CHAPTER 2

Planning

This chapter describes the pre-installation guidelines and four configurations for the Catalyst 1700. These guidelines and configurations can help you determine how the Catalyst 1700 fits into your network.

Pre-Installation Guidelines

The Catalyst 1700 can be installed in the same locations as your other Ethernet hubs, bridges, routers, and servers. By following these simple guidelines, the Catalyst 1700 will be easy to install and maintain.

Location

The Catalyst 1700 can be table, shelf, or rack mounted. The Catalyst 1700 will typically be located in a wiring closet or data center, although it can also be located in an office environment. The key requirement is that the Catalyst 1700 be located within 100 meters of its attached servers and workstations.

The Catalyst 1700 LEDs and cable connectors are on the front panel, so make sure you can see and access Catalyst 1700 from the front after mounting.

The Unshielded Twisted Pair (UTP) cables used for the Personal Ethernet and Fast Ethernet ports are sensitive to noise, so make sure the cable routing is not near electrical noise, power lines, or fluorescent lights.

Compatibility

The Catalyst 1700 is compatible with the IEEE 802.3 CSMA/CD media access control layer and frame format, and uses the same software applications, network management applications, client adapters, and diagnostic tools.

The 10 Mbps General Ethernet port can connect directly to an existing Ethernet network or internetworking device and is compatible with the IEEE 802.3 10Base2, 10Base5, and 10Base-T standards.

The Fast Ethernet ports are compatible with the 100Base-X specification and will connect to any 100Base-X compatible device.

Cabling Guidelines

There are cabling guidelines for each type of port on the Catalyst 1700. This section describes these guidelines for each type of port.

Personal Ethernet Ports

Personal Ethernet ports require 10Base-T compatible Category 3, 4, or 5 Unshielded Twisted Pair (UTP) or Shielded Twisted Pair (STP) wiring. The attached workstation must be within 100 meters of the Catalyst 1700 (10Base-T requirement) and have standard 10Base-T adapters and software installed.

Fast Ethernet Ports

Fast Ethernet ports require Category 5 UTP cabling. The attached server, workstation, or hub must be within 100 meters of the port. The server or workstation must have a 100Base-X compatible adapter installed.

The General Ethernet port has three available connectors that each support different cabling types.

The RJ-45 connector uses 10Base-T compatible UTP or STP wiring. The attached network or device must be within 100 meters of the Catalyst 1700.

The BNC connector requires 10Base2 compatible thin coax cable and can be up to 185 meters in length.

The AUI connector interfaces to an external thick coax, thin coax, 10Base-T or fiber optic transceiver. The external transceiver can be attached via an 802.3 compatible AUI cable, which may be up to 50 meters in length. Supported network and device distances will vary depending on the type of transceiver used.

Catalyst 1700 Network Configurations

This section describes six Catalyst 1700 network configurations:

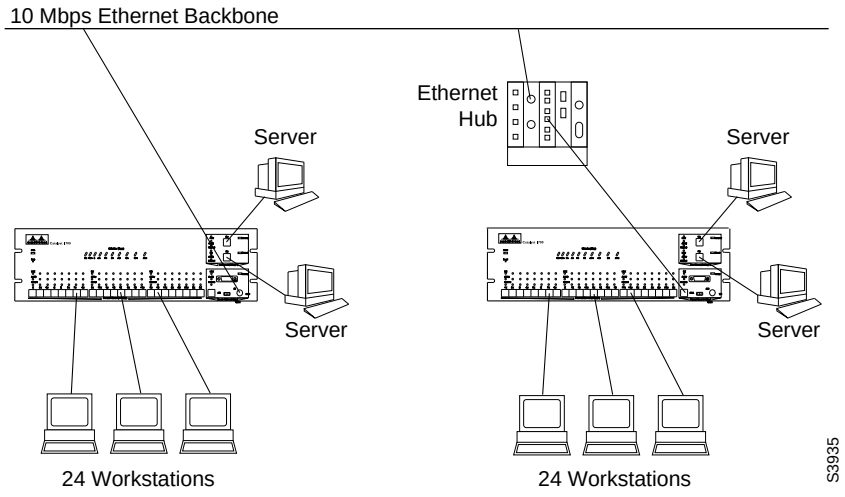
- Catalyst 1700 hubs connected to an Ethernet backbone
- Catalyst 1700 hub connected to a Token Ring or FDDI backbone using a translation bridge
- Two Catalyst 1700 hubs connected directly to each other
- Two Catalyst 1700 hubs connected as follows:
  - To each other and a backbone via a Routing server
  - To each other directly and to the backbone via a Routing server
  - To each other directly and to the backbone via a Router

Catalyst 1700 Hubs Connected to a 10 Mbps Ethernet Backbone

You can connect Catalyst 1700 hubs to the backbone using one of the General Ethernet port connectors: RJ-45, AUI, or BNC.

Figure 2-1 shows two Catalyst 1700 hubs connected to the backbone. The BNC connector provides direct attachment to a thin coax backbone as depicted for the Catalyst 1700 on the left side of Figure 2-1.

Figure 2-1 Catalyst 1700 Connected to a 10 Mbps Ethernet Backbone



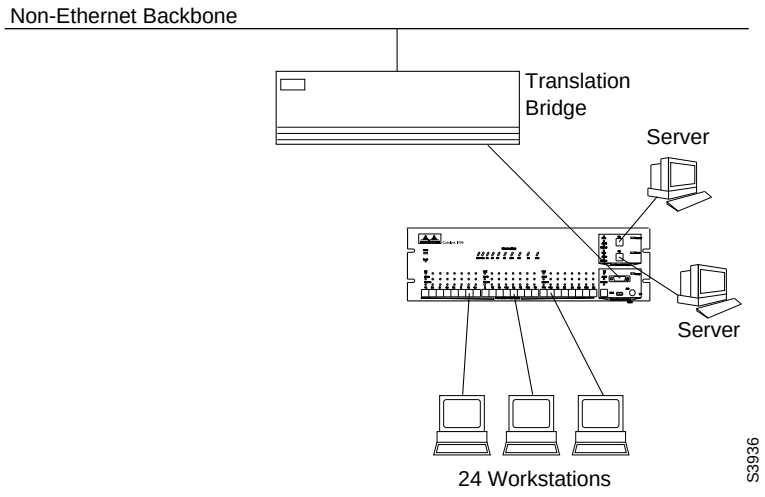
Alternatively, the AUI port can be connected via a transceiver to thick or thin coax, fiber optic, or twisted pair networks.

You can also connect to an Ethernet Enterprise hub via any of the connectors. When using the RJ-45 connector as depicted for the Catalyst 1700 on the right side of Figure 2-1, you can set the Uplink switch to the Uplink setting to eliminate the need for a special crossover cable.

Catalyst 1700 Connected to a Token Ring or FDDI Backbone

Using a translation bridge, you can attach a Catalyst 1700 to a Token Ring, FDDI, or other non-Ethernet network as shown in Figure 2-2.

Figure 2-2 Catalyst 1700 on a Non-Ethernet Backbone

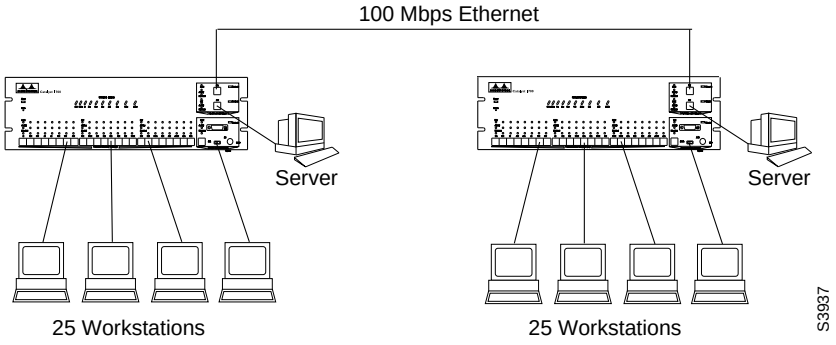


You use one of the three General Ethernet port connectors (RJ-45, AUI, or BNC) to attach to the translation bridge. If you use the RJ-45 connection, the Uplink switch should be set in the X position and standard straight-through cabling used.

Catalyst 1700 Hubs Connected Directly to Each Other

You can connect two Catalyst 1700 hubs to each other using crossover cable and one of the Fast Ethernet ports on each hub's front panel as shown in Figure 2-3.

Figure 2-3 Two Catalyst 1700 Hubs Connected Directly to Each Other



In this configuration, one Fast Ethernet port on each Catalyst 1700 is designated as a network port and used to interconnect the hubs at 100 Mbps via Category 5 UTP cabling.

The second Fast Ethernet port on each Catalyst 1700 may be used to connect servers with 100Base-X compatible adapters installed.

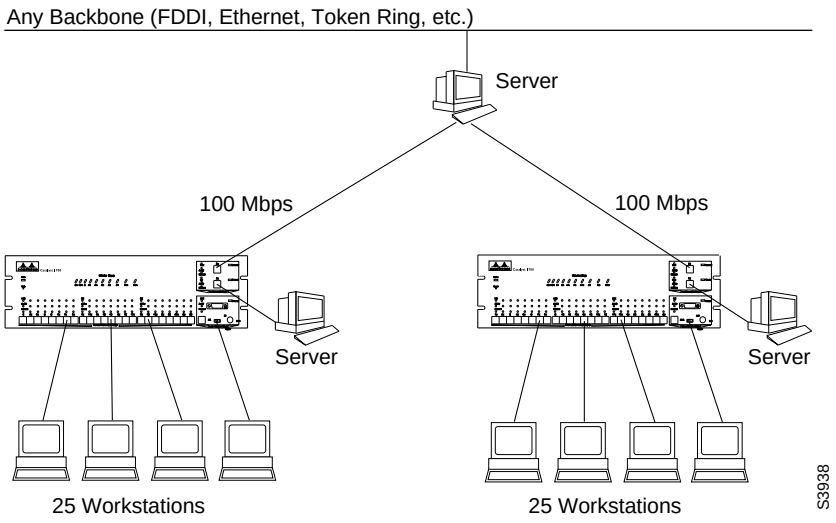
The General Ethernet port now functions as a twenty-fifth Personal Ethernet port and attaches to a single station via the RJ-45, AUI, or BNC connector. When you use the RJ-45 connector, the Uplink switch should be put in the X setting and straight-through cabling used.

Note Only two Catalyst 1700 hubs can be connected in this manner. In this configuration, the General Ethernet port cannot be used to connect to a network.

Interconnected Catalyst 1700 Hubs Connected to a Backbone

The Catalyst 1700 allows you to connect two Catalyst 1700 hubs together at 100 Mbps and still connect to a backbone network. You can use a server as a router between the two Catalyst 1700 hubs and the network as shown in Figure 2-4 and Figure 2-5, or use a router connected to a Personal Ethernet port as shown in Figure 2-6.

Figure 2-4 Two Catalyst 1700 Hubs Connected to a Backbone via a Routing Server



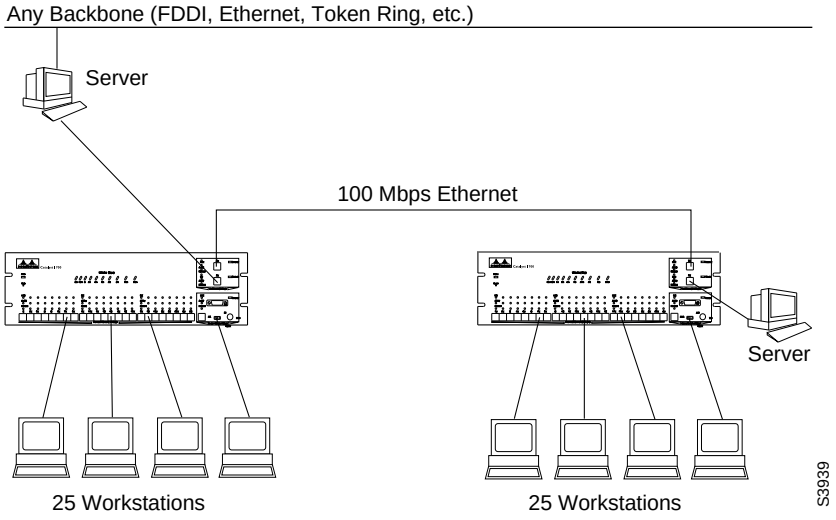
This configuration is similar to the previous example shown in Figure 2-3, with the exception that the Catalyst 1700 hubs are interconnected via a routing server instead of directly to each other.

The configuration shown in Figure 2-4 is constructed using a server equipped with the following:

- 2 100Base-X compatible adapters, one for each Catalyst 1700 connection
- A third adapter to connect to the backbone that corresponds to the backbone type (Token Ring, FDDI, or Ethernet)
- Routing software (for example, Novell's Multiprotocol Routing software)

Alternatively, you can connect the two Catalyst 1700 hubs together via one of the Fast Ethernet ports as shown previously in Figure 2-3, and connect the hubs to the network via a routing server as shown in Figure 2-5, or a router connected to a Personal Ethernet port as shown in Figure 2-6.

Figure 2-5 Two Catalyst 1700 Hubs Connected Directly to Each Other and to a Backbone via a Routing Server

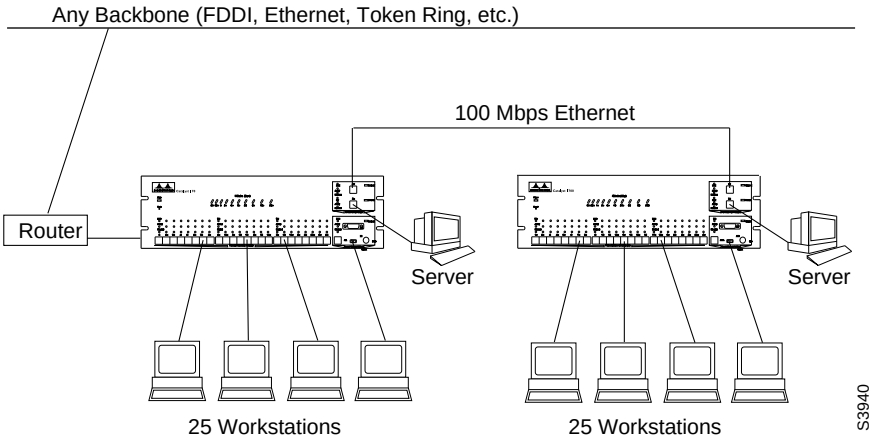


The routing server in Figure 2-5 requires a server equipped with the following:

- One 100Base-X compatible adapter to connect to the Catalyst 1700
- A third party adapter to connect to the backbone that corresponds to the backbone type (Token Ring, FDDI, or Ethernet)
- Routing software (for example, Novell's Multiprotocol Routing software)

You can also connect to the network with a router connected to a Personal Ethernet port as shown in Figure 2-6.

Figure 2-6 Two Catalyst 1700 Hubs Connected Directly to Each Other and to a Backbone via a Router



To learn more about Catalyst 1700 concepts, proceed to “Catalyst 1700 Concepts Overview.” To begin to install the Catalyst 1700, proceed to “Hardware Installation.”