

Telecom LAN Devices

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❖ Repeaters

- **Amplify the data signals to extend length of a segment**
- **They do not add any intelligence to the process**
- **They do not filter packets**
- **They do not examine addressing or change in data**

❖ Hubs

- **Used to connect multiple devices**
- **Can be considered as multi-port repeaters**
- **HUB - server as central meeting place for all cables from computers and devices**

❖ Bridges

- **Divides networks into more controllable segments to ensure bandwidth efficiency**
- **Bridges operate at 2-Data Link Layer**
- **Bridge - understand only MAC not IP address**
- **Bridge - Filter by MAC address**
- **Amplify the data signals to extend length of a segment**
- **They add some intelligence**
- **They do not use IP addressed because they run on layer 2**
- **Do not forward traffic if the destination computer is on the local network**
- **Automatically forward all boardcast traffic this can cause Boardcast storm**

❖ Switches

- **Switch - is a device with combined repeater and bridge**
- **Switches - operate at Data Link Layer (2)**
- **Extremely fast switch use Network Layer (3)**
- **Switch - understand only MAC not IP address**
- **Similar to a bridge or hub except will only send data to a specific port**
- **Can be used as multi-port bridge**

❖ Routers

- **Connected to at least two networks and make decisions on where to route traffic**
- **Router- understand only IP address only not MAC**
- **Router- operate at Network Layer (3) and lower levels**

- Router - Filter by IP address
- Router- has more network knowledge than bridge, switch, repeater
- Router- do not forward broadcast, which is a good thing
- Add intelligence to forwarding data
- Open up the packet and read either the IP
- Only Forward packet to the network to which the packet was destined
- Switches
 - Switch - is a device with combined repeater and bridge
 - Switches - operate at Data Link Layer (2)
 - Extremely fast switch use Network Layer (3)
 - Switch - understand only MAC not IP address
 - Similar to a bridge or hub except will only send data to a specific port
 - Can be used as multi-port bridge

❖ Gateways

- Acts as a point of entrance into a network
- Software product that run on computer or other network devices
- They can be multi-protocol (Link different protocol)
- They examine the entire packet
- Mail gateways are used to link dissimilar mail programs
- Can be used to translate between two dissimilar protocols

❖ ATM Switches

- Used more in WAN
- ATM transfers data in fixed cells 53 bytes
- Use cell relay technology that combines conventional circuit and packet based systems
- ATM is an example of a fast packet-switching network
- ATM - transmit data at very high rates
- ATM- support voice, data and video
- Use both switching and multiplexing
- Very High Bandwidth and Low delay
- It can allocate bandwidth upon demand
- Good solution for Brusty applications
- It can run in both WAN and LAN environments
- Require high-speed medium like fiber

❖ LAN extenders

- Remote access multi-layer switch
- LAN extenders is connected to a host router
- Forward traffic from all the standard layers based on the MAC or protocol
- Not capable of segmenting traffic or creating security firewalls