KOM Questions – Lecture 5b

Data Communications and Networking (Fourth Edition)

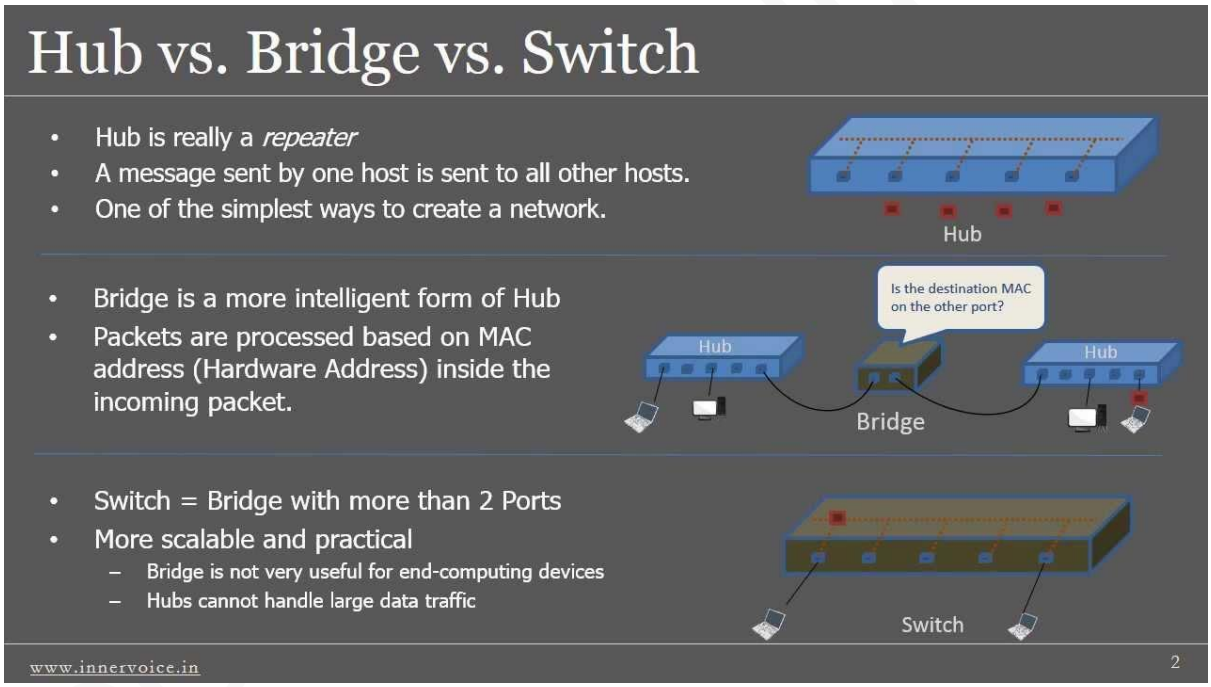
Ethernet

1.1 What addresses are used in the Ethernet protocol?

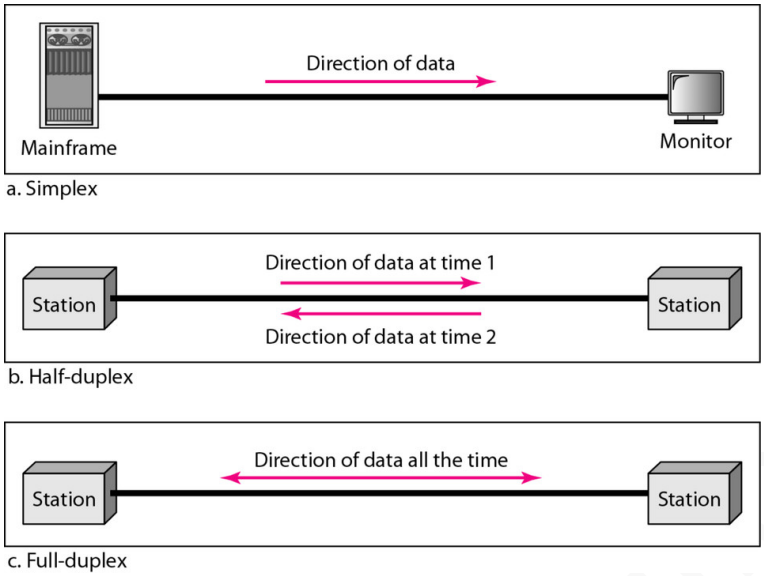
Each station on an Ethernet network (such as a PC, workstation, or printer) has its own **network interface card** (NIC). The NIC fits inside the station and provides the station with a **link-layer address**. The Ethernet address is 6 bytes (48 bits), normally written in hexadecimal notation, with a colon between the bytes, e.g., `4A:30:10:21:10:1A` (also known as a MAC address).

1.2 How is bridged Ethernet better? How about switched Ethernet?

Bridges raise the bandwidth and they separate collision domains (since a bridge divides the network into two or more networks). Switches are essentially a multi-port bridge, dividing the network into N sub-networks given N stations.



1.3 What are the differences between Simplex, Half duplex and Full Duplex transmission?



1.4 What is auto-negotiation?

Auto-negotiation allows two devices to negotiate the mode or data rate of operation. It was designed particularly to allow incompatible devices to connect to one another.

1.5 What are the advantages of full-duplex transmission with respect to Ethernet?

It allows for greater speeds for Gigabit Ethernet and eliminates the need for CSMA/CD due to there no longer being collisions. This also implies that the maximum length of the cable is determined by the signal attenuation in the cable, and not by the collision detection process.