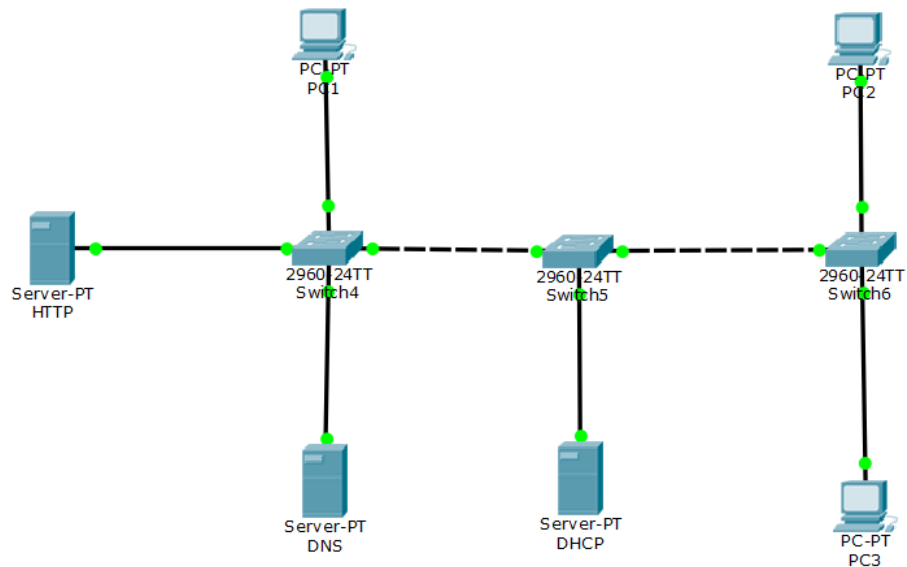


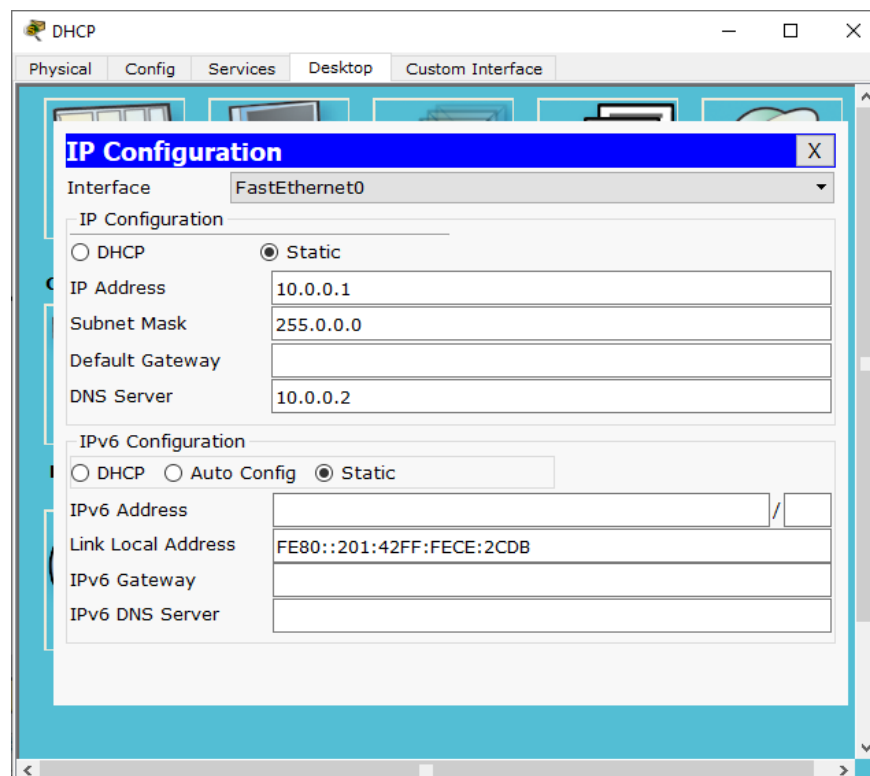
LAB 04 - COMPUTER NETWORKS

FIRST TASK

TOPOLOGY



DHCP SERVER



DHCP SERVICES

The screenshot shows the DHCP configuration window. On the left, a sidebar lists various services: HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, and FTP. The 'DHCP' service is selected. The main area is titled 'DHCP' and contains the following fields:

- Interface: FastEthernet0
- Service: ☒ On ☐ Off
- Pool Name: se
- Default Gateway: 0.0.0.0
- DNS Server: 10.0.0.2
- Start IP Address: 10.0.0.4
- Subnet Mask: 255.0.0.0
- Maximum number of Users: 512
- TFTP Server: 0.0.0.0

Below these fields are three buttons: Add, Save, and Remove. At the bottom, there is a table with the following data:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP
se	0.0.0.0	10.0.0.2	10.0.0.4	255.0.0.0	512	0.0.0.0
server...	0.0.0.0	0.0.0.0	10.0.0.0	255.0.0.0	512	0.0.0.0

DNS SERVER

The screenshot shows the DNS configuration window. On the left, a sidebar lists various services: HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, and FTP. The 'DNS' service is selected. The main area is titled 'DNS' and contains the following fields:

- Interface: FastEthernet0
- IP Configuration: ☐ DHCP ☒ Static
- IP Address: 10.0.0.2
- Subnet Mask: 255.0.0.0
- Default Gateway:
- DNS Server: 10.0.0.2
- IPv6 Configuration: ☐ DHCP ☐ Auto Config ☒ Static
- IPv6 Address:
- Link Local Address: FE80::20C:CFFF:FEC7:42C0
- IPv6 Gateway:
- IPv6 DNS Server:

DNS SERVICE

The screenshot shows the 'DNS SERVICE' configuration window. On the left, a 'SERVICES' list includes HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, and FTP. The 'DNS' service is selected. The main area is titled 'DNS' and contains the following fields and controls:

- DNS Service:** A radio button group with 'On' selected and 'Off' unselected.
- Resource Records:**
 - Name:** A text field containing 'cn'.
 - Type:** A dropdown menu set to 'CNAME'.
 - Host Name:** A text field containing 'cnlab'.
- Buttons:** 'Add', 'Save', and 'Remove' buttons are located below the resource record fields.
- Table:** A table with 4 columns: 'No.', 'Name', 'Type', and 'Detail'. It contains two rows:

No.	Name	Type	Detail
0	cn	CNAME	cnlab
1	cnlab	A Record	10.0.0.3

HTTP SERVER

The screenshot shows the 'HTTP SERVER' configuration window. The 'IP Configuration' dialog box is open, displaying settings for the 'FastEthernet0' interface. The dialog box has a blue title bar and a close button (X).

IP Configuration

Interface: FastEthernet0

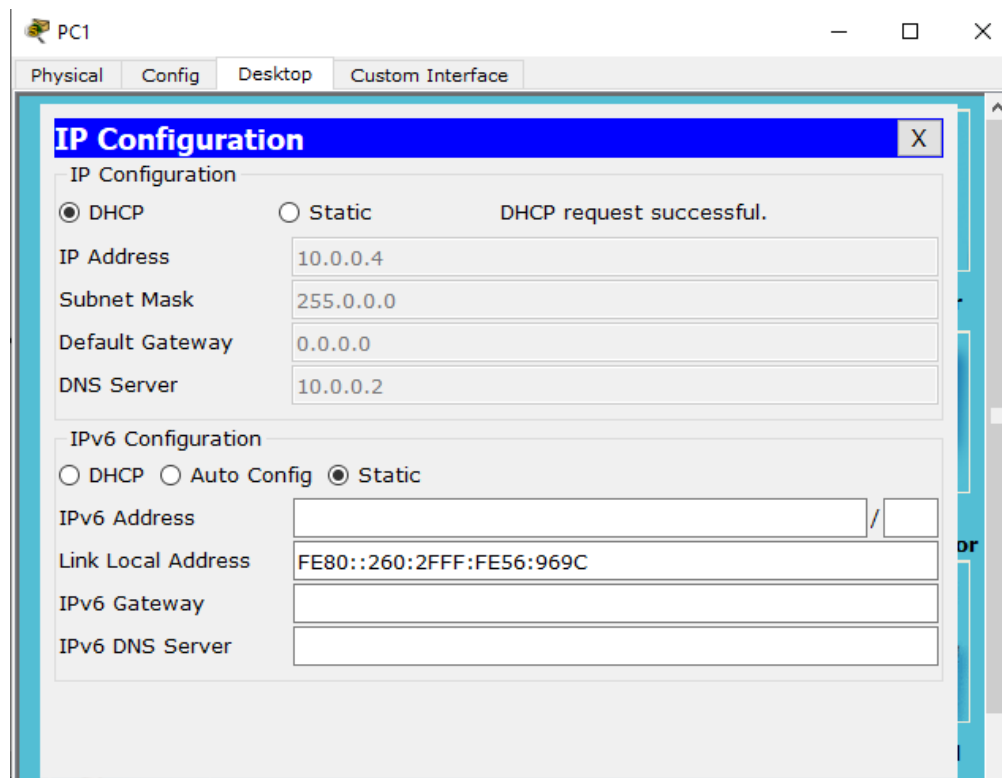
IP Configuration

- DHCP:** Unselected radio button.
- Static:** Selected radio button.
- IP Address:** 10.0.0.3
- Subnet Mask:** 255.0.0.0
- Default Gateway:** (Empty field)
- DNS Server:** 10.0.0.2

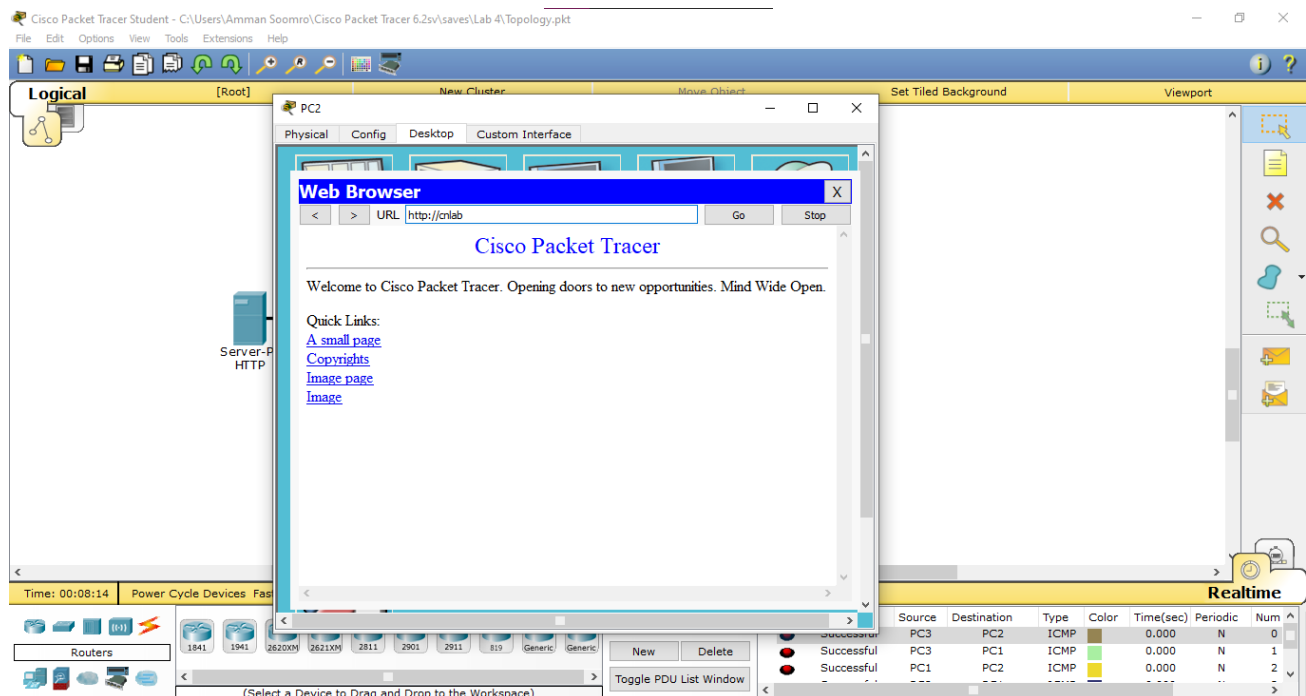
IPv6 Configuration

- DHCP:** Unselected radio button.
- Auto Config:** Unselected radio button.
- Static:** Selected radio button.
- IPv6 Address:** (Empty field) / (Empty field)
- Link Local Address:** FE80::260:3EFF:FEDA:C66B
- IPv6 Gateway:** (Empty field)
- IPv6 DNS Server:** (Empty field)

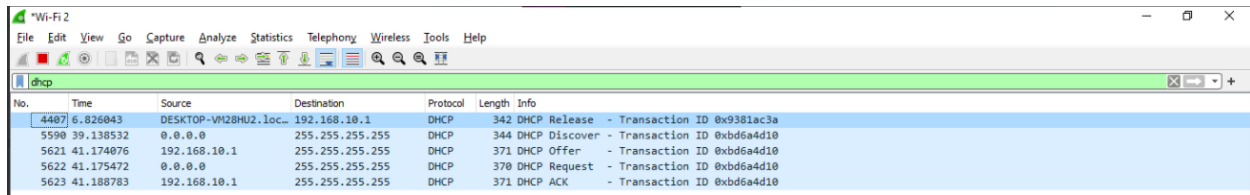
DHCP IP ASSIGNING



SENDING PACKETS AND DNS CHECK



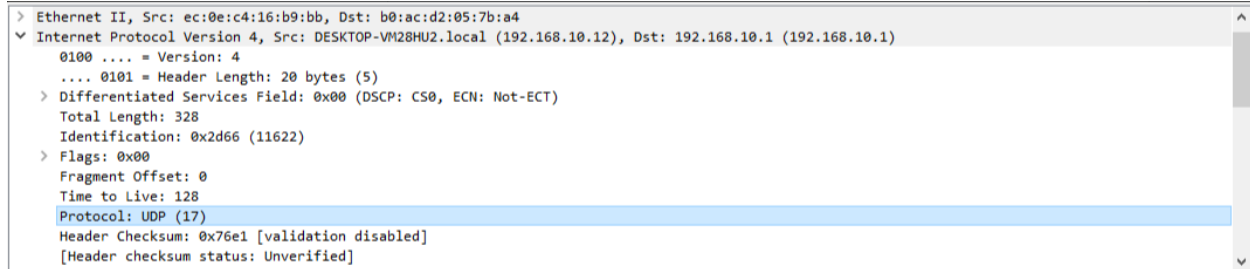
WIRESHARK



The screenshot shows the Wireshark interface with a packet capture of DHCP traffic. The packet list pane displays several packets, with packet 5590 (DHCP Discover) selected. The packet details pane shows the structure of the Ethernet II, Internet Protocol Version 4, and User Datagram Protocol (UDP) headers.

No.	Time	Source	Destination	Protocol	Length	Info
4407	6.826043	DESKTOP-VM28HU2.local	192.168.10.1	DHCP	342	DHCP Release - Transaction ID 0x9381ac3a
5590	39.138532	0.0.0.0	255.255.255.255	DHCP	344	DHCP Discover - Transaction ID 0xbd6a4d10
5621	41.174076	192.168.10.1	255.255.255.255	DHCP	371	DHCP Offer - Transaction ID 0xbd6a4d10
5622	41.175472	0.0.0.0	255.255.255.255	DHCP	370	DHCP Request - Transaction ID 0xbd6a4d10
5623	41.188783	192.168.10.1	255.255.255.255	DHCP	371	DHCP ACK - Transaction ID 0xbd6a4d10

QUESTION 01



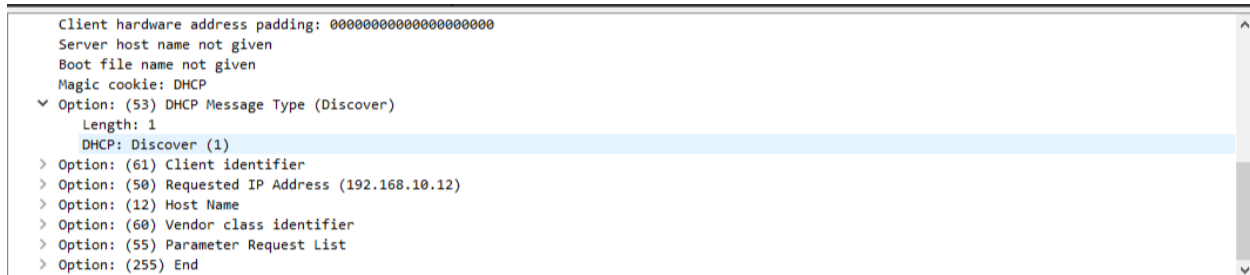
The screenshot shows the packet details pane for packet 5590. The pane displays the structure of the Ethernet II, Internet Protocol Version 4, and User Datagram Protocol (UDP) headers. The Ethernet II header shows the source MAC address as ec:0e:c4:16:b9:bb and the destination MAC address as b0:ac:d2:05:7b:a4. The Internet Protocol Version 4 header shows the source IP address as 0.0.0.0 and the destination IP address as 255.255.255.255. The User Datagram Protocol header shows the source port as 0 and the destination port as 67.

> Ethernet II, Src: ec:0e:c4:16:b9:bb, Dst: b0:ac:d2:05:7b:a4
▼ Internet Protocol Version 4, Src: DESKTOP-VM28HU2.local (192.168.10.12), Dst: 255.255.255.255 (255.255.255.255)
 0100 = Version: 4
 0101 = Header Length: 20 bytes (5)
 > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
 Total Length: 328
 Identification: 0x2d66 (11622)
 > Flags: 0x00
 Fragment Offset: 0
 Time to Live: 128
 Protocol: UDP (17)
 Header Checksum: 0x76e1 [validation disabled]
 [Header checksum status: Unverified]

QUESTION 02

No.	Time	Source	Destination	Protocol	Length	Info
5590	39.138532	0.0.0.0	255.255.255.255	DHCP	344	DHCP Discover - Transaction ID 0xbd6a4d10

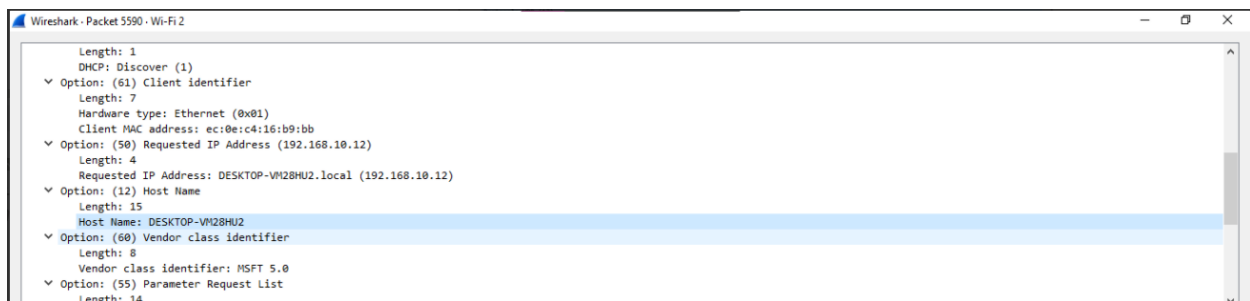
QUESTION 03



The screenshot shows the packet details pane for packet 5590, specifically the DHCP Discover message. The pane displays the structure of the DHCP message, including the magic cookie, message type, and various options.

Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
▼ Option: (53) DHCP Message Type (Discover)
 Length: 1
 DHCP: Discover (1)
 > Option: (61) Client identifier
 > Option: (50) Requested IP Address (192.168.10.12)
 > Option: (12) Host Name
 > Option: (60) Vendor class identifier
 > Option: (55) Parameter Request List
 > Option: (255) End

QUESTION 04

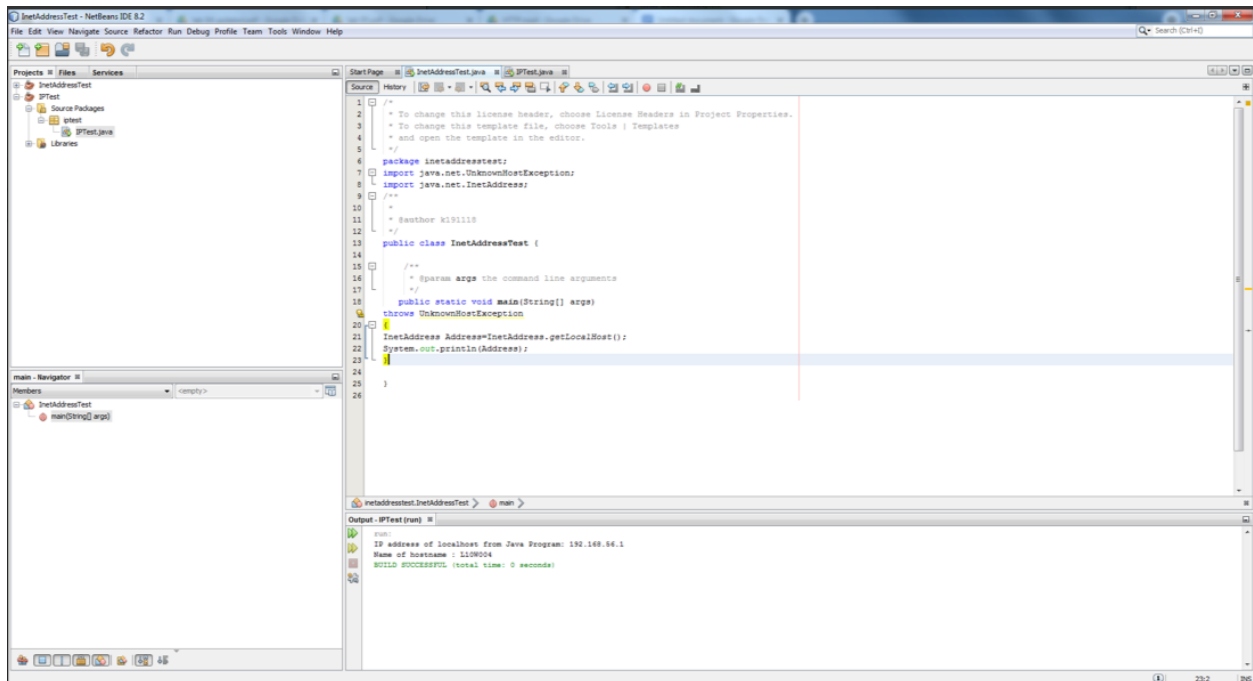


The screenshot shows the packet details pane for packet 5590, specifically the DHCP Discover message, showing the options section. The pane displays the structure of the DHCP options, including the client identifier, requested IP address, host name, vendor class identifier, and parameter request list.

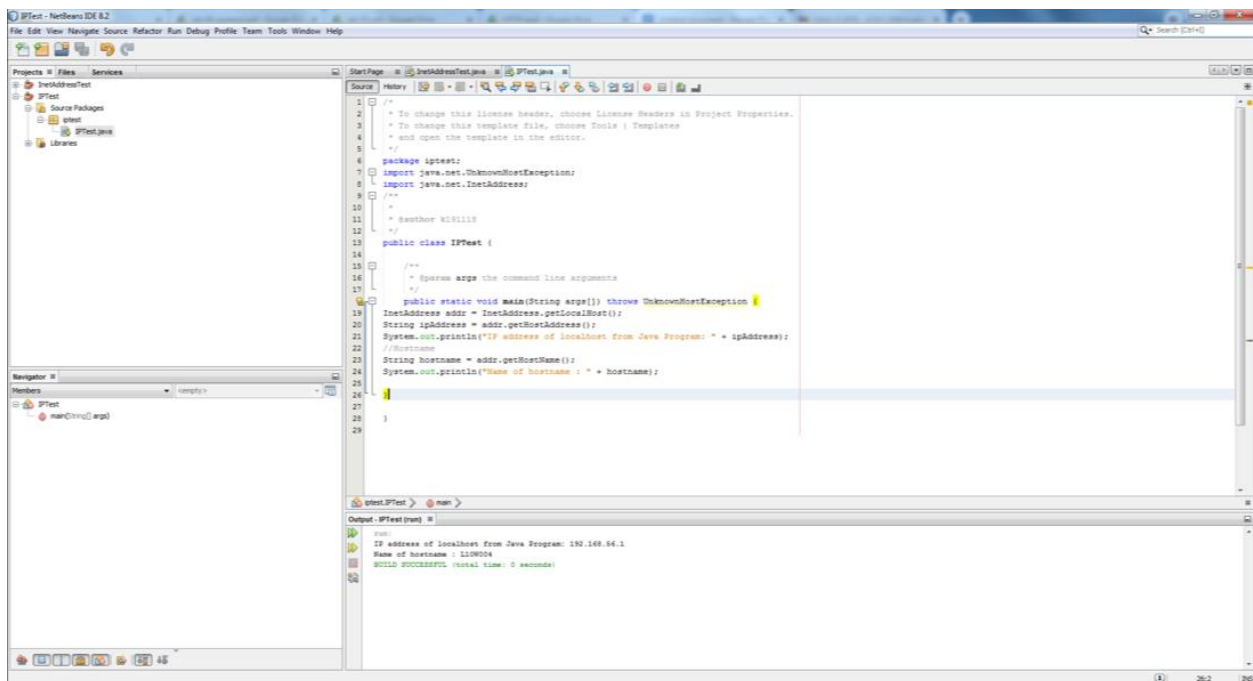
Length: 1
DHCP: Discover (1)
▼ Option: (61) Client identifier
 Length: 7
 Hardware type: Ethernet (0x01)
 Client MAC address: ec:0e:c4:16:b9:bb
▼ Option: (50) Requested IP Address (192.168.10.12)
 Length: 4
 Requested IP Address: DESKTOP-VM28HU2.local (192.168.10.12)
▼ Option: (12) Host Name
 Length: 15
 Host Name: DESKTOP-VM28HU2
▼ Option: (60) Vendor class identifier
 Length: 8
 Vendor class identifier: MSFT 5.0
▼ Option: (55) Parameter Request List
 Length: 14

SOCKET PROGRAMMING

QUESTION NO 01



QUESTION NO 02



SOCKET PROGRAMMING QUESTIONS

QUESTION NO 01

Port No and IP Address

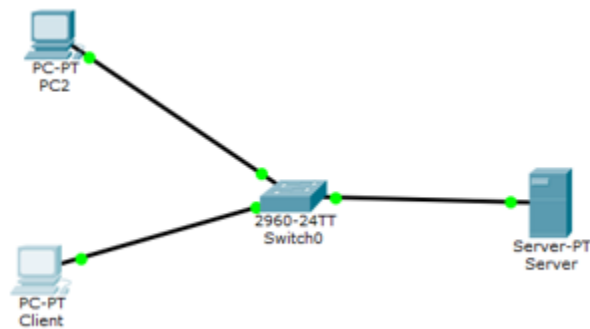
QUESTION NO 02

LISTEN (parameters).

Parameters will decide how many connections should be made.

LISTEN (1) will be passed to make a listen only connection.

QUESTION NO 03

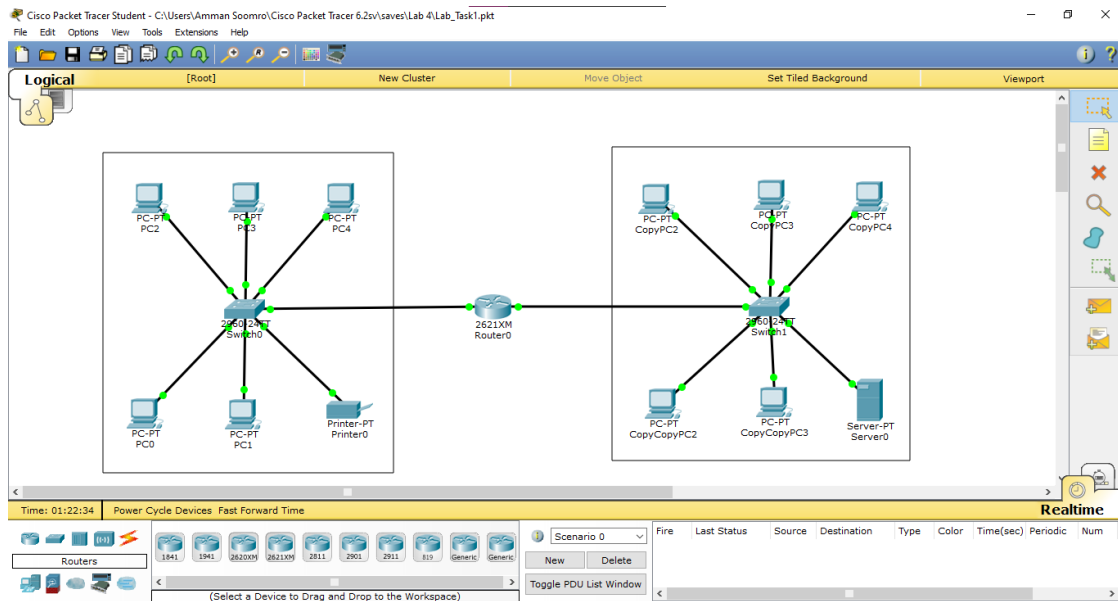


Client Server Architecture

LAB TASKS

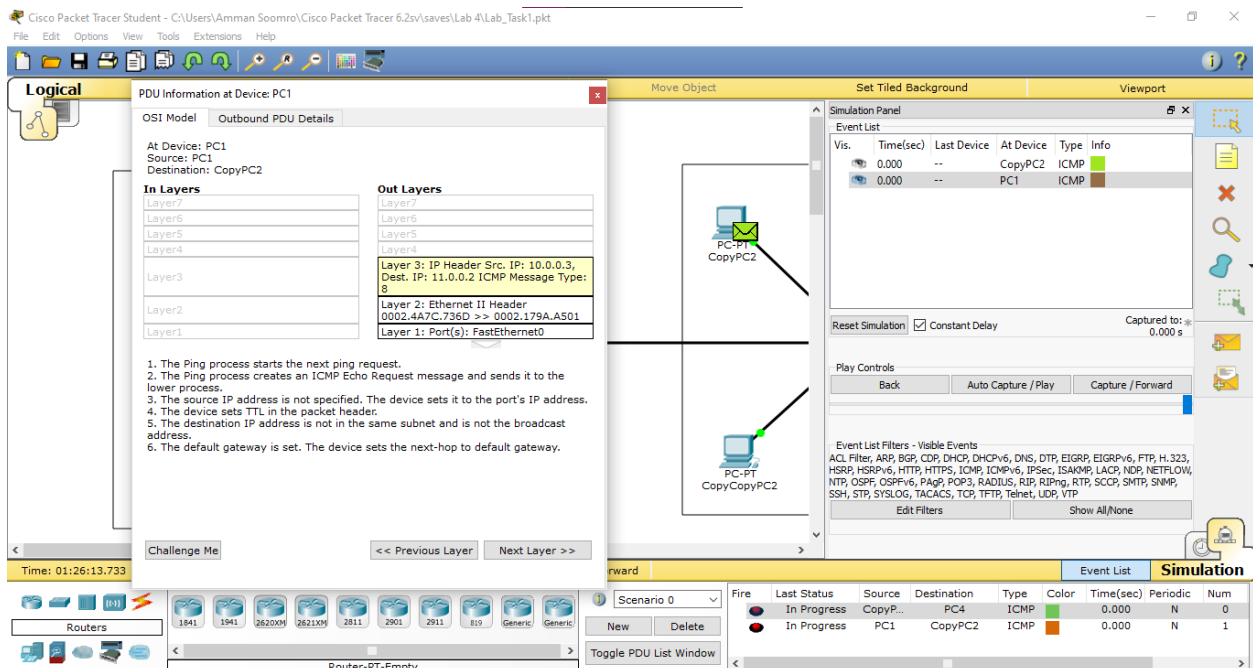
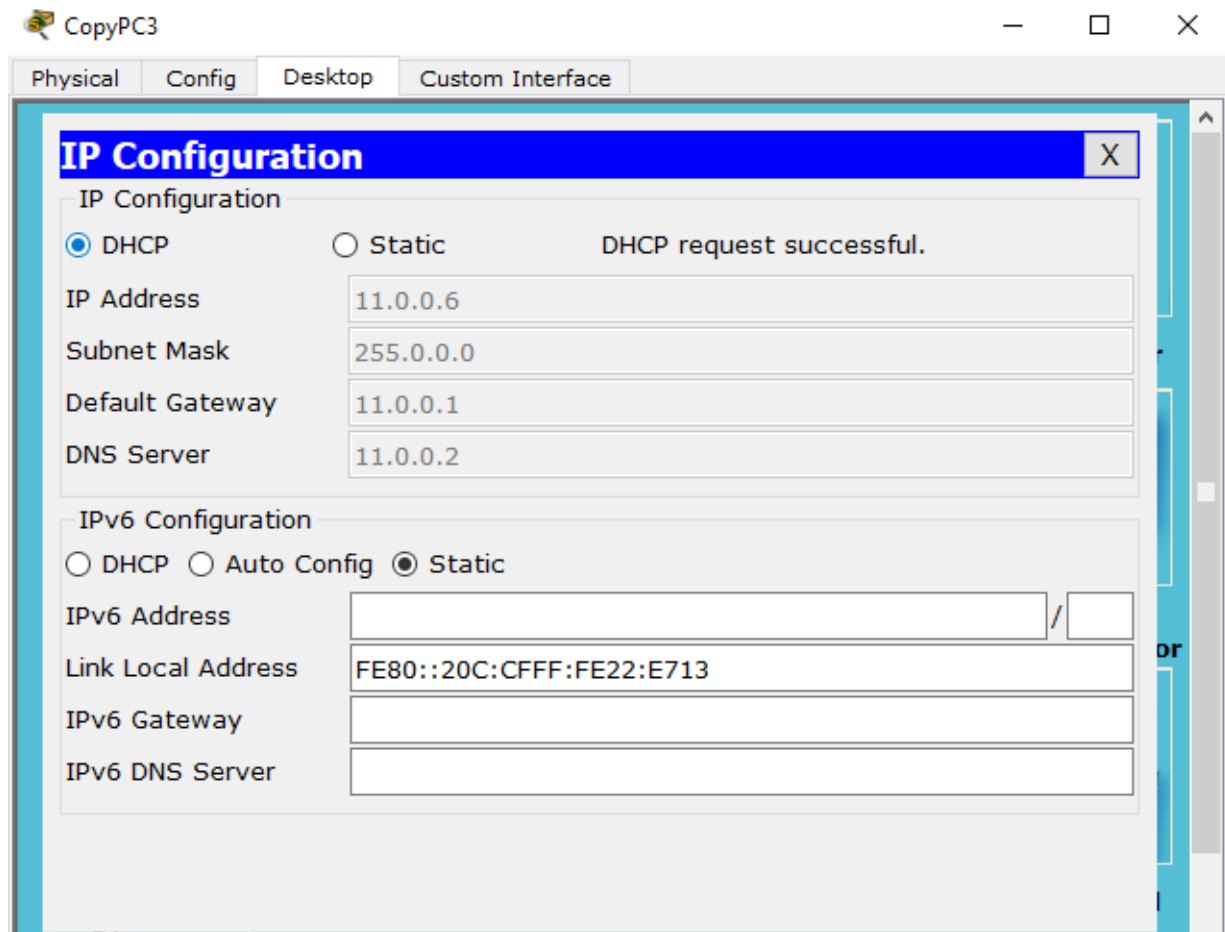
TASK NO 01

TOPOLOGY



The image shows the configuration window for PC4 in Cisco Packet Tracer. The window has tabs for Physical, Config, Desktop, and Custom Interface. The IP Configuration tab is active, showing the following settings:

- IP Configuration:**
 - ☒ DHCP ☐ Static **DHCP request successful.**
 - IP Address: 10.0.0.5
 - Subnet Mask: 255.0.0.0
 - Default Gateway: 10.0.0.1
 - DNS Server: 10.0.0.2
- IPv6 Configuration:**
 - ☐ DHCP ☐ Auto Config ☒ Static
 - IPv6 Address: [Empty field]
 - Link Local Address: FE80::2D0:FFFF:FECA:4CD1
 - IPv6 Gateway: [Empty field]
 - IPv6 DNS Server: [Empty field]



TASK NO 02

TOPOLOGY

