

X **PEDITION 8000/8600**

Getting Started Guide

Revision Date: 11.27.2002

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Printed in the United States of America

Order Number: 9032552-16 November 2002

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Conformance to Directive(s)/Product Standards: **EC Directive 89/336/EEC**
EC Directive 73/23/EEC
EN 55022
EN 55024
EN 60950
EN 60825

Equipment Type/Environment: **Networking Equipment, for use in a Commercial**
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Enterasys Networks, Inc. declares that the equipment packaged with this notice conforms to the above directives.

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About this Guide

This guide provides a general overview of the 8-slot and 16-slot Enterasys Networks X-Pedition 8000 and X-Pedition 8600 hardware and software features. It provides procedures for installing the X-Pedition 8000 and X-Pedition 8600. For product information not available in this guide, see the manuals listed in *Related Documentation* [on page xii](#).

What's New

Changes to this manual include the addition of new and extended capabilities for the following:

Line Cards [on page 20](#)

Control Modules [on page 14](#)

External Controls [on page 15](#)

Installing the Hardware [on page 55](#)

Software Installation and Setup [on page 83](#)

Installing a PCMCIA Flash Card [on page 84](#)

Troubleshooting [on page 101](#)

Who should Read this Guide?

Read this guide if you are a network administrator responsible for installing and setting up the X-Pedition 8000 or X-Pedition 8600.



ELECTRICAL HAZARD: Only qualified personnel should perform the installation procedures in this guide.

How to Use this Guide

If you want to...	See...
Get an overview of the X-Pedition 8000 and X-Pedition 8600 software and hardware features	Chapter 1, <i>Features Overview</i>
Install the X-Pedition 8000 or X-Pedition 8600 hardware	Chapter 2, <i>Hardware Installation</i>
Install the X-Pedition 8000 or X-Pedition 8600 software, boot the software, and set up the unit	Chapter 3, <i>Software Installation and Setup</i>
Troubleshoot installation problems	Appendix A, <i>Troubleshooting</i>
Cabling and LED information	Appendix B, <i>Hardware Components</i>
Contact Enterasys Networks Technical Support	Appendix C, <i>Technical Support</i>

Related Documentation

The Enterasys Networks X-Pedition 8000/8600 documentation set includes the following items. Refer to these other documents to learn more about your product.

For Information About...	See the...
How to use Command Line Interface (CLI) commands to configure and manage the X-Pedition 8000 or X-Pedition 8600	Enterasys X-Pedition User Reference
The complete syntax for all CLI commands	Enterasys X-Pedition Command Line Interface Reference Manual
System messages	Enterasys X-Pedition Error Reference Manual

Chapter 1

Features Overview

The 8-slot and 16-slot Enterasys Networks X-Pedition 8000 and X-Pedition 8600 provide non-blocking, wire-speed Layer-2 (switching), Layer-3 (routing) and Layer-4 (application) switching. This chapter provides a basic overview of the X-Pedition 8000 and X-Pedition 8600 software and hardware feature set.

- If you want to skip this information and install the X-Pedition now, see [Chapter 2, Hardware Installation](#).
- If you want to boot the X-Pedition software and perform basic configuration tasks now, see [Chapter 3, Software Installation and Setup](#).

Specifications

The X-Pedition provides wire-speed switching and full non-blocking throughput. The hardware provides wire-speed performance regardless of the performance monitoring, filtering, and Quality of Service (QoS) features enabled by the software. You do not need to accept performance compromises to run QoS or access control lists (ACLs).

The following table lists the basic hardware and software specifications for the X-Pedition.

Feature	Specification
Throughput	<ul style="list-style-type: none"> • 16-Gbps non-blocking switching fabric (X-Pedition 8000) • 32-Gbps non-blocking switching fabric (X-Pedition 8600) • Up to 30 million packets-per-second routing throughput (X-Pedition 8600) • Up to 15 million packets-per-second routing throughput (X-Pedition 8000)
Capacity	<ul style="list-style-type: none"> • Up to 250,000 routes • Up to 2,000,000 Layer-4 application flows (X-Pedition 8000) • Up to 4,000,000 Layer-4 application flows (X-Pedition 8600) • 400,000 Layer-2 MAC addresses (X-Pedition 8000) • 800,000 Layer-2 MAC addresses (X-Pedition 8600) • 4,096 Virtual LANs (VLANs) • 20,000 Layer-2 security and access-control filters • Up to 16 MB input/output buffering per Gigabit port • 1 MB input/output buffering per 10/100 port • 20 MB shared input/output buffering across WAN ports on a WAN module • 32 MB input/output buffering per Packet Over SONET/SDH OC-3c port • 64 MB input/output buffering per Packet Over SONET/SDH OC-12c port
Routing protocols	<ul style="list-style-type: none"> • IP: RIP v1/v2, OSPF, BGP 2, 3, 4 • IPX: RIP, SAP • Multicast: IGMP, DVMRP, PIM-SM • AppleTalk
Bridging and VLAN protocols	<ul style="list-style-type: none"> • 802.1d Spanning Tree • 802.1Q (VLAN trunking)
Media interface protocols	<ul style="list-style-type: none"> • 802.3 (100BASE-T) • 802.3u (100BASE-TX, 100BASE-FX) • 802.3x (1000BASE-SX, 1000BASE-LX) • 802.3z (1000BASE-SX, 1000BASE-LX) • 802.3ab (1000BASE-T)
Quality of Service (QoS)	<ul style="list-style-type: none"> • Layer-2 prioritization (802.1p) • Layer-3 source-destination flows • Layer-4 source-destination flows • Layer-4 application flows
RMON	<ul style="list-style-type: none"> • RMON v1/v2 for each port
Management	<ul style="list-style-type: none"> • SNMP (v1, v2C, v3) • Emacs-like Command Line Interface (CLI)

Feature	Specification
Port mirroring	<ul style="list-style-type: none"> Traffic to the control module Traffic from specific ports Traffic to specific chassis slots (line cards)
Hot swapping	<ul style="list-style-type: none"> Line cards Control module (when redundant control module is installed and online) Switching Fabric Modules (X-Pedition 8600 only—when redundant switch fabric is installed and online) Power Supply (when redundant supply is installed and online)
Load balancing/ sharing	<ul style="list-style-type: none"> Enterasys SmartTRUNK support Load Sharing Network Address Translation (LSNAT)
Redundancy	<ul style="list-style-type: none"> Redundant and hot-swappable power supplies Redundant and hot-swappable control modules Redundant and hot-swappable Switching Fabric Modules (X-Pedition 8600 only) Virtual Router Redundancy Protocol (VRRP)

This guide and other X-Pedition documentation refers to the X-Pedition's Layer-2 (L2), Layer-3 (L3), and Layer-4 (L4) switching and routing. These layers are based on the International Standards Organization (ISO) 7-layer reference model. Here is an example of that model. The X-Pedition operates within the layers that are not shaded. Notice that Layer 2 is divided into an LLC layer and a MAC layer. The X-Pedition operates at the MAC layer but not the LLC layer.

Layer 7	Application
Layer 6	Presentation
Layer 5	Session
Layer 4	TCP/UDP - application
Layer 3	IP/IPX - routing
Layer 2	LLC
Layer 2	MAC - bridging
Layer 1	Physical Interfaces

TCP/UDP Services

The following table lists some well-known TCP/UDP services provided by the X-Pedition.

TCP Port	UDP Port	Description
23		Telnet
	161	SNMP
	67	BOOTP/DHCP Relay Agent
	520	Routed

Features

This section describes the following X-Pedition features:

- Address-based and flow-based bridging
- Port-based VLANs and protocol-based VLANs
- IP and IPX routing
- Layer-4 (application) switching
- Security
- Quality of Service (QoS)
- Statistics
- Management

Bridging

The X-Pedition provides the following types of wire-speed bridging:

- Address-based bridging – The X-Pedition performs this type of bridging by looking up the destination address in an L2 lookup table on the line card that receives the bridge packet from the network. The L2 lookup table indicates the exit port(s) for the bridged packet. If the packet is addressed to the X-Pedition's own MAC address, the packet is routed rather than bridged.
- Flow-based bridging – The X-Pedition performs this type of bridging by looking up an entry in the L2 lookup table containing both the source and destination addresses of the bridge packet.

Your choice of bridging method does not affect X-Pedition performance. However, address-based bridging is more efficient because it requires fewer table entries while flow-based bridging provides tighter management and control over bridged traffic.

The X-Pedition ports perform address-based bridging by default but can be configured to perform flow-based bridging, instead of address-based bridging, on a per-port basis. A port cannot be configured to perform both types of bridging at the same time.

Port and Protocol VLANs

The X-Pedition supports the following types of Virtual LANs (VLANs):

- **Port-based VLANs** – A port-based VLAN is a set of ports that comprises a Layer-2 broadcast domain. The X-Pedition confines MAC-layer broadcasts to the ports in the VLAN on which the broadcast originates. X-Pedition ports outside the VLAN do not receive the broadcast.
- **Protocol-based VLANs** – A protocol-based VLAN is a named set of ports that comprises an IP or IPX broadcast domain. The X-Pedition confines IP or IPX broadcasts to the ports within the IP or IPX based VLAN. Protocol-based VLANs sometimes are called subnet VLANs or Layer-3 VLANs.

You can include the same port in more than one VLAN, even in both port-based and protocol-based VLANs. Moreover, you can define VLANs that span across multiple X-Peditions. To simplify VLAN administration, the X-Pedition supports 802.1Q trunk ports, which allow you to use a single port to “trunk” traffic from multiple VLANs to another X-Pedition or switch which supports 802.1Q.

Routing

The X-Pedition provides wire-speed routing for the following protocols:

- **Internet Protocol (IP)** – protocol that switching and routing devices use for moving traffic within the Internet and within many corporate intranets
- **Internet Packet Exchange (IPX)** – protocol by Novell used in NetWare products
- **Appletalk** – protocol used to allow users of dissimilar computer systems to share information over a network without regard for special formats and internal differences.

Note: All other protocols that require routing must be tunneled using IP.

By default, the X-Pedition uses one MAC address for all interfaces. The X-Pedition can be configured to have a separate MAC address for each IP interface and a separate MAC address for each IPX interface. When the X-Pedition receives a packet whose destination MAC address is one of the X-Pedition’s IP or IPX interface MAC addresses, the line card that received the packet from the network uses information in the line card’s Layer-3 lookup tables (or information supplied by the control module) to route the packet to its IP destination(s). (See *Control Modules* on [page 14](#) for information about the control module.)

You can create only one IP and IPX interface on a single port or VLAN. You can add secondary IP addresses to the same IP interface. When you add an interface to a set of ports, you are adding a VLAN to those ports. Ports that contain IP and IPX interfaces can also still perform Layer-2 bridging.

In addition to hardware based, wire-speed routing, the Advanced Routing Engine (ARE) feature extends X-Pedition’s capabilities to support software based routing. This capability is perfect for less demanding protocols like AppleTalk.

IP Routing

The X-Pedition supports the following IP unicast routing protocols:

- RIP v1 and RIP v2
- OSPF v2
- BGP 2,3,4

IP interfaces do not use a specific routing protocol by default. When you configure an interface for routing, you also specify the routing protocol the interface will use.

IP Multicast Routing

The X-Pedition supports the following IP multicast routing protocols:

- IGMP
- DVMRP
- PIM-SM

The X-Pedition does not use a specific IP Multicast routing protocol by default. When you configure an interface for IP Multicast, you also specify the routing protocol you want the interface to use.

IPX Routing

The X-Pedition supports the following IPX routing protocols:

- IPX RIP – a version of the Routing Information Protocol (RIP) tailored for IPX
- IPX SAP – the Service Advertisement Protocol, which allows hosts attached to an IPX network to reach printers, file servers, and other services

By default, IPX routing is enabled on the X-Pedition when an IPX interface is created.

Layer-4 Switching

In addition to Layer-2 bridging and Layer-3 routing, the X-Pedition performs Layer-4 switching. Layer-4 switching is based on applications and flows.

- **Layer-4 applications** – The X-Pedition understands the application for which an IP or IPX packet contains data and therefore enables you to manage and control traffic on an application basis. For IP traffic, the X-Pedition looks at the packet's TCP or UDP port number to determine the application. For IPX packets, the X-Pedition looks at the destination socket to determine the application.

- **Layer-4 flows** – The X-Pedition can store Layer-4 flows on each line card. A Layer-4 flow consists of the source and destination addresses in the IP or IPX packet combined with the TCP or UDP source and destination port number (for IP) or the source and destination socket (for IPX). You can therefore manage and control individual flows between hosts on an individual application basis.

A single host can have many individual Layer-4 entries in the X-Pedition. For example, an IP host might have separate Layer-4 application entries for E-mail, FTP, HTTP, and so on, or separate Layer-4 flow entries for specific E-mail destinations and for specific FTP and Web connections.

Security

The bridging, routing, and application (Layer-2, Layer-3, and Layer-4) support described in previous sections enables you to implement security filters that meet specific needs. You can implement the following types of filters to secure traffic on the X-Pedition.

- Layer-2 source filters (block bridge traffic based on source MAC address)
- Layer-2 destination filters (block bridge traffic based on destination MAC address)
- Layer-2 flow filters (block bridge traffic based on specific source-destination pairs)
- Layer-3 source filters (block IP or IPX traffic based on source IP or IPX address)
- Layer-3 destination filters (block IP or IPX traffic based on destination IP or IPX address)
- Layer-3 flow filters (block IP or IPX traffic based on specific source-destination pairs)
- Layer-4 flow filters (block traffic based on application flows)
- Layer-4 application filters (block traffic based on UDP or TCP source and destination ports for IP or source and destination sockets for IPX)

Quality of Service

Although the X-Pedition supplies non-blocking wire-speed throughput, you can configure the X-Pedition to apply Quality of Service (QoS) policies during peak periods to guarantee service to specific hosts, applications, and flows (source-destination pairs). This is especially useful in networks where the traffic level can exceed the network medium's capacity.

The X-Pedition QoS is based on four queues: control, high, medium, and low. Control traffic has the highest priority, high the second highest, and so on. The default priority for all traffic is low.

You can configure QoS policies for the following types of traffic:

- Layer-2 prioritization (802.1p)
- Layer-3 source-destination flows
- Layer-4 source-destination flows
- Layer-4 application flows

Statistics

The X-Pedition can provide extensive statistical data on demand. You can access the following types of statistics:

- Layer-2 RMON and MIB II Statistics – Port statistics for normal packets and for errors (packets in, packets out, CRC errors, and so on)
- Layer-3 RMON v2 Statistics – Statistics for ICMP, IP, IP-interface, IP routing, IP multicast, VLAN
- Layer-4 RMON v2 Statistics – Statistics for TCP and UDP
- NetFlow – The export of flow accounting statistics

Management Platforms

You can manage the X-Pedition using the following management platforms:

- **Command Line Interface (CLI)** – An Emacs editor-like interface that accepts typed commands and responds when applicable with messages or tables. You will use the CLI to perform the basic setup procedures described in [Chapter 3](#) of this guide.
- **SNMP MIBs and traps** – The X-Pedition supports SNMP v1, SNMP v2C, SNMP v3, and many standard networking MIBs. You can access the X-Pedition's SNMP agent using integration software for Enterasys Netsight Atlas, Netsight Element Manager 3.0, or HP OpenView 5.x on Windows NT, Solaris 2.x, or Aprisma SPECTRUM on Solaris 2.x. [Chapter 3](#) in this guide explains how to set up SNMP on the X-Pedition.

Hardware Overview

This section describes the X-Pedition hardware modules with which you will be working. [Chapter 2](#) in this guide describes how to install the hardware. This section describes the following hardware:

- Chassis
- Backplane
- Fan module
- Control Module
- Power Supply
- Switching Fabric Module (X-Pedition 8600 only)
- Line cards

Chassis

[Figure 1](#) shows the front view of a fully loaded X-Pedition 8000 chassis. The X-Pedition 8000 chassis contains eight slots, numbered from 0 to 7. Slot 0 is in the lower left corner of the chassis and slot 7 is in the upper right corner.

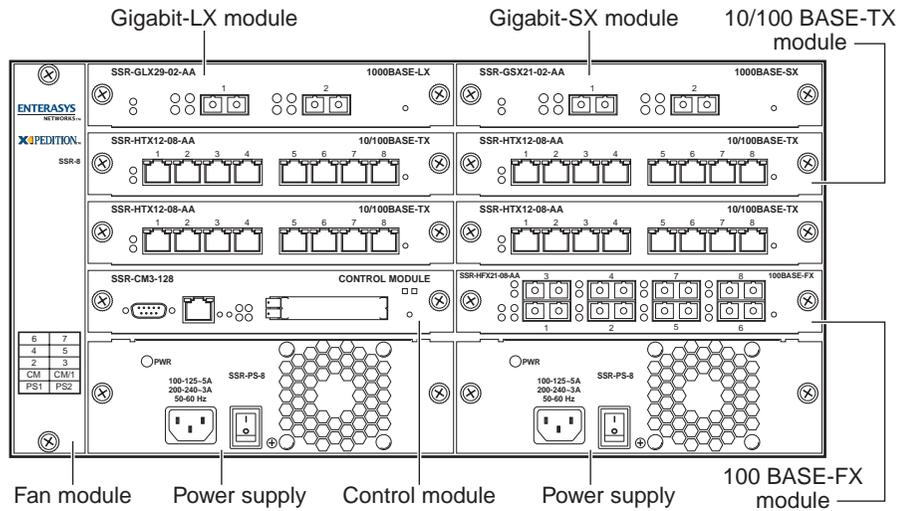


Figure 1. Front view of a fully loaded X-Pedition 8000 chassis

Figure 2 shows the front view of a fully loaded X-Pedition 8600 chassis. The X-Pedition 8600 chassis is similar to the X-Pedition 8000 chassis, except for the following:

- The chassis can contain up to 16 line cards.
- The switching fabric is stored on a separate module.
- There is a slot for a redundant switching fabric module.
- The power supply is larger.

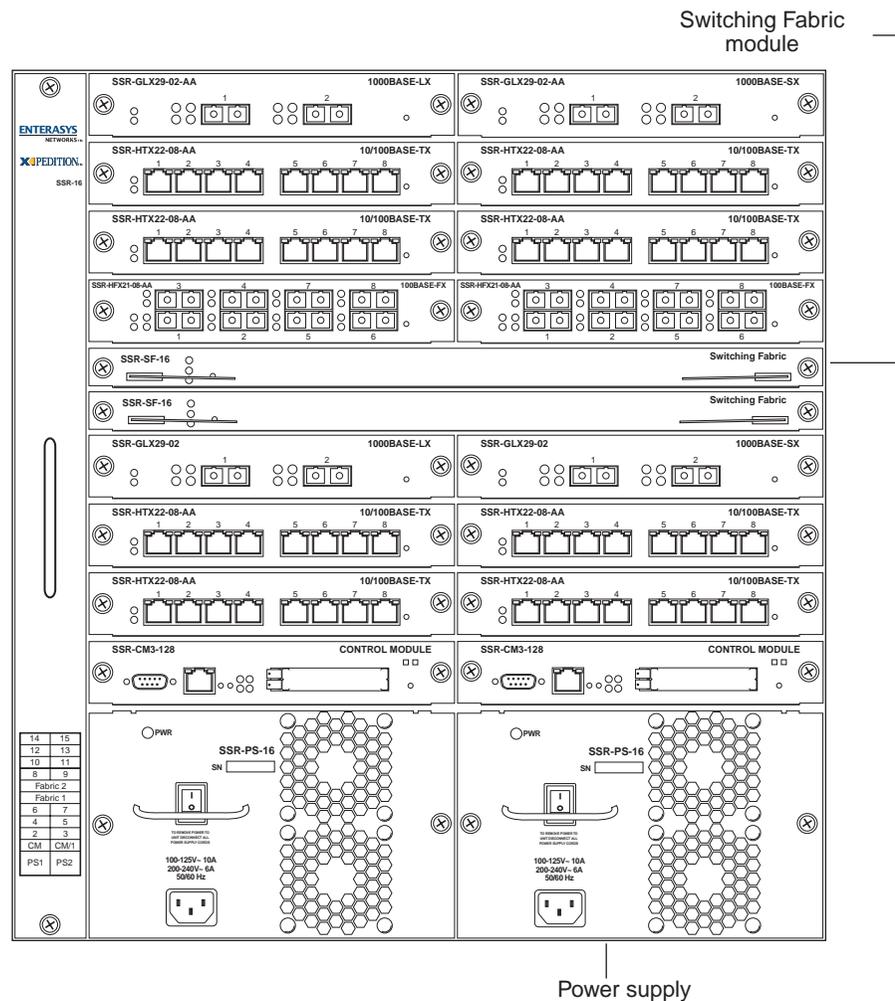


Figure 2. Front view of a fully loaded X-Pedition 8600 chassis

The X-Pedition 8600 chassis contains sixteen slots, numbered from 0 to 15. Slot 0 is in the lower left corner of the chassis and slot 15 is in the upper right corner. The X-Pedition 8600 also has slots for primary and redundant switching fabric modules.

On both the X-Pedition 8000 and X-Pedition 8600, slot 0 is labeled “CM” and contains the primary control module. The CM slot cannot be used for line cards. The primary control module must be installed in this slot. The CM/1 slot can contain a redundant control module (if you install one) or can contain a line card. Slots 2 to 7 on the X-Pedition 8000 or slots 2 to 15 on the X-Pedition 8600 can contain any line cards unless otherwise noted in *Installing Line Cards* on page 71. For information about these items, see *Control Modules* on page 14 and *Line Cards* on page 20.

You can install line cards in any order in the slots. For example, you could install line cards in slots 2 and 5 and leave the other line card slots empty. The X-Pedition provides non-blocking throughput regardless of the software features you are using. Therefore, you do not need to “load balance” line cards by placing them in certain relationships to balance the load on the backplane. Regardless of where you install the line cards, the backplane can provide full, non-blocking throughput.

Backplane

The backplane occupies the rear of the chassis and connects the power supplies, control modules, and line cards together. The power supplies use the backplane to provide power to the rest of the system. The line cards and control modules use the backplane to exchange control information and packets. The backplane is installed at the factory. Contact Enterasys Networks if you wish to replace the backplane.

Fan Module

The X-Pedition contains a fan module to provide a cooling air flow across the control module(s) and line cards. The fan module is located on the left side of the control modules and line cards. The X-Pedition 8000 fan module contains two fans; the X-Pedition 8600 fan module contains six fans. The fan module is installed at the factory, but you can replace the module yourself, if necessary.

Note: To ensure that the fan module can provide adequate cooling, always provide a minimum of 3 inches of clearance on each side of the chassis.

Hot Swapping a Fan Tray

Note: Before you hot swap a fan tray on the X-Pedition, have the replacement fan nearby and ready to install—delays in completing the swap may cause the router to overheat.

1. **Loosen the captive screws.**
2. **Remove the fan tray** (the fans will wind down and stop). Although the system will continue to operate normally with the fans removed, if the fans are removed long enough the system will overheat, power off, and reboot. When the fan tray is removed, the following message will appear on the console:

```
%SYS-W-FANFAILED, system fan(s) have failed or fan tray is not installed
```

3. **Slide the new fan tray completely into the slot.** Fans will start up and the LED on the front of the fan tray will light if the fan is installed properly. Once the fan tray is installed, the following message is displayed on the console:

```
%SYS-I-FANSOKAY, system fans are operational.
```

4. **Tighten the captive screws.**

Control Modules

The control module is the X-Pedition's central processing unit. It contains system-wide bridging and routing tables. Traffic that does not yet have an entry in the L2 and L3/L4 lookup tables on individual line cards is sent to the control module. After processing traffic, the control module updates the L2 and L3/L4 tables on the line cards that received the traffic. The line cards thus "learn" about how to forward traffic. Figure 3 shows the front panel of a control module.

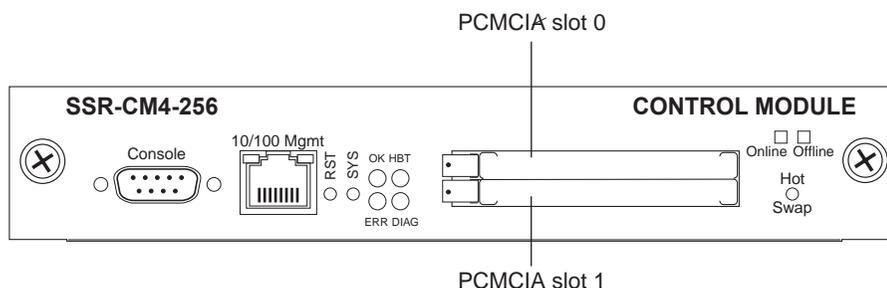
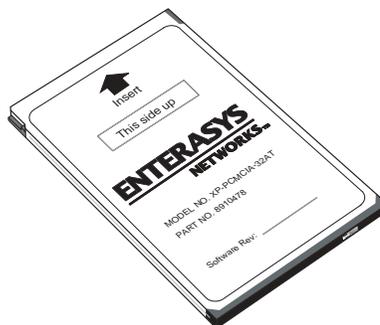


Figure 3. Front panel of a control module

Note: Only PCMCIA slot 0 (the upper slot) is active. The control module cannot use two PCMCIA flash cards at the same time.

Boot Flash

The control module has a boot flash containing the X-Pedition's boot software and configuration files. The system software image file resides on a PCMCIA flash card or a TFTP server.



Memory Module

The control module uses memory to hold the routing tables and other tables. The minimum factory configuration for the control module includes 64MB of memory in an SSR-CM2B-64, 128MB of memory in an SSR-CM3-128, and 256MB of memory in an SSR-CM4-256. You can obtain X-Pedition memory upgrade kits from Enterasys Networks to increase memory to 128MB (in a

128MB DIMM), or 256MB (in two 128MB DIMMs). See *Installing a Memory Upgrade* on page 66 for the upgrade procedure.

External Controls

The control module has the following external controls. Where appropriate, this guide describes how to use the controls.

- Male DB-9 Data Communications Equipment (DCE) port for serial connection from a management terminal. Use this port to establish a direct CLI connection to the X-Pedition. The default baud rate is 9600.
- 10/100BASE-TX out-of-band Ethernet management port for network management. The port is configured as a Media Data Interface (MDI). Use this port to establish a management connection to the X-Pedition over a local or bridged Ethernet segment.
- Reset switch (RST). Use this switch to reboot the X-Pedition's CPU.
- PCMCIA flash memory slots. These slots let you install system image software upgrades as well as older system image software versions.

Note: You can install a PCMCIA flash in slot 0 only. You cannot use two PCMCIA cards at the same time.

LEDs

Table 1. Control Module LED Indicators

LED	Condition	Status
OK	On	Ready for operation or configuration.
HBT	Flashing	Booting or waiting for configuration.
	On	Remains on for 5 seconds at power-up.
ERR	On	Remains on for 5 seconds at power-up.
	On	Error occurred.
DIAG	On	Remains on for 5 seconds at power-up.
	On	The diagnostics are running.
GREEN	On	Link on ethernet port.
YELLOW	Flashing	Activity on port.
Hot Swap	On	CM4 is active.
	Off	CM4 is redundant or offline.

AC Power Supply

The power supply delivers 3.3, 5, and 12 volts DC to the X-Pedition’s control module(s), fan modules, and other components. A single power supply provides enough current to operate a fully configured chassis—with the exception of certain line cards. For information about these cards, refer to *Installing Line Cards* on page 71. The power supply has its own internal cooling fan. The vent on the front of the power supply is the inlet vent for the cooling fan. Figure 4 shows the front view of an X-Pedition 8000 AC power supply.

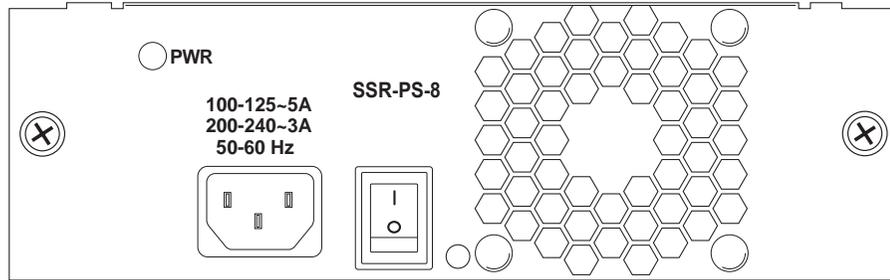


Figure 4. Front view of an X-Pedition 8000 AC power supply

The X-Pedition 8600 power supply is nearly twice as large as the X-Pedition 8000 power supply. Figure 5 shows the front view of an X-Pedition 8600 AC power supply.

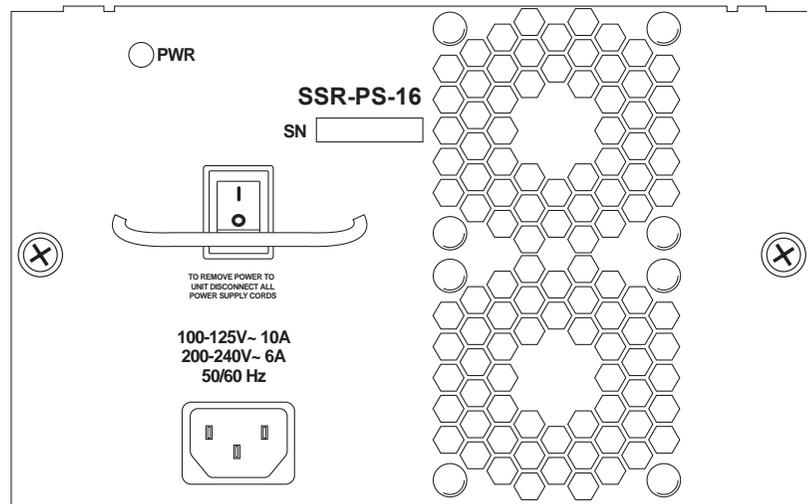


Figure 5. Front view of an X-Pedition 8600 AC power supply

AC Power Supply Specifications

The following table lists the specifications for the X-Pedition's AC power supplies.

	X-Pedition 8000	X-Pedition 8600
Dimensions	8.27 in. H x 17.25 W x 12.25 D 22.23 cm H x 43.82 W x 31.12 D	8.27 in. H x 17.23 W x 19.25 D 22.23 cm H x 43.82 W x 48.9 D
Weight	Pounds: 24Lbs Kilograms: 10.8 Kg	Pounds: 47 Lbs Kilograms: 21.2 Kg
AC Power	100-125 VAC, 5A maximum 200-240 VAC, 3A maximum 50/60 Hz	100-125 VAC, 10A maximum 200-240 VAC, 6A maximum 50/60 Hz
Output Wattage	390 Watts	780 Watts
At 3.4 V At 5.1 V At 12 Volts	70 Amps 25 Amps 2 Amps	140 Amps 50 Amps 4 Amps
Operating Temperature	Fahrenheit: 41°F to 104°F Centigrade: 5°C to 40°C	Fahrenheit: 41°F to 104°F Centigrade: 5°C to 40°C

To ensure against equipment failure, you can install a redundant power supply. When two power supplies are active in the X-Pedition, they load share, each supply delivering approximately 50 percent of the current needed. Moreover, if one of the power supplies fails, the other power supply immediately assumes the entire load, thus preventing any system outage.

The AC power supply has a green status LED. When the LED is lit, the power supply is connected to an appropriate power source and is active. The status LED is lit when you switch the power supply on, not when you plug the power supply into a power source.

DC Power Supply

The X-Pedition DC power supply delivers 3.3, 5, and 12 volts DC to the X-Pedition’s control module(s), fan modules, and other components. A single DC power supply provides enough current to operate a fully configured chassis—with the exception of certain line cards. For information about these cards, refer to *Installing Line Cards* on page 71.

Figure 6 shows the front view of an X-Pedition 8000 DC power supply.

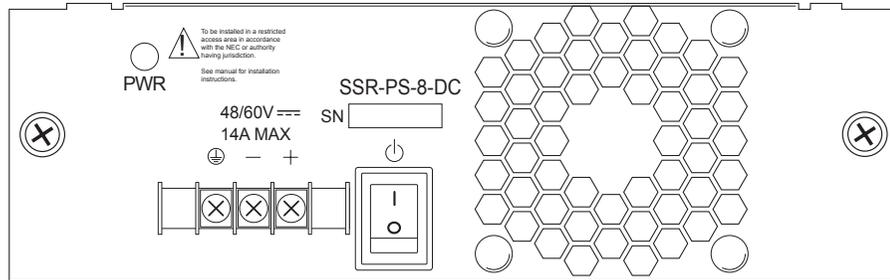


Figure 6. Front view of an X-Pedition 8000 DC power supply

The X-Pedition 8000 DC power supply has a three-terminal wiring block on the front panel, consisting of a positive (+) terminal, negative (-) terminal and a safety ground. The DC supply is designed to be powered by a 48-Volt DC source. Figure 7 shows the front view of an X-Pedition 8600 DC Power Supply.

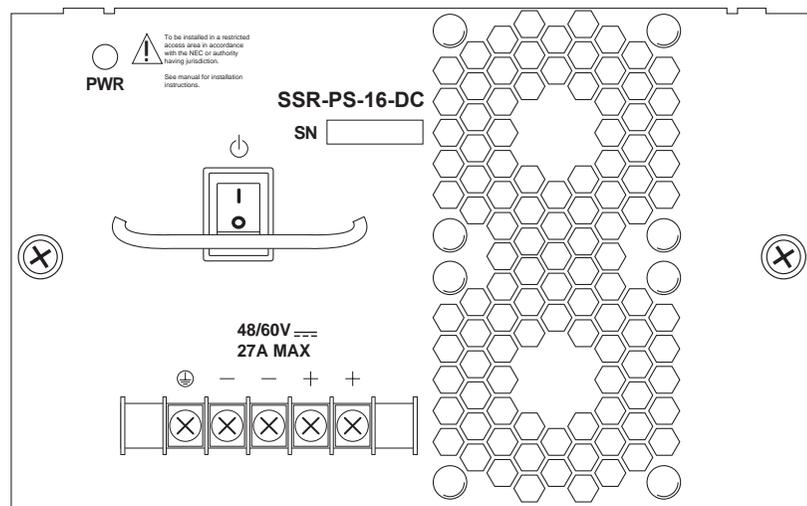


Figure 7. Front view of an X-Pedition 8600 DC power supply

The X-Pedition 8600 DC power supply has a five-terminal wiring block on the front panel, consisting of two positive (+) terminals, two negative (-) terminals and a safety ground. The DC supply is designed to be powered by a 48-Volt DC source.

DC Power Supply Specifications

The following table lists the physical specifications for the X-Pedition's DC power supplies.

	X-Pedition 8000	X-Pedition 8600
Input Voltage	48 to 60 VDC (14 Amperes Max.)	48 to 60 VDC (27 Amperes Max.)
Output Wattage	390 Watts	780 Watts
At 3.4 V	70 Amps	140 Amps
At 5.1 V	25 Amps	50 Amps
At 12 Volts	2 Amps	4 Amps
Dimensions	11.00 in. L x 7.70 W x 2.55 H 27.94 cm L x 19.55 W x 6.47 H	12.15 in. L x 7.70 W x 5.05 H 30.86 cm L x 19.55 W x 12.82 H
Weight	6.5 lb (2.95 kg)	12.0 lb (5.45 kg)

The following table lists the environmental specifications for the X-Pedition's DC power supplies.

Operating Temperature	+5 to +40 °C (41 to 104 °F)
Non-operating Temperature	-30 to +73 °C (-22 to 164 °F)
Operating Humidity	15 to 90% (non-condensing)

Switching Fabric Module (X-Pedition 8600 only)

On the X-Pedition 8600, the switching fabric is contained on a separate plug-in module. The X-Pedition 8600 has slots for two of these modules. When two switching fabric modules are installed, the module in the slot labelled "Fabric 1" serves as the primary switching fabric module, and the module in the slot labelled "Fabric 2" serves as a redundant switching fabric module.

Figure 8 shows the front panel of the X-Pedition 8600 Switching Fabric module.



Figure 8. Front panel of X-Pedition 8600 Switching Fabric module

LEDs

Table 2. X-Pedition 8600 Switching Fabric module LEDs

LED	Condition	Description
Offline	Amber	The module is offline (powered off) and is ready for hot swap. The Offline LED also lights briefly during a reboot or reset of the X-Pedition and goes out as soon as the control module discovers and properly initializes the switching fabric module.
Online	Green	The module is online and is ready to receive, process, and send packets if configured to do so.
Active	On	The switching fabric module is actively receiving, processing, and sending packets.

Line Cards

This section addresses the following line cards:

[SSR-ARE on page 21](#)
[SSR-ATM29-02 on page 21](#)
[SSR-CM2B-64, SSR-CM3-128, and SSR-CM4-256 on page 25](#)
[SSR-FDDI-02 on page 26](#)
[SSR-GLX39-02 on page 28](#)
[SSR-GLX39-04 and SSR-GSX31-04 on page 30](#)
[SSR-GLX70-01-AA and SSR-GLH39-02 on page 33](#)
[SSR-GSX21-02-AA and SSR-GLX29-02-AA on page 35](#)
[SSR-GSX31-02 on page 37](#)
[SSR-GTX32-04 and SSR-GTX32-02 on page 39](#)
[SSR-HFX21-08-AA and SSR-HFX29-08-AA on page 41](#)
[SSR-HSSI-02-CK on page 42](#)
[SSR-HTX22-08-AA and SSR-HTX12-08-AA on page 44](#)
[SSR-HTX32-16 on page 45](#)
[SSR-POS29-04 and SSR-POS21-04 on page 46](#)
[SSR-POS39-02 and SSR-POS31-02 on page 48](#)
[SSR-SERCE-04-AA and SSR-SERC-04-AA on page 50](#)

Note: When using line cards introduced prior to the “AA” series, SNA/DLC/NetBIOS traffic may not bridge properly. The issue in bridging DLC packets occurs where the length field within an IEEE 802.3 frame indicates less than 46 bytes of data.

The X-Pedition removes the length field information of incoming IEEE 802.3, 802.2, and Ethernet SNAP packets, then recalculates the field prior to re-transmission. Consequently, the calculation is based on the length of the entire data field. A packet entering the X-Pedition whose length field indicates a data field of less than 46 bytes will exit with the length field recalculated incorrectly. This can be a problem with LLC2 and legacy IPX applications. Typically, such packets exist only in SNA and NetBIOS/NetBEUI environments.

SSR-ARE

The Advanced Routing Engine (ARE) provides the X-Pedition 8000/8600 an avenue for routing protocols other than IP and IPX—currently, the ARE supports only the Appletalk protocol. The ARE is powered by a RISC processor that operates at 380Mhz, providing lightning-fast routing of your personal appletalk traffic. If you use a VLAN to create an AppleTalk interface, you must use an AppleTalk protocol-based VLAN.

Note: The ARE module cannot be installed into slots 0 or 1 on an X-Pedition 8000, or 0, 1, or 15 on an X-Pedition 8600. Attempting to hot swap this module into any of those slots may cause the router to core dump.

SSR-ATM29-02

The fully integrated design of the X-Pedition family increases the value of the product line by providing a seamless solution to support the industry's most complete range of technology and media options. This scalable framework ensures full cross-platform compatibility and allows for the smoothest possible migration as customers' technology and interface requirements evolve.

The combination of the X-Pedition and the SSR-ATM29-02 OC-3c module provide a complete solution for both the service provider and enterprise markets. Interconnecting IP networks over an ATM backbone is done by many service provider and enterprise customers. The OC-3c module provides the vital link between the network's switch-router solutions and the ATM-based solution in the WAN. Each PVC on the module can be configured as a routed IP interface, and the ATM backbone can provide connectivity from one routed backbone to another.

The SSR-ATM29-02 is a modular, high-performance OC-3c ATM interface for the X-Pedition 8000 and X-Pedition 8600. The module is optimized to provide an ATM uplink to an ATM backbone, and supports two modular slots, each of which accepts T1/E1, T3/E3 and OC-3c (single mode and multimode fiber, as well as unshielded twisted pair) interface.

The SSR-ATM29-02 line card actually houses various Physical Layer (PHY) interface cards in its two available slots. ATM PHY cards provide the media-specific portion of an ATM interface to support ATM connectivity across multiple platforms using different media types. The host system provides the power, initialization, and control for the PHY card. The PHY card is used with an ATM segmentation and reassembly (SAR) or cell-switching function.

See *Installing the ATM PHY Cards* on page 80 for installation instructions for the ATM PHY cards into the SSR-ATM29-02 line card. [Figure 9](#) shows the front panel of the SSR-ATM29-02 line card.

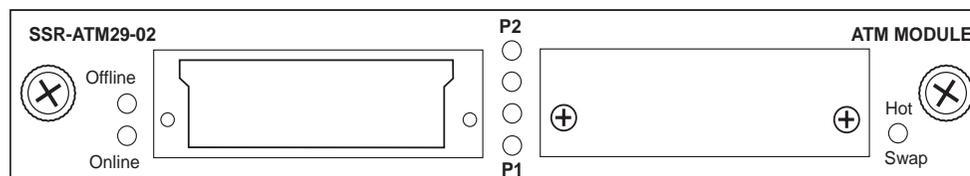


Figure 9. Front panel of SSR-ATM29-02 line card

Options Available

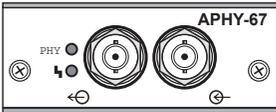
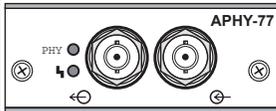
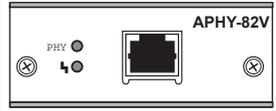
This module operates with the following APHYs (you may purchase them separately from the module) connected to the outside world. For information about these APHYs, consult the Enterasys Networks web site.

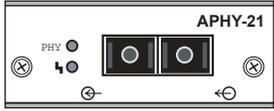
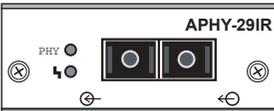
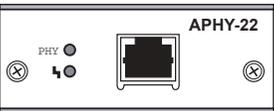


Caution: The X-Pedition-APHY-21 and X-Pedition-APHY-29IR use Class 1 Lasers. Do not use optical instruments to view laser output. The use of optical instruments to view laser output increases eye hazard.

Note: Before you can remove an APHY, Hot Swap the host ATM module.

The ATM line card has two available slots. Each slot accepts the following PHY interface modules:

Port type	Specification
<p>APHY-67</p> 	<ul style="list-style-type: none"> 1 DS-3/T-3 interface (BNC Coax); see <i>APHY-67 and APHY-77 on page 81</i> for attaching cables 75 coaxial (RG-59B or equivalent) terminated with 75-ohm BNC connectors Maximum of 450 ft (137 m) of cable
<p>APHY-77</p> 	<ul style="list-style-type: none"> 1 E-3 interface (BNC); see <i>APHY-67 and APHY-77 on page 81</i> for attaching cables 75 coaxial (RG-59B or equivalent) terminated with 75-ohm BNC connectors Maximum of 450 ft (137 m) of cable
<p>APHY-82V</p> 	<ul style="list-style-type: none"> 1 T-1 interface (UTP); see <i>APHY-82V on page 81</i> for attaching cables <p>Note: The APHY-82V is not a T1 interface. It merely allows you to connect to a T1 CSU—the T1 CSU will allow you to connect to a T1 circuit.</p> <ul style="list-style-type: none"> ITU-T G.703 for a symmetrical pair 100 ohm symmetrical pair Maximum of 655 ft (200 m) of cable 0 through 6 dB loss at 200 m

<p>APHY-92V</p> 	<ul style="list-style-type: none"> 1 E-1 interface (UTP); see <i>APHY-82V</i> on page 81 for attaching cables <p>Note: The APHY-92V is not an E1 interface. It merely allows you to connect to an E1 CSU—the E1 CSU will allow you to connect to an E1 circuit.</p> <ul style="list-style-type: none"> ITU-T G.703 for a symmetrical pair 120 ohm symmetrical pair Maximum of 655 ft (200 m) of cable 0 through 6 dB loss at 200 m
<p>APHY-21</p> 	<ul style="list-style-type: none"> 1 OC-3c MMF interface (SC-style); see <i>APHY-21 and APHY-29IR</i> on page 81 for attaching cables EIA/TIA 492-AAAA 62.5/125 μm Maximum cable length cannot exceed 2 kilometers (maximum will allow up to three cables—two splices). Additional cables/splices will reduce the maximum cable length. 0 to 9 dB loss at 1300 nm
<p>APHY-29IR</p> 	<ul style="list-style-type: none"> 1 OC-3c SMF-IR interface (SC-style); see <i>APHY-21 and APHY-29IR</i> on page 81 for attaching cables EIA/TIA 492-CAAA 9/125 μm Maximum cable length cannot exceed 15 kilometers (maximum will allow up to three cables—two splices). Additional cables/splices will reduce the maximum cable length. 0 to 15 dB loss at 1300 nm
<p>APHY-22</p> 	<ul style="list-style-type: none"> 1 OC-3c interface (UTP); see <i>APHY-22</i> on page 82 for attaching cables EIA/TIA 568B 295 ft (90 m) of Category 5 building cable 33 ft (10 m) of Category 5 patch cords 1 punchdown block (Category 5)

Ports

Depending on the APHY used, 1 or 2.

Interface

X-Pedition 8000/8600 2-port base module

Physical Dimensions

Size: 27.94 cm H x 19.68 W x 3.94 D (11.00 in. H x 7.75 W x 1.55 D)

Weight: 1.4 kg (3.0 lb)

Temperature

Operating: 41° to 104°F (5° to 40°C)

Storage: -22° to 164°F (-30° to 73°C)

Humidity

5% to 90% (non-condensing)

LEDs

Table 3. SSR-ATM29-02 LED Indicators

LED	Condition	Status
Hot Swap (2)	Yellow (Top)	Unit is not functioning, cannot hot swap.
	Green (Bottom)	Unit is operational.
Port 1 Traffic (2)	Tx Green (Top)	Indicates when the transceiver receives packets.
	Rx Green (Bottom)	Indicates when the transceiver receives flow-control packets.
Port 2 Traffic (2)	Tx Green (Top)	Indicates when the transceiver transmits packets.
	Rx Green (Bottom)	Indicates when the transceiver transmits flow-control packets.
PHY (Top)	Green	The PHY is operating properly and a link is established.
	Yellow	The PHY is inactive due to media errors.
	Blinking Green	The PHY was disabled by management.
	Off	No connection.
Lightning (Bottom)	Yellow	The diagnostics have detected a fault.
	Blinking Green	The PHY port has been redirected elsewhere.
	Off	Unit is operating properly.

SSR-CM2B-64, SSR-CM3-128, and SSR-CM4-256

The SSR-CM2B-64, SSR-CM3-128, and SSR-CM4-256 are Control Modules for the X-Pedition 8000 and X-Pedition 8600 product family. The CM4, targeted for applications that require higher processing power, uses a 380Mhz RISC processor and detection circuitry to maximize the internal clock speed for the given chassis.

Port

1 10/100 BaseT

MAC Addresses

64 Internal MAC Addresses

Temperature

Operating: 41° to 104°F (5° to 40°C)

Storage: -22° to 164°F (-30° to 73°C)

Humidity

5% to 90% (non-condensing)

Options Available

Control modules will operate only in slots 0 and 1 of the X-Pedition chassis.

SSR-FDDI-02

The SSR-FDDI-02 module supports high-performance translation from Ethernet, Fast Ethernet, Gigabit Ethernet, and ATM to FDDI, as well as connectivity between FDDI modules. IP Fragmentation support allows the module to fragment FDDI frames into multiple, smaller Ethernet frames. MTU path discovery support allows the module to transport the maximum size of packet to its end destination. FDDI full-duplex support is available for point to point connections with only two stations on a FDDI ring that support full duplex. The SSR-FDDI-02 module also supports the ring and DEC ring purger protocols, an extension to the FDDI specification.

Ports

2 Port FDDI Base Module (SSR-FDDI-02)

ASIC Type

T-Series

Network Interfaces

FPHY-01 MMF DAS

FPHY-02 UTP SAS

FPHY-09 SMF DAS

Number of Flows/Routes

Layer-2 Entries = 128,000 (memory size = 8 MB)

Layer-3/4 Entries = 256,000 (memory size = 16 MB)

Queue Buffer

8 MB per port

Physical Dimensions

Size: 27.94 cm H x 3.94 W x 19.68 D (11 in. H x 1.55 W x 7.75 D)

Weight: 1.4 kg (3.0 lb)

Temperature

Operating: 41° to 104° F (5° to 40° C)

Storage: -22° to 164° F (-30° to 73° C)

Humidity

15% to 90% (non-condensing)

LEDs

Table 4. SSR-FDDI-02 LED Indicators

LED	Condition				Status
Rx	Off				No activity
	Flashing Yellow				Activity
	Red				Diagnostic failure
Tx	Off				No activity
	Flashing Green				Activity
	Blinking Yellow				Port on standby
	Red				Diagnostic failure
Primary/Secondary Port LEDs (A, B, P, S)	A	B	P	S	
	Yellow	Yellow	Off	Off	Port enabled, not active
	Off	Off	Off	Off	Ports disabled
	Green	Green	Off	Off	Ports enabled
	Green	Green	Green	Off	THRU A
	Green	Green	Off	Green	THRU B
	Green	Off	Green	Yellow	WRAP A
	Off	Green	Green	Yellow	WRAP B
	Green	Green	Green	Yellow	WRAP AB
	Green	Off	Green	Off	WRAP S (in S mode)
	Green	Green	Off	Off	BYPASS Board
	Green	Green	Red	Red	TWISTED A-A, B-B
	Red	Red	Red	Red	Diagnostic failure

SSR-GLX39-02

The SSR-GLX39-02 (T-Series) line card provides the same features as the SSR-GSX31-02 line card, but supports single mode fiber (SMF) as well as multimode fiber (MMF). Figure 10 shows the front panel of the SSR-GLX39-02 (T-Series) line card.

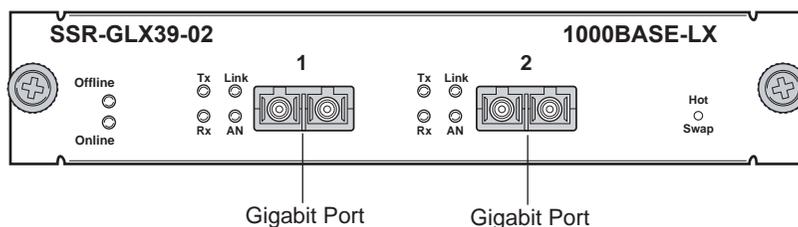


Figure 10. Front panel of SSR-GLX39-02 (T-Series) line card

LEDs

Table 5. SSR-GLX39-02 line card LED Indicators

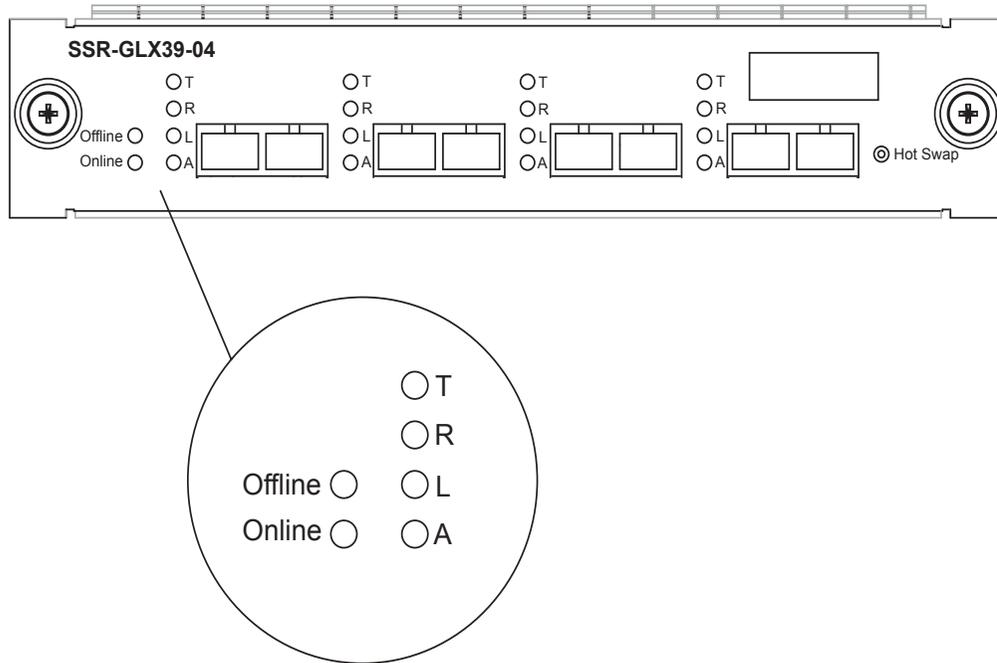
LED	Condition	Status
Offline	Amber	The line card is offline (powered off) but is ready for hot swap. The Offline LED also lights briefly during a reboot or reset of the X-Pedition but goes out as soon as the control module discovers the line card.
Online	Green	The line card is online and is ready to receive, process, and send packets if configured to do so.
Per-port Link	Green	The port hardware detects a cable plugged into the port and a good link is established.
	Red (intermittent)	The port received an error during operation.
	Red (solid)	The port hardware detects a cable plugged into the port, however, a bad link is established.
	Off	Indicates that no link from the port exists.
Per-port Rx	Green	The port's transceiver received a packet.
	Amber	The port's transceiver received a flow control packet.
Per-port Tx	Green	The port's transceiver transmitted a packet.
	Amber	The port's transceiver transmitted a flow-control packet.

Table 5. SSR-GLX39-02 line card LED Indicators (Continued)

LED	Condition	Status
Per-port AN	Green	The line card has auto negotiated the operating mode of the link between full-duplex and half-duplex.
	Amber (intermittent)	Auto-Negotiation is in process.
	Amber (solid)	Indicates a problem with Auto-Negotiation configuration.
	Red	Indicates an Auto-Negotiation failure. This fault may occur if the link partner does not support full duplex.
	Off	Auto-Negotiation was disabled or the link is down.

SSR-GLX39-04 and SSR-GSX31-04

The SSR-GLX39-04 and SSR-GSX31-04 are 4-port, T-Series Gigabit Line Cards for the X-Pedition 8000 and X-Pedition 8600 switch routers. The SSR-GLX39-04 connects to 1000BASE-LX fiber and the SSR-GSX31-04 connects to 1000BASE-SX fiber.



Note: If your system uses a redundant power configuration or only one power supply, you will not be able to support more than 4 SSR-GLX39-04 and SSR-GSX31-04 cards in the X-Pedition 8000 and 10 in the X-Pedition 8600.

Ports

4 1000BASE-SX or 1000BASE-LX SC connectors

Network Interfaces

- SC connector—850 nm Short-Wavelength Transceiver
- SC connector—1300 nm Long-Wavelength Transceiver
- 50/125 mm Multimode Fiber-Optic Cables
- 62.5/125 mm Multimode Fiber-Optic Cables
- 10/125 mm Single Mode Fiber-Optic Cables

Number of Flows/Routes

Layer-2 Entries = 512,000 (memory size = 32 MB)

Layer-3 Entries = 256,000 (memory size= 16 MB)

Switch Method

Address-based and Flow-based.

Queue Buffer

Input packet memory size: 8 MB

Output packet memory size: 8 MB

Physical Dimensions

Size: 3.94 cm H x 19.68 W x 27.94 D (1.55 in. H x 7.75 W x 11 D)

Weight: 1.4 kg (3.0 lb)

Temperature

Operating: 41° to 104° F (5° to 40° C)

Storage: -22° to 164° F (-30° to 73° C)

Humidity

15% to 90% (non-condensing)

LEDs

Table 6. SSR-GLX39-04 and SSR-GSX31-04 LED Indicators

LED	Condition	Status
Offline	On	The line card is offline (powered off) and ready to hot swap. This LED also lights briefly when you reboot or reset the X-Pedition but turns off as soon as the control module discovers the SSR-GLX39-04 or SSR-GSX31-04.
Online	On	The SSR-GLX39-04 or SSR-GSX31-04 is ready to receive, process, and send packets (if configured).
Per-Port Link	Green	Indicates that the port hardware detected the cable plugged into the port and a good link is established.
	Red (intermittent)	The port received an error during operation.
	Red	The port hardware detected a cable plugged into the port, but a bad link was established.
	Off	No link from the port exists.
Per-port Rx	Green	The port's transceiver is receiving packets.
	Amber	The port's transceiver is receiving flow-control packets.
Per-port Tx	Green	The port's transceiver is transmitting packets.
	Amber	The port's transceiver is transmitting flow-control packets.
Per-port AN	Green	The line card auto-negotiated the operating mode of the link between full-duplex and half-duplex.
	Amber (intermittent)	Auto-Negotiation is in progress.
	Amber	Indicates a problem with Auto-Negotiation configuration.
	Red	An Auto-Negotiation failure occurred. This fault may occur if the link partner does not support full-duplex operation.
	Off	Auto-Negotiation is disabled or the link is down.

SSR-GLX70-01-AA and SSR-GLH39-02

The SSR-GLX70-01-AA and SSR-GLH39-02 line cards are similar to the SSR-GLX39-02 line card, but extend the transmission distance over single mode fiber (SMF) to 70 kilometers for Gigabit Ethernet. Figure 11 shows the front panel of the 1000BASE-LLX line card.

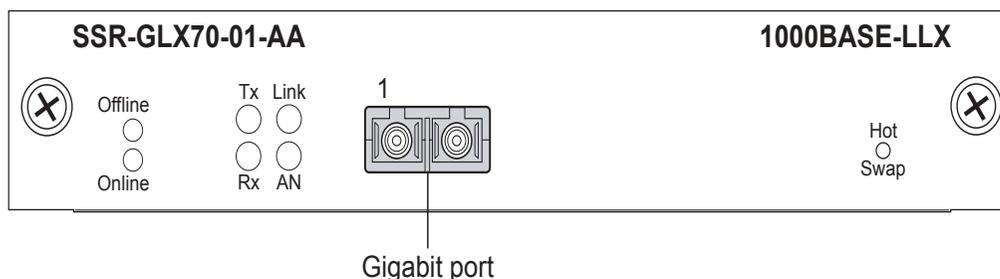


Figure 11. Front panel of 1000BASE-LLX line card

Figure 12 shows the front panel of the 1000BASE-LLX (T-Series) line card.

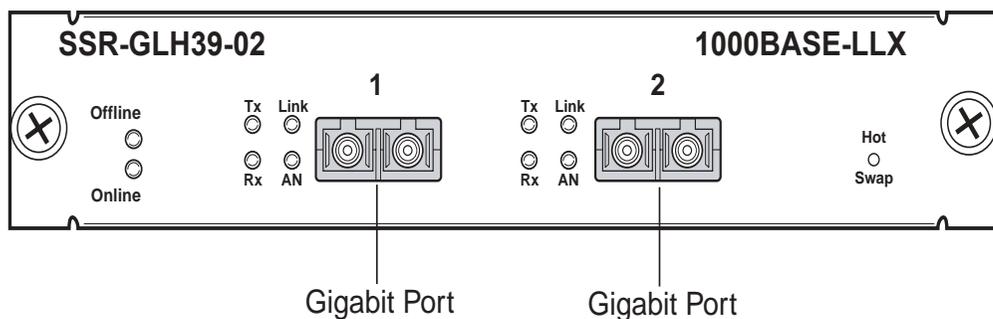


Figure 12. Front panel of 1000BASE-LLX (T-Series) line card

LEDs

Table 7. SSR-GLX70-01-AA and SSR-GLH39-02 line card LEDs

LED	Condition	Description
Offline	Amber	The line card is offline (powered off) but is ready for hot swap. The Offline LED also is lit briefly during a reboot or reset of the X-Pedition but goes out as soon as the control module discovers the line card.
Online	Green	The line card is online and is ready to receive, process, and send packets if configured to do so.

Table 7. SSR-GLX70-01-AA and SSR-GLH39-02 line card LEDs (Continued)

LED	Condition	Description
Per-port Link	Green	The port hardware detects a cable plugged into the port and a good link is established.
	Red (intermittent)	Indicates that the port received an error during operation.
	Red (solid)	The port hardware detected a cable plugged into the port, however, a bad link is established.
	Off	Indicates that no link from the port exists.
Per-port Rx	Green	The port's transceiver received a packet.
	Amber	The port's transceiver received a flow-control packet.
Per-port Tx	Green	The port's transceiver transmitted a packet.
	Amber	The port's transceiver transmitted a flow-control packet.
Per-port AN	Green	Green – indicates that the line card has auto negotiated the operating mode of the link between full-duplex and half-duplex.
	Amber (intermittent)	Amber (intermittent) – indicates that Auto-Negotiation is in process.
	Amber (solid)	Indicates a problem with Auto-Negotiation configuration.
	Red	Indicates an Auto-Negotiation failure. This fault may occur if the link partner does not support full duplex.
	Off	Auto-Negotiation was been disabled or the link is down.

SSR-GSX21-02-AA and SSR-GLX29-02-AA

The SSR-GSX21-02-AA and SSR-GLX29-02-AA line cards contain two independent Gigabit (1000 Mbps) Ethernet ports. The ports connect to multimode fiber (MMF) cables. Figure 10 shows the front panel of the SSR-GSX21-02-AA line card.

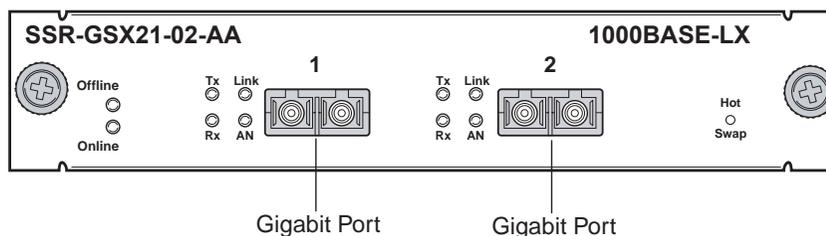


Figure 13. Front panel of SSR-GSX21-02-AA line card

LEDs

Table 8. SSR-GSX21-02-AA and SSR-GLX29-02-AA line card LEDs

LED	Condition	Description
Offline	Amber	The line card is offline (powered off) but is ready for hot swap. The Offline LED also lights briefly during a reboot or reset of the X-Pedition but goes out as soon as the control module discovers the line card.
Online	Green	The line card is online and is ready to receive, process, and send packets if configured to do so.
Per-port Link	Green	The port hardware detects a cable plugged into the port and a good link is established.
	Red (intermittent)	The port received an error during operation.
	Red (solid)	The port hardware detects a cable plugged into the port, however, a bad link is established.
	Off	Indicates that no link from the port exists.
Per-port Rx	Green	The port's transceiver received a packet.
	Amber	The port's transceiver received a flow control packet.
Per-port Tx	Green	The port's transceiver transmitted a packet.
	Amber	The port's transceiver transmitted a flow-control packet.

Table 8. SSR-GSX21-02-AA and SSR-GLX29-02-AA line card LEDs

LED	Condition	Description
Per-port AN	Green	The line card has auto negotiated the operating mode of the link between full-duplex and half-duplex.
	Amber (intermittent)	Auto-Negotiation is in process.
	Amber (solid)	Indicates a problem with Auto-Negotiation configuration.
	Red	Indicates an Auto-Negotiation failure. This fault may occur if the link partner does not support full duplex.
	Off	Auto-Negotiation was disabled or the link is down.

SSR-GSX31-02

The SSR-GSX31-02 line card contains two independent Gigabit (1000 Mbps) Ethernet ports. The ports connect to multimode fiber (MMF) cables. Figure 14 shows the front panel of the SSR-GSX31-02 (T-Series) line card.

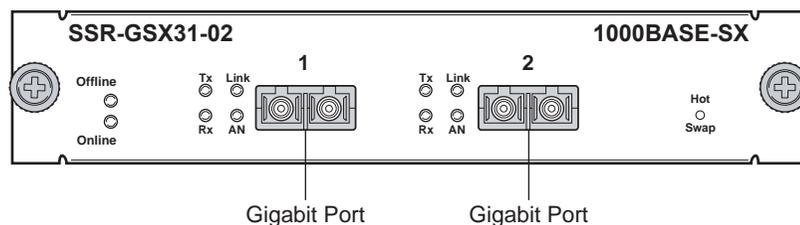


Figure 14. Front panel of SSR-GSX31-02 (T-Series) line card

LEDs.

Table 9. SSR-GSX31-02 line card LEDs

LED	Condition	Description
Offline	Amber	The line card is offline (powered off) but is ready for hot swap. The Offline LED also is lit briefly during a reboot or reset of the X-Pedition but goes out as soon as the control module discovers the line card.
Online	Green	The line card is online and is ready to receive, process, and send packets if configured to do so.
Per-port Link	Green	The port hardware detects a cable plugged into the port and a good link is established.
	Red (intermittent)	The port received an error during operation.
	Red (solid)	The port hardware detects a cable plugged into the port, however, a bad link is established.
	Off	No link from the port exists.
Per-port Rx	Green	The port's transceiver received a packet.
	Amber	The port's transceiver received a flow-control packet.
Per-port Tx	Green	The port's transceiver transmitted a packet.
	Amber	The port's transceiver transmitted a flow-control packet.

Table 9. SSR-GSX31-02 line card LEDs (Continued)

LED	Condition	Description
Per-port AN	Green	The line card has auto negotiated the operating mode of the link between full-duplex and half-duplex.
	Amber (intermittent)	Auto-Negotiation is in process.
	Amber (solid)	Indicates a problem with Auto-Negotiation configuration.
	Red	Red – indicates an Auto-Negotiation failure. This fault may occur if the link partner does not support full duplex.
	Off	Off – indicates that Auto-Negotiation has been disabled or the link is down.

SSR-GTX32-04 and SSR-GTX32-02

The SSR-GTX32-04 is a 4-port and the SSR-GTX32-02 a 2-port copper-based 1000BASE-T Gigabit Ethernet module for the X-Pedition platform. Figure 15 displays the front panel of an SSR-GTX32-04.

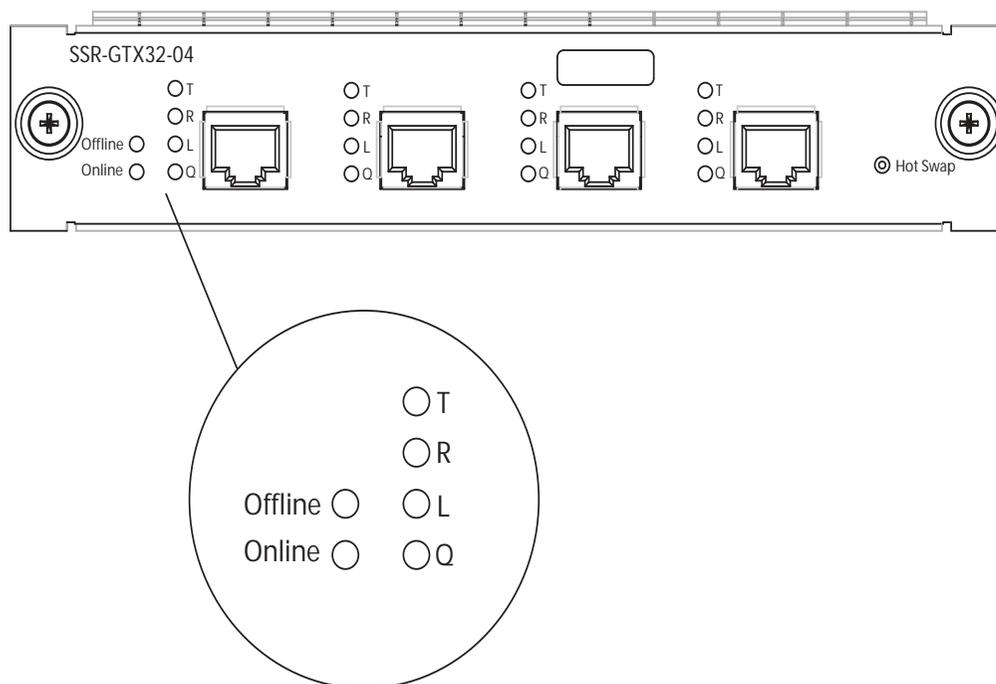


Figure 15. Front panel of SSR-GTX32-04 line card

Note: If your system uses a redundant power configuration or only one power supply, you will not be able to support more than 5 SSR-GTX32-04 and SSR-GTX32-02 cards in the X-Pedition 8000 and 10 in the X-Pedition 8600.

Ports

4 1000BASE-T Ports
or
2 1000BASE-T Ports

Network Interface

RJ-45 100 m Cat. 5 UTP Cabling per ANSI/TIA/EIA-568-A.

Number of Flows/Routes

Layer-2 Entries = 512,000 (memory size = 32 MB)
 Layer-3 Entries = 256,000 (memory size = 16 MB)

Physical Dimensions

Size: 27.94 cm H x 3.94 W x 19.68 D (11.00 in. H x 1.55 W x 7.75 D)
 Weight: 1.4 kg (3.0 lbs)

Temperature

Operating: 41° to 104° F (5° to 40° C)
 Storage: -22° to 164° F (-30° to 73° C)

Humidity

15% to 90% (non-condensing)

LEDs

Table 10. SSR-GTX32-04 and SSR-GTX32-02 LED Indicators

LED	Condition	Status
Online	On (Green)	The module is online and ready to receive, process, and send packets (if configured to do so).
Offline	On (Amber)	The module is offline (powered down) and ready to hot swap.
Per-Port Transmit	Green	The port transmitted a packet.
	Amber	The port transmitted a flow-control packet.
Per-Port Receive	Green	The port received a packet.
	Amber	The port received a flow-control packet.
Per-Port Link	Green	The port hardware detected a cable plugged into the port and established a good link.
	Off	No link exists from the port.
Per-Port Quality	Green	Auto-Negotiation completed successfully and the phy is attempting to establish a link. This LED remains green while the link operates with good signal-to-noise ratio.
	Fast blink	Low signal-to-noise ratio, close to data errors.
	Slow blink	Receive bit errors detected.
	Off	Auto-Negotiation is still in progress or the phy cannot receive packet data.

SSR-HFX21-08-AA and SSR-HFX29-08-AA

The SSR-HFX21-08-AA and SSR-HFX29-08-AA line cards provide the same features as the SSR-HTX22-08-AA line card but use a multimode fiber-optic cable (MMF) to connect to the network. The MMF line cards are available in 4 MB and 16 MB versions. Figure 16 shows the front panel of the 4 MB SSR-HFX21-08-AA line card.

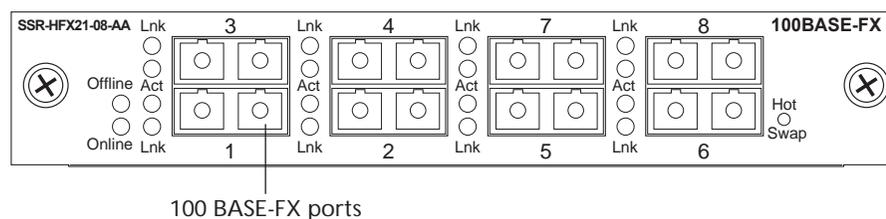


Figure 16. Front panel of 4 MB SSR-HFX21-08-AA line card (MMF)

LEDs

Table 11. SSR-HFX21-08-AA and SSR-HFX29-08-AA line card LEDs

LED	Condition	Description
Offline	Amber	When lit, this amber LED on the left side of the line card indicates that the line card is offline (powered off) but is ready for hot swap. The Offline LED also is lit briefly during a reboot or reset of the X-Pedition but goes out as soon as the control module discovers the line card.
Online	Green	When lit, this green LED indicates that the line card is online and is ready to receive, process, and send packets if configured to do so.
Lnk	Green	Each port has two LEDs located to the left of the connector. The green Lnk LED indicates the link status. When this LED is lit, the port hardware is detecting that a cable is plugged into the port and the port has established communication with the device at the other end.
Act	Amber	The amber Act LED flashes each time the port's transceiver sends or receives packets.

SSR-HSSI-02-CK

The HSSI interface extends the benefits of the X-Pedition router to the WAN, providing application-level control and wire-speed across high-speed WAN connections. The HSSI interface supports PPP and Frame Relay at speeds up to 52 Mbps. Typical applications include T3/E3 circuits or inverse multiplexed T1 connections. Flow Rate Limiting, Weighted Random Early Discard and Weighted Fair Queuing work together to manage and prevent congestion. The SSR-HSSI-02-CK also provides external clocking—you do not need an external CSU/DSU.

The HSSI module for the X-Pedition supports true Layer 2, 3 and 4 switching, allowing for consistent policy management for security and quality of service. Detailed accounting information can be gathered using per-PVC RMON, enabling easy confirmation that service-level agreements are being met. Prioritization policies can be extended across the entire network to allocate appropriate resources to groups of users, or specific applications.

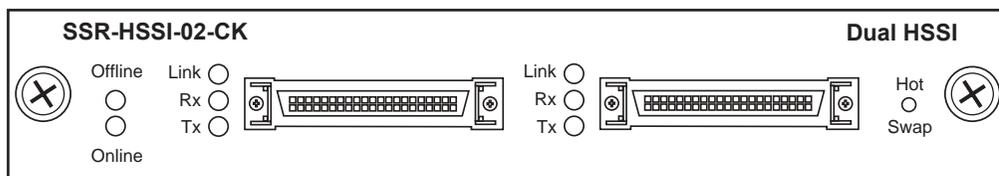


Figure 17. Front panel of the SSR-HSSI-02-CK line card

Ports

2 STS-1 or 52 MBps Serial ports

Network Interfaces

50-Pin Connector supporting 1 HSSI interface. WAN INTERFACES V.35, EIA-530, EIA-449, & X.21.

Physical Dimensions

Size: 52.9 cm H x 2.9 W x 40.1 D (20.83 in. H x 1.14 W x 15.79 D)

Weight: 2.72 kg (6.0 lbs)

Temperature

Operating: 32° to 104° F (0° to 40° C)

Storage: -22° to 194° F (-30° to 90° C)

Humidity

5% to 95% (non-condensing)

LEDs**Table 12. SSR-HSSI-02-CK LED Indicators**

LED	Condition	Status
Online (2)	Green	The unit is operational and functioning properly.
Offline (2)	Amber	The unit is not operational. You may remove the unit from the chassis.
Tx (4)	Amber	A frame was transmitted.
Rx (4)	Amber	A frame was received.
Link (4)	Green	A valid link is established on the port.

SSR-HTX22-08-AA and SSR-HTX12-08-AA

The SSR-HTX22-08-AA and SSR-HTX12-08 line cards contain eight independent Ethernet ports. Each port senses whether it is connected to a 10-Mbps segment or a 100-Mbps segment and automatically configures itself as a 10BASE-T or 100BASE-TX port. Figure 18 shows the front panel of the SSR-HTX22-08-AA line card.

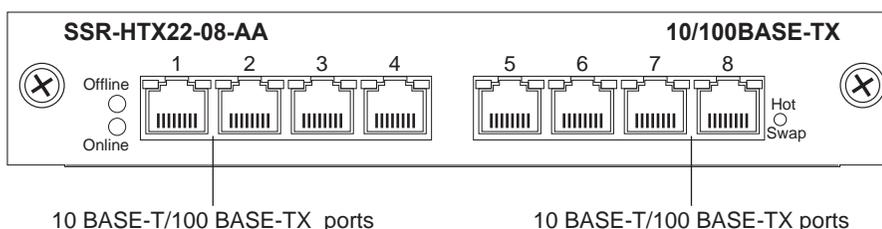


Figure 18. Front panel of SSR-HTX22-08-AA line card

LEDs

Table 13. SSR-HTX22-08-AA line card LEDs

LED	Condition	Description
Offline	Amber	The line card is offline (powered off) and is ready for hot swap. The Offline LED also is lit briefly during a reboot or reset of the X-Pedition and goes out as soon as the control module discovers and properly initializes the line card.
Online	Green	When lit, this green LED indicates that the line card is online and is ready to receive, process, and send packets if configured to do so.
Link	Green	Each port has two LEDs on its connector. The green LED on the left side of the connector indicates the link status. When this LED is lit, the port hardware is detecting that a cable is plugged into the port and the port has established communication with the device at the other end.
Activity	Flashing amber	The port's transceiver sent or received packets.

SSR-HTX32-16

The SSR-HTX32-16 16-port line card contains 16 independent Ethernet ports. Each port senses whether it is connected to a 10-Mbps segment or a 100-Mbps segment and automatically configures itself as a 10BASE-T or 100BASE-TX port. Figure 19 shows the front panel of the SSR-HTX32-16 line card.

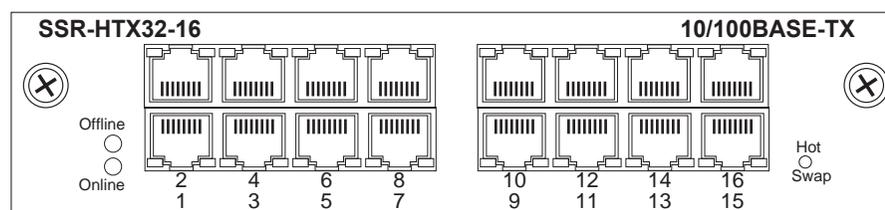


Figure 19. Front panel of SSR-HTX32-16 (T-Series) line card

LEDs

Table 14. SSR-HTX32-16 line card LEDs

LED	Condition	Description
Offline	Amber	The line card is offline (powered off) and is ready for hot swap. The Offline LED also lights briefly during a reboot or reset of the X-Pedition and goes out as soon as the control module discovers and properly initializes the line card.
Online	Green	The line card is online and is ready to receive, process, and send packets if configured to do so.
Link	Green	Each port has two LEDs on its connector. The green LED on the left side of the connector indicates the link status. When this LED is lit, the port hardware is detecting that a cable is plugged into the port and the port has established communication with the device at the other end.
Activity	Amber	The amber LED on the right side of each port connector flashes each time the port's transceiver sends or receives packets.

SSR-POS29-04 and SSR-POS21-04

The SSR-POS29-04 and SSR-POS21-04 modules provide high-speed connectivity to SONET networks. These modules support ACL-based filtering, Layer-4 application-aware switching, QoS features, and Server Load Balancing. The SSR-POS29-04 and SSR-POS21-04 are available as 4-port OC-3 SMF or MMF models and are compatible with the X-Pedition 8000/8600 hardware platforms. The POS OC-3c line cards use MT-RJ connectors to attach to multimode fiber (MMF) and single mode MT-RJ cables. To attach the segment cables to a POS OC-3c line card, obtain an MT-RJ cable and plug one end into the port connector. Plug the other end into the port of the other device. Since MT-RJ cables consist of only one line, there are no concerns about matching the receive port with the transmit port. [Figure 20](#) shows an SSR-POS29-04 line card.

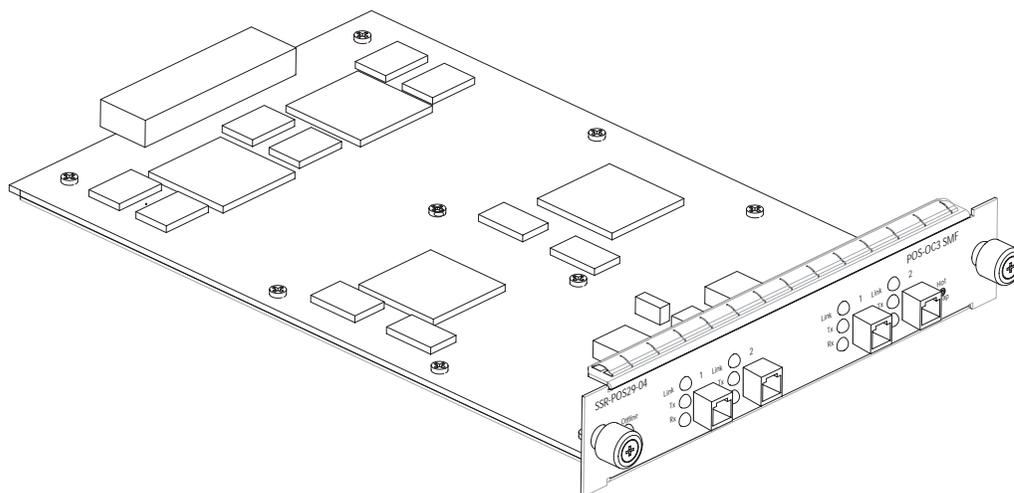


Figure 20. SSR-POS29-04 line card

Note: If your system uses a redundant power configuration or only one power supply, you will not be able to support more than 5 SSR-POS29-04 and SSR-POS21-04 cards in the X-Pedition 8000 and 10 in the X-Pedition 8600.

Ports

- 4 OC-3 MT-RJ MMF Ports
- 4 OC-3 MT-RJ SMF Ports

Physical Dimensions

Size: 27.94 cm H x 3.94 W x 19.68 D (11.00 in. H x 1.55 W x 7.75 D)
Weight: 1.4 kg (3.0 lbs)

Temperature

Operating: 41° to 104° F (5° to 40° C)

Storage: -22° to 164° F (-30° to 73° C)

Humidity

15% to 90% (non-condensing)

LEDs**Table 15. SSR-POS29-04 and SSR-POS21-04 LED Indicators**

LED	Condition	Status
Online	Green	The module is online and ready to receive, process, and send packets (if configured to do so).
Offline	Amber	The module is offline (powered down) and ready to hot swap.
Transmit	Green	The port transmitted a packet.
	Red	The port transmitted a flow-control packet.
Receive	Green	The port received a packet.
	Red	The port received a flow-control packet.
Link	Green	The port hardware detected a cable plugged into the port and established a good link.
	Red	Signal is degraded or a signal fail event occurred.
	Off	No link exists from the port.

SSR-POS39-02 and SSR-POS31-02

The SSR-POS39-02 and SSR-POS31-02 modules provide high-speed connectivity to SONET networks. These modules support ACL-based filtering, Layer-4 application-aware switching, QoS features, and Server Load Balancing. The SSR-POS39-02 and SSR-POS31-02 are available as 2-port OC-12 SMF or MMF models and are compatible with the X-Pedition 8000/8600 hardware platforms. The POS OC-12c line cards use SC-style Media Interface Connectors (MICs) to attach to multimode fiber (MMF) and single mode (SMF) cables. [Figure 21](#) shows an SSR-POS39-02 line card.

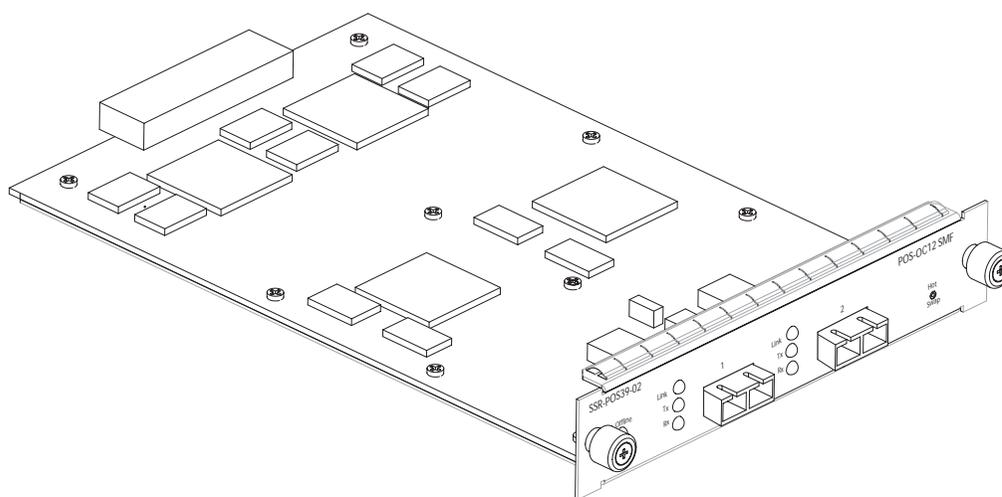


Figure 21. SSR-POS39-02 line card

Note: If your system uses a redundant power configuration or only one power supply, you will not be able to support more than 5 SSR-POS39-02 and SSR-POS31-02 cards in the X-Pedition 8000 and 10 in the X-Pedition 8000/8600.

Ports

2 OC-12 SC MMF Ports
2 OC-12 SC SMF Ports

Physical Dimensions

Size: 27.94 cm H x 3.94 W x 19.68 D (11.00 in. H x 1.55 W x 7.75 D)
Weight: 1.4 kg (3.0 lbs)

Temperature

Operating: 41° to 104° F (5° to 40° C)
Storage: -22° to 164° F (-30° to 73° C)

Humidity

15% to 90% (non-condensing)

LEDs**Table 16. SSR-POS39-02 and SSR-POS31-02 LED Indicators**

LED	Condition	Status
Online	On (Green)	The module is online and ready to receive, process, and send packets (if configured to do so).
Offline	On (Amber)	The module is offline (powered down) and ready to hot swap.
Transmit	Green	The port transmitted a packet.
	Red	The port transmitted a flow-control packet.
Receive	Green	The port received a packet.
	Red	The port received a flow-control packet.
Link	Green	The port hardware detected a cable plugged into the port and established a good link.
	Red	Signal is degraded or a signal fail event occurred.
	Off	No link exists from the port.

SSR-SERCE-04-AA and SSR-SERC-04-AA

The SSR-SERCE-04-AA and SSR-SERC-04-AA line cards each contain two dual-serial WAN ports (two serial ports located on one high density connector). In addition, the Quad Serial – C line card includes compression, and the Quad Serial – CE line card includes compression and encryption, for each WAN port. Figure 22 shows the front panel of the Quad Serial – CE WAN line card.

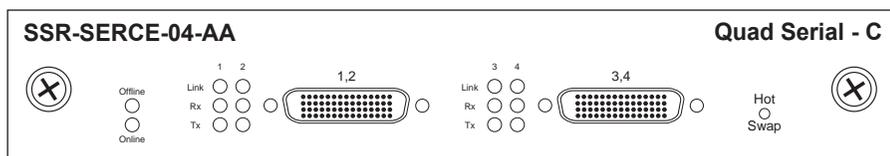


Figure 22. Front panel of the SSR-SERCE-04-AA line card

LEDs

Table 17. SSR-SERCE-04-AA and SSR-SERC-04-AA line card LEDs

LED	Condition	Description
Offline	Amber	The line card is offline (powered off) but is ready for hot swap. The Offline LED also is lit briefly during a reboot or reset of the X-Pedition but goes out as soon as the control module discovers the line card.
Online	Green	The line card is online and is ready to receive, process, and send packets if configured to do so.
Per-port Link	On	The line card detected a cable plugged into the port and a good link is established.
Per-port Rx	On	The port's transceiver received data.
Per-port Tx	On	The port's transceiver transmitted data.

Chapter 2

Hardware Installation

This chapter provides hardware installation information and procedures in the following sections:

- Safety considerations
- Installing the hardware

If the hardware is already installed and you are ready to install the software and perform basic system configuration, see [Chapter 3, *Software Installation and Setup*](#).

Safety Considerations

Read the following safety warnings and product cautions to avoid personal injury or product damage.



ELECTRICAL HAZARD: Only qualified personnel should perform installation procedures.

Preventing Injury



Cautions: Observe the following safety warnings to prevent accidental injury when working with the Enterasys X-Pedition (X-Pedition) hardware.

- To avoid back strain, be careful when lifting the chassis out of the shipping box.
- Never attempt to rack mount the X-Pedition chassis unaided. Ask an assistant to help you hold the chassis.
- Never operate the X-Pedition with exposed power-supply bays or module slots. You can leave the slots exposed but make sure you do not place any tools or body parts in the slot.

- Never operate the X-Pedition if the chassis becomes wet or the area where the chassis is installed is wet.

Preventing Equipment Damage

Observe the precautions listed in this section to prevent accidental damage to the X-Pedition components.



Cautions: To prevent accidental product damage, observe the following precautions:

- Always use proper electrostatic discharge (ESD) gear when handling the control module, backplane, line cards or other internal parts of the chassis.
- Make sure you allow adequate room for air flow around the chassis.
- If you plan to install the chassis in an equipment rack, it is recommended that you install a support tray under the chassis, especially for chassis that are completely filled (no empty control module, power supply, or line card slots).

Before Removing Fiber Optic Protective Caps

Cable assemblies and fiber optic ports are shipped with protective caps to prevent contamination. To avoid contamination, replace port caps on all fiber optic devices when not in use. Cable assemblies and fiber optic ports that become contaminated may experience signal loss or difficulty inserting and removing cable assemblies from fiber optic ports.

Contamination can be removed from cable assemblies by:

1. Blowing surfaces with canned duster (Chemtronics p/n ES1270 or equivalent).
2. Using a fiber port cleaning swab (Alcoa Fujikura LTD p/n ACT-01 or equivalent) saturated with optical-grade Isopropyl Alcohol, gently wipe the end face surface of ferrules first; then wipe down the sides of both ferrules. Blow ferrule surfaces dry with canned duster.

Contamination can be removed from fiber optic ports by:

1. Using the extension tube supplied with canned duster, blow into the optical port, being careful not to allow the extension tube to touch the bottom of the optical port.
2. Reconnect cable and check for proper mating. If problems remain, gently wipe out optical port with a **DRY** fiber port cleaning swab and repeat step 1.

Hardware Specifications

The following table lists the physical and environmental specifications for the X-Pedition 8000 and X-Pedition 8600.

	X-Pedition 8000	X-Pedition 8600
Dimensions	8.75 in. H x 17.25 W x 12.25 D 22.3 cm H x 43.82 W x 31.12 D	19.25 in. H x 17.25 W x 12.25 D 48.9 cm H x 43.82 W x 12.25 D
Weight	Pounds: 40 lbs Kilograms: 18.2 Kg	Pounds: 61.75 lbs Kilograms: 28 Kg
AC Power	100-125 VAC, 5A maximum 200-240 VAC, 3A maximum 50/60 Hz	100-125 VAC, 10A maximum 200-240 VAC, 6A maximum 50/60 Hz
DC Power	48-60 Vdc maximum 14A maximum	48-60 Vdc maximum 27A maximum
Output Wattage	390 Watts	780 Watts
At 3.4 V	70 Amps	140 Amps
At 5.1 V	25 Amps	50 Amps
At 12 Volts	2 Amps	4 Amps
Operating Temperature	Fahrenheit: 41°F to 104°F Centigrade: 5°C to 40°C	Fahrenheit: 41°F to 104°F Centigrade: 5°C to 40°C

The number of line modules you can install in an X-Pedition 8000/8600 chassis is limited only by the total power consumption of the installed modules. As long as you do not exceed the maximum power available, you may completely fill the chassis. Modules with high power consumption (i.e., the SSR-GTX32-04, SSR-GSX31-04, SSR-GLX39-04, SSR-POS21-04-AA, SSR-POS29-04-AA, SSR-POS31-02-AA, SSR-POS39-02-AA, and SSR-ATM29-02) can limit the number of modules you may install—some slots may remain empty. [Table 18](#) lists the power consumption for each module and the total power limit for each chassis type.

Note: As long as you do not exceed the maximum Amps listed at the bottom of the following chart, the restrictions above do not apply. For questions related to power consumption, please contact Enterasys Networks.

Table 18. Power Consumption

Line Module	Description	3.3v Amps	5v Amps
SSR-SF-16	SSR Switch Fabric Module	3.00	0.00
SSR-CM2B-64	SSR 64 MB Switch Control Processor	3.65	0.33
SSR-CM3-128	SSR 128 MB Switch Control Processor	4.42	0.38
SSR-CM4-256	SSR 128 MB Switch Control Processor	4.42	0.38
SSR-GLX29-02-AA	SSR 2-Port Gigabit Ethernet-LX 16 MB line card	5.40	0.50

Table 18. Power Consumption (Continued)

SSR-GLX70-01-AA	SSR 1-Port 70km GbE LX (SMF) 16MB line card	5.40	0.50
SSR-GLX39-02	SSR Gigabit Jumbo Packet	7.32	0.51
SSR-GLX39-04	SSR Gigabit Jumbo Packet (Blackbird)	13.16	0.98
SSR-GLH39-02	SSR Gigabit Jumbo Packet	7.32	0.51
SSR-GSX21-02-AA	SSR 2-Port Gigabit Ethernet-SX 16 MB line card	5.40	0.50
SSR-GSX31-02	SSR Gigabit Jumbo Packet	7.32	0.51
SSR-GSX31-04	SSR Gigabit Jumbo Packet (Blackbird)	13.16	0.98
SSR-GTX32-02	SSR Gigabit 1000BASE-T (Nighthawk)	10.44	0.00
SSR-GTX32-04	SSR Gigabit 1000BASE-T (Spirit)	12.30	0.98
SSR-HFX21-08-AA	SSR 8-Port Fast Ethernet-FX (MMF) 16 MB line card	6.10	2.70
SSR-HFX29-08-AA	SSR 8-Port Fast Ethernet-FX (SMF) 16 MB line card	6.10	2.70
SSR-HTX12-08-AA	SSR 8-Port Fast Ethernet-TX (UTP) 4 MB line card	5.90	1.60
SSR-HTX22-08-AA	SSR 8-Port Fast Ethernet-TX (UTP) 16 MB line card	5.90	1.60
SSR-HTX32-16	SSR 16-Port Fast Ethernet-TX, 16MB (Dino/TREX)	7.68	0.00
SSR-HSSI-02-AA	SSR 2-Port HSSI Line Card	3.70	0.50
SSR-SERC-04-AA	SSR 4-Port Serial LC w/ HW Compression	4.80	0.50
SSR-SERCE-04-AA	SSR 4-Port Serial LC w/ HW Compression and HW Encryption	4.80	0.50
SSR-POS21-04-AA	SSR Quad OC-3 (POS-MMF)	5.62	0.88
SSR-POS29-04-AA	SSR Quad OC-3 (POS-SMF)	5.62	0.88
SSR-POS31-02-AA	SSR Dual OC-12 (POS-MMF)	6.00	1.041
SSR-POS39-02-AA	SSR Dual OC-12 (POS-SMF)	6.00	1.041
SSR-ATM29-02	SSR OC-3 ATM (Modular PHY)	12.00	0.00
SSR-FDDI-02-Fiber Phy	SSR FDDI (Fiber mod-PMD)	6.95	2.60
SSR-FDDI-02-Copper Phy	SSR FDDI (Copper Mod-PMD)	6.84	1.50
SSR-ARE	SSR AppleTalk Routing Engine	1.41	2.26
8000 Chassis Limit		68.5 Amps	25 Amps
8600 Chassis Limit		140 Amps	50 Amps

Installing the Hardware

This section describes how to perform the following tasks:

- Check the shipping box to ensure that all the parts arrived
- Install the chassis (on a tabletop or in an equipment rack)
- Install the control module
- Install a memory upgrade
- Install the switching fabric module (X-Pedition 8600 only)
- Install line cards
- Install the power supply (either AC or DC)
- Attach console management cables
- Attach port cables

Verifying Your Shipment

Before you begin installing your X-Pedition, check your shipment to ensure that everything you ordered arrived securely.



Caution: To avoid back strain, be careful when lifting the chassis out of the shipping box.

Open the shipping box(es) and verify that you received the following equipment:

- An X-Pedition 8000 or X-Pedition 8600 chassis containing a backplane, fan module, and a console cable. The console cable is used for connecting a terminal to the control module DB-9 port.
- An X-Pedition 8000 or X-Pedition 8600 power supply.
- One country-specific power cable per power supply.
- One control module.
- One Switching Fabric Module (X-Pedition 8600 only).
- An X-Pedition Media Kit containing:
 - One PCMCIA flash card containing the X-Pedition system software
 - One copy of the *Enterasys X-Pedition 8000/8600 Getting Started Guide* (the book you are reading now)
 - Release Notes

Depending on your order, your shipment may also contain some or all of the following:

- Redundant power supply, if you ordered one.
- Redundant control module, if you ordered one.
- Redundant Switching Fabric Module, if you ordered one (X-Pedition 8600 only).
- The line cards you ordered.

Installing the Chassis

Enterasys recommends that only qualified personnel conduct installation of any X-Pedition chassis.

This section contains procedures for the following types of installation:

- Tabletop Installation
- Rack mount Installation

Tabletop Installation

You can install the X-Pedition on a tabletop.

1. Select a table that is stable (not wobbly) and is not in an area subject to frequent foot traffic. Remember that you will be attaching numerous cables to the chassis.
2. Place the X-Pedition on the table, allowing at least 3 inches (7.62 centimeters) of room above and behind the unit for air flow to the cooling fans.

Rack Mount Installation

You can install the X-Pedition in a standard 19-inch equipment rack. The X-Pedition chassis is equipped with front-mounting brackets. [Figure 23](#) shows an example of how to install an X-Pedition 8600 chassis in an equipment rack.

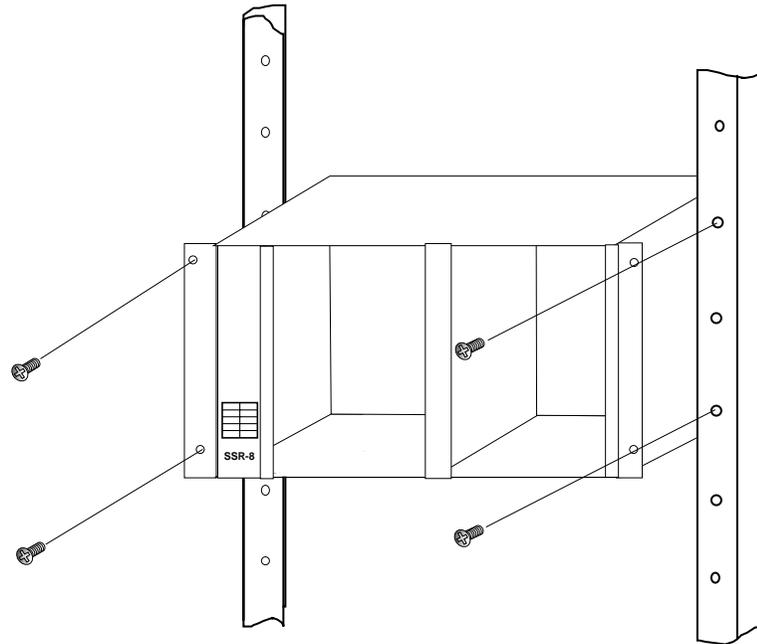


Figure 23. Installing the X-Pedition 8600 chassis in an equipment rack

Note: Never attempt to rack mount the X-Pedition chassis unaided. Ask an assistant to help you hold the chassis.



Caution: To make lifting and holding the chassis easier, install the chassis before you install line cards or redundant control modules and power supplies.

To install the X-Pedition chassis in an equipment rack, use the following procedure. You need a #2 Phillips screwdriver to perform this procedure.

1. If the front-mounting brackets are already installed on the X-Pedition chassis, go to [step 2](#). If not, do the following:
 - a. Align one of the mounting brackets over the corresponding holes in the side of the chassis. The mounting bracket is correctly positioned when the side with two open mounting holes is flush with the front of the chassis.
 - b. Use the #2 Phillips screwdriver and two of the supplied Phillips screws to attach the mounting bracket to the chassis.
 - c. Attach the other mounting bracket.

2. Along with an assistant, lift the chassis into place in the mounting rack.
3. While your assistant holds the chassis in place, use the #2 Phillips screwdriver and four #2 Phillips screws to attach the mounting brackets to the mounting rack.

Note: Make sure there are at least 3 inches (7.62 centimeters) of room above and behind the unit for air flow to the cooling fans.



Caution: Make sure the screws are tight before your assistant releases the chassis. If you accidentally leave the screws loose, the chassis can slip and fall, possibly becoming damaged.

Installing an AC Power Supply

The primary AC power supply is shipped separately from the X-Pedition chassis. To install or replace the primary AC power supply or if you want to install a redundant power supply, use the following procedure. You will need a #2 Phillips screwdriver to perform this procedure.

Note: Use a single-phase grounded power source located within 6 feet (1.89 meters) of the installation site.

AC Power Supply Specifications

The following table lists the physical specifications for the X-Pedition's AC power supplies.

	X-Pedition 8000	X-Pedition 8600
Dimensions	2.5 in. H x 7.70 W x 11 D 6.35 cm H x 19.56 W x 27.94 D	5.05 in. H x 7.70 W x 12.28 D 12.83 cm H x 19.56 W x 31.19 D
Weight	6 lbs 2.73 Kg	11 lbs 4.99 Kg
AC Power	100-125 VAC, 5A maximum 200-240 VAC, 3A maximum 50/60 Hz	100-125 VAC, 10A maximum 200-240 VAC, 6A maximum 50/60 Hz
Output Wattage	390 Watts	780 Watts
At 3.4 V At 5.1 V At 12 Volts	70 Amps 25 Amps 2 Amps	140 Amps 50 Amps 4 Amps
Operating Temperature	Fahrenheit: 41°F to 104°F Centigrade: 5°C to 40°C	Fahrenheit: 41°F to 104°F Centigrade: 5°C to 40°C

The following table lists the environmental specifications for the X-Pedition's AC power supplies.

Operating Temperature	+5 to +40 °C (41 to 104 °F)
Non-operating Temperature	-30 to +73 °C (-22 to 164 °F)
Operating Humidity	15 to 90% (non-condensing)

Figure 24 shows an example of how to install an AC power supply. The procedure following the figure describes how to do this.

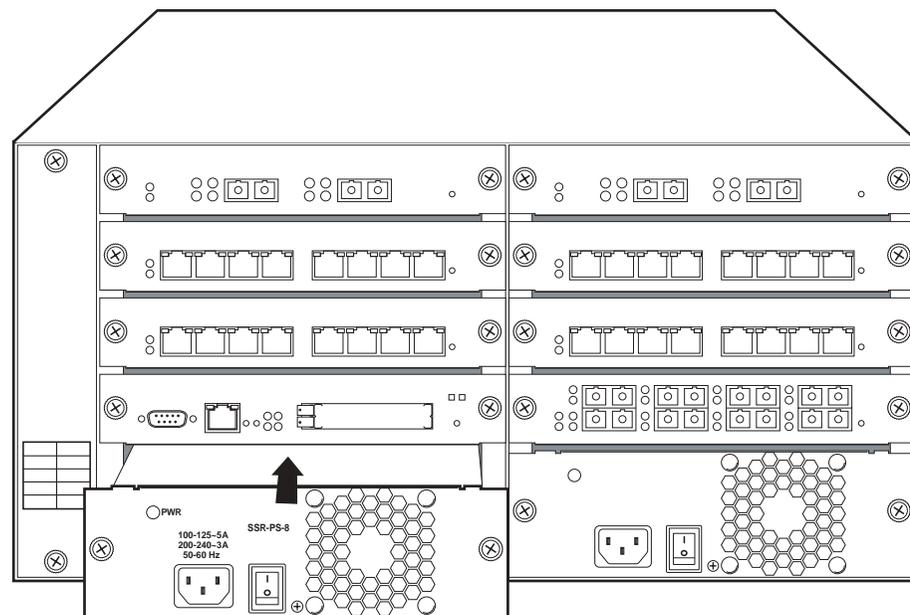


Figure 24. Installing an AC power supply

AC Power Supply Installation Procedure

To install an AC power supply:

1. Ensure that the AC power supply is not powered on.
2. If a coverplate is installed over the power supply slot, use the #2 Phillips screwdriver to remove it. If you are replacing an AC power supply, unplug the power cable from the supply you are replacing, loosen the captive screws on the power supply's front panel, then pull the supply out of the chassis.
3. Slide the AC power supply all the way into the slot, firmly but gently pressing to ensure that the pins on the back of the power supply are completely seated in the backplane.

4. Use the #2 Phillips screwdriver to tighten the captive screws on each side of the power supply to secure it to the chassis.
5. Attach the power cable to the AC power supply.

Installing a DC Power Supply

The X-Pedition DC power supply delivers 3.3, 5, and 12 volts DC to the X-Pedition’s control module(s), fan modules, and other components. A single DC power supply provides enough current to operate a fully-configured chassis.

DC Power Supply Specifications

The following table lists the physical specifications for the X-Pedition’s DC power supplies.

	X-Pedition 8000	X-Pedition 8600
Input Voltage	48 to 60 Volts (14 Amperes Max.)	48 to 60 Volts (27 Amperes Max.)
Output Wattage	390 Watts	780 Watts
At 3.4 V	70 Amps	140 Amps
At 5.1 V	25 Amps	50 Amps
At 12 Volts	2 Amps	4 Amps
Dimensions	2.5 in. H x 7.70 W x 11 D 6.35 cm H x 19.56 W x 27.94 D	5.05 in. H x 7.70 W x 12.28 D 12.83 cm H x 19.56 W x 31.19 D
Weight	6 lbs 2.73 Kg	11 lbs 4.99 Kg



Caution: To reduce the risk of electric shock or energy hazards:

1. Connect to a reliably grounded SELV source.
2. The branch circuit over current protection must be rated at a maximum of 20A for the X-Pedition 8000 and 40A for the X-Pedition 8600.
3. Use 14 AWG solid copper wires on the X-Pedition 8000 and 8 AWG solid copper wires on the X-Pedition 8600 only.
4. A readily accessible disconnect device that is suitably approved and rated shall incorporated in the field wiring.
5. To be installed in a restricted access area in accordance with the NEC or authority having jurisdiction.

The following table lists the environmental specifications for the X-Pedition's DC power supplies.

Operating Temperature	+5 to +40 °C (41 to 104 °F)
Non-operating Temperature	-30 to +73 °C (-22 to 164 °F)
Operating Humidity	15 to 90% (non-condensing)

DC Power Supply Installation Procedure

To install a DC power supply on the X-Pedition 8000 or X-Pedition 8600:

1. Ensure that the DC power supply is not powered on.
2. If a coverplate is installed over the DC power supply slot, use a #2 Phillips screwdriver to remove it. If you are replacing a power supply, unplug the power cable from the supply you are replacing, loosen the captive screws on the power supply's front panel, then pull the supply out of the chassis.
3. Slide the DC power supply all the way into the slot, firmly but gently pressing to ensure that the pins on the back of the power supply are completely seated in the backplane.
4. Use a #2 Phillips screwdriver to tighten the captive screws on each side of the DC power supply to secure it to the chassis.
5. Attach wires to the terminal blocks on the front of the unit. To attach a wire, loosen the terminal screw, insert the exposed end of the wire, and tighten the terminal screw.
6. Connect the safety ground wire to a reliable earth ground.
7. Connect the DC input wiring to a DC power source. See [Figure 28 on page 64](#) and [Figure 29 on page 64](#) for a diagram of the wiring connections between the X-Pedition and a DC power source.

X-Pedition 8000 DC Power Supply

Figure 25 shows the front view of an X-Pedition 8000 DC power supply.

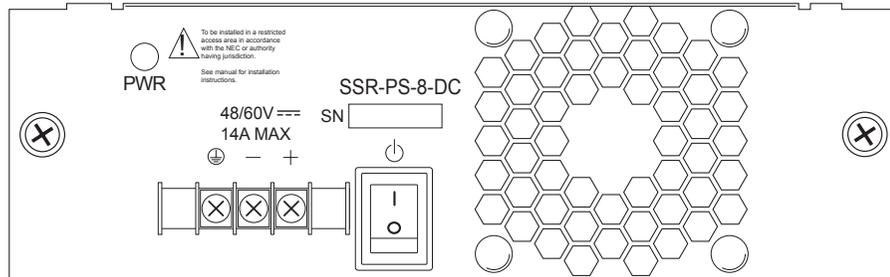


Figure 25. Front view of an X-Pedition 8000 DC power supply

The X-Pedition 8000 DC power supply has a three-terminal wiring block on the front panel, consisting of a positive (+) terminal, negative (-) terminal and a safety ground. The DC supply is designed to be powered by a 48-volt DC source.

X-Pedition 8600 DC Power Supply

Figure 26 shows the front view of an X-Pedition 8600 DC power supply.

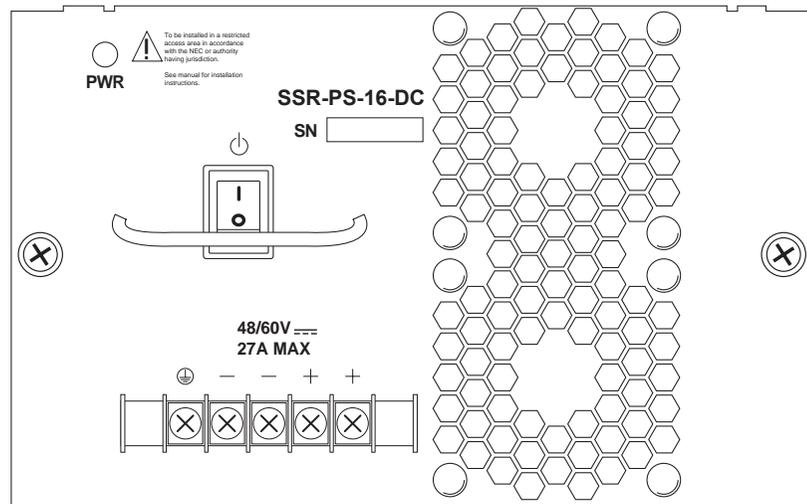


Figure 26. Front view of an X-Pedition 8600 DC power supply

The X-Pedition 8600 DC power supply has a five-terminal wiring block on the front panel. The wiring block contains two positive (+) terminals, two negative (-) terminals, and a safety ground. The DC supply is designed to be powered by a 48-volt DC source.

Internally, the X-Pedition 8600 DC power supply consists of two separate power supplies. Each of these internal power supplies must be energized to produce sufficient power for the X-Pedition 8600 to operate. Each internal power supply is connected to source power through a pair of positive (+) and negative (-) wiring lugs on the wiring block. [Figure 27](#) shows the internal relationship of the wiring lugs of the X-Pedition 8600 DC power supply.

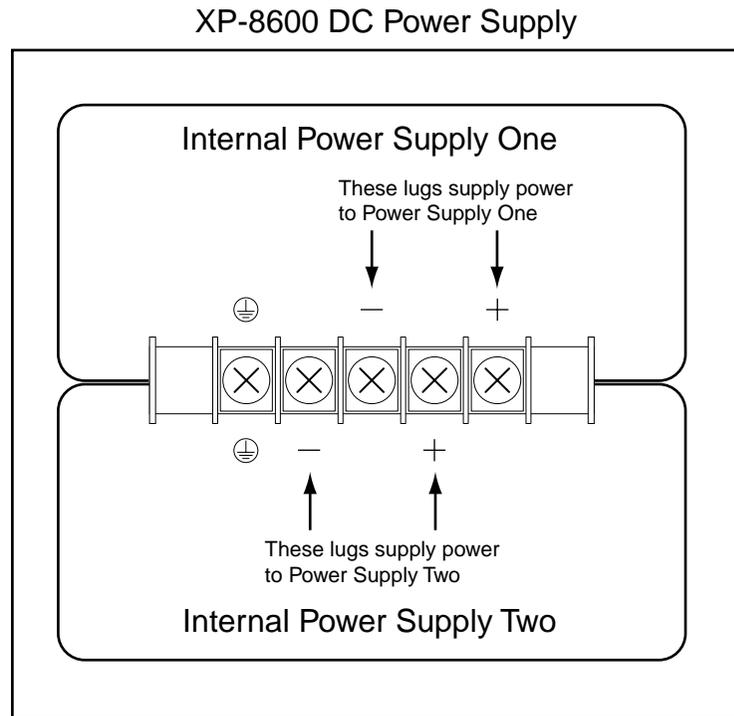


Figure 27. Relationship of wiring lugs on X-Pedition 8600 DC power supply

Note: For the X-Pedition 8600 to work properly, both positive (+) terminals and both negative (-) terminals of the X-Pedition 8600 DC power supply **MUST** be connected to the DC source.

Because of the X-Pedition 8600 DC supply current requirements, each pole of the 48 Volt DC source should use 6 gauge wire. Each 6 gauge wire can be divided into two 12 gauge wires by using a conductive splitter-block. This creates two 12 gauge wires carrying positive (+) current and two 12 gauge wires carrying negative current. In turn, both 12 gauge positive (+) wires and both 12

gauge negative (-) wires are connected to the X-Pedition 8600 DC power supply wiring block. See [Figure 28](#).

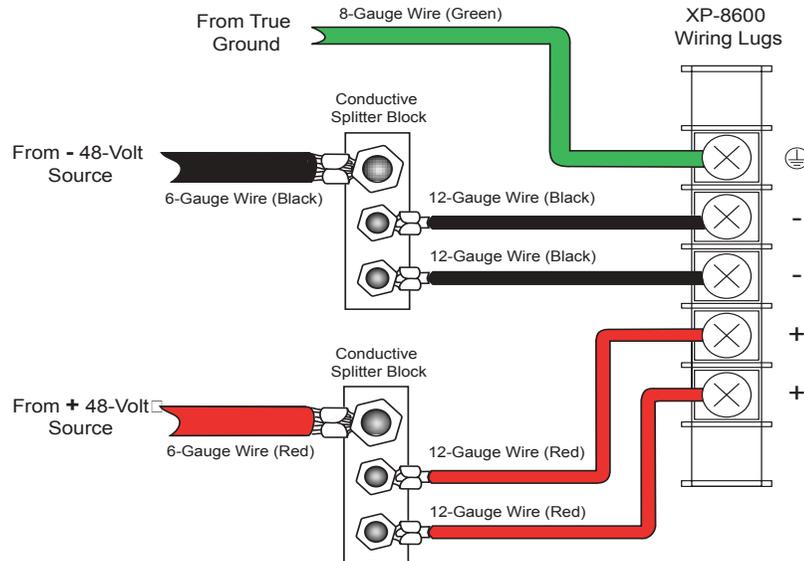


Figure 28. Splitting each source wire to two 12-gauge wires

An alternate method of wiring the X-Pedition 8600 power supply is to use a single set of 8-AWG wires (+ and -) from the DC source, and then tie the X-Pedition 8600's wiring lugs together: + to + and - to -. See [Figure 29](#).

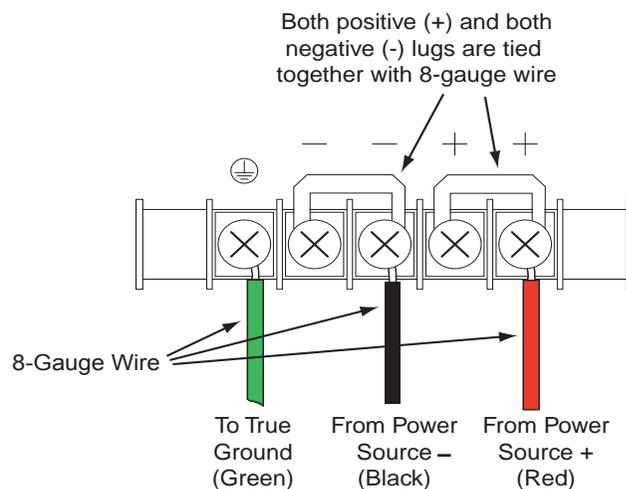


Figure 29. Tying X-Pedition 8600 DC supply lugs together

Installing the Control Module

The primary control module always resides in the CM slot. If you need to replace the primary control module in the CM slot, or you want to install a redundant control module in slot CM/1, use the following procedure (you will need a #2 Phillips screwdriver to perform this procedure). The primary control module must be installed in slot CM. The redundant control module must be installed in slot CM/1. (See *Chassis* on page 10 for information about the chassis slots.)

Figure 30 shows an example of how to install a control module. The procedure following the figure describes how to do this.

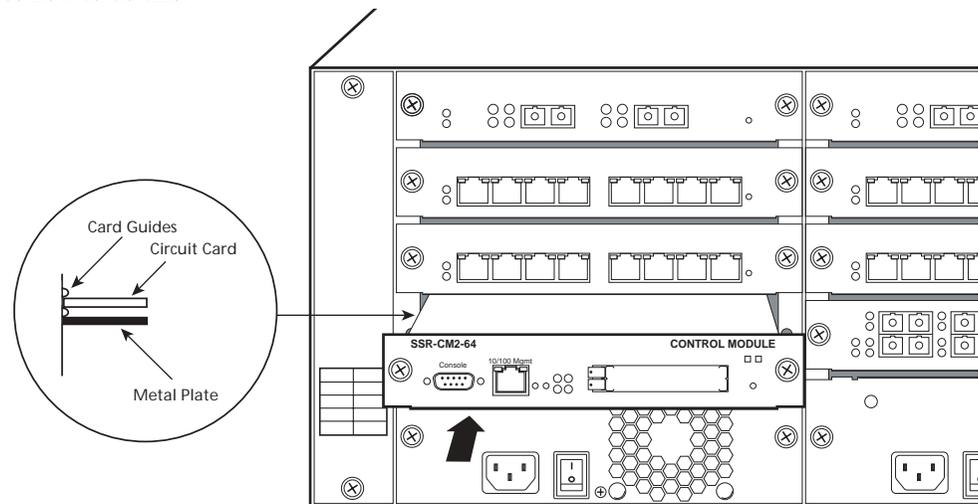


Figure 30. Installing a Control Module

To install the control module:

1. If a coverplate is installed over the control module slot (slot or CM/1 only), use the #2 Phillips screwdriver to remove it.
2. Slide the control module all the way into the slot, firmly but gently pressing to ensure that the pins on the back of the control module are completely seated in the backplane.

Note: Make sure the circuit card (and not the metal plate) is between the card guides, as shown in Figure 30. Check both the upper and lower tracks.

3. Use the #2 Phillips screwdriver to tighten the captive screws on each side of the control module to secure it to the chassis.
4. When you are ready to attach the management cables to the control module, review the cable specifications under *SSR-CM2B-64*, *SSR-CM3-128*, and *SSR-CM4-256* on page 107.

Firmware Image Requirements

Version 8.2.0.0 or later.

Default Module Settings

The CM4 comes with the baud rate on RS232 console port set to 9600.

Preparing the Module

- You must install the PCMCIA card **before** you install the command module. You cannot add or remove a PCMCIA card while the unit is powered on.

Installing a Memory Upgrade



CAUTION: Before performing any upgrade or installation, ensure that you are properly “grounded” to avoid electrostatic discharge. The switch must be powered off before installing or replacing any module.

1. **Determine how much memory is already installed on the Control Module.** If you do not know how much memory is installed on the Control Module, enter the **system show hardware** command in Enable mode. The amount of memory is reported as the System Memory size. For example:

```
xp# system show hardware

Hardware Information:
  System type:          X-Pedition 8600, Rev. A
  CPU Module type:     CPU-Elan, Rev. 0
  Processor:           R5000, Rev 3.0, 249.99 MHz
    Icache size:       32 Kbytes, 32 bytes/line
    Dcache size:       32 Kbytes, 32 bytes/line
  CPU Board Frequency: 83.33 MHz
  Switching Fabrics:   2 (Active = Fabric 1)
  PCMCIA card:         No card present
  System Memory size: 64 MBytes
  Network Memory size: 8 MBytes
  MAC Addresses
    System:             00e063:fdd700
    10BASE-T CPU Port: 00e063:fdd701
    Internal Use:       00e063:fdd702 -> 00e063:fdd73f
  CPU Mode:            Active
  Redundant CPU:       Not present
```

2. **Power down the chassis.**

Note: If the X-Pedition chassis contains a redundant Control Module, you do not need to power down the X-Pedition. You must, however, press the Hot Swap button before removing the Control Module.

3. **Loosen captive screws.** Use a phillips screwdriver to loosen the captive screws on the face of the module.
4. **Remove the Control Module.** Pull the Control Module out of the X-Pedition chassis and place it on an ESD-safe work area. The Control Module memory resides in slots P7 and P8. [Figure 4](#) shows the location of the DIMM slots—slot P7 is the slot closest to the backplane.

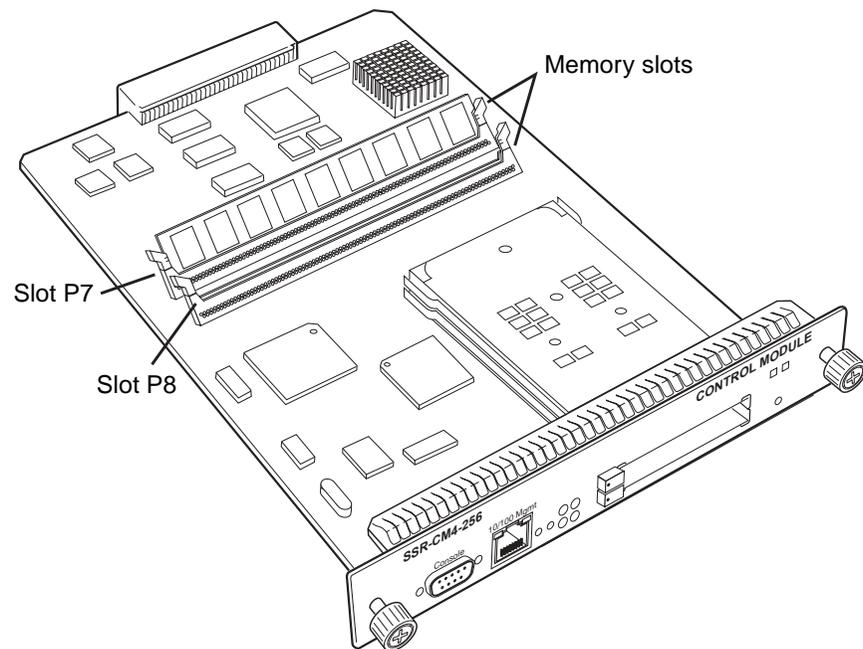


Figure 31. Install the DIMM in an X-Pedition memory slot

5. **Insert the SSR-MEM-128 into an empty memory slot.** Gently press the memory card in place and ensure that the card is completely seated in the slot.

Note: Slot P7 must contain the larger of the two DIMMs. If slot P7 already contains a 64MB DIMM, remove the 64MB DIMM and install the 128MB DIMM in slot P7. You may then install the 64MB DIMM in slot P8 for a total of 192MB installed on the Control Module.

If a 128MB DIMM already resides in slot P7, you need not remove it. Install the new 128MB DIMM in slot P8.

6. **Align the backsheet of the Control Module between the card guides** as shown in [Figure 32](#).

Note: Make sure that the circuit card is between the card guides. Check both tracks.

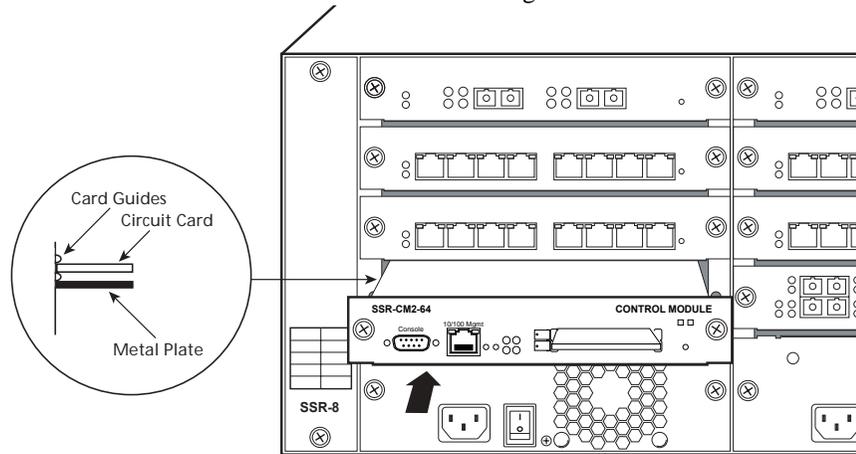


Figure 32. Insert card between card guides

7. **Slide the upgraded Control Module back into the chassis.** Return the Control Module to the chassis, firmly but gently pressing the line module fully in place to ensure that the pins on the back of the line card are completely seated in the backplane.
8. **Tighten captive screws.** Align the captive screws with the holes in the face of the module and tighten the screws to secure the module to the chassis.
9. **Power on the X-Pedition chassis.** Move the power switch located on the power supply to the “On” position. As the X-Pedition boots, messages on the console will appear, reflecting the memory upgrade on the Control Module.

Installing the Switching Fabric Module (X-Pedition 8600 only)

On the X-Pedition 8600, the switching fabric module is shipped separately from the X-Pedition chassis. To install or replace the primary switching fabric module, or if you want to install a redundant switching fabric module, use the following procedure. You will need a #2 Phillips screwdriver to perform this procedure.

The primary switching fabric module must be installed in slot Fabric 1. The redundant switching fabric module must be installed in slot Fabric 2. [Figure 33](#) shows an example of how to install a switching fabric module. The procedure following the figure describes how to do this.

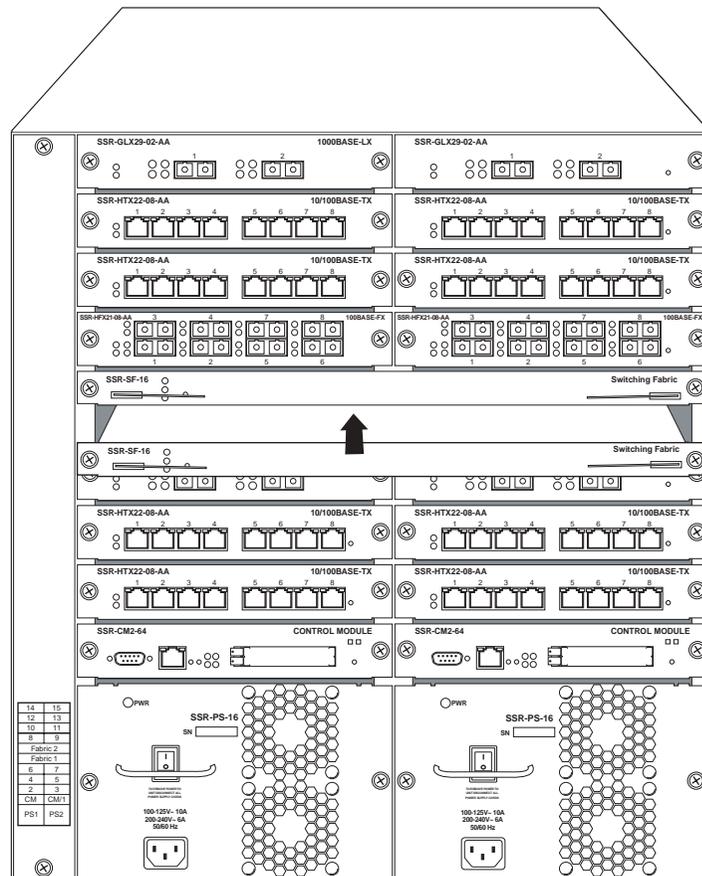


Figure 33. Installing a switching fabric module on the X-Pedition 8600

To Install a Switching Fabric Module

1. If a coverplate is installed over the switching fabric module slot (slot Fabric 1 or Fabric 2), use the #2 Phillips screwdriver to remove the coverplate.
2. Slide the switching fabric module all the way into the slot, firmly but gently pressing to ensure that the pins on the back of the module are completely seated in the backplane.

- Note:** Make sure the circuit card (and not the metal plate) is between the card guides, as shown in [Figure 30 on page 65](#). Check both the upper and lower tracks.
3. Lock down the left and right metal tabs to secure the switching fabric module to the chassis.
 4. Use the #2 Phillips screwdriver to tighten the captive screws on each side of the switching fabric to secure the switching fabric to the chassis.

Installing Line Cards



ELECTRICAL HAZARD: Only qualified personnel should perform installation procedures.

You can install line modules in slots 1 to 7 on the X-Pedition 8000 (slot 0 allows a control module only) or 1 to 15 on the X-Pedition 8600 (again, slot 0 allows a control module only). If you plan to install a redundant control module, you may install line cards in slots 2–7 on the X-Pedition 8000 and 2–15 on the X-Pedition 8600. Before you begin, please review [Table 19](#) for system firmware requirements, restrictions, and special instructions that apply to the line card you are installing.

Table 19. Line card installation notes

	Minimum Firmware	Restrictions	Special Instructions
SSR-ARE		<p>Note: The SSR-ARE is designed for the X-Pedition 8000/8600 only—do not try to install these modules in any other units. Do not install the SSR-ARE in slot 0 or 1 on the X-Pedition 8000 or slot 0, 1, or 15 on the X-Pedition 8600.</p>	
SSR-ATM29-02	3.0.0.0	<p>CLI Setup</p> <p>Enter the following commands at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> Enable —> Configuration —> <Enter>. Once you reach the configuration prompt, you can create the ATM interface using CLI commands as described in the ATM section of the X-Pedition CLI manual. Enter the ? character to view the options available to you in configuration mode. 	<p>Proper Boot sequence</p> <ul style="list-style-type: none"> The control module on the chassis should indicate that the SSR-ATM29-02 was detected and is operating correctly. <p>Common Errors</p> <ul style="list-style-type: none"> Make sure the chassis is connected to a terminal through a console port. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version System show bootlog

Table 19. Line card installation notes (Continued)

	Minimum Firmware	Restrictions	Special Instructions
SSR-CM2B-64 SSR-CM3-128 SSR-CM4-256	E8.2.0.0	<p>WARNING: The SSR-CM4-256 is designed for slots 0 and 1 only, and is easily damaged by electrostatic discharge.</p> <p>CAUTION: You cannot hot swap the <i>Primary</i> CM; however, you may hot swap a <i>Secondary</i> CM by pressing the hot swap button.</p> <p>Note: You cannot use a CM4 with CM3 or CM2 command modules. Older modules will not recognize the CM4.</p> <p>Default Module Settings</p> <p>The CM4 comes with the baud rate on RS232 console port set to 9600.</p> <p>Preparing the Module</p> <ul style="list-style-type: none"> You must install the PCMCIA card before you install the command module. You cannot add or remove a PCMCIA card while the unit is powered on. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> The HBT, ERR, and DIAG LEDs light momentarily. The screen displays the boot software version, cache, and processor information. The CM boots an image if available or stops at a prompt for configuration. <p>Common Errors</p> <ul style="list-style-type: none"> The firmware image was loaded but no traffic is being passed. This occurs when your network reboots and cannot find your network settings in the configuration file. Screen connected to console port displays random text. Change terminal to 9600 baud/8 bits/Xon Xoff/full duplex. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version System show bootlog
SSR-FDDI-02	3.2.0.0	<p>Preparing the Module</p> <ul style="list-style-type: none"> Before installing the module, you must install at least one of the following FPHYs (purchased separately): FPHY-01, FPHY-02, or FPHY-09. See <i>Installing FPHYs on page 79</i>. Because FDDI full duplex is not an industry standard, its implementation is based on the Digital Equipment Corporation (DEC) standard. FDDI full duplex will interoperate with all DEC products and most Enterasys Networks FDDI products. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> Firmware loads. The LEDs on Port 1 light in the following order: A, B, P, S, Rx, and Tx. After the Tx LED lights, all LEDs turn off and the online LED turns green. Diagnostic messages display for each line card. Status lights on line cards go online. Link lights activate for connected lines. <p>Common Errors</p> <ul style="list-style-type: none"> The X-Pedition is not powered up. Ensure that the device attached to the module is powered up and operating correctly. The module is not properly seated in the slot. Connectors on both ends of the cable are not properly engaged. Fiber cable attached to an SC-type port did not click into place or is not properly seated. If you are using fiber optic cable with an ST-type connector in conjunction with an SC-ST port converter, try switching the TX and RX connectors. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version System show bootlog

Table 19. Line card installation notes (Continued)

	Minimum Firmware	Restrictions	Special Instructions
SSR-GLX39-04 SSR-GSX31-04	8.3.0.0	<p>Note: If your system uses a redundant power configuration or only one power supply, you will not be able to support more than 5 SSR-GLX39-04 and SSR-GSX31-04 cards in the X-Pedition 8000 and 10 in the X-Pedition 8600.</p> <p>Note: You may install the SSR-GLX39-04 or SSR-GSX31-04 in any line card slot except the CM slot which supports a control module only.</p> <p>Preparing the Module</p> <ul style="list-style-type: none"> When connecting a 1000Base-SX/LX module to a device that does not support auto-negotiation, ensure that auto-negotiation is disabled and that both devices are set to the same data transmission speed and duplex mode. <p>Default Module Settings</p> <p>The default mode for each port on the X-Pedition-8000 and X-Pedition-8600 is:</p> <p>Full duplex/ 1000 mbs/ autonegotiation on</p> <p>To view the current mode for a particular port, enter the following (where x is the chassis slot that contains the line card and y is a specific port number on the card):</p> <p>xp# port show port status gi.x.y</p> <p>CLI Setup</p> <p>Enter the following commands at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> Type the following from Enable mode to enter Configuration mode Enable -> Configure # You may now begin configuring ports on the SSR-GLX39-04 or SSR-GSX31-04. Refer to the <i>Enterasys X-Pedition Command Line Interface Reference Manual</i> for details. 	<p>When connecting a 1000BASE-SX/LX module to a device that does not support auto-negotiation, ensure that Auto-Negotiation is disabled and that both devices are set to the same data transmission speed and duplex mode.</p> <p>Proper Boot Sequence</p> <ul style="list-style-type: none"> Offline LED turns on and remains on until card is online. Port LEDs turn on momentarily and the CLI indicates that the system discovered the line card in proper slot. CLI indicates all ports are initialized and offline LED turns off. Online LED lights. Link LED is active for connected lines. <p>Common Errors</p> <ul style="list-style-type: none"> The line card is not inserted properly or seated completely in the chassis Connectors for the connected lines are not seated properly. Attached device is not configured to match configuration mode of module (i.e., auto-negotiation, speed, duplex). <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version Port show port status gi.x.y (where x is the chassis slot that contains the line card and y is a specific port number on the card). System show bootlog

Table 19. Line card installation notes (Continued)

	Minimum Firmware	Restrictions	Special Instructions
SSR-GTX32-04 SSR-GTX32-02	9.0.0.0	<p>Note: The SSR-GTX32-02 line card does not support 10/100 Mbps traffic.</p> <p>Default Module Settings</p> <p>The default mode for each port on the X-Pedition 8000/8600X-Pedition is:</p> <p>Full duplex/ 1000 mbs/ autonegotiation on</p> <p>To view the current mode for a particular port, enter the following (where x is the chassis slot that contains the line card and y is a specific port number on the card):</p> <p>xp# port show port status gi.x.y</p> <p>CLI Setup</p> <p>Enter the following commands at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> 1. Enable —> Configure —> <Enter>. Once you reach the configuration prompt, you can configure the module using CLI commands as described in the X-Pedition CLI manual. Enter the ? character to view the options available to you in configuration mode. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> Offline LED lights at power-up. Port LEDs flicker briefly during system boot while ports initialize. Online LED turns on once module is active. <p>Common Errors</p> <ul style="list-style-type: none"> The X-Pedition is not powered up. The module is not properly seated in the slot. Connectors on both ends of the cable are not properly engaged. The copper cable did not click into place or is not properly seated. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version System show bootlog
SSR-HSSI-02-CK	8.3.0.0	<p>CLI Setup</p> <p>Enter the following command at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> Type the following from Enable mode to enter Configuration mode Enable -> Configure # You may now begin configuring ports on the SSR-HSSI-02-CK. Refer to the <i>Enterasys X-Pedition Command Line Interface Reference Manual</i> for details. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> Firmware loads. The control module for the chassis should indicate that the SSR-HSSI-02-CK was detected and is operating correctly. The Online LED will turn on and remain lit (no other LEDs should illuminate during module power-up). <p>Common Errors</p> <ul style="list-style-type: none"> The SSR-HSSI-02-CK is not inserted properly or seated completely in the chassis Connectors for the connected lines are not seated properly. The CM does not connect to a terminal through a console port. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version Port show port status gi.x.y (where x is the chassis slot that contains the line card and y is a specific port number on the card). System show boot log

Table 19. Line card installation notes (Continued)

	Minimum Firmware	Restrictions	Special Instructions
SSR-POS29-04 SSR-POS21-04	9.0.0.2	<p>Note: If your system uses a redundant power configuration or only one power supply, you will not be able to support more than 5 cards in the X-Pedition 8000 and 10 in the X-Pedition 8600.</p> <p>CLI Setup</p> <p>Enter the following commands at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> Enable —> Configure —> <Enter>. Once you reach the configuration prompt, you can configure the SSR-POS21-04 or SSR-POS29-04 using CLI commands as described in the X-Pedition CLI manual. Enter the ? character to view the options available to you in configuration mode. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> Offline LED lights at power-up. Port LEDs flicker briefly during system boot while ports initialize. Online LED turns on once module is active. <p>Common Errors</p> <ul style="list-style-type: none"> The X-Pedition is not powered up. The module is not properly seated in the slot. Connectors on both ends of the cable are not properly engaged. The copper cable did not click into place or is not properly seated. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version System show bootlog
SSR-POS39-02 SSR-POS31-02	9.0.0.2	<p>Note: If your system uses a redundant power configuration or only one power supply, you will not be able to support more than 5 cards in the X-Pedition 8000 and 10 in the X-Pedition 8600.</p> <p>CLI Setup</p> <p>Enter the following commands at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> Enable —> Configure —> <Enter>. Once you reach the configuration prompt, you can configure the SSR-POS39-02 or SSR-POS31-02 using CLI commands as described in the X-Pedition CLI manual. Enter the ? character to view the options available to you in configuration mode. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> Offline LED lights at power-up. Port LEDs flicker briefly during system boot while ports initialize. Online LED turns on once module is active. <p>Common Errors</p> <ul style="list-style-type: none"> The X-Pedition is not powered up. The module is not properly seated in the slot. Connectors on both ends of the cable are not properly engaged. The copper cable did not click into place or is not properly seated. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> System show hardware System show version System show bootlog

Table 19. Line card installation notes (Continued)

	Minimum Firmware	Restrictions	Special Instructions
SSR-SERC-04-AA	E8.3.0.0	<p>CLI Setup</p> <p>Enter the following command at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> 1. Type the following from Enable mode to enter Configuration mode Enable -> Configure # 2. You may now begin configuring ports on the SSR-SERC-04-AA. Refer to the <i>Enterasys X-Pedition Command Line Interface Reference Manual</i> for details. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> • Firmware loads. • The control module for the chassis should indicate that the SSR-SERC-04-AA was detected and is operating correctly. • The Online LED will turn on and remain lit (no other LEDs should illuminate during module power-up). <p>Common Errors</p> <ul style="list-style-type: none"> • The ER16-SERC-04-AA is not inserted properly or seated completely in the chassis • Connectors for the connected lines are not seated properly. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> • System show hardware • System show version • Port show port status se.x.y (where x is the chassis slot that contains the line card and y is a specific port number on the card). • System show bootlog
SSR-SERCE-04-AA	E8.3.0.0	<p>CLI Setup</p> <p>Enter the following command at the CLI before implementing any configurations.</p> <ol style="list-style-type: none"> 1. Type the following from Enable mode to enter Configuration mode Enable -> Configure # 2. You may now begin configuring ports on the SSR-SERCE-04-A. Refer to the <i>Enterasys X-Pedition Command Line Interface Reference Manual</i> for details. 	<p>Proper Boot Sequence</p> <ul style="list-style-type: none"> • Firmware loads. • The control module for the chassis should indicate that the SSR-SERCE-04-A was detected and is operating correctly. • The Online LED will turn on and remain lit (no other LEDs should illuminate during module power-up). <p>Common Errors</p> <ul style="list-style-type: none"> • The ER16-SERCE-04-A is not inserted properly or seated completely in the chassis • Connectors for the connected lines are not seated properly. <p>Helpful CLI Commands for Debugging</p> <ul style="list-style-type: none"> • System show hardware • System show version • Port show port status se.x.y (where x is the chassis slot that contains the line card and y is a specific port number on the card). • System show bootlog

Handling the Module



Caution: Line cards are easily damaged by electrostatic discharge.

To prevent electrostatic damage, observe the following guidelines:

- Do not remove the module from its packaging until you are ready to install it.
- Do not touch any of the module's pins, connectors or components.
- Hold the module only by its edges or front panel.
- Wear an anti-static wristband connected to a suitable earth ground whenever handling the module.
- Store or transport this module only in appropriate anti-static packaging.

Tools

Typical installations require the following tools:

Anti-static wristband



Phillips screwdriver



Flathead screwdriver



Hot Swap

You may *install* most modules into a live system without powering off the device. However, do not remove an active module from a live system except under the following conditions:

- Press the **Hot Swap** button on the front panel. The **Online LED** will turn **off** and the **Offline LED** will turn **on**.

OR...

- Enter the following from the CLI and click enter: **Enable -> System -> Hotswap -> Out -> Slot -> #**. The **Online LED** will turn **off** and the **Offline LED** will turn **on**.
- **Remove the module.**

For more information on hot swapping, see *Hot Swapping Line Cards and Control Modules* in the *Enterasys X-Pedition User Reference Manual*.



Warning: Do not insert tools or body parts in the chassis while it is powered on. Doing so may cause electrical shock or equipment damage.

Instructions



Caution: You may install the line card in the chassis with the chassis powered up. However, before removing an existing line card, Hot Swap the line card as described under *Hot Swap* on page 77.

1. If a coverplate is installed in the line module slot, **remove the coverplate:** loosen the captive screws on each side of the coverplate and pull out the plate.
2. **Align the backsheet of the line card between the card guides** as shown in Figure 34.

Note: Make sure that the circuit card is between the card guides. Check both tracks.

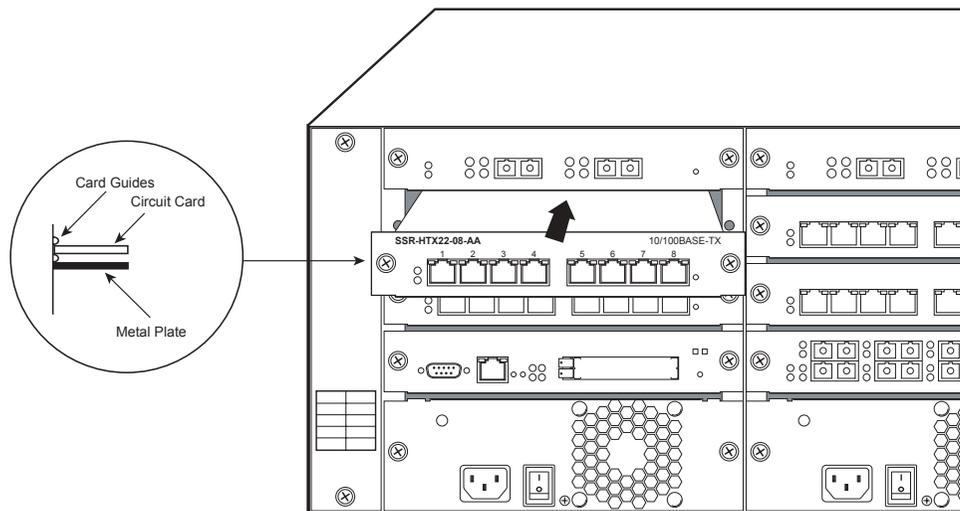


Figure 34. Installing a line card

3. **Slide the line card all the way into the slot,** firmly but gently pressing the line card fully in place to ensure that the pins on the back of the line card are completely seated in the backplane.
4. **Tighten captive screws.** Align the captive screws with the holes in the face of the module and tighten the screws to secure the card to the chassis.
5. **Repeat the above steps** for additional cards.
6. **Attach the segment cables** when you are ready.

Installing FPHYs

The FDDI (Fiber Distributed Data Interface) line card has modular PHYs supporting multimode fiber (MMF), single mode fiber (SMF), and unshielded twisted pair (UTP). Installing the FDDI module is a two-part process: first, install the PHY cards into the line card; then, install the line card in the SSR.

Preparing the Module

- Before installing the module, **you must install at least one of the following** FPHYs (purchased separately): FPHY-01, FPHY-02, or FPHY-09.
- Because FDDI full duplex is not an industry standard, its implementation is based on the Digital Equipment Corporation (DEC) standard. FDDI full duplex will interoperate with all DEC products and most Enterasys Networks FDDI products.

Installing the FDDI PHY Cards

Each FDDI line card has two slots available for PHY cards. One FDDI PHY card can be installed into each available slot. The following procedure describes how to do this. To install a PHY card into an FDDI line card:

1. Remove the blank coverplates on the front of the line card, if present.
2. Remove the two screws from the standoffs on both sides of the PHY connector on the line card.
3. Hold the PHY card by the edges and position it above the line card.
4. Slide the transceivers into the slot openings.
5. Connect the stacking connector at the back of the PHY to the pins on the line card.
6. Push the PHY card down until the connector is firmly seated on the line card.
7. Tighten the two screws on the top rear of the PHY and the two screws on the faceplate that will hold the PHY card in place.
8. You are now ready to install the SSR-FDDI-02 line card. Please refer to *Installing Line Cards* on [page 71](#).

Installing the ATM PHY Cards

Each ATM line card has two slots available for PHY cards. One ATM PHY card can be installed into each available slot. You will need a #2 Phillips screwdriver to perform this procedure.

Figure 35 shows an example of how to install a PHY card. The procedure following the figure describes how to do this.

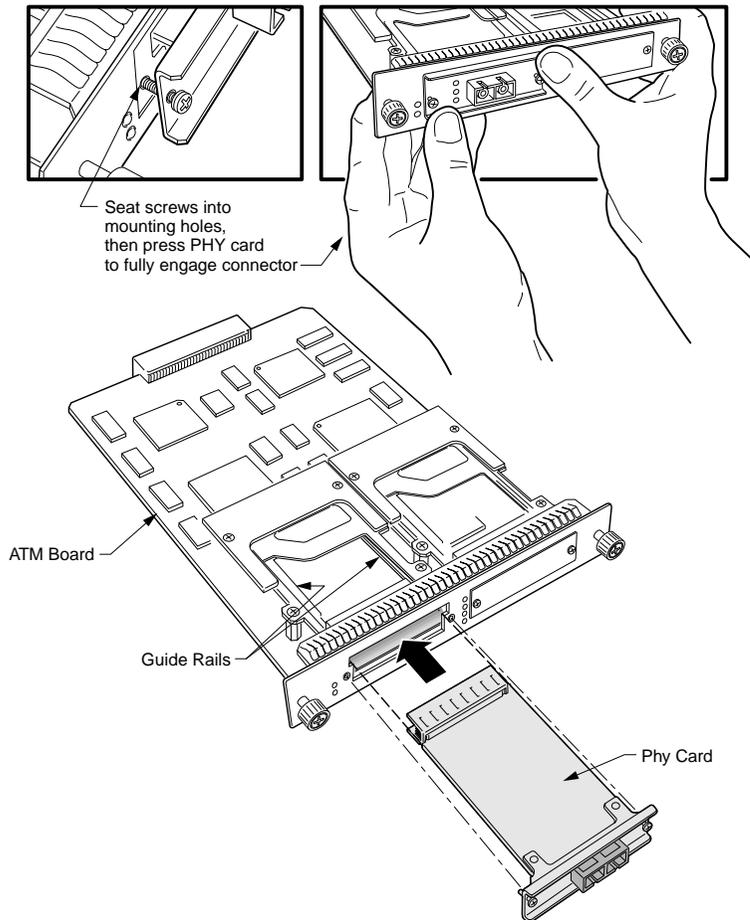


Figure 35. Installing an ATM PHY card

To install a PHY card into an ATM line card:

1. Use a Phillips screwdriver to loosen the two captive screws that hold the option slot cover in place.
2. Save the option slot cover.
3. Hold the PHY card by the edges and position it so that it is parallel with the slot opening.
4. Insert the PHY card through the opening in the system unit by aligning the sides of the PHY card with the card guide.

5. Push the PHY card into the slot until the 96-pin connector is firmly seated on the motherboard.
6. Fasten the PHY card to the system unit with the two captive screws. Torque to 5 in-lb (0.56 N-m).

Connecting ATM PHY Cards

The following are instructions on how to attach cables to the various PHY interface cards.

APHY-67 and APHY-77

To attach the segment cables to your APHY-67 and APHY-77 card:

1. Align the transmit cable connector with the transmit port and the receive cable connector with the receive port.
2. Push one connector into the PHY port and rotate clockwise 1/4 turn to lock it in place.
3. Repeat step 2 for the second cable.

APHY-82V

To attach the segment cables to your APHY-82V card:

1. Align the key of the modular jack (MJ) plug with the locking key of the MJ receptacle.
2. Push the MJ plug into the receptacle until the plug mates fully with the locking key. You will hear a snapping sound when the locking key engages.

Note: The APHY-82V is not a T1 interface. It merely allows you to connect to a T1 CSU—the T1 CSU will allow you to connect to a T1 circuit.

APHY-92V

To attach the segment cables to your APHY-92V card:

1. Align the key of the modular jack (MJ) plug with the locking key of the MJ receptacle.
2. Push the MJ plug into the receptacle until the plug mates fully with the locking key. You will hear a snapping sound when the locking key engages.

Note: The APHY-92V is not an E1 interface. It merely allows you to connect to an E1 CSU—the E1 CSU will allow you to connect to an E1 circuit.

APHY-21 and APHY-29IR

To attach the segment cables to your APHY-21 and APHY-29IR card:

1. Remove the dust caps from the PHY port and cable.

2. Line up the transmit cable connector with the transmit port and the receive cable connector with the receive port. Insert the connectors, ensuring that the key is correctly positioned.

APHY-22

To attach the segment cables to your APHY-22 card:

1. Align the key of the modular jack (MJ) plug with the locking key of the MJ receptacle.
2. Push the MJ plug into the receptacle until the plug mates fully with the locking key. You will hear a snapping sound when the locking key engages.

Chapter 3

Software Installation and Setup

This chapter provides the following software installation and basic setup procedures:

- Installing the PCMCIA flash card (if you are upgrading from the software version on the X-Pedition's boot flash)
- Powering on and booting the software
- Starting the Command Line Interface (CLI)
- Setting basic system information
- Setting up SNMP community strings
- Setting up passwords
- Setting the DNS domain name and address
- Setting SYSLOG parameters
- Loading system image software
- Loading the Boot Firmware
- Activating configuration changes and saving the configuration file

Note: The command examples used in the following instructions are for informational purposes only. Please consult the *Enterasys X-Pedition User Reference Manual* for more detailed information.

Installing a PCMCIA Flash Card

The control module PCMCIA flash card contains a version of the system image software that is installed at the factory. If you have a more recent system image and want to boot the X-Pedition using the newer software, you must boot either from a PCMCIA card or from a TFTP server.

To install a PCMCIA card:

1. Power off the X-Pedition.



Cautions: Do NOT install or remove a PCMCIA card while the X-Pedition is running.

2. Insert the PCMCIA card into the upper slot on the control module, pressing firmly to ensure that the card is fully seated.

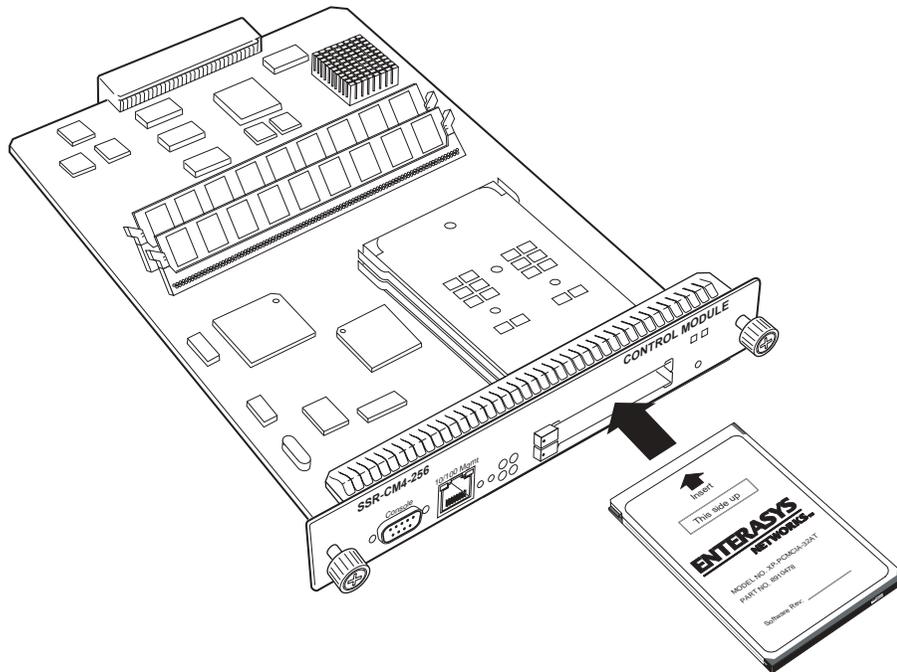


Figure 36. Install a PCMCIA flash card in a Control Module

Note: Only the upper slot is active. The control module cannot use two PCMCIA flash cards at the same time.

3. Lock the PCMCIA card into the slot with the locking mechanism.
4. Power on the X-Pedition. (See *Powering On and Booting the Software* on page 86.)
5. Once the X-Pedition is powered on and starts to boot up, any of the following scenarios may occur:

- The X-Pedition will boot up and the following messages will appear, indicating that the PCMCIA flash card was installed successfully:

```
%SYS-I-FLASHCRD, Mounting 32MB Flash card
%SYS-I-FLASHMNTD, 32MB Flash card mounted
```

- The X-Pedition will start to boot up but stop after a few seconds, leaving the router in boot mode. If the X-Pedition displays the “*external flash card absent*” message, the PCMCIA flash card was not found and an image was not loaded. If this occurs, power off the X-Pedition and verify that the PCMCIA flash card is properly installed (refer to steps 2 and 3). Power on the router—if the problem persists, contact Enterasys Technical Support (see *Technical Support on page 125*).
- The X-Pedition will start to boot up but stop after a few seconds, leaving the router in boot mode. If the X-Pedition does not display the “*external flash card absent*” message, the router did not find an image to load from the PCMCIA Flash Card. Please contact Enterasys Technical Support for assistance (see *Technical Support on page 125*).

Note: If you boot from a TFTP server and the system does not detect a PCMCIA card, the “*external flash card absent*” message will appear. As the system firmware boots, the %SYS-E-NOFLASHCARD message will also appear, indicating that the PCMCIA card is not present or is not installed correctly. If this occurs, power off the X-Pedition and verify that the PCMCIA flash card is properly installed (refer to steps 2 and 3). Power on the router—if the problem persists, contact Enterasys Technical Support (see *Technical Support on page 125*).

Powering On and Booting the Software

To power on the X-Pedition and boot the software:

1. Make sure any exposed expansion slots are free of foreign objects, such as tools or your hands, and are covered with coverplates.
2. Plug the X-Pedition's power supplies into a power source. Assuming that your power source is currently active, the router will automatically power on and attempt to boot using the software image in the motherboard's boot flash.

While the software is booting, the HBT (heartbeat) LED on the chassis flashes. When the software finishes booting, the HBT LED goes dark and the OK LED lights up, indicating that the X-Pedition software is online. As the software boots, the management console attached to the X-Pedition's DB-9 DCE port displays messages related to the phases of the boot sequence. When the software is fully booted, the following message appears on the management console:

Press RETURN to activate console...

3. Press Return (or Enter) to activate the CLI on the console.

Starting the Command Line Interface

After the software has successfully booted and you press Return (or Enter) to activate the CLI, the CLI prompts you for a password. You can define separate passwords for login access and Enable mode. The factory default password for both of these is set to blank (simply press Return).

Access Modes

The CLI has the following access modes:

- **User** – Allows you to display basic information and use basic utilities such as ping but does not allow you to display SNMP, filter and access control list information, or make other configuration changes. You can tell you are in User mode when the command prompt ends with a “>” character.
- **Enable** – Allows you to display SNMP, filter, and access control information as well as all the information you can display in User mode. To enter Enable mode, enter the **enable** command, then supply the password when prompted. When you are in Enable mode, the command prompt ends with a “#” character.
- **Configure** – Allows you to make configuration changes. To enter Configure mode, first enter Enable mode (**enable** command), then enter the **configure** command from the Enable command prompt. When you are in Configure mode, the command prompt ends with “(config)#.”
- **Boot** – This mode appears when the system image is not found during bootstrap. You should enter the **reboot** command to reset the router. If the X-Pedition still fails to boot up, please call Enterasys Technical Support (see *Technical Support on page 125*).

Note: The command prompt will show the name of the X-Pedition in front of the mode character(s). The default name is “xp.” The procedure in *Setting Basic System Information on page 89* describes how to change the system name.

When you are in Configure or Enable mode, use the **exit** command or press Ctrl+Z to exit to the previous access mode.

Note: When you exit Configure mode, the CLI will ask you whether you want to activate the configuration commands you have issued. If you enter **yes** or **y**, the configuration commands you issued are placed into effect and the X-Pedition’s configuration is changed accordingly. However, the changes are not written to the Startup configuration file in the X-Pedition’s boot flash and therefore are not reinstated after a reboot. See *Activating Configuration Changes and Saving the Configuration File on page 98* for information about saving configuration changes.

Basic Line Editing Commands

The CLI supports EMACs-like line editing commands. The following table lists some commonly used commands. For a complete set of commands, see the *Enterasys X-Pedition User Reference Manual*.

Table 20. Some commonly used CLI commands

Key sequence	Command
Ctrl+A	Move cursor to beginning of line
Ctrl+B	Move cursor back one character
Ctrl+D	Delete character
Ctrl+E	Move cursor to end of line
Ctrl+F	Move cursor forward one character
Ctrl+N	Scroll to next command in command history (use the cli show history command to display the history)
Ctrl+P	Scroll to previous command in command history
Ctrl+U	Erase command line up to cursor
Ctrl+X	Move cursor to beginning of the next word in the command line
Ctrl+Z	Exit current access mode to previous access mode

Setting Basic System Information

Use the procedure in this section to set the following system information:

- System time and date
- System name
- System location
- Contact name (the person to contact regarding this router)

Note: Some of the commands in this procedure accept a string value. String values can be up to a maximum of 255 characters in length, including blank spaces. Surround strings that contain blanks with quotation marks (example: “**string with internal blanks**”).

To set the system information:

1. Enter the **enable** command in the CLI to enter Enable mode.
2. Use the **system set date** commands to set the system time and date. To verify the date and time, use the **system show date** command.
3. From Configure mode, enter the **system set** command to set the system name, location, and contact information. To enter Configure mode, enter the **configure** command in the CLI.
4. To set the IP address and netmask for the en0 Ethernet interface, use the **interface add ip** command. The en0 interface is automatically created by the system and is reserved for the X-Pedition’s management port.
5. When you enter commands in Configure mode, the X-Pedition does not immediately execute the commands. Instead, the X-Pedition checks the syntax of the commands and, if they are syntactically correct, stores them in a temporary scratchpad in memory. The scratchpad is automatically cleared when you log out of the X-Pedition, so you must activate the changes and then save them to the Startup configuration file to retain the changes, as explained below.

The scratchpad allows you to make configuration changes without worrying about the order in which you issue the commands. If you change your mind about configuration changes, you do not need to back out of the changes incrementally. You can simply choose not to activate them. As you become more familiar with the X-Pedition and the CLI and begin to make detailed configuration changes, you will find the scratchpad quite useful. For simple changes such as those outlined in this procedure, you might want to activate the changes as you go, then use CLI commands to view the results of the changes.

To show the changes accumulated in the scratchpad, enter the **show** command from Configure mode.

6. To activate commands in the scratchpad, enter the **save active** command. Enter the **exit** command or press **Ctrl+Z** to exit Configure mode. Alternatively, if you exit Configure mode by entering the **exit** command or pressing **Ctrl+Z** before activating any of your changes in the scratchpad, the CLI will ask you whether or not you want to make the changes active. To activate changes, enter **yes** or **y**.

7. To display the active configuration, enter the **system show active-config** command. Changes in the active configuration take effect on the running system but will not be restored following a reboot.
8. To guarantee that changes are restored following a reboot, you must save the active database to the Startup configuration file:
 - a. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
 - b. Enter the **copy active to startup** command. The CLI displays the following message:

Are you sure you want to overwrite the Startup configuration [no]?

- c. Enter **yes** or **y** to add the active configuration to the Startup configuration file.

Note: You also can save active changes to the Startup configuration file from within Configure mode by entering the **save startup** command.

See *Activating Configuration Changes and Saving the Configuration File* [on page 98](#) for more information about the scratchpad, active database, and Startup configuration.

Setting Up SNMP Community Strings

When you use SNMP to manage the X-Pedition, you will need to set up an SNMP community. Otherwise, the X-Pedition's SNMP agent runs in local trap process mode until you disable it using the **snmp stop** command. In addition, if you want to be able to access the SNMP traps issued by the X-Pedition's SNMP agent, you need to specify the IP address of the target for the SNMP traps.

To add the SNMP community string and specify the target for traps, do the following:

1. Enter the **enable** command in the CLI to enter Enable mode.
2. Enter the **configure** command in the CLI to enter Configure mode.
3. Use the **snmp set community** and **snmp set target** commands to add an SNMP community string and set a target for the traps.

Note: Because the X-Pedition is not yet running a routing protocol, the target IP address must be attached to the router locally. You may not specify a target that is connected to the X-Pedition by another router. If the IP address is more than one hop away from the X-Pedition, configure the router with a static route to the target to allow the X-Pedition to send SNMP traps.

4. Enter the **show** command to examine the changes accumulated in the scratchpad.
5. To activate commands in the scratchpad, enter the **save active** command. Enter the **exit** command or press **Ctrl+Z** to exit Configure mode. Alternatively, if you exit Configure mode by entering the **exit** command or pressing **Ctrl+Z** before activating any of your changes in the scratchpad, the CLI will ask you whether or not you want to make the changes active. To activate changes, enter **yes** or **y**.
6. To verify the changes, enter the **snmp show all** command.
7. After verifying the SNMP configuration, save the changes to the Startup configuration file by entering the **copy active to startup** command.

Setting Up Passwords

By default, the X-Pedition operates in single-user mode with password access enabled and no passwords defined. To define a password for Login, Enable, or Configure mode, use the **system set password** command from Configure mode. The following example sets an Enable mode password:

```
xp(config)# system set password enable MyPassword
```

Note: Passwords are case *sensitive*. In other words, the X-Pedition recognizes upper- and lower-case letters as different characters (e.g., “M” is not the same as “m”).

Note: You must set the password for each mode individually (i.e., you may use a different password for each mode). If a password is configured for Enable mode, the X-Pedition asks for the password when you enter the **enable** command. If no password is defined, the X-Pedition will advise you to configure a password, then switch to Enable mode—from here you can access Configure mode and make configuration changes. Access to Configuration mode may be configured to require a password.

Multi-user mode password security employs individual user accounts to grant CLI permissions on a case-by-case basis—this requires that each user log in via username and password. The X-Pedition supports up to 256 concurrent user accounts (although you may still employ either protocol, multi-user accounting no longer requires TACACS+ or RADIUS).

The default password for each access level is blank. (Simply press Enter or Return without entering a password.) If you want to add password protection to the CLI, use the following procedure. For detailed information on passwords and configuring a password policy, consult the *Enterasys X-Pedition User Reference Manual*.

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
2. Ensure that you are in Configure mode by entering the **configure** command in the CLI.
3. Use the **system set password** command for each password you want to set.
4. Enter the **show** command to examine the changes accumulated in the scratchpad.
5. To activate commands in the scratchpad, enter the **save active** command. Enter the **exit** command or press **Ctrl+Z** to exit Configure mode. Alternatively, if you exit Configure mode by entering the **exit** command or pressing **Ctrl+Z** before activating any of your changes in the scratchpad, the CLI will ask you whether or not you want to make the changes active. To activate changes, enter **yes** or **y**.
6. Enter the **system show active-config** command to verify the active changes.



Caution: Test all the new passwords before saving the active configuration to the Startup configuration file. As shown in the example above, the passwords are shown in the active configuration in an encrypted format and will also appear this way in the Startup configuration.

To keep your passwords secure, the X-Pedition does not have a command for displaying passwords. If you forget a password, you can remove the password by entering the following command while in Configure mode. (See the *Enterasys X-Pedition Command Line Interface Reference Manual* for more information.)

```
system set password login|enable none
```

Setting the DNS Domain Name and Address

If you want the X-Pedition to be able to access a DNS server, use the following procedure to specify the domain name and IP address for the DNS server.

1. Enter the **enable** command in the CLI to enter Enable mode.
2. Use the **ping** command to verify that the X-Pedition can reach the DNS server.
3. Enter the **configure** command in the CLI to enter Configure mode.
4. If you have not done so already, use the **interface add ip** command to set the IP address and netmask for the en0 Ethernet interface.

Note: The en0 interface is automatically created by the system and is reserved for the X-Pedition's management port.

5. Use the **system set dns domain** command to specify the domain name for which the DNS server(s) have authority.
6. Use the **system set dns server** command to "add" one or more DNS servers to the X-Pedition.

Note: If you specify more than one IP address, you must separate the addresses with a space and surround them with a single pair of quotes (i.e., "*IP-Address IP-Address IP-Address*"). You do not need to surround a single IP address with quotes.

7. To activate commands in the scratchpad, enter the **save active** command. Enter the **exit** command or press **Ctrl+Z** to exit Configure mode. Alternatively, if you exit Configure mode by entering the **exit** command or pressing **Ctrl+Z** before activating any of your changes in the scratchpad, the CLI will ask you whether or not you want to make the changes active. To activate changes, enter **yes** or **y**.
8. Return to Enable mode by entering the **enable** command in the CLI and enter the **system show dns** command to verify the new DNS settings.
9. Use the **ping** command with a domain name (e.g., enterasys.com) to verify that the X-Pedition can access the DNS server.

Setting SYSLOG Parameters

The CLI can use SYSLOG messages to communicate the following types of messages to a SYSLOG server:

- **Fatal** – Provide information about events that caused the X-Pedition to crash and reset.
- **Error** – Provide information about errors.
- **Warning** – Warns against invalid configuration information and other conditions that are not necessarily errors. This is the default.
- **Audit** – Audit messages are used as an audit *trail* to aid in keeping the router secure by reporting events as they occur and information about the user who caused each event.
- **Informational** – Provide informational messages such as status messages (e.g., the SYSLOG messages that the X-Pedition displays while booting the software and reading the startup configuration file).

The X-Pedition writes the SYSLOG messages to a SYSLOG daemon on UDP port 514. You can set the CLI to send all or only messages of specific types. By default the CLI sends warning, error, and fatal messages (not informational messages) to the specified SYSLOG server.

To specify the SYSLOG server and the types of messages you want the CLI to log on the server, use the following procedure:

1. Enter the **enable** command in the CLI to enter Enable mode.
2. Use the **ping** command to verify that the X-Pedition can reach the SYSLOG server.
3. Enter the **configure** command in the CLI to enter Configure mode.
4. If you have not already done so, use the **interface add ip** command to set the IP address and netmask for the en0 Ethernet interface.

Note: The en0 interface is automatically created by the system and is reserved for the X-Pedition’s management port.

5. Use the **system set syslog** command to “add” the SYSLOG server to the X-Pedition, set the message level, and set the SYSLOG facility.

```
system set syslog [server <hostname-or-IPaddr>] [local] [level <level-type>]
[facility <syslog-facility-type>] [source <source-IPaddr>] [buffer-size <size>]
```

6. Enter the **show** command to verify that the command you entered is listed in the scratchpad section of the output.

Note: The other configuration changes made during this CLI session are also listed. Active changes are listed in the “Running system configuration section” and unactivated changes are listed in the “Non-committed changes in Scratchpad” section.

7. To activate the SYSLOG commands, enter the **save active** command.

Loading System Image Software

The X-Pedition operates using the system image software installed in its internal flash chip. To upgrade the system software and operate using the upgraded image, use the following procedure:

1. Enter the **enable** command in the CLI to enter Enable mode.
2. To display the current boot settings, enter the **system show version** command.

Note: In this example, the location “slot0:boot” indicates that the X-Pedition is set to use the factory-installed system software in the motherboard’s internal flash chip.

3. Copy the software upgrade you want to install onto a TFTP server that the X-Pedition can access. Use the **ping** command to verify that the X-Pedition can reach the TFTP server.
4. Enter the **system image add** command to copy the software upgrade onto the X-Pedition’s internal flash chip.
5. Enter the **system image list** command to verify that the new image exists on the internal flash chip.
6. Use the **system image choose** command to select the image file the X-Pedition will use the next time you reboot.
7. Enter the **system image list** command to verify the change.

Note: You do not need to activate this change.

Loading Boot Firmware

The X-Pedition boots using the Boot Firmware installed in its internal memory. To upgrade the Boot Firmware and boot using the upgraded image, use the following procedure.

1. Enter the **system show version** command to display the current boot settings.

Note: A “slot0:boot” location indicates that the X-Pedition is set to use the factory-installed software in the motherboard’s internal flash chip.

2. Copy the boot firmware upgrade you want to install onto a TFTP server that the X-Pedition can access. Use the **ping** command to verify that the X-Pedition can reach the TFTP server.
3. Use the **system promimage upgrade** command to copy the boot firmware upgrade into the X-Pedition’s internal memory. When this procedure is complete, the phrase “Programming complete” appears on the screen.
4. To verify that the new Boot Firmware is on the X-Pedition’s internal memory, reboot the router and enter the **system show version** command.

Note: Until you reboot the router, entering the **system show version** command will display the old bootprom version.

Activating Configuration Changes and Saving the Configuration File

The X-Pedition uses three special configuration files:

- **Active** – The commands from the Startup configuration file and any configuration commands that you have made active from the scratchpad.



Caution: The active configuration remains in effect only during the current power cycle. If you power down or reboot the X-Pedition without saving the active configuration changes to the Startup configuration file, the changes will be lost.

- **Startup** – The configuration file that the X-Pedition uses to configure itself when you power on the system.
- **Scratchpad** – The configuration commands you entered during a management session. These commands do not become active until you explicitly activate them. Because some commands depend on others for successful execution, the X-Pedition scratchpad simplifies system configuration by allowing you to enter configuration commands in any order, even when dependencies exist. When you activate the commands in the scratchpad, the X-Pedition sorts out the dependencies and executes the commands in the proper sequence.

Activating the Configuration Commands in the Scratchpad

The configuration commands you have entered using procedures in this chapter may still be in the Scratchpad only and may not be active. Use the following procedure to activate the configuration commands in the scratchpad:

1. Enter the **enable** command in the CLI to enter Enable mode.
2. Enter the **configure** command in the CLI to enter Configure mode.
3. Enter the **save active** command.
4. To activate commands in the scratchpad, enter the **save active** command. Enter the **exit** command or press **Ctrl+Z** to exit Configure mode. Alternatively, if you exit Configure mode by entering the **exit** command or pressing **Ctrl+Z** before activating any of your changes in the scratchpad, the CLI will ask you whether or not you want to make the changes active. To activate changes, enter **yes** or **y**.

Saving the Active Configuration to the Startup Configuration File

After you save the configuration commands in the scratchpad, the X-Pedition executes the commands and makes the corresponding configuration changes. However, if you power down or reboot the X-Pedition, the new changes are lost. Use the following procedure to save the changes into the Startup configuration file so that the X-Pedition reinstates the changes when you reboot the software.

1. Enter the **enable** command in the CLI to enter Enable mode.
2. Enter the **copy active to startup** command to copy the configuration changes in the Active configuration to the Startup configuration.
3. Enter **yes** or **y** to save the changes. The new configuration changes are added to the Startup configuration file stored in the X-Pedition's boot flash.

Note: You also can save active changes to the Startup configuration file from within Configure mode by entering the **save startup** command.

Viewing the Current Configuration

To view the current configuration:

1. Enter the **enable** command in the CLI to enter Enable mode.
2. Enter the **system show active-config** command to display the status of each command line.

The CLI displays the active configuration file with the following possible annotations:

- Commands without errors are displayed without any annotation.
- Commands with errors are annotated with an “E”.
- If a particular command is only partially applied, such that it can be expanded on additional interfaces/modules, it is annotated with a “P” (i.e., “P:stp enable et.*.*”). For example, if you enabled stp on all ports in the current system but the X-Pedition contains only 1 module, that particular command could be expanded at a later date when more modules are added to the X-Pedition.

If you add more modules to the X-Pedition at a later date, then update the configuration file to encompass all of the available modules in the X-Pedition, the “P:” annotation would disappear when displaying the configuration file.

If a command originally configured to encompass all of the available modules on the X-Pedition becomes only partially activated (after a Hot Swap or some such chassis reconfiguration), the status of that command line will automatically change to indicate a partial completion status.

Note: Commands with no annotation or annotated with a “P:” are not in error.

Appendix A

Troubleshooting

If you experience difficulty with the basic hardware or software setup procedures in this guide, check the following table. If you find a description of the difficulty you are experiencing, try the recommended resolution.

If the resolution does not remove the difficulty or it is not listed in this appendix, see [Appendix C](#) for information about contacting Enterasys Networks for technical support.

Problem	Solution
The Enterasys X-Pedition exhibits no activity (no LEDs are on, the fan module is not operating, and so on).	Make sure the power supply is installed and plugged into a power source and the power source is active. Also check to see whether the switch on the power supply is in the ON position.
The power supply is installed but is not operating.	Check the power cable and the circuit to which the power supply is connected.
The fan module is not active.	Check the power cable and the circuit to which the power supply is connected. If the green status LED on the power supply indicates that it is active, immediately power down the chassis, unplug the power supply, and contact Enterasys Networks for technical support. The fan module may be improperly connected or damaged.

Problem	Solution
The control module is not active.	<p>Check the power cable and the circuit to which the power supply is connected.</p> <p>If the power supply is working, make sure the control module is inserted all the way into its slot in the chassis and the captive screws are screwed in. The control module must be in slot 0 or 1—not in a line card slot.</p>
No line cards are active.	Check the power cable and the circuit to which the power supply is connected.
A specific line card is inactive.	Make sure the line card is inserted all the way into the chassis and the captive screws are screwed in.
The chassis LEDs indicate activity but you cannot tell what the X-Pedition is doing.	Make sure you have properly connected the primary control module to a management console and the console is powered on.
An older software version continues to boot instead of the newer version on a PCMCIA card or TFTP server.	Use the procedure in <i>Loading System Image Software</i> on page 96 to configure the X-Pedition to boot using newer software.
You are unable to access the configuration commands in the CLI.	Enter the enable command to access the Enable mode, then enter the configure command to access the Configuration mode.
Configuration changes do not seem to be taking effect.	Use the procedure in <i>Activating the Configuration Commands in the Scratchpad</i> on page 98 to activate the changes.
Configuration changes are not reinstated after a reboot.	Use the procedure in <i>Saving the Active Configuration to the Startup Configuration File</i> on page 99 to save the configuration changes to the Startup configuration file.

Problem	Solution
The X-Pedition is not resolving DNS names.	<p>Use the procedure in <i>Setting the DNS Domain Name and Address</i> on page 94 to set up DNS.</p> <p>If you have already performed this procedure, make sure you can use NS lookup on the DNS server to get the default domain.</p>
An SNMP manager cannot access the X-Pedition.	<p>Use the procedure in <i>Setting Up SNMP Community Strings</i> on page 91 to set up an SNMP community string and specify a target for SNMP traps.</p> <p>If you have already performed this procedure, enter the snmp show all command to check the SNMP settings.</p> <p>Use the tracert and ping commands to verify that the X-Pedition can reach the SNMP management station.</p>
You are unable to ping a certain host.	Create and add an IP or IPX interface for the host. See the <i>Enterasys X-Pedition User Reference</i> for information.

Appendix B

Hardware Components

This appendix contains cabling and LED information about the following hardware components:

- [SSR-ATM29-02 on page 106](#)
- [SSR-CM2B-64, SSR-CM3-128, and SSR-CM4-256 on page 107](#)
- [SSR-FDDI-02 on page 109](#)
- [SSR-GLX39-02 on page 110](#)
- [SSR-GLX39-04 and SSR-GSX31-04 on page 111](#)
- [SSR-GLX70-01-AA and SSR-GLH39-02 on page 112](#)
- [SSR-GSX21-02-AA and SSR-GLX29-02-AA on page 113](#)
- [SSR-GSX31-02 on page 114](#)
- [SSR-GTX32-04 and SSR-GTX32-02 on page 115](#)
- [SSR-HFX21-08-AA and SSR-HFX29-08-AA on page 116](#)
- [SSR-HSSI-02-CK on page 117](#)
- [SSR-HTX22-08-AA and SSR-HTX12-08-AA on page 119](#)
- [SSR-HTX32-16 on page 121](#)
- [SSR-POS29-04 and SSR-POS21-04 on page 122](#)
- [SSR-POS39-02 and SSR-POS31-02 on page 122](#)
- [SSR-SERCE-04-AA and SSR-SERC-04-AA on page 123](#)

SSR-ATM29-02

Connectivity Guidelines

Table 21. SSR-ATM29-02 Recommended Cable Types and Specifications

PHY Card	Type	Connector
APHY-82V	Cat 3,4,5 100 ohm UTP (special pinout)	RJ-45
APHY-92V	Cat 3,4,5 100 ohm UTP (special pinout)	RJ-45

Connector Pin Assignments X-Pedition-APHY-82V and X-Pedition APHY-92V

Pin	Connection
1	Receive analog signal
2	Receive reference
3	Pin used for shield reference if you use a shielded cable and jumper is enabled
4	Transmit analog positive pulse
5	Transmit analog negative pulse
6	Pin used for shield reference if you use a shielded cable

APHY-22	Cat 3,4,5 100 ohm	RJ-45
APHY-21	Multimode Fiber	SC
APHY-29IR	Single Mode Fiber	SC
APHY-67	Co-ax	BNC
APHY-77	Co-ax	BNC

SSR-CM2B-64, SSR-CM3-128, and SSR-CM4-256

Connectivity Guidelines

Table 22. Control Module Recommended Cable Types and Specifications

Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm UTP	100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5 100-ohm UTP	100 m (328 ft)	RJ-45
VART Serial Connection	Serial Cable		DB9

The control modules have two ports for attaching management consoles to the X-Pedition.

- A male DB-9 DCE port for direct serial connection from a terminal. You use this port to perform basic setup, including setting up the X-Pedition for management through the network using CLI or SNMP.
- An RJ-45 10/100BASE-T DTE port for Telnet connection from a host on the network. The port is configured for Media Data Interface (MDI). You use this port to manage the X-Pedition using CLI or SNMP.

Connector Pin Assignments

The connector pins are assigned as follows:

Table 23. DB9-RS232 Console Port Pin Assignments

Pin	Connection
1	Unused
2	TXD (transmit data)
3	RXD (receive data)
4	Unused
5	Ground
6	DTR (data terminal ready)
7	CTS (clear to send)
8	RTS (request to send)
9	Unused

Table 24. 10/100 Ethernet Management Port Pin Assignments

Pin	Connection
1	TX + Diff Output
2	TX - Diff Output
3	RX + Diff Output
4	Unused
5	Unused
6	RX - Diff Output
7	Unused
8	Unused

SSR-FDDI-02

Connectivity Guidelines

Table 25. SSR-FDDI-02 Recommended Cable Types and Specifications

Cable	Type	Max. Length	Connector
FDDI Copper	Cat. 3, 4, 5 100-ohm UTP	100 m (328 ft)	RJ-45
Multimode Fiber	62.5/125	2 km (1.24 mi)	SC
Single Mode Fiber	10/125	30 km (18.64 mi)	SC

Optics

Table 26. SSR-FDDI-02 Receiver/Transmitter

	Receiver Sensitivity		Transmit Power	
	MMF	SMF	MMF	SMF
Minimum	-34 dBm	-33 dBm	Minimum	-20 dBm
Maximum	-31 dBm	-3 dBm	Maximum	-14 dBm

Table 27. SSR-FDDI-02 Links

Link Power Budget	
MMF	11 dB
SMF	>10 dB

Connector Pin Assignments

The connector pins are assigned as follows:

Table 28. RJ-45 Console Port Pin Assignments

Pin	Connection
1	TX +
2	TX -
3	Unused
4	Unused
5	Unused
6	Unused
7	RX +
8	RX -

SSR-GLX39-02

Cabling and Connector Specifications

The following table lists the media specifications for the SSR-GLX39-02 (T-Series) line card.

Table 29. SSR-GLX39-02 Media Specifications

Port Type	Specification
1000BASE-LX	<ul style="list-style-type: none"> 802.3z standard (also uses 802.3x for flow control) SC-style Media Interface Connector (MIC); either connection pin in the MIC can be used for transmit or receive; see <i>SSR-GLX39-02</i> on page 110 for attaching cables 62.5 micron or 50 micron multimode fiber-optic cable 9.5 micron single mode fiber-optic cable Maximum 550 meters (1804 feet)¹ segment length for 62.5 micron multimode fiber-optic cable Maximum 550 meters (1804 feet)¹ segment length for 50 micron multimode fiber-optic cable Maximum 5 kilometers (16404 feet) segment length for 10 micron single mode fiber-optic cable

1. Mode Conditioning Patch cord required.

Optics

Table 30. SSR-GLX39-02 (1000BASE-LX) 1300 nm Fiber

Receiver Sensitivity		Transmit Power	
Minimum	-20 dBm	Minimum	- 9 dBm into 9um SMF -11.5 into 50 um MMF
Maximum	-3 dBm	Maximum	-3 dBm

SSR-GLX39-04 and SSR-GSX31-04

Connectivity Guidelines

Table 31. SSR-GLX39-04 (1000BASE-LX) Single Mode Fiber Specifications

Fiber Diameter	Modal Bandwidth	Range	Connector
62.5/125 μm	160 MHz/km	2-220 m (7-722 ft)	SC
	200 MHz/km	2-275 m (7-902 ft)	SC
50/125 μm	400 MHz/km	2-500 m (7-1641 ft)	SC
	500 MHz/km	2-550 m (7-1805 ft)	SC
10/125 μm SMF	N/A	2-5000 m (7-16404 ft)	SC

Table 32. SSR-GSX31-04 (1000BASE-SX) Multimode Fiber Specifications

Fiber Diameter	Modal Bandwidth	Range	Connector
62.5/125 μm	160 MHz/km	2-220 m (7-722 ft)	SC
	200 MHz/km	2-275 m (7-902 ft)	SC
50/125 μm	400 MHz/km	2-500 m (7-1641 ft)	SC
	500 MHz/km	2-550 m (7-1805 ft)	SC

Optics

Table 33. SSR-GLX39-04 (1000BASE-LX) Fiber

Receiver Sensitivity		Transmit Power	
Minimum	-20 dBm	Minimum	-11.5 dBm
Maximum	-3 dBm	Maximum	-3 dBm

Table 34. SSR-GSX31-04 (1000BASE-SX) 850 nm Fiber

Receiver Sensitivity		Transmit Power	
Minimum	-17 dBm	Minimum	-9.5 dBm
Maximum	0 dBm	Maximum	-4 dBm

SSR-GLX70-01-AA and SSR-GLH39-02

Cabling and Connector Specifications

The following table lists the media specifications for the SSR-GLX70-01-AA and SSR-GLH39-02 (T-Series) line cards.

Table 35. SSR-GLX70-01-AA and SSR-GLH39-02 Media Specifications

Port Type	Specification
1000BASE-LX	<ul style="list-style-type: none"> 802.3z standard (also uses 802.3x for flow control) SC-style Media Interface Connector (MIC); either connection pin in the MIC can be used for transmit or receive; see <i>SSR-GLX39-02</i> on page 110 for attaching cables 9.5 micron single mode fiber-optic cable Maximum 70 kilometers (229,659 feet) segment length for 10 micron SMF fiber-optic cable Minimum cable length is 50 kilometers (164,041 feet) segment length for 10 micron SMF fiber-optic cable <p>Note: If you do not use the minimum cable length the receiver will oversaturate. The minimum distance depends on the attenuation of the specific cable used. Enterasys recommends using at least 50Km of cable or calculating the cable attenuation to be greater than 3dB.</p> <p>The maximum transmitter output is +5dBm and the maximum allowed input power is -3dBm. In this worst case scenario, you would need to attenuate the signal at least 8dB.</p>

Optics

Table 36. SSR-GLH39-02 (1000BASE-LH) 1550 nm Fiber

Receiver Sensitivity		Transmit Power	
Minimum	-24 dBm	Minimum	0.0 dBm
Maximum	-3 dBm	Maximum	5.0 dBm

Note: The maximum power for this unit (24 dB) is greater than the maximum input power; therefore, a long cable length or an attenuator is required.

SSR-GSX21-02-AA and SSR-GLX29-02-AA

Connector Pin Assignments

The connector pins are assigned as follows:

Table 37. SSR-GSX21-02-AA and SSR-GLX29-02-AA Rx/Tx Pin Assignments

Pin	Connection
Rx	When connecting ports with a Fiber Optic cable, ensure that you mate the connections properly (i.e., connect Tx ports to Rx ports). This may require the use of a fiber crossover cable.
Tx	

Cabling and Connector Specifications

The following table lists the media specifications for the SSR-GLX39-02 (T-Series) line card.

Table 38. SSR-GLX39-02 Media Specifications

Port Type	Specification
1000BASE-LX	<ul style="list-style-type: none"> 802.3z standard (also uses 802.3x for flow control) SC-style Media Interface Connector (MIC); either connection pin in the MIC can be used for transmit or receive; see <i>SSR-GSX21-02-AA and SSR-GLX29-02-AA</i> on page 113 for attaching cables 62.5 micron or 50 micron multimode fiber-optic cable 9.5 micron single mode fiber-optic cable Maximum 550 meters (1804 feet)¹ segment length for 62.5 micron multimode fiber-optic cable Maximum 550 meters (1804 feet)¹ segment length for 50 micron multimode fiber-optic cable Maximum 5 kilometers (16404 feet) segment length for 10 micron single mode fiber-optic cable

1. Mode Conditioning Patch cord required.

SSR-GSX31-02

The SSR-GSX31-02 line card uses SC-style Media Interface Connectors (MICs) to attach to multimode fiber (MMF) cables.

To attach the segment cables to your SSR-GSX31-02 line card, obtain an MMF cable with an SC MIC and plug the MIC into the port connector. When you plug the other end of the cable into another device, ensure that the cable connected to the transmit port on the X-Pedition is connected to the receive port on the other device. The receive port on the X-Pedition should be connected to the transmit port on the other device.

Cabling and Connector Specifications

The following table lists the media specifications for the SSR-GSX31-02 (T-Series) line card.

Table 39. SSR-GSX31-02 Media Specifications

Port Type	Specification
1000BASE-SX	<ul style="list-style-type: none"> 802.3z standard (also uses 802.3x for flow control) SC-style Media Interface Connector (MIC); either connection pin in the MIC can be used for transmit or receive; see <i>SSR-GSX31-02</i> on page 114 and <i>SSR-HFX21-08-AA</i> and <i>SSR-HFX29-08-AA</i> on page 116 for information on attaching cables 62.5 micron or 50 micron multimode fiber-optic cable Maximum 220 or 275 meters (722 or 902 feet) segment length for 62.5 micron fiber-optic cable, based on installed fiber bandwidth Maximum 500 or 550 meters (1640 or 1804 feet) segment length for 50 micron fiber-optic cable, based on installed fiber bandwidth

Optics

Table 40. SSR-GSX31-02 (1000BASE-SX) 850 nm Fiber

Receiver Sensitivity		Transmit Power	
Minimum	-17 dBm	Minimum	-9.5 dBm
Maximum	0 dBm	Maximum	-4 dBm

SSR-GTX32-04 and SSR-GTX32-02

Connectivity Guidelines

Table 41. SSR-GTX32-04 and SSR-GTX32-02 Recommended Cable Types and Specifications

Cable	Type	Max. Length	Connector
1000BASE-T	Cat. 5 100-ohm UTP	100 m (328 ft)	RJ-45

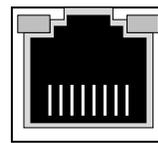
Connector Pin Assignments

The connector pins are assigned as follows:

Table 42. RJ-45 Connector Pin Assignments

Pin	Connection
1	TRD0 + Diff Output
2	TRD0 - Diff Output
3	TRD1 + Diff Output
4	TRD2 + Diff Output
5	TRD2 - Diff Output
6	TRD1 - Diff Output
7	TRD3 + Diff Output
8	TRD3 - Diff Output

Figure 37 shows the pin positions in the SSR-GTX32-04 and SSR-GTX32-02 connectors.



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Figure 37. SSR-GTX32-04 and SSR-GTX32-02 RJ-45 connectors

SSR-HFX21-08-AA and SSR-HFX29-08-AA

The SSR-HFX29-08-AA line card and the SSR-HFX21-08-AA line cards use SC-style Media Interface Connectors (MICs) to attach to multimode fiber (MMF) cables.

To attach the segment cables to your SSR-HFX29-08-AA line card or SSR-HFX21-08-AA line cards, obtain an MMF cable with an SC MIC and plug the MIC into the port connector. When you plug the other end of the cable into another device, ensure that the cable connected to the transmit port on the X-Pedition is connected to the receive port on the other device. The receive port on the X-Pedition should be connected to the transmit port on the other device.

Cabling and Connector Specifications

The following table lists the media specifications for the SSR-HFX21-08-AA and SSR-HFX29-08-AA line cards.

Table 43. SR-HFX21-08-AA and SSR-HFX29-08-AA Media Specifications

Port Type	Specification
100BASE-FX	<ul style="list-style-type: none"> 802.3u standard SC-style Media Interface Connector (MIC); either connection pin in the MIC can be used for transmit or receive; see <i>SSR-HFX21-08-AA and SSR-HFX29-08-AA</i> on page 116, <i>SSR-GSX31-02</i> on page 114 for attaching cables 62.5 micron multimode fiber-optic cable Maximum 412 meters (1352 feet) segment length for half-duplex links Maximum 2 kilometers (6562 feet) segment length for full-duplex links

SSR-HSSI-02-CK

Connectivity Guidelines

Table 44. SSR-HSSI-02-CK Recommended Cable Types and Specifications

Cable	Type	Max. Length	Connector
HSSI Cable	HSSI	Recommended 3 meters (10 feet) segment length for standard WAN line card-to-CSU/DSU data port. ¹	50-pin High Speed Serial Interface (HSSI) connector; see <i>SSR-HSSI-02-CK</i> on page 117 for pin assignments

1. Connector cables for WAN line cards may be ordered from Enterasys Networks. For detailed information, including part numbers, see *SSR-HSSI-02-CK* on page 117.

Connectivity Guidelines

The SSR-HSSI-02-CK line card uses a 50-pin High Speed Serial Interface (HSSI) connector to link to a Channel Service Unit/Data Service Unit (CSU/DSU). Enterasys offers a 3-meter (10-foot) 50-pin HSSI connector cable (part number **SYS-HSSI-CAB**) to connect SSR-HSSI-02-CK line cards to remote CSU/DSU modules.

Table 45. Map for the 50-pin HSSI connector

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	14	(reserved)	26	GND	39	(reserved)
2	RT+	15	(reserved)	27	RT-	40	(reserved)
3	CA+	16	(reserved)	28	CA-	41	(reserved)
4	RD+	17	(reserved)	29	RD-	42	(reserved)
5	LC+	18	(reserved)	30	LC-	43	(reserved)
6	ST+	19	GND	31	ST-	44	GND
7	GND	20	(reserved)	32	GND	45	(reserved)
8	TA+	24	(reserved)	33	TA-	46	(reserved)
9	TT+	22	(reserved)	34	TT-	47	(reserved)
10	LA+	23	(reserved)	35	LA-	48	(reserved)
11	SD+	24	(reserved)	36	SD-	49	(reserved)
12	LB+	25	GND	37	LB-	50	GND
13	GND			38	GND		

Note: Because neither connector at the ends of the **SYS-HSSI-CAB** cable is keyed, you can simply plug either end of the cable into either your SSR-HSSI-02-CK line card or the remote HSSI CSU/DSU data port.

Figure 38 shows the pin positions in the 50-pin HSSI connector.

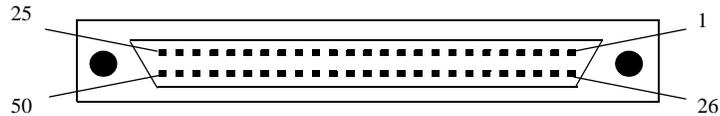


Figure 38. 50-pin HSSI connector

The Enterasys SSR-HSSI-02-CK line card uses standard copper twisted-pair cable with identical 50-pin HSSI connectors at each end to attach to a CSU/DSU module.

To attach the segment cables to your SSR-HSSI-02-CK line card:

1. Obtain an Enterasys 50-pin HSSI connector cable (part number **SYS-HSSI-CAB**) and connect either end of the HSSI connector cable to the X-Pedition WAN interface you wish to use.
2. Plug the remote end of the connector cable into the HSSI CSU/DSU data port you wish to use.

SSR-HTX22-08-AA and SSR-HTX12-08-AA

Cabling and Connector Specifications

The following table lists the media specifications for the SSR-HTX22-08-AA line card.

Table 46. SSR-HTX22-08-AA Media Specifications

Port Type	Specification
10BASE-T	<ul style="list-style-type: none"> 802.3 standard RJ-45 connector wired as Media Data Interface Crossed (MDIX); see Figure 39 on page 120 for pin assignments EIA Category 3, 4, or 5 unshielded twisted pair cabling Maximum 100 meters (328 feet) segment length
100BASE-TX	<ul style="list-style-type: none"> 802.3u standard RJ-45 connector wired as Media Data Interface Crossed (MDIX); see Figure 39 on page 120 for pin assignments EIA Category 5 unshielded twisted pair cabling Maximum 100 meters (328 feet) segment length

Connectivity Guidelines

To attach the segment cables to your SSR-HTX22-08-AA or SSR-HTX12-08-AA line card:

- For all the 10/100-Mbps ports, obtain copper cables that have the following pin assignments. The RJ-45 connectors on the SSR-HTX22-08-AA and SSR-HTX12-08-AA line cards are configured as Media Data Interface Crossed (MDIX). You can use Category 3 (“Cat-3”) or higher wire for 10-Mbps segments. For 100-Mbps segments, use Cat-5 or higher wire. The ports automatically sense which type of segment they are connected to and configure themselves to transmit and receive at the appropriate bandwidth.

The following table lists the pin assignments for the RJ-45 connector on the SSR-HTX22-08-AA and SSR-HTX12-08-AA, and for the RJ-45 connector on the switch, router, or host on the other end of the segment cable.

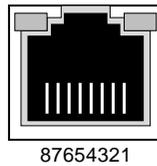
Table 47. RJ-45 Connector Pin Assignments

Line Card RJ-45 Connector	Pin Number	RJ-45 Connector at Other End of Segment
RXD (receive data)	1	TXD (transmit data)
RXD (receive data)	2	TXD (transmit data)
TXD (transmit data)	3	RXD (receive data)
Unused	4	Unused
Unused	5	Unused

Table 47. RJ-45 Connector Pin Assignments (Continued)

Line Card RJ-45 Connector	Pin Number	RJ-45 Connector at Other End of Segment
TXD (transmit data)	6	RXD (receive data)
Unused	7	Unused
Unused	8	Unused

Figure 39 shows the pin positions in the SSR-HTX22-08-AA and SSR-HTX12-08-AA connectors.

**Figure 39. SSR-HTX22-08-AA and SSR-HTX12-08-AA RJ-45 connectors**

2. Plug one end of the cable into the line card and the other end into the hardware at the other end of the connection.

SSR-HTX32-16

Cabling and Connector Specifications

The following table lists the media specifications for the SSR-HTX32-16 (T-Series) line card.

Table 48. SSR-HTX32-16 Media Specifications

Port Type	Specification
10BASE-T	<ul style="list-style-type: none"> • 802.3 standard • RJ-45 connector wired as Media Data Interface Crossed (MDIX); see Figure 39 for pin assignments • EIA Category 3, 4, or 5 unshielded twisted pair cabling • Maximum 100 meters (328 feet) segment length
100BASE-TX	<ul style="list-style-type: none"> • 802.3u standard • RJ-45 connector wired as Media Data Interface Crossed (MDIX); see Figure 39 for pin assignments • EIA Category 5 unshielded twisted pair cabling • Maximum 100 meters (328 feet) segment length

SSR-POS29-04 and SSR-POS21-04

Connectivity Guidelines

**Table 49. SSR-POS29-04 and SSR-POS21-04
Recommended Cable Types and Specifications**

Cable	Type	Max. Length	Connector
1300 nm MMF	62.5/125 um	2,000 m (1.24 mi)	MT-RJ
1300 nm SMF	9/125 um	15,000 m (9.32 mi)	MT-RJ

SSR-POS39-02 and SSR-POS31-02

Connectivity Guidelines

**Table 50. SSR-POS39-02 and SSR-POS31-02
Recommended Cable Types and Specifications**

Cable	Type	Max. Length	Connector
1300 nm MMF	62.5/125 um	500 m (1,640.41 ft)	SC
1300 nm SMF	9/125 um	15,000 m (9.32 mi)	SC

SSR-SERCE-04-AA and SSR-SERC-04-AA

Cabling and Connector Specifications

The following table lists the media specifications for the Quad Serial – C/CE line cards.

Table 51. SSR-SERCE-04-AA and SSR-SERC-04-AA Media Specifications

Port Type	Specification
Dual serial	V.35, X.21, EIA530, EIA530A, or RS449
	LFH-60 high density connector; see <i>LFH-60 high density connector</i> on page 124 for pin assignments.
	Recommended 3 meters (10 feet) segment length for standard WAN line card-to-CSU/DSU data port. ¹

1. Connector cables for WAN line cards may be ordered from Enterasys Networks.

Connectivity Guidelines

The SSR-SERCE-04-AA and SSR-SERC-04-AA line cards each use the same 60-pin LFH-60 high density connector to link to their respective Channel Service Units/Data Service Units (CSU/DSUs).

Enterasys offers the following four cables, used to connect the SSR-SERCE-04-AA and SSR-SERC-04-AA line cards to standard CSU/DSU modules:

Table 52. SSR-SERCE-04-AA and SSR-SERC-04-AA Cable Types

Enterasys Part Number	CSU/DSU Connector Type	Standard
SYS-SV35-DTE	Two (2) V.35 34-pin connectors ¹	V.35
SYS-S530-DTE	Two (2) DB-25 25-pin connectors	EIA-530
SYS-S449-DTE	Two (2) DB-37 37-pin connectors	RS-449
SYS-SX21-DTE	Two (2) DB-15 15-pin connectors	X.21

1. The two remote ends of each type of connector cable are labeled “Port A” and “Port B”. “Port A” corresponds to Port 1 or 3 on a Quad Serial – C/CE WAN card, depending upon which line card port you are using. Similarly, “Port B” corresponds to Port 2 or 4 on a Quad Serial – C/CE line card.

Note: Because the LFH-60 high density connectors on Quad Serial – C/CE line cards contain two serial WAN ports per interface, all four cable types defined above feed two CSU/DSU ports.

The following table maps the pin assignments for Enterasys's LFH-60 high density connectors for the SSR-SERCE-04-AA and SSR-SERC-04-AA line cards.

Table 53. SSR-SERCE-04-AA and SSR-SERC-04-AA Connector Pin Assignments

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	P1_GND	16	P2_TXC_A	31	P1_GND	46	P2_TXD_A
2	P1_MODE[2]	17	P2_TXC_B	32	P1_MODE[0]	47	P2_TXD_B
3	P1_CTS_B	18	P2_DCD_A	33	P1_DCD_B	48	P2_RTS_A
4	P1_CTS_A	19	P2_DCD_B	34	P1_DCD_A	49	P2_RTS_B
5	P1_RTS_B	20	P2_MODE[1]	35	P0_RXD_B	50	P2_DSR_A
6	P1_RTS_A	21	P2_GND	36	P0_RXD_A	51	P2_DSR_B
7	P1_SCTE_B	22	P2_GND	37	Reserved	52	P2_LL_A
8	P1_SCTE_A	23	P1_TXD_A	38	P2_GND	53	P2_SHIELD
9	P1_GND	24	P1_TXD_B	39	P2_MODE[0]	54	Reserved
10	P2_GND	25	P1_TXC_A	40	P2_CTS_B	55	P1_RXC_A
11	P2_MODE[2]	26	P1_TXC_B	41	P2_CTS_A	56	P1_RXC_B
12	P2_RXD_B	27	P1_DSR_A	42	P2_DTR_B	57	P1_DTR_A
13	P2_RXD_A	28	P1_DSR_B	43	P2_DTR_A	58	P1_DTR_B
14	P2_RXC_B	29	P1_MODE[1]	44	P2_SCTE_B	59	P1_LL_A
15	P2_RXC_A	30	P1_GND	45	P2_SCTE_A	60	P1_SHIELD

Figure 40 shows the pin positions in the LFH-60 high density connector.

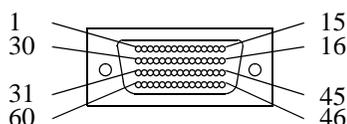


Figure 40. LFH-60 high density connector

Enterasys SSR-SERCE-04-AA and SSR-SERC-04-AA line cards use standard copper twisted-pair cable with one of four custom remote-end connectors to attach to their respective CSU/DSU modules.

To attach the segment cables to your SSR-SERCE-04-AA or SSR-SERC-04-AA line card:

1. Obtain one of the Enterasys connector cables described on [page 123](#) and connect the single LFH-60 high density connector to the X-Pedition WAN interface you wish to use.
2. Plug the remote end of the connector for each port you wish to use into its respective CSU/DSU data port.

Appendix C

Technical Support

Getting Help

For additional support related to the Common CLI syntax or this document, contact Enterasys Networks using one of the following methods:

World Wide Web	http://www.enterasys.com/
Phone	(603) 332-9400
Internet mail	support@enterasys.com
FTP	ftp://ftp.enterasys.com
Login	anonymous
Password	your email address

To send comments or suggestions concerning this document, contact the Technical Writing Department via the following email address: **TechWriting@enterasys.com**

Please include the document Part Number in the email message.

Before contacting Enterasys Networks for technical support, have the following information ready:

- Your Enterasys Networks service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Enterasys Networks products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)

- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

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