# Introduction

The Catalyst 2820 and Catalyst 1900 (shown in Figure 1-1) are Ethernet switches that provide high-speed configuration flexibility for workgroup applications. With 25 switched Ethernet ports for individual workstations and 10BaseT hubs and either 2 high-speed expansion slots or 2 fixed high-speed ports for servers and backbones, these switches provide Ethernet switching to 100BaseT, Fiber Distributed Data Interface (FDDI), and future Asynchronous Transfer Mode (ATM) networks.

Figure 1-1   Catalyst 2820 and Catalyst 1900
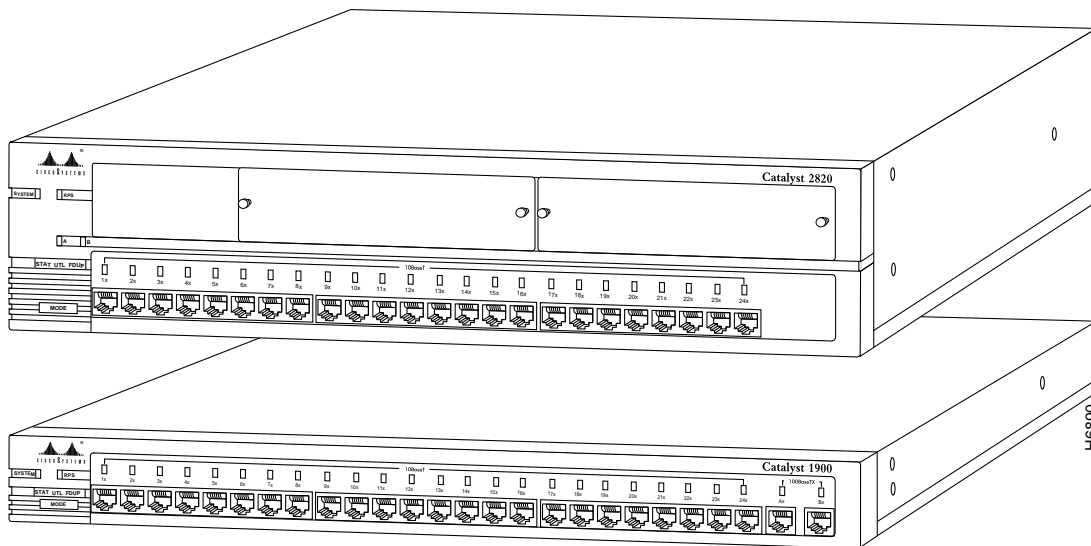
Key Features

The Catalyst 2820 and Catalyst 1900 offer the following features:

- 25 switched Ethernet ports: 24 10BaseT and one AUI.

- 2 high-speed expansion slots supporting the Catalyst 2820 100BaseT, FDDI, and future ATM modules (Catalyst 2820 only).

- Two fixed 100BaseTX ports (Catalyst 1900 only).

- Multiple MAC address support:

  — The Catalyst 1900 supports a 1024-address cache shared among all 27 ports.

  — The Catalyst 2820 supports a 2048- or, optionally, 8192-address cache shared among all 27 ports.

- CollisionFree operation for full-duplex 100BaseT, providing up to 200-Mbps bandwidth and extended distances using fiber cabling.

- CiscoView device-management support.

- IEEE 802.1d Spanning-Tree Protocol.

- Up to 320-Mbps maximum forwarding bandwidth and 450,000 packets per second (pps) aggregate packet-forwarding rate.

- Shared memory architecture with 3-Mb packet buffer.

- Supporting connection to a redundant power supply (RPS).

- 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.

- Broadcast storm control.

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 switch's in-band capabilities are described in the "Standard MIBs and MIB Extensions" section in the "In-Band Management" chapter.
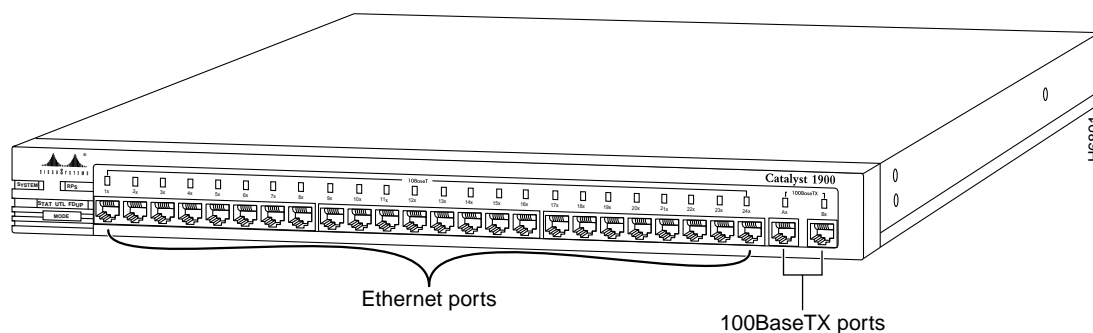
Catalyst 2820 and Catalyst 1900 Ports

The Catalyst 2820 and Catalyst 1900 have the following ports:

- 25 switched Ethernet ports: 24 10BaseT and one AUI

- Two fixed, switched 100BaseTX ports (Catalyst 1900 only)

- Two high-speed expansion slots (Catalyst 2820 only)

10BaseT Ports

The 10BaseT ports shown in Figure 1-2 use RJ-45 connectors to connect to single workstations, 10BaseT hubs, or any 10BaseT compatible device. The attached devices use standard 10BaseT adapters and wiring. Port 25, located on the back panel, supports an alternative AUI connection for attachment to a thick coaxial, thin coaxial, or a fiber-optic media transceiver.

Figure 1-2   Catalyst 1900 Ports

Fixed 100BaseTX Ports

The Catalyst 1900 has two 100BaseTX ports for server or backbone connectivity. One or both of these can be set to CollisionFree full-duplex mode for full-duplex operation. Each 100BaseTX port is internally bridged to the other Catalyst 1900 ports.

High-Speed Expansion Slots

The Catalyst 2820 has two high-speed expansion slots that are compatible with Catalyst 2820 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 2820 ports. Figure 1-3 shows a Catalyst 2820.
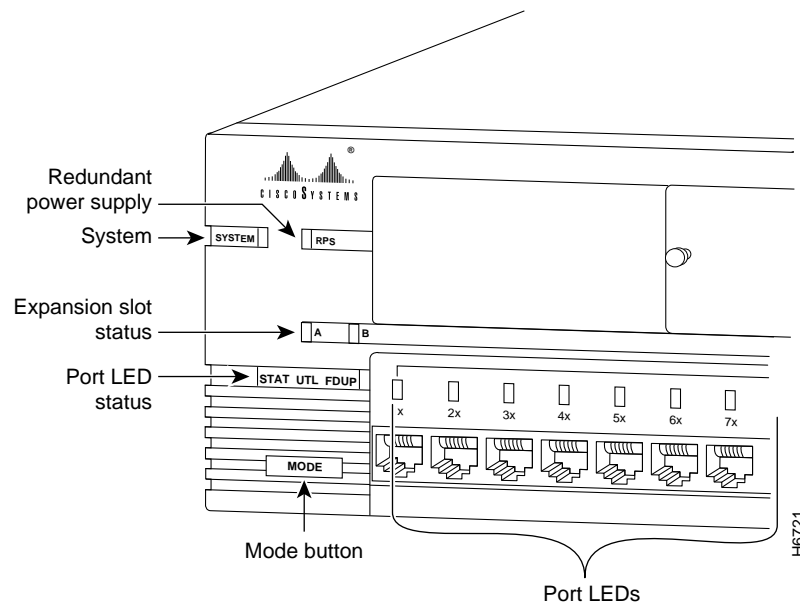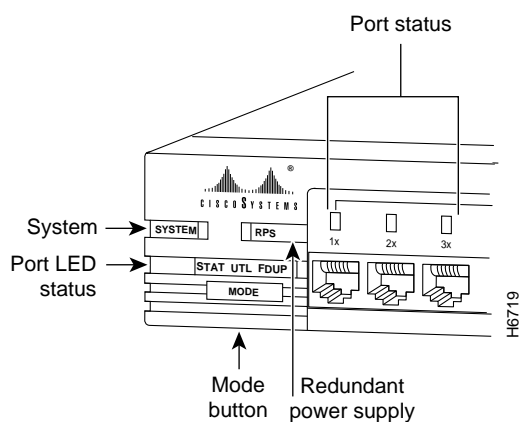
Figure 1-3   Catalyst 2820 Expansion Slots
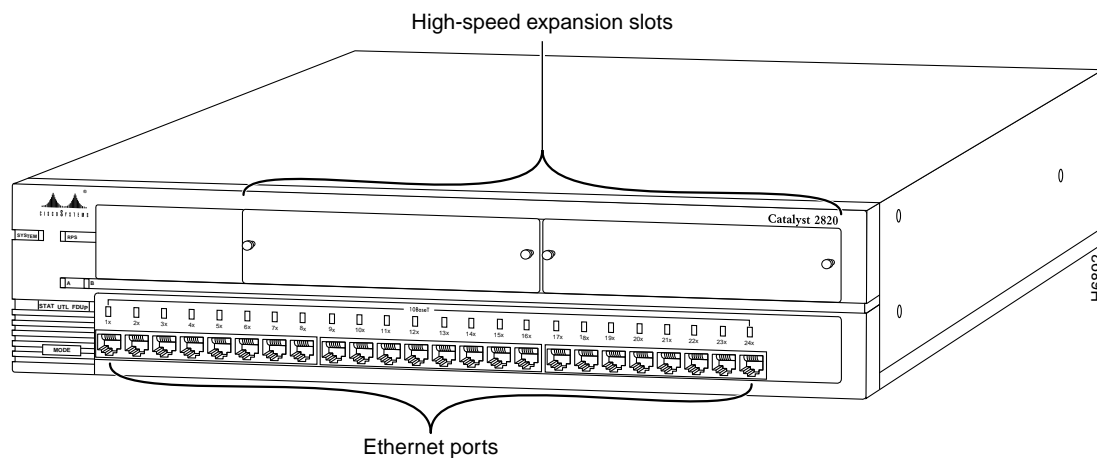
Understanding the LEDs

The Catalyst 2820 and Catalyst 1900 have an extensive range of LEDs that enable you to easily monitor network activity and performance. Figure 1-4 and Figure 1-5 show the location of the LEDs.

Figure 1-4   Catalyst 2820 LEDs

Figure 1-5 **Catalyst 1900 LEDs**

System LED

This LED reflects the overall well-being of the switch, as shown in Table 1-1.

Table 1-1 **System LED**

Visual Indication	System Status
Green	Normal operation.
Amber	Switch failed POST and is not forwarding packets.
Off	System not powered on.

Redundant Power Supply

The redundant power supply (RPS) LED shows the RPS status, as shown in Table 1-2. When the RPS is in use, the local power supply should be turned off by unplugging the AC power cord.

Table 1-2   RPS LED

Visual Indication	RPS Status	Local Power Supply Status
Green	RPS operational	Not operational or unplugged
Amber	RPS installed but not operational	–
Off	RPS not installed	–
Alternating green/off	RPS operational	Operational, not unplugged

Expansion Slot Status

These LEDs show the status of an inserted module. Check the LEDs on the module itself for the module port status, as shown in Table 1-3. The A and B LEDs correspond to the left and right expansion slots, respectively.

Table 1-3   Expansion Slot LEDs

Visual Indication	Expansion Slot Status
Green	Module is operational.
Alternating green-off	Module is running POST.
Amber	Module failed POST and is not operational.
Off	No module is in the slot.

Port LEDs

Port LEDs indicate one of the following, depending on the Mode button setting:

- Port status (STAT)

- Bandwidth utilization (UTL)

- Full-duplex status (FDUP)

Changing the Mode of the Port LED

To change the mode being displayed by the port LEDs, press the Mode button, as shown in Figure 1-6, to highlight in sequence each of the possibilities: STAT (port status), UTL (bandwidth utilization), and FDUP (full-duplex status). When the correct mode is lit, release the button to make the change. As long as you hold the button down, the mode does not change.

The selected mode remains lit for 30 seconds before returning to the default mode of port status.

Figure 1-6   Changing the LED Mode
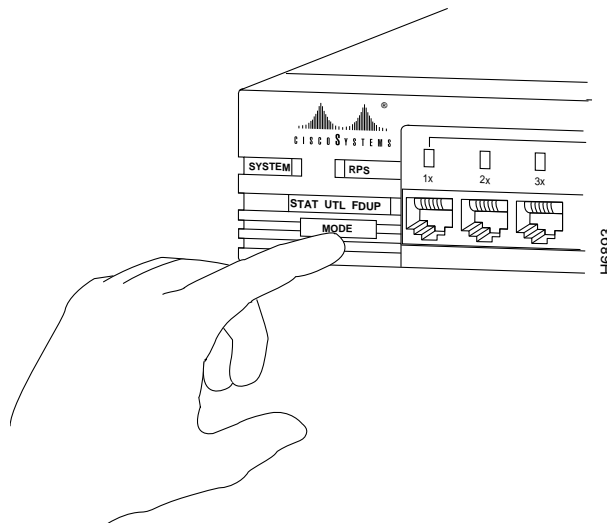
Port Status (STAT)

This LED mode provides the status of switched ports, as shown in Table 1-4.

Table 1-4   Port Status

Visual Indication	Port Status
Green	Link present.
Flashing green-off	Activity: port is transmitting or receiving data.
Alternating green-amber	Link fault. Error frames can affect connectivity and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link fault indication.
Amber	Port is not forwarding. For example, this could be because the port was disabled by management, suspended due to an address violation, or suspended by STP due to the presence of network loops.
Off	No link.

Full-Duplex Status (FDUP)

A port configured for full-duplex operation must be connected to another full-duplex port. You can display the full-duplex status of a port, as shown in Table 1-5, by pressing the Mode button and releasing it when FDUP is highlighted.

Table 1-5   Full-Duplex LED

Visual Indication	Full-Duplex Status
Green	Full-duplex is operational.
Off	Half-duplex is operational.

Utilization LEDs (UTL)

These LEDs show the current utilization of the switch (see Table 1-6). The peak utilization is also recorded in the current bandwidth capture interval. You can invoke the utilization mode LEDs by pressing the Mode button and releasing it when UTL is highlighted. Change the bandwidth-capture interval with the Bandwidth Usage Report described in the chapter "Out-of-Band Management."

The switch uses the port LEDs to establish a scale indicating the two utilizations in megabits per second (Mbps). This scale is shown in Table 1-7.

Table 1-6   Utilization LEDs

Visual Indication	Utilization
Alternating green-amber	Current utilization.
Farthest right amber LED	Peak utilization recorded in the current bandwidth capture interval.

Table 1-7   Utilization LEDs Scale

Port LEDs	Mbps
1–8	0.1–5
9–16	6–100
12–24	120–280

Rear Panel

The rear panel, shown in Figure 1-7 and Figure 1-8, contains the following components:

- Power receptacle

  The 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 switch.

- EIA/TIA-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 switch. See the "Serial Connector Pinouts" section in the "Technical Specifications" appendix for more information.


Note EIA/TIA-232 was known as the recommended standard RS-232 before its acceptance as a standard by the Electronic Industries Association (EIA) and Telecommunications Industry Association (TIA). Because RS-232 appears on the out-of-band management screens and in the names of supported MIB objects, this manual also uses RS-232.
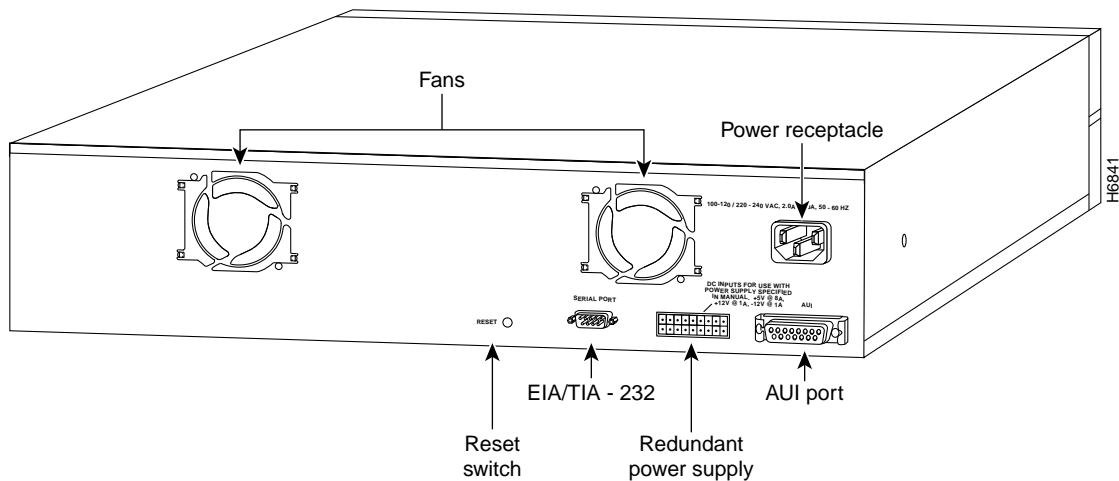

- Redundant power supply receptacle
- AUI connector
- Reset switch

Figure 1-7   Catalyst 1900 Rear Panel
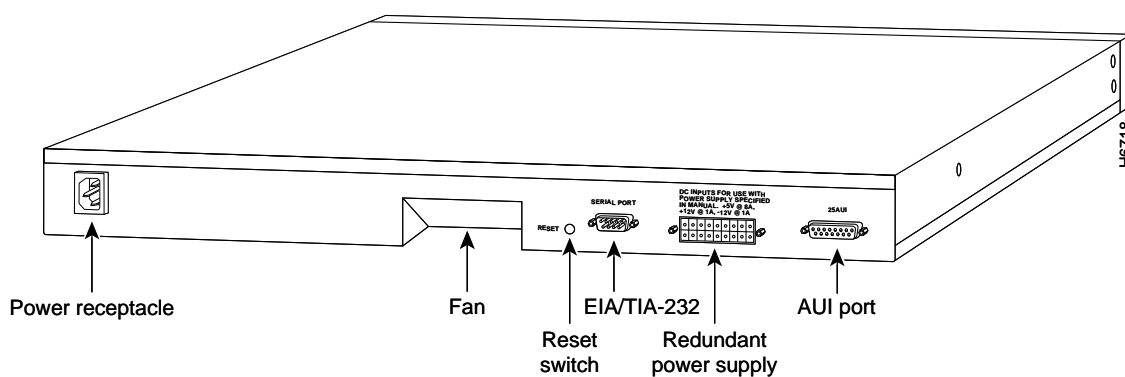
Figure 1-8   Catalyst 2820 Rear Panel

Using the Reset Switch

Use the reset switch only if the Catalyst 2820 or 1900 does not respond to network management or if packet forwarding has stopped. Resetting the switch has the same effect as turning it off and on. The reset switch is located on the rear panel, as shown in Figure 1-7 and Figure 1-8. Use a paper clip or pen to reach through the hole and reset the switch.

Configuring and Managing a Catalyst 2820 and Catalyst 1900

You can configure and manage a Catalyst 2820 and Catalyst 1900 using any SNMP-compatible management station, or you can connect an ASCII terminal to the switch via the EIA/TIA-232 (RS-232) port and use the management console. The management console is also accessible via Telnet. SMT-compatible workstations can support installed Catalyst 2820 FDDI modules.

Using the Management Console

The management console provides a menu-driven interface for configuring and monitoring your network. The application is password-protected and locks 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 switch are available through the management console. You can continue to use it even when the network is down.

SNMP Management

The Catalyst 2820 and Catalyst 1900 are fully manageable by any SNMP-compatible management station.

The product supports all pertinent SNMP MIB II variables, the 802.1d bridge MIB, and a comprehensive set of MIB extensions designed for maximum support of the switch's hub and switching capabilities. The Catalyst 2820 also supports the FDDI MIB and the MIB supporting Catalyst 2820 modules.

Note   Catalyst 2820 and Catalyst 1900 MIB objects are documented in the *Catalyst 2820 and Catalyst 1900 MIB Reference Manual*. This manual is available on the Cisco Connection Documentation, Enterprise Series CD.

Supported Network Management Platforms

The Catalyst 2820 and 1900 SNMP MIBs are supplied in ASCII format for compiling into any SNMP network management system using a general MIB browser. You can display switch information from the following network management platforms.

- Castle Rock SNMPc
- Novell NMS
- HP OpenView
- SunNet Manager

The Catalyst 2820 and Catalyst 1900 must be configured for SNMP management. To do this, you need to assign an IP address to the switch using the menu described in "IP Configuration" in the "Out-of-Band Management" chapter. Although the switch will immediately register the IP address the first time you assign it, if you *change* the IP address it does not take effect until after the switch is reset. You can also use the Bootstrap protocol (BOOTP) described in the "Configuring the Switch for SNMP Management with BOOTP" section in the "In-Band Management" chapter.

CiscoView

You can use the CiscoView graphical user interface to configure your Catalyst 2820 and Catalyst 1900 switches and to generate the same statistics available through the management console.