CHAPTER 2

Planning

This chapter describes the preinstallation guidelines and sample configurations for FastHub 112F. These guidelines and configurations can help you determine how FastHub 112F fits into your network.

Preinstallation Guidelines

FastHub 112F can be installed in the same locations as your other Ethernet hubs, bridges, routers, and servers. By following these simple guidelines, FastHub 112F will be easy to install and maintain.

Location

The FastHub 112F can be table, shelf, or rack mounted. FastHub 112F 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 FastHub 112F be located within certain distances of its attached devices, as discussed in this chapter.

The FastHub 112F LEDs and cable connectors are located on the front panel, so make sure you can see and access the FastHub 112F from the front after mounting.

See the “Technical Specifications” appendix for more information.

Compatibility

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

Configuration Guidelines

There are simple guidelines for cabling the FastHub 112F. The following figures show some common configurations and the guidelines that apply.

In general, the rules are as follows:

- Each 100Base-T repeater in the network is equivalent to 95 meters of cable.
- The maximum distance, including the equivalent “distance” associated with the repeater, between any two nodes on a repeated Fast Ethernet network is 400 meters.

Therefore:

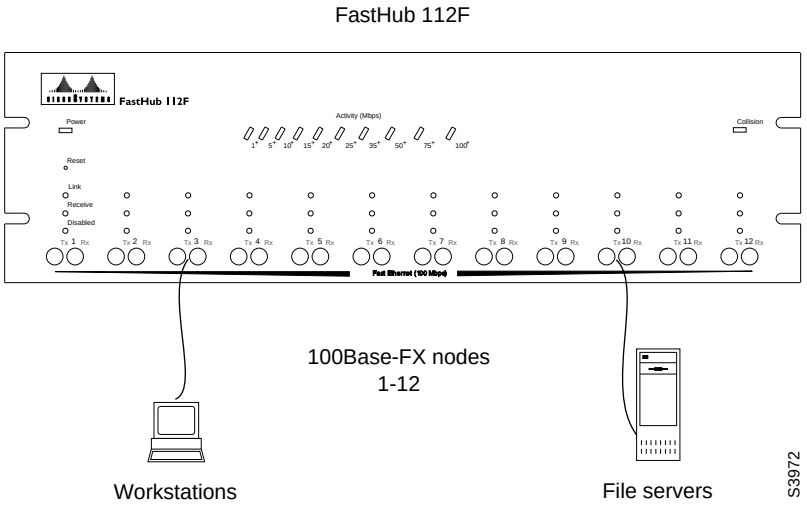
- In a one-repeater network, the maximum length of cable between any two nodes is 305 meters because the 400-meter maximum minus the 95 meters for the repeater equals 305 meters.
- In a two-repeater network, the maximum length of cable between any two nodes is 210 meters using the same formula (400 - 95 - 95 = 210).

Fast Ethernet Ports

Fast Ethernet ports require 62.5/125 or 50/125 micron multimode fiber optic cabling. The cable connecting to the attached server, workstation, or hub can be any length as long as it does not exceed the total maximum cable length allowable between two nodes, as described above. The server or workstation must have a 100Base-FX-compatible adapter installed.

For example, the FastHub 112F can be used to interconnect up to twelve 100Base-FX devices. Because this is a one-repeater configuration, the maximum cable length between any two attached devices is 305 meters.

Figure 2-1 The FastHub 112F Interconnecting 12 100Base-FX devices



Example Configuration: Power Workgroups

You can build 100Base-FX power workgroups of up to 22 nodes using 2 daisy-chained FastHub 112Fs as shown in Figure 2-2. The workgroup can consist of both workstations and servers, which in each case require a 100Base-FX adapter.

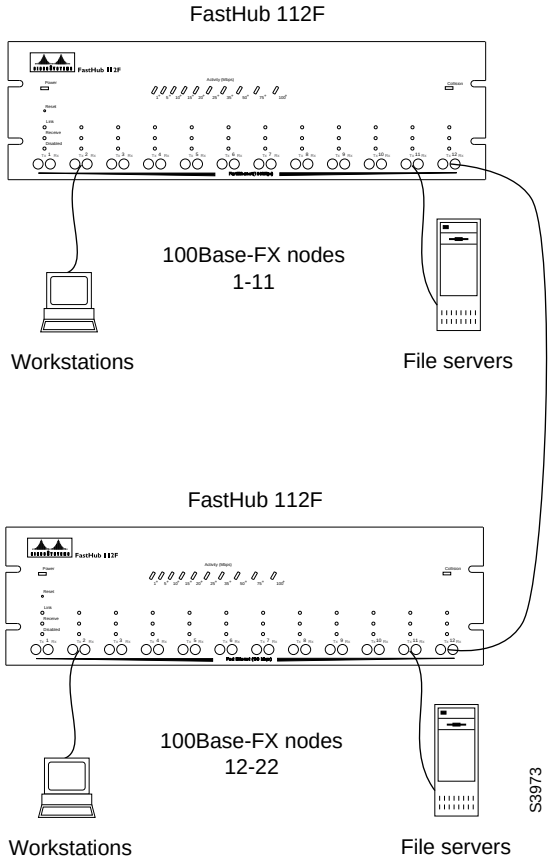
Only two FastHub 112Fs can be daisy-chained in this manner, and the total length of the cable from node to node through the repeaters must not exceed 210 meters, as discussed previously.

This “210-meter rule” can be applied to any configuration including two FastHub 112Fs, or a FastHub 112F and a repeated port on a Cisco Catalyst 2800 workgroup switch. If the length of cable between the two FastHub 112Fs is 10 meters, then each workstation or server can be connected to its FastHub 112F by a cable no more than 100 meters long.

If the length of cable between the two repeaters is 50 meters, then each workstation or server can be connected to its FastHub 112F by a cable no more than 80 meters long. (50 + 80 + 80 = 210 meters.)

Or, one cable could be 60 meters long and the other cable 100 meters long, because 50 + 60 +100 = 210 meters.

Figure 2-2 Power Workgroups

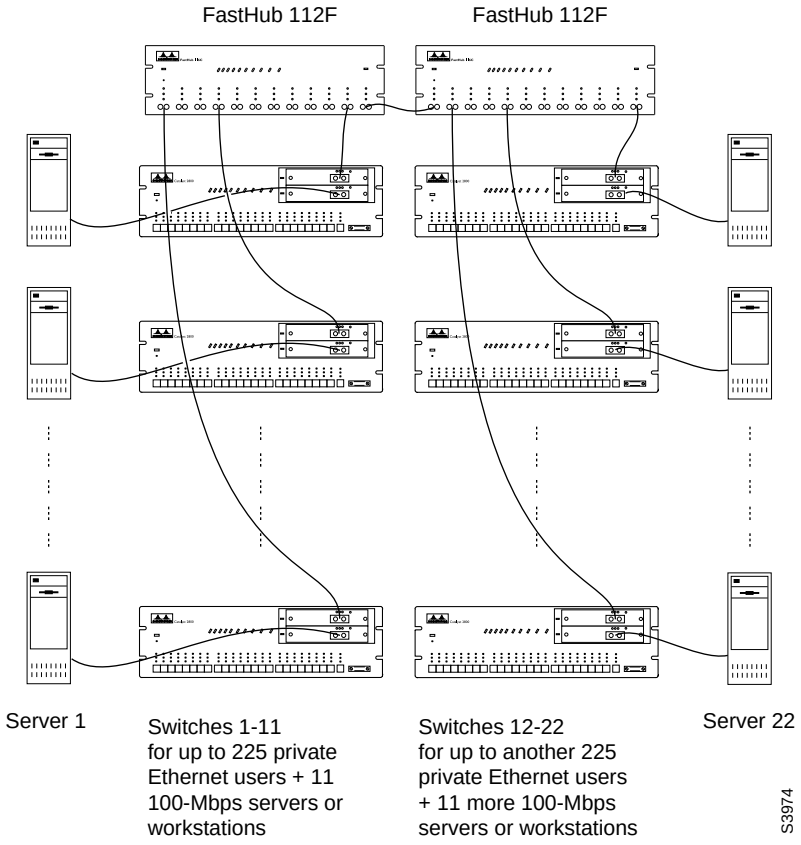


Example Configuration: High-Density Catalyst 2800 Aggregation

You can use two FastHub 112Fs to aggregate up to 22 Cisco Catalyst 2800 workgroup switches as shown in Figure 2-3. All interswitch traffic would use the 100Base-FX local backbone provided by the FastHub 112Fs. This configuration supports up to 550 private Ethernet nodes and 22 switched Fast Ethernet servers, each connected to a Catalyst 2800.

Only two FastHub 112Fs can be connected in this manner, and the 210-meter rule discussed above applies to any two Catalyst 2800s connected through the repeaters. The cable from each server or workstation on either the Catalyst 2800 10-Mbps ports or switched Fast Ethernet port to its Catalyst 2800 can be up to 100 meters long using Unshielded Twisted Pair (UTP) cabling, outside the application of the 210-meter rule. Using fiber optic cabling, the distance from each server or workstation on a Catalyst 2800 switched Fast Ethernet port to its Catalyst 2800 can be up to 400 meters (standard) or up to 2 kilometers using full-duplex mode.

Figure 2-3 High-Density Catalyst 2800 Aggregation



For example, in this configuration the maximum cable distance between Server 1 and Server 22 could be tabulated as follows:

- 100 meters from Server 1 to the Catalyst 2800 if using UTP cabling (400 meters–2km from Server 1 to the Catalyst 2800 if using fiber optic cabling)
- 100 meters from the Catalyst 2800 to the FastHub 112F
- 10 meters between the FastHub 112Fs

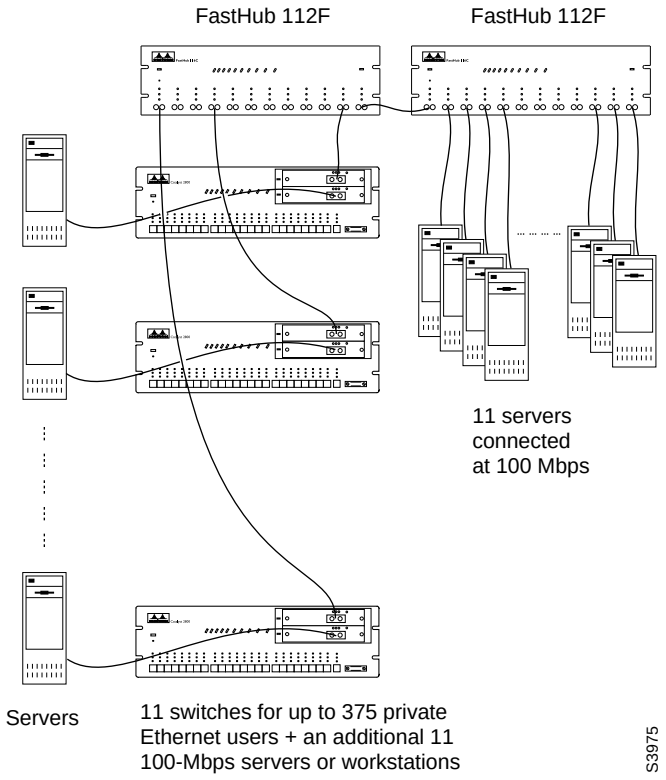
- 100 meters from the FastHub 112F to the Catalyst 2800
- 100 meters from the Catalyst 2800 to Server 22 if using UTP cabling (400 meters–2km from the Catalyst 2800 to Server 22 if using fiber optic cabling)

Note The actual distances between the Catalyst 2800s and the FastHub 112F—and between the Catalyst 2800s—can vary, as long as the total distance does not exceed the 210 meter rule.

Example Configuration: Server Farms

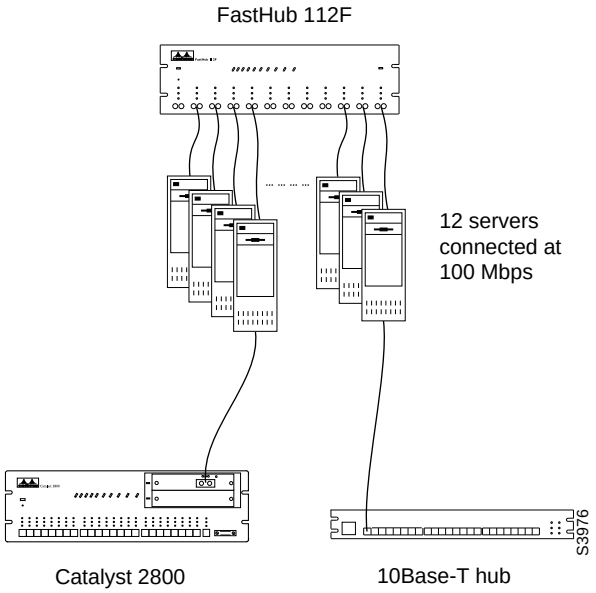
Two FastHub 112Fs can be used to provide up to 375 private Ethernet users with high-speed access to 100Base-FX equipped, high performance servers as shown in Figure 2-4. Only two FastHub 112Fs can be connected in this manner and the 210-meter rule applies.

Figure 2-4 Server Farms



Server farms can also be connected to either Catalyst 2800 or 10Base-T hub users utilizing a FastHub 112F and routing software in the servers, as shown in Figure 2-5. In this configuration, the 305-meter rule applies.

Figure 2-5 Server Farms



In both these server farm examples, the cable from each server or workstation on the Catalyst 2800 ports and the 10Base-T hub ports is outside the 210- or 305-meter rules.