C H A P T E R 4

Configuring the LightStream 1010 ATM Switch

This chapter discusses the initial configuration of the LightStream 1010 Asynchronous Transfer mode (ATM) switch. Because the LightStream 1010 offers true plug-and-play operation, most users may not need to perform any of these procedures.

The LightStream 1010 is shipped with the ATM address autoconfigured to an address assigned by Cisco Systems. This feature lets the switch automatically configure attached end systems using the Interim Local Management Interface (ILMI) protocol and automatically establishes itself as a node in a single-level Private Network-Network Interface (PNNI) routing domain.

Note The default software image for the LightStream 1010 contains only the Interim Interswitch Signaling Protocol (IISP) for routing. This is suitable for small networks that do not require the sophistication of the PNNI protocols. A separate orderable image contains both PNNI and IISP. The PNNI protocol provides the route dissemination mechanism for complete plug-and-play capability.

The ILMI and PNNI protocols, when used with such IP address autoconfiguration mechanisms as BOOTP, allow the LightStream 1010 to be entirely self-configured. Through network management applications and the text-based command line interface (CLI), the switch's network operator has the capability, if desired, to configure and customize all aspects of the operation of the switch.

An IP address must be assigned to allow up to eight simultaneous Telnet sessions to connect to the switch or to use Simple Network Management Protocol (SNMP) network management for the switch. The Ethernet IP address can be assigned either manually or by a BOOTP server. See the section "Configuring Ethernet IP Interface Parameters."

Note If your Telnet station or SNMP network management workstation is on a different network from the switch, a static routing table entry must also be added to the routing table. Use the **configure ip route** command to set the static routing table entry.

For definitions of all commands discussed in this chapter, refer to the publication *LightStream 1010 ATM Switch Command Reference.*

Before You Begin

If you want to configure some additional features, you may need the following information before you can begin your LightStream 1010 switch configuration:

- Media Access Control (MAC) address of the Ethernet port if you want to configure a BOOTP server to inform the switch of its Ethernet IP address and mask

- ATM address assigned by your system administrator if you want to configure a new ATM address for the switch (an autoconfigured ATM address is assigned by Cisco Systems)

- IP address of the Ethernet port if not using BOOTP

- Netmask address if you want to configure the Ethernet port on the ATM Switch Processor (ASP)

- Broadcast address if you want to configure the Ethernet port on the ASP

You should have already have made a copy of the "Port Configuration Worksheets" from the appendix "Configuration Worksheets" in the *LightStream 1010 ATM Switch Software Configuration Guide*, and completed a worksheet for your switch.

Note Complete all interface connections described in the *LightStream 1010 ATM Switch ASP Installation Guide* and *LightStream 1010 ATM Switch PAM Installation Guide* before beginning to configure the switch.

Powering Up Your System

Before powering up your system, check for correct AC or DC power voltages. See the appendix "System Chassis Specifications" for correct power voltages.

The following warning applies to AC power supplies:

Warning   This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors). To see translated versions of this warning, refer to the appendix "Translated Safety Warnings."

The following warnings and cautions applies to DC power supplies:

Caution   This product relies on protective devices in the building installation for protection against short-circuit overcurrent, and earth faults. Ensure that a fuse or circuit breaker no larger than 48 VDC, 20A is provided for the 48VDC source in the United States and Canada (60 VDC, 15A for the 60VDC internationally).

Warning   Before installing a DC-input power supply, ensure that all power is off to the DC input circuit. Locate the circuit breaker on the panel board that services the DC circuit and switch it to the off position. Tape the circuit breaker switch handle in the off position to prevent accidental closing of the circuit.

Warning   Care must be given to connecting units to the supply circuit so that wiring is not overloaded. To see translated versions of this warning, refer to the appendix "Translated Safety Warnings."

Now you can safely power up your system by turning on the power switch of the power supply to be used.

Verifying Installed LightStream 1010 Software and Hardware

When you first power up your console and LightStream 1010, a screen similar to the following appears:

```
                Restricted Rights Legend

Use, duplication, or disclosure by the Government is
subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

            Cisco Systems, Inc.
            170 West Tasman Drive
            San Jose, California 95134-1706


Cisco Internetwork Operating System Software
IOS (tm) PNNI Software (LS1010-WP-M), Version 11.2(1.4.WA3.0.41)
Copyright (c) 1986-1997 by cisco Systems, Inc.
Compiled Tue 11-Feb-97 02:59 by
Image text-base: 0x600108D0, data-base: 0x603EE000
```

The first section of the script displays the banner information, including the software version.

The next portion of the script lists installed hardware configuration.

```
cisco ASP1 (R4600) processor with 16384K bytes of memory.
R4600 processor, Implementation 32, Revision 2.0
Last reset from power-on
1 Ethernet/IEEE 802.3 interface.
16 ATM network interfaces.
125K bytes of non-volatile configuration memory.

8192K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
8192K bytes of Flash internal SIMM (Sector size 256K).


Press RETURN to get started!



Switch>
```

Use the **show hardware** command to confirm installed hardware part and serial numbers:

```
Switch#show hardware

LS1010 named Switch, Date: 14:26:42 UTC Fri Feb 14 1997
Feature Card's FPGA Download Version: 10

Slot Ctrlr-Type    Part No.   Rev Ser No  Mfg Date   RMA No. Hw Vrs  Tst EEP
---- ------------  ---------- --  -------- --------- -------- ------- --- ---
0/0  155UTP PAM    75-1574-02 03  36434547 Mar 19 98 02-02-02  3.2     2   2
0/1  155UTP PAM    75-2010-03 06  35866442 Mar 18 98 02-02-02  3.2     2   2
1/0  155UTP PAM    75-2010-03 06  35866462 Mar 19 98 02-02-02  3.2     2   2
1/1  155UTP PAM    75-2010-03 06  35887734 Mar 11 98 02-02-02  3.2     2   2
3/1  QUAD DS3 PAM  75-2711-02 02  37211062  #) 18 98 02-02-02  3.2     2   2
2/0  ATM Swi/Proc  73-1402-04 A0  03827617 Oct 19 96 00-00-00  3.2     0   2
2/1  FeatureCard1  73-1405-03 B0  03825722 Oct 19 96 00-00-00  3.2     0   2

DS1201 Backplane EEPROM:
Model  Ver.  Serial   MAC-Address  MAC-Size  RMA  RMA-Number  MFG-Date
------ ----  -------- ------------ --------  ---  ----------  -----------
LS1010  2    68000003 00400B0A1080   256      0       0       Jan 19 1996

Switch#
```

The LightStream 1010 should be operating correctly and transferring data. To confirm that the hardware and software installation and configuration procedures were successful, see the chapter "Confirming the Installation."

- ATM Address Configuration

   The LightStream 1010 ATM switch is autoconfigured with an ATM address using a hierarchical addressing model similar to the Open System Interconnection (OSI) network service access point (NSAP) addresses. PNNI uses this hierarchy to construct ATM peer groups.

   — Manually Setting the ATM Address

- Configuring the Interfaces

   When the switch is powered on initially without any previous configuration data, the ATM interfaces are automatically configured on the physical ports. ILMI and the physical card type are used to automatically derive the ATM interface type, UNI version, maximum virtual path identifier (VPI) and virtual channel identifier (VCI) bits, ATM interface side, and ATM UNI type.

   — Default ATM Interface Configuration Without Autoconfiguration

   — Configuring Ethernet IP Interface Parameters

- Configuring the Network Routing

   The default software image for the LightStream 1010 will contain only the IISP routing protocol. This will be suitable for small networks that do not require the sophistication of the PNNI protocols. A separate orderable image contains both PNNI and IISP protocols. The PNNI protocol provides the route dissemination mechanism for complete plug-and-play capability.

   — Configuring PNNI Connections

- Configuring the System Information

- Configuring SNMP Management

- Storing the Configuration at Startup

- Testing the Configuration