Riphah International University Faisalabad Campus.

LAB MANUAL
Computer Network

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DEPARTMENT OF COMPUTER SCIENCE

LIST OF PRACTICALS	
Computer Networks	**Semester: VI**
S.NO	**PRACTICALS**
1	LANs configuration w.r.t Hub Technology
2	Inter LANs configuration w.r.t Switch and Router Technology
3	Inter LANs configuration w.r.t Hub and Router Technology
4	Bus Topology using Hub
5	Bus Topology using Switch
6	Star Topology using Hub
7	Star Topologies using Switch
8	Mesh Topology using Switch
9	Ring Topology using Switch
10	Hybrid Topology
11	RIP (Routing Information Protocol) Dynamic Routing

Reference Material:

- Computer Networking: A Top-Down Approach Featuring the Internet, 6th edition by
- James F. Kurose and Keith W. Ross
- Computer Networks, 5th Edition by Andrew S. Tanenbaum
- Data and Computer Communications, 10th Edition by William Stallings
- Data Communication and Computer Networks, 5th Edition by Behrouz A. Forouza

Practical No. 1

Objectives:

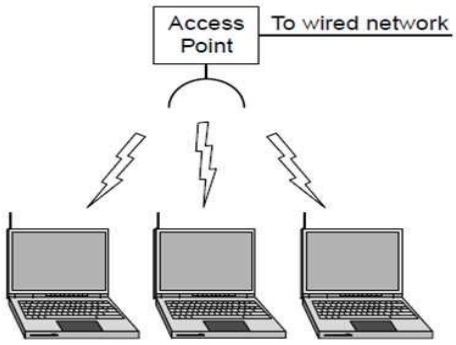
- To determine the LANs configuration
- To understand working and usage of Hub
- To create a simple LANs Connection

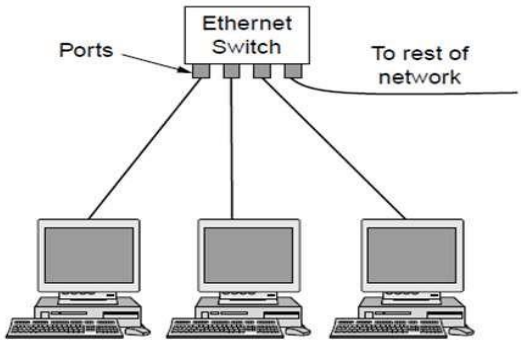
Components:

- A Hub, 5 PCs, Straight Through Cables

Theory:

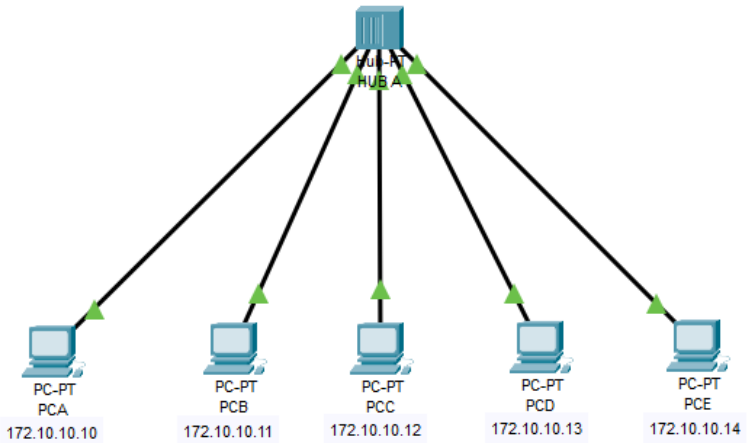
- Most common Type of Network
- Usually connect the computers and other devices within one office or building
- e.g. in labs Computer connected through LAN
- Wireless and wired LANs. (a) 802.11 (b) Switched Ethernet.





Procedure:

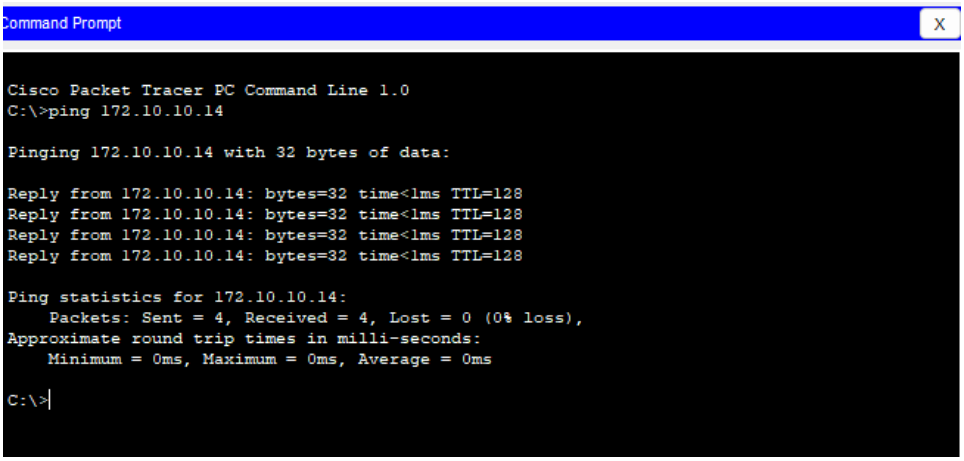
- Take 5 computers and 1 Hub.
- Connect these 5 computers with Hub using straight through cable.



- Configure these 5 computers one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of LANs connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 192.168.1.1**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device).
- I observed that when packet is sent from one PC to another PC. Hub send that packet to all other connected PCs.

Conclusion:

LANs network connects computers with the same class addresses like a computer that have ID of class A then it will only be connect with other computers that have same class ID (which is class A).

Practical No. 2

Objectives:

- To determine the inter LANs configuration
- To understand working and usage of Switches and Router
- To create an inter LANs Connection or WANs connection

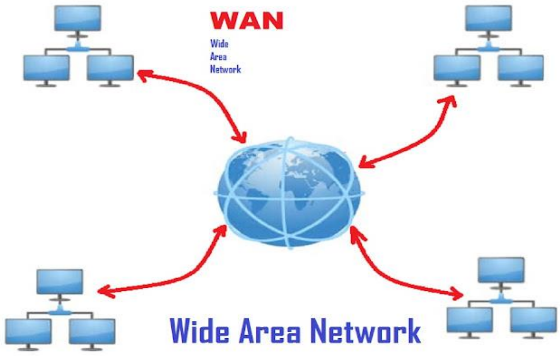
Components:

- 2 Switches, A Router, 5 PCs, 5 Laptops, Straight Through Cables

Theory:

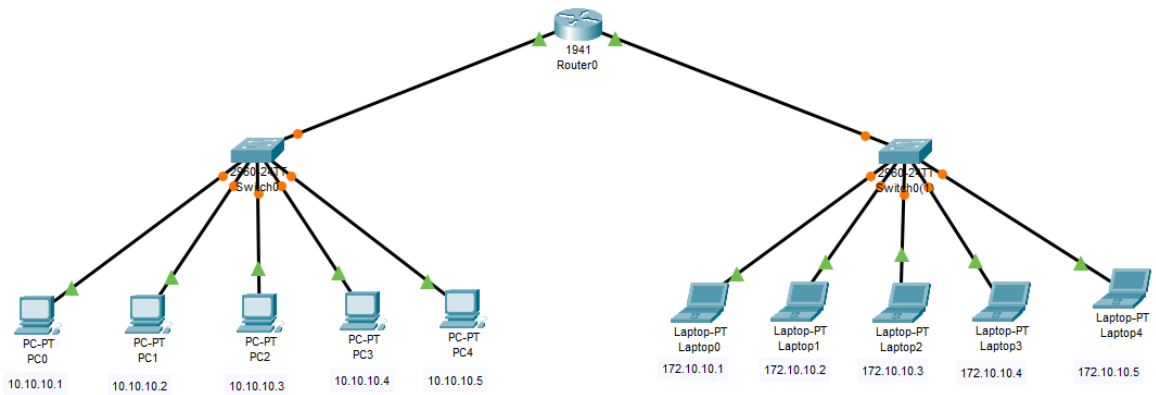
WAN (Wide Area Network)

- WAN usually consists of several LANs connected together
- Connects computers and other devices in different cities and countries
- e.g. Bank different branches connect through WAN



Procedure:

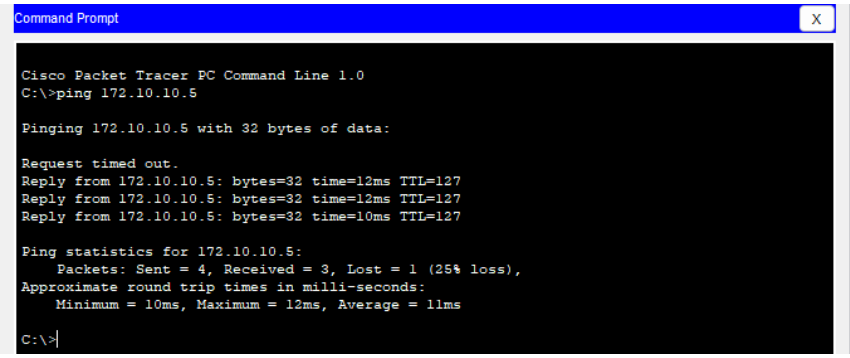
- Take 5 PCs and first Switch.
- Connect these 5 PCs with first Switch using straight through cable.
- Again take 5 laptops and second Switch.
- Connect these 5 Laptops with second Switch using straight through cable.
- Now Take one Router and connect it with these two Switches using straight through cable.



- Configure these PCs and Laptops one by one using a different class network IDs (e.g. in given scenario PCs connected with same Class A network IDs and Laptop connected with same class B network IDs).
    - Left click on a PC or Laptop.
    - Select Desktop Tab.
    - Click on IP Configuration.
    - In IPv4 address put your selected class ID.
    - Click on subnet mask box or press Tab button subnet mask added automatically.
    - In Default Gateway put Default ID of that class in which that LANs working.
    - Then close that dialog box.
- Configure the Router by passing Default Gateway ID of all LANs connected with it.
- Check the working or created network is correct by using **"ping"** command.
    - Click on a PC or Laptop.
    - Select Desktop Tab
    - Click on Command Prompt
    - Use following command to check the configuration or connection of LANs connectivity.

      ping "ID of that computer which you want to check the connection to"

      e.g. **ping 192.168.1.1**
    - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device).
- I observed that using switch packet is sent from one PC to another PC. Switch send that packet only to the destination end not to all other connected PCs.
- I observed when Router connects two or more LANs it uses Default Gateway ID for each LANs.

Conclusion:

WANs network connects computers with the different class addresses like a computer that have ID of class A then it will be connect with other computers that have different class ID (which can be class B or C).

Practical No. 3

Objectives:

- To determine the inter LANs configuration
- To understand working and usage of Hub and Router
- To create an inter LANs Connection or WANs connection

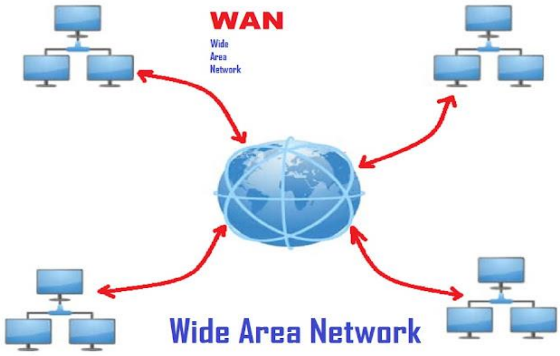
Components:

- 2 Hubs, A Router, 5 PCs, 5 Laptops, Straight Through Cables

Theory:

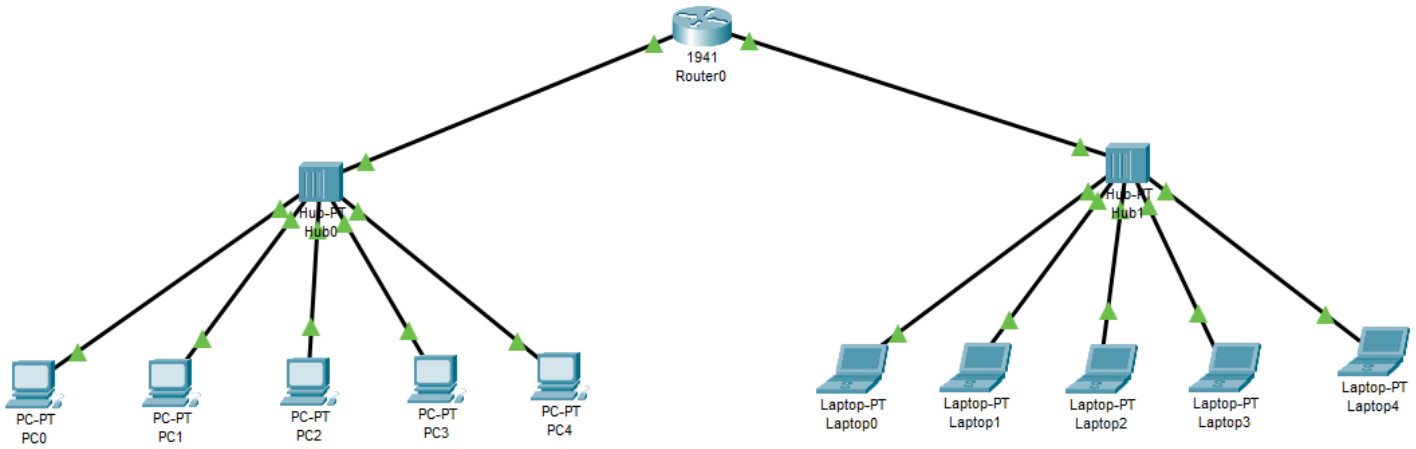
WAN (Wide Area Network)

- WAN usually consists of several LANs connected together
- Connects computers and other devices in different cities and countries
- e.g. Bank different branches connect through WAN



Procedure:

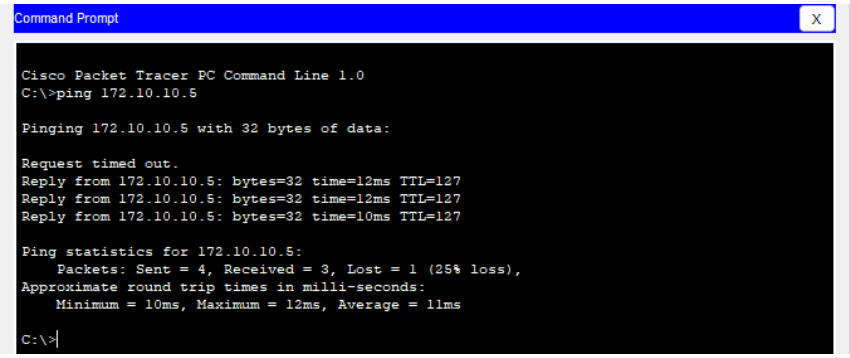
- Take 5 PCs and first Hub.
- Connect these 5 PCs with first Hub using straight through cable.
- Again take 5 laptops and second Hub.
- Connect these 5 Laptops with second Hub using straight through cable.
- Now Take one Router and connect it with these two Hubs using straight through cable.



- Configure these PCs and Laptops one by one using a different class network IDs (e.g. in given scenario PCs connected with same Class A network IDs and Laptop connected with same class B network IDs).
    - Left click on a PC or Laptop.
    - Select Desktop Tab.
    - Click on IP Configuration.
    - In IPv4 address put your selected class ID.
    - Click on subnet mask box or press Tab button subnet mask added automatically.
    - In Default Gateway put Default ID of that class in which that LANs working.
    - Then close that dialog box.
- Configure the Router by passing Default Gateway ID of all LANs connected with it.
- Check the working or created network is correct by using **"ping"** command.
    - Click on a PC or Laptop.
    - Select Desktop Tab
    - Click on Command Prompt
    - Use following command to check the configuration or connection of LANs connectivity.

      ping "ID of that computer which you want to check the connection to"

      e.g. **ping 192.168.1.1**
    - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device).
- I observed that when packet is sent from one PC to another PC. Hub send that packet to all other connected PCs.
- I observed when Router connects two or more LANs it uses Default Gateway ID for each LANs.

Conclusion:

WANs network connects computers with the different class addresses like a computer that have ID of class A then it will be connect with other computers that have different class ID (which can be class B or C).

Practical No. 4

Objectives:

- Bus Topology configuration
- Bus topology Connection
- Working of Bus Topology using Hub.
- Usage of Bus Topology

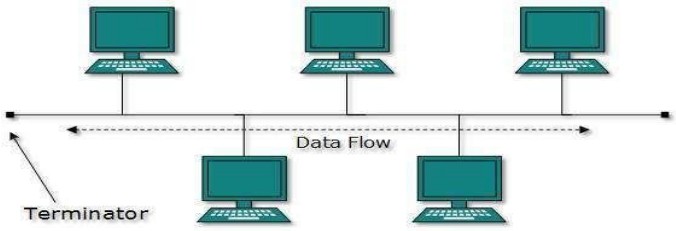
Components:

- 4 Hubs, 4 PCs, Straight Through Cables, Cross Over Cables.

Theory:

Bus Topology (Multipoint Topology)

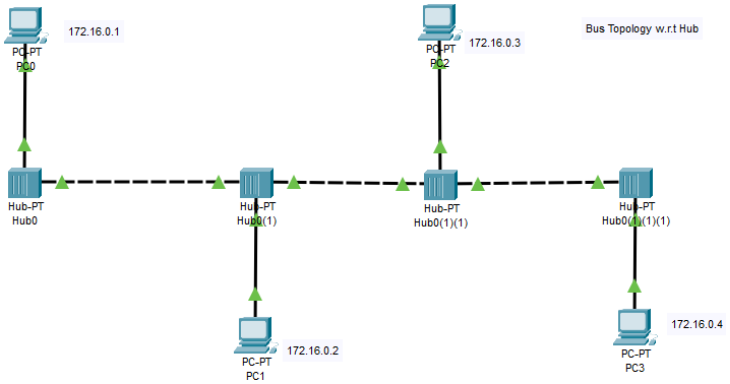
- In case of Bus topology, all devices share single communication line or cable.
- Bus topology may have problem while multiple hosts sending data at the same time.
- It is one of the simple forms of networking where a failure of a device does not affect the other devices.
- But failure of the shared communication line can make all other devices stop functioning



Both ends of the shared channel have a line terminator. The data is sent in only one direction and as soon as it reaches the extreme end, the terminator removes the data from the line. Terminator is a device connected to one end of a bus or cable that absorbs signals. Terminators prevent signal reflection, which can produce interference that causes signal loss.

Procedure:

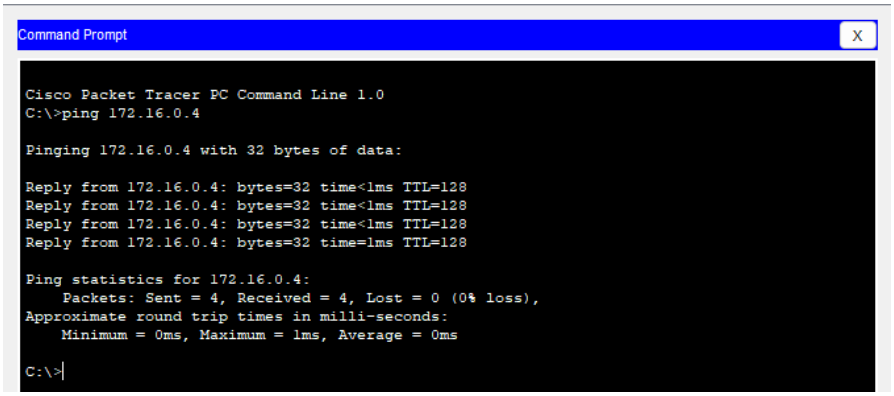
- Take 4 PCs and 4 Hubs.
- Connect these 4 Hubs with each other using Cross Over Cable and connect these 4 PCs with Hubs (one PC per Hub).



- Configure these PCs one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of Bus Topology connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 172.16.0.4**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device) and cross over cable is used between two same class devices (e.g. class 1 device is connected with class 1 device).
- I observed that when packet is sent from one PC to another PC. Hub send that packet to all other connected PCs.

Conclusion:

In case of Bus topology, all devices share single communication line or cable. When any node goes shut down the whole system works correctly if the main line Bus goes shut down the whole system goes down and cannot work.

Practical No. 5

Objectives:

- Bus Topology configuration
- Bus Topology Connection
- Working of Bus Topology using Switch.
- Usage of Bus Topology

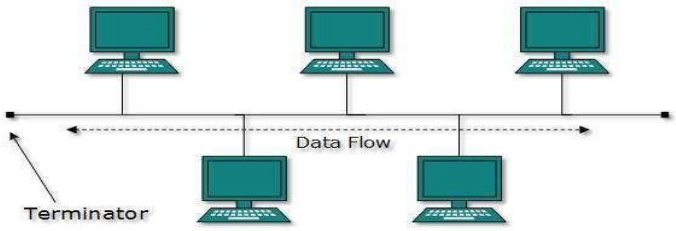
Components:

- 4 Switches, 4 PCs, Straight Through Cables, Cross Over Cables.

Theory:

Bus Topology (Multipoint Topology)

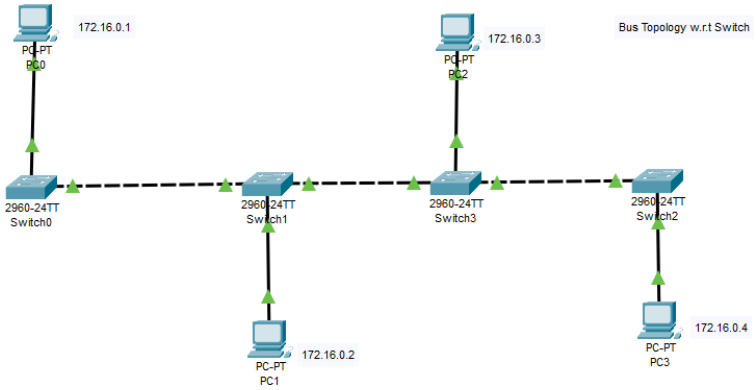
- In case of Bus topology, all devices share single communication line or cable.
- Bus topology may have problem while multiple hosts sending data at the same time.
- It is one of the simple forms of networking where a failure of a device does not affect the other devices.
- But failure of the shared communication line can make all other devices stop functioning



Both ends of the shared channel have a line terminator. The data is sent in only one direction and as soon as it reaches the extreme end, the terminator removes the data from the line. Terminator is a device connected to one end of a bus or cable that absorbs signals. Terminators prevent signal reflection, which can produce interference that causes signal loss.

Procedure:

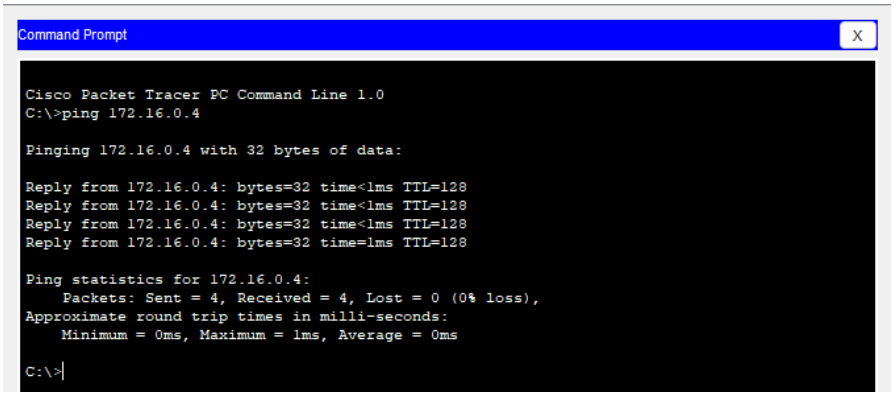
- Take 4 PCs and 4 Switches.
- Connect these 4 Switches with each other using Cross Over Cable and connect these 4 PCs with Switches (one PC per Switches).



- Configure these PCs one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of Bus Topology connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 172.16.0.4**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device) and cross over cable is used between two same class devices (e.g. class 1 device is connected with class 1 device).
- I observed that using switch packet is sent from one PC to another PC. Switch send that packet only to the destination end not to all other connected PCs.

Conclusion:

In case of Bus topology, all devices share single communication line or cable. When any node goes shut down the whole system works correctly if the main line Bus goes shut down the whole system goes down and cannot work.

Practical No. 6

Objectives:

- Star Topology configuration
- Star Topology Connection
- Working of Star Topology using Hub.
- Usage of Star Topology

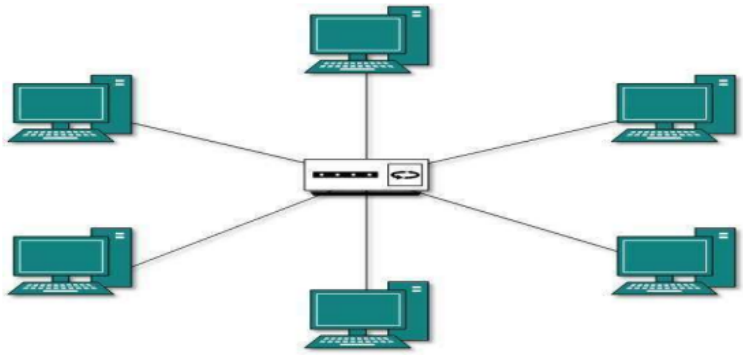
Components:

- 1 Hub, 5 PCs, Straight Through Cables

Theory:

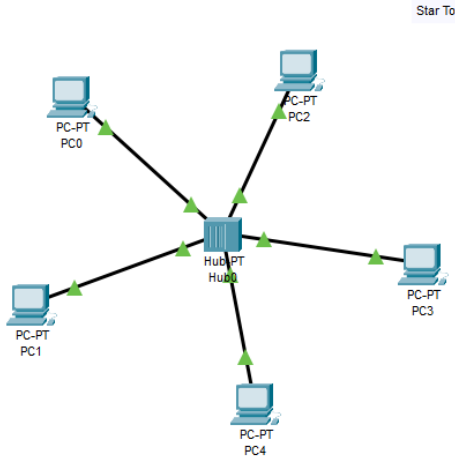
Star Topology (Point to Multipoint Topology)

- All hosts in Star topology are connected to a central device, known as hub device, using a point-to-point connection.
- That is, there exists a point to point connection between hosts and hub.
- The hub device can be any of the following:
  - Layer-1 device such as hub or repeater
  - Layer-2 device such as switch or bridge
  - Layer-3 device such as router or gateway



Procedure:

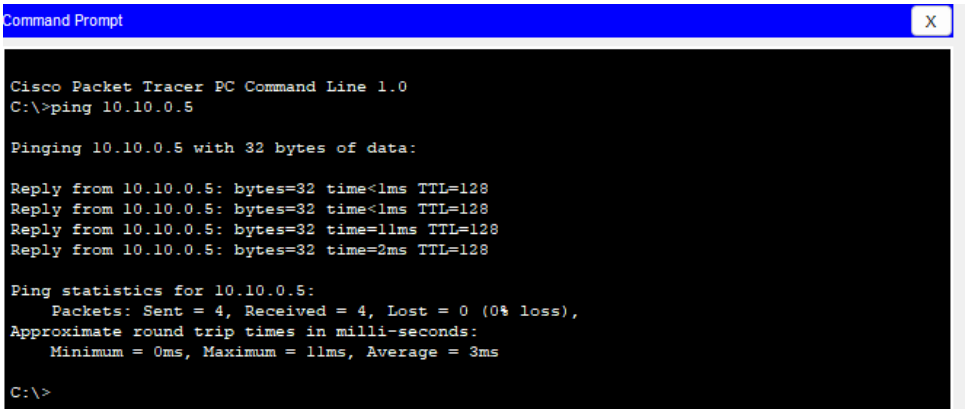
- Take 5 PCs and 1 Hub.
- Connect these 5 PCs with Single Hub using Straight Through Cable.



- Configure these PCs one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of Star Topology connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 10.10.0.5**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device).
- I observed that when packet is sent from one PC to another PC. Hub send that packet to all other connected PCs.

Conclusion:

In case of Star topology, all devices are connected to a central device, known as hub device, using a point-to-point connection. When any node disconnects, the whole system works correctly if the central device goes shut down the whole system goes down and cannot work.

Practical No. 7

Objectives:

- Star Topology configuration
- Star Topology Connection
- Working of Star Topology using Switch.
- Usage of Star Topology

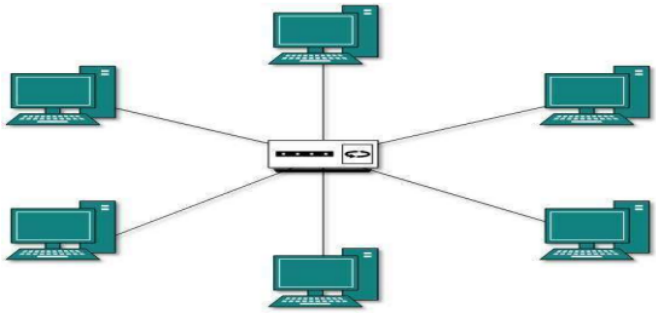
Components:

- 1 Switch, 5 PCs, Straight Through Cables

Theory:

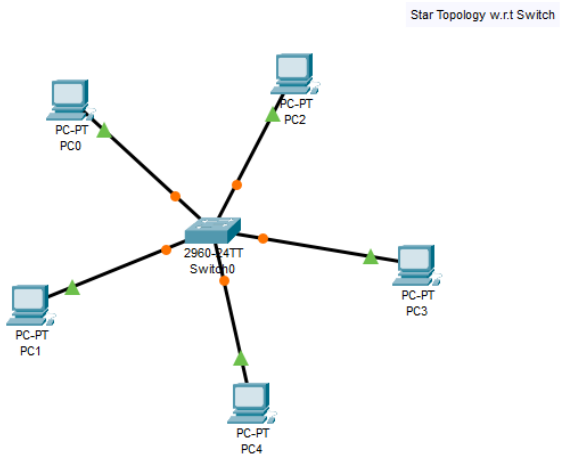
Star Topology (Point to Multipoint Topology)

- All hosts in Star topology are connected to a central device, known as hub device, using a point-to-point connection.
- That is, there exists a point to point connection between hosts and hub.
- The hub device can be any of the following:
  - Layer-1 device such as hub or repeater
  - Layer-2 device such as switch or bridge
  - Layer-3 device such as router or gateway



Procedure:

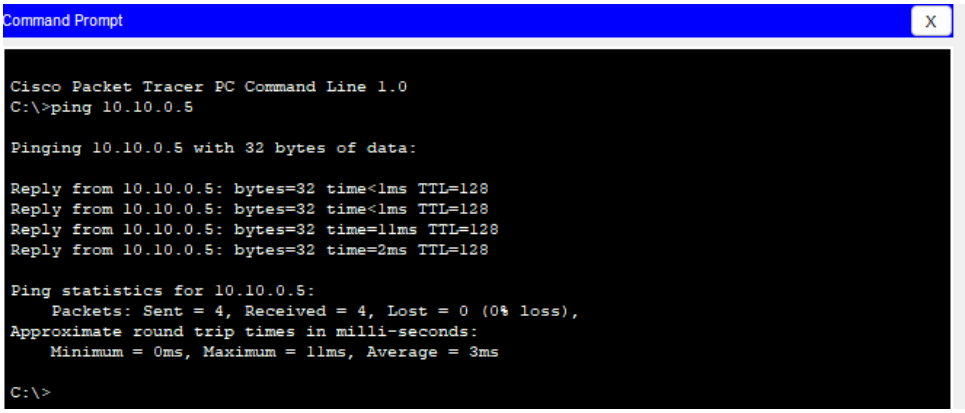
- Take 5 PCs and 1 Switch.
- Connect these 5 PCs with Single Switch using Straight Through Cable and point to point connection.



- Configure these PCs one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of Star Topology connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 10.10.0.5**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device).
- I observed that when packet is sent from one PC to another PC. Switch send that packet only to the destination end not to all other connected PCs.

Conclusion:

In case of Star topology, all devices are connected to a central device, known as Switch device, using a point-to-point connection. When any node disconnects, the whole system works correctly if the central device goes shut down the whole system goes down and cannot work.

Practical No. 8

Objectives:

- Mesh Topology configuration
- Mesh Topology Connection
- Working of Mesh Topology using Switch.
- Usage of Mesh Topology

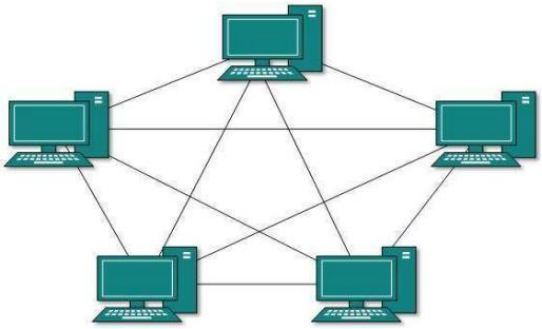
Components:

- 4 Switches, 4 PCs, Straight Through Cable, Cross Over Cable.

Theory:

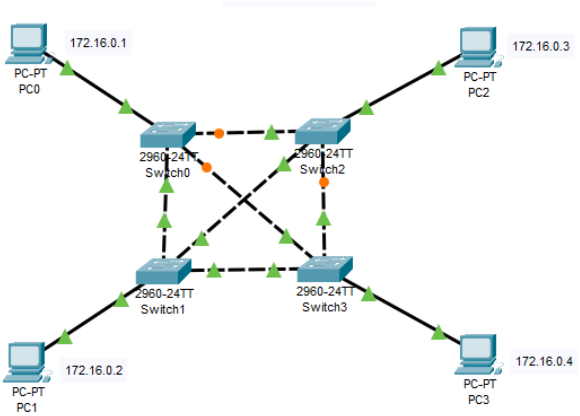
Mesh Topology (Point to Point Topology)

- In this type of topology, a host is connected to one or multiple hosts.
- This topology has hosts in point-to-point connection with every other host or may also have hosts which are in point-to-point connection to few hosts only.
- Hosts in Mesh topology also work as relay for other hosts which do not have direct point-to-point links. Mesh technology comes into two types: Full Mesh and Partial Mesh
  Physical part (topology) + Logical part (topology) = Network topology



Procedure:

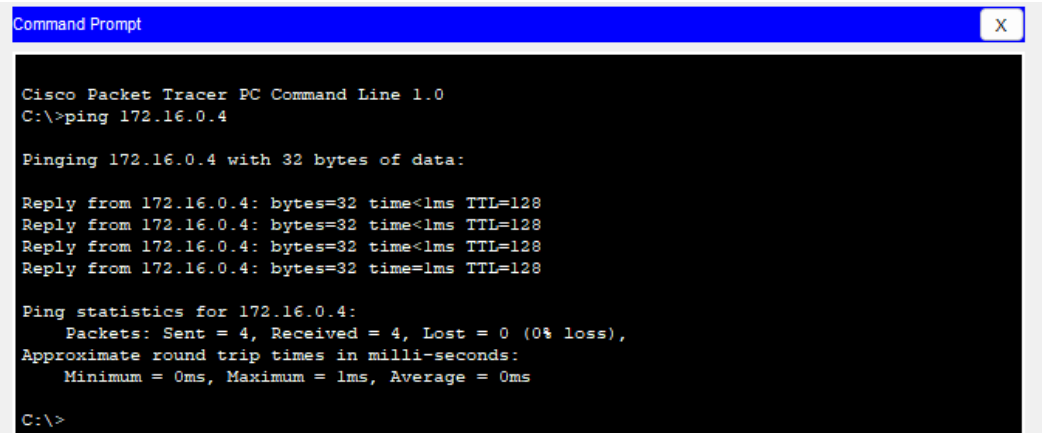
- Take 4 PCs and 4 Switches.
- Connect these 4 Switches with each other (Point to Many connection) using Cross Over Cable.
- Connect 4 PCs with 4 Switches (Point to Point connection) using Straight Through Cable.



- Configure these PCs one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of Mesh Topology connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 172.16.0.4**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device) and cross over cable is used between two same class devices (e.g. class 1 device is connected with class 1 device).
- I observed that when packet is sent from one PC to another PC. Switch send that packet only to the destination end not to all other connected PCs.

Conclusion:

In case of Mesh topology, all devices are connected to each other (Point to Many connection). Failure of one single device does not affect the network. If one node goes down, the network has the strength to use the other ones and complete the mesh.

Practical No. 9

Objectives:

- Ring Topology configuration
- Ring Topology Connection
- Working of Ring Topology using Switch.
- Usage of Ring Topology

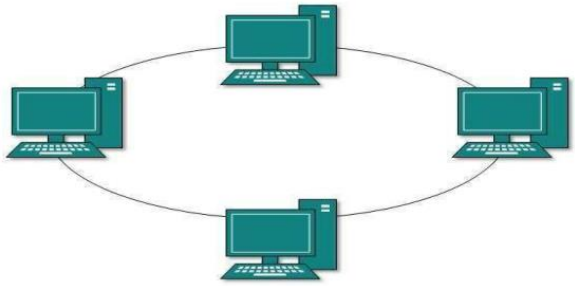
Components:

- 4 Switches, 4 PCs, Straight Through Cable, Cross Over Cable.

Theory:

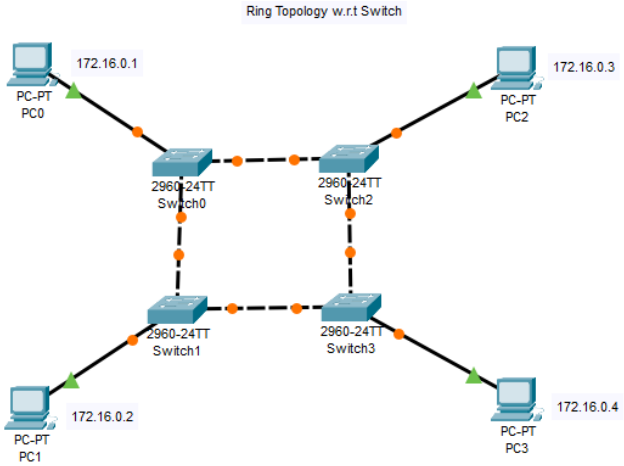
Ring Topology (Broadcast)

- In ring topology, each host machine connects to exactly two other machines, creating a circular network structure.
- When one host tries to communicate or send message to a host which is not adjacent to it, the data travels through all intermediate hosts.
- To connect one more host in the existing structure, the administrator may need only one more extra cable.



Procedure:

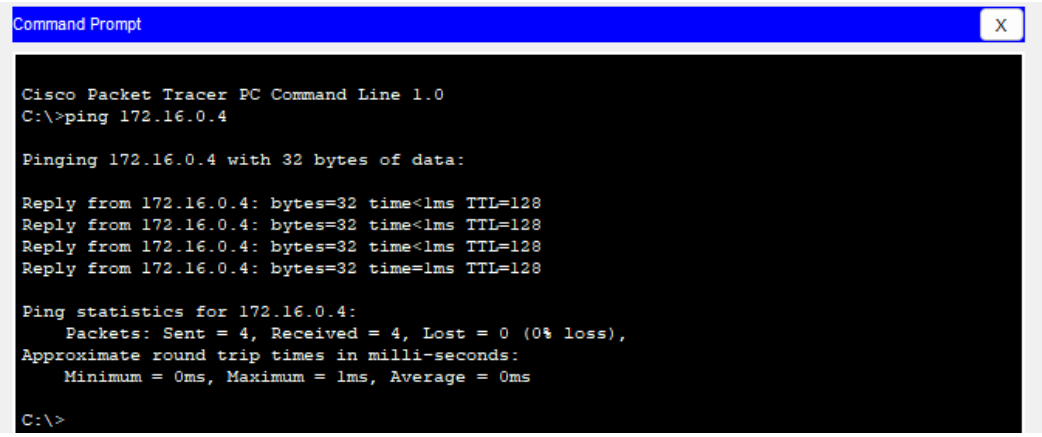
- Take 4 PCs and 4 Switches.
- Connect these 4 Switches with each other (Point to point connection) using Cross Over Cable.
- Connect 4 PCs with 4 Switches (Point to Point connection) using Straight Through Cable.



- Configure these PCs one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of Ring Topology connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 172.16.0.4**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device) and cross over cable is used between two same class devices (e.g. class 1 device is connected with class 1 device).
- I observed that when packet is sent from one PC to another PC. Switch send that packet only to the destination end not to all other connected PCs.

Conclusion:

In case of Ring topology, each host machine connects to exactly two other machines, creating a circular network structure. Failure of any host results in failure of the whole ring. Thus, every connection in the ring is a point of failure.

Practical No. 10

Objectives:

- Hybrid Topology configuration
- Hybrid Topology Connection
- Working of Hybrid Topology using Switch.
- Usage of Hybrid Topology

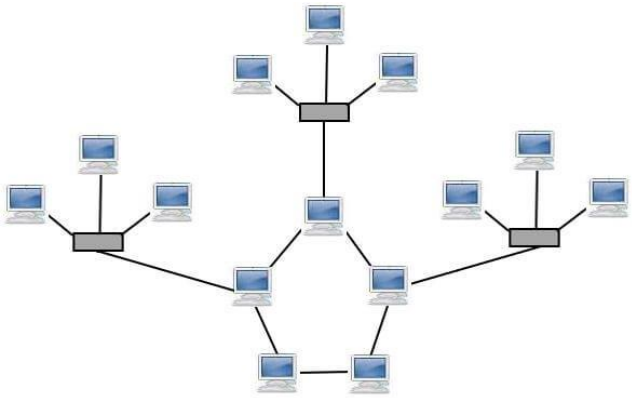
Components:

- 5 Switches, 4 PCs, 4 Laptops, Straight Through Cable, Cross Over Cable.

Theory:

Hybrid Topology (Broadcast)

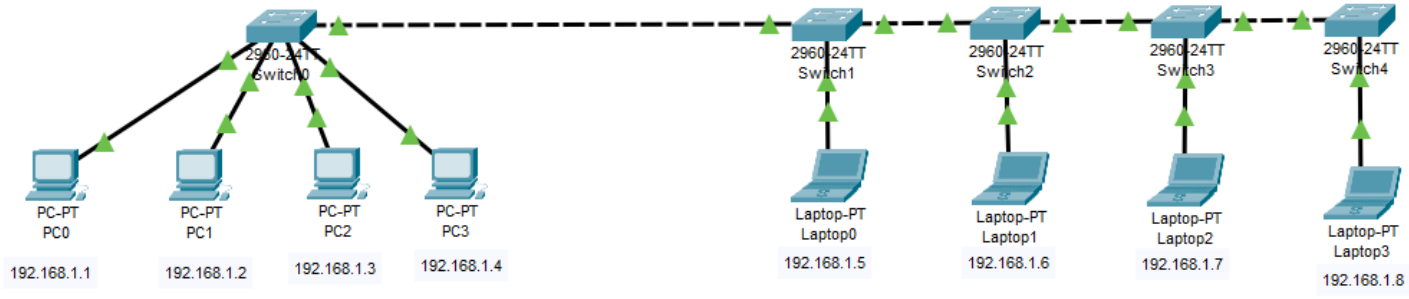
- A hybrid topology is a kind of network topology that is a combination of two or more network topologies, such as mesh topology, star topology, bus topology, and ring topology.
- Its usage and choice are dependent on its deployments and requirements like the performance of the desired network, and the number of computers, their location.
- The below figure is describing the structure of hybrid topology that contains more than one topology.



- Types of Hybrid Topology
  - Star-Ring Hybrid Topology
  - Star-Bus Hybrid Topology
  - Hierarchal Network Topology

Procedure:

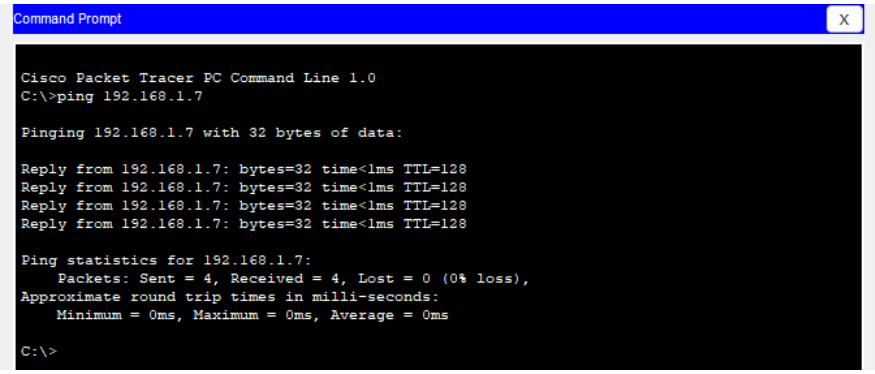
- Take 4 PCs, 5 Switches, 4 Laptops
- Connect these 5 Switches with each other (Point to point connection) using Cross Over Cable.
- Connect 4 PCs with One Switches (Point to MultiPoint connection) using Straight Through Cable and create Star Topology.
- Connect 4 Laptops with other 4 Switches (Point to Point connection) using Straight Through Cable and create Bus Topology.



- Configure these PCs and Laptops one by one by using a same class network IDs.
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of Hybrid Topology connectivity.

    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 192.168.1.7**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that straight through cable is used between two different devices (e.g. class 1 device is connected with class 2 device) and cross over cable is used between two same class devices (e.g. class 1 device is connected with class 1 device).
- I observed that when packet is sent from one PC to another PC. Switch send that packet only to the destination end not to all other connected PCs.

Conclusion:

- In case of Hybrid topology, two or more than two topologies are connected.
- It can be modified as per requirement.
- Error detecting and troubleshooting is easy.
- Handles large volume of traffic.
- If a node gets damaged between the network, it is possible in this network to singled out the damaged node from rest of the network.

Practical No. 11

Objectives:

- To Determine RIP (Routing Information Protocol) configuration
- To understand connection of RIP
- To observe the working of RIP
- The usage of RIP

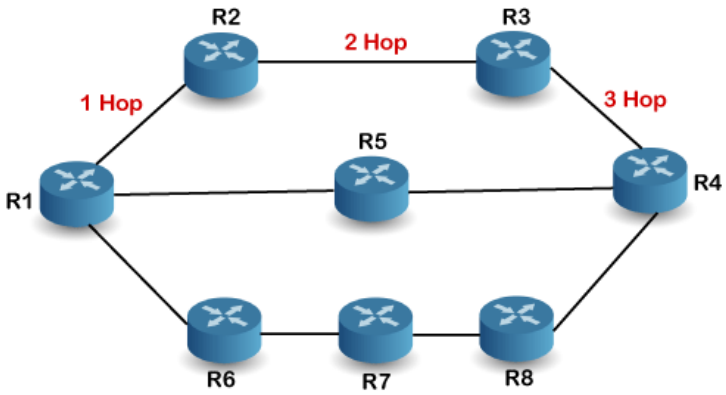
Components:

- 5 Switches, 4 PCs, 4 Laptops, Straight Through Cable, Cross Over Cable.

Theory:

Routing Information Protocol (RIP)

- RIP) is a dynamic routing protocol that uses hop count as a routing metric to find the best path between the source and the destination network. It is a distance-vector routing protocol that has an AD value of 120 and works on the Network layer of the OSI model. RIP uses port number 520.
- Hop count is the number of routers occurring in between the source and destination network. The connection between two routers is called one hop. The path with the lowest hop count is considered as the best route to reach a network and therefore placed in the routing table. The maximum hop count allowed for RIP is 15 and a hop count of 16 is considered as network unreachable.
- The routers configured with RIP send their updates to all the neighboring routers every 30 seconds.
- The RIP invalid timer is 180 seconds, which means that if the router is disconnected from the network or some link goes down, then the neighbor router will wait for 180 seconds to take the update. If it does not receive the update within 180 seconds, then it will mark the particular route as not reachable.
- The RIP flush timer is 240 second which is almost equal to 4 minutes means that if the router does not receive the update within 240 seconds then the neighbor route will remove that particular route from the routing table which is a very slow process as 4 minutes is a long time to wait.



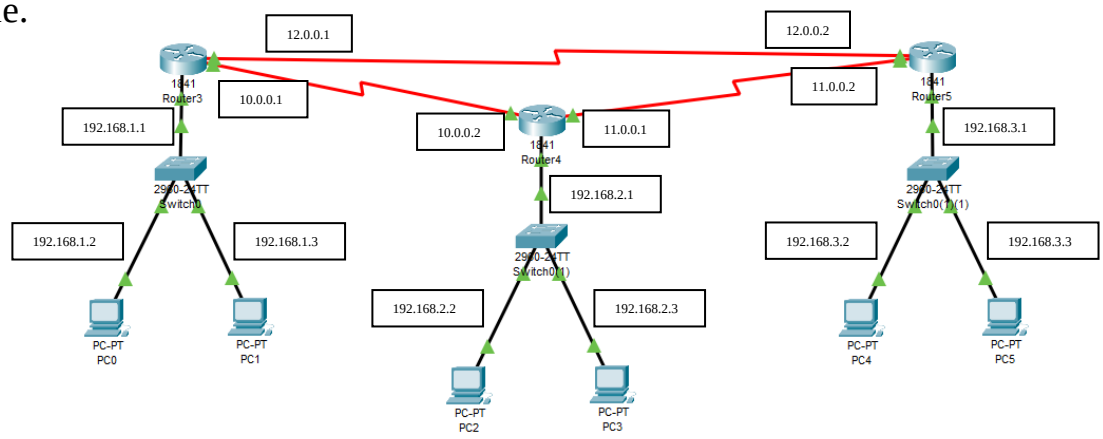
RIP versions:

There are three versions of routing information protocol

1	RIP v1	RIP v2	RIPng
2	Sends update as broadcast	Sends update as multicast	Sends update as multicast
3	Broadcast at 255.255.255.255	Multicast at 224.0.0.9	Multicast at FF02::9 (RIPng can only run on IPv6 networks)
4	Doesn't support authentication of updated messages	Supports authentication of RIPv2 update messages	Supports authentication of RIPv2 update messages
5	Classful routing protocol	Classless protocol updated supports classful	Classless updates are sent

Procedure:

- Take 3 Routers (1841), 3 Switches and 6 PCs
- Connect these 3 Routers with each other (Point to Multipoint connection) using Serial DTE Cable.
  - Left click on a router
  - On Physical tab there is an ON, OFF button of router turn OFF the router.
  - Then hold the lift click on WIC_2T on left side and place it in the router slot.
  - Then turn ON the router and close the dialog box.
- Connect 3 Switches with 3 Routers (Point to Point connection) using Straight Through Cable.
- Connect 2 PCs To each Switch (Point to MultiPoint connection) using Straight Through Cable.



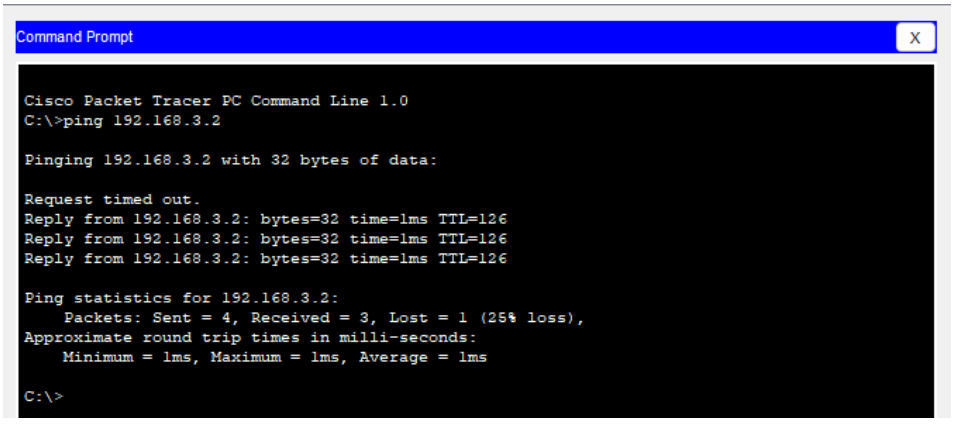
- Configure these 3 routers one by one.
  - Left click on a router
  - click on config tab and on the left side click on FastEthernet0/0 or FastEthernet0/1.
  - Check the box on top right corner of dialog box.
  - In IPv4 address put your default gateway ID (e.g. in this scenario 192.168.1.1) and Click on subnet mask box or press Tab button subnet mask added automatically.

- Then click on serial0/0/0, check the box on top right corner and put class A ID (e.g. in this scenario 10.0.0.1) in IPv4 address and click on subnet mask or press tab.
- Then click on serial0/0/1, check the box on top right corner and put class A ID (e.g. in this scenario 12.0.0.1) in IPv4 address and click on subnet mask or press tab.
- Then click on RIP on left side and put Network IDs of All Classes one by one which are used and press add.
- Then close the dialog box.

- Configure these PCs one by one by using different class IDs
  - Left click on a PC.
  - Select Desktop Tab.
  - Click on IP Configuration.
  - In IPv4 address put your selected class ID.
  - Click on subnet mask box or press Tab button subnet mask added automatically.
  - Put the default Gateway ID, which you enter in FastEthernet0/0 or FastEthernet0/1 of first router.
  - Then close that dialog box.
- Check the working or created network is correct by using ping command.
  - Click on a computer
  - Select Desktop Tab
  - Click on Command Prompt
  - Use following command to check the configuration or connection of RIP connectivity.

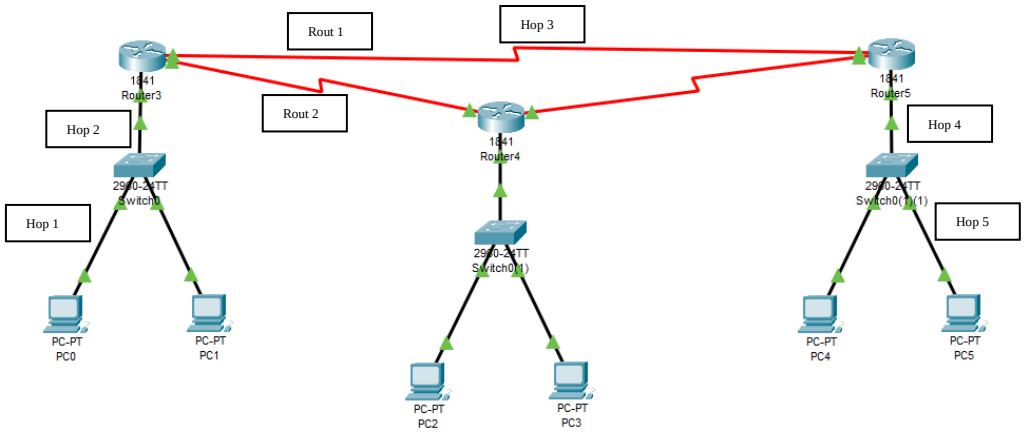
    ping "ID of that computer which you want to check the connection to"

    e.g. **ping 192.168.3.1**
  - If it shows reply from that computer than connection is complete.



Observation:

- I observed that in RIP (dynamic routing), it auto selects the shortest path (small hop count) for sending data or packet. In the given scenario Rout 1 is chosen as shown in fig below because it has the least hop count that is 5. It does not choose the Rout 2 because it has 6 hop counts that are not least than Rout 1.



- Serial DTE is used for dynamic routing.

Conclusion:

- RIP is dynamic routing type.
- Route 1 is chosen in the above figure as it has the least hop count. If the Route 2 is free and data can be reached more faster, instead of this, data is sent to the Route 1 that makes the Route 1 slower due to the heavy traffic. This is one of the biggest disadvantages of RIP.
- It updates the table in every 30 seconds, after 180 seconds it determines that the particular Route is not reachable, after 240 seconds neighbor routs remove that particular route from the routing table.