STUDY MATERIAL – 7
TOPIC – NETWORKING

SUBJECT: COMPUTER APPLICATION **CLASS: XII**
DATE: 18.07.2020

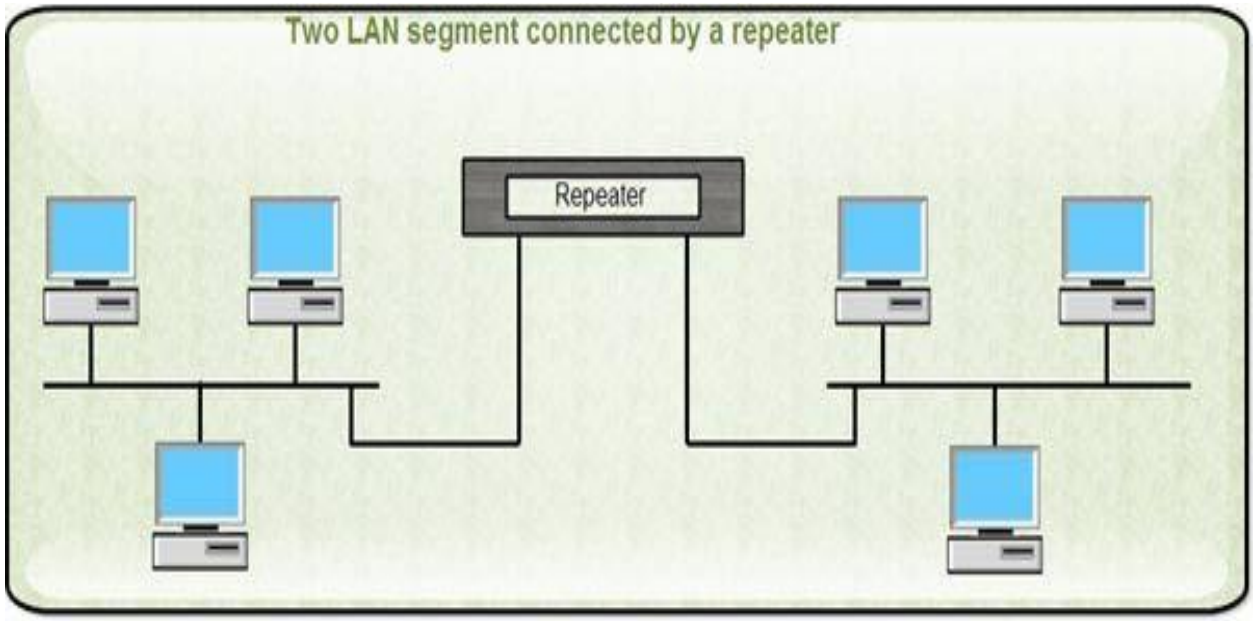
Network Connecting Devices

Several computers and peripheral devices are connected together to form a LAN. Depending upon their purpose, various types of network connecting devices are used.

- ✓ **Repeater**
- ✓ **Hub**
- ✓ **Bridge**
- ✓ **Switch**
- ✓ **Router**
- ✓ **Gateway**

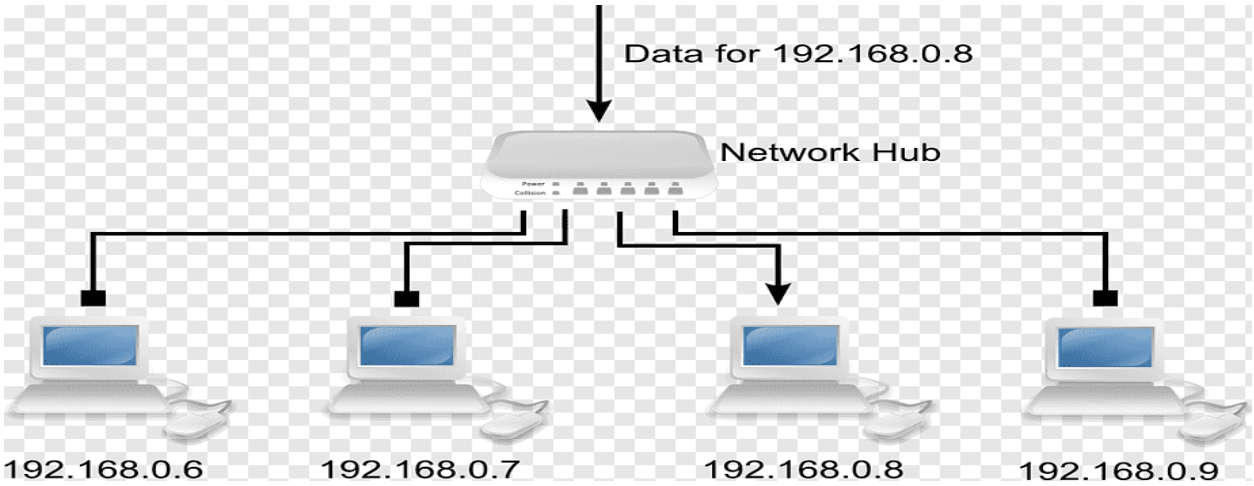
❖ Repeater

- When transmission lines run over long distances, data signals may get weaker.
- A repeater is usually a two port device used to amplify a signal when it travels across a network.
- It has no data filtering capability and is used to simply extend a LAN segment.



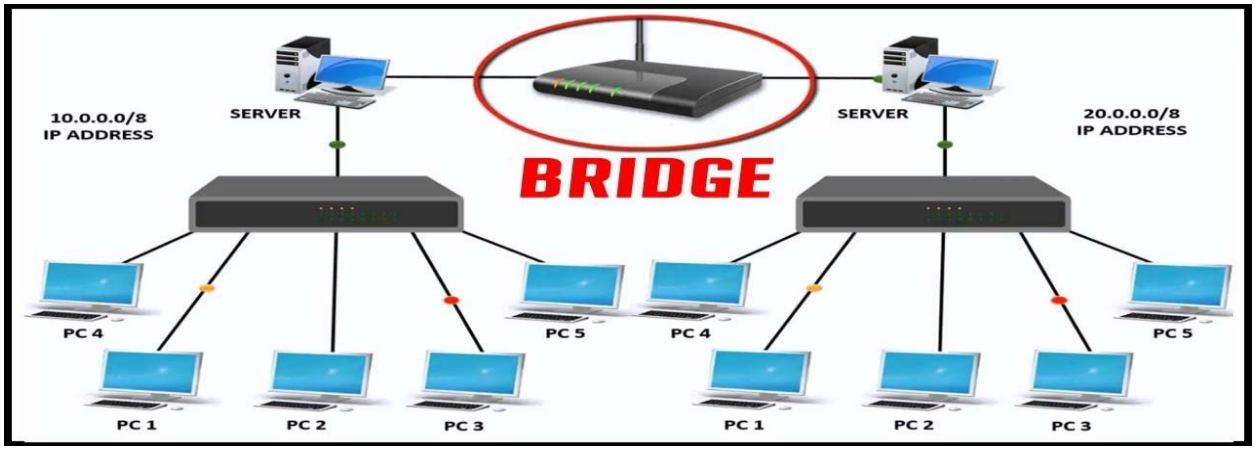
❖ Hub

- ❑ Hub is a device that provides a common connection point for network devices in a star topology.
- ❑ These are almost obsolete now and replaced by network switches.
- ❑ Hub is a passive device and simply forwards the signal without any amplification.
- ❑ However, in case of a faulty connection a hub recognises the error and disconnects the faulty node.



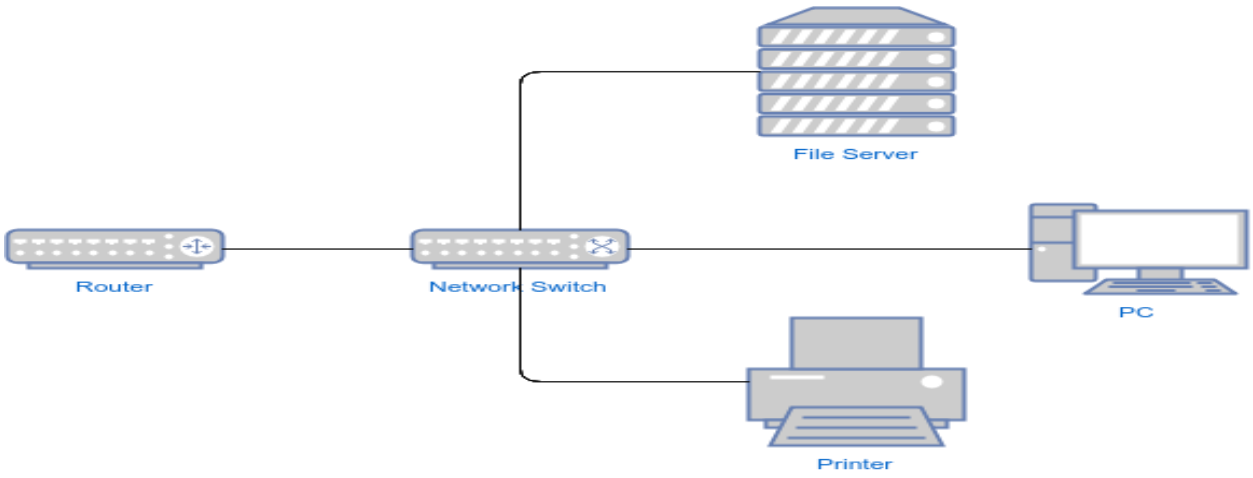
❖ Bridge

- ❑ A bridge is a network connecting device that consists of two or more ports, where each port connects to a different LAN segment under the same network.
- ❑ It has data filtering capability and selectively passes data signals between two ports.
- ❑ Bridges work by checking the MAC address of the source and the destination node during a communication.
- ❑ A bridge works by building an address-table called a bridge table to decide which messages to pass and which to restrict.



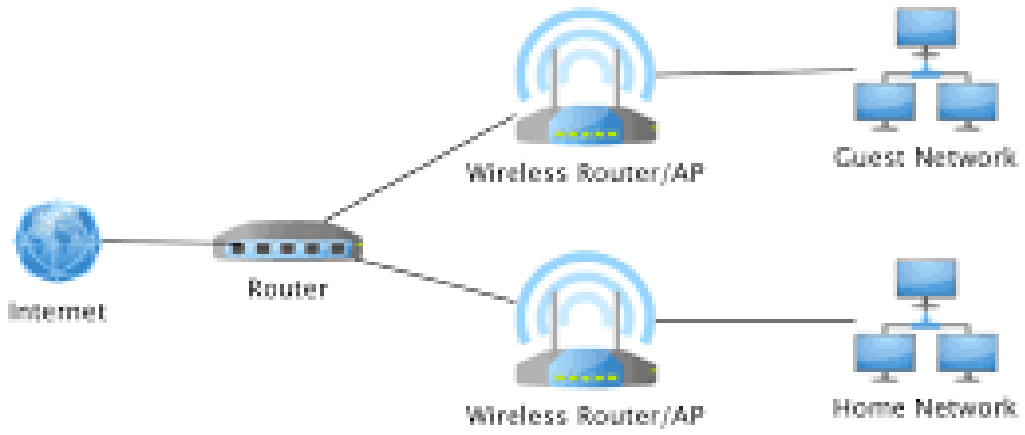
❖ Switch

- ❑ Switch is a network connecting device which connects individual nodes under the same network, like a hub.
- ❑ A switch makes a temporary connection between the source and the destination ports based on the MAC address of these nodes.
- ❑ It then forwards data packets from the source to the destination port only, and terminates the connection when the transfer is over.
- ❑ For doing this, the switch uses a switching matrix to rapidly connect and disconnect the ports.



❖ Router

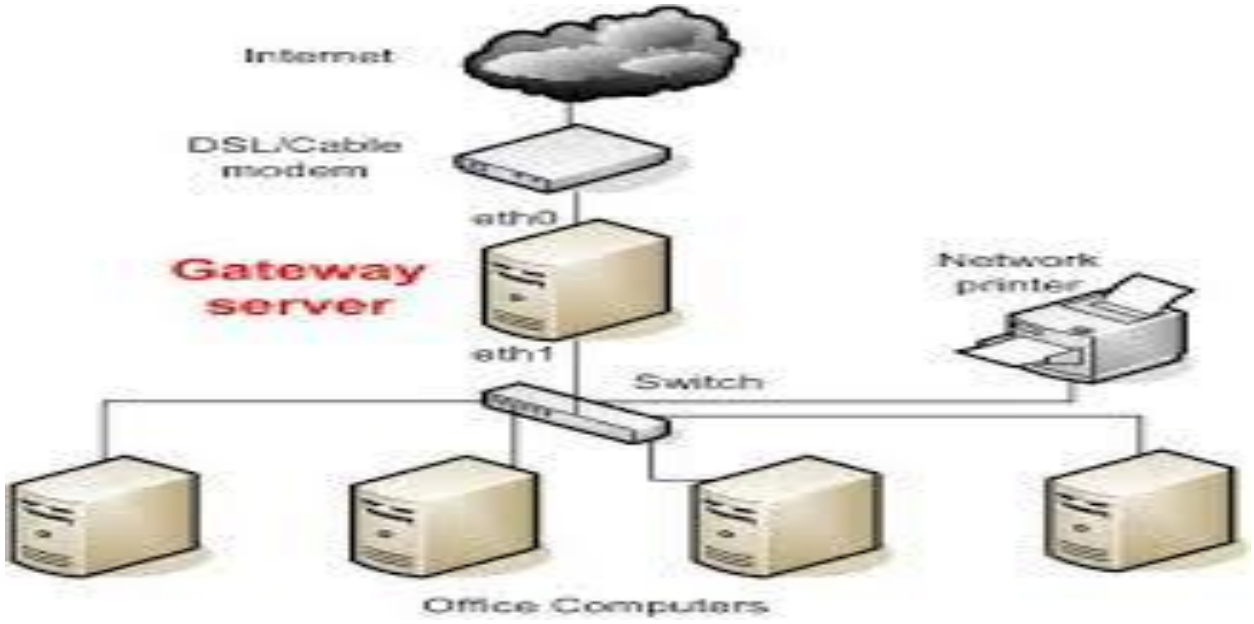
- ❑ Apart from the physical MAC address, a node in a given network can have a logical address called the IP address. It determines the network to which the node is connected. A router is a device used to connect two different networks and works using the network address or IP address of a node.
- ❑ Routers can do data filtering based on the IP addresses of the communicating nodes. They can also choose the best route for a data packet from the source network to the destination network and efficiently control network traffic.
- ❑ Routers checks for the location of the destination node by checking the destination node address of the data packet using its routing table.



❖ Gateway

Gateway normally acts as translators between two networks running totally incompatible communication protocols. If the destination network differ in protocol standards, a gateway can be used to repackage and sometimes convert the data to suit the destination network. The different uses of gateways are:

- **Default Gateways:** Some networks can have multiple routers that lead to other networks. Amongst these, one of the routers can be selected to serve as the primary path to other networks like the internet. This router is called the default gateway.
- **Email Gateways:** It translate messages from one vendor's messaging application to another's, so that users with different email applications can share messages.
- **Firewalls:** Gateways also serve as firewalls, which allow internal network users to access the internet, while blocks the internet users from accessing the internal network.
- **Proxy Servers:** Gateways may act as proxy servers. These make copies of the incoming and outgoing data packets and forward them to the other side, instead of passing the packets as it is.



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