

EXPERIMENT-1

CONFIGURATION OF NETWORK COMPONENTS

Aim To study the following Network Devices Detail

PO

i: 1/2 Server

i: 1/2 Repeater

i: 1/2 Hub

Switch

Bridge

Router

GateWay

Transmission medium

Apparatus Software: CISCO Packet Tracer.

1. **Node** In a communication network, a node is a connection point that can receive, store, or send data along distributed network routes.

Hosts

Computer Network

2. **Repeater** Functioning in Physical layer.

A repeater is an electronic device that receives a signal and retransmits a higher level of signal to the other side of an obstruction, that the signal can travel over longer distances.

REPEATER

Repeater

LANA

3. Hub Ethernet hub, active hub, network hub, repeater hub, Hub or concentrator is a device for connecting multiple twisted pair or fiber optic Ethernet devices together and making them act as a single network segment. Hubs work at the physical layer (layer 1) of the OSI model. The device is a form of multiport repeater. Repeater hubs also participate in collision detection, forwarding a jam signal to all ports if it detects a collision.

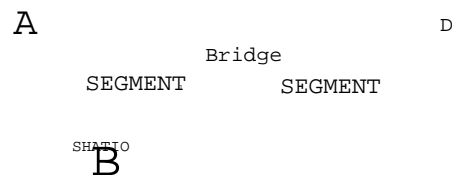
Hub

4. Switch A network switch or switching hub is a computer networking device that connects network segments. The term commonly refers to a network bridge that processes and routes data at the data link layer (layer 2) of the OSI model. Switches that additionally process data at the network layer (layer 3 and above) are often referred to as Layer 3 switches or multilayer switches.

Switch

5. Bridge: A network bridge connects multiple network segments at the data link layer (Layer 2) of the OSI model. In Ethernet networks, a network bridge formally means a device that behaves according to the IEEE 802.1D standard. A bridge and switch are very much alike, a switch being a bridge with numerous ports. A Layer 2 switch is often used interchangeably with a bridge. Bridges analyze incoming packets to determine if the bridge is able to send the given packet to another segment of the network.

An Ethernet Bridge Connecting Two Segments



6. Router: A router is an electronic device that interconnects two or more computer

networks and selectively interchange packets of data between them. Each data packet contains address information that a router can use to determine if the source and destination are on the same network; if the data packet must be transferred from one network to another. The multipointers used in a large collection of interconnected networks, the routers exchange information about target system addresses so that each router can build up a table showing the preferred paths between any two systems on the interconnected networks.

Router

Wireless Home Network Diagram

7. Gateway: In a communication network, a network node equipped for interfacing with another network that uses different protocols. A gateway may contain devices such as protocol translators, impedance matching devices, converters, and isolators, or signal translators, as necessary, provide system interoperability, requires establishment of mutually acceptable administrative procedures between both networks. A protocol translation/mapping gateway interconnects networks with different network protocol technologies by performing required protocol conversions.

Gateway

A gateway is required to connect a network with other types of networks that are running different

Network

Network

Gateway

Protocol

Protocol

8. Server A server is a type of computer or device on a network that manages network resources. Servers are often dedicated, meaning that they perform no other tasks besides their server tasks. On multiprocessor operating systems, however, a single computer can execute several programs. Once a server in this case could defer to the program that is managing resources rather than the entire computer.

Client

Client

Client

Server

Client

Client

Client

9. Transmission Media The medium through which the signals travel from one device to another. These are classified as guided and unguided. Guided media are those that provide a conduit from one device to another. Eg Twisted pair, coaxial cable etc. Unguided media transport signals without using physical cables. Eg Air.

Coaxial cable

Shielded twisted-pair cable

Fiber-optic cable

Results: When network components are studied in detail,