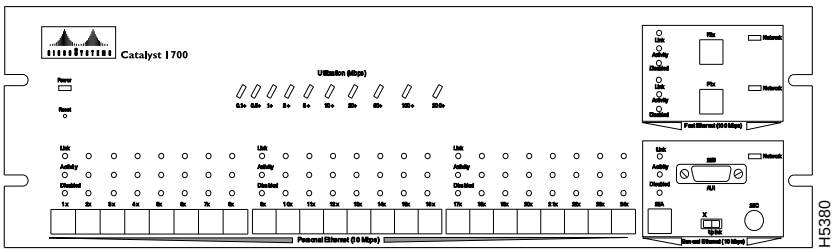
CHAPTER 1

Introduction

Optimized for client-server LANS, the Catalyst 1700 workgroup switch affordably provides 10 Mbps Ethernet for each user and 100 Mbps Fast Ethernet for servers.

Figure 1-1 Catalyst 1700 Workgroup Switching Hub



The hub's 100% Ethernet switch design offers a high performance alternative to 10Base-T hubs, while preserving investments in Ethernet technology and training. This chapter describes the Catalyst 1700 features and associated benefits.

Key Features

The Catalyst 1700 provides the following key features:

- Two 100 Mbps Fast Ethernet ports to eliminate server bottlenecks
- Twenty-four 10 Mbps Personal Ethernet ports for high-bandwidth user applications
- One General Ethernet port for backbone connectivity or use as a twenty-fifth Personal Ethernet port
- User-selectable switching modes for minimum latency or maximum error-checking
- Non-blocking Clear Channel architecture and wire-speed bridging for highest performance
- User-selectable address learning mode for configuration simplicity or enhanced security
- SNMP in-band and out-of-band network management for full monitoring, configuration, and management
- Compatible with standard Ethernet applications, network management systems, internetworking systems, and client-side adapters to minimize infrastructure changes and costs

Packing List

The Catalyst 1700 package should contain the following items:

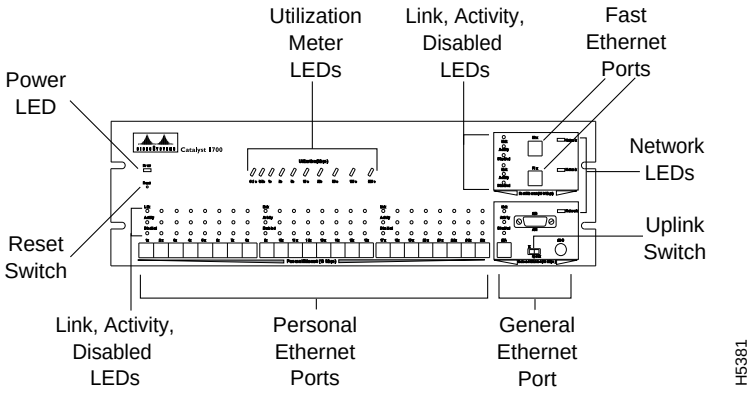
- Catalyst 1700 hub
- *Catalyst 1700 User Guide*
- One Catalyst 1700 DOS diskette containing the Catalyst 1700 MIBs in ASCII text format, pre-compiled MIBs (Profiles) for Novell Netware Management System (NMS), and a README file
- One Catalyst 1700 UNIX diskette in TAR format containing the Catalyst 1700 MIBs in ASCII text format, pre-compiled MIBs (Schemas) for SunNet Manager and a README file
- Power cord
- Warranty package
- Four rackmount screws
- Catalyst 1700 cushioning kit (4 rubber feet with instructions)

Note If any of these items are missing, notify Cisco immediately.

Catalyst 1700 Front Panel

The Catalyst 1700 front panel contains all of the network connectors and LEDs for easy access.

Figure 1-2 Catalyst 1700 Front Panel



These features are described in the following sections.

Catalyst 1700 Ports

The Catalyst 1700 hub has a total of 27 ports including the following:

- Twenty-four 10 Mbps bridged Personal Ethernet ports that each connect to a single workstation via an RJ-45 connector
- Two 100 Mbps bridged Fast Ethernet ports that each connect to a single server, workstation, another Catalyst 1700, or other 100Base-X compatible device via an RJ-45 connector
- One 10 Mbps bridged General Ethernet port that connects to a multi-address device or a network via your choice of an RJ-45, AUI, or BNC connector, or to a twenty-fifth workstation for use as a Personal Ethernet port

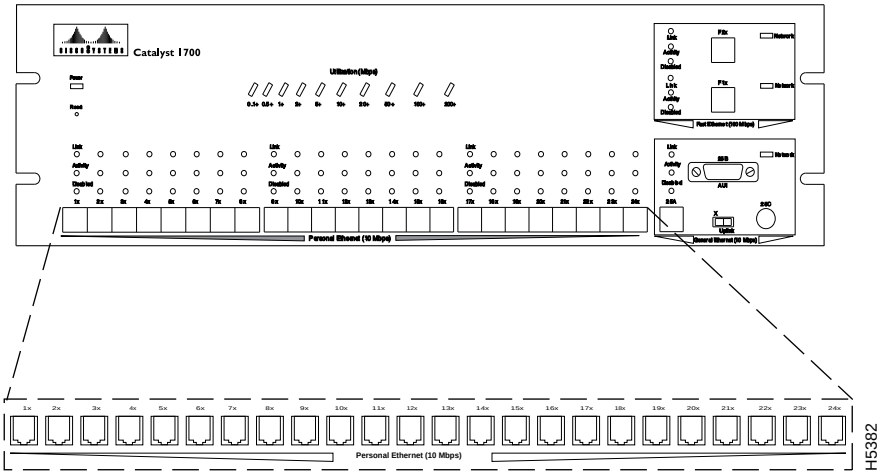
Note Only one port per Catalyst 1700 (either the General Ethernet port or one of the Fast Ethernet ports) can be connected to a network or multi-address device.

Note Personal Ethernet ports support only a single station address and cannot be connected to a hub or any other multi-address device.

Personal Ethernet Ports

Each Personal Ethernet port provides a dedicated or private 10 Mbps of bandwidth to a single workstation. The 24 Personal Ethernet ports are 10Base-T connections, as shown in Figure 1-3.

Figure 1-3 Catalyst 1700 Personal Ethernet Ports



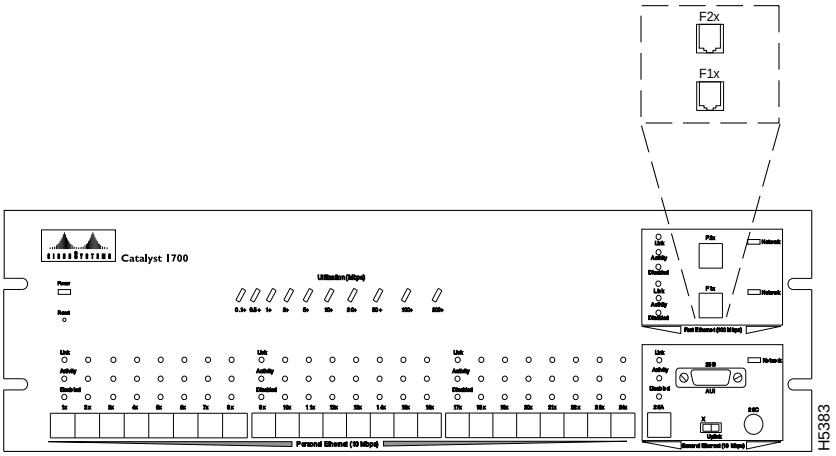
These ports do not support connection to multi-node segments (networks) or multi-address devices such as hubs and repeaters.

The attached workstations use standard 10Base-T adapters and wiring.

Fast Ethernet Ports

The two Fast Ethernet ports each provide 100 Mbps of bandwidth for connection to a single server or workstation, another Catalyst 1700, or other 100Base-X compatible hub via an RJ-45 connector. The two Fast Ethernet ports are shown in Figure 1-4.

Figure 1-4 Catalyst 1700 Fast Ethernet Ports



These ports support direct connection to a multi-address device such as another hub or to a single address server or workstation using Unshielded Twisted Pair (UTP) Category 5 cabling.

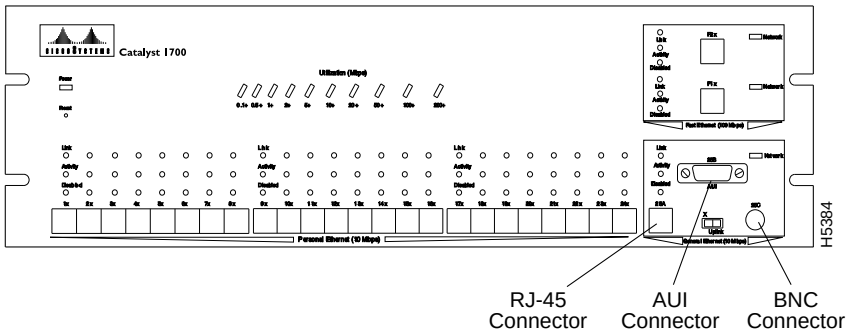
The attached server or workstation must have a 100Base-X compatible adapter installed. Contact Cisco or your authorized reseller for more information on 100Base-X compatible adapters.

Note Only one port per Catalyst 1700 (either the General Ethernet port or one of the Fast Ethernet ports) can be connected to a network or multi-address device.

General Ethernet Port

The Catalyst 1700 contains one General Ethernet port with three connectors: AUI, BNC, and RJ-45, as shown in Figure 1-5.

Figure 1-5 General Ethernet Port Connectors



The General Ethernet port supports direct connection to a multi-node segment (network) or multi-address device such as a hub or repeater. Alternatively, it can be used as a twenty-fifth Personal Ethernet port to attach to a single workstation.

The BNC and RJ-45 connectors are provided for direct attachment to a thin coax or twisted-pair network. In addition, an AUI port is provided as a universal connection to all Ethernet media.

Note Only one General Ethernet port connector is active at a time. For proper operation, only one connector should have cabling attached.

Only one Catalyst 1700 network connection is supported. If the General Ethernet port is connected to a network or multi-address device, each Fast Ethernet port can only be connected to a single server or workstation.

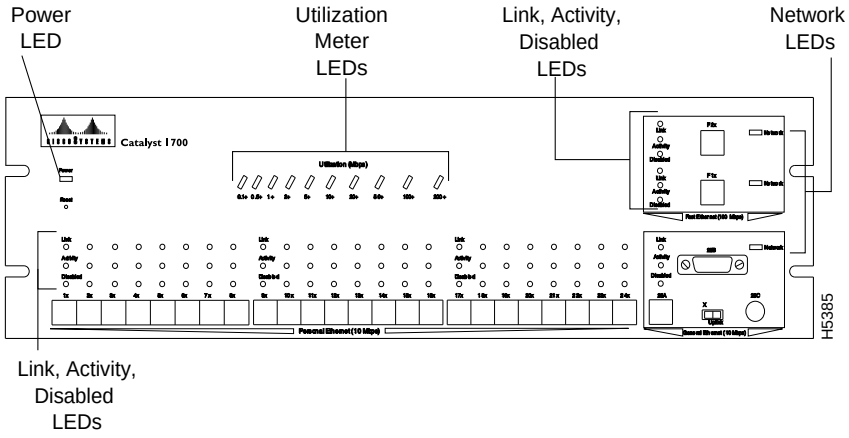
Catalyst 1700 Uplink Switch

The Uplink switch is used when attaching to a multi-address device via the RJ-45 connector of the General Ethernet port. Setting the switch to the Uplink position eliminates the crossover cable usually required when connecting a hub to another hub or repeater. To connect to an adapter or bridge, leave the Uplink switch in the X position and use a straight-through cable.

Catalyst 1700 LEDs

The Catalyst 1700 has an extensive range of LEDs that allow easy and fast troubleshooting. The Catalyst 1700 has a Power LED, Utilization Meter LEDs, Status LEDs, and Network LEDs. These LEDs are shown in Figure 1-6 and described in the following sections.

Figure 1-6 Catalyst 1700 LEDs



Power LED

The Power LED lights if the Catalyst 1700 is turned on. If the LED does not light when powered up, refer to the chapter “Troubleshooting.”

Utilization Meter LEDs

The Utilization Meter LEDs help you measure the bandwidth utilization of the Catalyst 1700 at a glance. The meter displays current and peak bandwidth utilization.

The LEDs are updated based on the bandwidth usage as measured in Mbps. The current bandwidth is shown with a series of lit LEDs topped by a rapidly blinking LED.

The peak utilization seen in a 24-hour period (measured beginning at midnight each day) is indicated by the rightmost LED that is solidly lit.

Table 1-1 shows the associated bandwidth for each of the 10 LEDs.

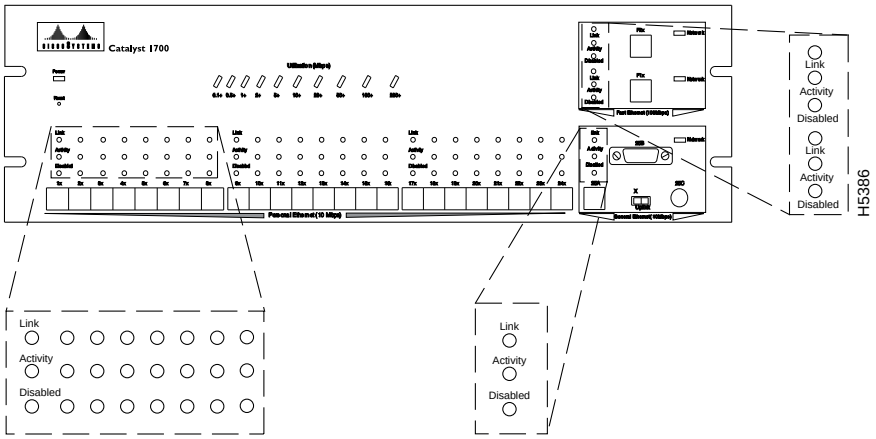
Table 1-1 Utilization Meter LED information

LED Number	Mbps Usage
LED 1	0.1+
LED 2	0.5+
LED 3	1+
LED 4	2+
LED 5	5+
LED 6	10+
LED 7	20+
LED 8	50+
LED 9	100+
LED 10	200+

Status LEDs

Three status LEDs are included for each Personal Ethernet port, Fast Ethernet port and General Ethernet port. These LEDs are link integrity, network activity, and disabled, as shown in Figure 1-7.

Figure 1-7 Catalyst 1700 Link, Activity, and Disabled LEDs



The Link LED is not active on the General Ethernet port when the AUI or BNC connector is used.

Link

The Link LED indicates that the port is properly connected to a powered-on device. This LED is on when the link integrity test passes and off when the link integrity test fails.

Note As a diagnostic aid, the Link LED will blink whenever an improperly formed packet is received on a port.

Activity

The Activity LED blinks when the port is transmitting or receiving data. If the traffic level is high, this LED will be on continuously. This LED is off when there is no activity.

Disabled

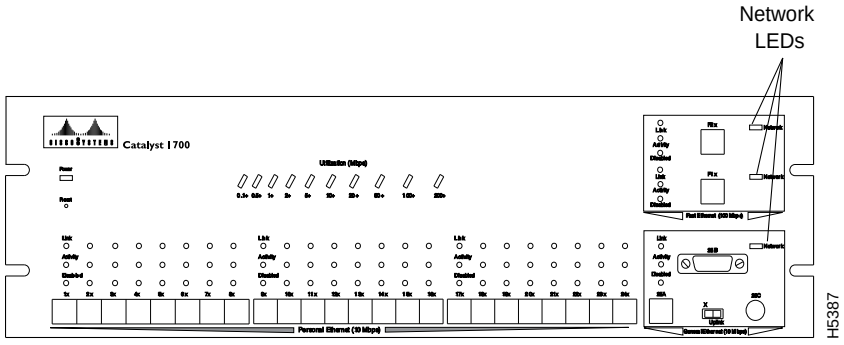
The Disabled LED is on when the port is disabled or suspended, either by a network connection error or secure address violation, or manually disabled or suspended using the in-band or out-of-band management. The Disabled LED is off when the port is fully operational. For more information, see the chapter “Catalyst 1700 Concepts Overview.”

Note As a diagnostic aid, the Disabled LED will blink for 1 second whenever a new address is learned on a non-network port.

Network LEDs

There are 3 Network LEDs, one for each Fast Ethernet port and one for the General Ethernet port, as shown in Figure 1-8. The Network LED indicates that the port is connected to a network or multi-address device.

Figure 1-8 Catalyst 1700 Network LEDs



This LED will also be on if the port has been manually assigned via in-band or out-of-band management as the network port.

Note Since only one port per Catalyst 1700 (either the General Ethernet port or one of the Fast Ethernet ports) can be connected to a network or multi-address device at a time, only one network LED will be lit.

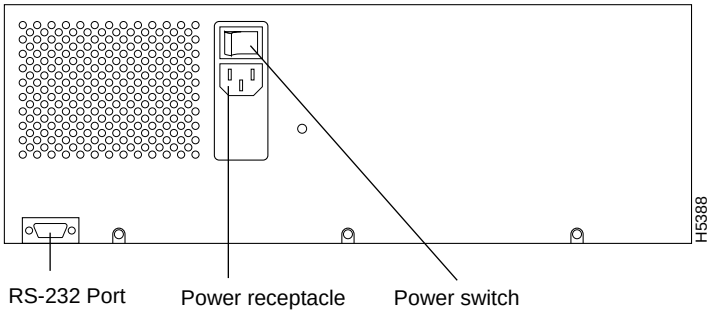
Catalyst 1700 Reset Switch

The reset switch restarts the Catalyst 1700. The reset switch has the same effect as powering the Catalyst 1700 off and on and can be activated by pushing a thin implement into the hole. All configuration values are saved. The reset switch should only be used if the Catalyst 1700 does not respond to network management or packet forwarding has stopped.

Catalyst 1700 Rear Panel

The power switch, power receptacle, and the RS-232 port are located on the rear panel as shown in Figure 1-9.

Figure 1-9 Catalyst 1700 Rear Panel



Power Switch

The power switch depicted in Figure 1-9 turns the Catalyst 1700 on and off without removing the power cord.

Power Receptacle

The Catalyst 1700 power supply is an auto-ranging unit supporting input voltages between 100–220 VAC. The power cord should be plugged into the power receptacle located on the rear panel of the Catalyst 1700 hub as shown in Figure 1-9.

RS-232 Port

The RS-232 port, shown in Figure 1-9, allows a terminal or modem to be attached to the Catalyst 1700 for configuration and management operations. For more information about out-of-band management, see the chapter “Out-of-Band Management.”

Catalyst 1700 Configuration and Management Options

You can configure and manage the Catalyst 1700 in-band using an SNMP management station and out-of-band using a local or modem-attached terminal.

In-Band Management

The Catalyst 1700 is fully manageable by any standard SNMP-based management system. The product supports all pertinent MIB II variables as well as an extensive private MIB designed for maximum manageability of Catalyst 1700’s hub and switching capabilities.

To facilitate this management, Catalyst 1700 MIBs are supplied in ASCII text format for compilation into SNMP network management systems for use with general MIB Browser functions. In addition, Schemas and installation procedures for SunNet Manager and Profiles and installation procedures for Novell NetWare Management System (NMS) are supplied. See the chapter “In-Band Management” for more information.

Out-of-Band Management

The Catalyst 1700 is equipped with an integrated RS-232 port for out-of-band configuration and management via a directly-attached terminal or over serial lines using a modem and remote terminal. This menu-driven tool is useful for basic monitoring and control and can be used locally or remotely by a Service Bureau or centralized MIS group.

The out-of-band management is password protected and a “lock-out” will occur upon entry of a user-defined number of invalid passwords and an alert sent to the administrator via in-band management.

The out-of-band function allows configuration and management of the Catalyst 1700 even if the network is down. You can get most of the same statistics and information that you can access via in-band management. See the chapter “Out-of-Band Management” for more detailed information.