15/01/2021

Experiment - 1

Aim: To understand the functionalities and working of devices as follows:

Devices:

1) **HUB:** It is a hardware device that is used to send data packets to all the devices on a network, regardless of any MAC addresses contained in the data packet.

Working of HUB →

A HUB works as a common connection point for devices in a network. HUBS are comonly used to connect segments of a LAN. A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all the segments can see all

packets.

2. SWITCH: A switch is a device that takes in packets sent by devices that are connected to its physical ports and sends them out again, but only through the ports that lead to the devices the packets are intended to reach

Working →

Once a device is connected to a switch, the switch (copies/notes) its MAC address,

The switch uses this MAC address to identify which attached device outgoing packages are being sent from and where to send deliver incoming packets

(3) ROUTER :→ A router is a device that recieves and sends data on computer networks.
A router can connect with a modem, or network switches etc: to improve internet access or helps in creating wider networks

Working :→ A wireless router connects directly to a modem by a ~~cap~~ cable. This allows it to recieve information from - and transmit information to the internet. The router then creates and communicates with your home Wi-fi network using built in antennas. As, a result, all of the devices on your home network have the access.

4) GATEWAY: A gateway is a device that acts as a "gate" b/w 2 networks (i.e. it enables traffic to flow in and out of the network. While a gateway protects the nodes within network it also is a node itself.

Working:→ It is a point of a network that can access other networks usually, in the intranet, a router or node can act as a gateway node or the router that links the networks are called gateways. In large scale enterprises, the computers manage the traffic b/w enterprises, the computers manage the traffic b/w enterprise networks are termed as gateway nodes.

5. MODEM: A modem (Modulator - Demodulator) is a hardware device that converts data from a signal format, intended for communication directly b/w devices with specialized wiring into one suitable for a transmission medium such as a telephone or a radio.

Working: → The sending modem modulates the data into a signal that is compatible with the phone line, and the recieving modem demodulates the signal back into the digital data.

6) Repeater:→ A repeater is an electronic device that receives a signal and transmits it.

Repeaters are used to extend transmissions so that the signal can cover longer distances or be received on the other side of an obstruction.

Working;→ A radio repeater receives the radio waves on one frequency and it is called the "input frequency" and then retransmits the information on its "output" frequency.

3) BRIDGE :→ It is a computer networking device that creates a single, aggregate network from multiple communication networks or network segments. This function is called network bridging

Working :→ Bridges connect two or more different LANs that has a similar protocol and provides communication b/w the devices (nodes) in them. By joining multiple LAN's, bridges help in multiplying the network capacity of a single LAN.