Abinash Gupta

120CS0157

Computer Networks Lab -1 (S1)

1. a. Modem :-

It is a computer hardware device that converts data from a digital format into a format suitable for an analog transmission medium .
A modem transmits data by modulating one or more carrier wave signals to encode digital information, while the receiver demodulates the signal to recreate the original digital information .

b. Hub :-

A network hub is a node that broadcasts data to every computer or Ethernet-based device connected to it. A hub is less sophisticated than a switch, the latter of which can isolate data transmissions to specific devices.

It cannot provide routing capabilities or other routing services , they only work by forwarding packets across all ports indiscriminately . Hence generally used in LAN enviornments .

c. Repeater :

In telecommunications, a repeater is an electronic device that receives a signal and retransmits 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 .

d. Switch

They connect devices in a network and use packet switching to send, receive or forward data packets or data frames over the network.

A switch has many ports, to which computers are plugged in. When a data frame arrives at any port of a network switch, it examines the destination address, performs necessary checks and sends the frame to

the corresponding device(s).It supports unicast, multicast as well as broadcast communications.

e. Bridge

A bridge in a computer network is a device used to connect multiple LANs together with a larger Local Area Network (LAN). The mechanism of network aggregation is known as bridging .

Bridge in computer networks is used to divide network connections into sections, now each section has separate bandwidth and a separate collision domain. Here bridge is used to improve network performance.

f. Router

A router is a device that connects two or more packet-switched networks or subnetworks. It serves two primary functions: managing traffic between these networks by forwarding data packets to their intended IP addresses, and allowing multiple devices to use the same Internet connection**.**

g. Firewall :-

A Firewall is a network security device that monitors and filters incoming and outgoing network traffic based on an organization's previously established security policies. At its most basic, a firewall is essentially the barrier that sits between a private internal network and the public Internet.

h. Gateway :-

A gateway is a network node used in telecommunications that connects two networks with different transmission protocols together. Gateways serve as an entry and exit point for a network as all data must pass through or communicate with the gateway prior to being routed**.**

Q2 : UNIX Commands

1. **ftp** : The ftp command uses the File Transfer Protocol (FTP) to transfer files between the local host and a remote host or between two remote hosts. Remote execution of the ftp command is not recommended. The FTP protocol allows data transfer between hosts that use dissimilar file systems.
2. **host** : this command is used to find the IP address of a particular domain name or if you want to find out the domain name of a particular IP address the host command becomes handy. You can also find more specific details of a domain by specifying the corresponding option along with the domain name.
3. **ifconfig** : **ifconfig**(interface configuration) command is used to configure the kernel-resident network interfaces. It is used at the boot time to set up the interfaces as necessary. After that, it is usually used when needed during debugging or when you need system tuning.
4. **netstat:** Netstat command displays various network related information such as network connections, routing tables, interface statistics, masquerade connections, multicast memberships
5. **ip: ip** command is used to perform several tasks like assigning an address to a network interface or configuring network interface parameters.
   It can perform several other tasks like configuring and modifying the default and static routing, setting up tunnel over IP, listing IP addresses and property information, modifying the status of the interface, assigning, deleting and setting up IP addresses and routes.
6. **ping:** PING (Packet Internet Groper) command is used to check the network connectivity between host and server/host
7. **route**: **route** command in Linux is used when you want to work with the IP/kernel routing table. It is mainly used to set up static routes to specific hosts or networks via an interface. It is used for showing or update the IP/kernel routing table.
8. **scp: scp** (secure copy) command in Linux system is used to copy file(s) between servers in a secure way. The SCP command or secure copy allows secure transferring of files in between the local host and the remote host or between two remote hosts. It uses the same authentication and security as it is used in the Secure Shell (SSH) protocol. SCP is known for its simplicity, security and pre-installed availability.

9. **sftp**: SFTP (SSH File Transfer Protocol) is a secure file protocol that is used to access, manage, and transfer files over an encrypted SSH transport.