convey both the switch identity and its location. The procedure for setting the name is described in "Setting and Viewing the Switch Name" in Chapter 2, "Configuring General Switch Features."

ATM Addressing Plan

An ATM network addressing plan is critical for successful operation of the MGX 8850 and MGX 8950 switches in an ATM network. Both MPLS and PNNI networks require unique ATM addresses on each switch. However, the PNNI protocol uses structured network addresses to logically group network devices and determine routes between devices. For PNNI networks, an ATM address plan is required.

PNNI network addressing is described in the *Cisco MGX and SES PNNI Network Planning Guide*.

IP Addressing Plan

An IP network addressing plan is required for switch management. IP network addressing is described in "Guidelines for Creating an IP Address Plan," later in this chapter.

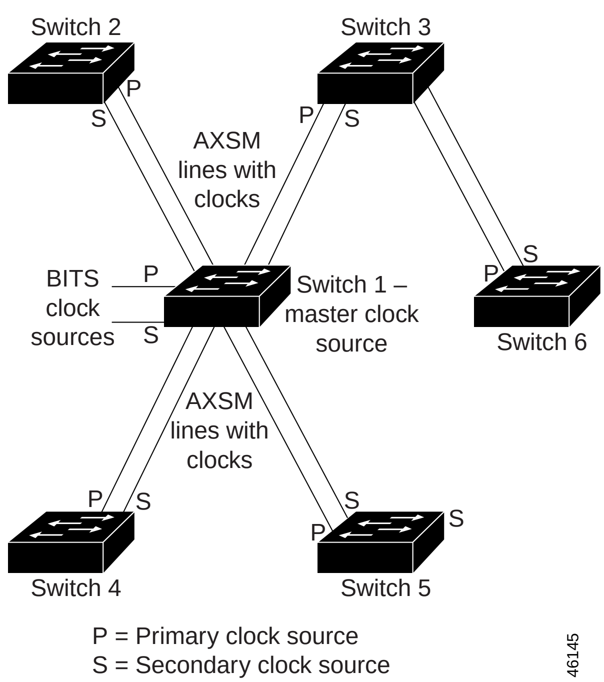
Administrator Data

In most cases, more than one administrator will manage the switch. The MGX 8850 and MGX 8950 switches support multiple administrators and several different administration levels. As part of the planning process, you might want to identify who will be managing the switch and at what level. You can learn more about managing administrators by reading "Configuring User Access" in Chapter 2, "Configuring General Switch Features."

Network Clock Source Plan

Clock synchronization in an ATM network is very important. If two switches have trouble synchronizing their communications, traffic between the switches may slow down or stop. Figure 1-5 shows an example network clock source topology.

Figure 1-5 Example Network Clock Source Topology with a Single Master Clock Source

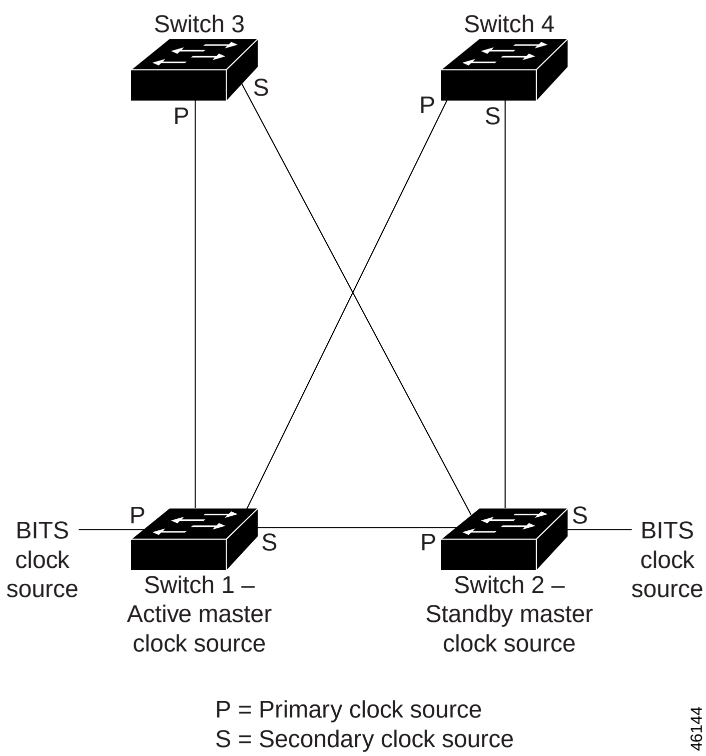


In Figure 1-5, Switch 1 provides the master network clock source to the rest of the network and uses highly accurate external Building Integrated Timing System (BITS) clock sources to time its transmissions. These BITS clock sources are T1 or E1 lines with stratum 1, 2, or 3 clock signals. Switch 1 uses one BITS line as the primary clock source and uses the secondary BITS source only if a failure occurs on the primary BITS line. If the primary BITS line fails and recovers, the switch reverts to the primary clock source.

Switches 2 through 5 synchronize their transmissions to Switch 1 with the master clock signal, which they receive over AXSM lines. Switch 6 synchronizes its communications using the master clock source, which is forwarded from Switch 3. In this topology, all switches synchronize to the same clock source, and this configuration reduces the possibility that two switches might not be able to synchronize communications.

Figure 1-6 shows an example network clock source topology that uses two master clock sources.

Figure 1-6 Example Network Clock Source Topology with Two Master Clock Sources



In Figure 1-6, Switches 1 and 2 both use BITS clock sources. Switch 1 operates as the master and distributes its BITS clock source over AXSM lines to Switches 2 through 4. Switch 2 is the standby master and receives its primary clock signal over the AXSM line from Switch 1. As long Switch 1 and its primary BITS clock source are operating correctly, the entire network is synchronized to the BITS clock source from Switch 1.

In this example, the secondary clock source for Switch 2 is its BITS clock source, and all other switches are configured to use the AXSM lines from Switch 2 as their secondary clock source. If Switch 1 or its BITS clock source fails, all the switches, including Switch 1, start using the clock signals from Switch 2 for network communications. This configuration preserves network sychronization when either a clock source or a switch fails.

To develop a network clock source plan, create a topology drawing and identify which switches serve as active and standby master clock sources. For each switch that receives clock sources from other switches, indicate which lines carry the primary and secondary clock signals.

When creating your network clock source plan, consider the following:

- Master clock sources that are located near the center of the network minimize clock signal propagation delay.
- BITS clock interfaces receive stratum 3 or higher clock signals.
- Multiple master clock sources provide fault tolerance.
- If both primary and secondary external clock sources fail, the switch uses an internal stratum 3 clock.
- When using an external clock source and redundant PXM45 cards, use a Y-cable to connect that clock source to the same clock port on both PXM45 cards. Do not run separate external clock sources to each card, as this can produce timing problems.
- If the switch is using its own internal stratum 3 clock and a primary or secondary clock source recovers, the switch will use the recovered clock source.
- If no primary or secondary clock sources are configured, the switch uses the internal stratum 3 clock.
- Primary and secondary BITS clocks can be configured after the switch is initialized. For more information, see "Configuring BITS Clock Sources" in Chapter 2, "Configuring General Switch Features."
- Primary and secondary AXSM clocks must be configured after the AXSM cards and lines are configured. For more information, see "Configuring AXSM Line Clock Sources" in Chapter 5, "Provisioning AXSM Communication Links."

Network Management Plan

You can use the following tools to manage the Cisco MGX 8850 and MGX 8950 switches:

- Command line interface (CLI) provided with the switch
- Cisco WAN Manager
- Cisco View
- Third-party SNMP manager

The CLI that comes with the switch is the least expensive option. To use the other tools, you must purchase Cisco WAN Manager (CWM) or a Simple Network Management Protocol (SNMP) manager. The MGX 8850 and MGX 8950 switches come with an SNMP agent for use with an SNMP manager.

The advantage to using CWM or an SNMP manager is that you can use one program to simultaneously manage multiple devices. Also, CWM is the only management tool that can configure Service Class Templates (SCTs), which are described in Chapter 5, "Provisioning AXSM Communication Links." Most installations require at least one CWM workstation to complete the switch configuration.

Cisco View is a CWM component that can be used independently of CWM to provide limited monitoring and management capabilities.

To determine which versions of CWM and Cisco View are compatible with this release, refer to the *Release Notes for Cisco MGX 8850 Software Version 2.1.60* or the *Release Notes for Cisco MGX 8950 Software Version 2.1.60*.

For information on managing the switch with an SNMP manager, refer to the following: *Cisco MGX 8850 and MGX 8950 SNMP Reference, Release 2.1*.

Line and Trunk Data

When configuring lines and trunks that connect the switch to other devices, you need to collect the following:

- Physical line type and configuration data
- ATM port configuration data

The MGX 8850 and MGX 8950 switches support many of the most common ATM configuration parameters. To successfully configure lines and trunks, be sure that the configuration settings used on the switch match the configuration settings used at the other end of the line or trunk. In some cases, options you want to use at one end of the trunk are not supported at the other end. In these situations, change your configuration plan to use settings that are supported at both ends.

Chapter 3, "Preparing AXSM Cards and Lines for Communication," describes how to configure physical layer line communications. Chapter 5, "Provisioning AXSM Communication Links," describes how to configure ATM ports.

Planning for Card and Line Redundancy

Card redundancy is a feature that associates two cards, so that if one card fails, the other card assumes operation. Processor Switch Module 45 (PXM45) card redundancy is preconfigured on the MGX 8850 and MGX 8950 switches for PXM45 and PXM45/B cards. If PXM45 cards and their associated back cards are inserted in slots 7 and 8, they will automatically operate as redundant cards. One card assumes the active role, and the other card operates in standby mode.

Note Throughout this guide, the term PXM45 is used to refer to both the PXM45 and PXM45/B cards. The PXM45 has 128 MB of memory and can scale to 40K connections. The PXM45/B has 256 MB of memory and will support more than 40K connections in future software releases.

AXSM cards and their associated lines can be configured for either standalone or redundant operation. Because a configuration change interrupts service and can require substantial configuration teardown, it is important to develop a redundancy plan early. The redundancy plan determines how AXSM cards must be installed in the chassis, and how lines must connect to the cards. Once the hardware is installed, the software configuration team uses the redundancy plan to configure the switch. The software configuration must match the hardware configuration.

RPM-PR cards can operate in 1:n redundancy mode, which means that one standby RPM-PR card can serve as a backup card for multiple active RPM-PR cards.

The MGX 8850 and MGX 8950 switches support the following card and line redundancy options:

- Standalone AXSM, redundant lines
- Redundant AXSM cards, standalone line
- Redundant AXSM cards, redundant lines
- Redundant RPM-PR cards

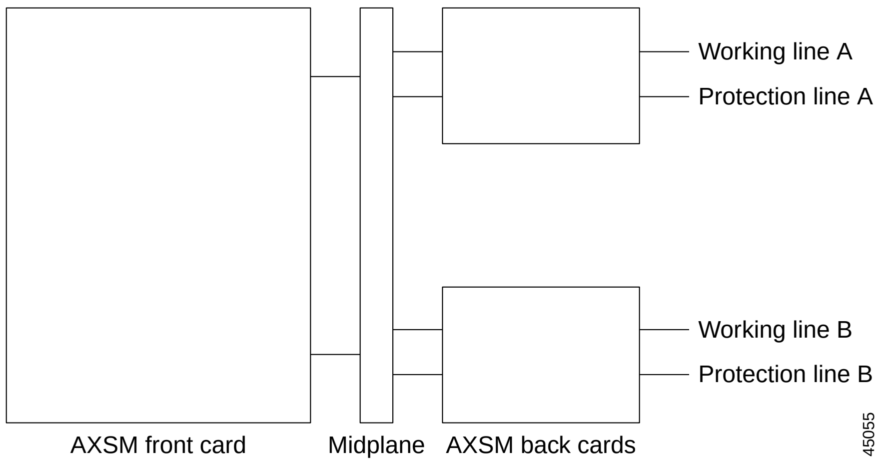
The following sections provide planning guidelines for these configurations.

Planning Standalone AXSM Configurations with Redundant Lines

AXSM cards can operate in either standalone or redundant mode. Standalone mode is the default mode, and standalone cards can be configured for either standalone line operation or Automatic Protection Switching (APS) line operation, which uses redundant lines for fault tolerance. If a standalone AXSM card fails, all calls are lost and the associated lines go out of service. However, if the AXSM card is configured to support redundant lines, a failure on the working line causes a switchover to the protected line, and operation continues.

Figure 1-7 shows how a single AXSM card connects to redundant lines.

Figure 1-7 Standalone AXSM Configuration with Redundant Lines



The redundant lines shown in Figure 1-7 are labeled the working line and the protection line, as defined in the SONET specification for APS. The working line is the primary communications line, and the protection line takes over if the working line fails. If the protection line is being used for traffic and fails, the working line takes over.

Two types of APS communications are supported: 1+1 and 1:1. The 1+1 communications type transmits data on both the working line and the protection line. The 1:1 communications type transmits data on either the working line or the protection line.

Notice that both the working line and the protection line connect to the same back card in Figure 1-7. This configuration is also known as an intracard APS configuration. When planning an intracard APS configuration, consider the following:

- The working line and the protection line must connect to adjacent ports on the same back card.
- The working line must be assigned to an odd-numbered port. For example, the working line could be on port 1 and the protection line on port 2.
- The working line must be assigned to a lower numbered port than the protection line. For example, the working line could be on port 3 and the protection line on port 4. If the protection line is on port 2, do not assign the working line to port 3.
- Because the AXSM-1-2488 has only one OC-48 port on its back card, this card cannot be configured for intracard APS operation (although it can be configured for intercard APS, which is described later in this chapter).
- The switches at both ends of the APS lines must be configured for APS, and the role of each line (working or protection) must be the same at both ends of the line.

Planning Redundant AXSM Configurations with Standalone Lines

In a redundant AXSM configuration, matched sets of front and back cards are installed in the switch, and redundancy is established during software configuration. In a redundant AXSM configuration, a failure on the active AXSM front card causes a switchover to the standby AXSM card set, and no calls are lost.

Note This configuration provides fault tolerance for the AXSM front card only. This configuration does not provide fault tolerance for back cards or lines. If you need such a level of protection, use the redundant AXSM configuration with redundant lines.

Figure 1-8 shows how a redundant AXSM cards connect to standalone lines.

Figure 1-8 Redundant AXSM Configuration with Standalone Lines

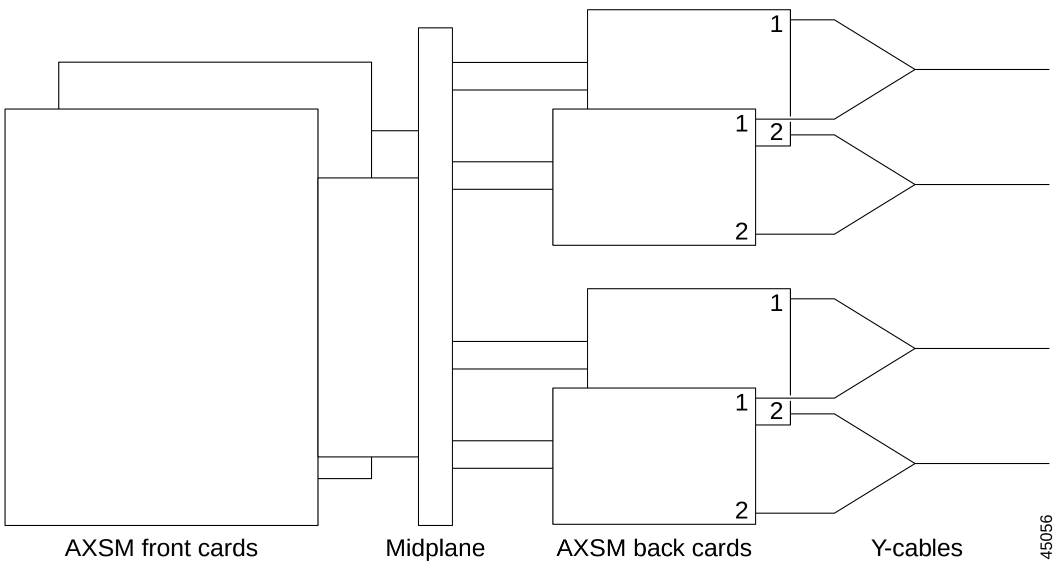


Figure 1-8 shows two complete sets of AXSM cards. Each port in an active card slot is connected to the corresponding port in the standby card slot through a Y-cable, which joins the two ports to a common line. If the front card in the active card set fails, the standby card set becomes active and continues to support calls over the shared communication line.

When planning a redundant AXSM configuration with a standalone line, consider the following:

- The redundant AXSM cards can be placed in any available slots; they do not have to be installed in adjacent slots, although doing so makes the cabling easier.
- The AXSM card sets must be identical. You cannot pair nonmatching cards, such as an AXSM T3/E3 card, with an AXSM OC-3 card.
- The switch ends of each Y-cable must connect to corresponding ports. For example, the cable connected to line 2 on the active lower bay back card must also connect to line 2 on the standby lower bay back card.
- Optical Y-cables must use single-mode fiber (SMF) cable, not multimode fiber (MMF).
- The remote end of the standalone line can connect to a standalone AXSM card or a redundant AXSM card set with a standalone line. (It cannot connect to an AXSM APS port.)

Planning Redundant AXSM Configurations with Redundant Lines

Maximum fault tolerance is achieved when redundant AXSM cards are used with redundant APS lines. In this configuration, fault tolerance is provided for the front card and for the combination of the back card and the communication line. If the active line or the back card to which it is connected fails, communications traffic is rerouted through the backup line and the back card to which it is connected.

Figure 1-9 shows how a redundant AXSM card connects to redundant APS lines.

Figure 1-9 Redundant AXSM Configuration with Redundant Lines

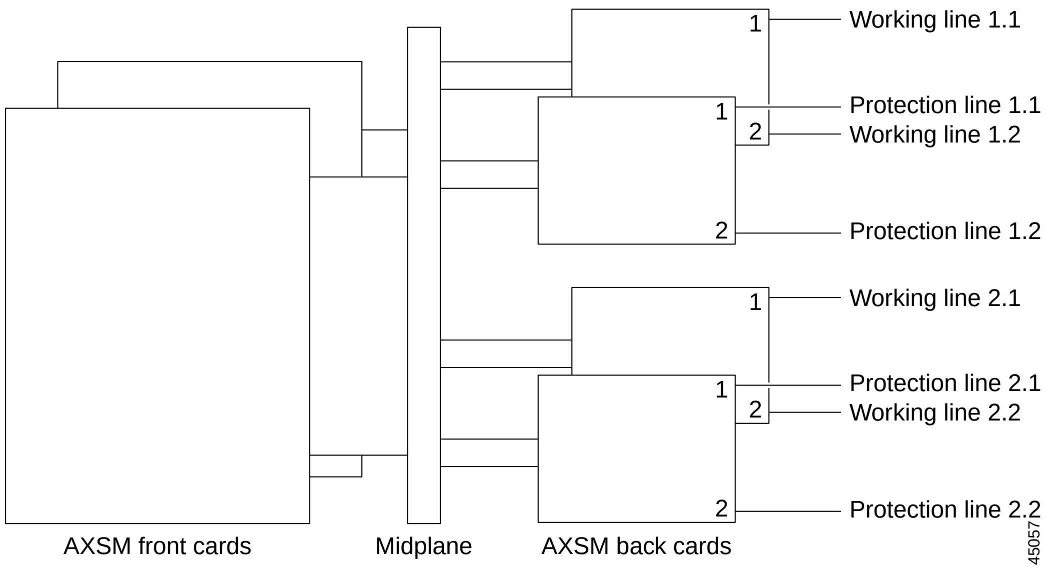


Figure 1-9 shows two complete sets of AXSM cards. Each port in each card slot connects to an independent line. If the front card in the active card set fails, the standby card set becomes active and continues to support calls over the shared communication line. If the working line fails, communications are rerouted through the protection line for that port.

When planning a redundant AXSM configuration with a redundant lines, consider the following:

- The redundant AXSM cards must be placed in adjacent slots. They can be installed in slots 1 though 6 and slots 9 through 14.
- The AXSM card sets must be identical. You cannot pair unmatching cards such as an AXSM T3/E3 card an AXSM OC-3 card.
- The redundant back cards must be joined together with the APS mini-backplane.
- The switches at both ends of the APS lines must be configured for APS, and the role of each line (working or protection) must be the same at both ends of the line.
- The working line must be defined on the primary card.
- The protection line can be defined on the same back card or on a different back card. Using a different back card provides greater fault tolerance.

Configuration Worksheets

Table 1-2 lists general switch parameters you will need to configure in each new switch.

Table 1-2 General Switch Configuration Parameters

Feature	Parameter Information	Value to Configure
PXM45 runtime software version number	Text	
Node name	Text	
Time zone	Enter a zone	
Time zone offset	Hours to offset	
PNNI controller	Controller ID	2
	Controller type	2 (PNNI)
	Controller name	
MPLS controller	Controller ID	3
	Controller type	3 (LSC)
	Controller name	
PNNI level and lowest peer group ID	Refer to the *Cisco MGX and SES PNNI Network Planning Guide*.	
PNNI node address	Refer to the *Cisco MGX and SES PNNI Network Planning Guide*.	
SPVC prefix	Refer to the *Cisco MGX and SES PNNI Network Planning Guide*.	
IP Addresses	Boot IP	
	Boot IP network mask	
	LAN IP	
	LAN IP network mask	
	ATM IP	
	ATM IP network mask	
	SLIP IP	
	SLIP IP network mask	
SNMP	Community	
	Contact	
	Location	

Table 1-3 lists general switch parameters you will need to configure on each AXSM card.

Table 1-3 General AXSM Card Configuration Parameters

Feature	Parameter Information	Value to Configure
Slot for this AXSM	Slot number	
AXSM runtime software version number	Text	
Redundant slot	Slot number	
Card SCT	SCT number	
Line 1 APS	Working index	
	Protection index	
	Mode	
Line 2 APS	Working index	
	Protection index	
	Mode	
Line 3 APS	Working index	
	Protection index	
	Mode	
Line 4 APS	Working index	
	Protection index	
	Mode	
Line 5 APS	Working index	
	Protection index	
	Mode	
Line 6 APS	Working index	
	Protection index	
	Mode	
Line 7 APS	Working index	
	Protection index	
	Mode	
Line 8 APS	Working index	
	Protection index	
	Mode	
Line 9 APS	Working index	
	Protection index	
	Mode	

Table 1-3 General AXSM Card Configuration Parameters (continued)

Feature	Parameter Information	Value to Configure
Line 10 APS	Working index	
	Protection index	
	Mode	
Line 11 APS	Working index	
	Protection index	
	Mode	
Line 12 APS	Working index	
	Protection index	
	Mode	
Line 13 APS	Working index	
	Protection index	
	Mode	
Line 14 APS	Working index	
	Protection index	
	Mode	
Line 15 APS	Working index	
	Protection index	
	Mode	
Line 16 APS	Working index	
	Protection index	
	Mode	

Guidelines for Creating an IP Address Plan

The switch provides the following interfaces for CLI, SNMP, and CWM access:

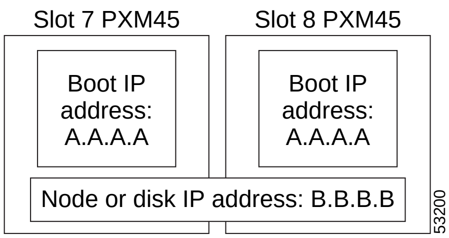
- Console Port (CP)
- Maintenance Port (MP)
- LAN 1 port
- ATM interface

Basic switch configuration and management can be completed by using a local terminal connected to the console port. However, to configure and manage the switch from a LAN connection, a modem connection, or with CWM, you need define an IP address for the appropriate interface.

Note This section discusses remote connectivity through the PXM45 LAN port. For information on using terminal servers, modems and CWM to access the switch, refer to Appendix C, "Supporting and Using Additional CLI Access Options."

A typical switch configuration requires either one or two IP addresses for LAN access. When the switch hosts a single PXM45 card, use just one IP address and assign it to both the boot and LAN IP address options (more on this later in this section). When the switch uses two PXM45 cards, you can choose to use one or two IP addresses. Figure 1-10 shows a redundant PXM45 configuration that uses two IP addresses.

Figure 1-10 Using Multiple IP Addresses for Switch Access



The configuration shown in Figure 1-10 provides the following benefits:

- Direct access to the active PXM45 using address B.B.B.B.
- Direct access to the standby PXM45 card using address A.A.A.A.
- The boot code on the standby PXM45 card can be upgraded without interrupting service on the active PXM45 card.
- You can perform additional procedures in backup boot mode on the standby card without interrupting the active card. These procedures include hard disk formats and file transfers.

When different IP addresses are used for the boot and LAN IP addresses, you can manage the active PXM45 card and the switch using the LAN or disk IP address, which is B.B.B.B in Figure 1-10. You can also access the standby PXM45 card using the boot IP address. When the same address is used for both the boot and LAN IP addresses, that address can be used only to manage the active PXM45 card.

Note MGX 8850 software releases prior to Release 2.0(12) supported unique addresses for the boot IP addresses on the PXM45 cards in slots 7 and 8. This approach required three unique addresses per switch. Beginning with Release 2.0(12), the boot IP addresses for both slots 7 and 8 must be set to the same IP address.

When planning IP addresses for your switch, use the following guidelines:

- If the switch has one PXM45 card, set the boot and LAN IP addresses to the same address.
- If the switch has two PXM45 cards and you want to minimize the number of IP addresses used, set both boot IP addresses and the LAN IP address to the same address.
- If the switch has two PXM45 cards and you want to maximize your control options from remote locations, assign the same boot IP address to each PXM45 card, and assign a different IP address to the LAN IP address.
- Be sure to define the default gateway IP address when defining the boot IP addresses.
- To minimize router configuration, choose boot, LAN, and default gateway IP addresses that are all on the same subnet.

For instructions on setting boot and LAN IP addresses, refer to "Setting the LAN IP Addresses" in Chapter 2, "Configuring General Switch Features."