CHAPTER 2

Planning

This chapter describes the preinstallation guidelines and several sample configurations for the FastHub 108T/104T. Use these guidelines and examples to determine how FastHub 108T/104T can best fit into your network.

Preinstallation Guidelines

You can install your FastHub 108T/104T in the same locations as your other Ethernet hubs, bridges, and routers. This would normally be a wiring closet or computer room but it could as well be an office.

The FastHub 108T/104T can be mounted on a table or shelf. The key requirement is to locate FastHub 108T/104T according to the cabling guidelines discussed in this chapter. As the LEDs and the cable connectors are on the front panel, you should also ensure easy access to the front of the hub.

Note The UTP cables to be installed are sensitive to noise, so ensure that the cable routing is not near electrical noise, power lines, or fluorescent lights.

See the “Technical Specifications” appendix for a complete description of the hub’s dimensions and physical requirements.

Compatibility

The 100Base-T ports are compatible with the 100Base-TX specification and will interoperate with any 100Base-TX device.

Configuration Guidelines and Sample Networks

There are simple guidelines for cabling the FastHub 108T/104T. This section consists of some common configurations and the guidelines that apply to them. In general, you can connect devices to the FastHub 108T/104T according to the following rules:

- Each FastHub 108T/104T in the network is equivalent to 90 meters of cable.
- The maximum distance between any two nodes on a 100Base-T network is 400 meters. This includes the 90-meter distance associated with each repeater.
- The repeaters to be counted when determining available cable distance are only those repeaters in the path between two nodes, not the total number of repeaters in the network.
- The maximum length for any Category 5 UTP cable is 100 meters.

When implementing the FastHub 108T/104T, these guidelines interrelate in the following ways:

- **One repeater in the path**

  The maximum length of cable between any two nodes is 310 meters: 400 meters minus 90 meters for the repeater itself. Note, however, that the 100-meter limitation for UTP cabling also applies to any connections so that 200 meters is the actual cabling distance allowable. See Figure 2-1.

- **Two repeaters in the path**

  Using a similar formula, the maximum length of cable between any two nodes separated by two repeaters is 220 meters: 400 - 90 - 90 = 220. In addition, note that the maximum length cable between any two nodes on the *same* repeater is still 310 meters (200 meters in actual practice since the 100-meter limitation on UTP connections to all ports still applies). See Figure 2-2.

Figure 2-1 Cabling Guidelines: One Repeater in the Path

Figure 2-2 Cabling Guidelines: Two Repeaters in the Path

Ports

All FastHub 108T/104T ports require two pairs of Category 5 UTP cabling, wired for Ethernet, and RJ-45-type connectors. A *straight-through cable* is used to connect to an adapter in a server or workstation. Attached servers or workstations must have a 100Base-TX compatible adapter installed.

When interconnecting two FastHub 108T/104Ts or a FastHub 108T/104T and a 100Base-T compatible hub, or switch, or router, a *crossover cable* must be used. See Figure B-2 for more details on crossover cables. Note that only one connection can exist between hubs.

Power Users

The FastHub 104T is a perfect complement to 100Base-T switches, providing an affordable 100-Mbps solution for a power user with multiple workstations. Up to three user workstations, each equipped with a 100Base-TX adapter, can connect to the FastHub 108T/104T. The fourth hub port is used to connect to a 100Base-T switch as shown in Figure 2-3. All workstations on the hub share 100 Mbps of bandwidth.

Figure 2-3 Power User with Multiple Workstations

Power Workgroups

The eight-port FastHub 108T offers 100-Mbps performance for small power workgroups, as shown in Figure 2-4. The power workgroup can consist of both workstations and servers, with 100Base-TX adapters required.

Figure 2-4 Small Power Workgroup

The power workgroup can be enlarged by daisy chaining two FastHub 108T/104Ts, and can also be connected to a 100Base-T switch or router as described on in the section “Connecting Power Workgroups to a 100Base-T Switch or Router” in this chapter.

Daisy-Chaining FastHub 108T/104Ts

By daisy-chaining two FastHub 108T/104Ts together, as shown in Figure 2-5, you can build 100Base-T power workgroups of up to 13 nodes.

When daisy-chaining FastHub 108T/104Ts, ensure that cable requirements are followed, as described in the section “Configuration Guidelines and Sample Networks” in this chapter.

Figure 2-5 Daisy-Chaining FastHub 108T/104Ts

Connecting Power Workgroups to a 100Base-T Switch or Router

You can also connect FastHub 108T/104T power workgroups to a 100Base-TX switch or router as shown in Figure 2-6.

Two daisy-chained FastHub 108Ts can be attached to each 100Base-TX switch or router port to support power workgroups of up to 13 100Base-TX nodes on each switch or router port.

All nodes on each 100Base-TX switch or router port share 100 Mbps of bandwidth. The workstations connect to the FastHub 108T/104T with the 100Base-TX ports and require a 100Base-TX adapter. A 100Base-TX port on one of the FastHub 108T/104Ts is used to connect to the 100Base-TX switch or router.

Figure 2-6 Connecting to a 100Base-T Switch or Router

Server Farms

One FastHub 108T/104T can be used to interconnect up to seven 100Base-TX equipped, high-performance servers across a 100 Mbps backbone to a group of switch-based users, as shown in Figure 2-7.

Figure 2-7 Server Farm 1

100Base-TX server farms can also be connected to 10Base-T hub users utilizing a FastHub 108T/104T and routing software in the servers, as shown in Figure 2-8.

Figure 2-8 Server Farm 2