

NAME: MOHAIMENUR RAHMAN  
ID: 19-40338-1  
SECTION: J

ID: 19-40338-1  
ST-UVWXY-Z  
S=1  
T= 9  
U=4  
V=0  
W=3  
X=3  
Y=8  
Z=1

Table 1: IP requirements

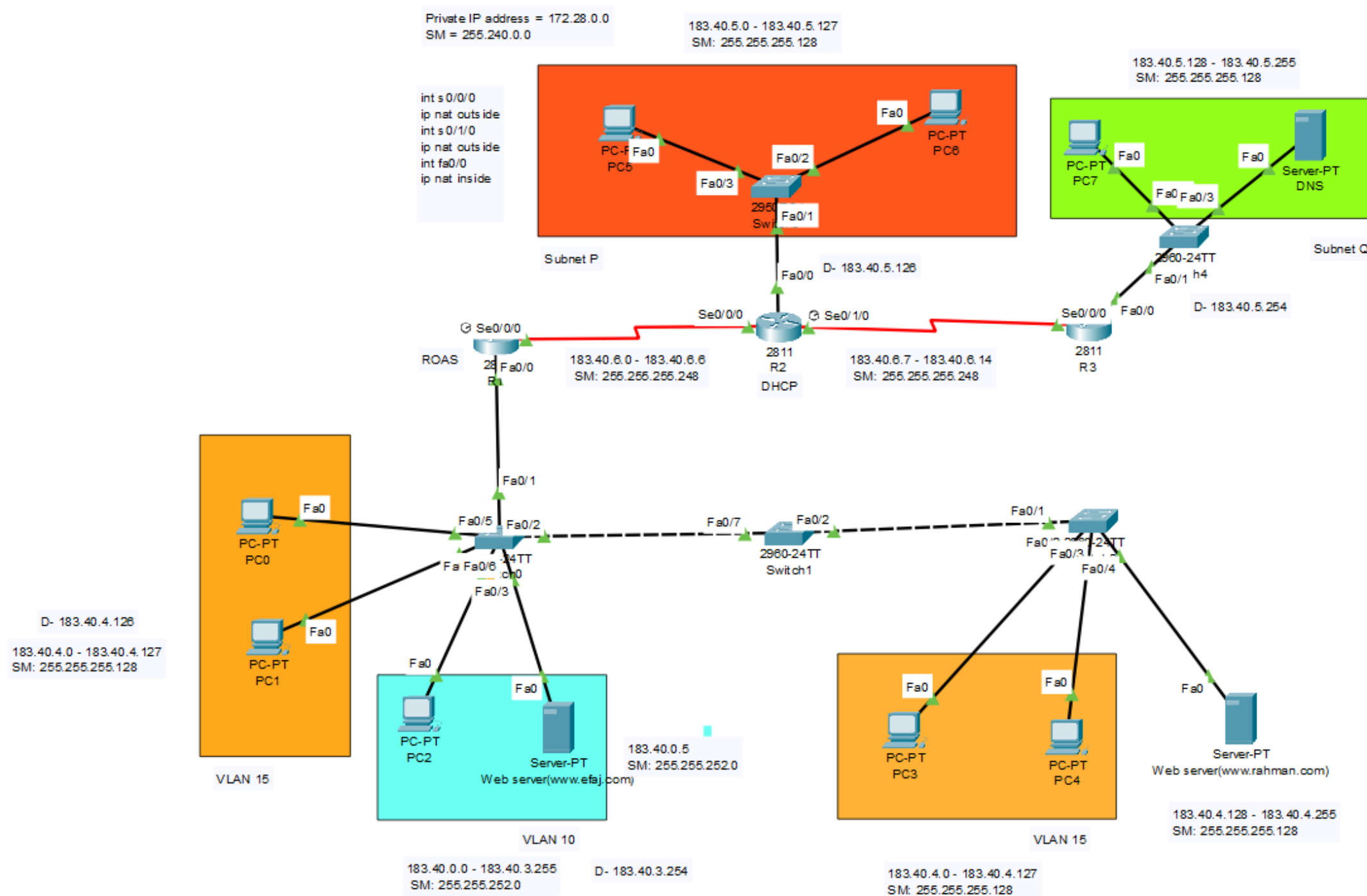
Subnet	IP requirement	IP address is 19-40338-1
P	YX	83
Q	YW	83
VLAN 10	YWV	830
VLAN 15	ZZS	111
Web server(www.rahman.com)	TX	93

The IP block is 183.40.0.0/16.

## VLSM

Subnet	No Of IPs Required	How many bits to borrow	Number of allocated IPs	No of hosts bits No of net bits	Subnet mask	Allocated IP range
VLAN 10	830	$2^{10} > 830 > 2^9$	1024	x=10 y=32-10=22	255.255.252.0	183.40.0.0 - 183.40.3.255/22
VLAN 15	111	$2^7 > 111 > 2^6$	128	x=7 y=32-7=25	255.255.255.128	183.40.4.0 - 183.40.4.127/25
Web server(www.rahman.com)	93	$2^7 > 111 > 2^6$	128	x=7 y=32-7=25	255.255.255.128	183.40.4.128 - 183.40.4.255/25
P	83	$2^7 > 83 > 2^6$	128	x=7 y=32-7=25	255.255.255.128	183.40.5.0 - 183.40.5.127/25
Q	83	$2^7 > 83 > 2^6$	128	x=7 y=32-7=25	255.255.255.128	183.40.5.128 - 183.40.5.255/25
X	7	$2^3 > 7 > 2^2$	8	x=3 y=32-3=29	255.255.255.248	183.40.6.0 - 183.40.6.6/29
Y	7	$2^3 > 7 > 2^2$	8	x=3 y=32-3=29	255.255.255.248	183.40.6.7 - 183.40.6.14/29

## Design



**Table-2**

**Router Configuration (R1)**

Router(config)#interface s0/0/0 Router(config-if)#ip address 183.40.6.0 255.255.252.248 Router(config-if)#no shutdown	Assign an ip address which is belongs to ip block
Router(config-if)#interface fa0/0 Router(config-if)#ip address 183.40.4.126 255.255.255.128 Router(config-if)#no shutdown	Select interface Activate the command Assign an ip address which is default gateway
Router(config-if)#router rip Router(config-router)#version 2 Router(config-router)#network 183.40.6.0 Router(config-router)#network 183.40.4.0 Router(config-router)#auto-summary	Routing.....

**Table-3**

**Router Configuration (R2)**

Router(config)#interface s0/1/0 Router(config-if)#ip address 183.40.6.9 255.255.252.248 Clock rate 64000 Router(config-if)#no shutdown	Assign an ip address which is belongs to ip block
Router(config)#interface s0/0/0 Router(config-if)#ip address 183.40.6.2 255.255.252.248 Router(config-if)#no shutdown	Assign an ip address which is belongs to ip block
Router(config-if)#interface fa0/0 Router(config-if)#ip address 183.40.5.7	Select interface Activate the command

255.255.255.128 Router(config-if)#no shutdown	Assign an ip address which is default gateway
Router(config-if)#router rip Router(config-router)#version 2 Router(config-router)#network 183.40.6.0 Router(config-router)#network 183.40.6.7 Router(config-router)#network 183.40.5.0 Router(config-router)#auto-summary	Routing.....

**Table-4**  
**Router Configuration (R3)**

Router(config)#interface s0/0/0 Router(config-if)#ip address 183.40.6.8 255.255.252.248 Router(config-if)#no shutdown	Assign an ip address which is belongs to ip block
Router(config-if)#interface fa0/0 Router(config-if)#ip address 183.40.5.254 255.255.255.128 Router(config-if)#no shutdown	Select interface Activate the command Assign an ip address which is default gateway
Router(config-if)#router rip Router(config-router)#version 2 Router(config-router)#network 183.40.6.8 Router(config-router)#network 183.40.5.128 Router(config-router)#auto-summary	Routing.....

**Table-5**  
**Switch Configuration (Switch1)**

Switch(config)#hostname switch1 switch1(config)#vlan 15 switch1(config-vlan)#interface range fa0/5-6 switch1(config-if-range)#switchport mode access switch1(config-if-range)#switchport access vlan 15 switch1(config-if-range)#exit	Assign hostname switch1 Create VLAN 15 Select a range of interfaces ( fa0/5 and fa0/6) Make both interfaces access link Include them to the VLAN 15
switch1(config)#vlan 10 switch1(config-vlan)#interface range fa0/3-4 switch1(config-if-range)#switchport mode access switch1(config-if-range)#switchport access vlan 10 switch1(config-if-range)#exit	Create VLAN 10 Select a range of interfaces ( fa0/3 and fa0/4) Make both interfaces access link Include them to the VLAN 10
switch1(config)#interface fa0/2 switch1(config-if)#switchport mode trunk	Select the interface fa0/2 Make it a trunk port

**Table-6**  
**Switch Configuration (Switch2)**

Switch(config)#hostname switch2 switch1(config)#interface fa0/1 switch1(config-if)#switchport mode trunk switch1(config-if-range)#exit switch1(config)#interface fa0/2 switch1(config-if)#switchport mode trunk	Assign hostname switch2 Select the interface fa0/1 Make it a trunk port Select the interface fa0/2 Make it a trunk port
--	---

**Table-7**  
**Switch Configuration (Switch3)**

Switch(config)#hostname switch3 switch1(config)#vlan 15 switch1(config-vlan)#interface range fa0/2-3 switch1(config-if-range)#switchport mode access switch1(config-if-range)#switchport access vlan 15 switch1(config-if-range)#exit	Assign hostname switch1 Create VLAN 15 Select a range of interfaces ( fa0/5 and fa0/6) Make both interfaces access link Include them to the VLAN 15
switch1(config)#interface fa0/1 switch1(config-if)#switchport mode trunk	Select the interface fa0/1 Make it a trunk port

## ROAS Table-8

### Router 1 Configuration

Router(config)#int fa0/0 Router(config-if)#no shut	Select interface Activate the command
Router(config-if)#int fa0/0.10 Router(config-subif)#encapsulation dot1q 10 Router(config-subif)#ip add 183.40.3.254 255.255.252.0	Create a sub-interface for VLAN 10 Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block used in VLAN 10. This IP will be the default gateway of all the computers used in VLAN 10.
Router(config-subif)#int fa0/0.15 Router(config-subif)#encapsulation dot1q 15 Router(config-subif)#ip add 183.40.4.126 255.255.255.128	Create a sub-interface for VLAN 15 Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block used in VLAN 15. This IP will be the default gateway of all the computers used in VLAN 15.
Router(config-if)#int S0/0/0 Router(config-subif)#ip address 183.40.6.1 255.255.255.248	Create a sub-interface Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block This IP will be the default gateway
Router eigrp 20 Network 183.40.6.0 255.255.255.248 Network 183.40.4.0 255.255.255.128 Network 183.40.0.0 255.255.252.0 No auto-summary	Eigrp 20 All connected networks valid ip and sm
Interface fa0/0.10 Ip helper 183.40.6.6 exit	After dhcp interface fa 0/0.10 Ip helper 183.40.6.6 For automatic ip assign



**Table-9**  
**Router 2 Configuration**

Router(config-if)#int S0/0/0 Router(config-subif)#ip address 183.40.6.6 255.255.255.248	Create a sub-interface Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block This IP will be the default gateway
Router(config-if)#int S0/1/0 Router(config-subif)#ip address 183.40.6.14 255.255.255.248	Create a sub-interface Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block This IP will be the default gateway
Router(config-subif)#int fa0/0 Router(config-subif)#ip add 183.40.5.126 255.255.255.128	Create a sub-interface Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block This IP will be the default gateway
Router eigrp 20 Network 183.40.6.0 255.255.255.248 Network 183.40.6.7 255.255.255.248 Network 183.40.5.0 255.255.255.128 No auto-summary	Eigrp 20 All connected networks valid ip and sm

**Table-10**  
**Router 3 Configuration**

Router(config-if)#int S0/0/0 Router(config-subif)#ip address 183.40.6.13 255.255.255.248	Create a sub-interface Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block This IP will be the default gateway
Router(config-subif)#int fa0/0 Router(config-subif)#ip add 183.40.5.254 255.255.255.128	Create a sub-interface Specify the tagging protocol (IEEE 802.1Q) Assign an IP address. This IP address must belong to the IP block This IP will be the default gateway
Router eigrp 20 Network 183.40.6.0 255.255.255.248 Network 183.40.6.7 255.255.255.248 Network 183.40.5.0 255.255.255.128 No auto-summary	Eigrp 20 All connected networks valid ip and sm

**DHCP**  
**Table-11**  
**Router 2 Configuration**

R2(config)#ip dhcp pool vlan10 R2(dhcp-config)#network 183.40.0.0 255.255.252.0 R2(dhcp-config)#default-router 183.40.3.254 R2(dhcp-config)#dns-server 8.8.8.8 R2(dhcp-config)#exit	ip dhcp pool vlan10 network 183.40.0.0 default-router 183.40.3.254
---	--

## VTP

**Table-12**

### Switch 1

Switch(config)#vtp mode server Switch(config)#vtp domain mohaimenur Switch(config)#vtp password 123	switch server domain name 'mohaimenur'. password 123.
--	---

**Table-13**

### Switch 2

Switch(config)#vtp mode client Switch(config)#vtp domain mohaimenur  Switch(config)#vtp password 123	switch client domain name 'mohaimenur'. All switch needs to have the same domain name password 123. All switch needs to have the same pasword
--	---

**Table-14**

### Switch 3

Switch(config)#vtp mode client Switch(config)#vtp domain mohaimenur  Switch(config)#vtp password 123	switch client domain name 'mohaimenur'. All switch needs to have the same domain name password 123. All switch needs to have the same pasword
--	---

**ROAS(R1)-Telnet**

**Table-15**

ROAS#enable secret 123 ROAS#exit ROAS#line vty 0 ROAS#password 789 ROAS#login ROAS#exit	Set secret password 123 Line vty0 password 789 login
--	--

**NAT**

**Private IP address: IP block 172.2Y.0.0/12 = 172.28.0.0/12**

**SM = 255.240.0.0**

**Table-16**

R2(config)#interface fa0/0 R2(config-if)#ip nat inside R2(config-if)#interface s0/0/0 R2(config-if)#ip nat outside R2(config-if)#interface s0/1/0 R2(config-if)#ip nat outside R2(config)#ip nat inside source list 2 pool CN R2(config)#ip nat pool CN 183.40.6.2 183.40.6.5 netmask 255.255.255.248 R2(config)#access-list 2 permit 172.28.0.0 0.0.255.255 R2(config)#ip nat inside source list 2 pool CN	interface fa0/0 - inside interface s0/0/0 - outside interface s0/1/0 - outside ip nat pool CN 183.40.6.2 183.40.6.5 netmask 255.255.255.248 access-list 2 permit 172.28.0.0 WM: 0.0.255.255
--	---

# ROAS

Cisco Packet Tracer - C:\Users\Windows\Desktop\CN final\Final Assignment.pkt

File Edit Options View Tools Extensions Help

Logical Physical x 1005, y. 174 [Root] 01:57:30

Private IP address = 172.28.0.0  
SM = 255.240.0.0

183.40.5.0 - 183.40.5.127  
SM: 255.255.255.128

int s0/0/0  
ip nat outside  
int s0/1/0  
ip nat outside  
int fa0/0  
ip nat inside

Subnet P

PC-PT PC0  
PC-PT PC1  
PC-PT PC2  
Server-PT Web server(www.eta.com)

VLAN 15  
VLAN 10

183.40.0.0 - 183.40.3.255  
SM: 255.255.252.0

D- 183.40.3.254

183.40.4.0 - 183.40.4.127  
SM: 255.255.255.128

183.40.4.128 - 183.40.4.255  
SM: 255.255.255.128

183.40.0.0 - 183.40.4.127  
SM: 255.255.255.128

183.40.0.0 - 183.40.3.255  
SM: 255.255.252.0

183.40.0.5  
SM: 255.255.252.0

2960-24T Switch1

2811 R2 DHCP

2811 R1

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/0.1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/0.10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/0.15, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
%DUAL-5-NBRCHANGE: IP-EIGRP 20: Neighbor 183.40.6.6 (Serial0/0/0)
is up: new adjacency

ROAS>ENABLE
Password:
```

Ctrl+F6 to exit CLI focus

Copy Paste

Time: 01:50:42.598 PLAY CONTROLS: [Icons]

Event List Realtime Simulation

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Copper Cross-Over

Type here to search

87°F Rain showers 6:12 PM 8/9/2021

# Telnet

Cisco Packet Tracer - C:\Users\Windows\Desktop\CN final\Final Assignment.pkt

File Edit Options View Tools Extensions Help

Logical Physical x 1214, y: 180 [Root] 04:06:00

The network diagram shows a central switch (24TT) connected to several devices. On the left, there are two PC-PT devices (PC0 and PC1) connected to the switch. On the right, there is a server (PC5) connected to the switch. The switch is also connected to a router (R2) and a server (ROAS). The router is connected to a server (PC5) and a server (ROAS). The switch is connected to a server (PC5) and a server (ROAS). The switch is connected to a server (PC5) and a server (ROAS).

PC5

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>telnet 183.40.6.1
Trying 183.40.6.1 ...Open

User Access Verification

Password:
Password:
Password:
ROAS>enable
Password:
ROAS#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ROAS (config)#
ROAS (config)#
ROAS (config)#
```

Time: 06:20:56 Realtime Simulation

Scenario 0

New Delete

Toggle PDU List Window

Copper Straight-Through

Type here to search

84°F Haze 10:17 PM 8/8/2021

# Ping Test

Cisco Packet Tracer - C:\Users\Windows\Desktop\CN final\Final Assignment.pkt

File Edit Options View Tools Extensions Help

Logical Physical x 515, y 757 [Root] 23:11:00

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 183.40.4.2

Pinging 183.40.4.2 with 32 bytes of data:

Reply from 183.40.4.2: bytes=32 time<1ms TTL=128
Reply from 183.40.4.2: bytes=32 time=2ms TTL=128
Reply from 183.40.4.2: bytes=32 time=1ms TTL=128
Reply from 183.40.4.2: bytes=32 time<1ms TTL=128

Ping statistics for 183.40.4.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>
```

PC-PT PC0

PC-PT PC1

PC-PT PC2

VLAN 15

183.40.4.126

183.40.4.0 - 183.40.4.127

SM: 255.255.255.128

183.40.0.0 - 183.40.3.255

SM: 255.255.252.0

D- 183.40.3.254

183.40.4.0 - 183.40.4.127

SM: 255.255.255.128

Server-PT

Web server(www.rahman.com)

183.40.4.128 - 183.40.4.255

SM: 255.255.255.128

Time: 06:11:28

Realtime Simulation

Scenario 0

New Delete

Toggle PDU List Window

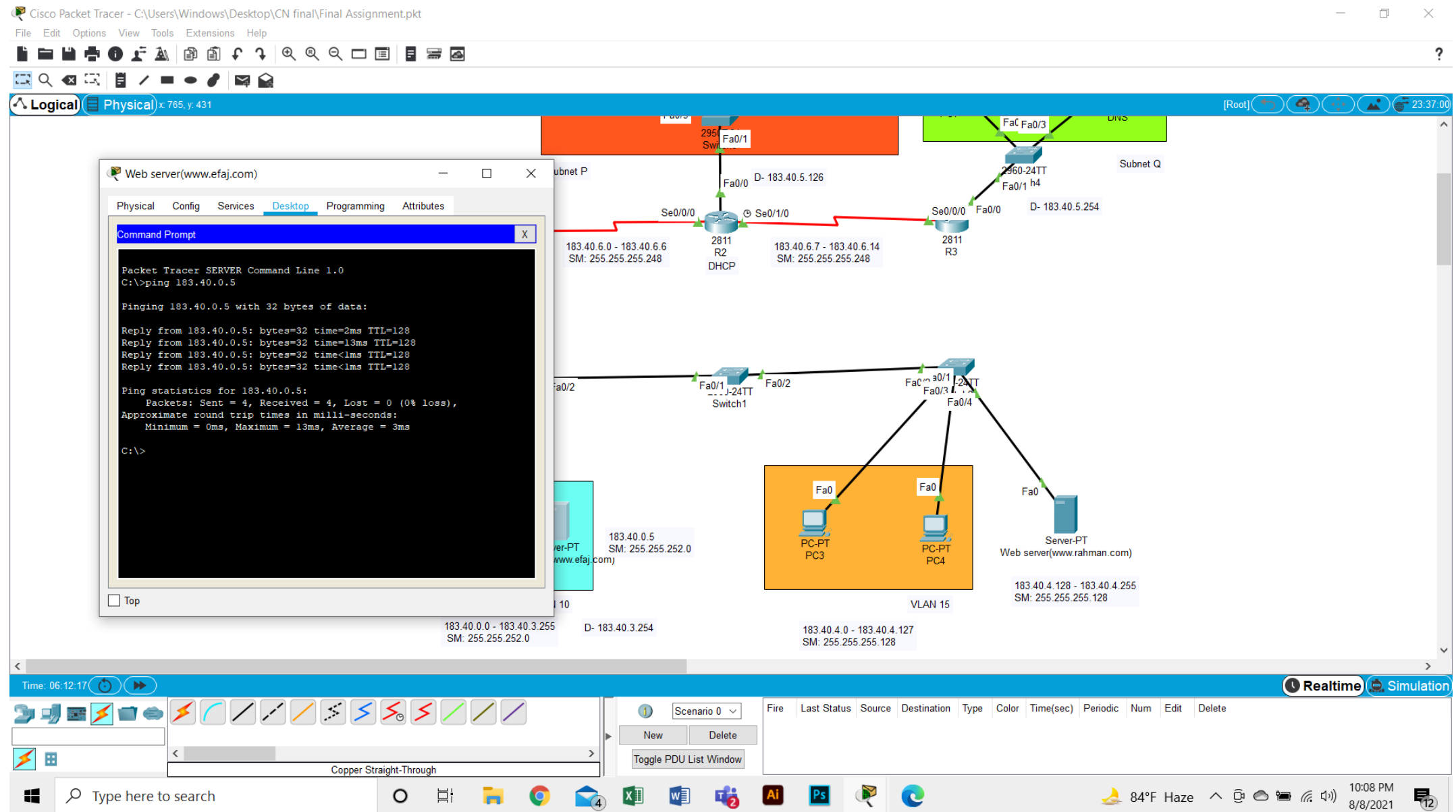
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Copper Straight-Through

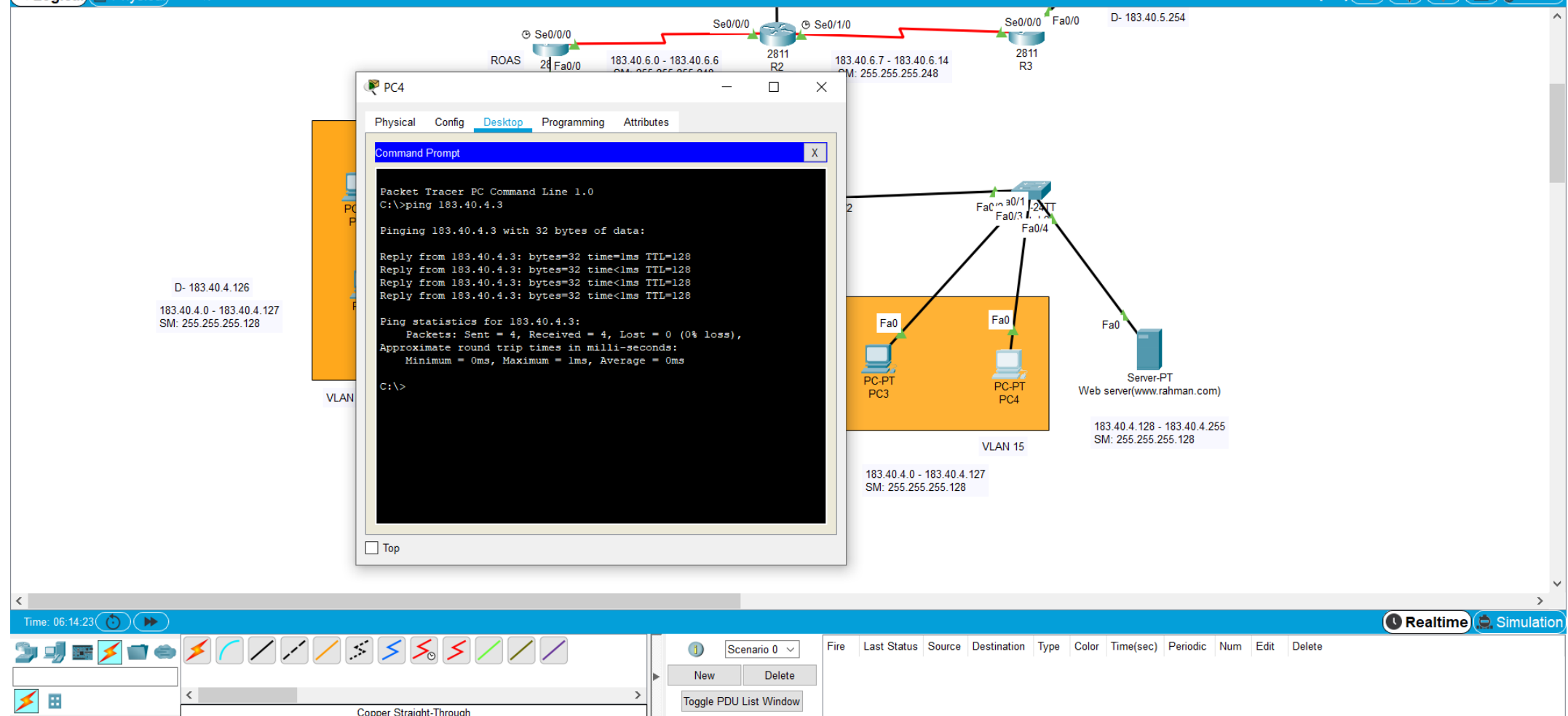
Type here to search

84°F Haze

10:07 PM 8/8/2021







Time: 06:14:23

Realtime Simulation



Scenario 0	Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
New	Delete										
Toggle PDU List Window											

Type here to search



84°F Haze 10:10 PM 8/8/2021

Cisco Packet Tracer - C:\Users\Windows\Desktop\CN final\Final Assignment.pkt

File Edit Options View Tools Extensions Help

Logical Physical x 1107, y 260 [Root] 01:04:00

PC6

Physical Config Desktop Programming Attributes

Command Prompt

Packet Tracer PC Command Line 1.0  
C:\>telnet 183.40.6.1  
Trying 183.40.6.1 ...  
% Connection timed out; remote host not responding  
C:\>telnet 183.40.6.2  
Trying 183.40.6.2 ...  
% Connection timed out; remote host not responding  
C:\>ping 183.40.5.1  
  
Pinging 183.40.5.1 with 32 bytes of data:  
  
Reply from 183.40.5.1: bytes=32 time=1ms TTL=128  
Reply from 183.40.5.1: bytes=32 time<1ms TTL=128  
Reply from 183.40.5.1: bytes=32 time<1ms TTL=128  
Reply from 183.40.5.1: bytes=32 time<1ms TTL=128  
  
Ping statistics for 183.40.5.1:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 0ms, Maximum = 1ms, Average = 0ms  
  
C:\>

183.40.5.128 - 183.40.5.255  
SM: 255.255.255.128

Fa0 Fa0/3 Server-PT DNS  
Subnet Q

2960-24TT  
Fa0/1 h4  
D- 183.40.5.254

Fa0/0

PC-PT PC0  
Fa0

Fa0/5  
Fa0/6  
24TT  
Switch1  
Fa0/2  
Fa0/2  
Fa0/3  
Fa0/4

Time: 06:15:04 Realtime Simulation

Copper Straight-Through

Scenario 0 New Delete Toggle PDU List Window

Type Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Type here to search 84°F Haze 10:11 PM 8/8/2021

# DNS server & Web server

Cisco Packet Tracer - C:\Users\Windows\Desktop\CN final\Final Assignment.pkt

File Edit Options View Tools Extensions Help

Logical Physical x: 935, y: 809 [Root] 11:42:30

The network diagram shows a central switch (Fa0/5, Fa0/6, Fa0/3) connected to three PCs (PC0, PC1, PC2) and a web server (Web serv). The PCs are in VLAN 15. The web server is connected to the switch via Fa0/3. The switch is connected to a router (Se0/0/0, Se0/1/0) which is connected to another router (Se0/0/0, Fa0/0). The IP address 183.40.5.254 is shown for the second router. The web browser window on PC6 shows the URL http://www.efaj.com and the text 'Paternal grandfather's upzilla name: Hatiya'.

Web Browser

URL: <http://www.efaj.com> Go Stop

Paternal grandfather's upzilla name: Hatiya

Time: 05:49:19 Realtime Simulation

Scenario 0

New Delete

Toggle PDU List Window

Copper Straight-Through

Type here to search

86°F Haze 9:44 PM 8/8/2021

Cisco Packet Tracer - C:\Users\Windows\Desktop\CN final\Final Assignment.pkt

File Edit Options View Tools Extensions Help

Logical Physical x: 1520, y: 629 [Root] 13:17:00

Subnet P: 183.40.4.0 - 183.40.4.127 SM: 255.255.255.128

Subnet Q: 183.40.5.0 - 183.40.5.254 SM: 255.255.255.128

PC7 Desktop: Web Browser URL: http://www.rahman.com Go Stop Paternal grandmother's upzilla name: Dhaka

Server-PT: Web server(www.rahman.com) 183.40.4.128 - 183.40.4.255 SM: 255.255.255.128

Time: 05:52:18 Realtime Simulation

Scenario 0 New Delete Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Copper Straight-Through

Type here to search

86°F Haze 9:47 PM 8/8/2021