

Network Communications

Chapter 14

LAN Interconnection Devices

LAN Interconnection Devices

- Repeater: Layer 1 (Physical)
- Bridge: Layer 2 (Data Link)
- Switch: Layer 2, 3, or 4 (Transport)
- Router: Layer 3 (Network)
- Gateway: Layer 7 (Application)
- CSU/DSU: LAN to WAN connection

Connecting LAN Segments with a Repeater

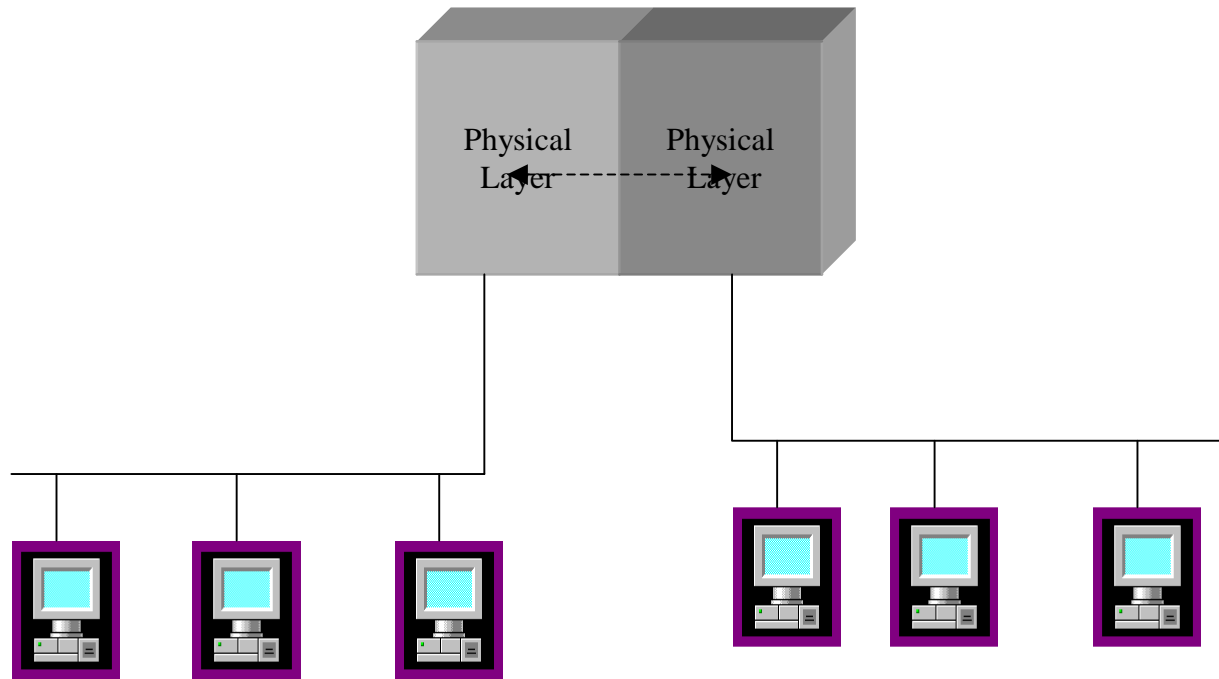


Figure 14.1

OSI Reference Model for a Bridge

- Homogeneous Network Expansion

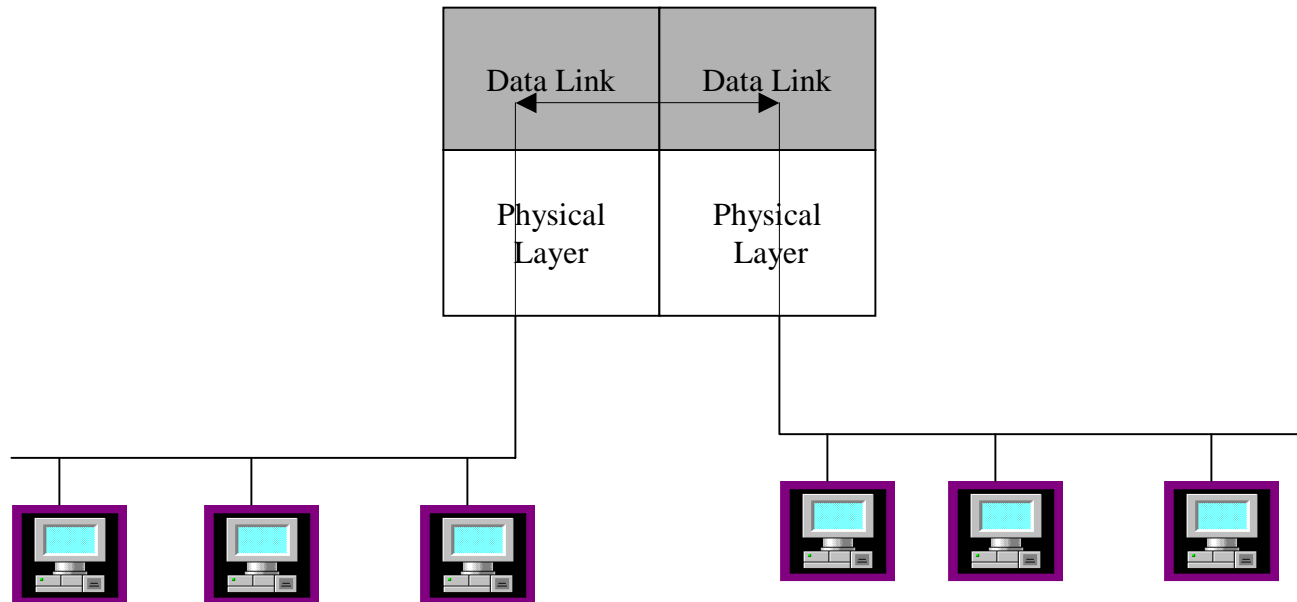


Figure 14.2

Bridge Types

- Learning (Transparent) Bridge
 - Requires no administration
 - Discovers connected terminals
- Source routing bridge
 - Used in token ring networks
 - Follows the information in the frame header

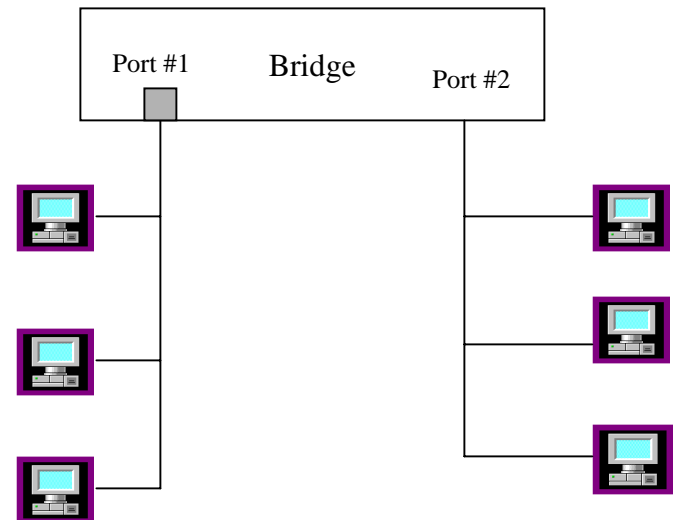


Figure 14.3

Router OSI Reference Model

- Works at the Network Layer
- Can handle non-homogeneous networks
- Determine “best” data path for each frame

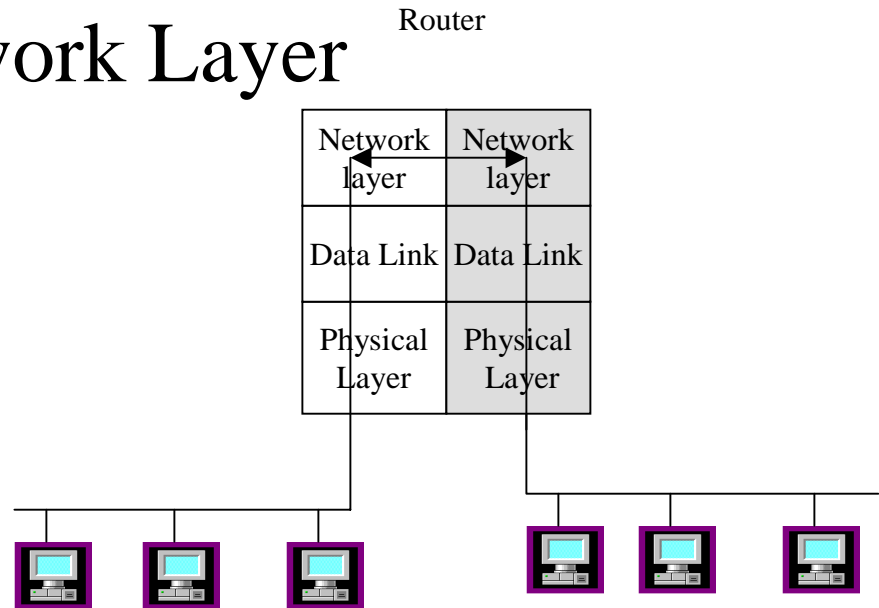


Figure 14.4

Routers Connecting LANS

- Static Router

- Manual administration

- Dynamic Router

- Automatic
- Exchanges information with peers
- Standard protocol and algorithm (Dykstra)

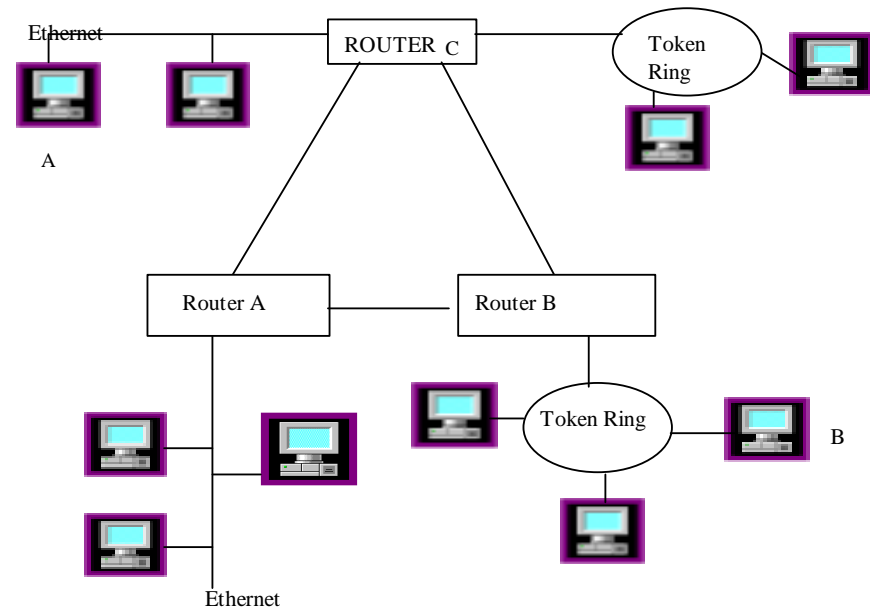


Figure 14.5

Gateway

- Works at the application layer
- A high-level protocol converter

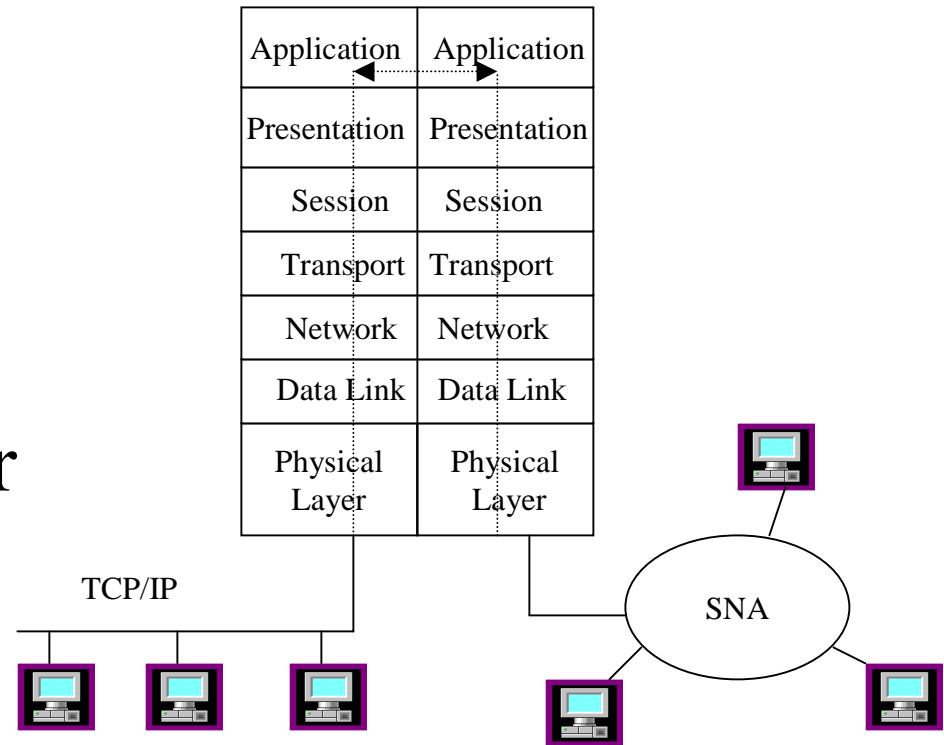


Figure 14.6

Switch

- Already covered in chapter 12

CSU/DSU

- Channel Service Unit/Data Service Unit

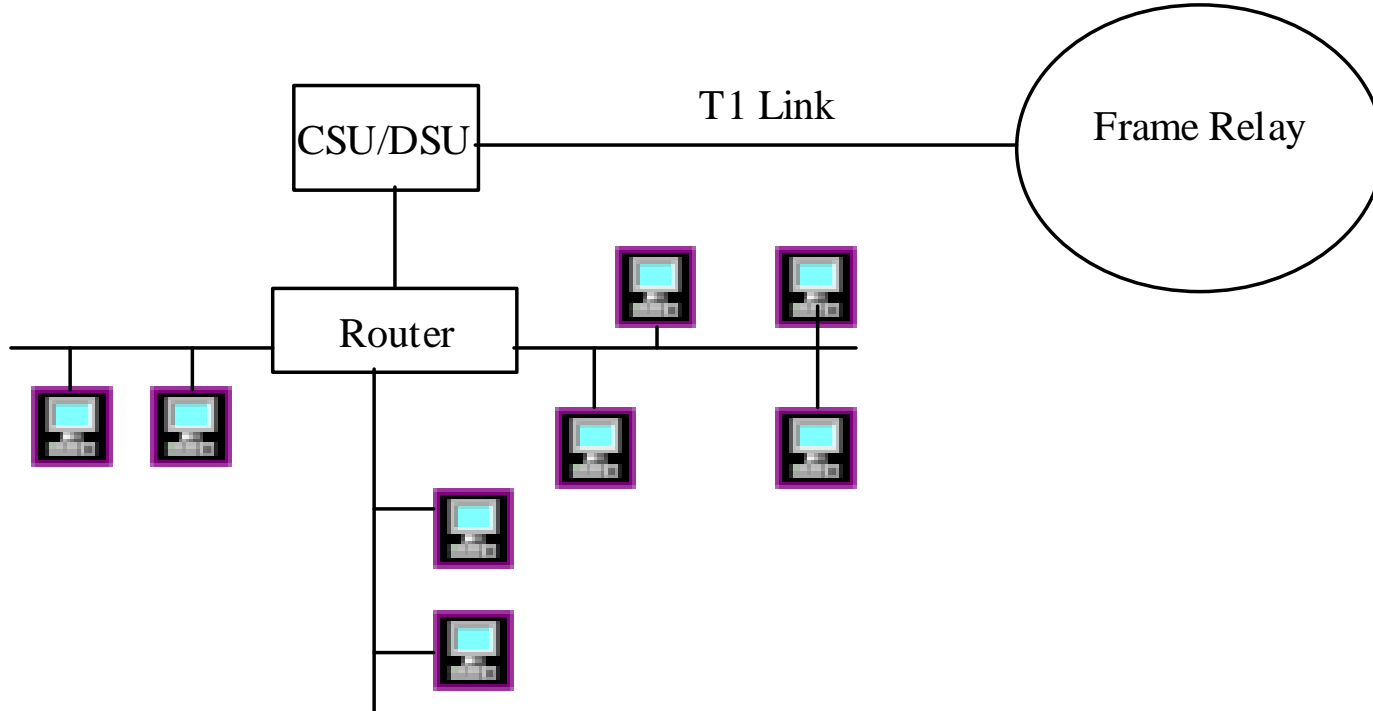


Figure 14.7