

# Practical Exam

## Computer Network

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**Aim:** Implementing a LAN network with Hybrid Topology.  
[Bus Topology + Star Topology]

### Hybrid Topology:

Hybrid topology is an integration of two or more different topologies to form a resultant topology which has many advantages (as well as disadvantages) of all the constituent basic topologies rather than having characteristics of one specific topology.

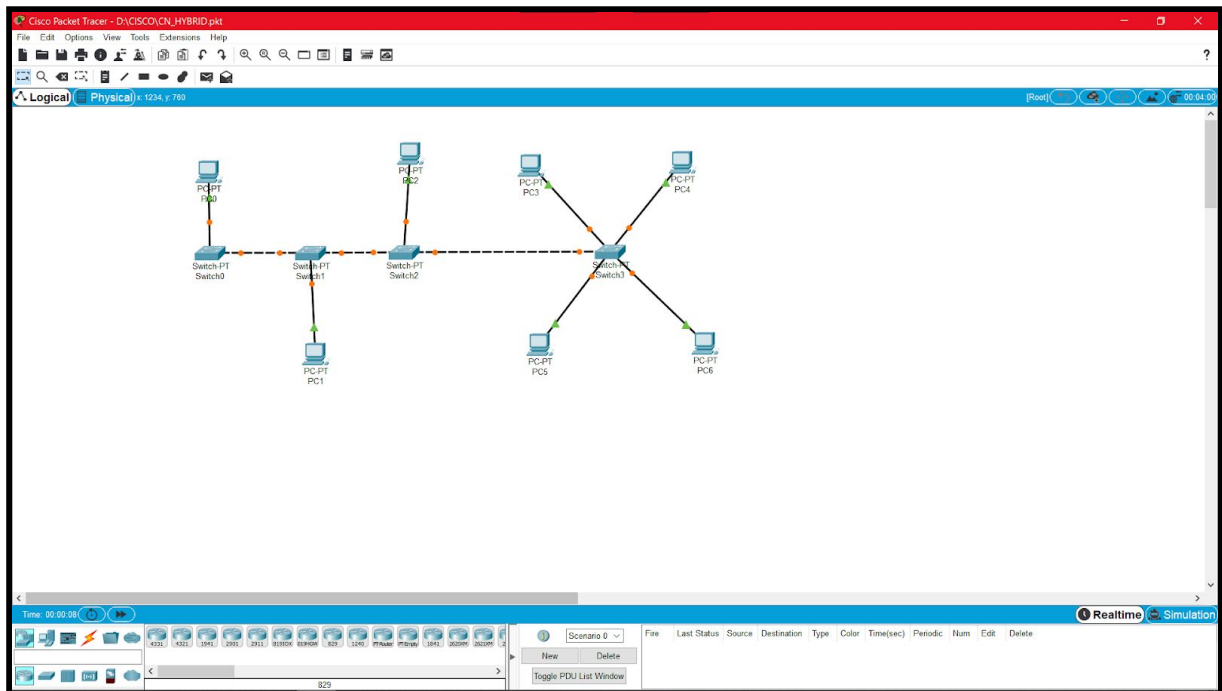
### CISCO PACKET TRACER

**Steps:** [How I performed Hybrid by using Bus and Star Topology]

1. Selected 4 PCs from the devices menu to create a Star Topology with Switch PT.
2. Selected 3 PCs and 3 Switch PTs to create Bus Topology, respectively.
3. Added 1 CFE to the empty port.
4. Simulated the message transfer over the network.
5. Transmitted the messages from PC 0 to PC 5 successfully, across different topologies.

## Output:

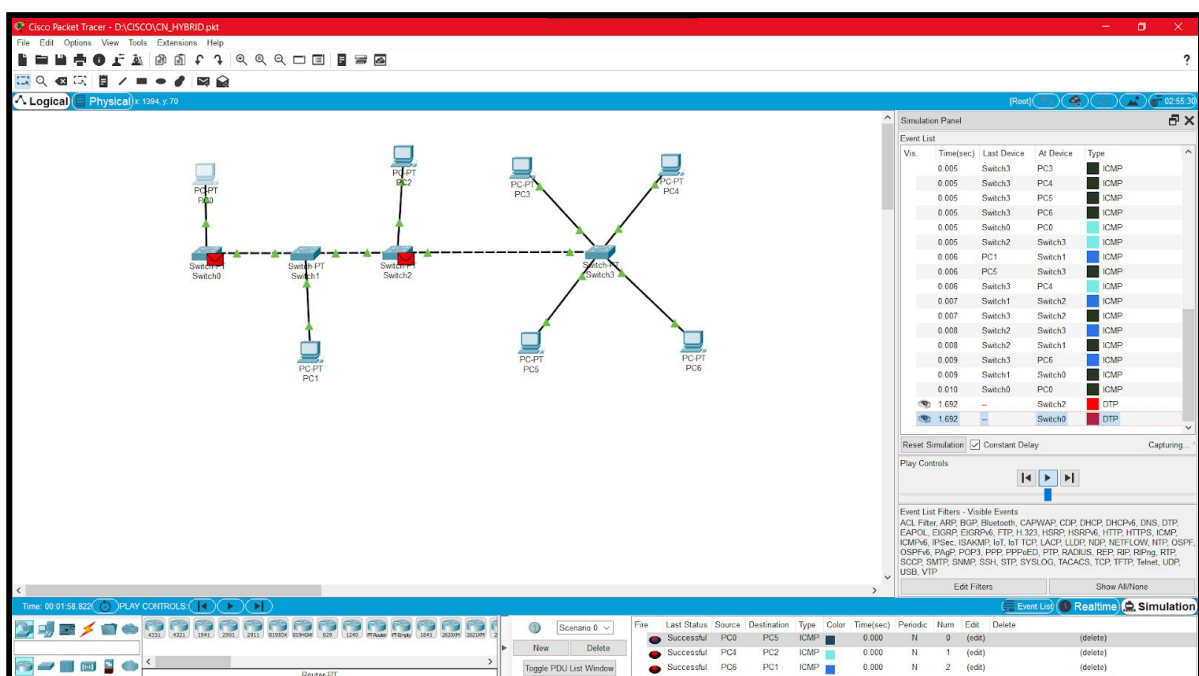
- Bus Topology + Star Topology connected via Switches



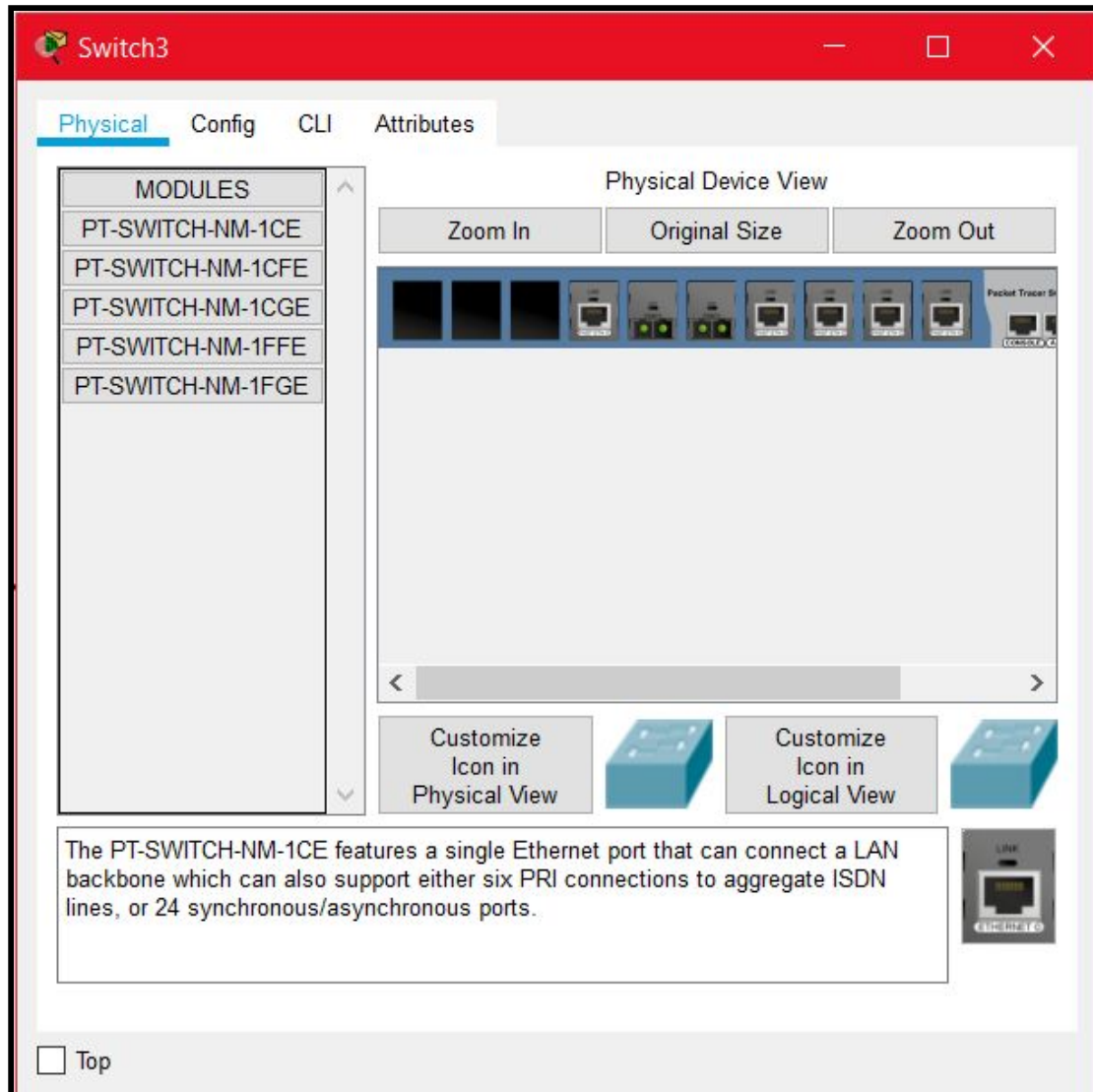
- Packet Successfully Delivered

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC5	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC4	PC2	ICMP		0.000	N	1	(edit)	(delete)
	Successful	PC6	PC1	ICMP		0.000	N	2	(edit)	(delete)

- Successful Simulation



- Inserted Extra port in Switch



- PC 0 [IP: 198.168.0.50] **AMEY THAKUR TE B-50 ← My Roll Number**  
[Default Gateway: 198.168.2.1]

The screenshot shows a window titled "PC0" with a red header bar. Below the header are four tabs: "Physical", "Config", "Desktop" (which is selected and highlighted in blue), "Programming", and "Attributes". The "Desktop" tab contains a sub-header "IP Configuration" with a close button "X". Below this, there is a dropdown menu for "Interface" set to "FastEthernet0".

The "IP Configuration" section has two radio buttons: "DHCP" (unselected) and "Static" (selected). Below these are five text input fields:

- IP Address: 198.168.0.50
- Subnet Mask: 255.255.255.0
- Default Gateway: 198.168.2.1
- DNS Server: 0.0.0.0

The "IPv6 Configuration" section has two radio buttons: "DHCP" (unselected), "Auto Config" (unselected), and "Static" (selected). Below these are four text input fields:

- IPv6 Address: (empty) / (empty)
- Link Local Address: FE80::260:2FFF:FE72:4BB
- IPv6 Gateway: (empty)
- IPv6 DNS Server: (empty)

The "802.1X" section has a checkbox "Use 802.1X Security" which is unchecked. Below it is a dropdown menu for "Authentication" set to "MD5", and two text input fields for "Username" and "Password", both of which are empty.

At the bottom left of the window is a checkbox labeled "Top" which is unchecked.

- PC 1 [IP: 198.168.0.51]

The screenshot shows a configuration window for PC1 with a red title bar. The window has tabs for Physical, Config, Desktop (selected), Programming, and Attributes. The main content area is titled 'IP Configuration' and shows the configuration for the 'FastEthernet0' interface. The 'IP Configuration' section has two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Below these are fields for 'IP Address' (198.168.0.51), 'Subnet Mask' (255.255.255.0), 'Default Gateway' (198.168.2.1), and 'DNS Server' (0.0.0.0). The 'IPv6 Configuration' section has three radio buttons: 'DHCP' (unselected), 'Auto Config' (unselected), and 'Static' (selected). Below these are fields for 'IPv6 Address' (empty), 'Link Local Address' (FE80::209:7CFF:FE49:3EE4), 'IPv6 Gateway' (empty), and 'IPv6 DNS Server' (empty). The '802.1X' section has a checkbox 'Use 802.1X Security' (unchecked), a dropdown menu 'Authentication' (MD5), and fields for 'Username' and 'Password' (both empty). A 'Top' button is located at the bottom left of the window.

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address: 198.168.0.51

Subnet Mask: 255.255.255.0

Default Gateway: 198.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::209:7CFF:FE49:3EE4

IPv6 Gateway:

IPv6 DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top

- PC 2 [IP: 198.168.0.52]

The screenshot shows a configuration window for PC2 with a red title bar. The window has tabs for Physical, Config, Desktop (selected), Programming, and Attributes. The main content area is titled 'IP Configuration' and shows the configuration for the 'FastEthernet0' interface. The 'IP Configuration' section has two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Below these are text boxes for 'IP Address' (198.168.0.52), 'Subnet Mask' (255.255.255.0), 'Default Gateway' (198.168.2.1), and 'DNS Server' (0.0.0.0). The 'IPv6 Configuration' section has three radio buttons: 'DHCP' (unselected), 'Auto Config' (unselected), and 'Static' (selected). Below these are text boxes for 'IPv6 Address' (empty), 'Link Local Address' (FE80::201:42FF:FEE3:8C60), 'IPv6 Gateway' (empty), and 'IPv6 DNS Server' (empty). The '802.1X' section has a checkbox for 'Use 802.1X Security' (unchecked), a dropdown for 'Authentication' (MD5), and text boxes for 'Username' and 'Password' (both empty). A 'Top' button is at the bottom left.

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 198.168.0.52

Subnet Mask 255.255.255.0

Default Gateway 198.168.2.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::201:42FF:FEE3:8C60

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

- PC 3 [IP: 198.168.0.53]

The screenshot shows a configuration window for PC3 with a red title bar. The window has tabs for Physical, Config, Desktop (selected), Programming, and Attributes. The main content area is titled 'IP Configuration' and shows the configuration for the 'FastEthernet0' interface. The 'IP Configuration' section has two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Below these are text fields for 'IP Address' (198.168.0.53), 'Subnet Mask' (255.255.255.0), 'Default Gateway' (198.168.2.1), and 'DNS Server' (0.0.0.0). The 'IPv6 Configuration' section has three radio buttons: 'DHCP' (unselected), 'Auto Config' (unselected), and 'Static' (selected). Below these are text fields for 'IPv6 Address' (empty), 'Link Local Address' (FE80::20C:CFFF:FEB1:314A), 'IPv6 Gateway' (empty), and 'IPv6 DNS Server' (empty). The '802.1X' section has a checkbox for 'Use 802.1X Security' (unchecked), a dropdown for 'Authentication' (MD5), and text fields for 'Username' and 'Password' (both empty). A 'Top' button is located at the bottom left of the window.

PC3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 198.168.0.53

Subnet Mask 255.255.255.0

Default Gateway 198.168.2.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::20C:CFFF:FEB1:314A

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

- PC 4 [IP: 198.168.0.54]

The screenshot shows a configuration window for a PC named PC4. The window has a red title bar with standard Windows window controls. Below the title bar is a tabbed interface with four tabs: Physical, Config, Desktop (which is selected and highlighted in blue), Programming, and Attributes. The main content area is titled 'IP Configuration' and contains a dropdown menu for 'Interface' set to 'FastEthernet0'. Below this, there are three main sections: IP Configuration, IPv6 Configuration, and 802.1X. The IP Configuration section has two radio buttons: DHCP (unselected) and Static (selected). Below these are four text input fields: IP Address (198.168.0.54), Subnet Mask (255.255.255.0), Default Gateway (198.168.2.1), and DNS Server (0.0.0.0). The IPv6 Configuration section has three radio buttons: DHCP (unselected), Auto Config (unselected), and Static (selected). Below these are four text input fields: IPv6 Address (empty), Link Local Address (FE80::205:5EFF:FE65:4E62), IPv6 Gateway (empty), and IPv6 DNS Server (empty). The 802.1X section has a checkbox for 'Use 802.1X Security' (unchecked), a dropdown menu for 'Authentication' set to 'MD5', and two text input fields for 'Username' and 'Password' (both empty). At the bottom left of the window is a 'Top' button with a small square icon.

PC4

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address: 198.168.0.54

Subnet Mask: 255.255.255.0

Default Gateway: 198.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::205:5EFF:FE65:4E62

IPv6 Gateway:

IPv6 DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top



- PC 5 [IP: 198.168.0.55]

PC5

PhysicalConfigDesktopProgrammingAttributes

IP Configuration

InterfaceFastEthernet0

IP Configuration

☐ DHCP

☒ Static

IP Address

198.168.0.55

Subnet Mask

255.255.255.0

Default Gateway

198.168.2.1

DNS Server

0.0.0.0

IPv6 Configuration

☐ DHCP

☐ Auto Config

☒ Static

IPv6 Address

/

Link Local Address

FE80::2D0:BCFF:FE42:AD61

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

☐ Top

- PC 6 [IP: 198.168.0.56]

The screenshot shows the configuration window for PC6 in Cisco Packet Tracer. The window has a red title bar with the text "PC6" and standard window controls. Below the title bar are tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is selected. Inside the "Desktop" tab, there is a sub-tab for "IP Configuration". The "Interface" dropdown menu is set to "FastEthernet0". Under "IP Configuration", the "Static" radio button is selected. The fields are filled with: IP Address: 198.168.0.56, Subnet Mask: 255.255.255.0, Default Gateway: 198.168.2.1, and DNS Server: 0.0.0.0. Under "IPv6 Configuration", the "Static" radio button is selected, and the "Link Local Address" field is filled with FE80::2D0:BAFF:FE0C:79C9. Under "802.1X", the "Use 802.1X Security" checkbox is unchecked, and the "Authentication" dropdown menu is set to "MD5". At the bottom left, there is a "Top" button.

PC6

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address: 198.168.0.56

Subnet Mask: 255.255.255.0

Default Gateway: 198.168.2.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:BAFF:FE0C:79C9

IPv6 Gateway:

IPv6 DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top

## Conclusion:

We can use Cisco Packet Tracer to design and simulate topologies.