Academic Term: Jan-April 2018

Class : S.E

Subject Name: Computer Network

Practical No:	1
Title:	To study different hardware components of communication network
Maps to CO	CO1: study the basics taxonomy and terminology of the computer networking and enumerate the layers of OSI model and TCP/IP model.
Date of Performance:	
Date of Submission:	
Roll No:	
Name of the Student:	

Evaluation:

Sr. No	Rubric	Grade
1	On time submission Or completion (2)	
2	Preparedness(2)	
3	Skill (4)	
4	Documentation (2)	

Signature of the Teacher:

Date:

Aim: Understanding the working of various hardware components of communication network.

Theory

Network Interface Cards (NIC):-

An NIC is a hardware device that is used to connect the computer to the network. It can support several networks, the most popular one being Ethernet for 802.3 standards, whichis called Ethernet cardor Ethernet NIC.

Every NIC has a unique MAC address on a LAN that is allotted to it by the manufacturer. NIC works on both the physical layer and data link layer of the OSI model. As a physical layer device, it transforms streams of bits to electrical signals or vice versa.

Network cards are available in two forms: namely internal and external network.

Repeater:-

This device is functioning at Physical Layer. A Repeater is an electronic device that receives a signal and retransmits it at higher level and higher power so that the signal can cover longer distances. It has a capacity to regenerate the original bit pattern that it receives at the input interface and thus avoids signals to attenuate. The repeater joins two networks at the physical layer of the OSI model and cannot connect two LANs that operate at different protocols.

Repeater has two ports, so cannot be used to connect more than two devices.

Hubs:-

It is a multi port repeater that can connect several segments of LAN together at the physical layer of the OSI model. Similar to the repeater, hub simply regenerates the original bit pattern of the signal and forwards every frame that it receives to all the output ports. Hub does not have a packet filtering capacity; hence it acts as a simple broadcast device those results to traffic congestion and packet collision in the network.

Bridges:-

It is a network device that connects two or more LANs at the data link layer of the OSI model. A typical bridge operates at both the physical and data link layers and thus regenerates the input signals as well as filters the frames it receives. This decision of filtering is taken on the basis of the table those has MAC addresses of every node and the port number.

Router:-

A router can connect various LANs, various WANs, and also connect LANs and WANs together. A router is an intelligent device because it understands the network topology and routes the packets forward based on several aspects to determine the best path

A router selectively exchanges data packets between computer networks. Each packet contains address information that a router can use to determine if the source and destination are on the same network, or if the data packet must be transferred from one network to another.

In large collection of interconnected networks, multiple routers are used. A router exchange information about target system addresses, so that each router can build up a table showing preferred paths between any two systems on the interconnected networks.

Switch:-

It is a device that connects network segments together. Depending on the operation switch cam be classified as a layer 2 switch or a layer 3 switch. Layer 2 switch is a kind of bridge that operates at the physical and data link layers of the OSI model.

A layer 3 switch typically corresponds to a router and employed when packet, cell or frame switching is to be used.

Gateway:-

In a communications network, a network node equipped for interfacing with another network that uses different protocols.

- A gateway may contain such as protocol translators, rate converts, fault isolators or signal translators as necessary to provide system interoperability.
- A protocol translation/mapping gateway interconnects networks with different network protocol technologies by performing the required protocol conversions.

Draw pictures of above devices:

Conclusion:

Experiment performedis SATISFACTORY NOT SATISFACTORY (Tick appropriate outcome)

Post Lab Assignment:

1. For n devices in a network, what is the number of cable links required for a mesh, ring , bus and star topology?
2. Differentiate between Mesh, Star, Ring and Bus.
3. Differentiate between Hub and Switch.
4. Differentiate between Bridge and Router.

Write Answers here:

Signature of Faculty

Date of Completion: