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Section: B1

Course Code: CSE 320

DHCP WITH DNS report

DHCP:

DHCP Dynamic Host Configuration Protocol is a network management protocol used to dynamically assign an IP address to any device, or node, on a network so it can communicate using IP. DHCP automates and centrally manages these configurations rather than requiring network administrators to manually assign IP addresses to all network devices. DHCP can be implemented on small local networks, as well as large enterprise networks.

Windows Server 2016 includes DHCP Server, which is an optional networking server role that you can deploy on your network to lease IP addresses and other information to DHCP clients. All Windows-based client operating systems include the DHCP client as part of TCP/IP, and DHCP client is enabled by default.

USE OF DHCP:

Every device on a TCP/IP-based network must have a unique unicast IP address to access the network and its resources. Without DHCP, IP addresses for new computers or computers that are moved from one subnet to another must be configured manually; IP addresses for computers that are removed from the network must be manually reclaimed.

The network administrator establishes DHCP servers that maintain TCP/IP configuration information and provide address configuration to DHCP-enabled clients in the form of a lease offer. The DHCP server stores the configuration information in a database that includes:

1. Valid TCP/IP configuration parameters for all clients on the network.
2. Valid IP addresses, maintained in a pool for assignment to clients, as well as excluded addresses.
3. Reserved IP addresses associated with particular DHCP clients. This allows consistent assignment of a single IP address to a single DHCP client.
4. The lease duration, or the length of time for which the IP address can be used before a lease renewal is required.
5. A DHCP-enabled client, upon accepting a lease offer, receives:
6. A valid IP address for the subnet to which it is connecting.
7. Requested DHCP options, which are additional parameters that a DHCP server is configured to assign to clients. Some examples of DHCP options are Router (default gateway), DNS Servers, and DNS Domain Name.

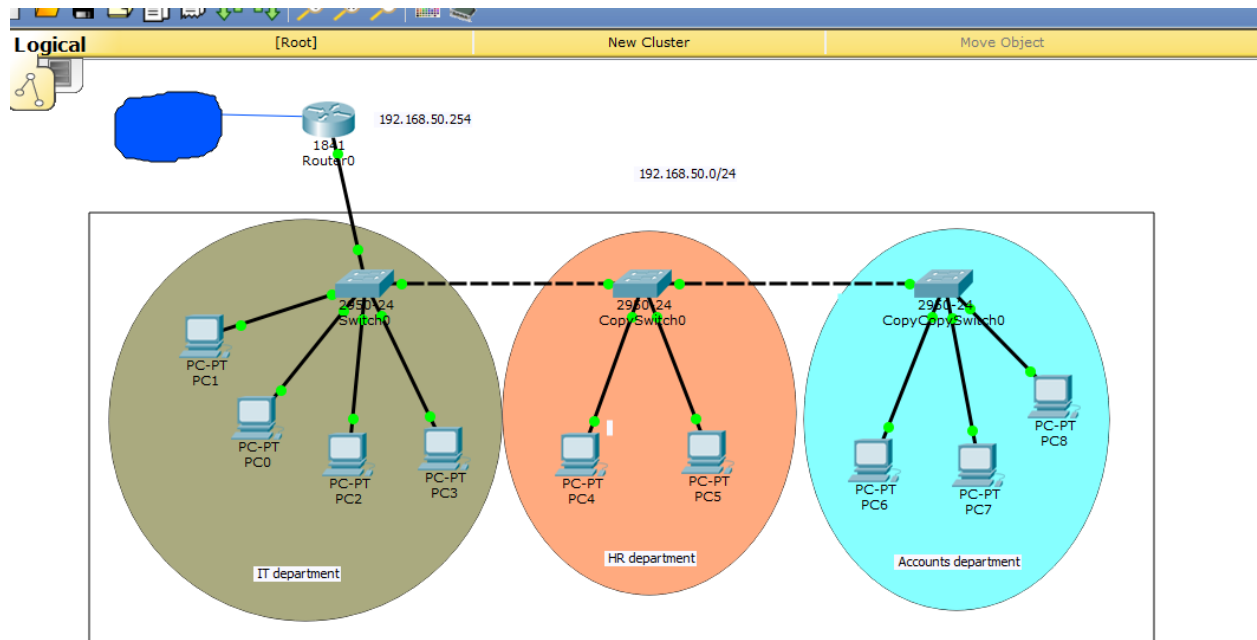
DHCP WORKING PRINCIPLE:

DHCP runs at the application layer of the TCP/IP stack. It dynamically assigns IP addresses to DHCP clients and allocates TCP/IP configuration information to DHCP clients. This information includes subnet mask information, default gateway IP addresses and domain name system (DNS) addresses.

DHCP is a client-server protocol in which servers manage a pool of unique IP addresses, as well as information about client configuration parameters. The servers then assign addresses out of those address

pools. DHCP-enabled clients send a request to the DHCP server whenever they connect to a network.

DHCP Structure:



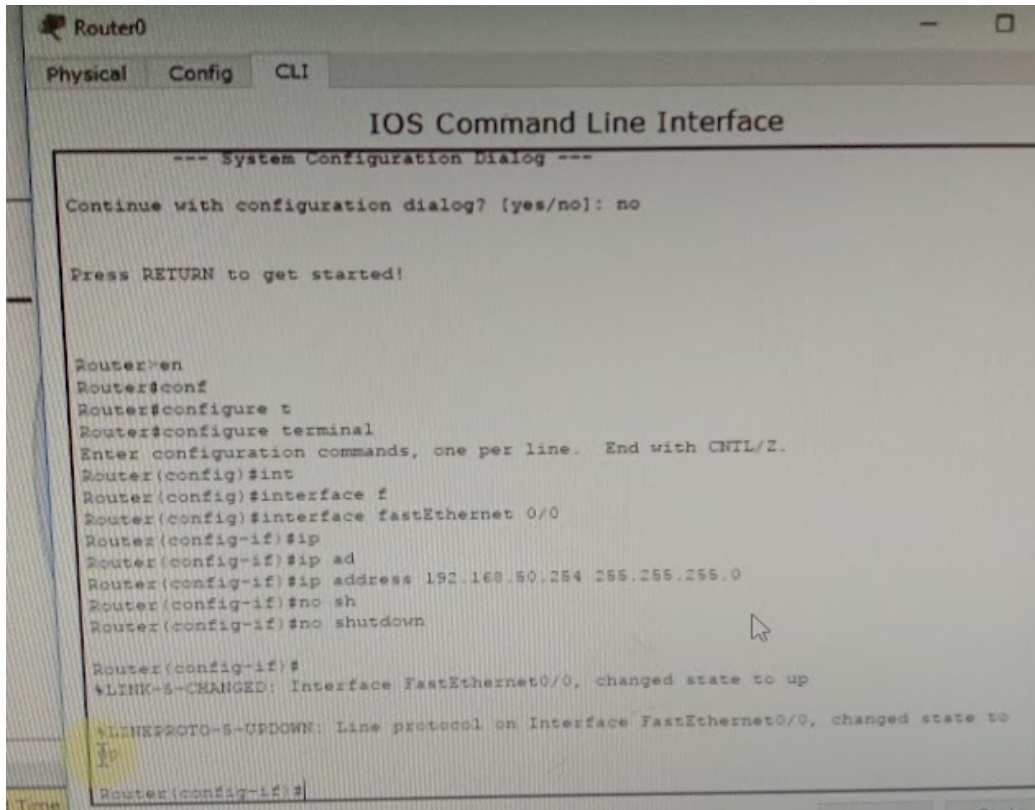
Equipment:

- 1841 router
- 2960-24 switch
- PC-PT end devices
- wire

STEP FOR DHCP:

1. Connect all the devices with proper wire.
2. Setup the router.
3. Put the correct ip address in dhcp.
4. Configure all PCs using the dhcp protocol.
5. For checking pass messages from one pc to another.

FOR ROUTER CONFIGURE:



```
Router0
Physical Config CLI
IOS Command Line Interface
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: no
Press RETURN to get started!

Router>en
Router#conf
Router#configure t
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int
Router(config)#interface f
Router(config)#interface fastEthernet 0/0
Router(config-if)#ip
Router(config-if)#ip ad
Router(config-if)#ip address 192.168.50.254 255.255.255.0
Router(config-if)#no sh
Router(config-if)#no shutdown

Router(config-if)#
%LINK-3-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Router(config-if)#
```

IP ADDRESSING PC:

PC0

Physical Config Desktop Custom Interface

IP Configuration

IP Configuration

☒ DHCP ☐ Static

IP Address 192.168.50.27

Subnet Mask 255.255.255.0

Default Gateway 192.168.50.254

DNS Server 8.8.8.8

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

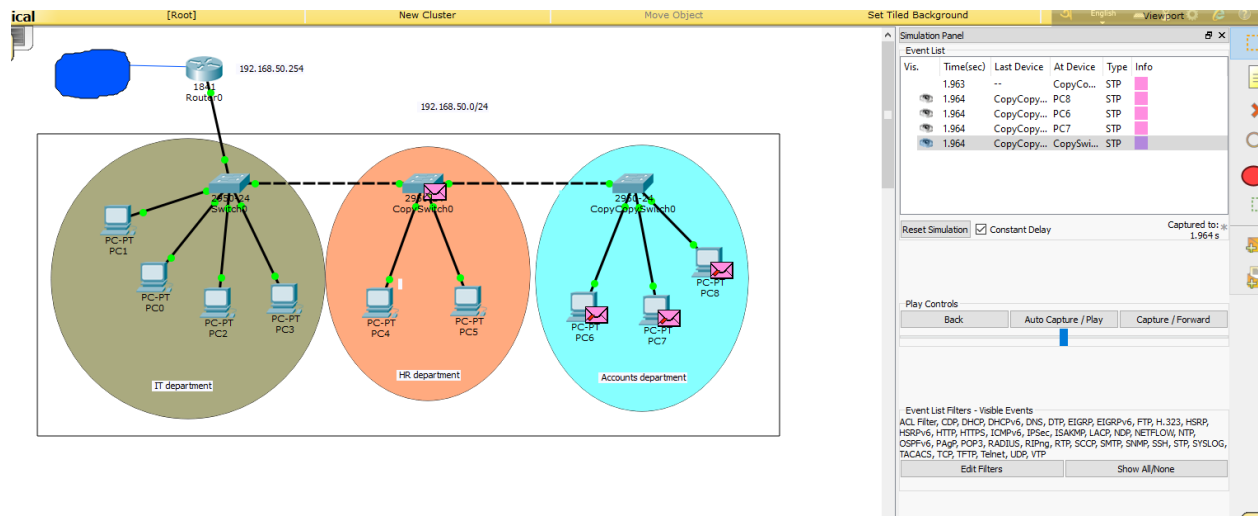
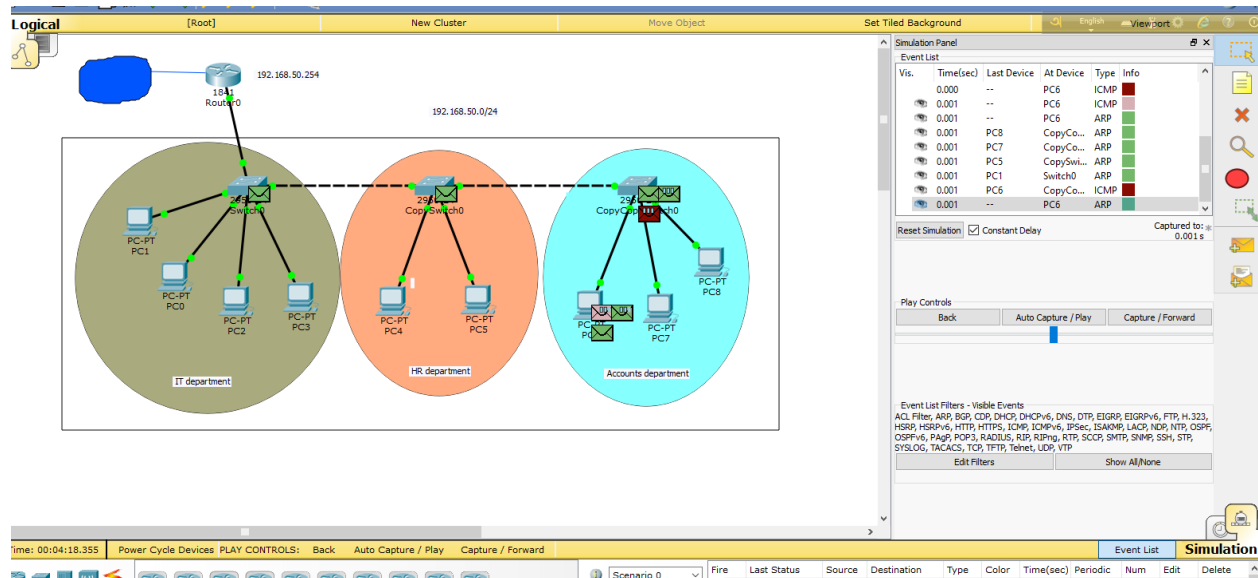
IPv6 Address /

Link Local Address FE80::201:42FF:FE49:3A54

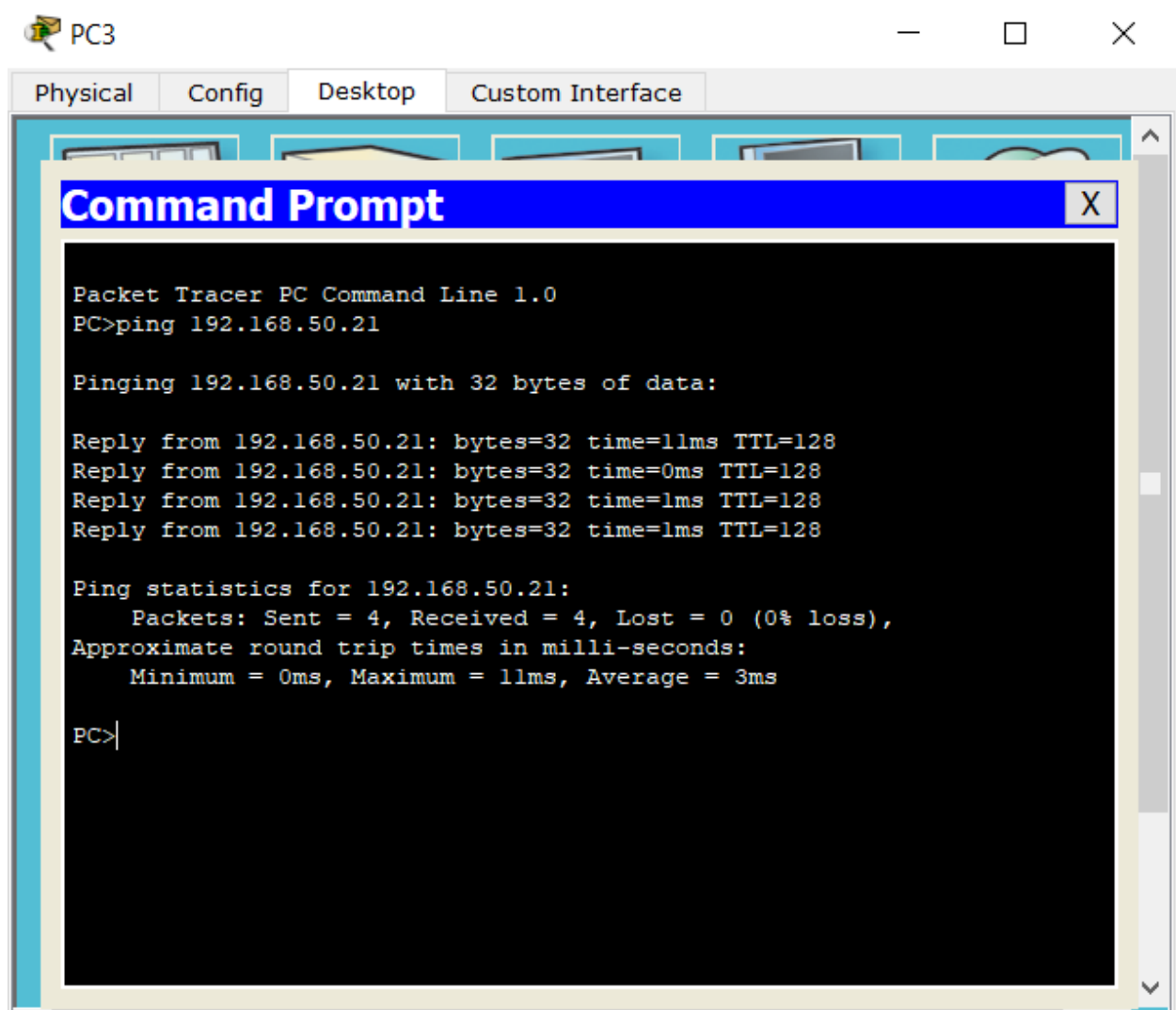
IPv6 Gateway

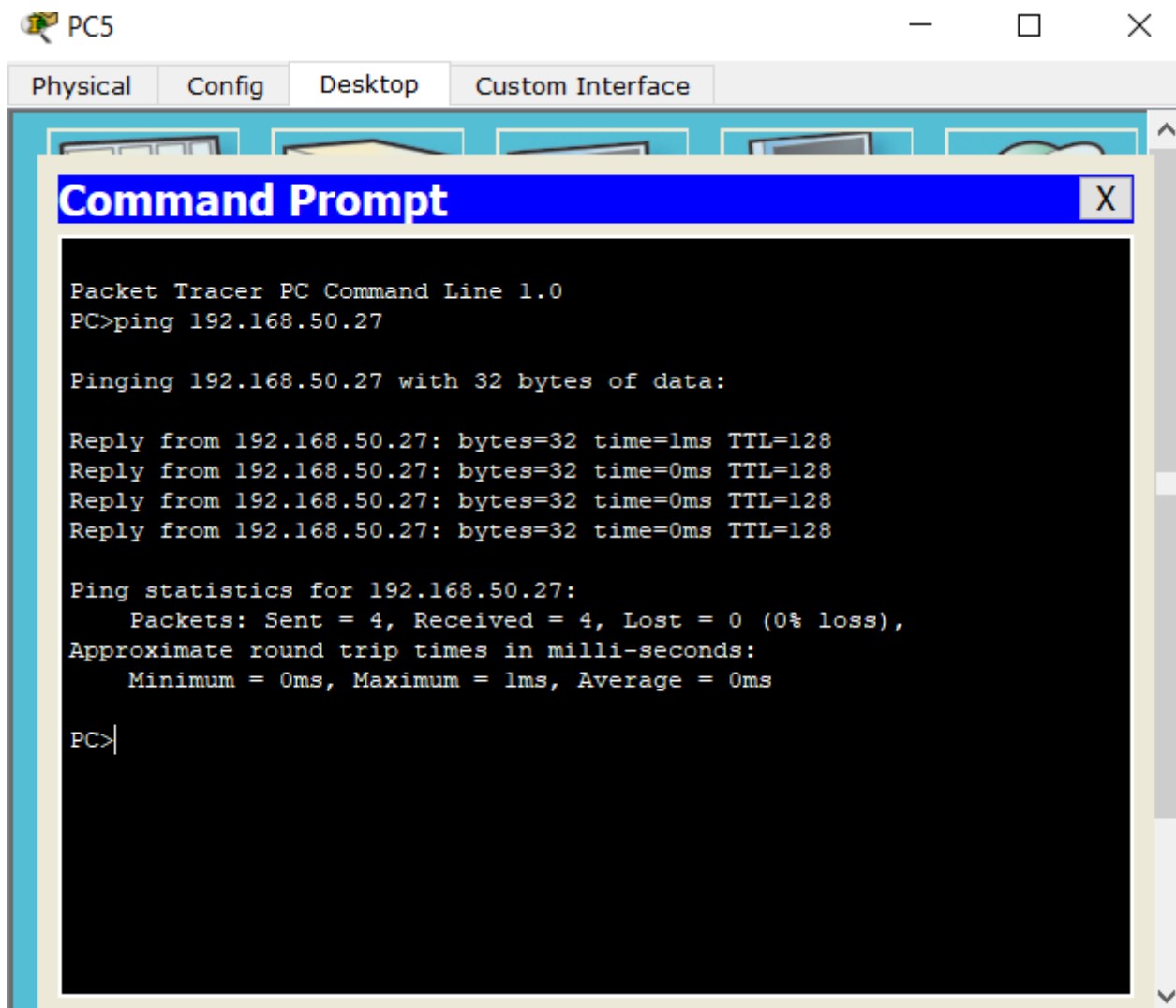
IPv6 DNS Server

FOR SEND MESSAGE:



Connection Between PCs:





Here we see the message will be sent properly we have successfully done DHCP WITH DNS.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC8	ICMP		0.005	N	6	(edit)	(delete)
	Successful	PC8	PC0	ICMP		0.005	N	7	(edit)	(delete)
	Successful	PC0	PC2	ICMP		150.082	N	8	(edit)	(delete)