

## Experiment Number 4

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Branch ::	CSE - IoT	Sec/Grp ::	1/A
Semester ::	6 <sup>th</sup>	Date ::	15 <sup>th</sup> Mar, 2022
Subject ::	NOS Lab	CODE ::	CSP-396

### 1. Aim :

To implement the DNS network.

### 2. Task :

1. Implement the DNS network using two servers.

### 3. Appartus :

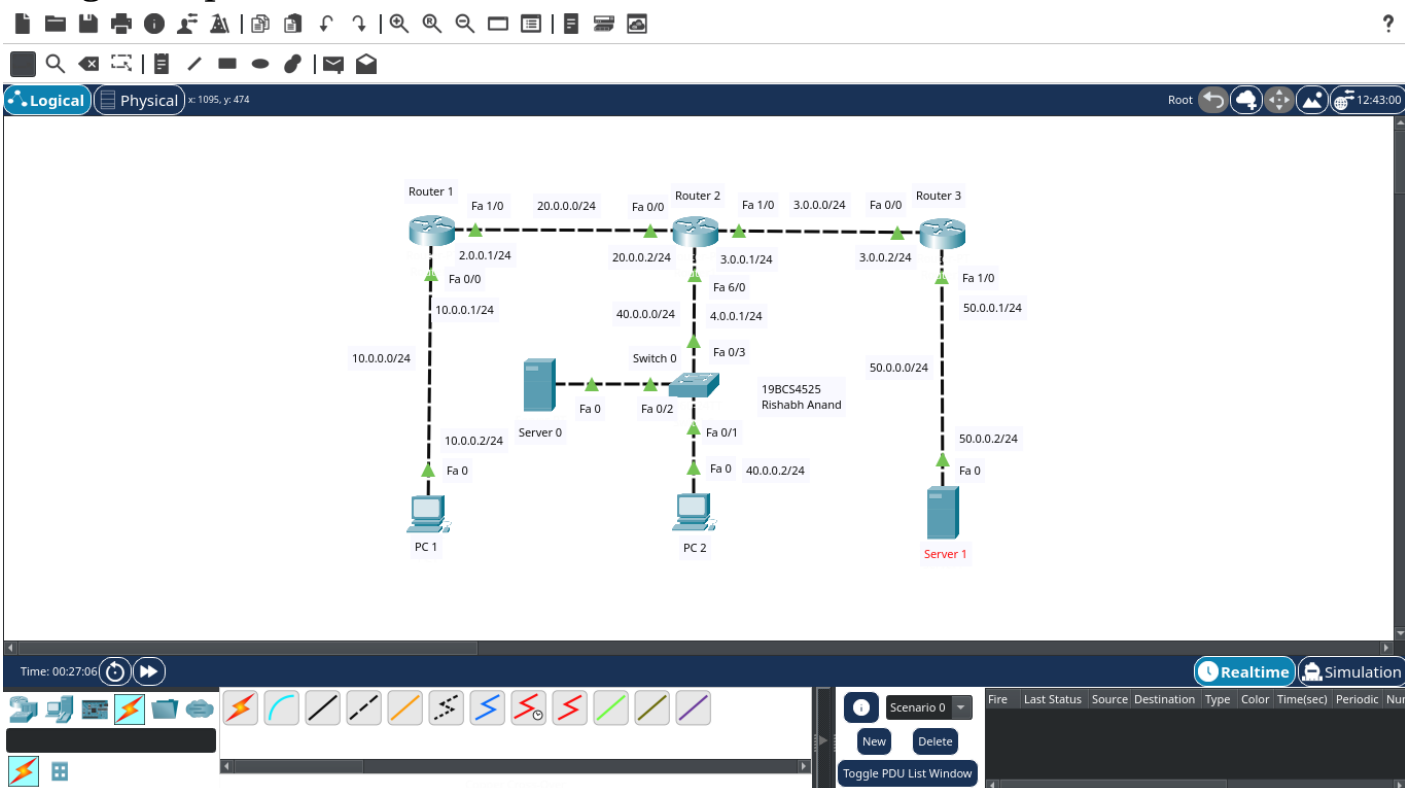
- Cisco Packet Tracer.

### 3A. Theory :

DNS is a service that converts a host's name to an IP address. The Domain Name System (DNS) is a distributed database that is implemented as a hierarchy of name servers. It's an application layer protocol that allows clients and servers to send and receive messages.

## 4. Steps:

- Design the phase.



- Configure the routers, servers, and PC's.

## - Routers

CLI

```
Router>enable
Router#
Router>configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet4/0
Router(config-if)#no shutdown
Router(config-if)#
Router(config)#interface FastEthernet5/0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
```

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CLI

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Router>enable
Router#
Router>configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet4/0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet5/0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet6/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet6/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet6/0, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet7/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet7/0, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet8/0
Router(config-if)#no shutdown
```

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CLI

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface FastEthernet7/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet7/0, changed state to up

Router(config-if)#exit
Router(config)#interface FastEthernet8/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet8/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

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%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

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%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

```

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Top

CLI

```

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

```

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Top

## - PC

Desktop

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP
☐ Static

IPv4 Address 10.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 10.0.0.1

DNS Server 50.0.0.2

IPv6 Configuration

☒ Automatic
☐ Static

IPv6 Address

Link Local Address FE80::209:7CFF:FE47:9864

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Top

Desktop

IP Configuration

Interface FastEthernet0

IP Configuration

☒ DHCP
☐ Static

IPv4 Address 40.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 40.0.0.1

DNS Server 50.0.0.2

IPv6 Configuration

☒ Automatic
☐ Static

IPv6 Address

Link Local Address FE80::200:CFF:FE95:1857

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Top

## – Servers

Desktop

IP Configuration

IP Configuration

☒ DHCP

☒ Static

IPv4 Address

40.0.0.3

Subnet Mask

255.255.255.0

Default Gateway

40.0.0.1

DNS Server

0.0.0.0

IPv6 Configuration

☒ Automatic

☒ Static

IPv6 Address

Link Local Address

FE80::202:17FF:FE8B:6C56

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

Top

Desktop

IP Configuration

IP Configuration

☒ DHCP

☒ Static

IPv4 Address

50.0.0.2

Subnet Mask

255.0.0.0

Default Gateway

50.0.0.1

DNS Server

50.0.0.2

IPv6 Configuration

☒ Automatic

☒ Static

IPv6 Address

Link Local Address

FE80::230:F2FF:FEDC:201B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

Top



[Physical](#) [Config](#) [CLI](#) [Attributes](#)

IOS Command Line Interface

```
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
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Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#ip route 50.0.0.0 255.255.255.0 30.0.0.2
Router(config)#ip route 50.0.0.0 255.255.255.0 30.0.0.2
% Unknown command or computer name, or unable to find computer address

Router(config)#ip route 10.0.0.0 255.255.255.0 20.0.0.1
Router(config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

[Go to the previous CLI history](#) [Copy](#) [Paste](#)

[Top](#)





- After configuring the DNS Services on this server, we can create a platform for services and clients to communicate. To do so, go to services, pick DNS, and enter the name and IP address of the HTTP Server as shown below, then click the add button to add these entries to the DNS Server. Then, on this server, turn on DNS Services.

The screenshot shows a web-based configuration interface for DNS services. On the left is a sidebar with a list of services: SERVICES, HTTP, DHCP, DHCPv6, TFTP, DNS (selected), SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The main area is titled 'Services' and contains a 'DNS' section. It has input fields for 'Name' (containing 'packet.com') and 'IP Address' (containing '40.0.0.3'), a 'Type' dropdown menu set to 'A Record', and buttons for 'Add', 'Save', and 'Remove'. Below these is a table with the following data:

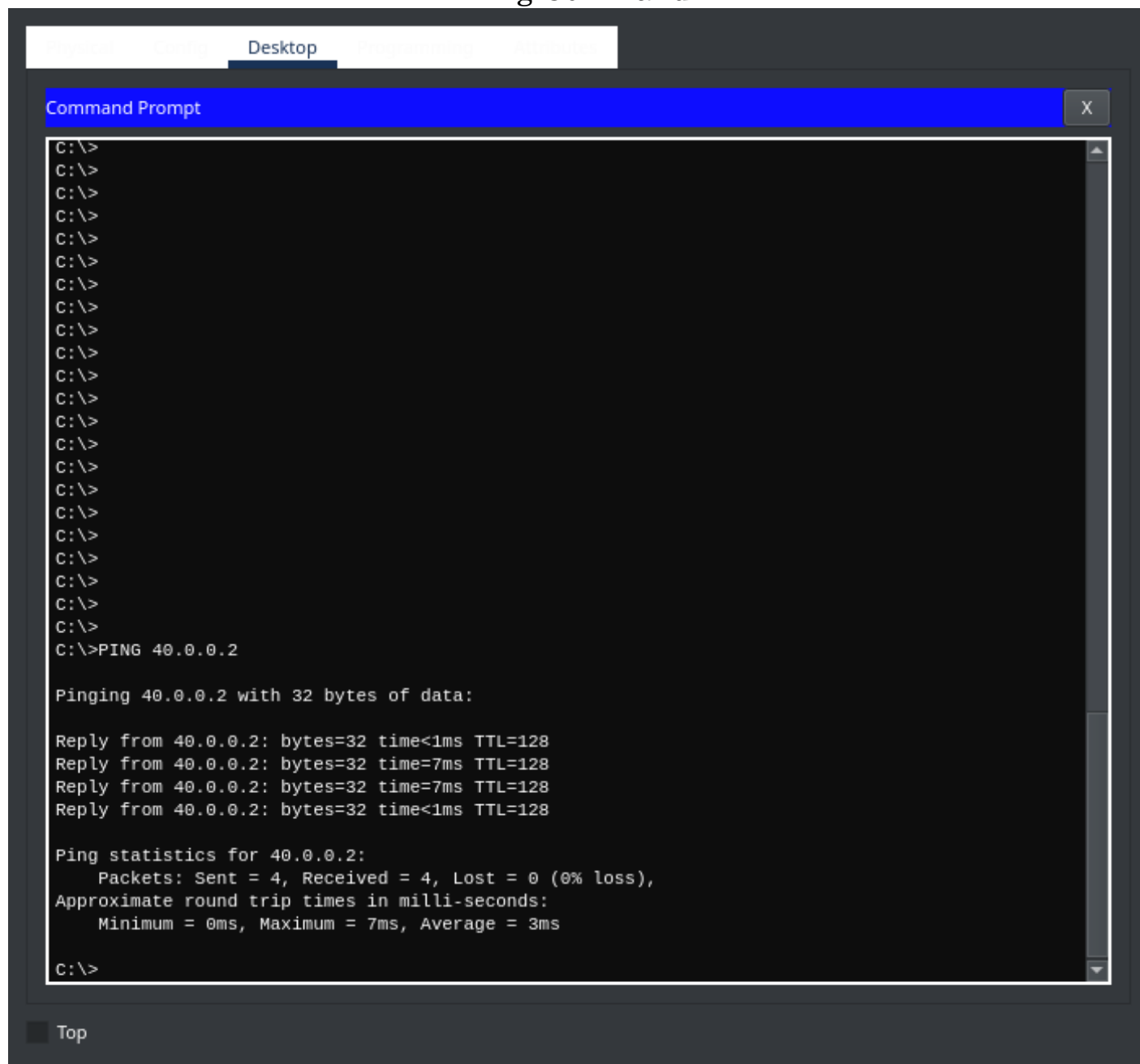
No.	Name	Type	Detail
0	packet.com	A Record	40.0.0.3

At the bottom of the main area is a 'DNS Cache' button. The footer of the interface has a 'Top' link.

- Now, in a browser, type the name of our page packet.com, and our page should display on the screen. This is because the client's request first goes to the DNS server, which then directs it to the HTTP server, which then loads the webpage from the HTTP server to our machine using the name rather than the IP address.

## 5. Observations :

### Ping Command



The screenshot shows a Windows desktop environment with a taskbar at the top containing icons for 'This PC', 'Cortana', 'Desktop', 'Programming', and 'Activities'. A 'Command Prompt' window is open, displaying the following text:

```
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>PING 40.0.0.2

Pinging 40.0.0.2 with 32 bytes of data:

Reply from 40.0.0.2: bytes=32 time<1ms TTL=128
Reply from 40.0.0.2: bytes=32 time=7ms TTL=128
Reply from 40.0.0.2: bytes=32 time=7ms TTL=128
Reply from 40.0.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 7ms, Average = 3ms

C:\>
```

At the bottom left of the Command Prompt window, there is a 'Top' button.

## Browser

Web Browser

X

< > URL  Go Stop

### Cisco Packet Tracer

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Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.

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- [Copyrights](#)
- [Image page](#)
- [Image](#)

## Learning Outcomes :

- I have learnt how to make the Servers and Clients communicate with each other.
- I learned how to access the website using another server.
- Learn to do the static routing with DNS server.
- Learn to use the DHCP server with DNS.

S. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			