

Planning for Installation

Before installing the Catalyst 2600 Token Ring Switch, read this chapter carefully, it contains the information on:

- Physical Planning
- Recording Your Installation Information

Note Before installing the Catalyst 2600, read the “Safety Warnings” appendix.

Physical Planning

This section will help you understand the physical configuration rules for the Catalyst 2600.

If you have a large network, we recommend that you create a sketch of the network to which you will add one or more Catalyst 2600 switches. Include major network elements such as hubs and concentrators, servers, bridges, and routers.

To plan for the installation of a Catalyst 2600, obtain all connectivity and physical planning information about the network segments to which you will attach. In addition, if you are planning to use permanently installed telecommunications wiring, you should have information about the cabling installation that will allow you to determine the termination points of every cable, the cable type, connector type (if any), and the distance between termination points. Building floorplans and telecommunications closet layouts are also useful.

Cables and Distances Between Devices

Devices attached to the RJ-45 jacks on the front of the Catalyst 2600 should conform to the cabling rules established in the EIA/TIA 568A and ISO/IEC 11801:1995. If you must exceed the distances prescribed in this section, refer to the appendix “Cable and Pin Information” for cable design specifications.

Dedicated-Media LAN Segment Rules

For installations where permanently installed building cable is available, 100-ohm or 120-ohm twisted-pair Category 3, 4, or 5 cabling up to 200 m (660 ft), including patch and equipment cabling, can be used.

Note This type of cable is commonly called unshielded twisted-pair (UTP). Termination hardware should always match the category of cable that is terminated on it.

IBM Cabling System 150-ohm, shielded twisted-pair (STP) cables (types 1 and 9) can also be used following the same 200m distance restrictions. Because the RJ-45 connectors on the Catalyst 2600 use pins 3, 4, 5, and 6, a cable with an IBM STP data connector on one end and an RJ-45 connector on the other must be constructed. For an illustration, see the appendix “Cable and Pin Information.”

The same distance limitations apply to installations in which cabling is done with patch cables. Ensure that patch cables are composed of Category 3 or better components. IBM Cabling System 150-ohm, type 6 patch cables can also be used following the same rules as for permanently installed STP or STP-A cables.

Shared-Media LAN Segment Rules

The types of cables that can be used are the same as those described above for dedicated-media segments. The acceptable distances are defined by the hub or concentrator attached to the Catalyst 2600 port.

Cable Wiring

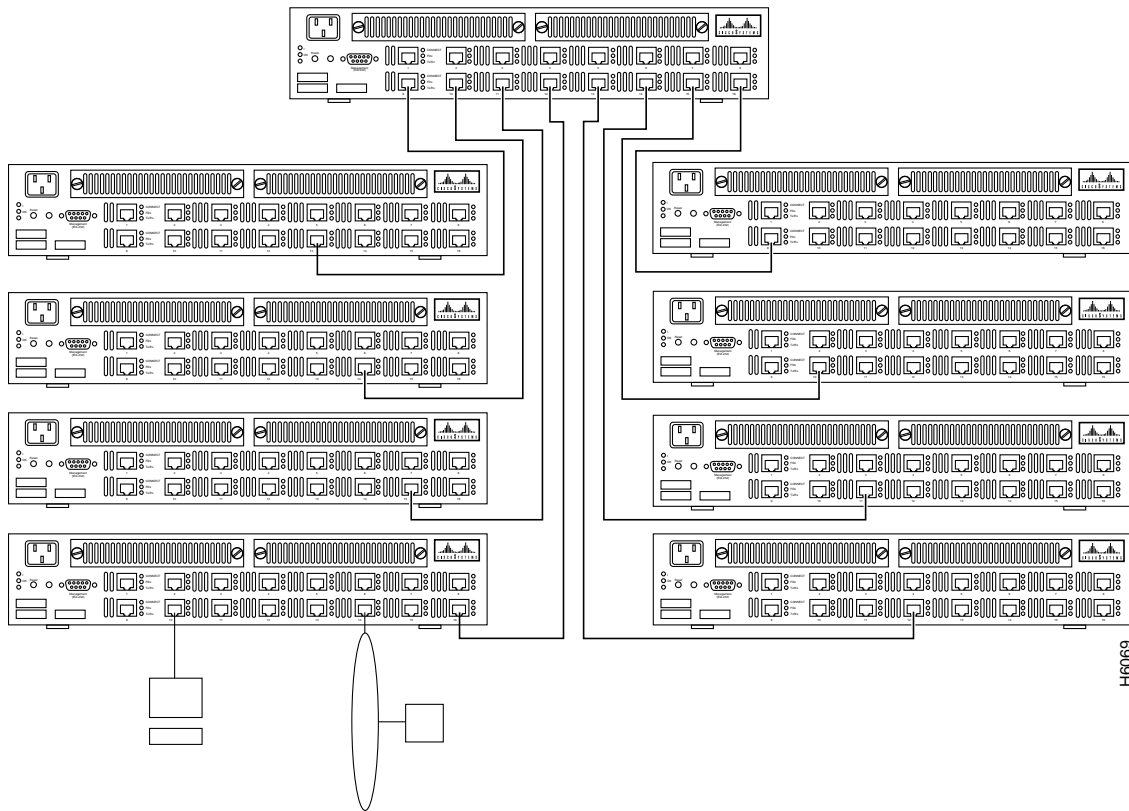
Straight-through cables should always be used for the Token Ring ports. For an illustration, see the appendix “Cable and Pin Information.”

Interconnecting Catalyst 2600 Switches

The Catalyst 2600 is a switch and not a concentrator, so Catalyst 2600s can be connected together to form large networks. As in other configurations, the effective capacity between the Catalyst 2600 switches is 32 Mbps when the ports on both switches are set up for FDX operation.

The topology of a cascaded network of Catalyst 2600 switches is important from a performance perspective. A star topology (as in Figure 2-1) offers maximum bandwidth, and is preferred for network problem determination because no single cable carries all of the traffic. A serial topology reduces capacity and could divide the network in the event of failure.

Creating parallel paths directly between two Catalyst 2600 switches results in unsatisfactory network operation unless the spanning tree algorithm or a TokenChannel is configured. Because the spanning tree algorithm was designed especially to prevent loops in networks that use transparent bridging, the algorithm will block a port of one of the Catalyst 2600 switches in the parallel paths. If the port in the primary path fails, the port that has been blocked will change automatically to the forwarding state, keeping the network working.

Figure 2-1 Interconnected Catalyst 2600 Switches

Recording Your Installation Information

Prepare a set of planning worksheets for each Catalyst 2600 you plan to install.

- Step 1** Make a copy of the worksheets (in the “Worksheets” appendix) for each Catalyst 2600 you will install.
- Step 2** Install the Catalyst 2600 and fill in the worksheet as you read, or fill in the worksheet now and install the switch later. In either case, it is important to have a completed worksheet on file because it represents the only backup of the Catalyst 2600 installation information.

Filling Out The Rack Inventory Chart

The Rack Inventory Chart helps you track all components installed in each rack in your establishment. This chart is particularly useful for larger installations.

- Step 1** If you will install a Catalyst 2600 in more than one rack, make a copy of the chart for each rack.
- Step 2** Mark the location of each component on the chart(s).
- Step 3** Write the unit number and device type of each component on the Rack Inventory Chart.

Filling Out the Cabling Chart

The information on the Cabling Chart is used by the installer to place the Catalyst 2600 in its assigned location and connect the appropriate cables to it.

- Step 1** If you will install a more than one Catalyst 2600, make a copy of the chart for each switch.
- Step 2** At the top of the chart, record the date, the identifier for the Catalyst 2600's segment, and the locally assigned unit number. Then, enter the name or number of the building where the Catalyst 2600 is to be installed and describe its location in the building (such as room and rack number).
- Step 3** Check a box to indicate whether the switch is to be rack mounted or placed on a surface.
- Step 4** In the section labeled "Port in Use," check the box if the port will be used.
- Step 5** In the section labeled "Cable Type":
- For ports 1 through 16 with Token Ring connections, choose either 100-ohm, 120-ohm, or 150-ohm cables or STP for 150-ohm, shielded twisted-pair cables.
 - Check the box at the EIA 232 port if a cable will be permanently attached. For example, for easy access to the out-of-band management features of the Catalyst 2600, you might want it permanently attached to a modem. Indicate whether a null modem is required.
- Step 6** In the "Connect to" section of the chart, supply enough information to make an attachment to the device at the other end of the port. For example, for a connection to a Token Ring concentrator in another wiring closet the information might contain the cable termination points in both closets, the cable number, the unit number of the concentrator, and the number of the port through which it will be connected to the Catalyst 2600. On the other hand, if the concentrator is in the same room or rack as the Catalyst 2600, the concentrator's unit number and the port to be used for connection to the Catalyst 2600 would be sufficient.
- Step 7** For the EIA 232 port, specify whether the Catalyst 2600 is permanently attached to a modem or console.

Filling Out the Locator Charts

The locator charts associate adapter addresses to the physical location and device identification numbers. These charts are useful for problem determination and should be kept current, especially in larger installations.

- Step 1** Determine the MAC addresses.

Each of the attaching devices in your establishment is assigned to a specific physical location. In addition, each attaching device has a unique identification number. You have used these identifiers to indicate specific attaching devices on your cabling charts.

On the network, however, an attaching device is known not by its location or assigned identification number, but by its MAC address. This address can be one of two types: universally administered or locally administered. Determine the MAC address of each attached device, using its documentation if necessary.

The Catalyst 2600 has a universally administered base MAC address that is displayed on the Switch Information panel. In addition, each port and each configured domain also requires a MAC address.

The base MAC address ends in 0. The port 1 MAC address is the same as the base MAC address except that it ends in 1, port 5 ends in 5, and so forth. MAC addresses ending in 21, 22, 23, and 24 are reserved for the UFC ports. MAC addresses for domains start at the base address plus hex 20. For example, if the MAC address of the base switch is 0004AC 29AEC0, the MAC address for domain 0 is 0004AC 29AEE0.

- Step 2** Make copies of the locator charts.
- Step 3** On the Adapter Address to Physical Location Locator Chart, record the addresses of all devices in the network in numeric order.
- Step 4** On the Physical Location to Adapter Address Locator Chart, record the physical locations of all devices by building and room number.
- Step 5** In the “Device Identification” column on each chart, enter the device identifications and specify the device type, such as a switch, hub, print server, file server, gateway, or bridge.

