Name :- Yadav Vishal Tahsildar

Class:-SEIT 2

Batch:-B4

Roll No:-69

Sub : Network Lab

Date of Performance: 20/01/2022

Experiment no :- 03

Aim: Implement Star based Hub topology through cisco packet tracer.

Theory:

Star topology

A **star topology** is a network that is designed to look very similar to a star with a central core and many systems connected directly to that core. The systems in a star topology do not connect to each other, but instead pass messages to the central core that, in turn, passes the message to either all other systems or the specific destination system depending on the network design. This topology works well for many smaller networks and works around many of the detriments associated with bus or ring topologies.

In a star topology, computers aren't connected to one another but are all connected to a central hub or switch. When a computer sends data to other computers on the network, it is sent along the cable to a central hub or switch, which then determines which port it needs to send the data through for it to reach the proper destination. **Characteristics** of a star topology are as follows:

- All cables run to a central connection point.
- If one cable breaks or fails, only the computer that is connected to that cable is unable to use the network.
- A star topology is scalable.
- As the network grows or changes, computers are simply added or removed from the central connection point, which is usually a hub or a switch.
- Because there is so much cabling used to connect individual computers to a central point, this may increase the cost of expanding and maintaining the network.

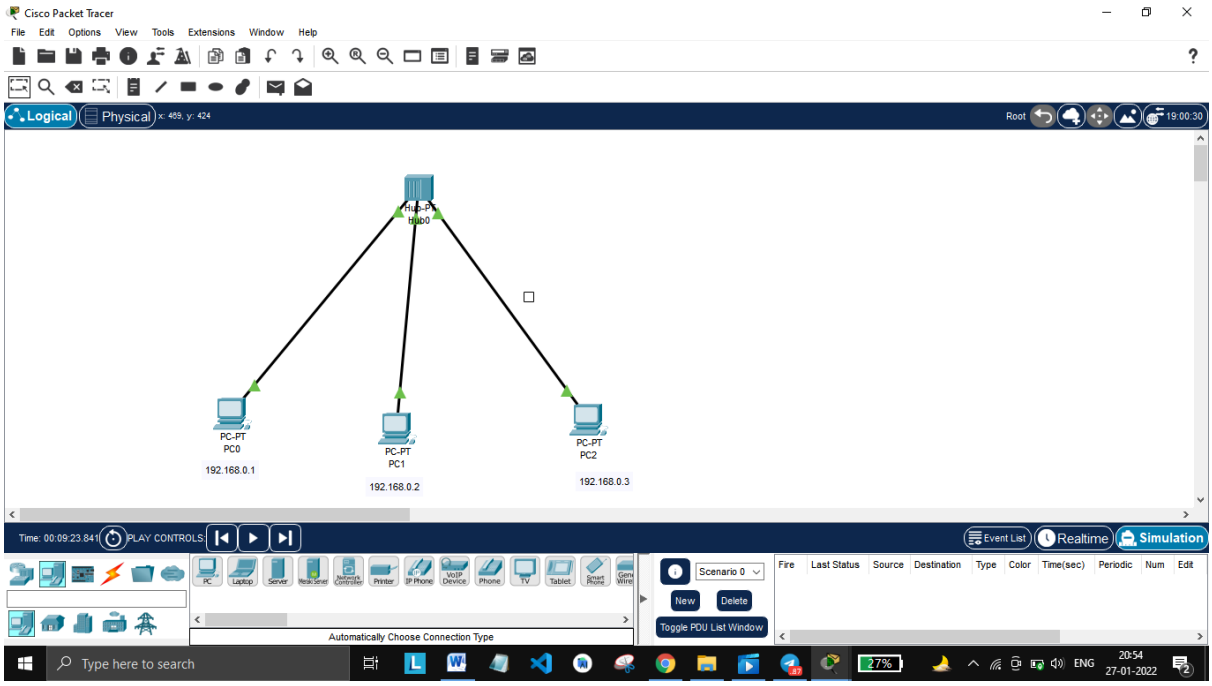
Advantages Of Star Topology

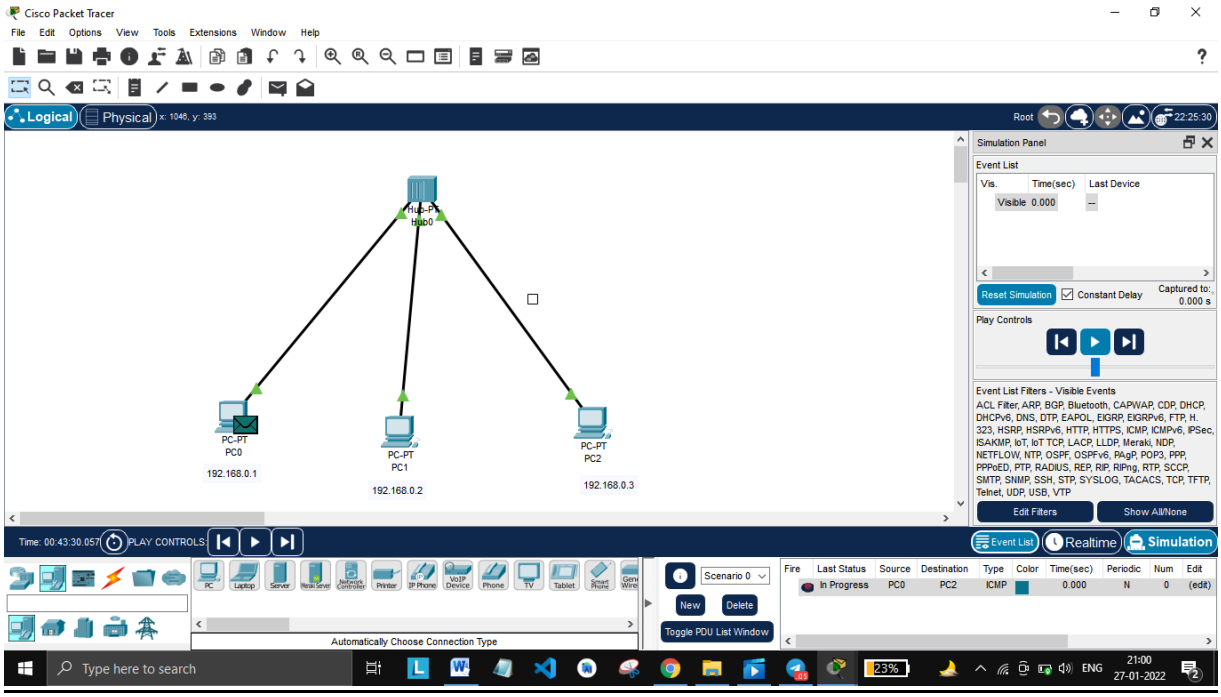
1) **Reliable:** It is a reliable topology because if one cable fails then all the other cables will be working fine.
2) **Easy to maintain:** If x is the number of the devices connected to the network the x cables will be required.
3) There is no collision of data because the switch manages the flow of the data and prioritizes the data.
4) New users can be added to the network without disturbing the existing users.
5) Devices can also be removed easily which is no longer required with the network.
6) It is easy to detect daily with the network because the broken link is easily identified.
7) Easy to set up.
8) It is cost-effective because each device requires only a cable and one I/O port to connect to the network.

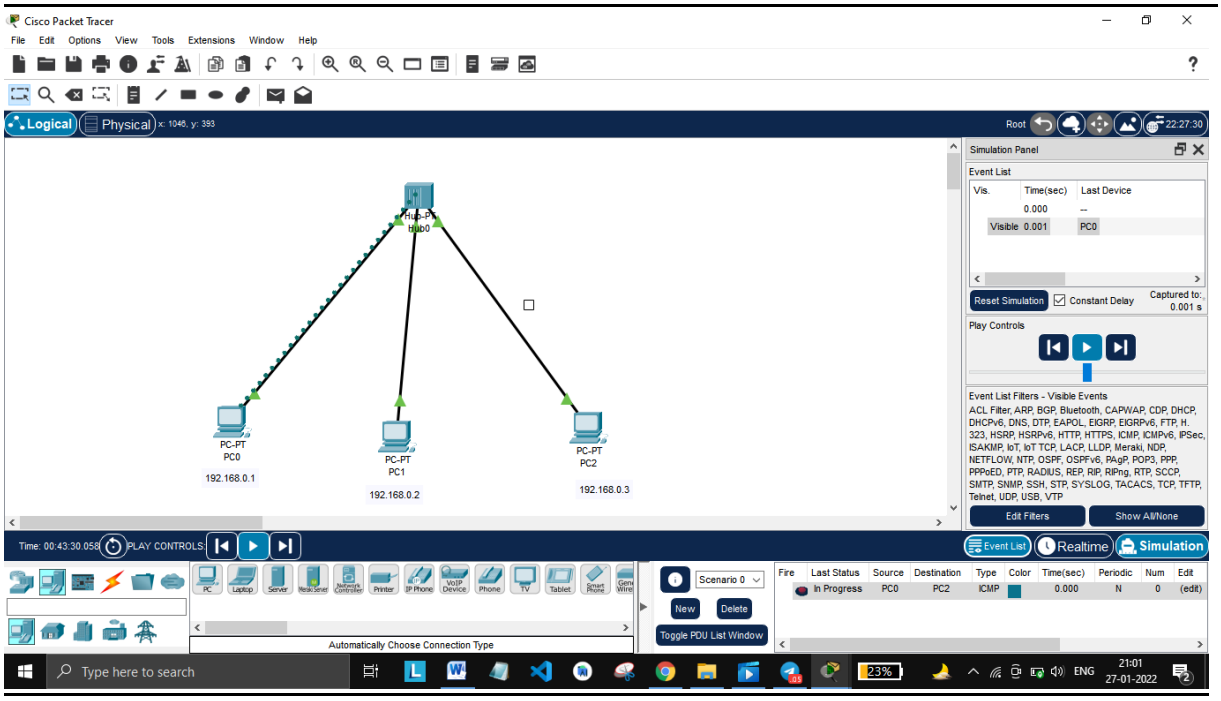
Disadvantages Of Star Topology

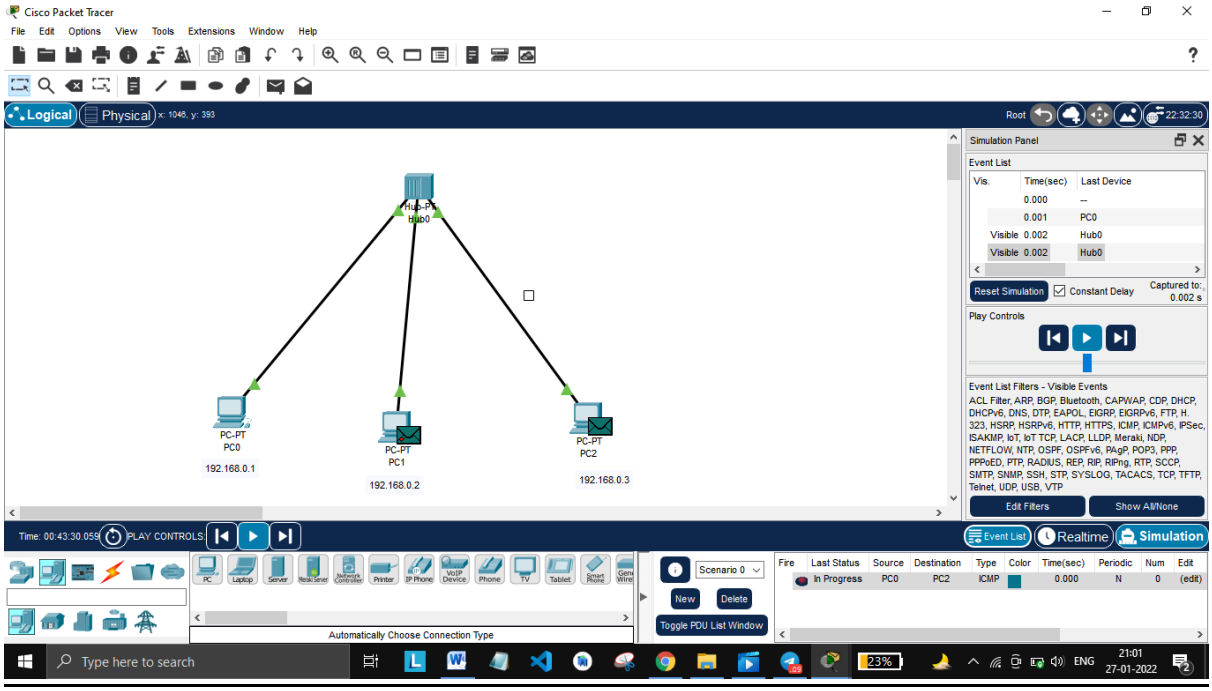
1) Requires more cables than a bus topology.
2) Complete dependency over the central devices.
3) If the central hub/switch fails, all the nodes connected in a network will no longer be able to communicate together.
4) More expensive than a bus topology because of the value of the networking devices like hubs and switches used within the network.
5) The switch requires more resources and regular maintenance because it is the center of data sharing.
6) Performance is completed based on the switches and hubs used within the network.

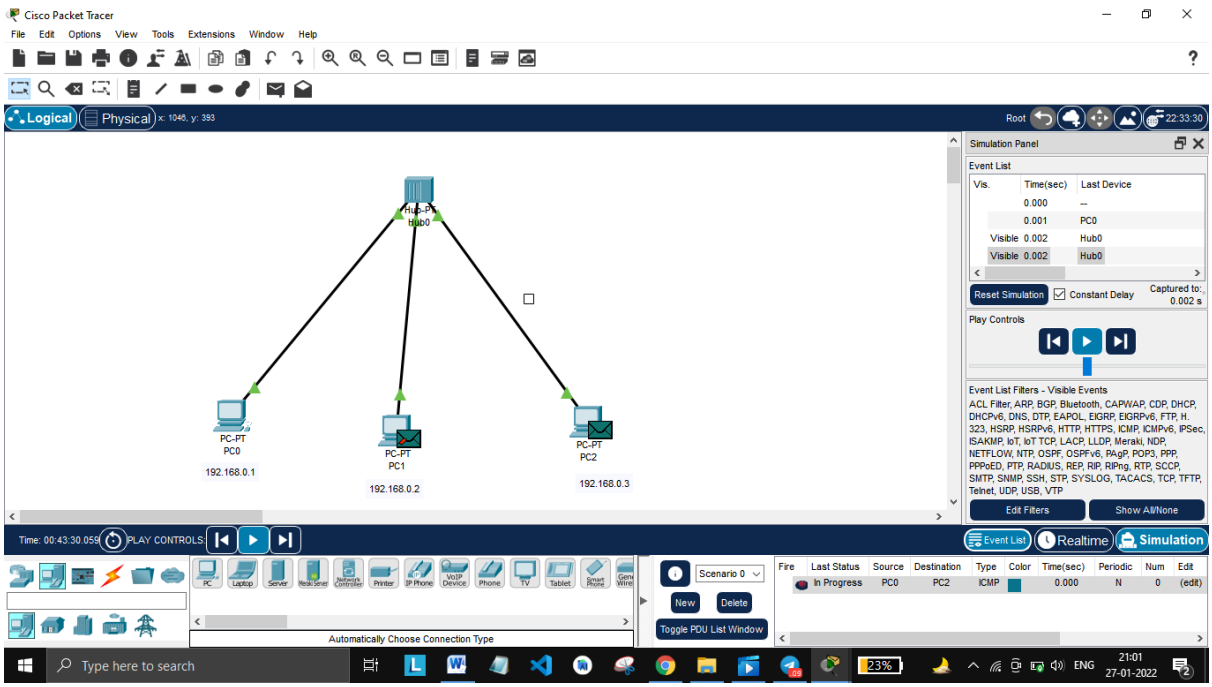
Output:

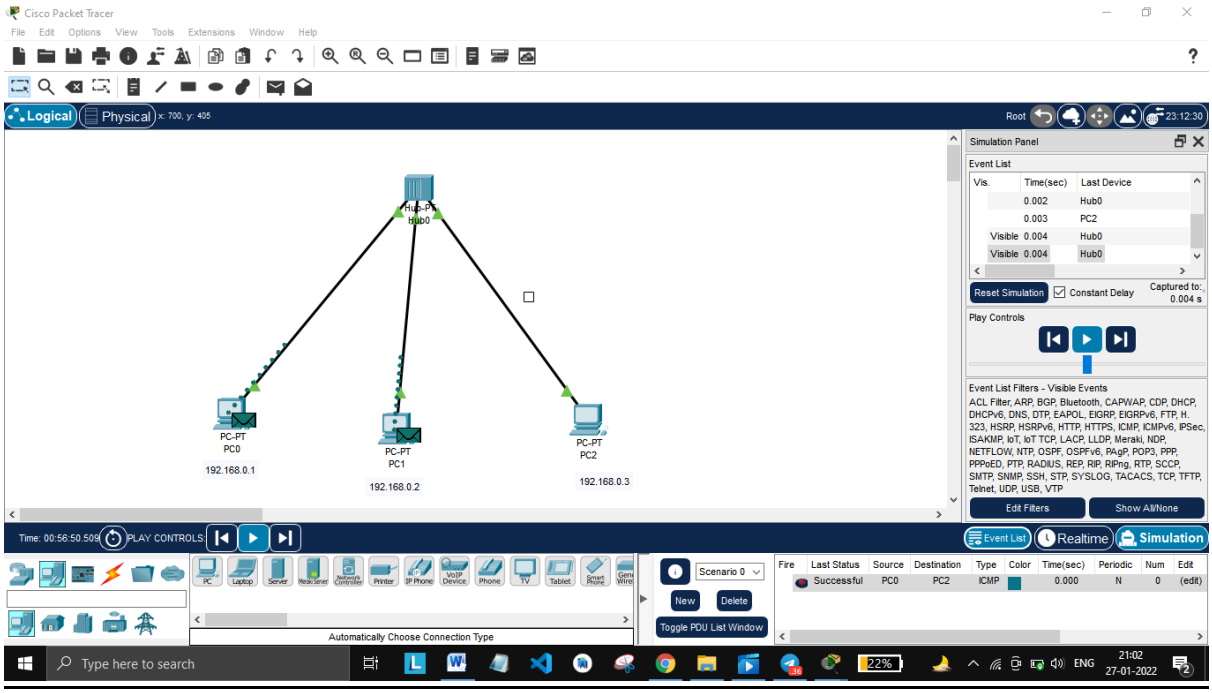

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical
Root
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 00:09:23.841 PLAY CONTROLS:
Event List Realtime Simulation
Scenario 0
New Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
Automatically Choose Connection Type
Type here to search
27%
ENG
20:54
27-01-2022

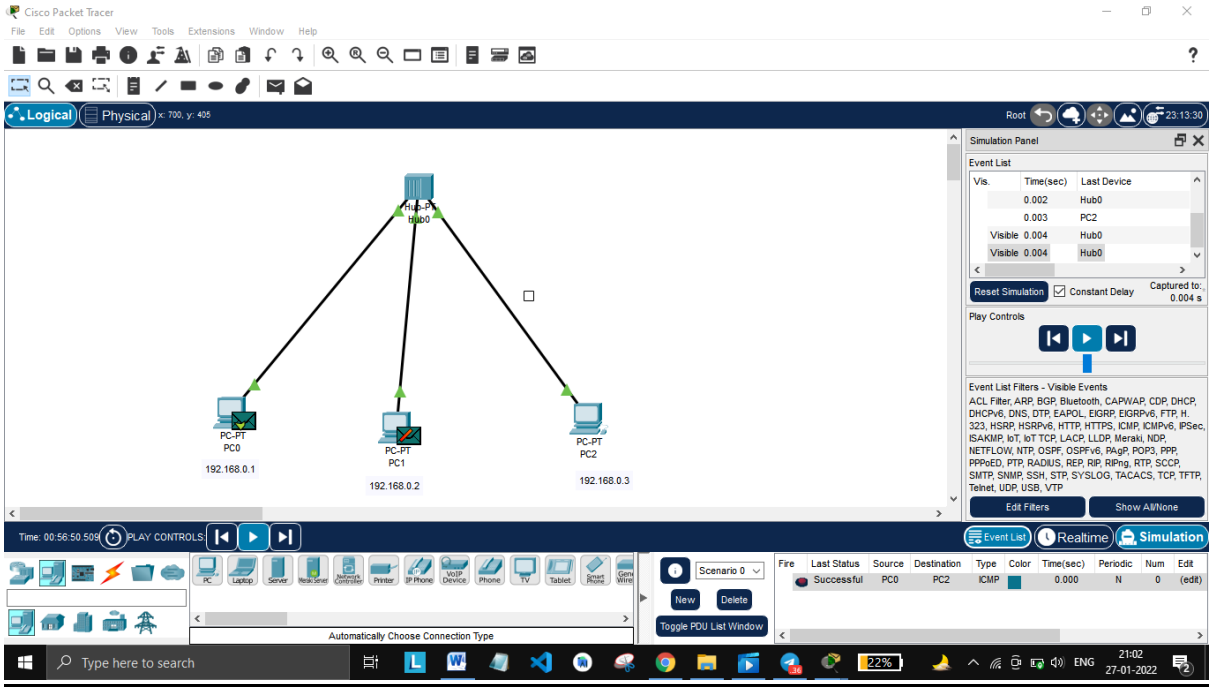

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical
Root
Simulation Panel
Event List
Vis. Time(sec) Last Device
Visible 0.000
Reset Simulation
Constant Delay
Captured to: 0.000 s
Play Controls
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP
Edit Filters
Show All/None
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 00:43:30.057 PLAY CONTROLS:
Event List Realtime Simulation
Scenario 0
New Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
In Progress PC0 PC2 ICMP 0.000 N 0 (edit)
Automatically Choose Connection Type
Type here to search
23%
ENG
21:00
27-01-2022


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical
Root
Simulation Panel
Event List
Vis. Time(sec) Last Device
0.000 --
Visible 0.001 PC0
Reset Simulation
Constant Delay
Captured to: 0.001 s
Play Controls
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP
Edit Filters
Show All/None
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 00:43:30.058 PLAY CONTROLS:
Event List Realtime Simulation
Scenario 0
New Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
In Progress PC0 PC2 ICMP 0.000 N 0 (edit)
Automatically Choose Connection Type
Type here to search
23%
ENG
21:01
27-01-2022

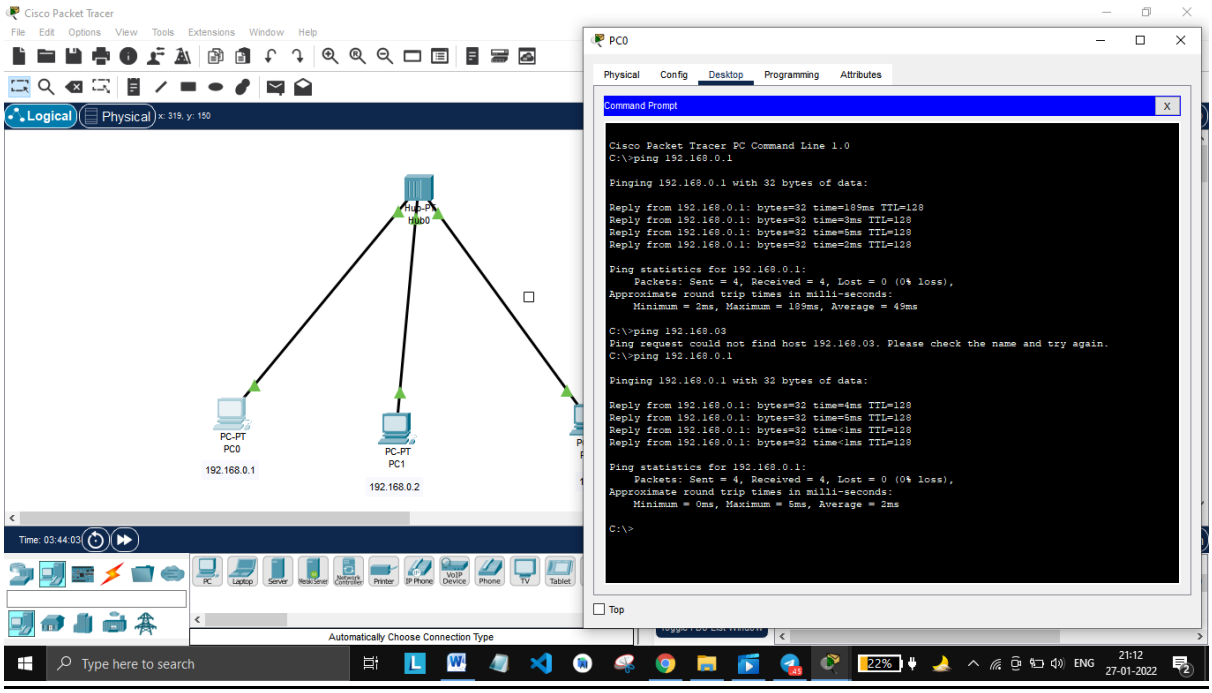

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical
Root
Simulation Panel
Event List
Vis. Time(sec) Last Device
0.000 --
0.001 PC0
Visible 0.002 Hub0
Visible 0.002 Hub0
Reset Simulation
Constant Delay
Captured to: 0.002 s
Play Controls
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP
Edit Filters
Show All/None
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 00:43:30.059 PLAY CONTROLS:
Event List
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
In Progress PC0 PC2 ICMP 0.000 N 0 (edit)
Automatically Choose Connection Type
Type here to search
23%
ENG
21:01
27-01-2022

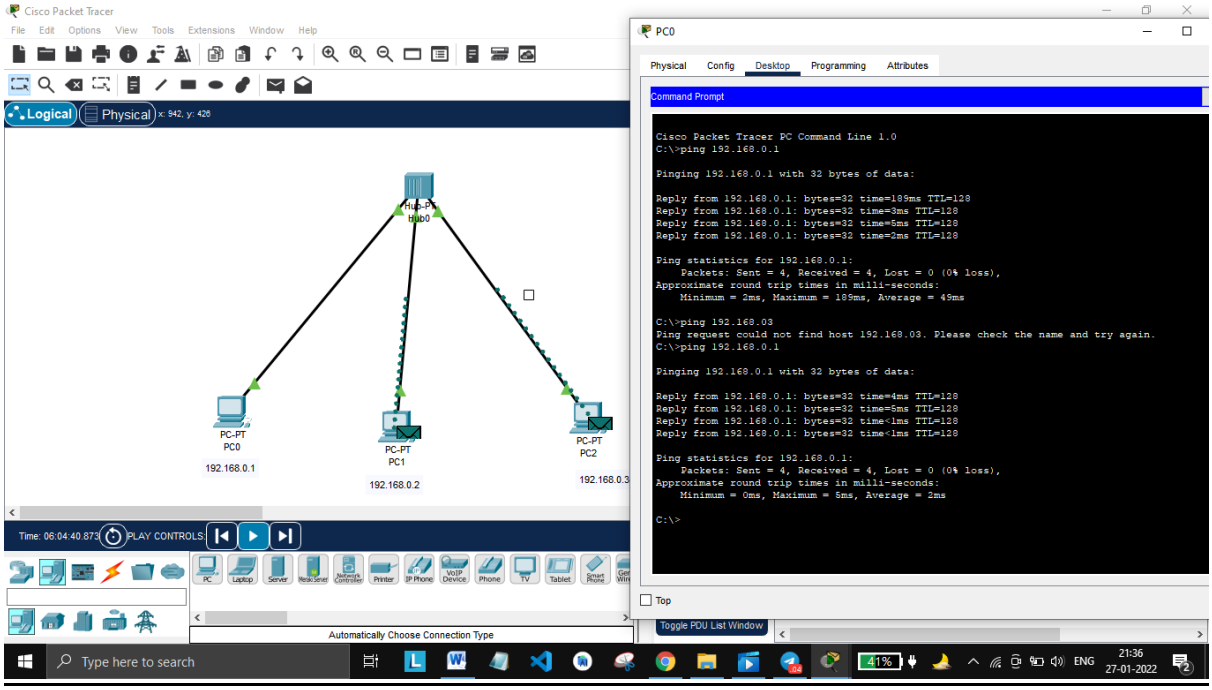

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical
Root
Simulation Panel
Event List
Vis. Time(sec) Last Device
0.000 --
0.001 PC0
Visible 0.002 Hub0
Visible 0.002 Hub0
Reset Simulation
Constant Delay
Captured to: 0.002 s
Play Controls
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP
Edit Filters
Show All/None
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 00:43:30.059 PLAY CONTROLS:
Event List
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
In Progress PC0 PC2 ICMP 0.000 N 0 (edit)
Automatically Choose Connection Type
Type here to search
23%
ENG
21:01
27-01-2022

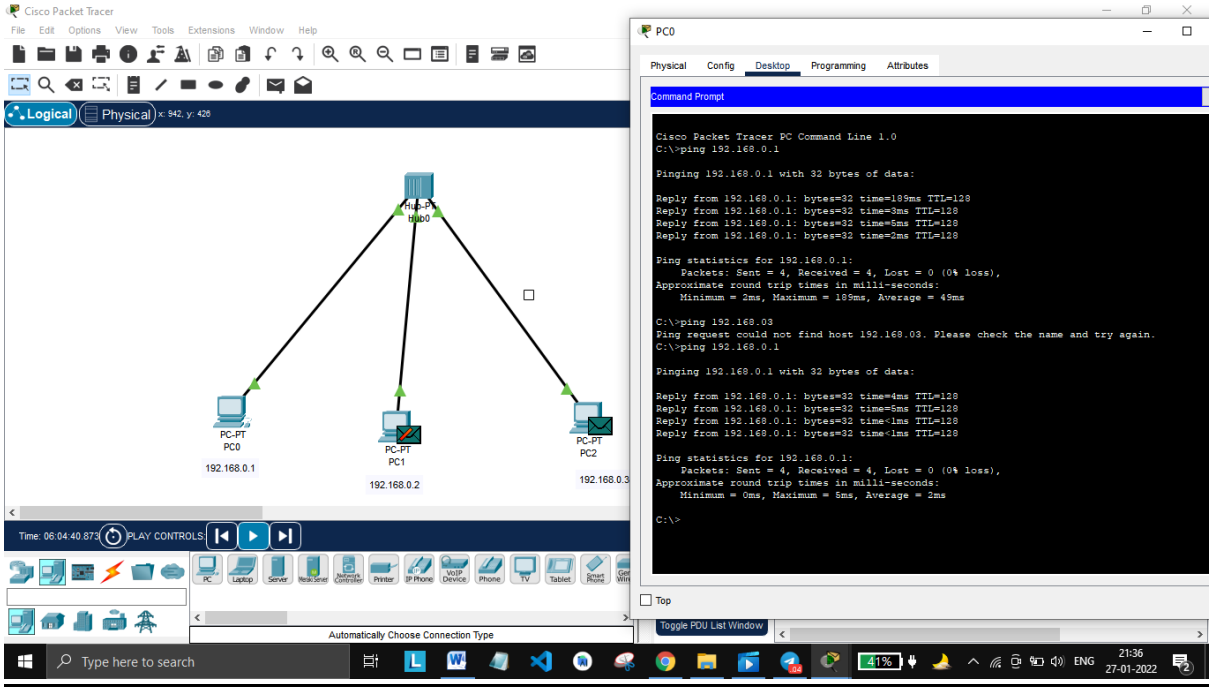

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical
Physical
Root
23:12:30
Simulation Panel
Event List
Vis. Time(sec) Last Device
0.002 Hub0
0.003 PC2
Visible 0.004 Hub0
Visible 0.004 Hub0
Reset Simulation
Constant Delay
Captured to: 0.004 s
Play Controls
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP
Edit Filters
Show All/None
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 00:56:50.509
PLAY CONTROLS:
Event List
Realtime
Simulation
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
Successful PC0 PC2 ICMP 0.000 N 0 (edit)
Type here to search
22%
ENG
21:02
27-01-2022

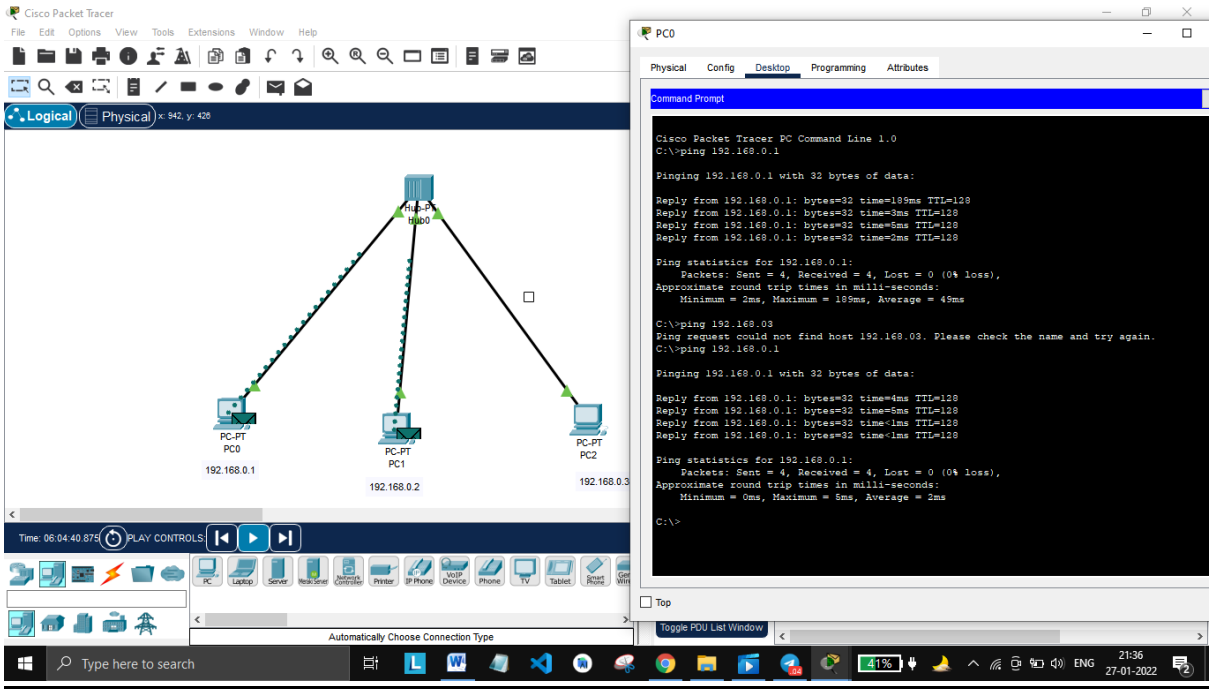

Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical
Physical
Root
23:13:30
Simulation Panel
Event List
Vis. Time(sec) Last Device
0.002 Hub0
0.003 PC2
Visible 0.004 Hub0
Visible 0.004 Hub0
Reset Simulation
Constant Delay
Captured to: 0.004 s
Play Controls
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP
Edit Filters
Show All/None
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 00:56:50.509
PLAY CONTROLS:
Event List
Realtime
Simulation
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
Successful PC0 PC2 ICMP 0.000 N 0 (edit)
Type here to search
22%
ENG
21:02
27-01-2022

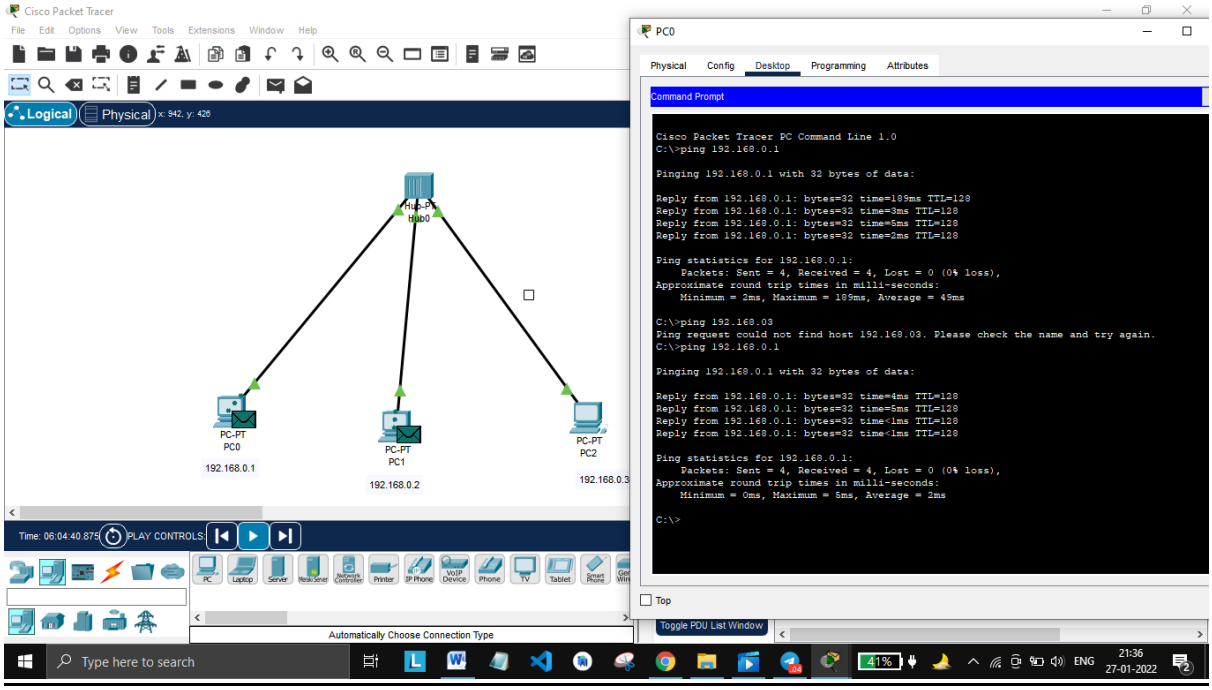
USING COMPT


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical x: 319, y: 150
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
Time: 03:44:03
Automatically Choose Connection Type
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=189ms TTL=128
Reply from 192.168.0.1: bytes=32 time=3ms TTL=128
Reply from 192.168.0.1: bytes=32 time=5ms TTL=128
Reply from 192.168.0.1: bytes=32 time=2ms TTL=128
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 189ms, Average = 49ms
C:\>ping 192.168.03
Ping request could not find host 192.168.03. Please check the name and try again.
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=4ms TTL=128
Reply from 192.168.0.1: bytes=32 time=5ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 5ms, Average = 2ms
C:\>
Top
Type here to search
22%
ENG
21:12
27-01-2022


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical x: 942, y: 426
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 06:04:40.873
PLAY CONTROLS:
Automatically Choose Connection Type
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=189ms TTL=128
Reply from 192.168.0.1: bytes=32 time=3ms TTL=128
Reply from 192.168.0.1: bytes=32 time=5ms TTL=128
Reply from 192.168.0.1: bytes=32 time=2ms TTL=128
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 189ms, Average = 49ms
C:\>ping 192.168.03
Ping request could not find host 192.168.03. Please check the name and try again.
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=4ms TTL=128
Reply from 192.168.0.1: bytes=32 time=5ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 5ms, Average = 2ms
C:\>
Top
Toggle PDU List Window
Type here to search
41%
ENG
21:36
27-01-2022


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical x: 942, y: 426
Hub-PT Hub0
PC-PT PC0
192.168.0.1
PC-PT PC1
192.168.0.2
PC-PT PC2
192.168.0.3
Time: 06:04:40.873
PLAY CONTROLS:
Automatically Choose Connection Type
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=189ms TTL=128
Reply from 192.168.0.1: bytes=32 time=3ms TTL=128
Reply from 192.168.0.1: bytes=32 time=5ms TTL=128
Reply from 192.168.0.1: bytes=32 time=2ms TTL=128
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 189ms, Average = 49ms
C:\>ping 192.168.03
Ping request could not find host 192.168.03. Please check the name and try again.
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=4ms TTL=128
Reply from 192.168.0.1: bytes=32 time=5ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 5ms, Average = 2ms
C:\>
Top
Toggle PDU List Window
Type here to search
41%
ENG
21:36
27-01-2022





Conclusion: Thus we have successfully implemented Star based Hub topology through cisco packet tracer.