Genba Sopanrao Moze College of Engineering, Balewadi, Pune-45

Department of Electronics And Telecommunication

Academic year 2022_23

Roll No: **Subject: Control System Lab**

Date : **Staff Sign:**

Experiment no:-1

AIM: Implementation of LAN using suitable multiuser windows operating system and demonstrating client-server and peer to peer mode of configuration.

REQUIREMENT:

WINDOWS XP/2007/10 with LAN Connectivity.

Software Packet tracer 6.1

THEORY:

A local area network (LAN) is a group of computers and associated devices that share a common communications line or wireless link to a server. Typically, a LAN encompasses computers and peripherals connected to a server within a small geographic area such as an office building or home.

Most local area networks use Wi-Fi or Ethernet for connectivity between devices. The smallest LAN consists of exactly two computers, while a large one can accommodate many thousands of computers. Most local networks enable devices to communicate over Internet Protocol (IP) through support built-in to each device's network operating system.

Software Packet tracer :

Packet Tracer is a cross-platform visual simulation tool designed by Cisco Systems that allows users to create network topologies and imitate modern computer networks. The software allows users to simulate the configuration of Cisco routers and switches using a simulated command line interface. Packet Tracer makes use of a drag and drop user interface, allowing users to add and remove simulated network devices as they see fit. The software is mainly focused towards Certified Cisco Network Associate Academy students as an educational tool for helping them learn fundamental CCNA concepts.

Role in Education

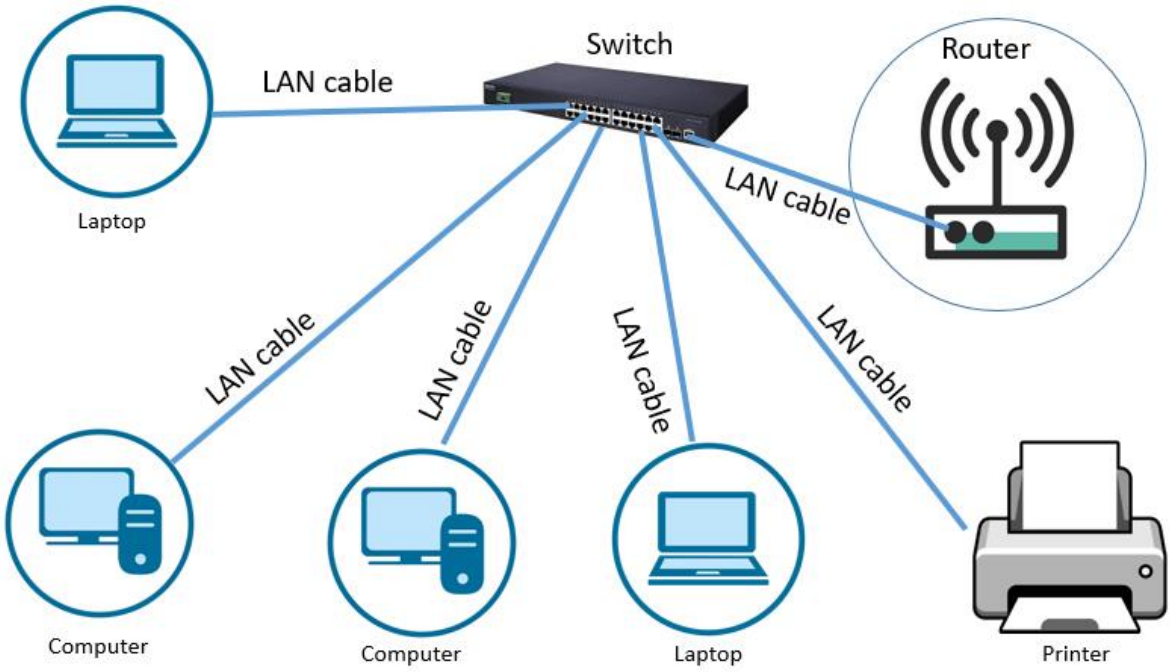
Packet Tracer allows students to design complex and large networks, which is often not feasible with physical hardware, due to costs. Packet Tracer is commonly used by CCNA Academy students, since it is available to them for free. However, due to functional limitations, it is intended by CISCO to be used only as a learning aid, not a replacement for Cisco routers and switches.] The application itself only has a small number of features found within the actual hardware running a current Cisco IOS version. Thus, Packet Tracer is unsuitable for modeling production networks. It has a limited command set, meaning it is not possible to practice all of the IOS commands that might be required.

Packet Tracer can be useful for understanding abstract networking concepts, such as the Enhanced Interior Gateway Routing Protocol by animating these elements in a visual form Packet Tracer is also useful in education by providing additional components, including an authoring system, network protocol simulation and improving knowledge an assessment system

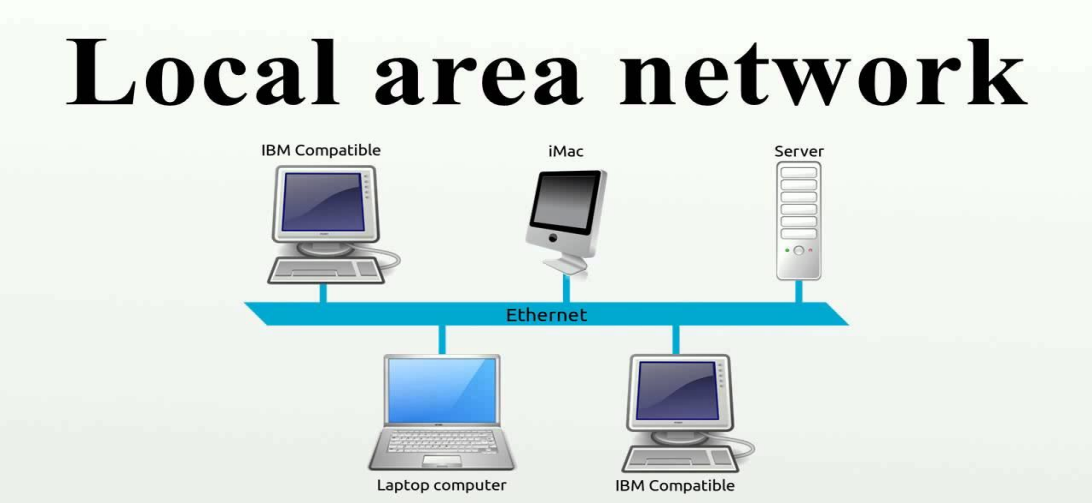
NETWORK TYPES

Local Area Network:

A local area network (LAN) is usually privately owned and connects some hosts in a single office, building, or campus. Depending on the needs of an organization, a LAN can be as simple as two PCs and a printer in someone's home office, or it can extend throughout a company and include audio and video devices. Each host in a LAN has an identifier, an address, that uniquely defines the host in the LAN. A packet sent by a host to another host carries both the source host's and the destination host's addresses. Today, most LANs use a smart connecting switch, which is able to recognize the destination address of the packet and guide the packet to its destination without sending it to all other hosts.

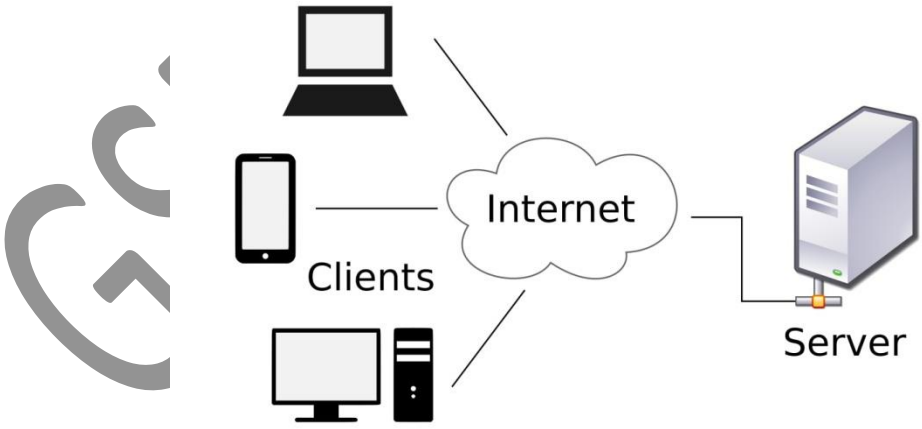


Local Area Network



Client/Server Network

In client-server network relationships, certain computers act as servers and others act as clients. A server is simply a computer that provides the network resources and provides service to other computers when they request it. A client is the computer running a program that requests the service from a server. Local area network (LAN) is based on client server network relationship.

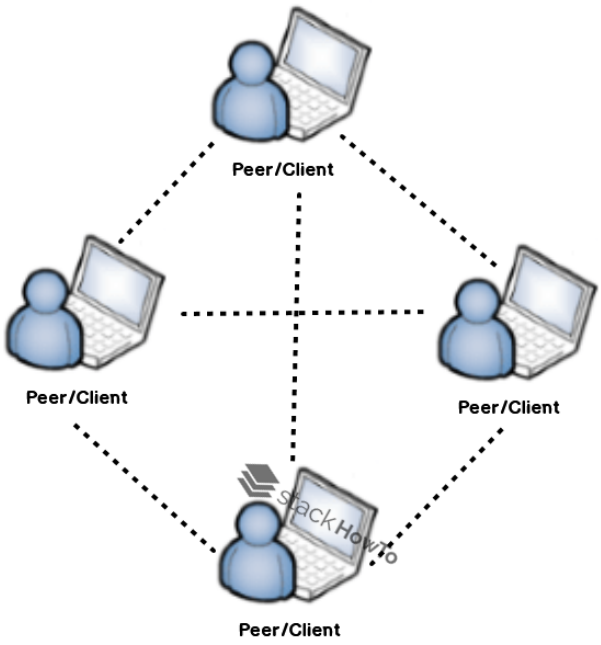


Client Server Network

A client-server network is one on which all available network resources such as files, directories, applications and shared devices, are centrally managed and hosted and then are accessed by the client. Client server networks are defined by the presence of servers on a network that provide security and administration of the network.

peer-to-peer (P2P)

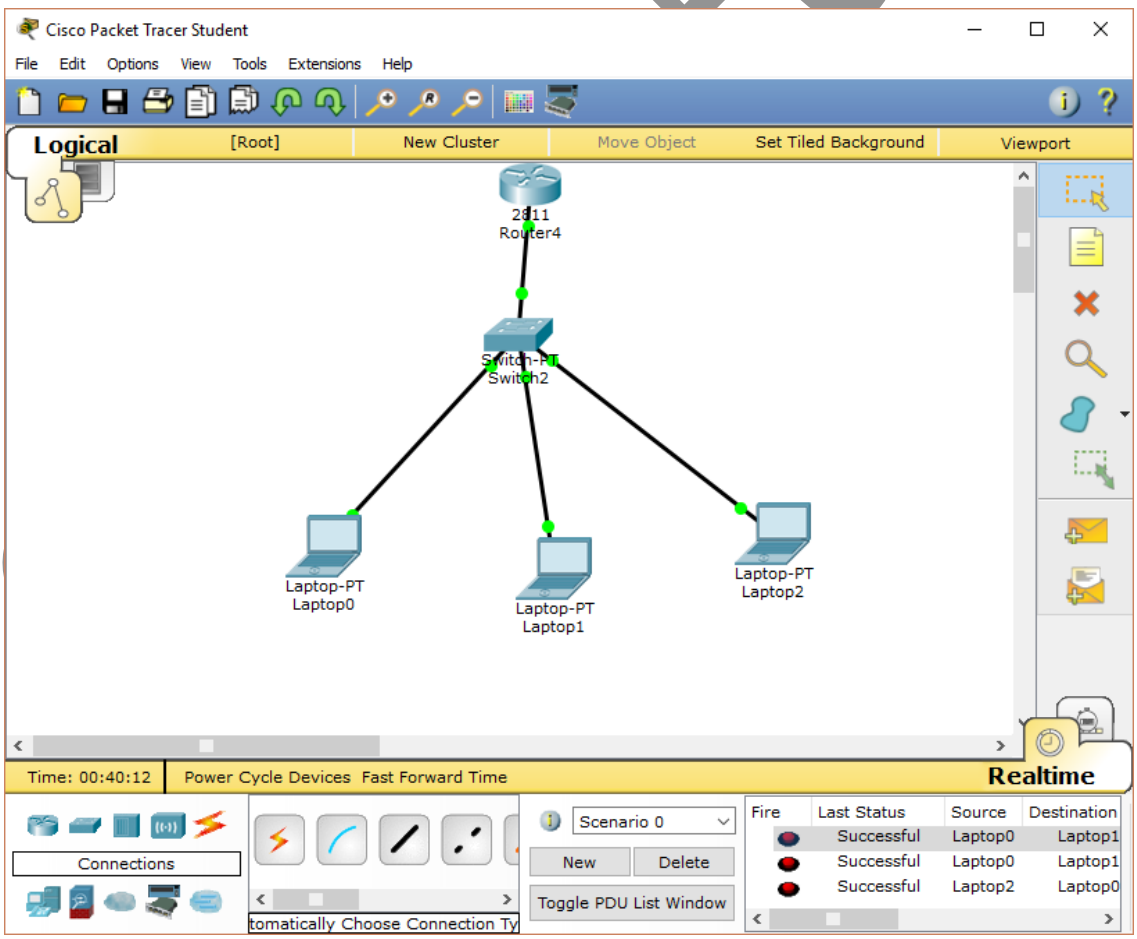
peer-to-peer (P2P) networking, a group of computers are linked together with equal permissions and responsibilities for processing data. Here each computer acts as a node for file sharing within the formed network. Here each node acts as a server and thus there is no central server to the network. This allows the sharing of a huge amount of data. The tasks are equally divided amongst the nodes. Each node connected in the network shares an equal workload. For the network to stop working, all the nodes need to individually stop working. This is because each node works independently.



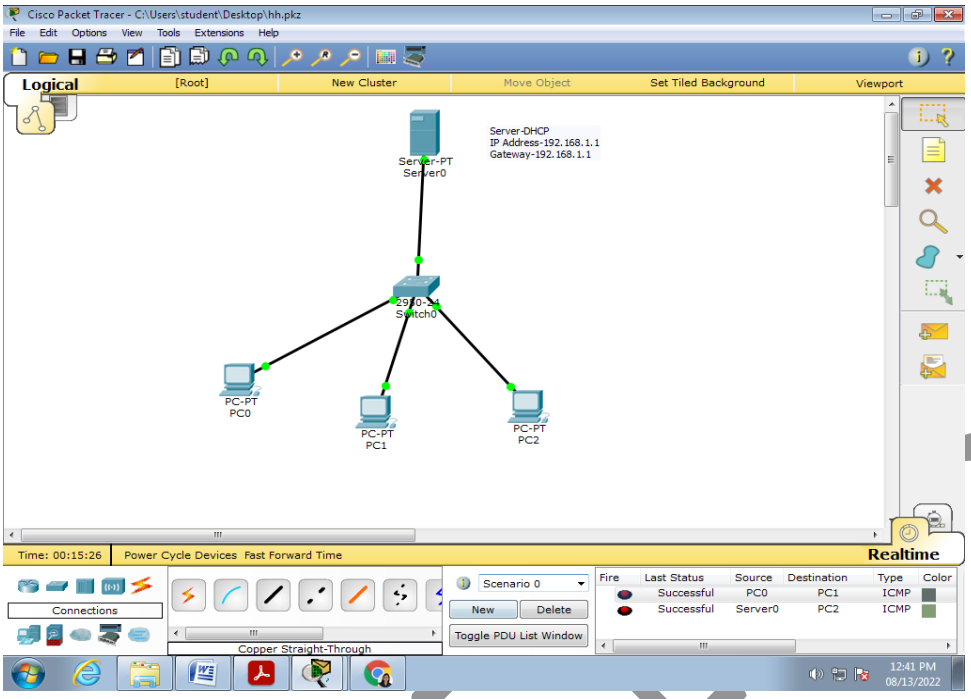
PROCEDURE:

a. Design a network using routers, switches and computers.
b. Switch ON the router by clicking on router, select fast Ethernet f0/0and click on the ON button.
c. Click on the PC0, click on the desktop icon, select IP configuration and assign the IP address for e.g. 120.0.0.2.
d. Repeat step 3 for the configuration of all PC's.
e. Transfer the packet from PC0 to PC1 or vice-versa.
f. Also check the result for other pc's.

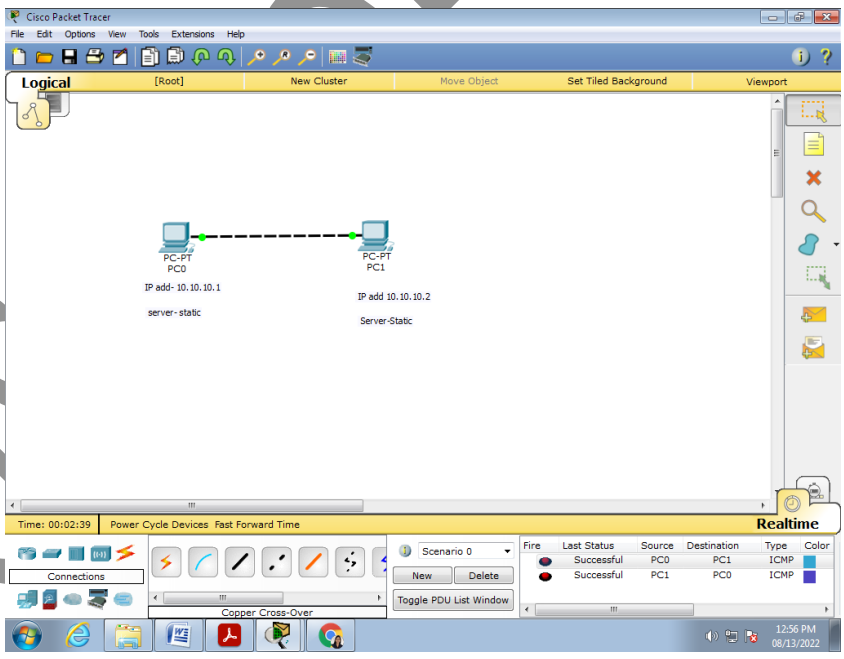
LAN Network



Client- Server Network



Peer to Peer Network



Result Printouts:

CONCLUSION: