



Title : Share data, within Five desktop computers placed in the same LAN by creating physical Network using different topology.

Objective : To create a physical network using different topologies for the same purposes of sharing data among 5 desktop computer placed in the same (LAN).

Mode Used : Physically connected network in cisco packet Trace

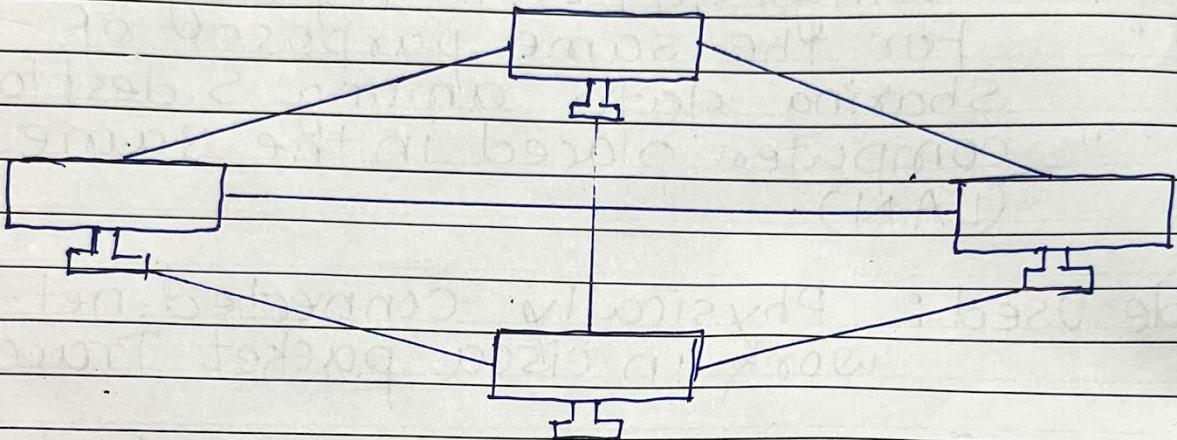
Theory : 1) A LAN is local Area network is collection of devices connected together in one physical location, such as building, office or home. A LAN can be small or large ranging from home network with thousand of users and devices in office or school.

2) Topology is A network ^{have} physically and logical management of nodes and connection in networks. Node usually includes devices such as switch, router and software with switch and router feature. Network topologies are often represented as a graph.

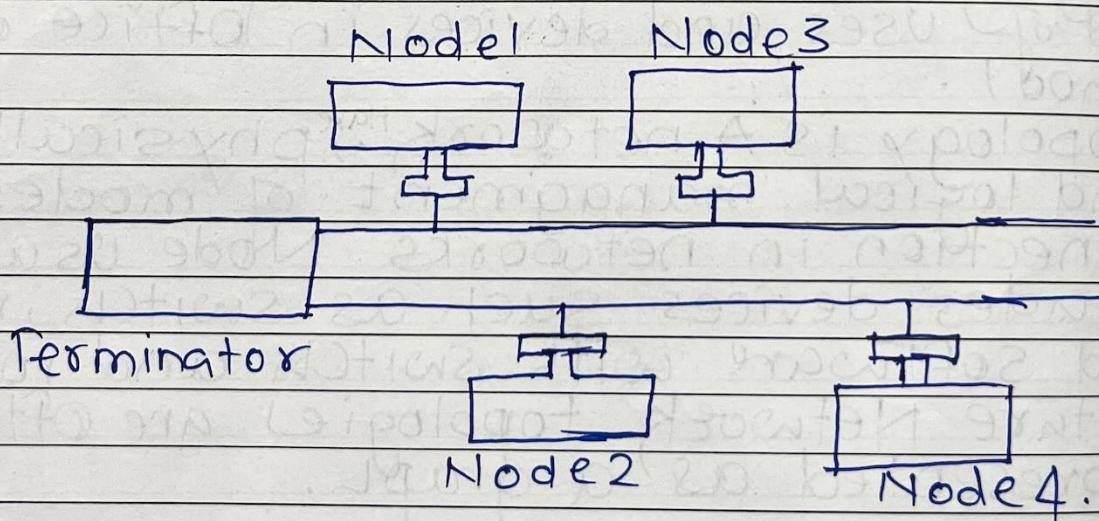


- Types of Topology :

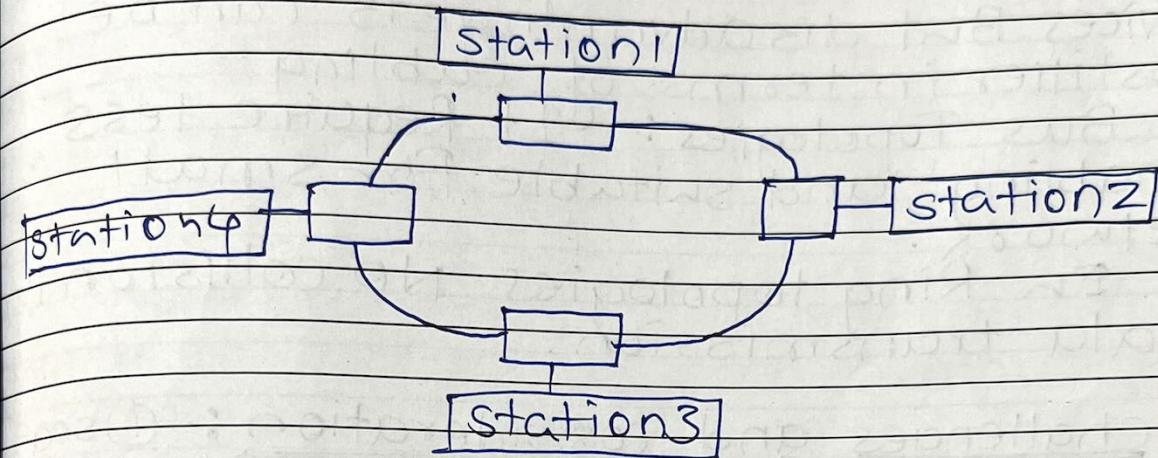
① Mesh Topology : In this topology, every device is connected to every other device through particular channel.



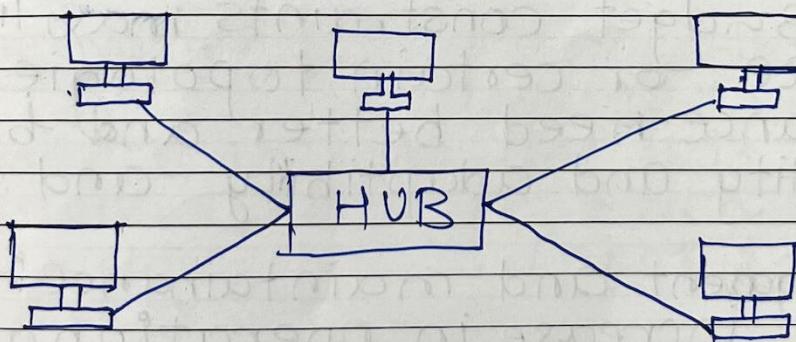
② Bus Topology :- In this topology, every computer and network device is connected to a single cable.



3) Ring Topology: It forms a ring connected devices with exactly two neighbouring devices.



4) Star Topology :- In this, each network component is physically connected to a central node such as router, hub & switch.





- comparision Between topologies :-i) mesh Topologies Have High redundancy and fault tolerance. It have high Reliability . But its to much expensive and have a complex design.
- ii) star Topology : It has troubleshooting Easy to add or remove devices But disadvantage is can be costlier in terms of cabling .
- iii) Bus Topologies :- It Require less cabling and suitable for small network .
- iv) In Ring topologies NO collision in data transmission .

- ① challenges and consideration :-① scalability : some challenges may face difficulties in scaling as the number of devices or user increases .
- ② Reliability : introduce latency or bottleneck that can effect network performance .
- ③ cost : Budget constraints may limit the choice for certain topologies .
- ④ performance need better and better
- ⑤ flexibility and adaptibility and security also .
- ⑥ Management and maintainance :- It leads to increase in operational costs .



① Setup :-

Procedure :-

i) Acquire five desktop computer & necessary network component such as Ethernet cables and a switch. ii) Plan the network topology based on the requirement and characteristic of network, consider the no. of computers, type of data to be shared and the future expansion choose from following star, Bus, mesh, and ring. iii) set the network component according to the chosen topologies, connect the computer and switch using Ethernet cable. iv) Configure the IP address for each computer on the network, assign a unique IP address to each computer and ensure that they all within the same subset. v) Test the network connectivity by pinging each computer from every other computer. vi) Repeat the step for each of topologies star, mesh, bus and ring respectively.

Observations : i) In Ring, data flow in circular fashion from one device to next until it reached to intended recipient. Each device exactly connected to other two other two devices.

ii) In Star, data flow through a central hub. And all devices in network directly connected to hub.



- iii) In ~~stars~~ mesh topology data flow along central communication channel or bus.
- iv) In mesh, data can take multiple path to reach its destination.

① Conclusion :- creating a physical network using different topologies and sharing data among multiple computer can be complex challenging task but with the Right plan & execution it can provided significant benifits to us.

② Questions :- ① → there are some potential problems that could arise along with their strategies are:
① single point of failure means the entire network is at risk if the central bus or back bone fails.
② strategy is to implement Reduntancy by using a back up bus.
③ As more devices added, the performance would be degrade. and strategy is to upgrading to more scalable topologies.
④ Data collision can occure in multiple device and for overcome On it Implement collision detection and Resolution mechanism.
⑤ Bus topology offered limited security as all devices can see transmitted data for this apply encryption mechanism.



iii) Ring Topology handle Network failures as, If a device or connection fail, the network can often continue to operate as the data travel in both direction.

Dual Ring and automatic reconfiguration.

Limitations in terms of scalability are, Have practical limits on the number of the device can be connected.
Second one is propagation delay.
Third one is complex maintenance and expansion.



Assignment NO-4
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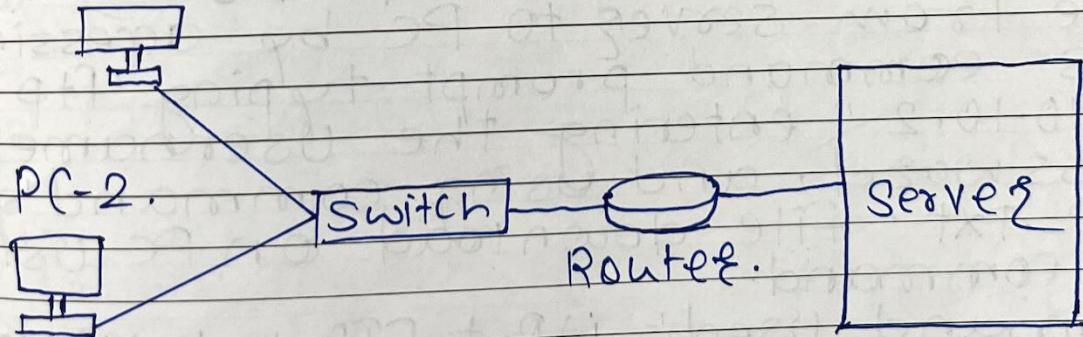
Title: Configure a TFTP/FTP server in Cisco packet tracer to share files between system.

Objective: To implement and demonstrate the configuration of TFTP/FTP server in Cisco packet tracer for effective file sharing.

Mode Used: Cisco packet tracer.

Theory :- FTP is a standard network protocol used for transferring files between a client and server on computer network. It operate on client initials a connections to the server model, where the client initiates a connections to the server to upload or download file. The network is divide into two distinct channels for communication. A command for channel 1 for sending commands from Client to Server.

PC-1





Procedure :- A) set up :- i) construct the Network topology according to the provided diagram.

ii) Assign static IP address to both PC and the server.

a) PC1 : 192.168.10.2

b) PC2 : 192.168.10.3

c) left side of Router : 192.168.10.1

d) Right side of Router : 10.10.10.1.

iii) enable FTP service on the both servers by navigating to Server → Service → FTP. Turn the FTP service 'ON' and set a User with specific Username & Password. iv) utilize the FTP client on PC to initiate file transfer to configured FTP server. v) In the PC's command prompt, FTP into the server by entering server IP address and providing the FTP login credentials.

vi) create file on PC, for instance, FTP.txt and upload it to server using FTP command Put FTP.Txt. vii) Return a file from server to PC by accessing PC's command prompt & typing 'ftp

"10.10.10.2" entering the Username & Password, and using command 'get FTP.Txt' file download on PC using the dir command.

command used:- i) Put FTP.Txt ii) dir

iii) exit, iv) get FTP.Txt

v) ftp <server IP address>

Observation :- FTP has limitations including weak security with no encryption & basic authentication. Vulnerabilities, fire wall & NAT challenges, lack of data integrity assurance and limited functionality. These constraints make it less suitable for modern secure file transfer compare to protocol with more advanced features.

Conclusion :- In this way FTP is useful for transferring a file between client and server effectively.

Questions :- A) To configure FTP on CISCO packet Tracer essential components include routers & PCs & FTP enabled service configuration IP address on devices. enable FTP on servers

B) In a network with star, bus and FTP Server Topologies, connect PCs in star & bus configuration and place and FTP server use a Router for failure communication between LANs. Configure FTP on server, set up routing and employ security measures seamless.