**C H A P T E R 1**

Introduction

The Catalyst 2800 is an Ethernet switch that provides a superior mix of configuration and backbone options. With twenty-five switched Ethernet ports for individual workstations and existing 10Base-T hubs, and two high-speed expansion slots, the Catalyst 2800 delivers the benefits of Ethernet switching to 100Base-T, FDDI, and future ATM networks.

Figure 1-1   Catalyst 2800
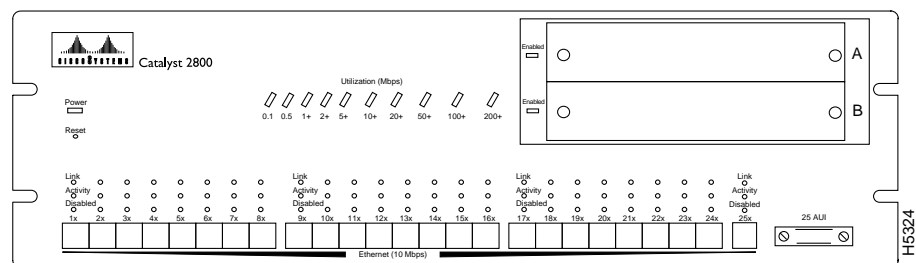
Key Features

The Catalyst 2800 offers the following features:

- Twenty-five switched 10Base-T ports

- Two high-speed expansion slots support Catalyst 2800 100Base-T, FDDI, and future ATM modules

- Multiple MAC address support with a 2,048 or, optionally, 8,192 address cache shared among all twenty-seven ports

- CollisionFree operation for full-duplex 100Base-T Catalyst 2800 modules provides up to 200 Mbps bandwidth and extended distances using fiber cabling

- IEEE 802.1d Spanning-Tree Protocol

- Up to 320 Mbps maximum forwarding bandwidth and 450,000 packets per second (pps) aggregate packet-forwarding rate with two Catalyst 2800 modules installed

- Shared memory architecture with 3 Mb packet buffer

- Telnet and SNMP support for in-band management and a menu-driven out-of-band management console

- Up to four port-configurable virtual LANs (VLANs)

- Multicast address registration and packet filtering

- Port security to prevent unauthorized access to the network

- Flooding controls

See the "Concepts" chapter for more information about these features. To implement them via out-of-band management or Telnet, turn to the "Out-of-Band Management" chapter for more information. If you are using SNMP, the Catalyst 2800's in-band capabilities are described in the "Standard MIBs and MIB Extensions" section in the "In-Band Management" chapter.
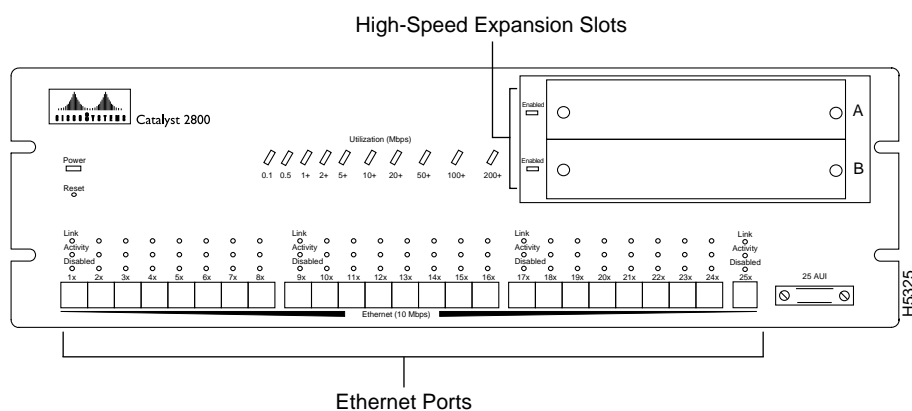
Catalyst 2800 Ports

The Catalyst 2800 has twenty-five switched 10Base-T ports and two high-speed expansion slots.

10Base-T Ports

The twenty-five 10Base-T ports, shown in Figure 1-2, connect to single workstations, 10Base-T hubs, or any 10Base-T compatible device, using RJ-45 connectors. The attached devices use standard 10Base-T adapters and wiring. Port 25 also supports an alternative AUI connection for attachment to a thick coax, thin coax, or fiber optic media transceiver.

Figure 1-2   Catalyst 2800 Ports

High-Speed Expansion Slots

The Catalyst 2800 high-speed expansion slots are compatible with Catalyst 2800 field-pluggable modules and provide high-bandwidth connections to backbones, servers, and other high-performance devices. Each expansion slot is internally switched to all other Catalyst 2800 ports.

Catalyst 2800 LEDs

The Catalyst 2800 has an extensive range of LEDs that allow you to easily monitor network activity and performance. Figure 1-3 shows the location of the LEDs described in Table 1-1.
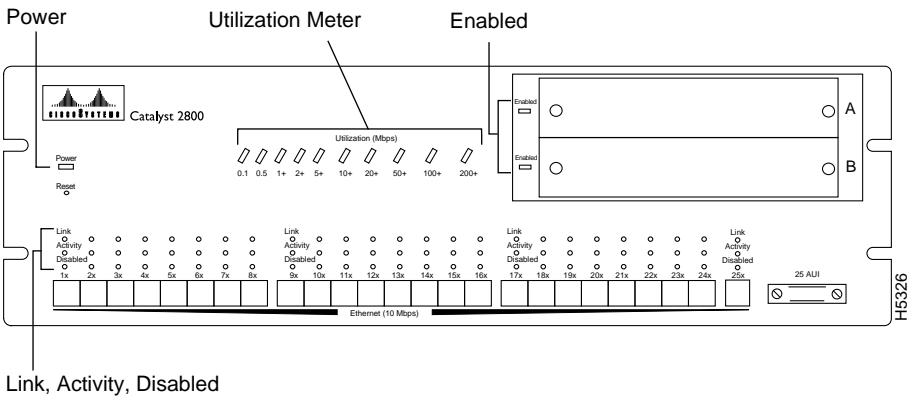
Figure 1-3   LEDs

Table 1-1   LEDs

LED Name	Function
Power	This LED lights when the Catalyst 2800 is turned on. If it does not come on, see the "Diagnosing Problems" section in the "Troubleshooting" chapter.
Link	This LED indicates that the port is properly connected to a powered-on device. It is on when the link-integrity test passes and off when it fails.
Activity	This LED blinks when the port is transmitting or receiving data. If the traffic level is high, it will blink continuously. It is off when there is no activity.

LED Name	Function
Disabled	This LED is on when the port is disabled or suspended. This could be due to the Spanning-Tree Protocol blocking the port or a secure-address violation, or the port could have been manually disabled by an administrator.
Enabled	The module-enabled LED indicates that the Catalyst 2800 module in a high-speed expansion slot has passed POST and is enabled. This LED is off when the Catalyst 2800 expansion slot is empty, the module failed POST, or the module has been manually disabled or suspended using the Catalyst 2800 in-band or out-of-band management system.
Utilization meter	This group of ten LEDs measures the Catalyst 2800's current and peak bandwidth use in Mbps. Current bandwidth is shown with a series of lit LEDs topped by a rapidly blinking one. Peak utilization is indicated by the right-most solidly lit LED. The default setting for the capture interval is 24 hours and is recorded at midnight each night. Table 1-2 shows the bandwidth associated with each of the ten LEDs.

Table 1-2   Activity Meter LED Information

LEDs	LED Label	Mbps Activity
Far left (1)	0.1+	0.1 - 0.5
	0.5+	0.5 - 1
	1+	1 - 2
	2+	2 - 5
	5+	5 - 10

LEDs	LED Label	Mbps Activity
	10+	10 - 20
	20+	20 - 50
	50+	50 - 100
	100+	100 - 200
Far right (10)	200+	200 - 320

Catalyst 2800 Reset Switch

The reset switch should only be used if the Catalyst 2800 does not respond to network management or packet forwarding has stopped. Resetting a Catalyst 2800 has the same effect as turning it off and on. The reset switch is located below the power LED on the Catalyst 2800 front panel as shown in Figure 1-3. Reset the Catalyst 2800 by inserting an unbent paper clip into the hole. All configuration values are saved when the Catalyst 2800 is reset.

Catalyst 2800 Rear Panel

The rear panel contains the following components:

- Power Switch

  The power switch shown in Figure 1-4 turns the Catalyst 2800 on and off.

- Power Receptacle

  The Catalyst 2800 power supply is an auto-ranging unit supporting input voltages between 100-200 VAC. Plug the power cord into the power receptacle located on the rear panel of the Catalyst 2800.

- Fuse

  A universal fuse receptacle is located below the power receptacle. Always replace this fuse with a 3A, 250V fuse.

- RS-232 Port

  The management console can be run with Telnet or through an ASCII terminal. Use this port to connect the necessary modem or terminal to the Catalyst 2800. See the "Serial Connector Pinouts" section in the "Technical Specifications" appendix for more information.

Figure 1-4   The Catalyst 2800 Rear Panel
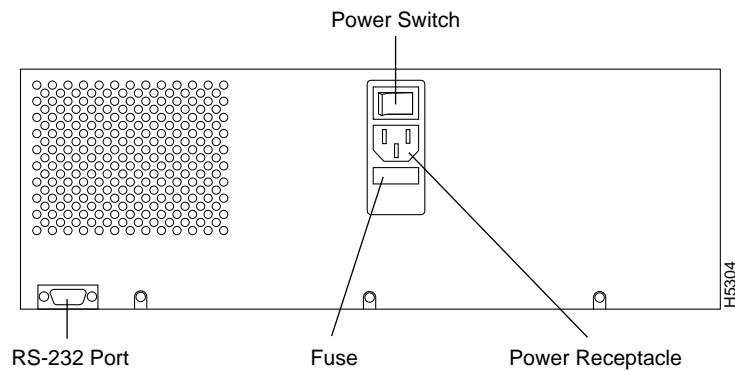
Configuring and Managing Catalyst 2800

You can configure and manage a Catalyst 2800 using any SNMP-compatible management station, or you can connect an ASCII terminal to the Catalyst 2800 via the RS-232 port and use the Catalyst 2800 management console. The management console is also accessible via Telnet. SMT-compatible workstations can support installed Catalyst 2800 FDDI modules.

Using the Catalyst 2800 Management Console

The Catalyst 2800 management console provides a simple, menu-driven interface for configuring and monitoring your network. The application is password protected and will lock out a user who fails to enter the password within a definable number of attempts. In such a case, the network administrator can be alerted via in-band management.

Most of the statistics and information generated by the Catalyst 2800 are available through the Catalyst 2800 management console. You can continue to use it even when the network is down.

SNMP Management

The Catalyst 2800 is fully manageable by any SNMP-compatible management station. The product supports all pertinent SNMP MIB II variables, the 802.1d bridge MIB, the FDDI MIB and a comprehensive set of MIB extensions designed for maximum support of Catalyst 2800's hub and switching capabilities.

Note Catalyst 2800 SNMP MIB objects are documented in a separate manual, *Catalyst 2000 MIB Reference Manual*. You can order it from Cisco Systems.

Supported Network Management Platforms

The Catalyst 2800 SNMP MIB objects are supplied in ASCII format for compiling into any SNMP network management system for use with a general MIB browser. In addition, the Catalyst 2800 MIB is precompiled and supplied with installation procedures for the following management platforms:

- Novell NMS

- SunNet Manager

- HP OpenView SNMP Management Platform

Before you can use one of these platforms, you need to customize it to understand the Catalyst 2800 MIB. Turn to the "Network Management Platforms" section in the "In-Band Management" chapter for more information.