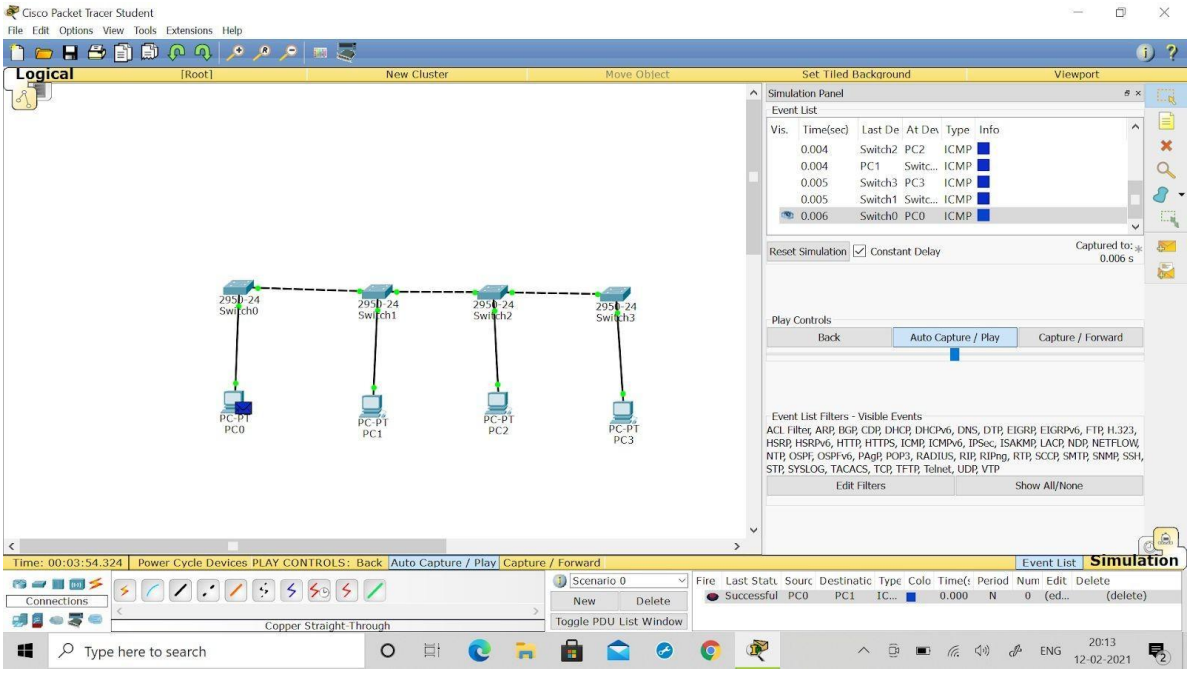
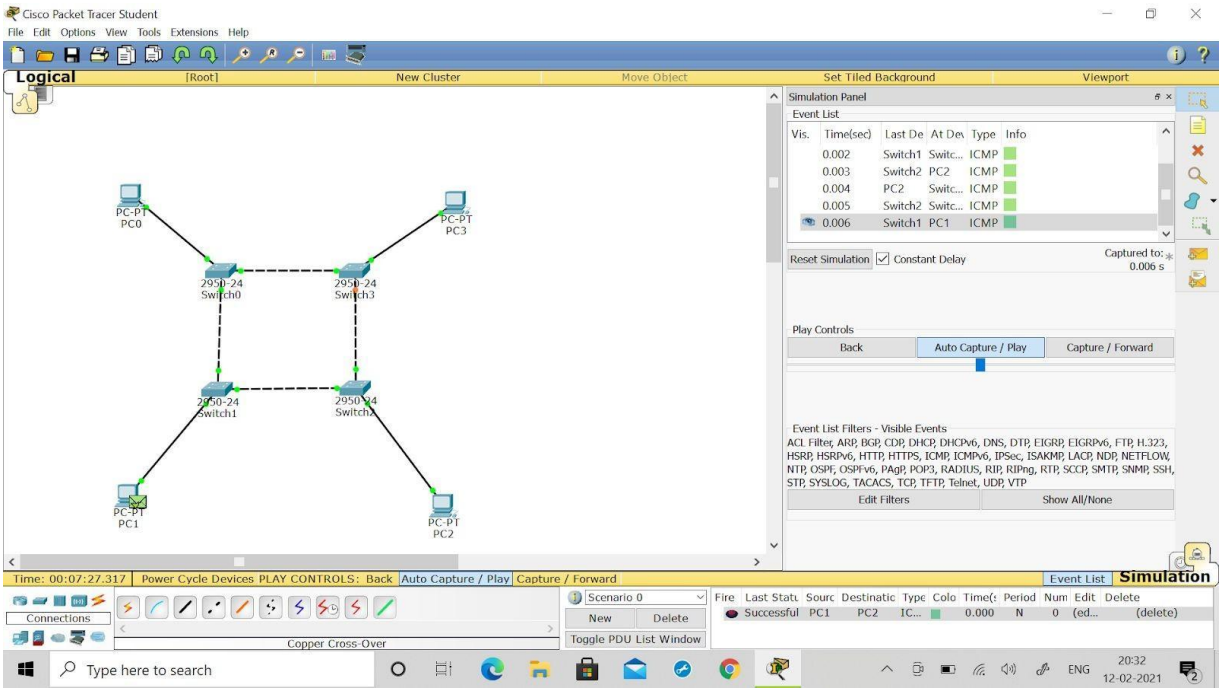
COMPUTER COMMUNICATIONS

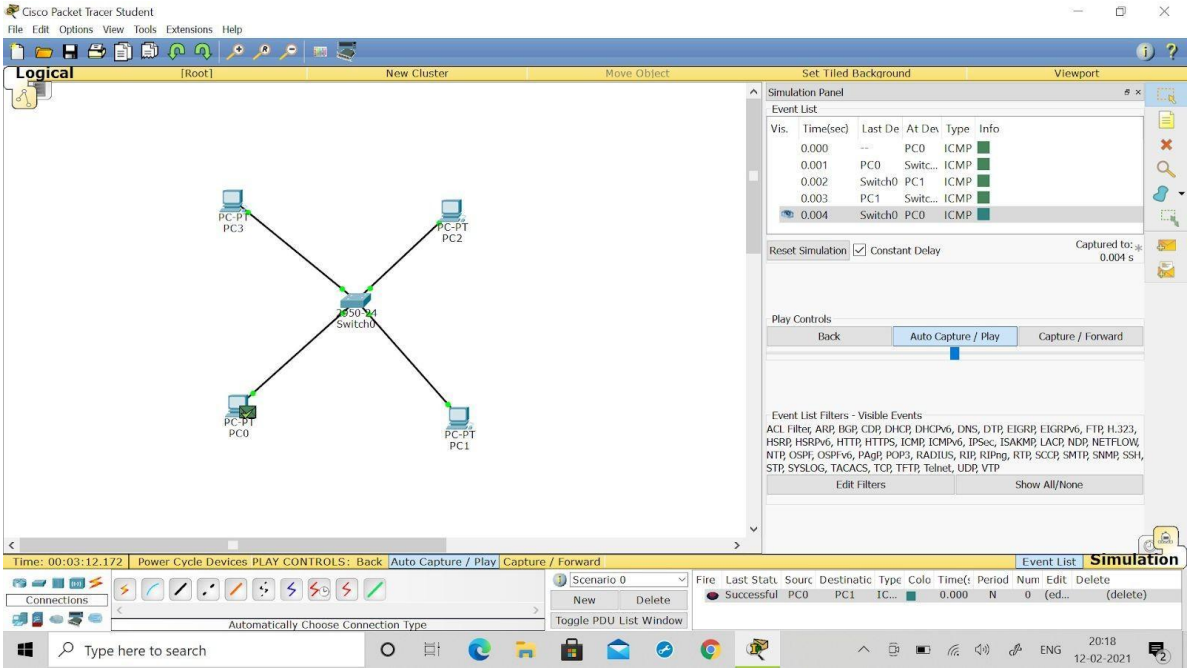
BUS :



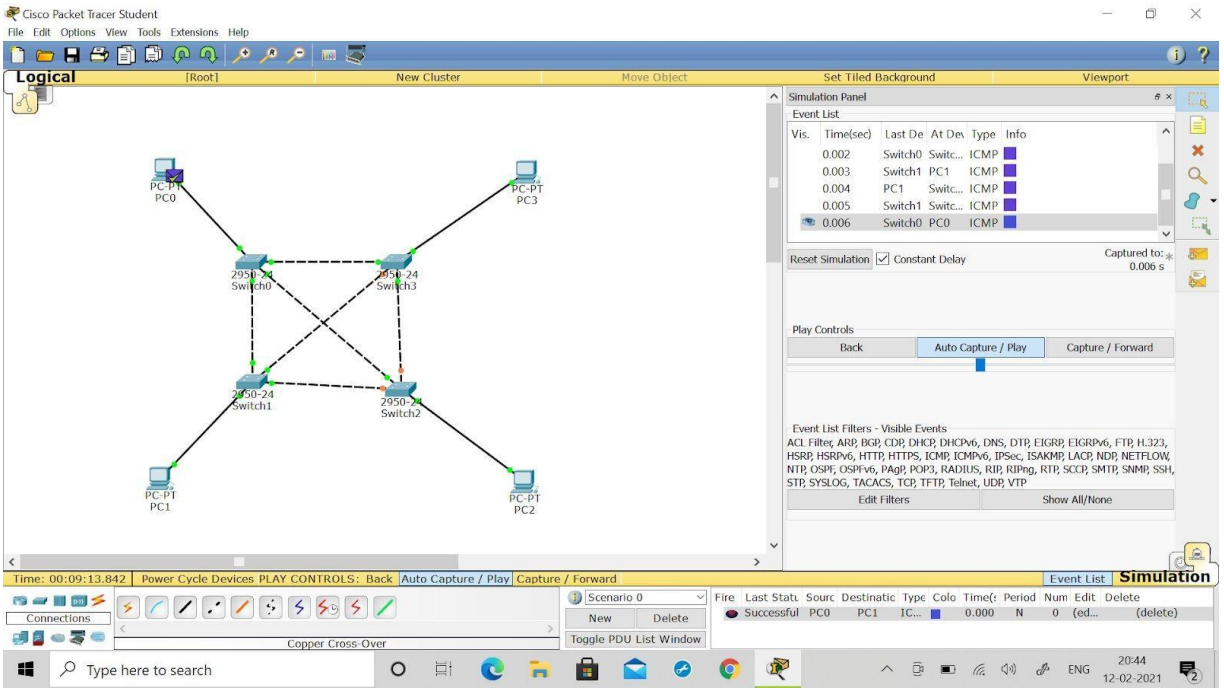
RING :


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical [Root] New Cluster Move Object Set Tiled Background Viewport
PC-PT PC0
PC-PT PC3
2950-24 Switch0
2950-24 Switch3
2950-24 Switch1
2950-24 Switch2
PC-PT PC1
PC-PT PC2
Simulation Panel
Event List
Vis. Time(sec) Last De At De Type Info
0.002 Switch1 Switc... ICMP
0.003 Switch2 PC2 ICMP
0.004 PC2 Switc... ICMP
0.005 Switch2 Switc... ICMP
0.006 Switch1 PC1 ICMP
Reset Simulation Constant Delay
Captured to: 0.006 s
Play Controls
Back Auto Capture / Play Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters Show All/None
Time: 00:07:27.317 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward
Event List Simulation
Connections
Copper Cross-Over
Scenario 0 New Delete Toggle PDU List Window
Fire Last Statu Sourc Destinatic Type Colo Time(: Period Num Edit Delete
Successful PC1 PC2 IC... 0.000 N 0 (ed... (delete)
Type here to search
ENG 20:32 12-02-2021

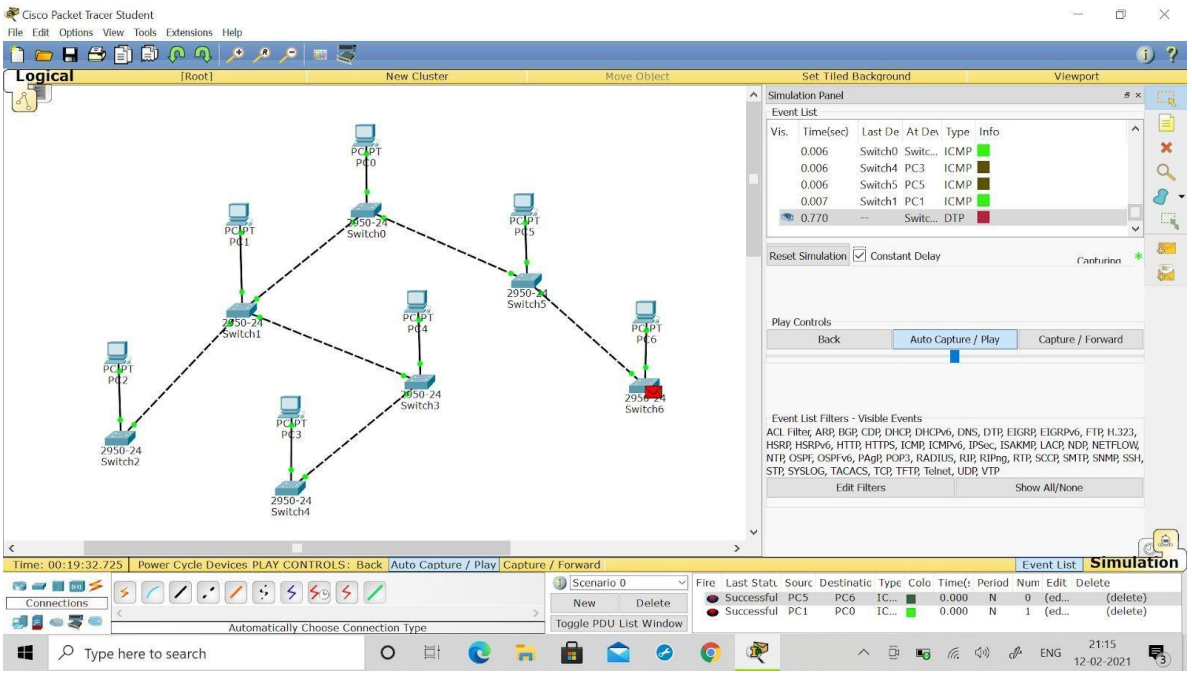
STAR :


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical [Root] New Cluster Move Object Set Tiled Background Viewport
PC-PT PC3
PC-PT PC2
2950-24 Switch0
PC-PT PC0
PC-PT PC1
Simulation Panel
Event List
Vis. Time(sec) Last De At De Type Info
0.000 -- PC0 ICMP
0.001 PC0 Switc... ICMP
0.002 Switch0 PC1 ICMP
0.003 PC1 Switc... ICMP
0.004 Switch0 PC0 ICMP
Reset Simulation Constant Delay
Captured to: 0.004 s
Play Controls
Back Auto Capture / Play Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters Show All/None
Time: 00:03:12.172 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward
Event List Simulation
Connections
Automatically Choose Connection Type
Scenario 0 New Delete Toggle PDU List Window
Fire Last Statu Sourc Destinatic Type Colo Time(: Period Num Edit Delete
Successful PC0 PC1 IC... 0.000 N 0 (ed... (delete)
Type here to search
ENG 20:18 12-02-2021

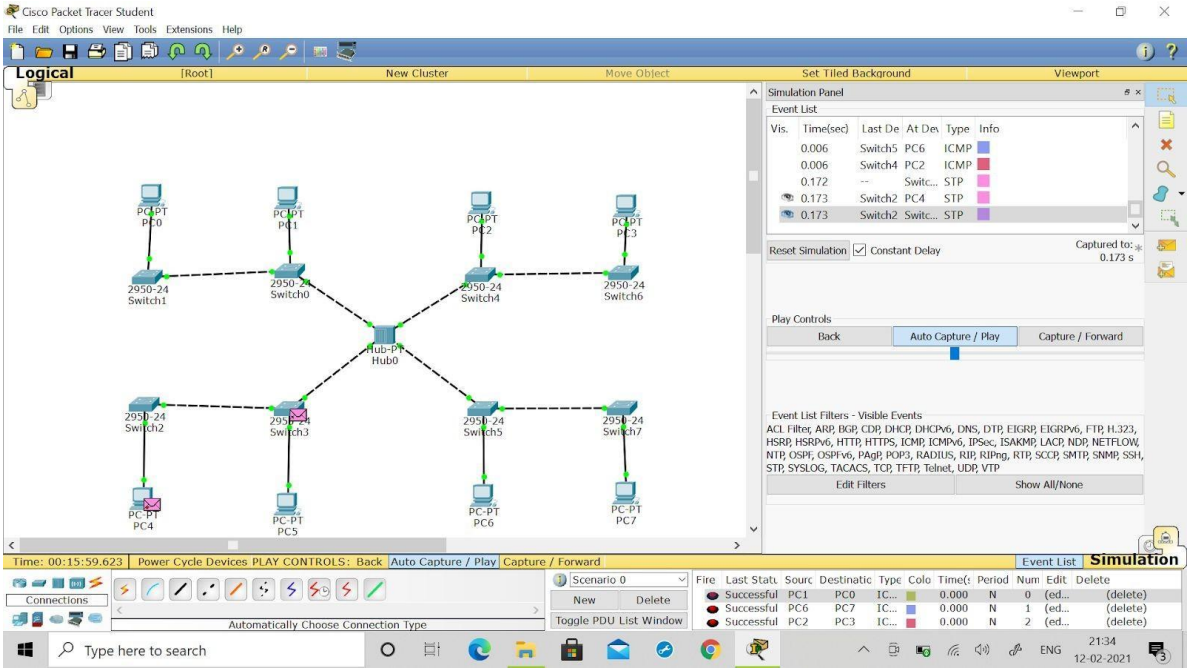
MESH :


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical [Root] New Cluster Move Object Set Tiled Background Viewport
PC-PT PC0
PC-PT PC3
2950-24 Switch0
2950-24 Switch3
2950-24 Switch1
2950-24 Switch2
PC-PT PC1
PC-PT PC2
Simulation Panel
Event List
Vis. Time(sec) Last De At De Type Info
0.002 Switch0 Switc... ICMP
0.003 Switch1 PC1 ICMP
0.004 PC1 Switc... ICMP
0.005 Switch1 Switc... ICMP
0.006 Switch0 PC0 ICMP
Reset Simulation Constant Delay
Captured to: 0.006 s
Play Controls
Back Auto Capture / Play Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters Show All/None
Time: 00:09:13.842 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward
Event List Simulation
Connections
Copper Cross-Over
Scenario 0 New Delete Toggle PDU List Window
Fire Last Statu Sourc Destinatic Type Colo Time(: Period Num Edit Delete
Successful PC0 PC1 IC... 0.000 N 0 (ed... (delete)
Type here to search
ENG 20:44 12-02-2021

TREE :


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical [Root] New Cluster Move Object Set Tiled Background Viewport
PC-PT PC0
PC-PT PC1
2950-24 Switch0
PC-PT PC5
2950-24 Switch5
PC-PT PC4
PC-PT PC6
PC-PT PC2
2950-24 Switch1
2950-24 Switch3
2950-24 Switch6
2950-24 Switch2
PC-PT PC3
2950-24 Switch4
Simulation Panel
Event List
Vis. Time(sec) Last De At De Type Info
0.006 Switch0 Switc... ICMP
0.006 Switch4 PC3 ICMP
0.006 Switch5 PC5 ICMP
0.007 Switch1 PC1 ICMP
0.770 -- Switc... DTP
Reset Simulation Constant Delay
Play Controls
Back Auto Capture / Play Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters Show All/None
Time: 00:19:32.725 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward
Event List Simulation
Connections
Automatically Choose Connection Type
Scenario 0 New Delete Toggle PDU List Window
Fire Last Statu Sourc Destinatic Type Colo Time(: Period Num Edit Delete
Successful PC5 PC6 IC... 0.000 N 0 (ed... (delete)
Successful PC1 PC0 IC... 0.000 N 1 (ed... (delete)
Type here to search
ENG 21:15 12-02-2021

HYBRID :


Cisco Packet Tracer Student
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Simulation Panel
Event List
Vis. Time(sec) Last De At De Type Info
0.006 Switch5 PC6 ICMP
0.006 Switch4 PC2 ICMP
0.172 -- Switc... STP
0.173 Switch2 PC4 STP
0.173 Switch2 Switc... STP
Reset Simulation
Constant Delay
Captured to: 0.173 s
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters
Show All/None
PC-PT PC0
PC-PT PC1
PC-PT PC2
PC-PT PC3
2950-24 Switch1
2950-24 Switch0
2950-24 Switch4
2950-24 Switch6
Hub-PT Hub0
2950-24 Switch2
2950-24 Switch3
2950-24 Switch5
2950-24 Switch7
PC-PT PC4
PC-PT PC5
PC-PT PC6
PC-PT PC7
Time: 00:15:59.623
Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward
Event List
Simulation
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Statu Sourc Destinatic Type Colo Time(: Period Num Edit Delete
Successful PC1 PC0 IC... 0.000 N 0 (ed... (delete)
Successful PC6 PC7 IC... 0.000 N 1 (ed... (delete)
Successful PC2 PC3 IC... 0.000 N 2 (ed... (delete)
Type here to search
ENG
21:34
12-02-2021

TOPOLOGY	ADVANTAGES	DISADVANTAGES	APPLICATIONS
BUS	Bus topologies were ofien used In smaller networks. One of the maln reasons 1s that they keep the layout simple. All devices are connected to a single cable so you don't need to manage a complex iopological setup.	However, relying on one cable does mean that bus topologies have a single point of fallure. If the cable falls then the entlre network will go down. A cable failure would cost organlzntlons a lot of time while they attempt to resume service, Further to this, high network raffle wou!d decrease network performance because all the data travels through one cable,	Bus topology 1s used for: Sinnll workgroup local area networks (LANs) whose computers are connected using a thlnnet cable. Tnink cables connecting hubs or switches of departmental LANs to fomi a larger LAN. Backboning, by .iolning switches and routers to form campus- wide neMorks.
RING	With ring topologies, the risk of packet collisions ls very low doe to the use of token-based protocols. which only allow one stntlon to transmit data at a glven ilme. This 1s compounded by the fact that data can move through network nodes at high speeds which can be expanded on when more nodes are added.	One of the reasons why ring topologies were replaced is because they are very vulnerable to failure. The failure of one node can take the entlre network out of operatlon. Thls means that ring topology networks need to be constantly managed to ensure that all network nodes are In good health. However, even If the nodes were In good health your network could still be knocked offline by a Dansmlsston line fallurel	Rlng Topology 1s deployed In a Local area network (LAN) and a Wide area neMork (MAN) as well. SONET (Synchronous optical network) fiber networks In the Telecommunication domain uses Ring topology quite extensively.

STAR	Star topologies are most commonly-used because you can manage ltte entire network from one location: lie centml switch. As a	Nough star topologies may be relatively safe from fall ‹», ir ‹he central switch goes down then the entire network will go down. As such, the	Star network topologies are common In home networks, where the centml connection potnt may be a router, switch, or network ftub. Unshle1ded Twisted Pad

	consequence. If a nnde that isn*t the central node goes down then the network wJll remain yp. This gives star topologies a layer of protection against fnllitres that aren't always present wlth other topology setups. Likewise, you can add new computers Without having to take the network offllne like you would have to do wlth a rlng topology.	administrator needs to manage the health of the central node closely to make sure that it doesn't go down. The performance of the network is a]so tied to the central node's configurations and performance. Star topologies are easy to manage in most ways but they are far from cheap to set up and use.	(UTP) Ethernet cabling is rypicolly used to connect devirps to the hub, though coaxial cable or optical fiber may also be employed.
TREE	The mom reason why tree lopologles are ilsed ls to extend btis and star topologies. Under lhis hlemrchical foncat, it is easy to add more nodes to lhe network when your organization grows in slze. Thls formut also lends ltsel(well to finding errors and troubleshooting because you can check for network performuzice issues sysfemaUcally t)2fDtlghout the tree.	The most slgniflcant weakness of tree topology is lhe root node If the roet node Falls then all of ils siibtrees become partitioned. There will still be partial conneciivtty wlihin the network amongst nther devices such as the failed node's parent.	oirrerent floors can be connected to each other through combining sl«r topology network and central bNs backbone. B- looks same as rree ty pology azid it is used In different programming languages llke MySQL, Redls, PostgreSQL and ln fllesystems including ext4. NTFS.
MESH	Mesh topologies are used first and foremost because they are reliable. The lnlerconnectivity of nodes makes ihem extremely resistant to failures. There is no single machine failure that could bring down the **enlire** network. The absence of a single polnl of failitre 1s nne of the reasons why this is a popular topology choice. This setup is also secure from being compromised.	However. mesh topologies are far from perrect. They require an immense amount of configuration once they are deployed. The lopologlcal layout Is more complex than many other topologies and this is reflected by how long It takes to se! up. You'll need to accommodate a whole hnst of new wiring which can add up to be quite expensive.	This topology was originally developed 30+ years ago for military app1icatJons. but today. they are typically used ror thlngs like home automation, smart HVAC control. and sman buildings.
HYBRID	There are many reasons why hybrid topologies are used but they all have one thing in	Unfortunately. hybrid topologies can be qufie complex. depending on the topologies that you	Some of the maJor applicaUons of the hybrfd topology are the financial and banking sector,

	common: flexibility. There are few constraints on the neMork structure thal a hybrid topology cannot accommodate, and you can Incorporate multiple topologies into one hybrld setup. As a consequence, hybrld topologies are very scnlable. The scalability of hybrtd seNps maLes them well-suited to larger neMorks.	decide to use. Each topology thnt 1s parl of your hybrid topology will have to be managed according to its unique neMork requirements. Thls makes administrators' jobs more difficult because they are golng to have to attempt to manage multlple topologies rather titan a single one. In addition, setting up a hybrid topology can end up being quite costly.	automated Industries, multi-national companies, research organlzntions, and many educational institutions.