Doc. No. 78-2988-01 Rev. A0

LightStream 1010 ATM Switch Processor Module Configuration Note

Product Numbers: WATM-ASP1=

This document contains instructions for installing and configuring the LightStream 1010 ATM switch processor (ASP) module. For a complete description of commands used to configure and maintain the ASP, refer to the *LightStream 1010 ATM Switch Software Configuration Guide* and *LightStream 1010 ATM Switch Command Reference* publications. For complete hardware configuration and maintenance procedures, refer to the *LightStream 1010 ATM Switch User Guide* publication.

Cisco documentation and additional literature are available on a CD called Cisco Connection Documentation, Enterprise Series. The CD is updated and shipped monthly, so it might be more up-to-date than the printed documentation. To order the Cisco Connection Documentation, Enterprise Series CD, contact your local sales representative or call Customer Service. The CD is available both as a single CD and as an annual subscription. You can access Cisco technical documentation on the World Wide Web Universal Resources Locator (URL) `http://www.cisco.com`.

Sections in this document include the following:

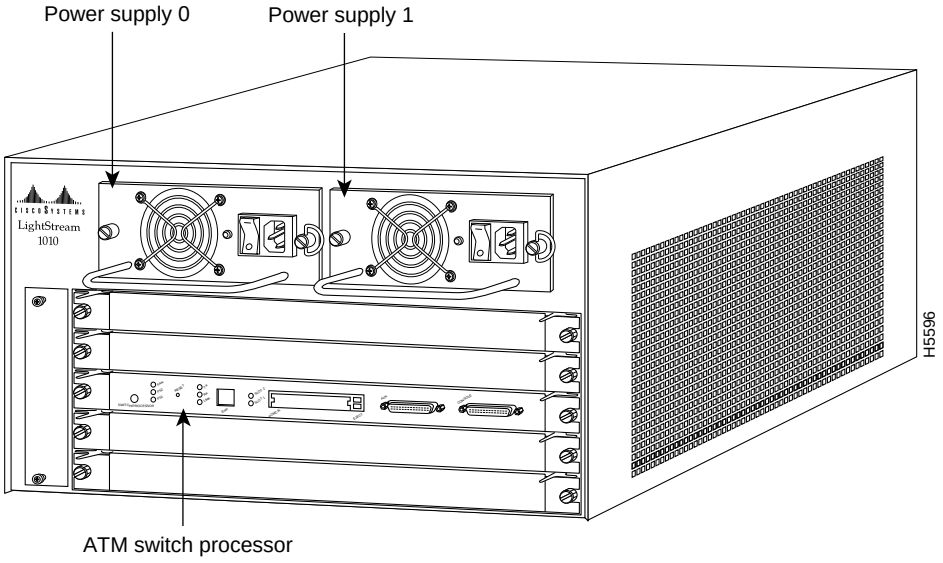
- What is the LightStream 1010 ATM Switch?
- ASP Description
- ASP LEDs
- Preparing Network Connections
- Safety Recommendations
- Installing and Replacing the ASP
- Configuring the Interfaces
- ASP Configuration Defaults

Warning Only trained and qualified personnel should install or replace the LightStream 1010 ATM switch, chassis, power supplies, fan assembly, or modules.

What is the LightStream 1010 ATM Switch?

The LightStream 1010 uses a five-slot, modular chassis featuring the option of dual, fault-tolerant, load-sharing power supplies (See Figure 1.) The central slot in the LightStream 1010 is dedicated to a single, field-replaceable ATM switch processor (ASP) module that supports both the 5-Gbps shared memory and the fully nonblocking switch fabric. The ASP also supports the feature card and high performance reduced instruction set (RISC) processor that provides the central intelligence for the device. The remaining slots support up to four hot-swappable Carrier Modules (CAMs). Each CAM supports up to two hot-swappable Port Adapter Modules (PAMs) for a maximum of eight PAMs per switch, supporting a wide variety of desktop, backbone, and wide-area interfaces.

Figure 1 Front View of the LightStream 1010 ATM Switch



The LightStream 1010 ATM switch provides switched ATM connections to individual workstations, servers, LAN segments, or other ATM switches and routers using fiber-optic, unshielded twisted-pair (UTP), and coaxial cable.

Figure 2 shows an example of a network configuration using the LightStream 1010 ATM switch in a high-performance workgroup.

Figure 2 LightStream 1010 Workgroup Configuration Example

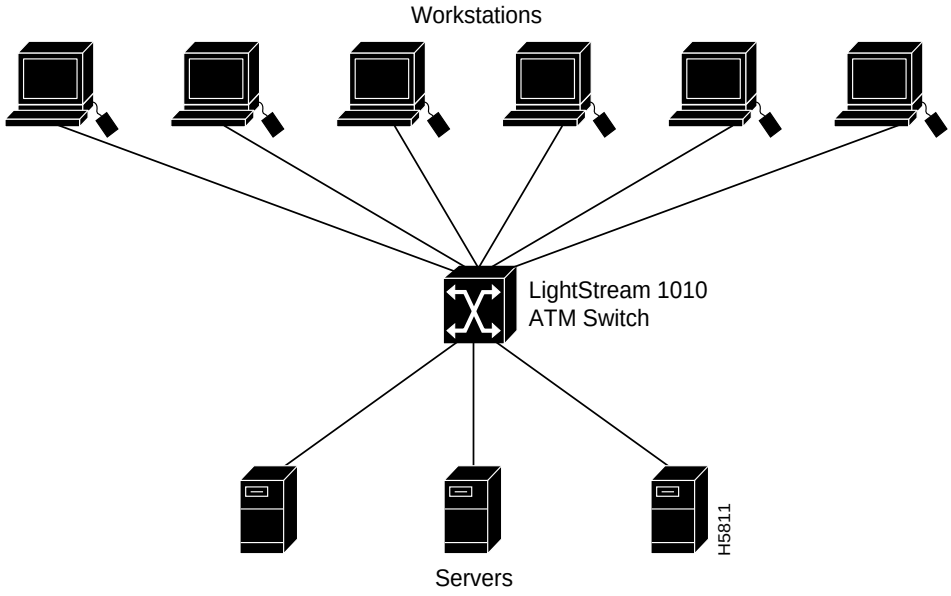
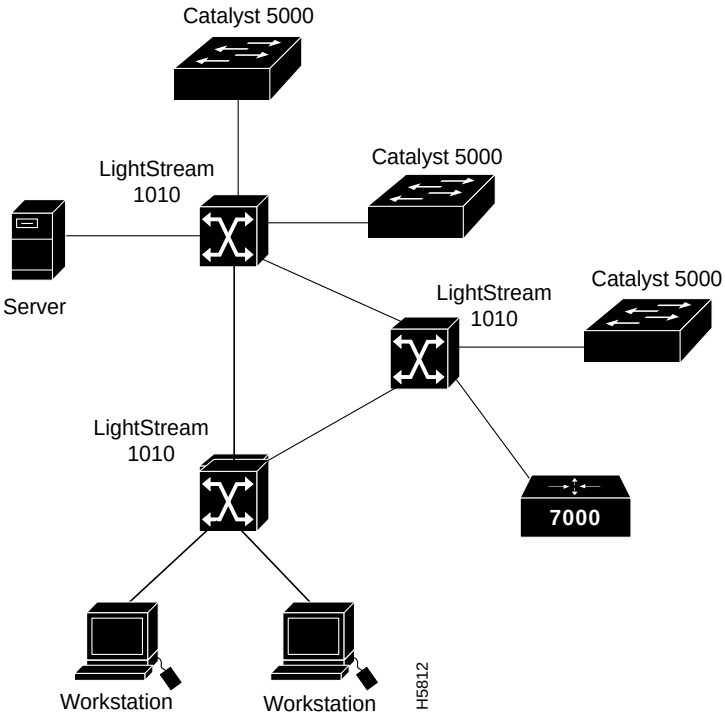


Figure 3 shows an example of a network configuration using the LightStream 1010 ATM switch for a campus backbone.

Figure 3 LightStream 1010 Backbone Configuration Example

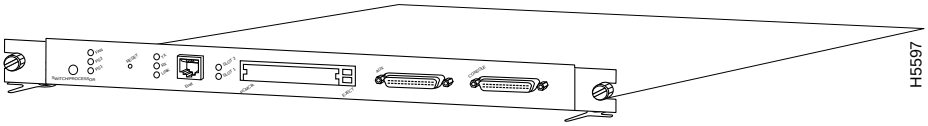


ASP Description

The ASP, shown in Figure 4, is the main system processor in the switch. The ASP contains the ATM switching engine and network management processor for the system software and most of the system memory components. It maintains and executes the management functions that control the system.

Note The ASP must be installed in the middle slot, slot number 2.

Figure 4 ATM Switch Processor



The ASP has the following features:

- 5-gigabits per second (Gbps) switching fabric
- MIPS architecture R4600 microprocessor at 100 MHz internally, 50 MHz system interface
- Memory components include:
  - Main memory is used by the system software—one dynamic random access memory (DRAM) bank of two single in-line memory modules (SIMMs), with 16 MB of DRAM as the default (upgradeable to 32 or 64 MB)
  - 8 MB of Flash memory for downloading the system software
- Dual PCMCIA card slot that can be used for additional Flash memory
- Air-temperature sensor for environmental monitoring
- Console serial port that can be configured for a terminal or a modem
- Auxiliary serial port for modem connection
- Ethernet port to allow Simple Network Management System (SNMP) to use an Ethernet attached management station

In addition to these features, the ASP performs the following management functions:

- Monitors interface and environmental status
- Provides SNMP management and the console/Telnet interface

The ASP must be installed in slot 2, the middle slot when facing the front panel. (See Figure 1.)

Flash Memory

The embedded Flash memory allows you to remotely load and store system software images. You can download a new software image over the network or from a local server, and add the new image to Flash memory or replace an existing file.

Reset Switch

Access to the reset switch, located behind the faceplate of the ASP, is through a small hole approximately 1.5 inches to the right of the ASP status LED. (See Figure 5.)

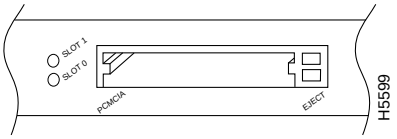
Enet Port

The Ethernet RJ-45 port (labeled Enet) may be used to connect a management workstation and enables SNMP management of the LightStream 1010 switch. (See Figure 5.)

Dual PCMCIA Card Slot

The dual-height Personal Computer Memory Card International Association (PCMCIA), Type II, card slot (shown in Figure 5) can be used to store Cisco Internetwork Operating System (IOS) software or system configuration information on a Flash card. The switch may also boot from the software stored on the Flash card.

Figure 5 ATM Switch Processor PCMCIA Slot



Console Port Signals

The console port on the ASP is a female, EIA/TIA-232, data communications equipment (DCE), DB-25 receptacle. Both data set ready (DSR) and data carrier detect (DCD) are active when the system is running. (See Figure 6.) The ready to send (RTS) signal tracks the state of the clear to send (CTS) input. The console port does not support modem control or hardware flow control. The console port requires a straight-through EIA/TIA-232 cable. Table 1 lists the signals used on this port.

Table 1 Console Port Signals

Pin	Signal	Direction	Description
1	GND	--	Ground
2	TxD	<---	Transmit data
3	RxD	--->	Receive data
6	DSR	--->	Data set ready (always on)
7	GND	--	Ground
8	DCD	--->	Data carrier detect (always on)
20	DTR	--->	Data terminal ready

Note EIA/TIA-232 was known as recommended standard RS-232 before its acceptance as a standard by the Electronic Industries Association (EIA) and Telecommunications Industry Association (TIA).

Auxiliary Port Signals

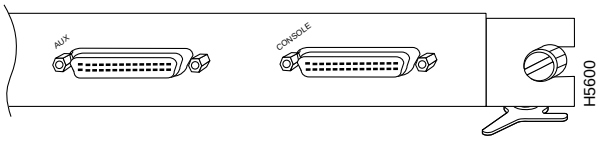
The auxiliary port on the ASP is a male, EIA/TIA-232 DTE, DB-25 plug to which you can attach a channel service unit/data service unit (CSU/DSU) or other equipment in order to access the switch from the network. (See Figure 6.) Table 2 lists the EIA/TIA-232 signals used on this port.

The asynchronous auxiliary port supports hardware flow control and modem control.

Table 2 Auxiliary Port Signals

Pin	Signal	Direction	Description
2	TxD	--->	Transmit data
3	RxD	<---	Receive data
4	RTS	--->	Request to send (used for hardware flow control)
5	CTS	<---	Clear to send (used for hardware flow control)
6	DSR	<---	Data set ready
7	Signal ground	--	Signal ground
8	CD	<---	Carrier detect (used for modem control)
20	DTR	--->	Data terminal ready (used for modem control only)

Figure 6 AUX and Console Connectors



Feature Card

The feature card is a daughter card of the ASP module that implements a number of value-added capabilities over and above the base switch mechanisms. These include:

- Per-virtual channel (VC) statistics collection
- Multicast cell replication
- Congestion control for the available bit rate (ABR) service
- Policing
- Threshold based Selective Discard
- Intelligent Early Packet Discard

Supporting such capabilities on the field-replaceable feature card allows you to upgrade the LightStream 1010 in the field as and when such standards evolve and more advanced mechanisms are required.

Note When you upgrade the feature card you must power down the switch and remove the ASP module.

Specifications

Table 3 lists the ATM switch processor specifications:

Table 3 ATM Switch Processor Module Specifications

Description	Specifications
Switch and processor capacity	5 Gbps[1] shared memory, nonblocking switch fabric 65,536 cells of ATM cell buffers
Software images	Default image with IISP protocol Optional PNNI image with plug-and-play capacity
Dimensions (H x W x D)	1.2 x 14.4 x 16 in.(3.0 x 36.6 x 40.6 cm)
Weight	6.85 lb (3.09 kg)
Operating temperature	32 to 104 F (0 to 40 C)
Nonoperating temperature	-40 to 67 F (-40 to 75 C)
Humidity	10 to 90%, noncondensing
Altitude	-500 to 10,000 ft (-52 to 3,048 m)
Microprocessor	100-MHz MIPs R4600
Memory	8 MB of Flash memory (upgradeable to 16 MB) 16 MB of packet-buffer DRAM[2] standard (upgradeable to 64 MB) 256 KB of boot EPROM 128 KB of SRAM[3]
Interface timing	Loop timing, Stratum 4 accuracy clock for self-timing, master clock distribution port
ATM Switch Processor (ASP)	ASP module, 16 MB DRAM, 8 MB Flash memory, No Flash card installed WATM-ASP1
Management access	Standard Ethernet and dual EIA/TIA 232 serial ports on ASP module
ASP Interface ports	RJ-45 IEEE 802.3 Ethernet 10BaseT port, 25-pin EIA/TIA-232[4] AUX port, and a DB-25 console port for an administration workstation
Network management	Port Tx and Rx LEDs, switch and common equipment status LEDs
Mean Time Between Failures	5.8 years for ASP and Feature card
Maximum station-to-station cabling distance	10BaseT Ethernet—Category 3-5 UTP[5]: 328 ft. (100 m)
Agency approvals	Safety: UL[6] 1950, CSA[7]-C22.2 No. 950-93, and EN60950 EMI[8]: FCC Class A CE Mark, and VCCI Class II with shielded cables

1. Gbps = gigabits per second

2. DRAM = dynamic random-access memory
3. SRAM = static random-access memory
4. MII = media independent interface
5. UTP = unshielded twisted-pair
6. UL = Underwriters Laboratory
7. CSA = Canadian Standards Association
8. EMI = electromagnetic interference

ASP LEDs

The LEDs on the ASP indicate the status of the system, which includes the fan assembly and power supply(ies) and the ASP. The ASP LEDs are shown in Figure 7 and described in Table 4.

Figure 7 ATM Switch Processor LEDs

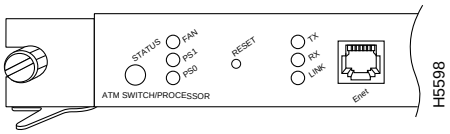


Table 4 ATM Switch Processor LEDs

LED	Description
Status	The switch performs a series of self-tests and diagnostic tests. If all the tests pass, the status LED is green. If any test fails, the status LED is red. During system boot or if the module is disabled, the LED is orange.
Fan	Indicates whether or not the fan is operational. If the fan is operational, the fan LED is green. If the fan is not operational, the fan LED is red.
PS 0, left bay	If the power supply is operational, the PS0 LED is green. If the power supply is installed but not operational, the PS0 LED is red. If the power supply is off or not installed, the PS0 LED is off.
PS 1, right bay	If the power supply is operational, the PS1 LED is green. If the power supply is installed but not operational, the PS1 LED is red. If the power supply is not installed, the PS1 LED is off.
Link	Green—The Ethernet port is operational. Off—No signal is detected.
RX (Receive)	Off—No signal received. Flashing green—Ethernet packets being received: pulse rate increases with data rate.
TX (Transmit)	Off—Not transmitting. Flashing green—Ethernet packets being transmitted: pulse rate increases with data rate.
Slot 1[1]	Off—No signal detected. On—Shows activity accessing the PCMCIA slot.
Slot 0[2]	Off—No signal detected. On—Shows activity accessing the PCMCIA slot.

1. This LED is located to the right of the Ethernet cable connector. Refer to the LightStream 1010 ATM Switch User Guide for more information.
2. This LED is located to the right of the Ethernet cable connector. Refer to the LightStream 1010 ATM Switch User Guide for more information.

Preparing Network Connections

When preparing your site for network connections to the switch, you need to consider a number of factors related to each type of interface:

- Type of cabling required for each type (fiber, twisted-pair, or coaxial cabling).
- Distance limitations for each signal type.
- Specific cables you need to connect each interface.
- Any additional interface equipment you need, such as transceivers, modems, channel service units (CSUs), or data service units (DSUs). Before installing the switch, have all additional external equipment and cables on hand. If you intend to build your own cables, refer to the cable pinouts in the section “Installing the LightStream 1010 Switch” in the *LightStream 1010 ATM Switch User Guide* publication. For ordering information, contact a customer service representative.

Distance Limitations

The length of your networks and the distances between connections depend on the type of signal, the signal speed, and the transmission media (the type of cabling used to transmit the signals). For example, fiber-optic cable has a greater channel capacity than twisted-pair cabling. The following distance limits are provided as guidelines for planning your network connections before installation.

Serial Connections

Serial signals can travel a limited distance at any given bit rate; generally, the slower the baud rate, the greater the distance. Table 5 shows the standard relationship between baud rate and distance for EIA/TIA-232 signals.

Table 5 IEEE Standard EIA/TIA-232 Transmission Speed Versus Distance

Rate (bps)	Distance (feet)	Distance (meters)
2400	200	60
4800	100	30
9600	50	15
19200	25	7.6
38400	12	3.7
56000	8.6	2.6

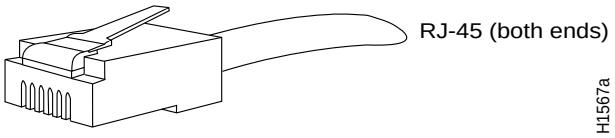
Additional and Optional Connection Equipment

To install and configure the switch, you need a terminal with an EIA/TIA-232 data terminal equipment (DTE) port and an EIA/TIA-232 data communications equipment (DCE) console cable with DB-25 plugs at one end. You can detach the terminal (and cable) after the installation and configuration procedures are complete.

Ethernet Connection Equipment

You need an Ethernet cable with RJ-45 male connectors (see Figure 8) between the Ethernet port and the Ethernet network. See the ASP Ethernet RJ-45 connector information in the section “Enet Port” in the chapter “LightStream 1010 ATM Switch Hardware” in the *LightStream 1010 ATM Switch User Guide*.

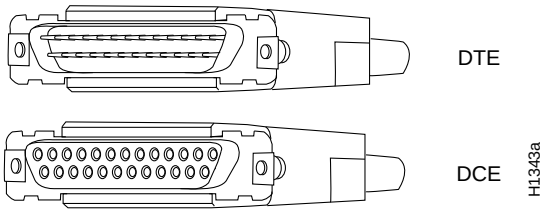
Figure 8 Ethernet RJ-45 Interface Cable Connectors



EIA/TIA-232 Connections

EIA/TIA-232 supports unbalanced circuits at signal speeds up to 64 kbps. The ASP console connection is a standard 25-pin D-shell connector (known as a DB-25) that is commonly used for EIA/TIA-232 connections. Figure 9 shows the connectors at the local end of the adapter cable. The system console port on the ASP EIA/TIA-232 connection supports only asynchronous connection.

Figure 9 EIA/TIA-232 Adapter Cable Connectors, Network End



Console Port Connection Equipment

The ASP contains an EIA/TIA-232 asynchronous console port (DB-25 receptacle).

When connecting a serial device, consider the cable as an extension of the switch for an external connection; therefore, use null-modem cable to connect the switch to a remote DCE device such as a modem or DSU. A straight-through cable to connect the switch to a DTE device such as a terminal or PC.

Before you connect a terminal to the console port, configure the terminal to match the switch console port, as follows:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit

Safety Recommendations

The following guidelines help ensure your safety and protect the equipment. This list is not inclusive of all potentially hazardous situations that you may be exposed to as you install the module, so *be alert*.

- Never try to lift the chassis by yourself; *two people are required* to lift the switch.
- Always turn off all power supplies and unplug all power cords before removing the chassis front panel.
- Always unplug all power cords before installing or removing a chassis.
- Keep the chassis area clear and dust free during and after installation.
- Keep tools and chassis components away from walk areas.
- Do not wear loose clothing, jewelry (including rings and chains), or other items that could get caught in the chassis. Fasten your tie or scarf and sleeves.

Warning Metal objects heat up when connected to power and ground, and can cause serious burns.

Safety with Electricity

The supervisor engine, modules, and redundant (second) power supplies are designed to be removed and replaced while the system is operating without presenting an electrical hazard or damage to the system. Before removing a redundant power supply, ensure that the first supply is powered on. However, you must shut down the system before removing or replacing any of the replaceable components inside the front panel, for example, the backplane. Never install equipment that appears damaged.

Follow these basic guidelines when working with any electrical equipment:

- Before beginning any procedures requiring access to the chassis interior, locate the emergency power-off switch for the room in which you are working.
- Disconnect all power and external cables before installing or removing a chassis.
- Do not work alone when potentially hazardous conditions exist.
- Never assume that power has been disconnected from a circuit; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Carefully examine your work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety grounds.

In addition, use the guidelines that follow when working with any equipment that is disconnected from a power source but still connected to telephone wiring or other network cabling.

Warning Do not work on the system or connect or disconnect cables during periods of lightning activity.

- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Preventing Electrostatic Discharge Damage

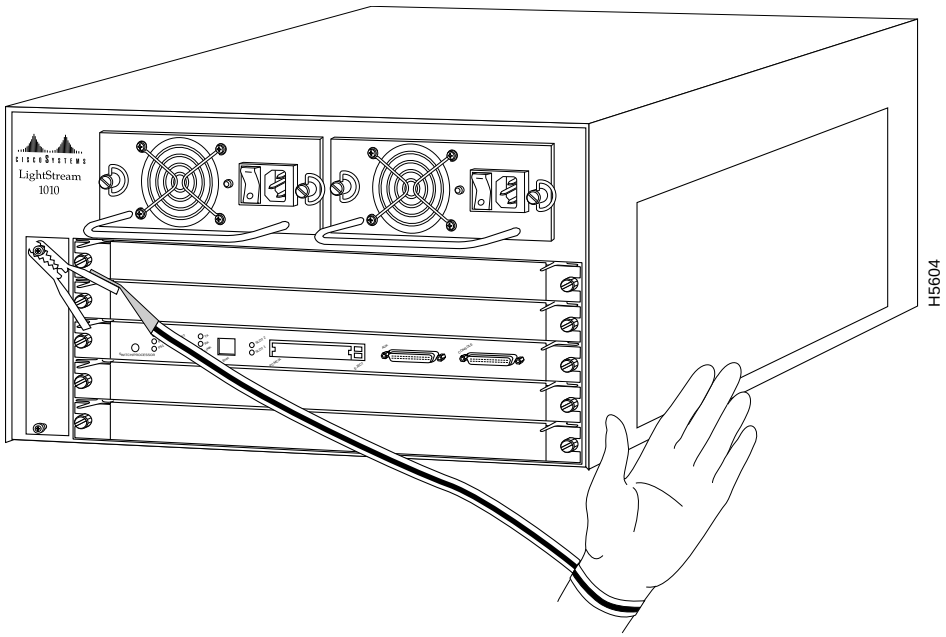
Electrostatic discharge (ESD) damage, which occurs when electronic cards or components are improperly handled, can result in complete or intermittent failures. The ASP and PAMs each consist of a printed circuit card that is fixed in a metal carrier. Electromagnetic interference (EMI) shielding, connectors, and a handle are integral components of the carrier. Although the metal carrier helps to protect the cards from ESD, use a preventive antistatic strap whenever you handle the ASP or PAMs. Handle the carriers by the handles and the carrier edges only; never touch the cards or connector pins.

Caution Always tighten the captive installation screws on the ASP and PAMs when you are installing them. These screws prevent accidental removal of the ASP, CAMs, and PAMs, provide proper grounding for the system, and help to ensure that the bus connectors are properly seated in the backplane.

Following are guidelines for preventing ESD damage:

- Always use an ESD-preventive wrist or ankle strap and ensure that it makes good skin contact.
- When removing any module, connect the equipment end of the strap to one of the captive installation screws on an installed PAM or power supply. (See Figure 10.)

Figure 10 Placement of Electrostatic Discharge Wrist Strap



- Handle carriers by the faceplates and carrier edges only; avoid touching the card or any connector pins.
- When removing a module, place the removed module component-side up on an antistatic surface or in a static shielding bag. If the module will be returned to the factory, immediately place it in a static shielding bag.
- Avoid contact between the modules and clothing. The wrist strap protects only the card from ESD voltages on the body; ESD voltages on clothing can still cause damage.

Caution For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohms (Mohms).

Installing and Replacing the ASP

This section describes how to remove and install the ASP card.

Caution The ASP is a required system component. Removing an ASP while the system is operating causes the system to shut down and may damage the processor.

Incorrect ASP Insertion and Removal

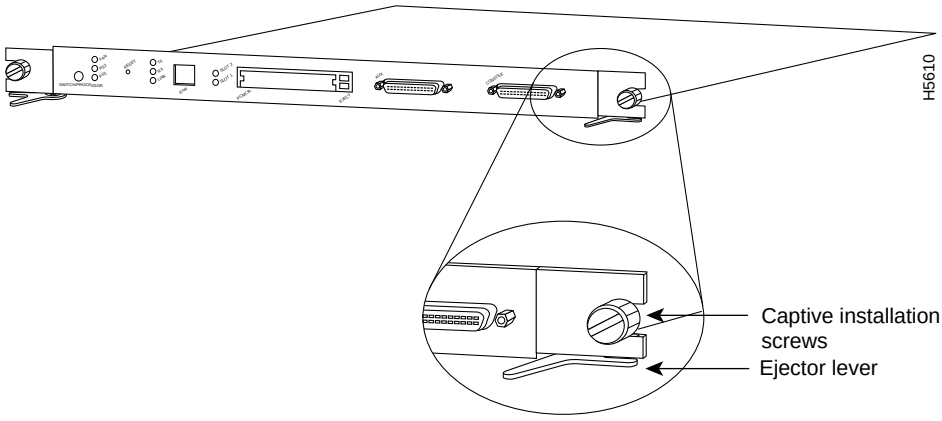
The ejector levers and installation screws (see Figure 11) align and seat the card connectors in the backplane. Follow the installation and removal instructions carefully, and review the following examples of *incorrect* insertion practices and results:

- Using the faceplate to force or slam the ASP into the slot can also damage the pins on the module connectors if they are not aligned properly with the backplane.
- When using the faceplate (rather than the ejector levers or installation screws) to seat the ASP in the backplane, you may need to pull the CAM or PAM back out and push it in again to align it properly. Using the ejector levers and installation screws ensures that the card connector mates with the backplane correctly.
- Using the faceplate to insert or remove an ASP or failing to push the ejector levers to the full 90-degree position, can leave some (not all) of the connector pins mated to the backplane, a state which will suspend the system. Using the ejector levers and installation screws to make sure that they are pushed fully into position ensures that all three layers of pins are mated with (or free from) the backplane.

It is also important to use the ejector levers and installation screws when removing an ASP to ensure that the card connector pins disconnect from the backplane in the logical sequence expected by the system. Any ASP that is only partially connected to the backplane can hang the bus. For more information, see the section “Installing and Replacing the ASP.”

Figure 11 shows the ejector levers, which you must use when inserting or removing the ASP or CAMs.

Figure 11 Ejector Levers and Captive Installation Screws (ASP Shown)



Tools Required

You need a 3/16-inch flat-blade screwdriver to remove any filler (blank) PAMs and to tighten the captive installation screws that secure the ASP in their slots. Whenever you handle ASP you should use a wrist strap or other grounding device to prevent electrostatic discharge (ESD) damage. See the section “Preventing Electrostatic Discharge Damage” in the chapter “Preparing for Installation” in the *LightStream 1010 ATM Switch User Guide.*

Removing the ASP

ASP and CAM removal instructions are the same, except only CAMs and PAMs support hot-swapping.

Caution The ASP is a required system component. Removing an ASP while the system is operating causes the system to shut down and may damage the processor. Power off the system before removing the ASP.

Take the following steps to remove an ASP (or CAM):

Step 1 Loosen the captive installation screws, by using a screwdriver, at the left and right sides of the ASP.

Step 2 Place your thumbs on the left and right ejector levers and simultaneously push the left lever left and the right lever right to release the ASP from the backplane connector.

Step 3 Grasp the ASP faceplate with one hand and place your other hand under the carrier to support and guide the module out of the slot. Avoid touching the card.

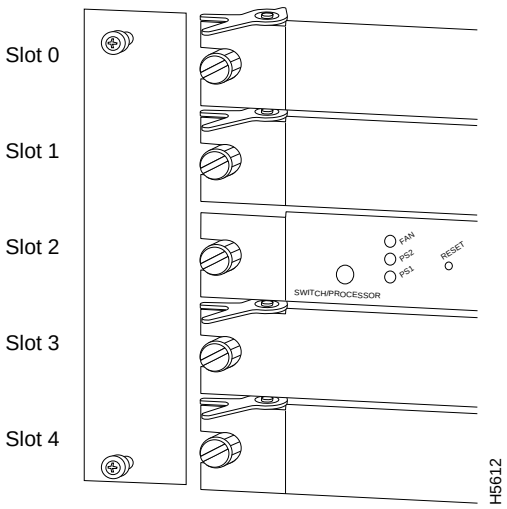
Step 4 Carefully pull the ASP straight out of the slot, keeping your other hand under the carrier to guide it. Keep the module at a 90-degree orientation to the backplane.

Step 5 Place the removed ASP on an antistatic mat or antistatic foam.

Installing ASP

Slot number 2 contains the ASP, Figure 12, from top to bottom when viewing the chassis from the front.

Figure 12 Slot Numbers



ASP Installation

ASP and CAM installation instructions are essentially the same, except the ASP does not support hot-swapping.

The ASP is a required system component. Removing an ASP while the system is operating causes the system to shut down and may damage the processor. Power off the system before removing the ASP. For more information, see the section “Installing and Replacing the ASP.”

Caution Handle ASP by the carrier edges only to prevent ESD damage.

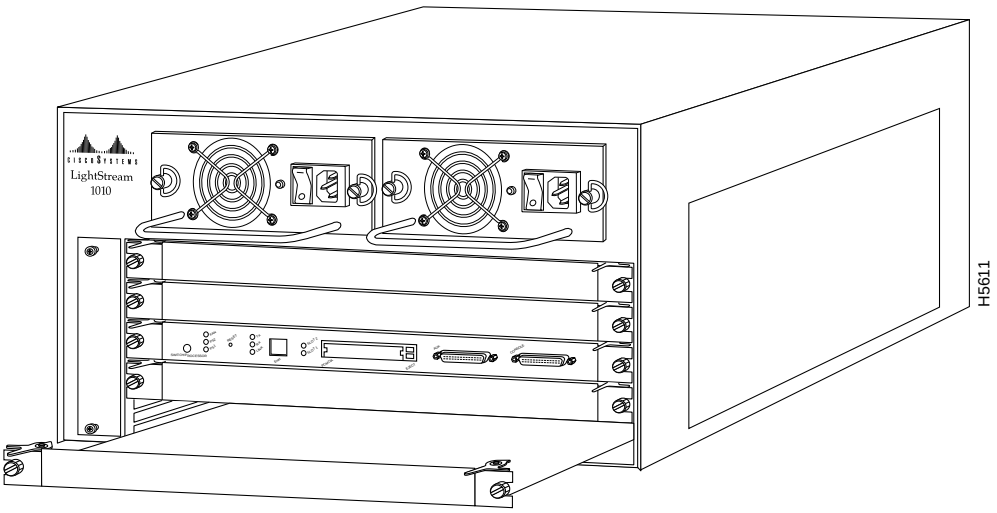
Take the following steps to install an ASP or CAM:

Step 1 Use a 1/4-inch flat-blade screwdriver to loosen the ASPs, which are secured with two captive installation screws. Then remove the ASP card from the slot.

Step 2 Hold the ASP faceplate with one hand, place your other hand under the carrier and guide it into the slot. Avoid touching the card. (See Figure 13.)

Step 3 Place the back of the ASP in the slot and align the notch on the sides of the module carrier with the groove in the slot.

Figure 13 Module Installation



Step 4 Keep the ASP at a 90-degree orientation to the backplane and carefully slide it into the slot until the faceplate makes contact with the ejector levers.

Step 5 Use your thumb and forefinger of each hand and simultaneously push the left lever and the right lever in to fully seat the ASP in the backplane connector.

Note Always use the ejector levers when installing or removing the ASP. A module that is partially seated in the backplane causes the system to halt and subsequently crash.

Step 6 Use a screwdriver to tighten the captive installation screws on the left and right ends of the ASP.

Step 7 Attach network interface cables or other devices to the interface ports.

Step 8 If needed, turn the power back on. See the section “Starting the System” in the chapter “Installing the LightStream 1010 ATM Switch” in the *LightStream 1010 ATM Switch User Guide*.

Step 9 Check the status of the interfaces as follows:

- If this installation is a replacement PAM, use the **show configuration** or **show atm interface** [*card*/*subcard*/*port*] command to verify that the system has acknowledged the new interfaces and brought them up.
- See the publications *LightStream 1010 ATM Switch Software Configuration Guide* and *LightStream 1010 ATM Switch Command Reference* for all software instructions and information.

Configuring the Interfaces

After you install the module, use the following information to configure the module and the individual interfaces on the ASP module. In the *LightStream 1010 ATM Switch User Guide* the section “LightStream 1010 ATM Switch Hardware” contains an overview of the port and module numbering scheme used to configure the ASP. The section “Configuring the LightStream 1010 ATM

Switch" describes how to configure the ports on the FDDI or CDDI module. The section "Confirming the Installation" describes the procedures you should use to confirm that the ASP is configured correctly.

Port Addresses

Each interface (or port) in the switch is designated by several different types of addresses. The *physical* interface address is the actual physical location (*card/sub/port*) of the interface connector within the chassis. The system software uses the physical addresses to control activity within the switch and to display status information. These physical card/subcard/port addresses are not used by other devices in the network; they are specific to the individual switch and its internal components and software.

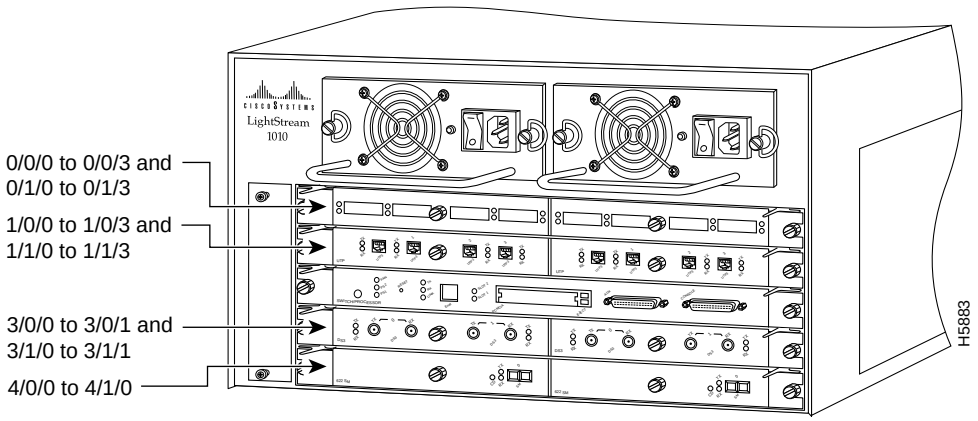
The following sections describe how the LightStream 1010 switch assigns and controls both the physical (card/subcard/port) and Media Access Control (MAC)-layer addresses for interfaces within the chassis.

Port IDs

In the LightStream 1010 switch, port IDs specify the actual physical location of each PAM port on the front of the switch. (See Figure 14.) The address is composed of a three-part number in the format *card/subcard/port number.* The first number identifies the slot in which the module is installed. Module slots are numbered 0 to 4 from top to bottom. The second number identifies the subcard or PAM number. The PAMs are numbered 0 and 1 with 0 being the left PAM facing the front of the switch. The third number identifies the physical port number on the module. The port numbers always begin at 0 and are numbered from the left port to the right port, facing the front of the switch. The number of additional ports (/1, /2, and so on) depends on the number of ports available on the module.

Interface ports maintain the same port ID regardless of whether other modules are installed or removed. However, when you move a module to a different slot, the first number in the address changes to reflect the new slot number. For example, on a 4-port 155 UTP PAM in chassis slot 1 in PAM slot 0, the address of the left port is 1/0/0 and the address of the right port is 1/0/3. If you remove the 4-port 155 UTP PAM from slot 1 and install it in slot 4, the addresses of those same ports become 4/0/0 and 4/0/3.

Figure 14 ATM Interface Port ID Address Examples



You can identify module ports by physically checking the card/subcard/port location on the front of the switch. You can also use software commands to display information about a specific interface, or all interfaces, in the switch. To display information about every interface, use the **show interface** command without parameters. To display information about a specific interface, use the **show interface** command with the interface type and port address in the format **show interface atm** *card/subcard/port*. This command is described in the *LightStream 1010 ATM Switch Command Reference* publication.

Cisco Connection Online

Cisco Connection Online (CCO), formerly Cisco Information Online (CIO), is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional content and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously—a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, Internet e-mail, and fax download options, and is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: `http://www.cisco.com`.
- Telnet: `cco.cisco.com`.
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and baud rates up to 14.4 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact `cco-help@cisco.com`. For additional information, contact `cco-team@cisco.com`.

Note If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or `tac@cisco.com`. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or `cs-rep@cisco.com`.

This document is to be used in conjunction with the *LightStream 1010 ATM Switch User Guide and the LightStream 1010 ATM Switch Command Reference* publication.