Report

Computer Networks

Project

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Subnetting Table

Network Name	Hosts	Address	Mask	Subnet mask	Range	Broadcast
INTERNET	254	192.168.50.0	/24	255.255.255.0	192.168.50.1 - 192.168.50.254	192.168.50.255
BRANCH-1	150	192.168.10.0	/24	255.255.255.0	192.168.10.1 – 192.168.10.254	192.168.10.255
BRANCH-3	120	192.168.11.0	/25	255.255.255.128	192.168.11.1 – 192.168.11.126	192.168.11.127
BRANCH-4	80	192.168.11.128	/25	255.255.255.128	192.168.11.129 – 192.168.11.254	192.168.11.255
BRANCH-2	60	192.168.12.0	/26	255.255.255.192	192.168.12.1 – 192.168.12.62	192.168.12.63
ADMIN-BRANCH	20	192.168.12.64	/27	255.255.255.224	192.168.12.65 – 192.168.12.94	192.168.12.95
P2P	2	192.168.12.96	/30	255.255.255.252	192.168.12.97 – 192.168.12.98	192.168.12.99
P2P	2	192.168.12.100	/30	255.255.255.252	192.168.12.101 – 192.168.12.102	192.168.12.103
P2P	2	192.168.12.104	/30	255.255.255.252	192.168.12.105 – 192.168.12.106	192.168.12.107
P2P	2	192.168.12.108	/30	255.255.255.252	192.168.12.109 – 192.168.12.110	192.168.12.111
P2P	2	192.168.12.112	/30	255.255.255.252	192.168.12.113 – 192.168.12.114	192.168.12.115
P2P	2	209.165.201.4	/30	255.255.255.252	209.165.201.5 - 209.165.201.6	209.165.201.7

Addressing Table

Device	interface	Ip address	Subnet mask	Default gateway
ADMIN-BRANCH	S0/1/0	192.168.12.97	255.255.255.252	
	S0/1/1	192.168.12.101	255.255.255.252	
	S0/2/0	209.165.201.5	255.255.255.252	
	G0/0/0	192.168.12.65	255.255.255.224	
	G0/0/1	192.168.12.113	255.255.255.252	
BRANCH-1	S0/1/0	192.168.12.106	255.255.255.252	
	S0/1/1	192.168.12.98	255.255.255.252	
	G0/0/0	192.168.10.1	255.255.255.0	
BRANCH-2	S0/1/0	192.168.12.102	255.255.255.252	
	S0/1/1	192.168.12.110	255.255.255.252	
	G0/0/0	192.168.12.1	255.255.255.192	
BRANCH-3	S0/1/0	192.168.12.105	255.255.255.252	
	G0/0/0	192.168.11.1	255.255.255.128	
BRANCH-4	S0/1/0	192.168.12.109	255.255.255.252	
	G0/0/0	192.168.11.129	255.255.255.128	
INTERNET	S0/2/0	209.165.201.6	255.255.255.252	
	G0/0/0	192.168.50.1	255.255.255.0	
DHCP-Server	Fa0	192.168.12.114	255.255.255.252	192.168.12.113
Outside-Server	Fa0	192.168.50.3	255.255.255.0	192.168.50.1
PC1	Fa0	192.168.12.66	255.255.255.224	192.168.12.65
LAPTOP1	Fa0	192.168.12.67	255.255.255.224	192.168.12.65
Outside-PC	Fa0	192.168.50.2	255.255.255.0	192.168.50.1

Explanation:

Firstly, in our topology,

The main router is ADMIN-BRANCH is connected to BRANCH-1, BRANCH-2 and INTERNET with serial cable to make connections P2P.

We connected ADMIN-BRANCH router to DHCP-Server with straight-through cable and make it assign Dynamic IPs to PCs by make Pools.

We configured static NAT, PAT and Dynamic NAT in ADMIN router, so I configured PCs that outgoing by static NAT with static Ip due to DHCP change assign IPs in any time activate it.

We connected BRANCH-1 with BRANCH-3 with serial cable to make connection P2P.

We connected BRANCH-2 with BRANCH-4 with serial cable to make connection P2P.

We connected Routers to switches with straight-through cable.

We connected Switches to Switches with cross-over cable.

We connected the INTERNET router to PC and Server to try access them from my inside network.

We connected PCs to switches with straight-through cable.

We connected Routers to Switches by straight cable.

We connected PCs to Switches by straight cable.

Network that holds 150 host configured in BRANCH-1 router (Full mesh).

Network that holds 120 host configured in BRANCH-3 router (Tree).

Network that holds 80 host configured in BRANCH-4 router (Ring).

Network that holds 60 host configured in BRANCH-2 router (Mesh)

Network that holds 20 host configured in ADMIN-BRANCH router (Star).

We configured interfaces in ADMIN-BRANCH gave them Ips and converted status from down to up.

We configured interfaces in BRANCH-1 gave them Ips and converted status from down to up.

We configured interfaces in BRANCH-2 router gave them Ips and converted status from down to up.

We configured interfaces in BRANCH-3 router gave them Ips and converted status from down to up.

We configured interfaces in BRANCH-4 router gave them Ips and converted status from down to up.

We configured interfaces in INTERNET router gave them Ips and converted status from down to up.

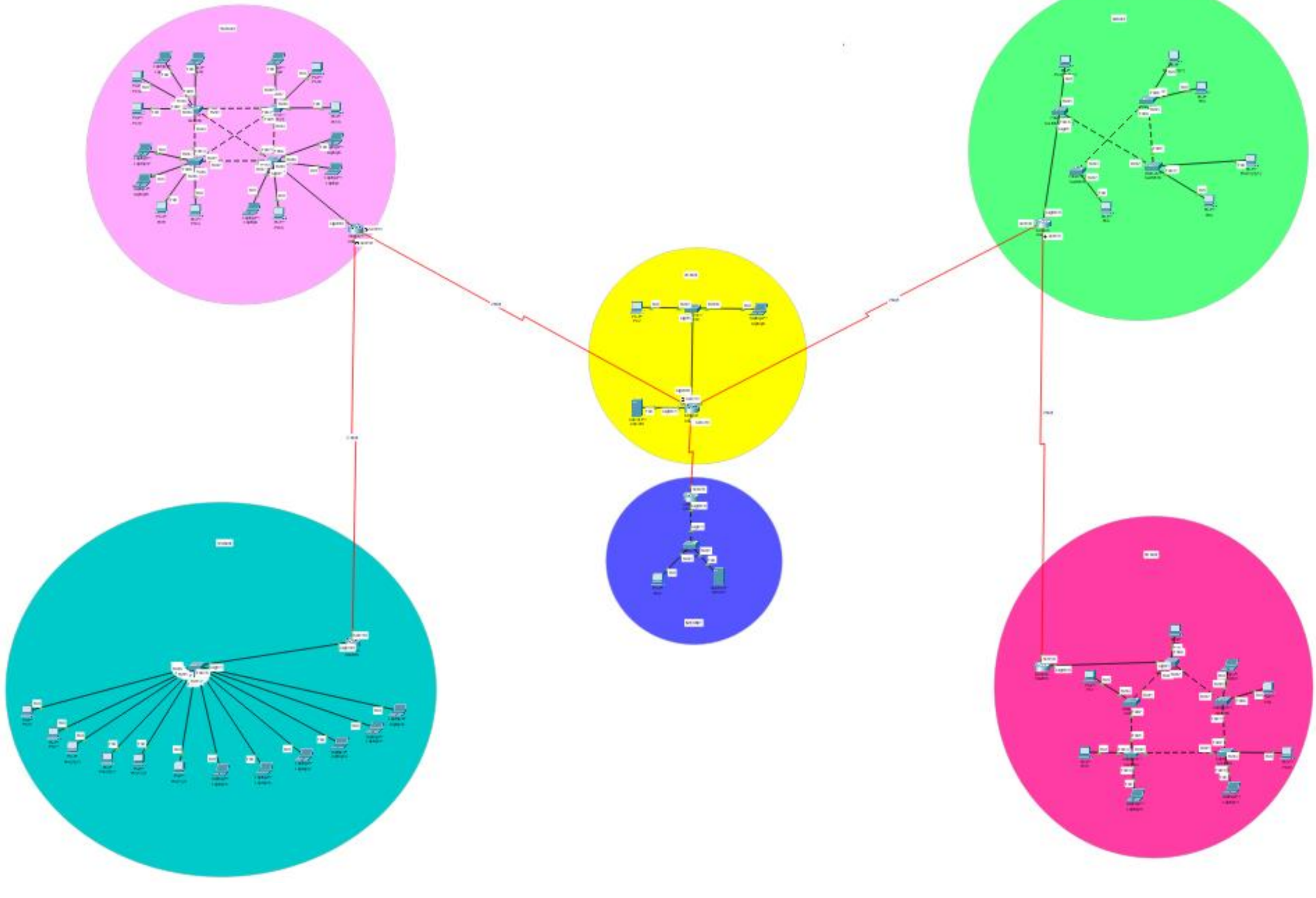
I used 6 routers so, we need a protocol to make Routers send and receive messages between them, I used Dynamic routing protocol.

(OSPF, EIGRP and RIP)

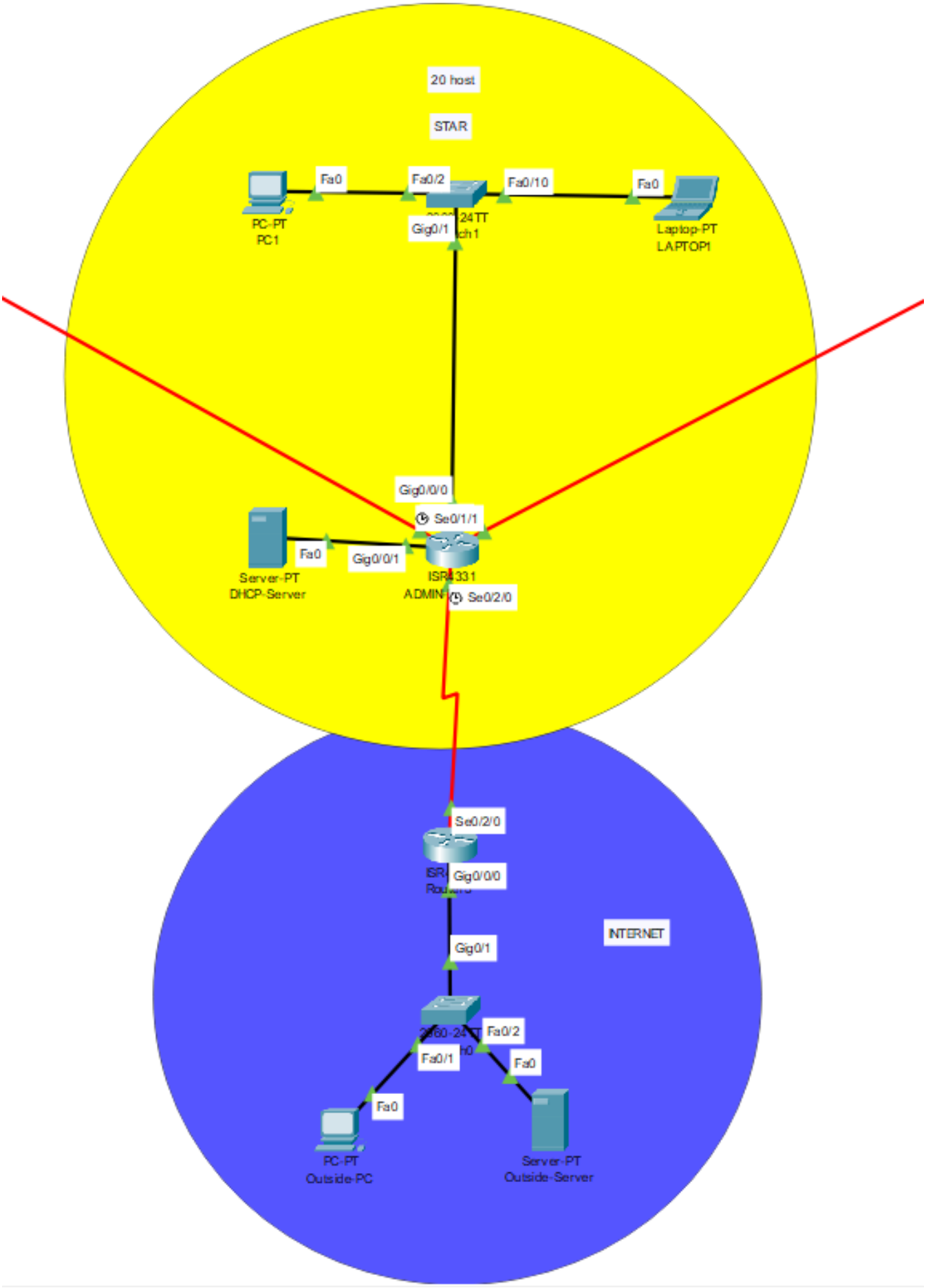
We make Privilege security in routers and limit access to them.

We make access lists to limit traffic of ingoing and outgoing in network.

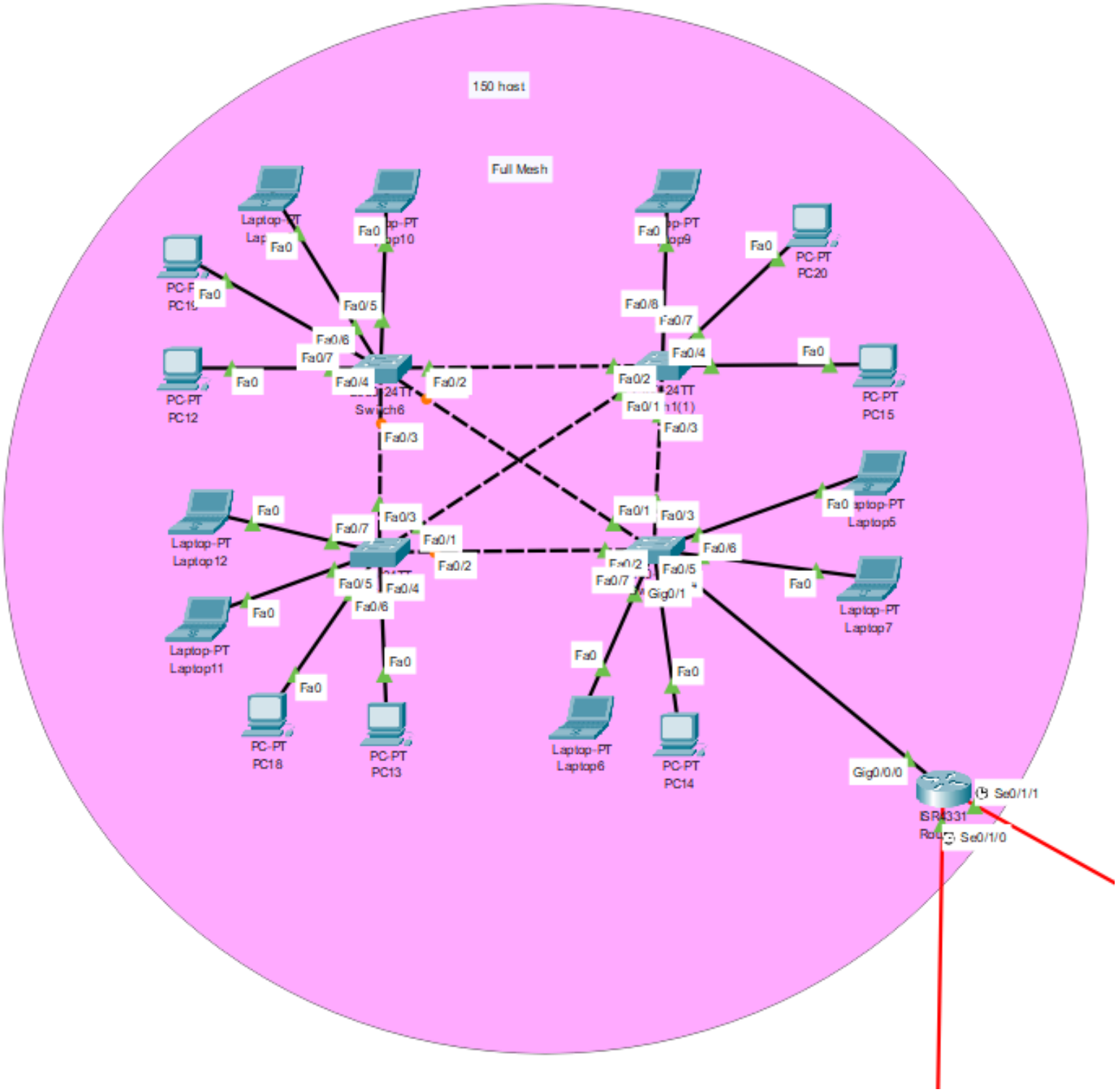
Finally, make ping to see connectivity between pcs in their network and connectivity between networks and each other.



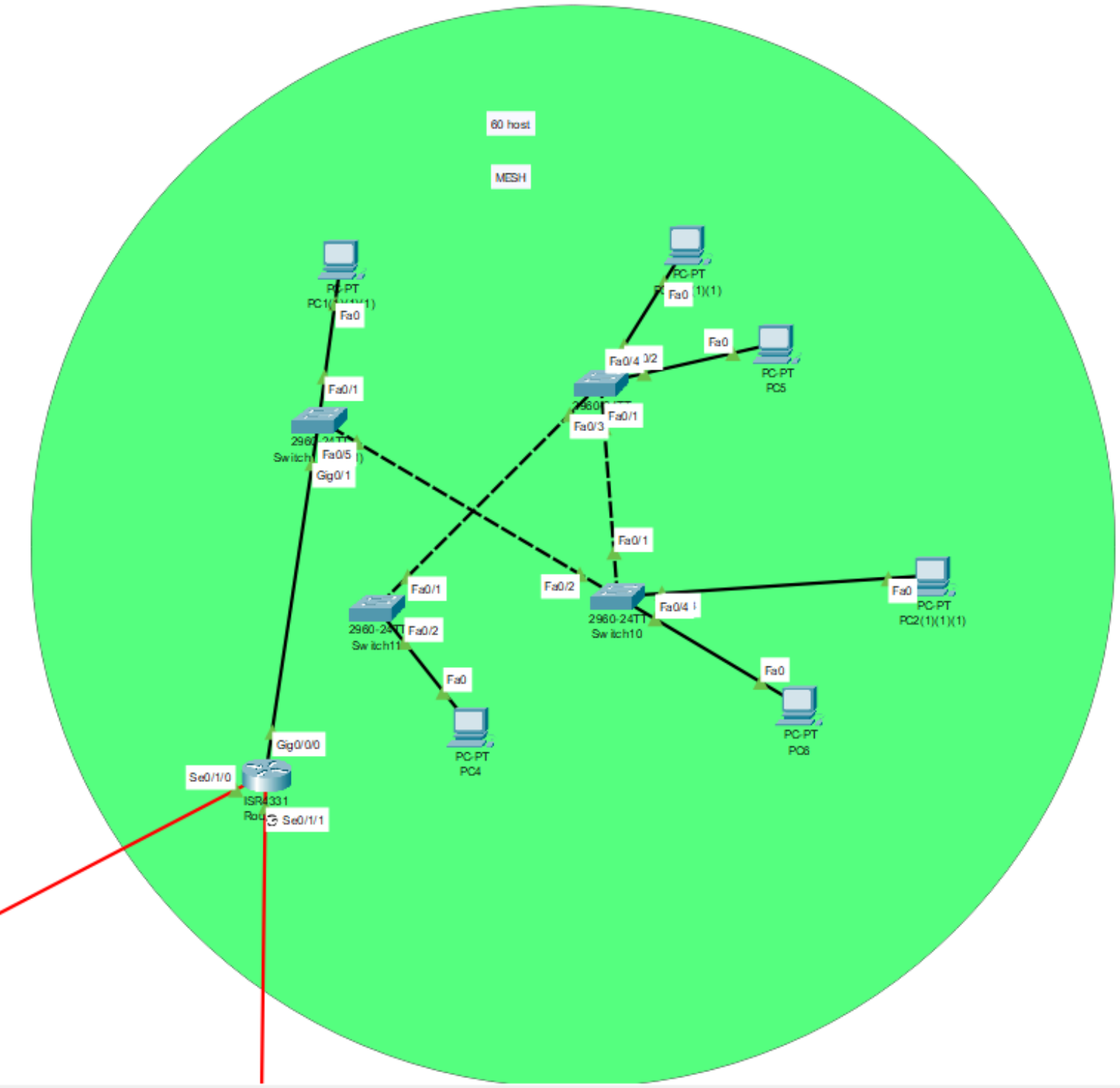
Networks


20 host
STAR
Fa0
Fa0/2
Fa0/10
Fa0
PC-PT
PC1
Gig0/1
24TT
ch1
Laptop-PT
LAPTOP1
Gig0/0/0
Se0/1/1
Fa0
Gig0/0/1
Server-PT
DHCP-Server
ISR4331
ADMIN
Se0/2/0
Se0/2/0
Gig0/0/0
INTERNET
Gig0/1
Fa0/2
Fa0/1
Fa0
Fa0
PC-PT
Outside-PC
Server-PT
Outside-Server

FULL MESH

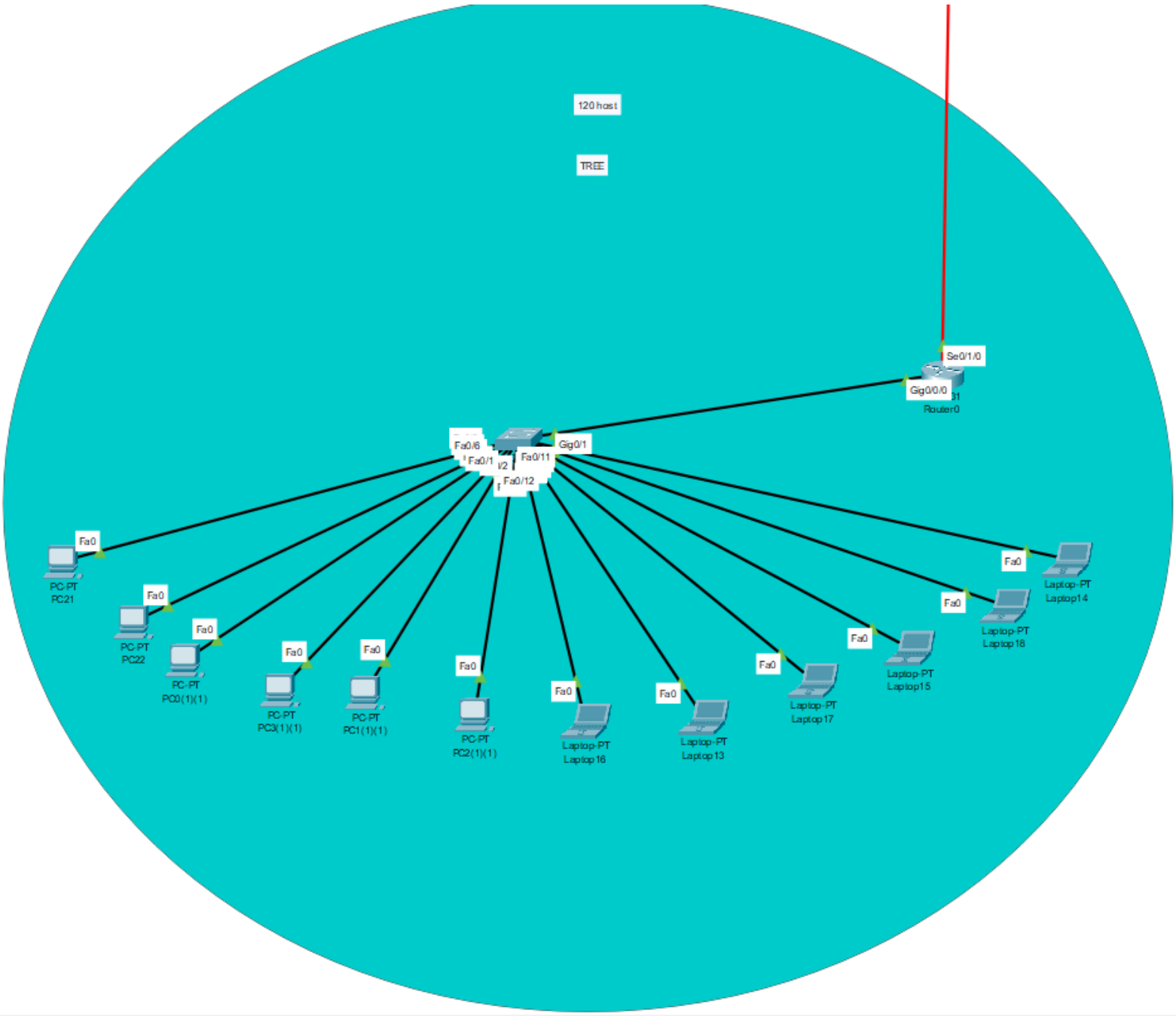

150 host
Full Mesh
Laptop-PT
Laptop12
Laptop-PT
Laptop11
PC-PT
PC18
PC-PT
PC13
Laptop-PT
Laptop6
PC-PT
PC14
Laptop-PT
Laptop5
Laptop-PT
Laptop7
PC-PT
PC20
PC-PT
PC15
PC-PT
PC12
Gig0/0/0
Se0/1/1
Se0/1/0
Fa0
Fa0/1
Fa0/2
Fa0/3
Fa0/4
Fa0/5
Fa0/6
Fa0/7
Fa0/8
Gig0/1

MESH

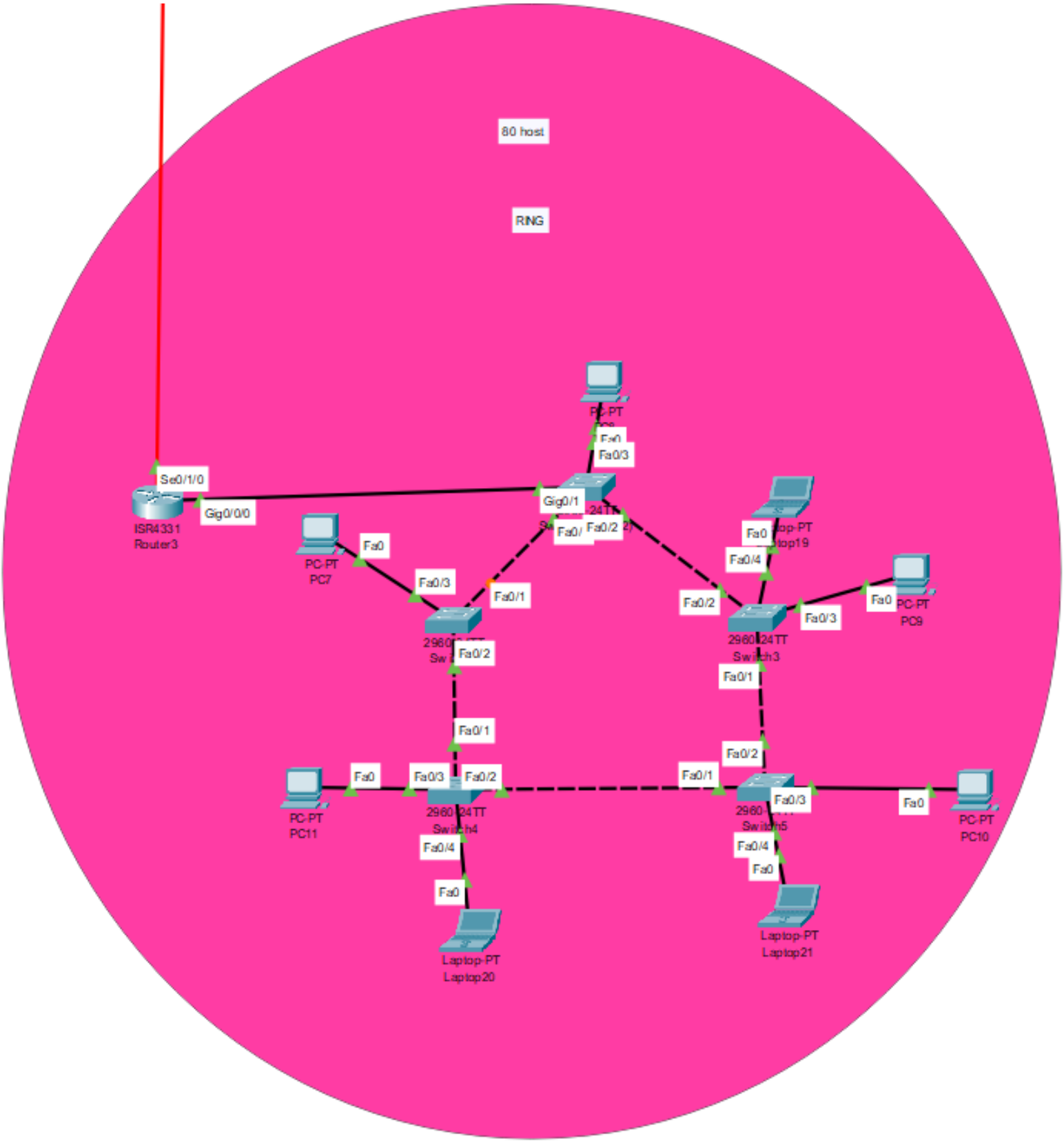


60 host
MESH
PC-PT
Fa0
Fa0/1
Fa0/5
Gig0/1
Fa0/4
Fa0/3
PC-PT
PC5
Fa0/1
Fa0/2
Fa0/4
2960-24TT
Switch10
PC-PT
PC2(1)(1)(1)
Fa0/1
Fa0/2
Fa0
PC-PT
PC4
PC-PT
PC6
Gig0/0/0
Se0/1/0
Se0/1/1

TREE


120 host
TREE
Se0/1/0
Gig0/0/0
Router0
Gig0/1
Fa0/6
Fa0/1
Fa0/11
Fa0/12
Fa0
PC-PT
PC21
PC-PT
PC22
PC-PT
PC0(1)(1)
PC-PT
PC3(1)(1)
PC-PT
PC1(1)(1)
PC-PT
PC2(1)(1)
Laptop-PT
Laptop16
Laptop-PT
Laptop13
Laptop-PT
Laptop17
Laptop-PT
Laptop15
Laptop-PT
Laptop18
Laptop-PT
Laptop14

RING



80 host
RING
Se0/1/0
Gig0/0/0
ISR4331
Router3
Gig0/1
Fa0/3
Fa0/2
Fa0/1
Fa0
PC-PT
PC7
Fa0/4
Fa0/3
Fa0/2
Fa0/1
Fa0/2
Fa0/3
Fa0
PC-PT
PC9
Fa0/1
Fa0/2
Fa0/1
Fa0
Fa0/3
Fa0/2
Fa0/1
Fa0/3
Fa0
PC-PT
PC11
Fa0/4
Fa0
Fa0/4
Fa0
PC-PT
PC10
Laptop-PT
Laptop20
Laptop-PT
Laptop21

OSPF-File-Configurations

In ADMIN-BRANCH:

We configured interface G0/0/0 with Ip 192.168.12.65 /27.

We configured interface G0/0/1 with Ip 192.168.12.113 /30.

We configured interface S0/1/0 with Ip 192.168.12.97 /30.

We configured interface S0/1/1 with Ip 192.168.12.101 /30.

We configured OSPF in this router to make it see undirected connected networks (80 host and 120 host).

We make static NAT on network that holds 20 host, Dynamic NAT on network that holds 150 and 120 host and PAT on networks that hold 80 and 60 hosts and overloaded on Ip 209.165.201.5 /30.

We make Privilege security to limit access to this router and enable encryption to passwords.

Configuration:

Router> en

Router# conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)# hostname ADMIN-BRANCH

ADMIN-BRANCH(config)# int s 0/1/0

ADMIN-BRANCH(config-if)# no shutdown

ADMIN-BRANCH(config-if)# ip add 192.168.12.97 255.255.255.252

ADMIN-BRANCH(config-if)# ip nat inside

```
ADMIN-BRANCH(config-if)# exit
ADMIN-BRANCH(config)# int s 0/1/1
ADMIN-BRANCH(config-if)# no shutdown
ADMIN-BRANCH(config-if)# ip add 192.168.12.101 255.255.255.252
ADMIN-BRANCH(config-if)# ip nat inside
ADMIN-BRANCH(config-if)# exit
ADMIN-BRANCH(config)# int s 0/2/0
ADMIN-BRANCH(config-if)# no shutdown
ADMIN-BRANCH(config-if)# ip add 209.168.201.5 255.255.255.252
ADMIN-BRANCH(config-if)# ip nat outside
ADMIN-BRANCH(config)# int g 0/0/0
ADMIN-BRANCH(config-if)# no shutdown
ADMIN-BRANCH(config-if)# ip add 192.168.12.65 255.255.255.224
ADMIN-BRANCH(config-if)# ip nat inside
ADMIN-BRANCH(config-if)# exit
ADMIN-BRANCH(config)# int g 0/0/1
ADMIN-BRANCH(config-if)# no shutdown
ADMIN-BRANCH(config-if)# ip add 192.168.12.113 255.255.255.252
ADMIN-BRANCH(config-if)# ip nat inside
ADMIN-BRANCH(config-if)# exit
ADMIN-BRANCH(config)# router ospf 1
ADMIN-BRANCH(config-router)# network 209.168.201.4 0.0.0.3 area 0
```

ADMIN-BRANCH(config-router)# network 192.168.12.112 0.0.0.3 area 0

ADMIN-BRANCH(config-router)# network 192.168.12.100 0.0.0.3 area 0

ADMIN-BRANCH(config-router)# network 192.168.12.96 0.0.0.3 area 0

ADMIN-BRANCH(config-router)# network 192.168.12.64 0.0.0.31 area 0

ADMIN-BRANCH(config)# ip nat inside source static 192.168.12.66 202.165.201.66

ADMIN-BRANCH(config)# ip nat inside source static 192.168.12.67 202.165.201.67

ADMIN-BRANCH(config)#ip nat inside source static 192.168.12.114 202.165.201.114

ADMIN-BRANCH(config)# ip access-list standard DYNAMIC-BRANCH

ADMIN-BRANCH(config-std-nacl)# 10 permit 192.168.10.0 0.0.0.255

ADMIN-BRANCH(config-std-nacl)# 20 permit 192.168.11.0 0.0.0.127

ADMIN-BRANCH(config-std-nacl)# exit

ADMIN-BRANCH(config)# ip nat pool DYNAMIC-branch 50.0.0.1 50.0.0.135 netmask 255.0.0.0

ADMIN-BRANCH(config)# ip nat inside source list DYNAMIC-BRANCH pool DYNAMIC-branch

ADMIN-BRANCH(config)# ip access-list standard PAT-BRANCH

ADMIN-BRANCH(config-std-nacl)# 10 permit 192.168.12.0 0.0.0.63

ADMIN-BRANCH(config-std-nacl)# 20 permit 192.168.11.128 0.0.0.127

ADMIN-BRANCH(config)# ip nat inside source list PAT-BRANCH interface Serial0/2/0 overload

ADMIN-BRANCH(config)#username meky password 17593

ADMIN-BRANCH(config)#username moaz password 2003

ADMIN-BRANCH(config)#enable secret admin

ADMIN-BRANCH(config)#line console 0

ADMIN-BRANCH(config-line)#login local

ADMIN-BRANCH(config-line)#password ADMINcon0

ADMIN-BRANCH(config-line)#exit

ADMIN-BRANCH(config)#line vty 0 4

ADMIN-BRANCH(config-line)#password ADMINvty04

ADMIN-BRANCH(config)#service password-encryption

In BRANCH-1:

We configured interface G0/0/0 with Ip 192.168.10.1 /24.

We configured interface S0/1/0 with Ip 192.168.12.106 /30.

We configured interface S0/1/1 with Ip 192.168.12.98 /30.

We configured OSPF in this router to make it see undirected connected networks (20 host, 60 host, 80 host, 120 host and internet).

We make Privilege security to limit access to this router and enable encryption to passwords.

We make access list to limit access to inside network 192.168.10.0/24

We access tcp on port 80 and 443, icmp and ospf protocols.

Configuration:

Router> en

Router# conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)# hostname BRANCH-1

BRANCH-1(config)# int s 0/1/0

BRANCH-1(config-if)# no shutdown

BRANCH-1(config-if)# ip add 192.168.12.106 255.255.255.252

BRANCH-1(config-if)# exit

BRANCH-1(config)# int s 0/1/1

BRANCH-1(config-if)# no shutdown

```
BRANCH-1(config-if)# ip add 192.168.12.98 255.255.255.252
BRANCH-1(config-if)# exit
BRANCH-1(config)# int g 0/0/0
BRANCH-1(config-if)# no shutdown
BRANCH-1(config-if)# ip add 192.168.10.1 255.255.255.0
BRANCH-1(config-if)# exit
BRANCH-1(config)# router ospf 1
BRANCH-1(config-router)# network 192.168.10.0 0.0.0.255 area 0
BRANCH-1(config-router)# network 192.165.12.104 0.0.0.3 area 0
BRANCH-1(config-router)# network 192.165.12.96 0.0.0.3 area 0
BRANCH-1(config)#username meky password 17593
BRANCH-1(config)#username moaz password 2003
BRANCH-1(config)#username abdo password 991
BRANCH-1(config)#enable secret branch1
BRANCH-1(config)#line console 0
BRANCH-1(config-line)#login local
BRANCH-1(config-line)#password BRANCH1con0
BRANCH-1(config-line)#exit
BRANCH-1(config)#line vty 0 4
BRANCH-1(config-line)#password BRANCH1vty04
BRANCH-1(config)#service password-encryption
BRANCH-1(config)#ip access-list extended BRANCH1-Policy
BRANCH-1(config-ext-nacl)#permit icmp any any
```

```
BRANCH-1(config-ext-nacl)#permit ip any any
BRANCH-1(config-ext-nacl)#permit tcp any any eq 80
BRANCH-1(config-ext-nacl)#permit tcp any any eq 443
BRANCH-1(config-ext-nacl)#exit
BRANCH-1(config)#int g0/0/0
BRANCH-1(config-if)#ip access-group BRANCH1-Policy in
BRANCH-1(config-if)# exit
```

In BRANCH-2:

We configured interface G0/0/0 with Ip 192.168.12.1 /26.

We configured interface S0/1/0 with Ip 192.168.12.102 /30.

We configured interface S0/1/1 with Ip 192.168.12.110 /30.

We configured OSPF in this router to make it see undirected connected networks (20 host, 80 host, 120 host, 150 host and internet).

We make Privilege security to limit access to this router and enable encryption to passwords.

We make access list to limit access to inside network 192.168.12.0/26

We access tcp on port 80 and 443, icmp and ospf protocols.

Configuration:

```
Router> en
Router# conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# hostname BRANCH-2
BRANCH-2(config)# int s 0/1/0
BRANCH-2(config-if)# no shutdown
BRANCH-2(config-if)# ip add 192.168.12.102 255.255.255.252
BRANCH-2(config-if)# exit
BRANCH-2(config)# int s 0/1/1
BRANCH-2(config-if)# no shutdown
BRANCH-2(config-if)# ip add 192.168.12.110 255.255.255.252
BRANCH-2(config-if)# exit
BRANCH-2(config)# int g 0/0/0
BRANCH-2(config-if)# no shutdown
BRANCH-2(config-if)# ip add 192.168.12.1 255.255.255.192
BRANCH-2(config-if)# exit
BRANCH-2(config)# router ospf 1
BRANCH-2(config-router)# network 192.165.12.0 0.0.0.63 area 0
BRANCH-2(config-router)# network 192.165.12.100 0.0.0.3 area 0
BRANCH-2(config-router)# network 192.168.12.108 0.0.0.3 area 0
BRANCH-2(config)#username meky password 17593
```

BRANCH-2(config)#username moaz password 2003

BRANCH-2(config)#username abdo password 991

BRANCH-2(config)#enable secret branch2

BRANCH-2(config)#line console 0

BRANCH-2(config-line)#login local

BRANCH-2(config-line)#password BRANCH2con0

BRANCH-2(config-line)#exit

BRANCH-2(config)#line vty 0 4

BRANCH-2(config-line)#password BRANCH2vty04

BRANCH-2(config)#service password-encryption

BRANCH-2(config)#ip access-list extended BRANCH2-Policy

BRANCH-2(config-ext-nacl)# deny tcp 192.168.12.0 0.0.0.63 any eq 80

BRANCH-2(config-ext-nacl)# deny tcp 192.168.12.0 0.0.0.63 any eq 443

BRANCH-2(config-ext-nacl)#permit icmp any any

BRANCH-2(config-ext-nacl)#permit ip any any

BRANCH-2(config-ext-nacl)#exit

BRANCH-2(config)#int g0/0/0

BRANCH-2(config-if)#ip access-group BRANCH2-Policy in

BRANCH-2(config-if)# exit

In BRANCH-3:

We configured interface G0/0/0 with Ip 192.168.11.1 /25.

We configured interface S0/1/0 with Ip 192.168.12.105 /30.

We configured OSPF in this router to make it see undirected connected networks (20 host, 60 host, 80host, 150 host and internet).

We make Privilege security to limit access to this router and enable encryption to passwords.

We make access list to limit access to inside network 192.168.11.0/25

We access tcp on port 80 and 443, icmp and ospf protocols.

Configuration:

```
Router> en
Router# conf t
Enter configuration commands, one per line. End with CNTL/Z
Router(config)# hostname BRANCH-3
BRANCH-3(config)# int s 0/1/0
BRANCH-3(config-if)# no shutdown
BRANCH-3(config-if)# ip add 192.168.12.105 255.255.255.252
BRANCH-3(config-if)# exit
BRANCH-3(config)# int g 0/0/0
BRANCH-3(config-if)# no shutdown
BRANCH-3(config-if)# ip add 192.168.11.1 255.255.255.128
BRANCH-3(config-if)# exit
BRANCH-3(config)# router ospf 1
BRANCH-3(config-router)# network 192.165.11.0 0.0.0.127 area 0
BRANCH-3(config-router)# network 192.165.12.104 0.0.0.3 area 0
BRANCH-4(config-router)# exit
BRANCH-3(config)#username meky password 17593
BRANCH-3(config)#username moaz password 2003
BRANCH-3(config)#username abdo password 991
BRANCH-3(config)#enable secret branch3
```

```
BRANCH-3(config)#line console 0
BRANCH-3(config-line)#login local
BRANCH-3(config-line)#password BRANCH3con0
BRANCH-3(config-line)#exit
BRANCH-3(config)#line vty 0 4
BRANCH-3(config-line)#password BRANCH3vty04
BRANCH-3(config)#service password-encryption
BRANCH-3(config)#ip access-list extended BRANCH3-Policy
BRANCH-3(config-ext-nacl)#permit icmp any any
BRANCH-3(config-ext-nacl)#permit ip any any
BRANCH-3(config-ext-nacl)#permit tcp any any eq 80
BRANCH-3(config-ext-nacl)#permit tcp any any eq 443
BRANCH-3(config-ext-nacl)#exit
BRANCH-3(config)#int g0/0/0
BRANCH-3(config-if)#ip access-group BRANCH3-Policy in
BRANCH-3(config-if)# exit
```

In BRANCH-4:

We configured interface G0/0/0 with Ip 192.168.11.129 /25.

We configured interface S0/1/0 with Ip 192.168.12.109 /30.

We configured OSPF in this router to make it see undirected connected networks (20 host, 60 host, 120 host, 150 host and internet).

We make Privilege security to limit access to this router and enable encryption to passwords.

We make access list to limit access to inside network 192.168.11.128/25

We access tcp on port 80 and 443, icmp and ospf protocols.

Configuration:

```
Router> en
Router# conf t
Enter configuration commands, one per line. End with CNTL/Z
Router(config)# hostname BRANCH-4
BRANCH-4(config)# int s 0/1/0
BRANCH-4(config-if)# no shutdown
BRANCH-4(config-if)# ip add 192.168.12.109 255.255.255.252
BRANCH-4(config-if)# exit
BRANCH-4(config)# int g 0/0/0
BRANCH-4(config-if)# no shutdown
BRANCH-4(config-if)# ip add 192.168.11.129 255.255.255.128
BRANCH-4(config-if)# exit
BRANCH-4(config)# router ospf 1
BRANCH-4(config-router)# network 192.165.12.108 0.0.0.3 area 0
BRANCH-4(config-router)# network 192.165.11.128 0.0.0.127 area 0
BRANCH-4(config-router)# exit
BRANCH-4(config)#username meky password 17593
BRANCH-4(config)#username moaz password 2003
BRANCH-4(config)#username abdo password 991
BRANCH-4(config)#enable secret branch4
```

```
BRANCH-4(config)#line console 0
BRANCH-4(config-line)#login local
BRANCH-4(config-line)#password BRANCH4con0
BRANCH-4(config-line)#exit
BRANCH-4(config)#line vty 0 4
BRANCH-4(config-line)#password BRANCH4vty04
BRANCH-4(config)#service password-encryption
BRANCH-4(config)#ip access-list extended BRANCH4-Policy
BRANCH-4(config-ext-nacl)#permit icmp any any
BRANCH-4(config-ext-nacl)#permit ip any any
BRANCH-4(config-ext-nacl)#permit tcp any any eq 80
BRANCH-4(config-ext-nacl)#permit tcp any any eq 443
BRANCH-4(config-ext-nacl)#exit
BRANCH-4(config)#int g0/0/0
BRANCH-4(config-if)#ip access-group BRANCH4-Policy in
BRANCH-4(config-if)# exit
```

In INTERNET:

We configured interface G0/0/0 with Ip 192.168.50.1 /24.

We configured interface S0/1/0 with Ip 209.165.201.6 /30.

We configured OSPF in this router to make it see undirected connected networks (20 host, 60 host, 80 host, 120 host and 150 host).

Configuration:

Router> en

Router# conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)# hostname INTERNET

INTERNET(config)# int s 0/2/0

INTERNET(config-if)# no shutdown

INTERNET(config-if)# ip add 209.165.201.6 255.255.255.252

INTERNET(config-if)# exit

INTERNET(config)# int g 0/0/0

INTERNET(config-if)# no shutdown

INTERNET(config-if)# ip add 192.168.50.1 255.255.255.0

INTERNET(config-if)# exit

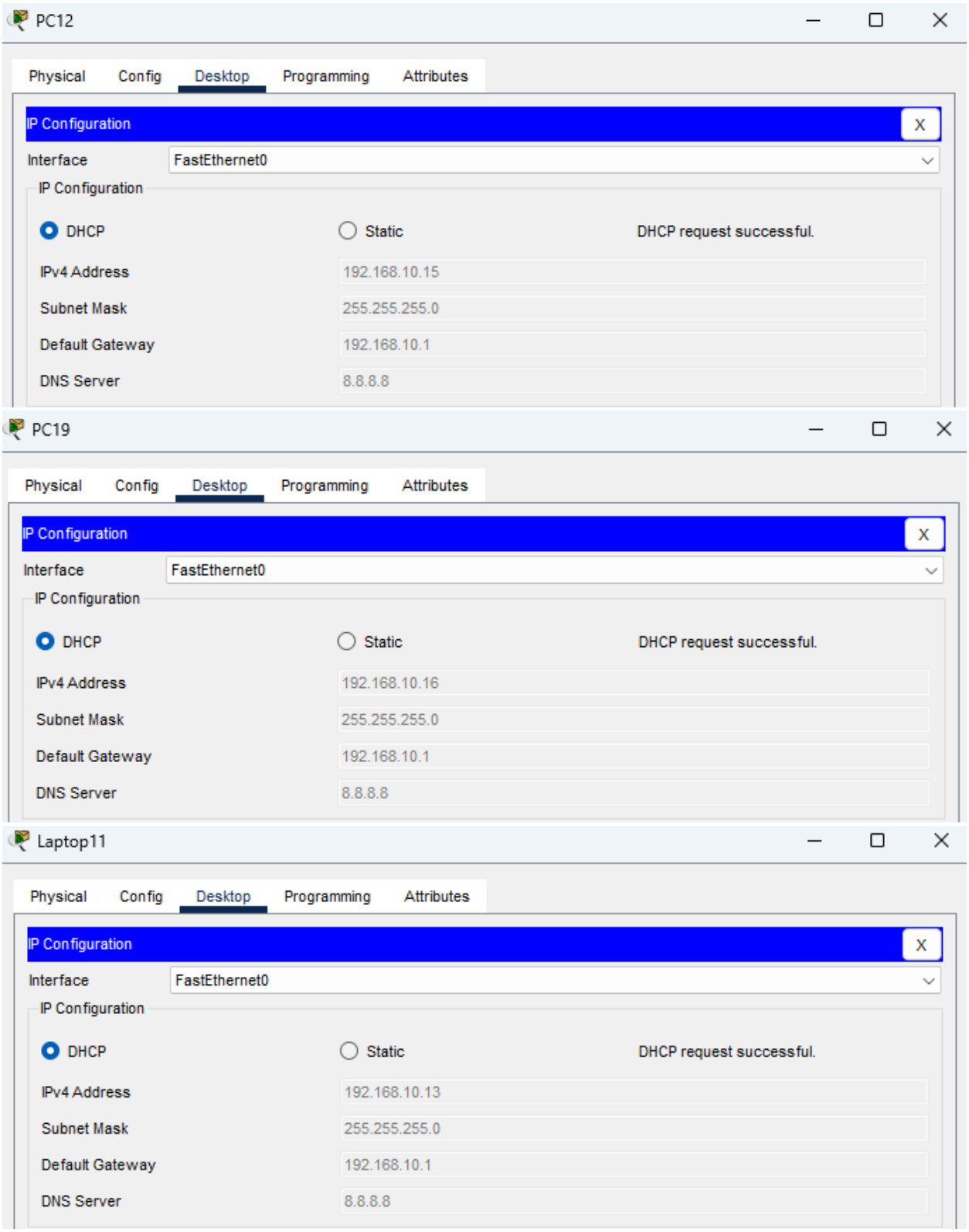
INTERNET(config)# router ospf 1

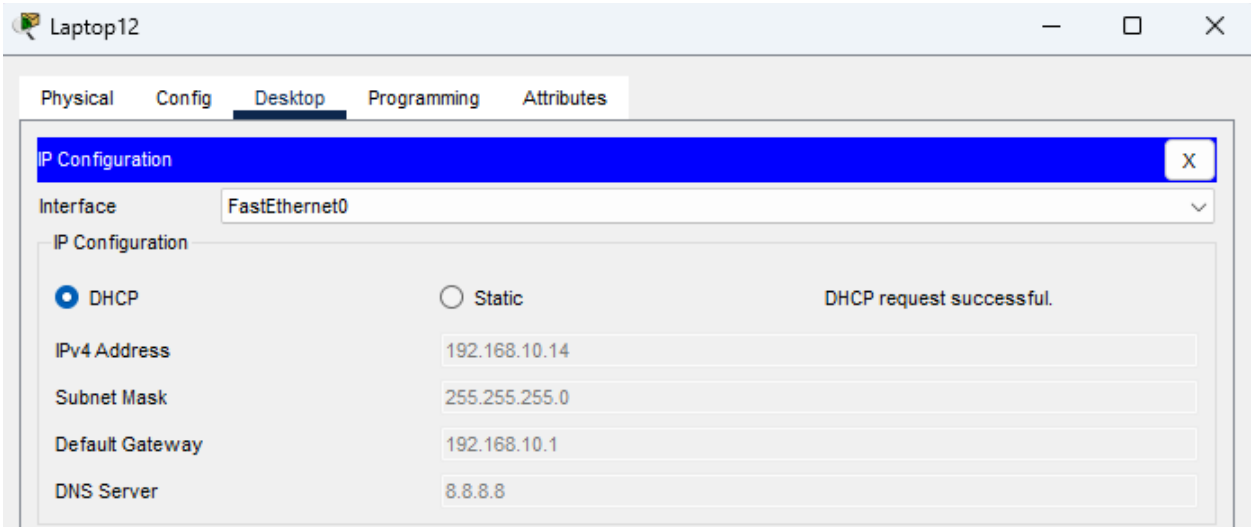
INTERNET(config-router)# network 209.165.201.4 0.0.0.3 area 0

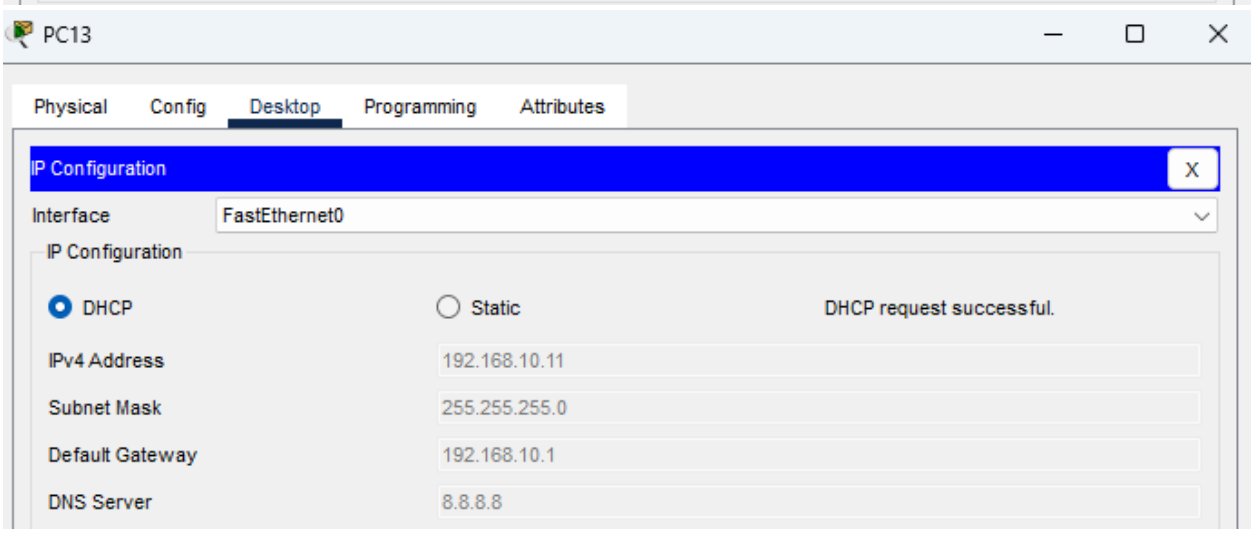
INTERNET(config-router)# network 192.165.50.0 0.0.0.255 area 0

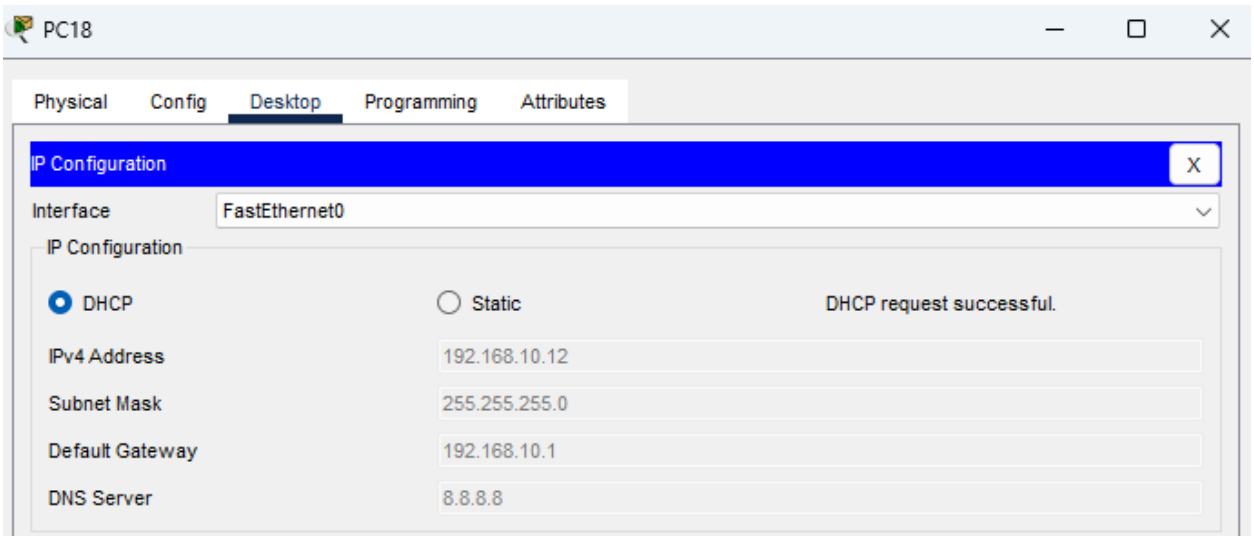
INTERNET(config-router)# exit

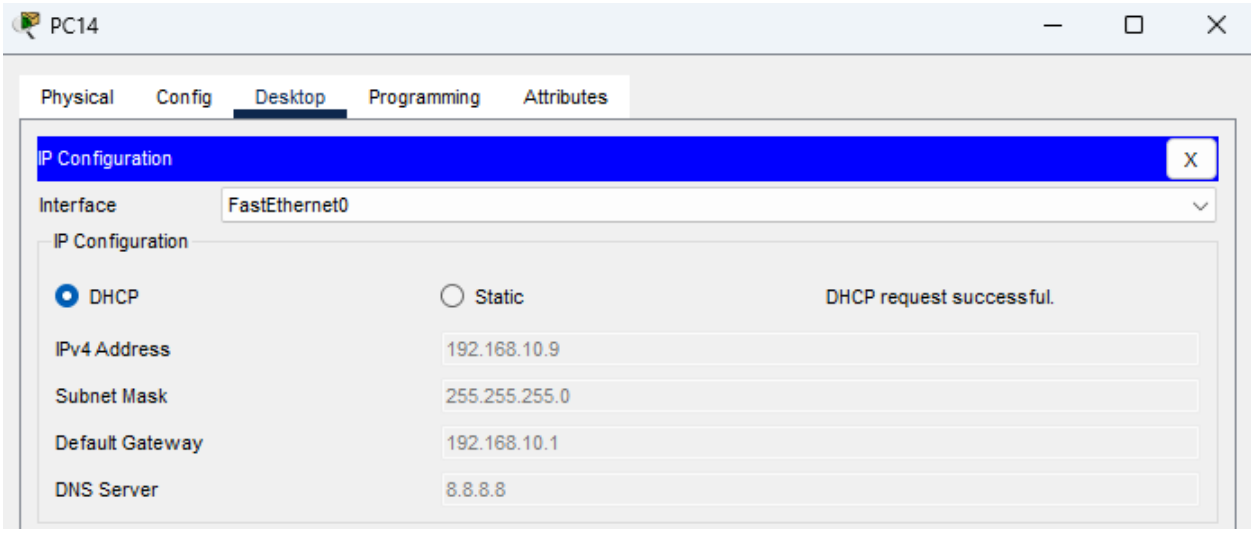
Screenshots PCs network 192.168.10.0/24:

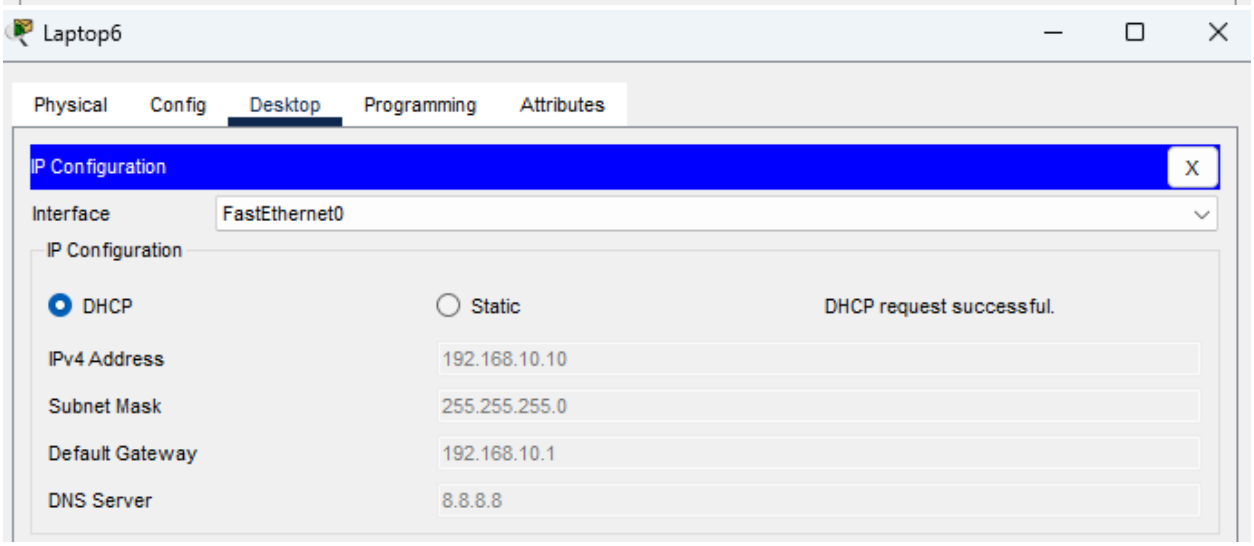


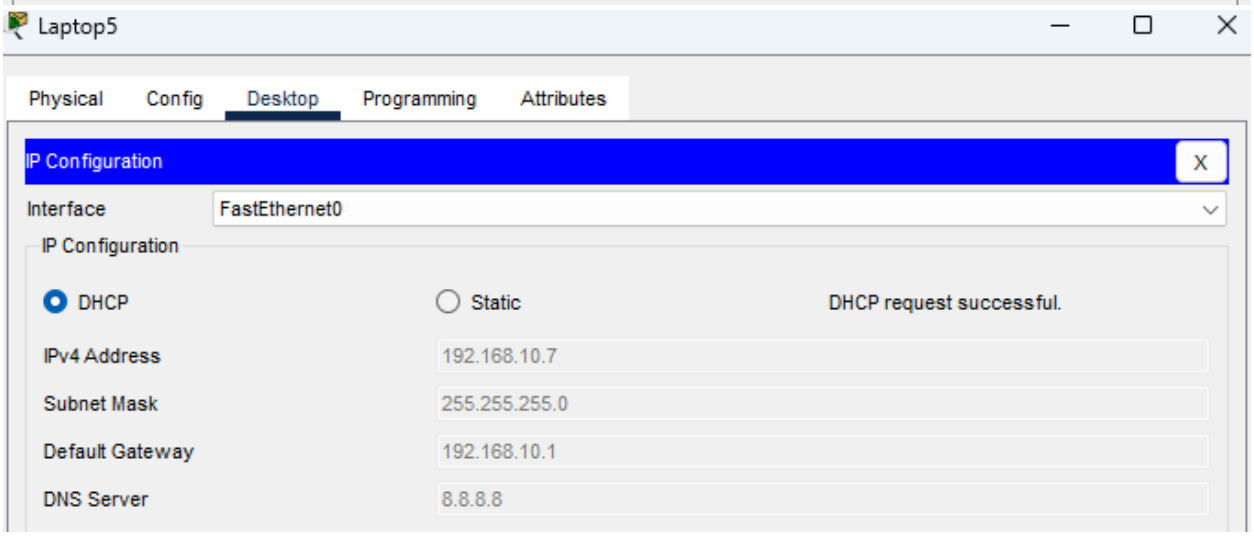

Laptop12
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.14
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

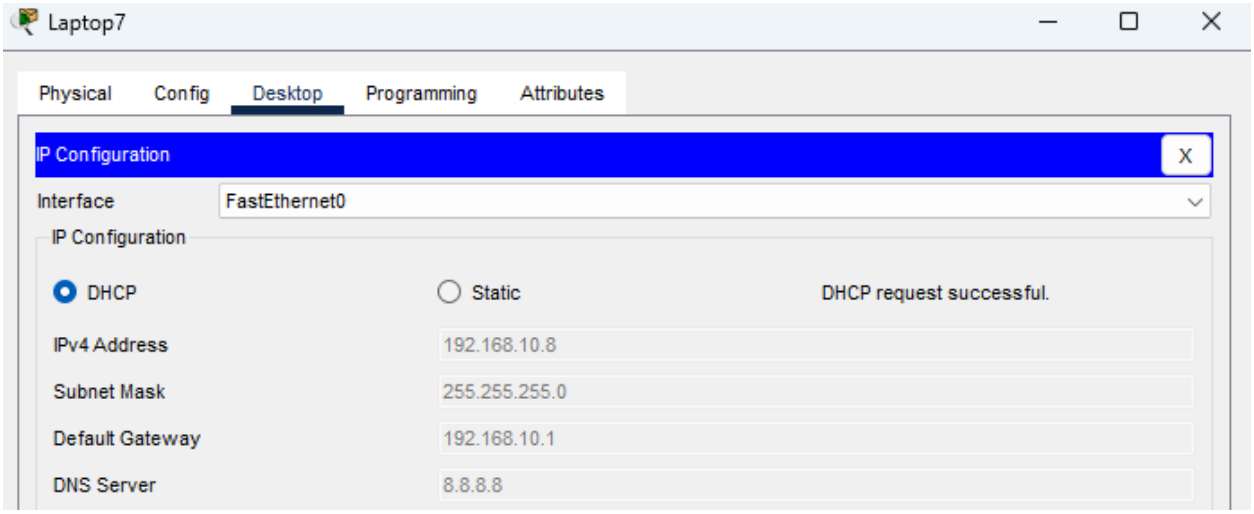

PC13
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.11
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

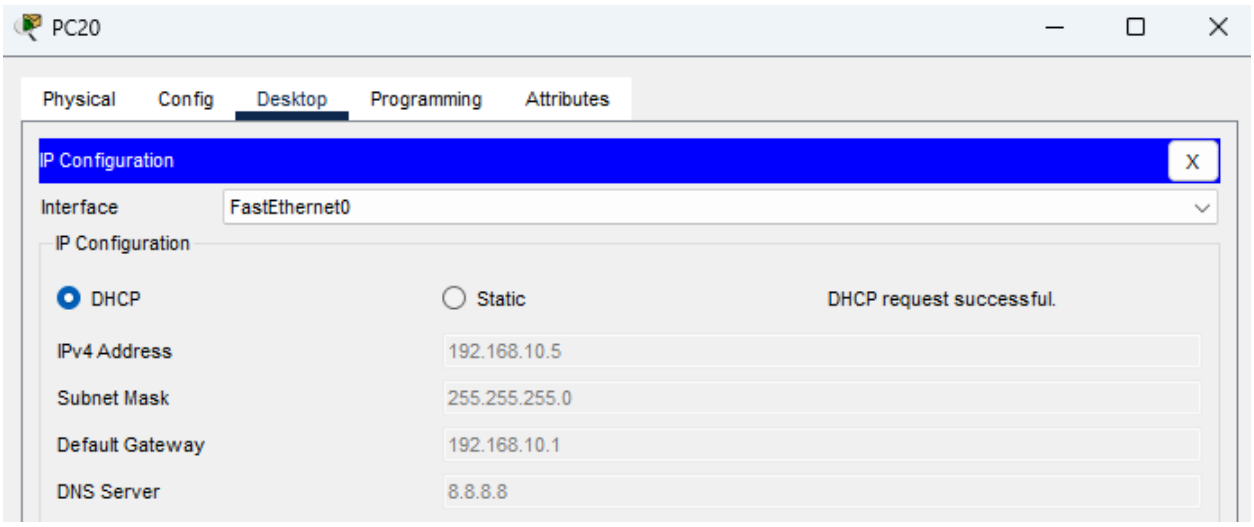

PC18
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.12
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

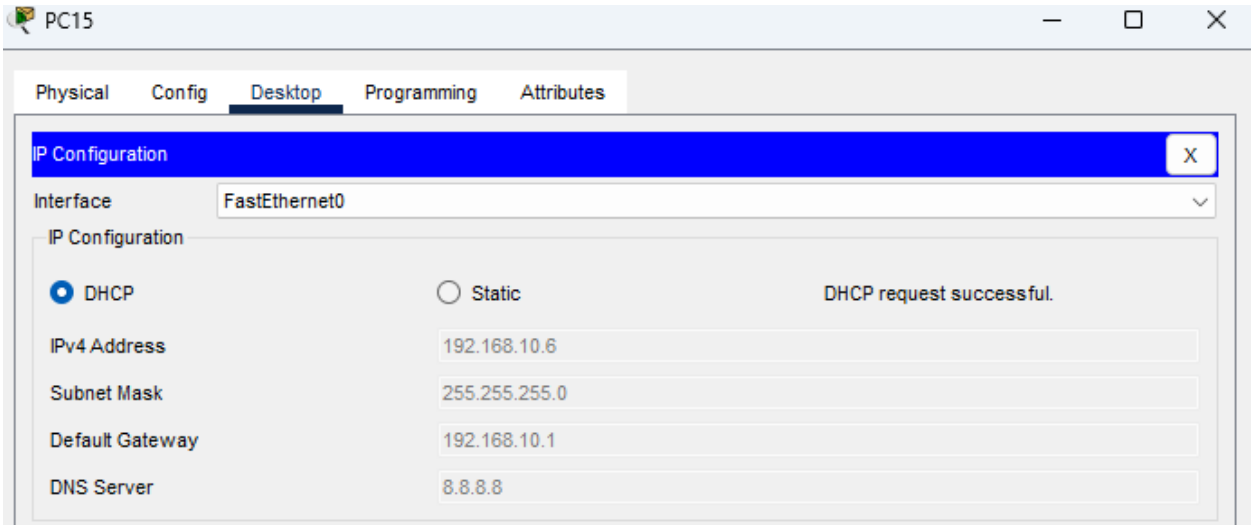

PC14
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.9
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

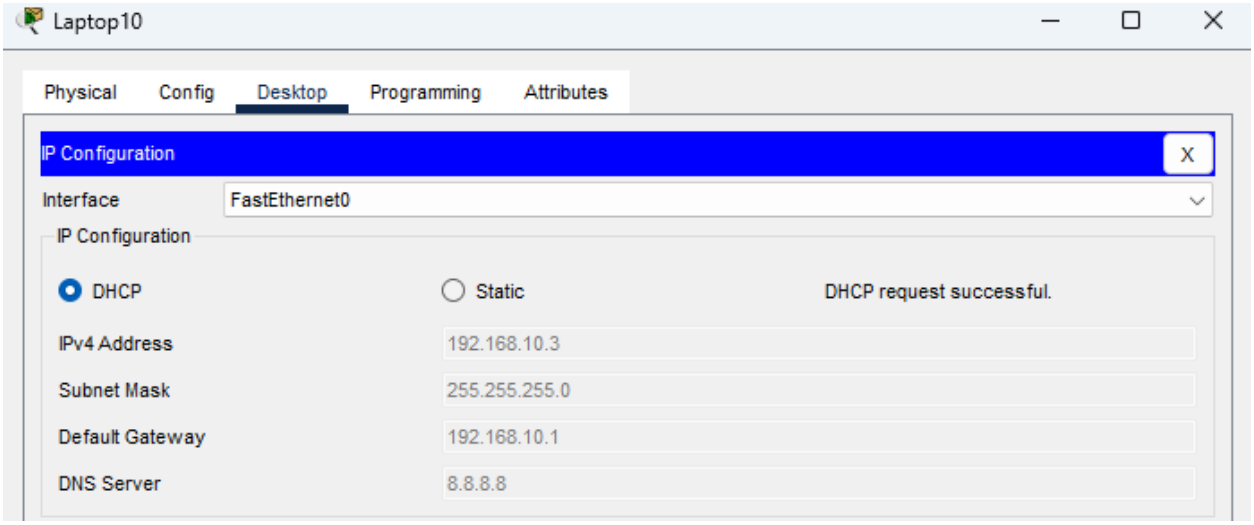

Laptop6
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.10
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

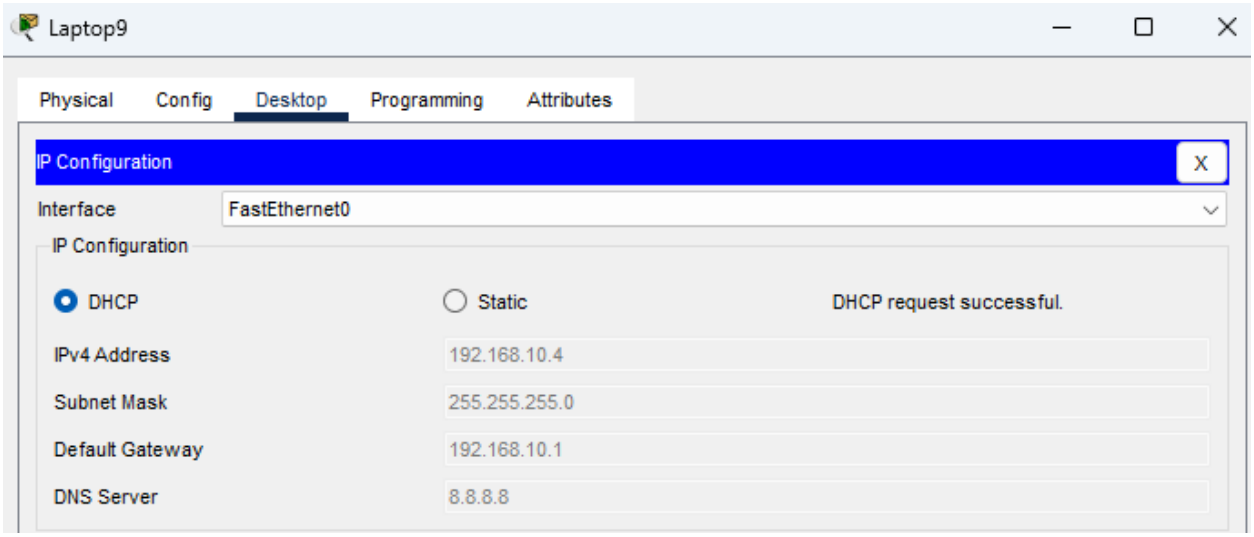

Laptop5
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.7
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

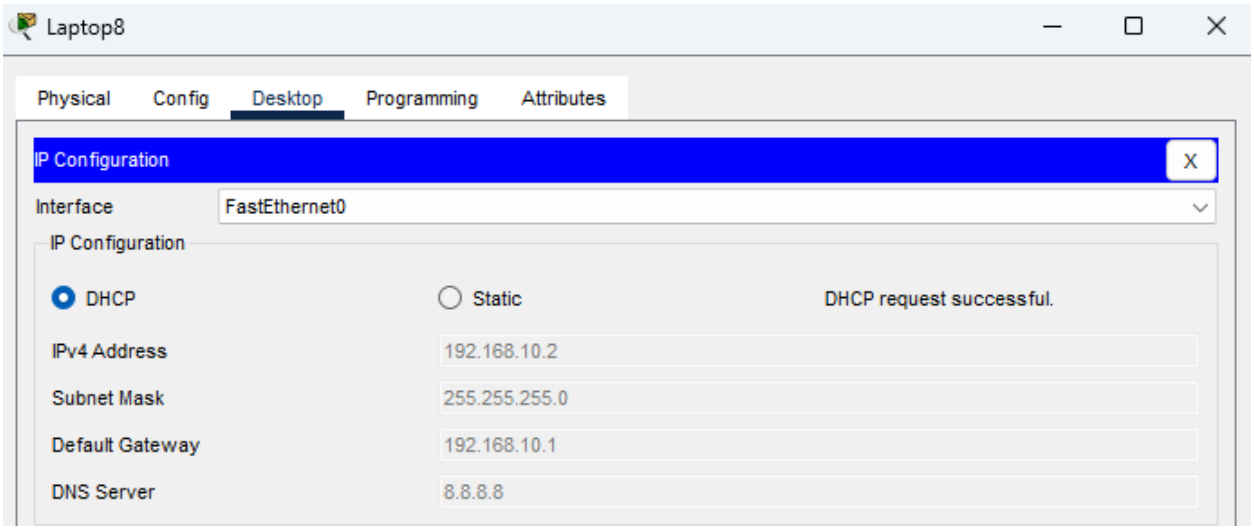

Laptop7
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.8
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8


PC20
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.5
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

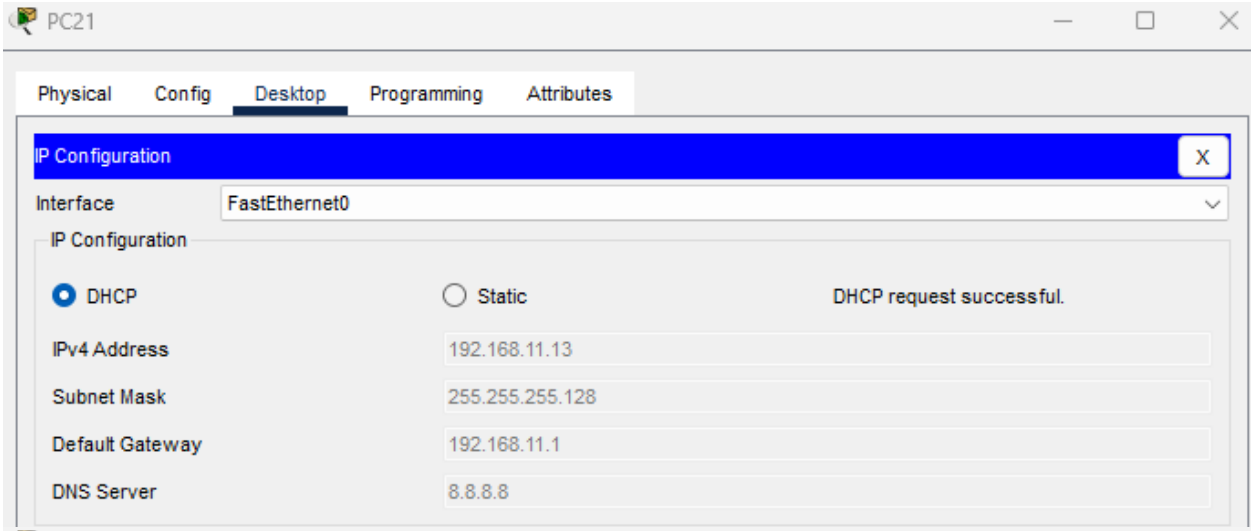

PC15
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.6
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

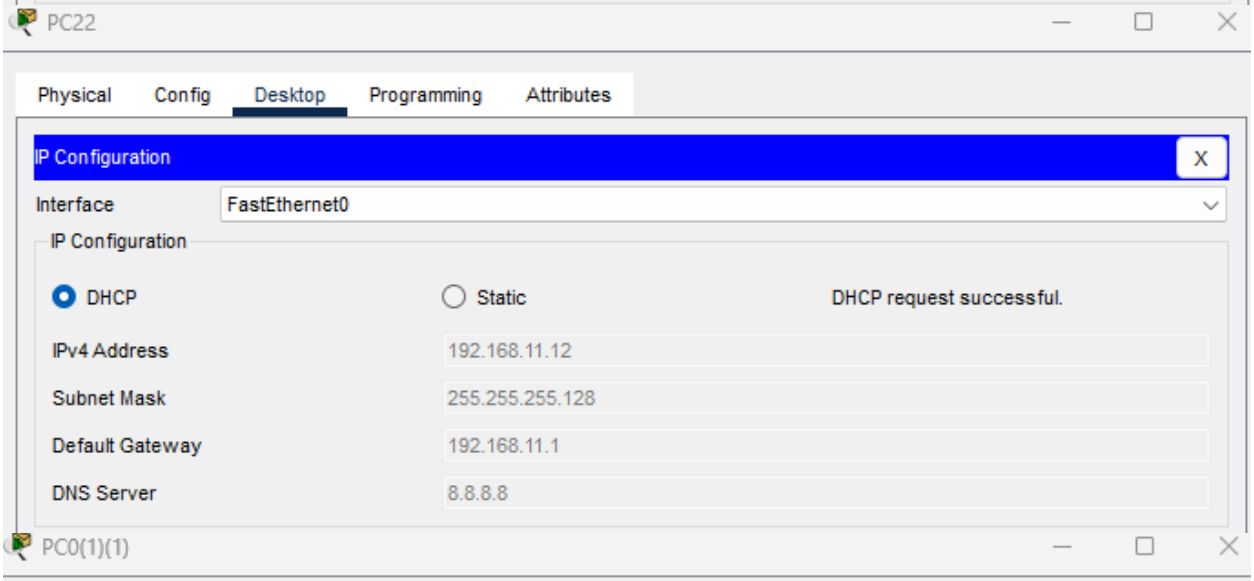

Laptop10
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

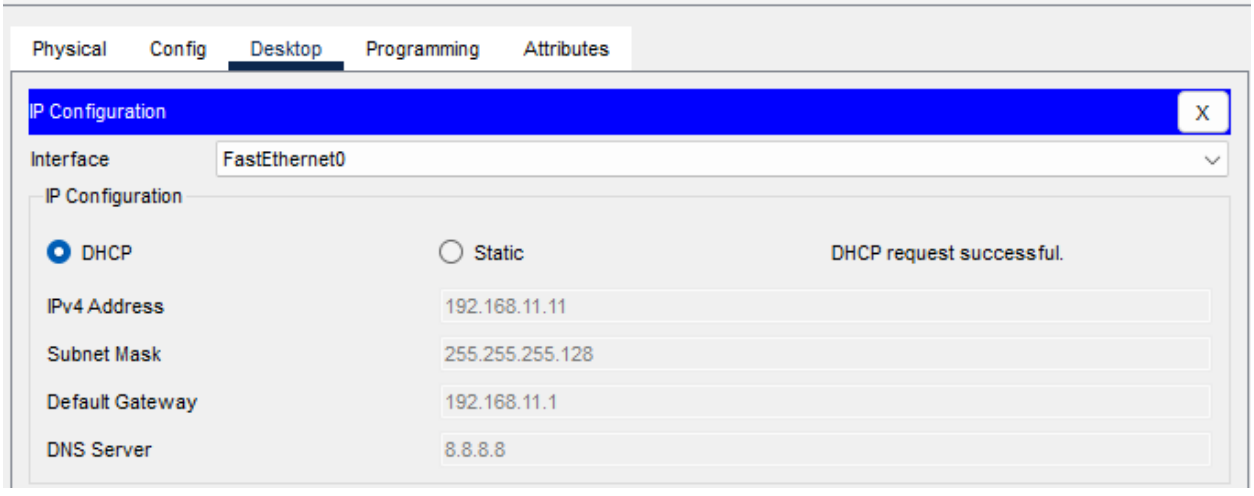

Laptop9
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.4
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

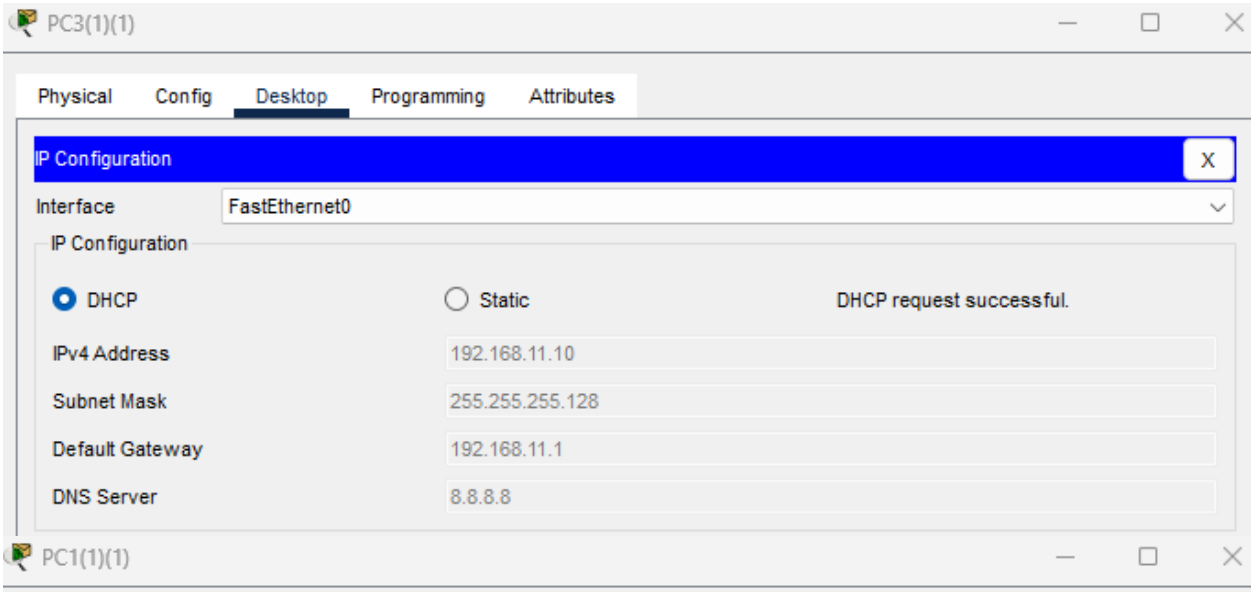

Laptop8
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.10.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.10.1
DNS Server
8.8.8.8

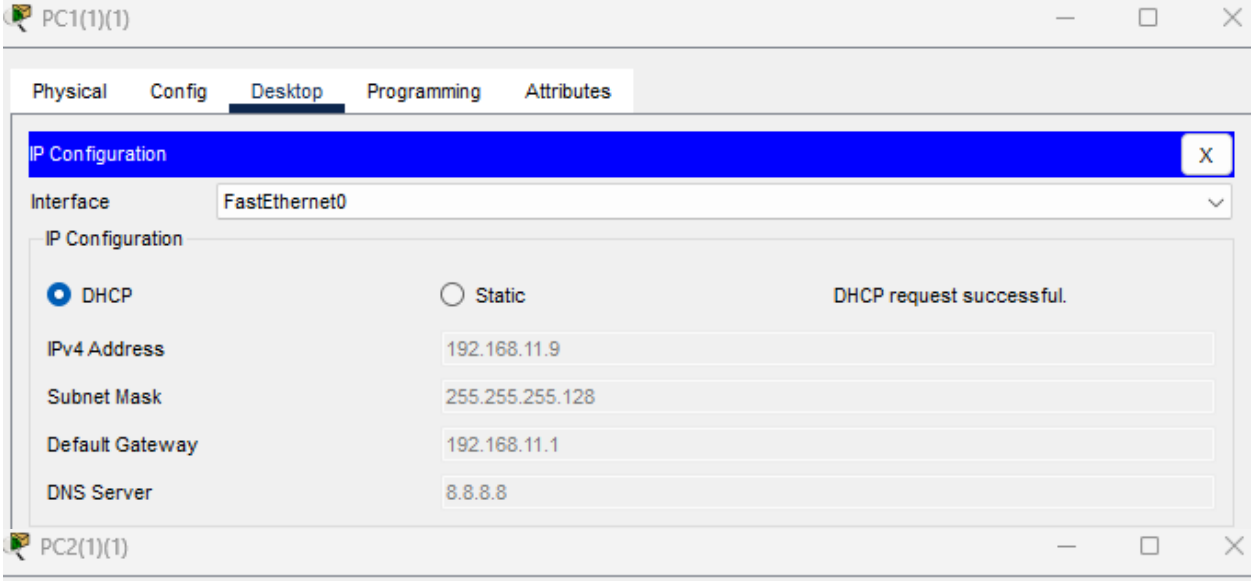
Screenshots PCs network 192.168.11.0/25:

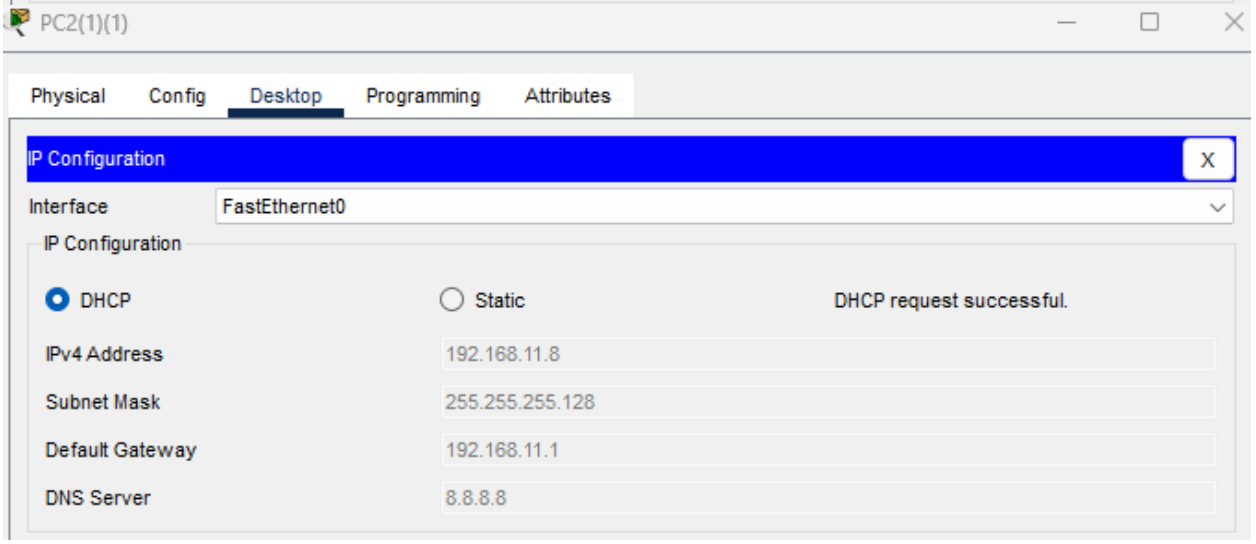


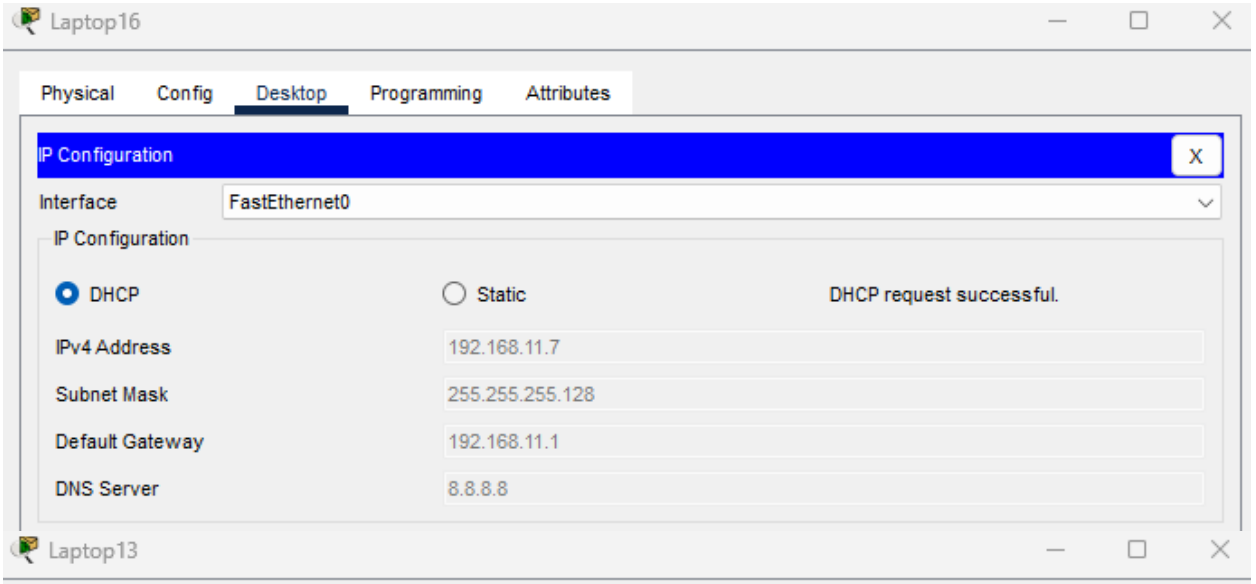


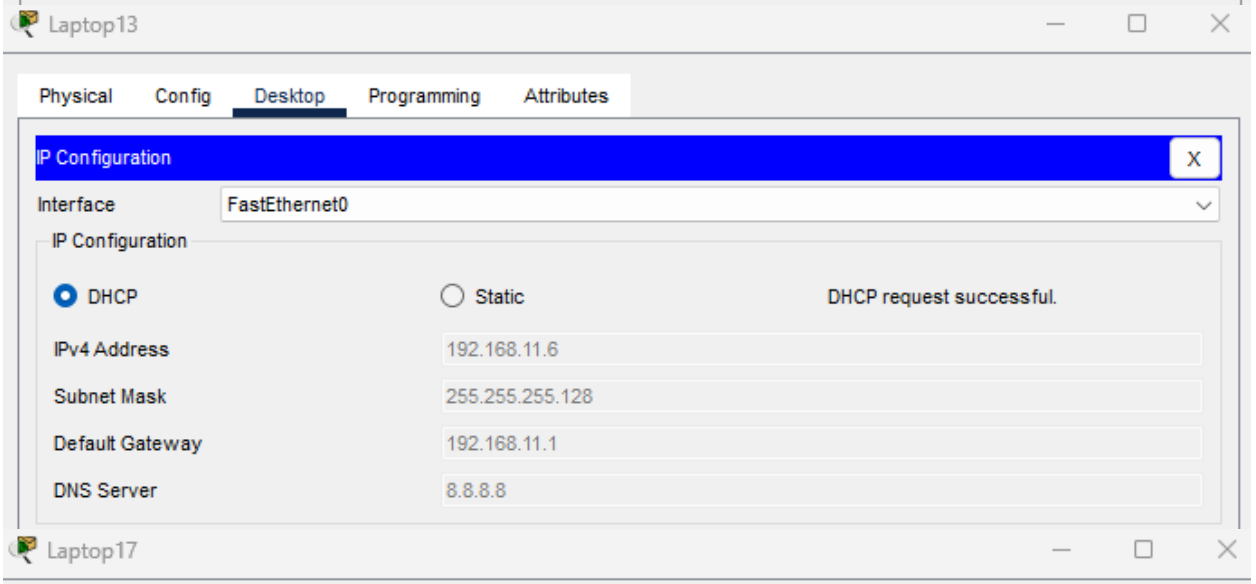


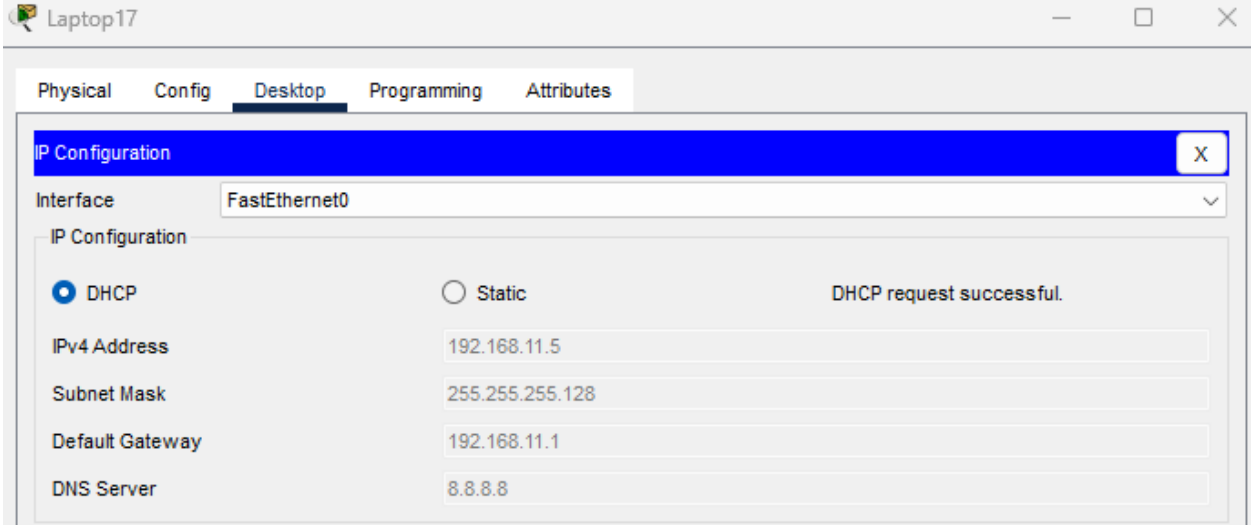

PC3(1)(1)
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.10
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

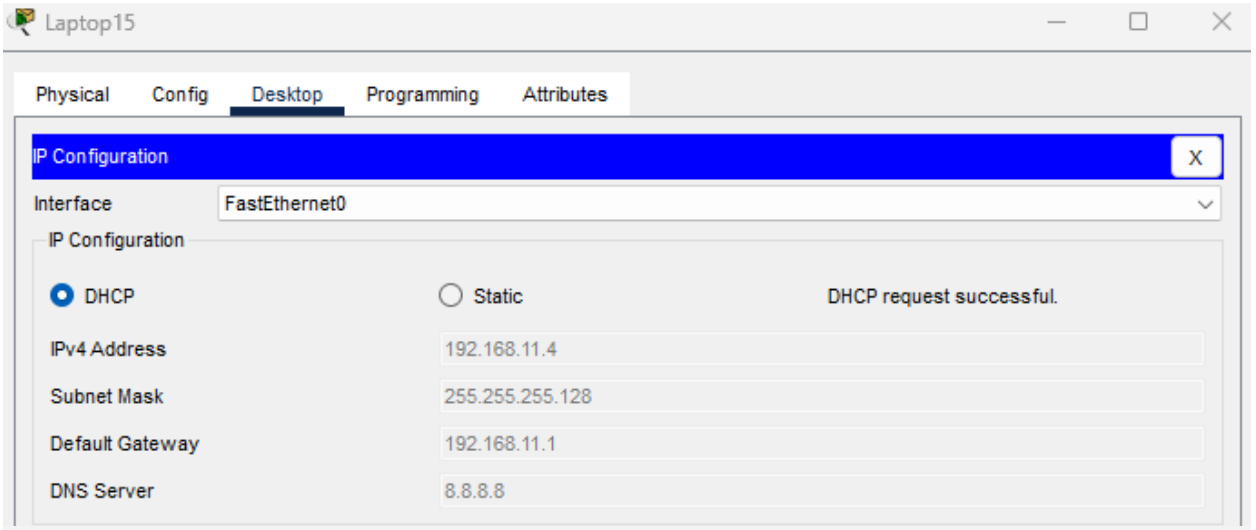

PC1(1)(1)
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.9
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

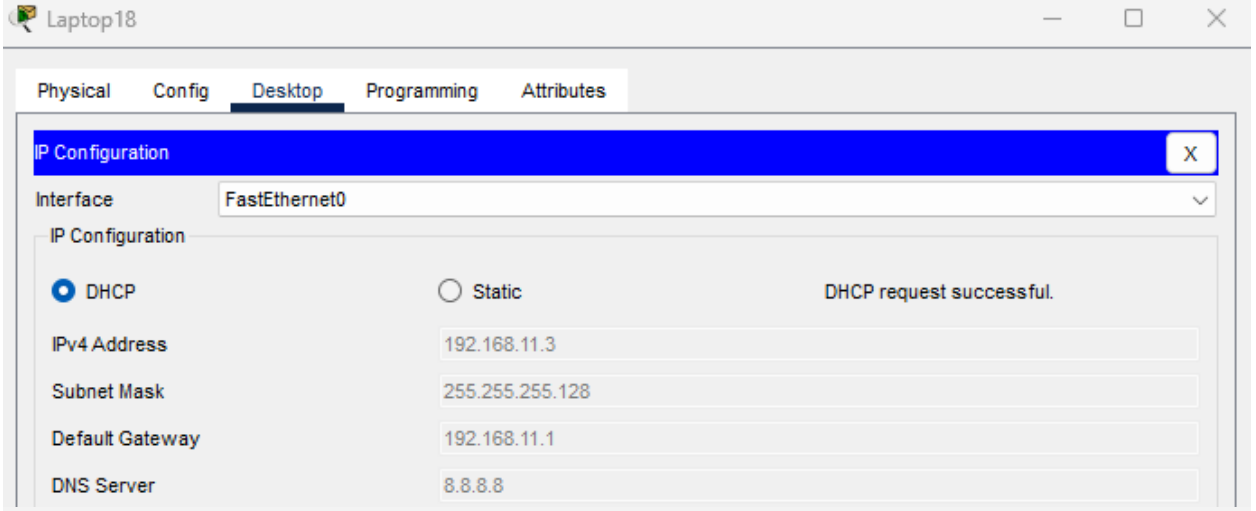

PC2(1)(1)
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.8
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

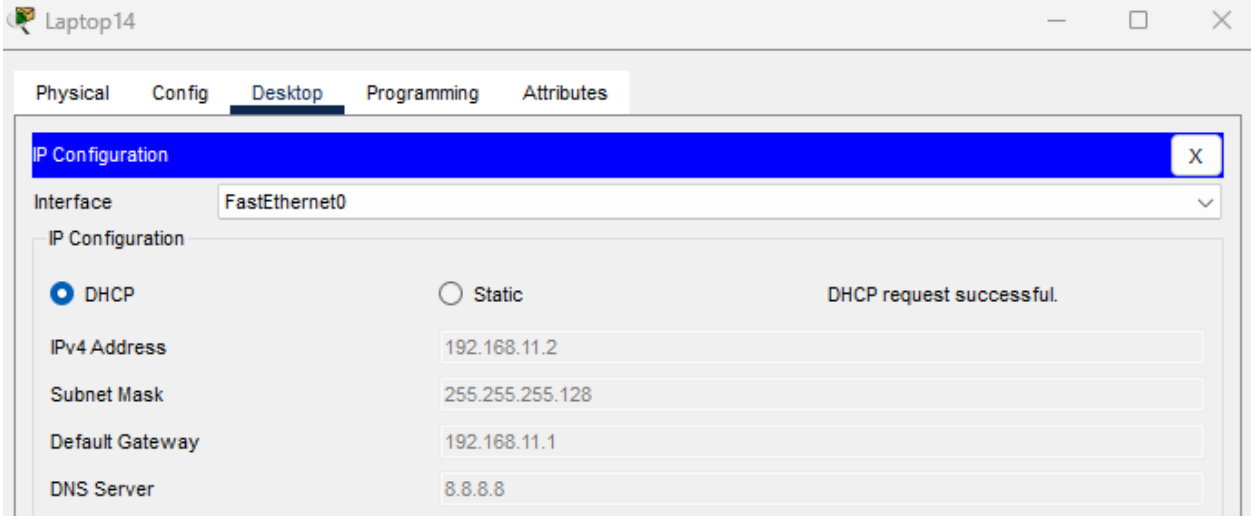

Laptop16
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.7
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8


Laptop13
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.6
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

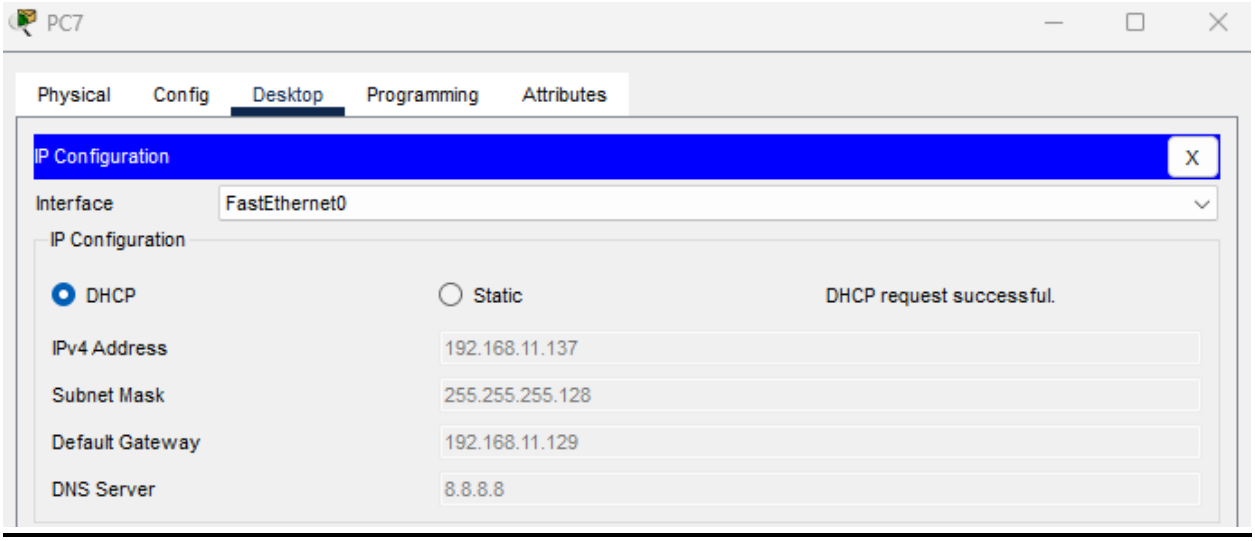

Laptop17
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.5
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

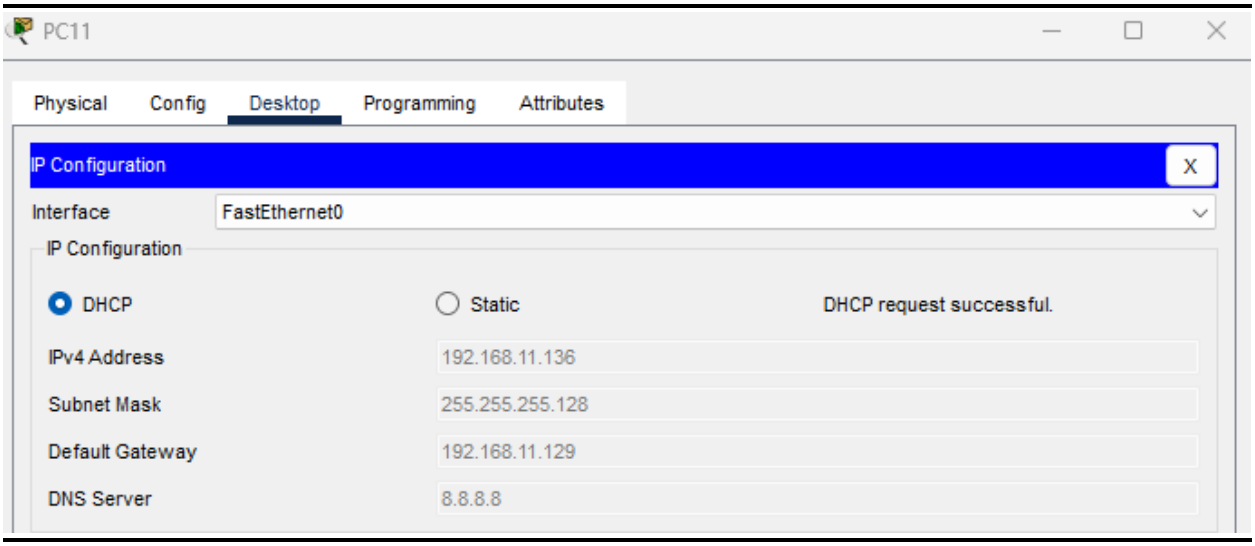

Laptop15
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.4
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

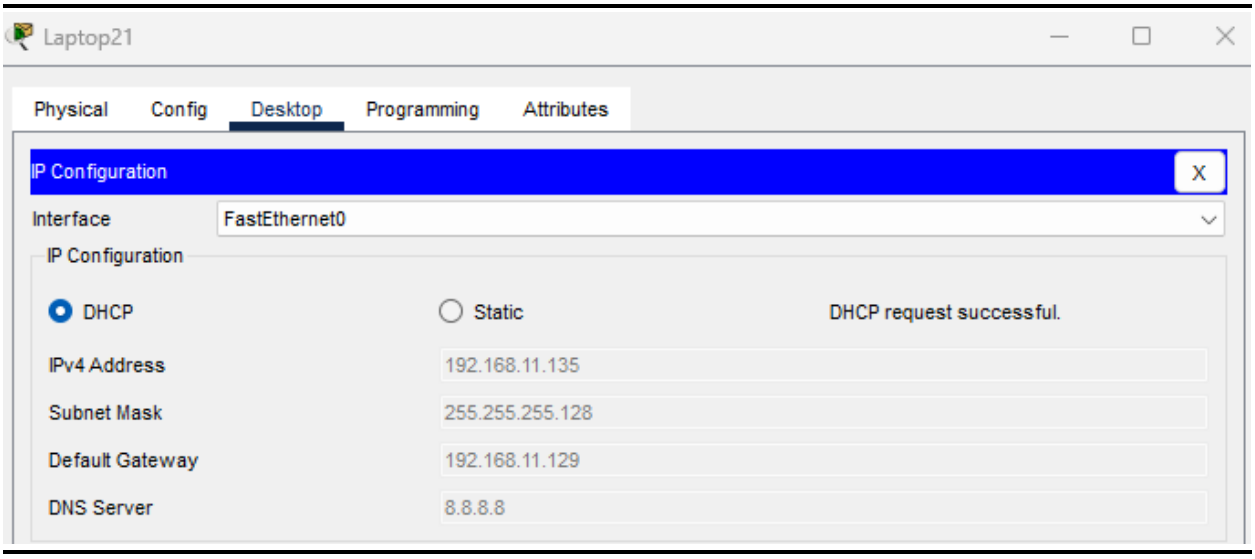

Laptop18
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.3
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

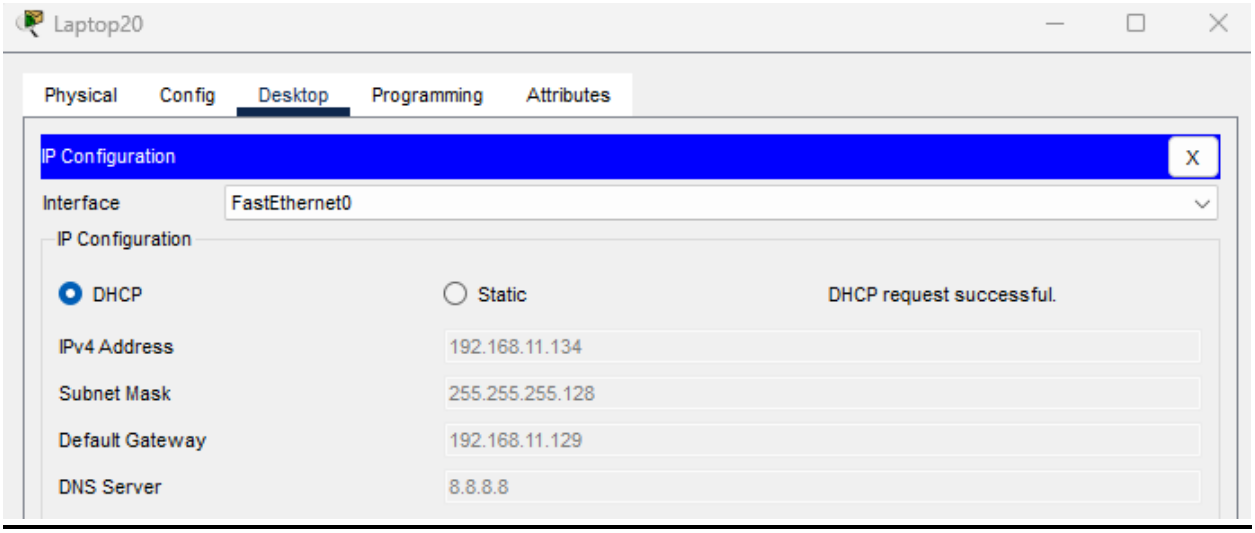

Laptop14
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.2
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.1
DNS Server
8.8.8.8

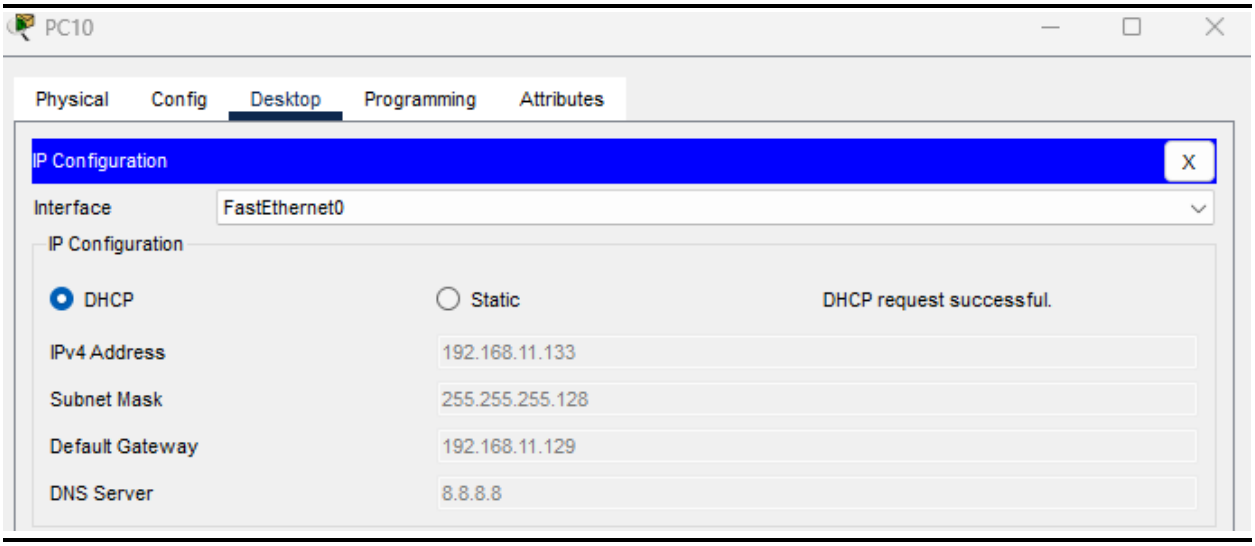
Screenshots PCs network 192.168.11.128/25:

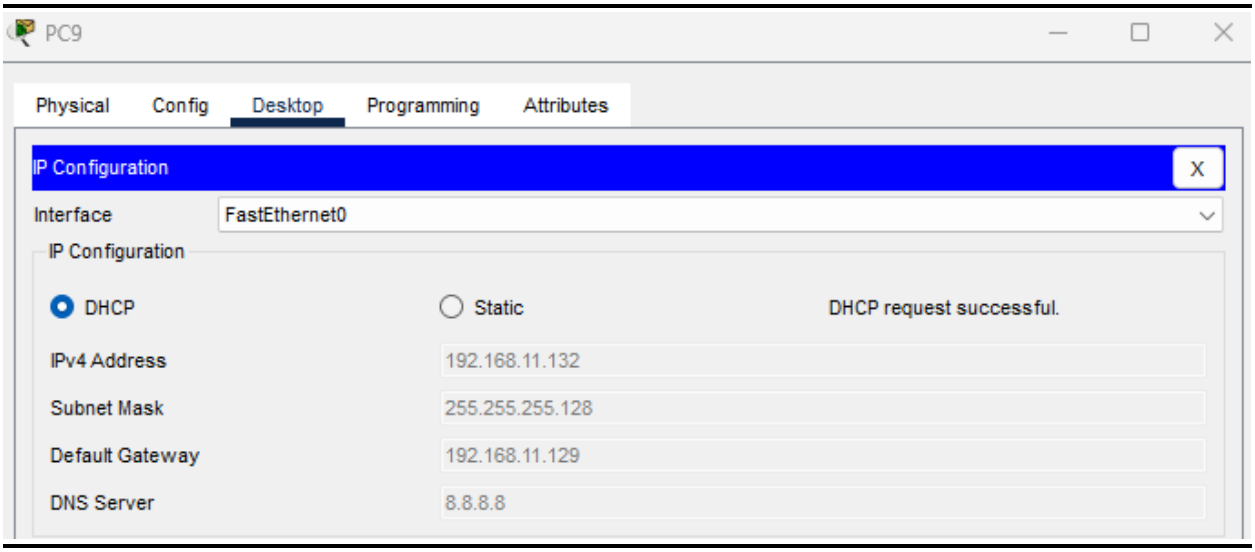


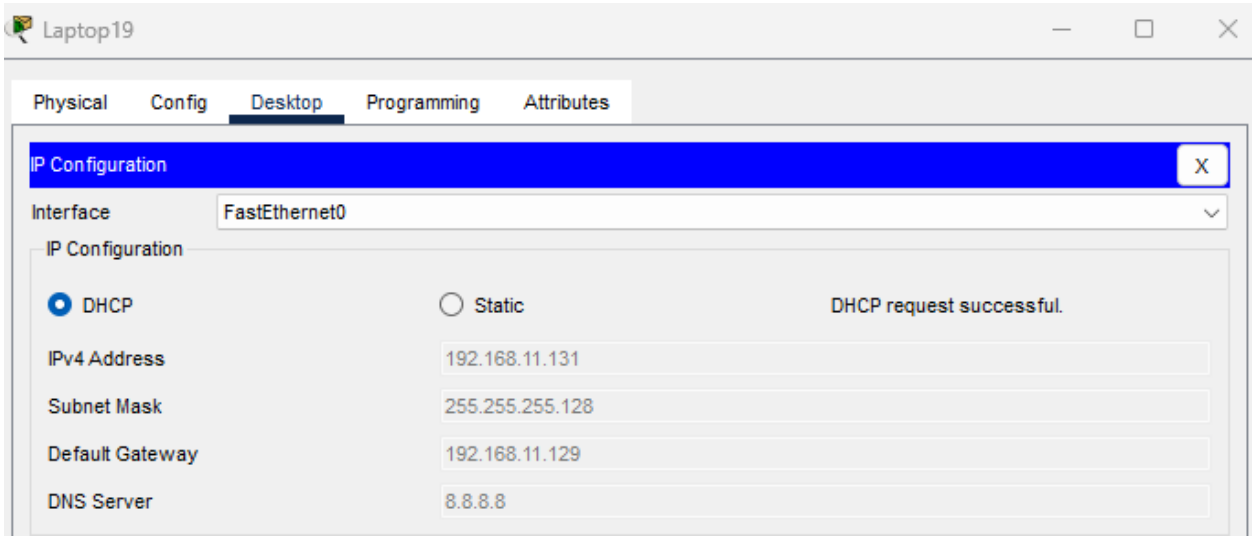


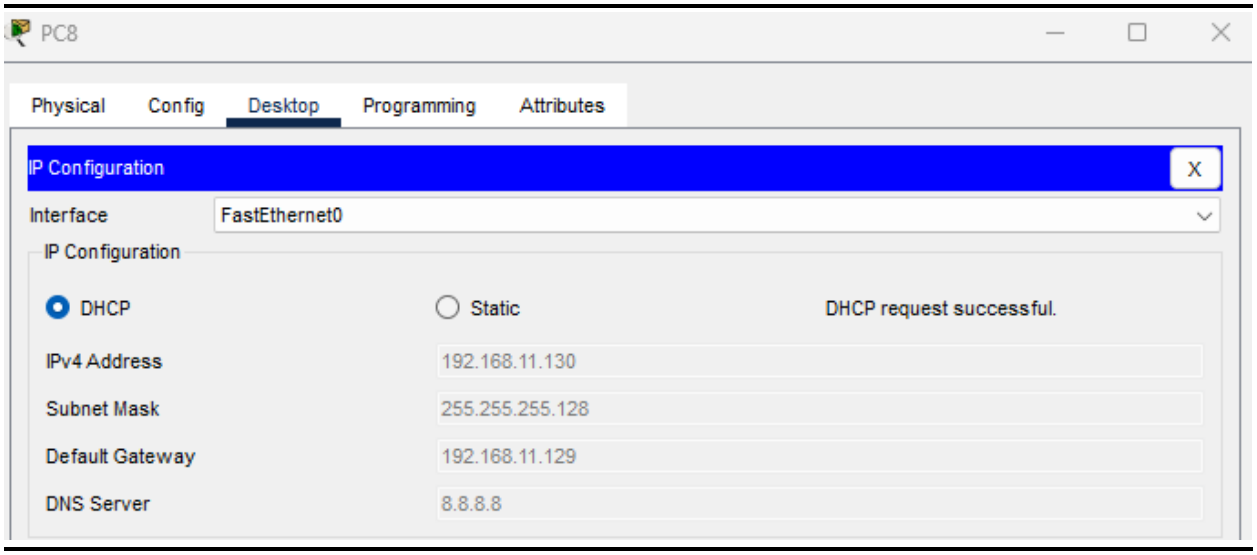



Laptop20
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.134
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.129
DNS Server
8.8.8.8

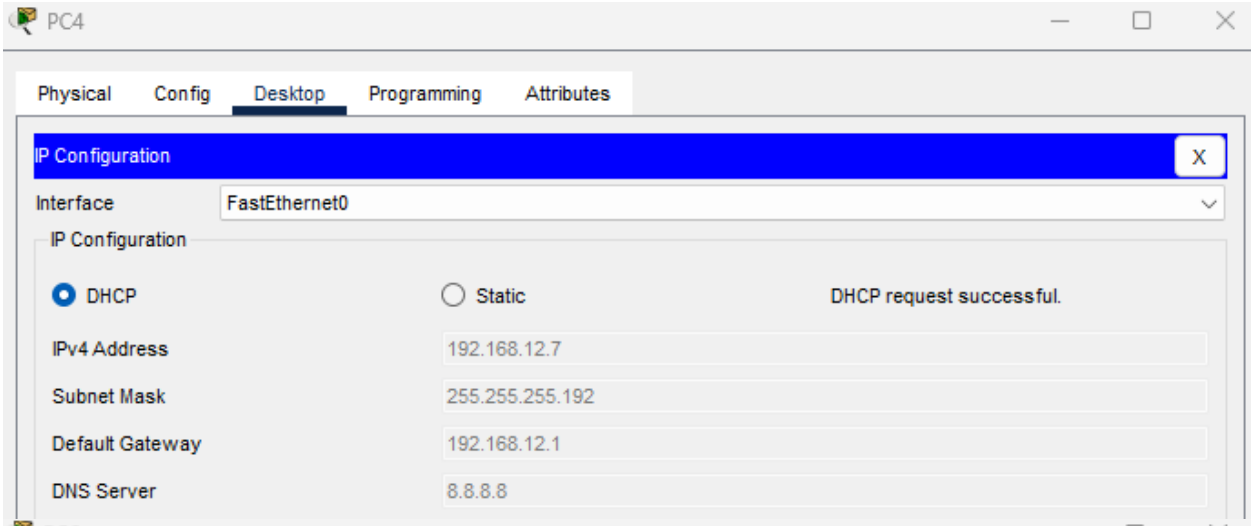

PC10
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.133
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.129
DNS Server
8.8.8.8

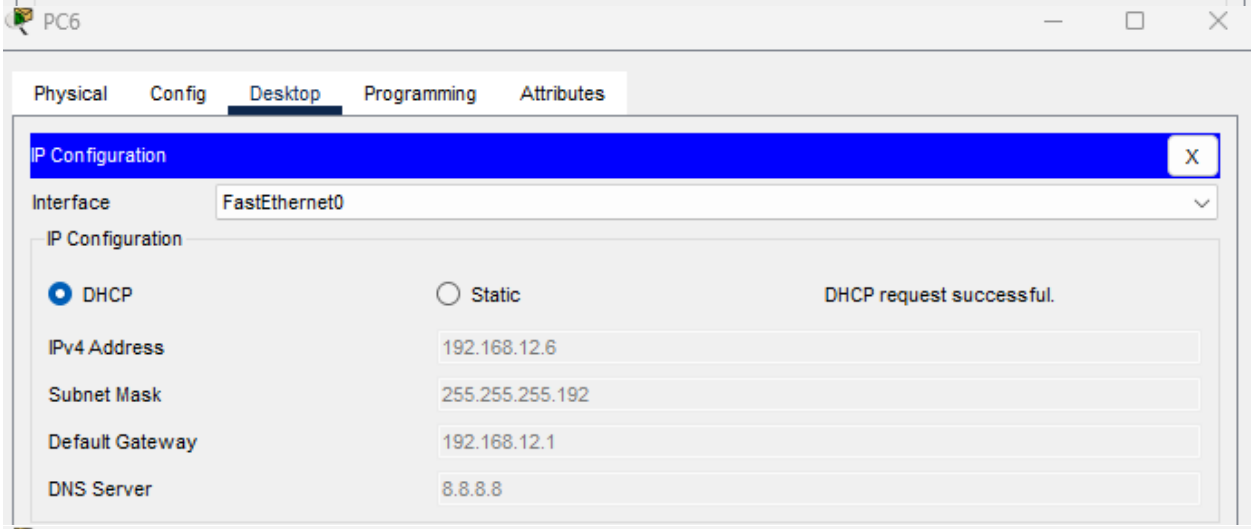

PC9
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.132
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.129
DNS Server
8.8.8.8

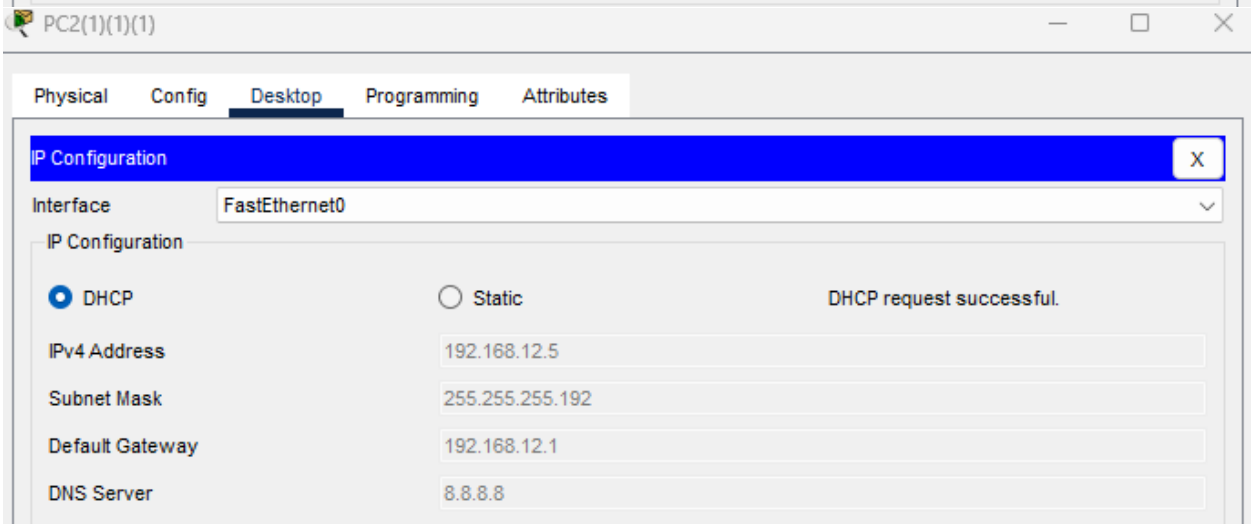

Laptop19
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.131
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.129
DNS Server
8.8.8.8

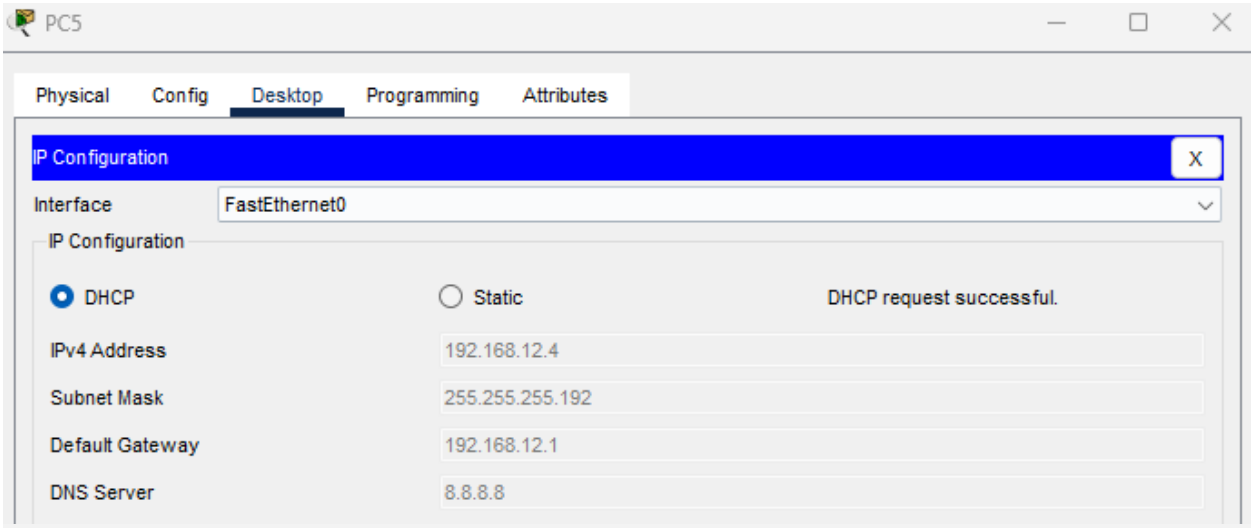

PC8
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.11.130
Subnet Mask
255.255.255.128
Default Gateway
192.168.11.129
DNS Server
8.8.8.8

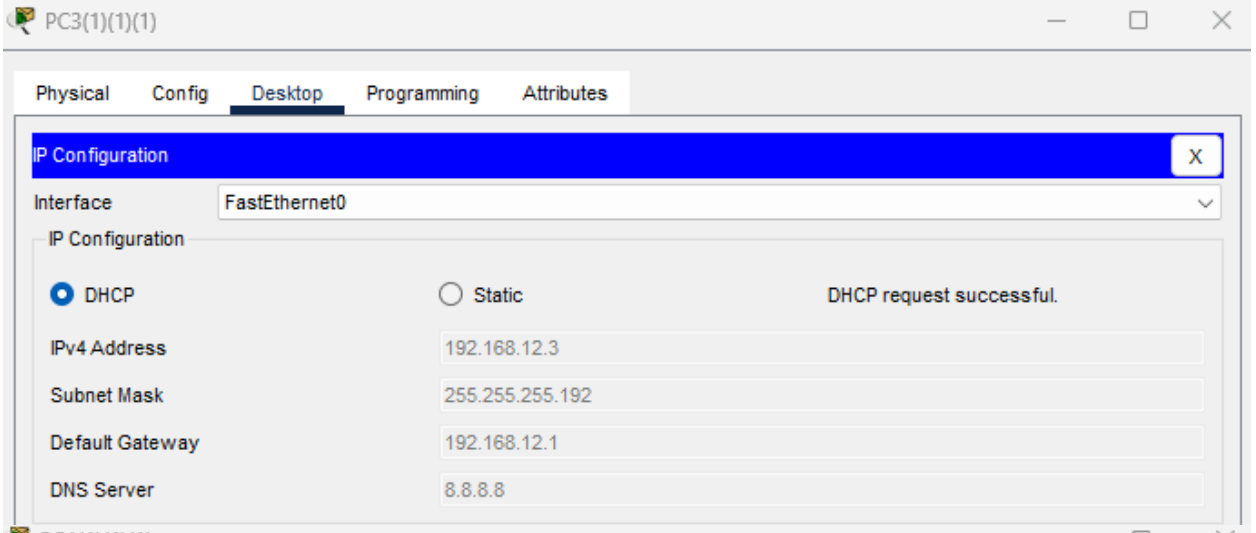
Screenshots PCs network 192.168.12.0/26:

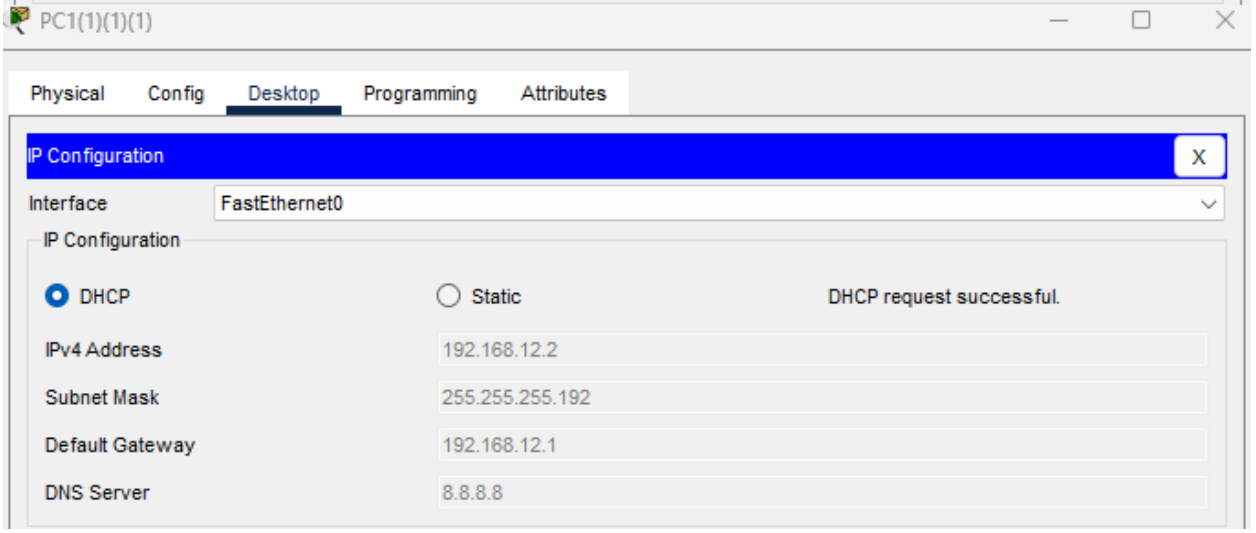




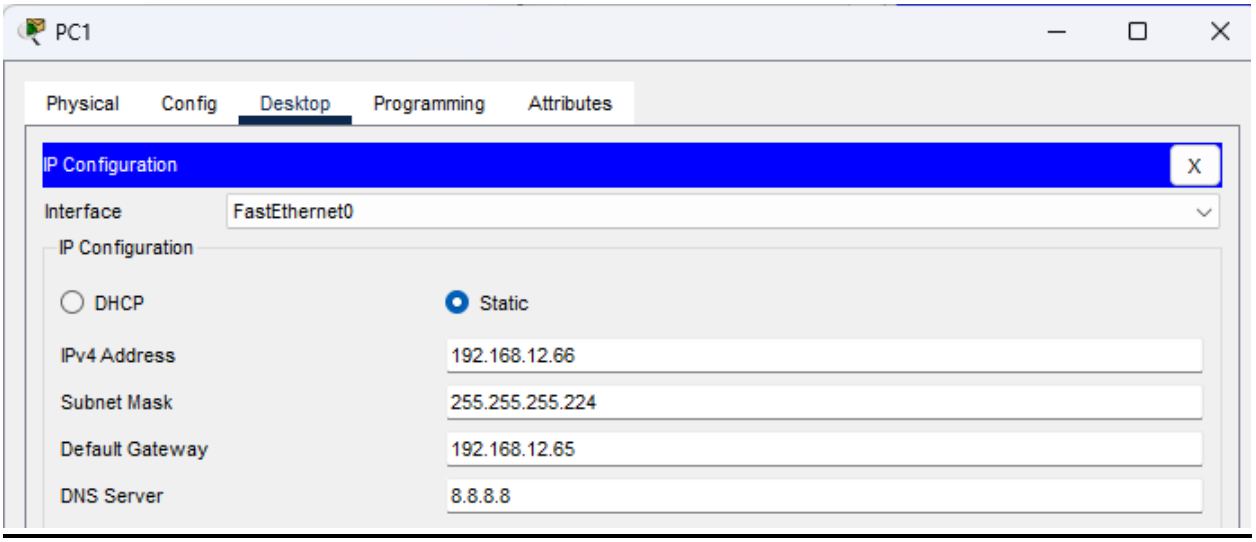


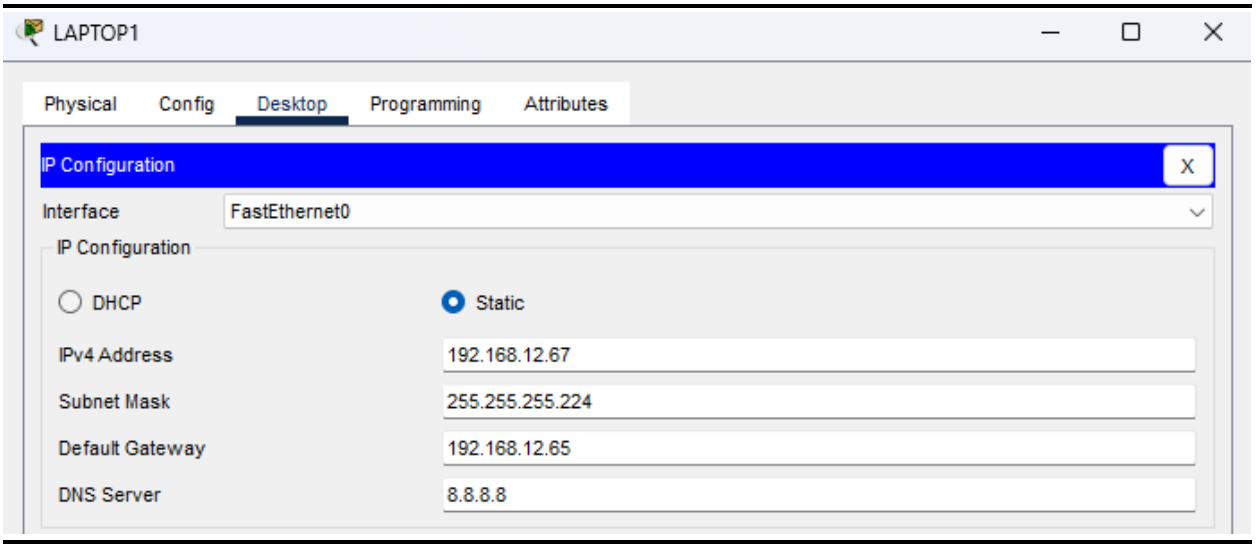

PC5
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.12.4
Subnet Mask
255.255.255.192
Default Gateway
192.168.12.1
DNS Server
8.8.8.8


PC3(1)(1)(1)
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.12.3
Subnet Mask
255.255.255.192
Default Gateway
192.168.12.1
DNS Server
8.8.8.8

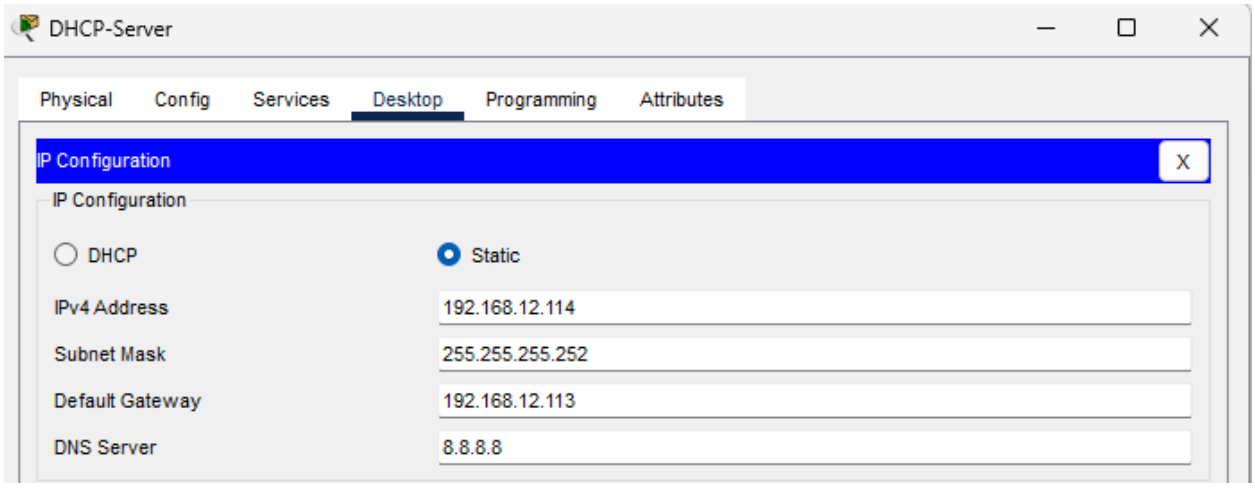

PC1(1)(1)(1)
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.12.2
Subnet Mask
255.255.255.192
Default Gateway
192.168.12.1
DNS Server
8.8.8.8

Screenshots PCs network 192.168.12.64/27:

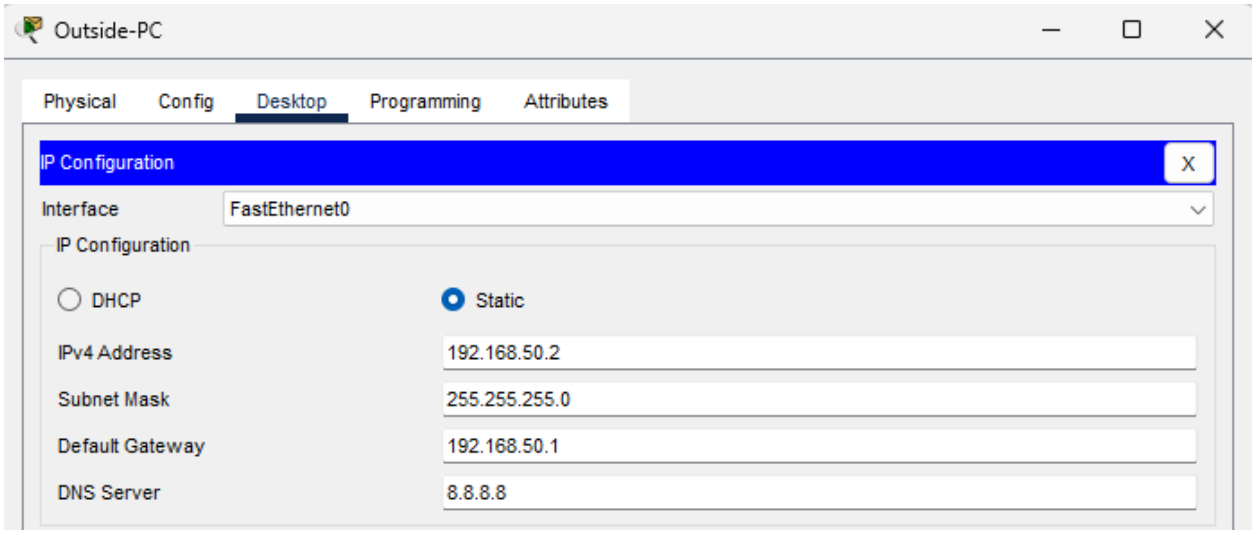


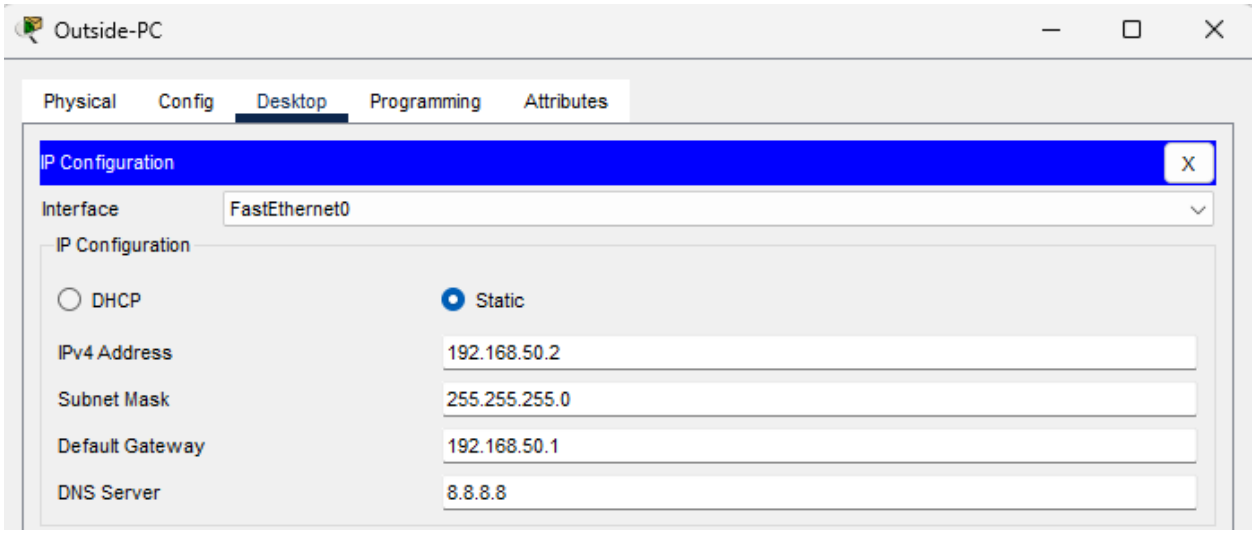


Screenshot Inside DHCP-Server:



Screenshot Outside -Server and Outside-PC:





Screenshots Test Connectivity:

From pc that has ip 192.168.10.5 to pc that has ip 192.168.11.5

```
C:\>ping 192.168.11.5

Pinging 192.168.11.5 with 32 bytes of data:

Request timed out.
Reply from 192.168.11.5: bytes=32 time=1ms TTL=126
Reply from 192.168.11.5: bytes=32 time=35ms TTL=126
Reply from 192.168.11.5: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.11.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 35ms, Average = 12ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.11.130

```
C:\>ping 192.168.11.130

Pinging 192.168.11.130 with 32 bytes of data:

Request timed out.
Reply from 192.168.11.130: bytes=32 time=11ms TTL=124
Reply from 192.168.11.130: bytes=32 time=3ms TTL=124
Reply from 192.168.11.130: bytes=32 time=10ms TTL=124

Ping statistics for 192.168.11.130:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 11ms, Average = 8ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.12.5

```
C:\>ping 192.168.12.5

Pinging 192.168.12.5 with 32 bytes of data:

Request timed out.
Reply from 192.168.12.5: bytes=32 time=3ms TTL=125
Reply from 192.168.12.5: bytes=32 time=2ms TTL=125
Reply from 192.168.12.5: bytes=32 time=3ms TTL=125

Ping statistics for 192.168.12.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.12.66

```
C:\>ping 192.168.12.66

Pinging 192.168.12.66 with 32 bytes of data:

Request timed out.
Reply from 192.168.12.66: bytes=32 time=1ms TTL=126
Reply from 192.168.12.66: bytes=32 time=16ms TTL=126
Reply from 192.168.12.66: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.12.66:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 16ms, Average = 6ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.50.2

```
C:\>ping 192.168.50.2

Pinging 192.168.50.2 with 32 bytes of data:

Reply from 192.168.50.2: bytes=32 time=3ms TTL=125
Reply from 192.168.50.2: bytes=32 time=40ms TTL=125
Reply from 192.168.50.2: bytes=32 time=3ms TTL=125
Reply from 192.168.50.2: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.50.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 40ms, Average = 12ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.10.5

```
C:\>ping 192.168.10.5

Pinging 192.168.10.5 with 32 bytes of data:

Reply from 50.0.0.3: bytes=32 time=2ms TTL=125
Reply from 50.0.0.3: bytes=32 time=22ms TTL=125
Reply from 50.0.0.3: bytes=32 time=10ms TTL=125
Reply from 50.0.0.3: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 22ms, Average = 9ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.11.5

```
C:\>ping 192.168.11.5

Pinging 192.168.11.5 with 32 bytes of data:

Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124

Ping statistics for 192.168.11.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 3ms, Average = 3ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.11.130

```
C:\>ping 192.168.11.130

Pinging 192.168.11.130 with 32 bytes of data:

Reply from 209.165.201.5: bytes=32 time=3ms TTL=124
Reply from 209.165.201.5: bytes=32 time=4ms TTL=124
Reply from 209.165.201.5: bytes=32 time=5ms TTL=124
Reply from 209.165.201.5: bytes=32 time=6ms TTL=124

Ping statistics for 192.168.11.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 6ms, Average = 4ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.5

```
C:\>ping 192.168.12.5

Pinging 192.168.12.5 with 32 bytes of data:

Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.12.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 2ms, Average = 2ms
```

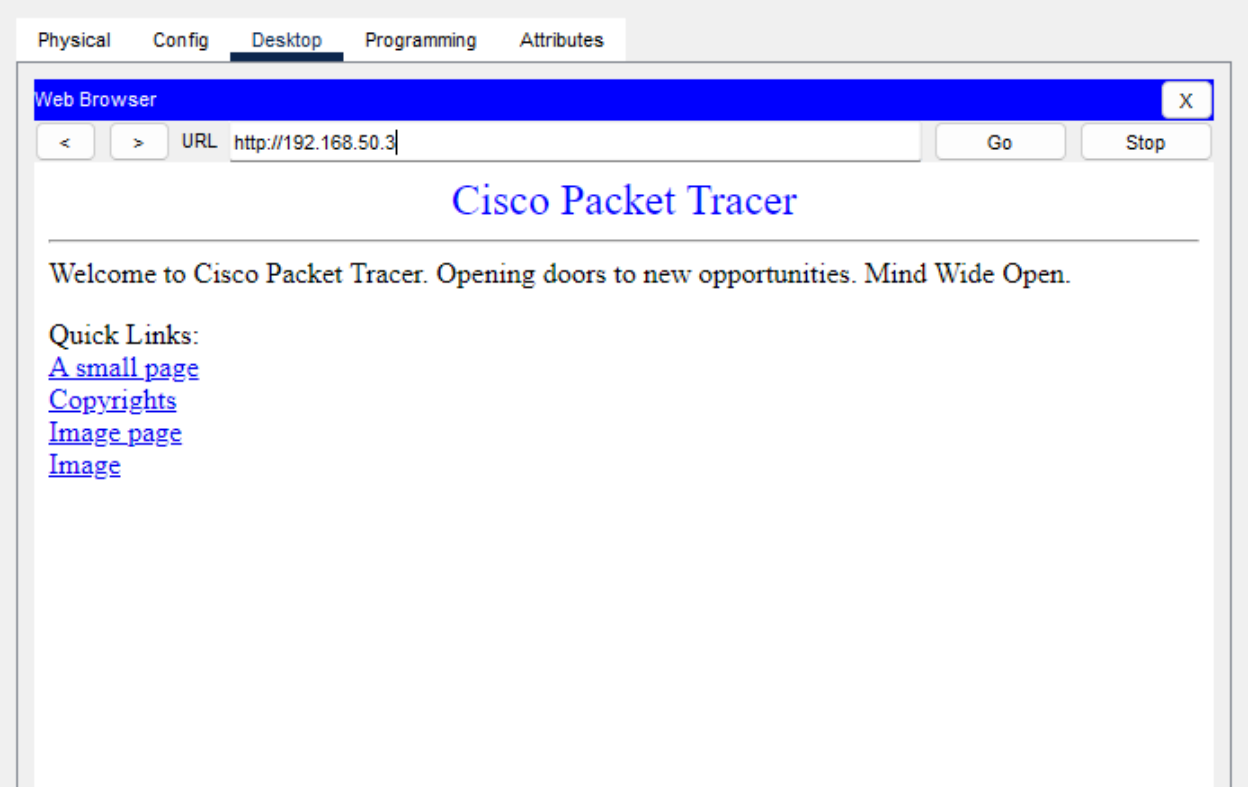
From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.66

```
C:\>ping 192.168.12.66

Pinging 192.168.12.66 with 32 bytes of data:

Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.12.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.114

```
C:\>ping 192.168.12.114

Pinging 192.168.12.114 with 32 bytes of data:

Reply from 202.165.201.114: bytes=32 time=16ms TTL=126
Reply from 202.165.201.114: bytes=32 time=14ms TTL=126
Reply from 202.165.201.114: bytes=32 time=14ms TTL=126
Reply from 202.165.201.114: bytes=32 time=19ms TTL=126

Ping statistics for 192.168.12.114:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 19ms, Average = 15ms
```

Access Outside-Server from my inside Network



Screenshot for Dynamic Pools

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask
ADMIN	192.168.12.65	8.8.8.8	192.168.12.66	255.255.255.224
BRANCH-3	192.168.11.1	8.8.8.8	192.168.11.2	255.255.255.128
BRANCH-1	192.168.10.1	8.8.8.8	192.168.10.2	255.255.255.0
BRANCH-4	192.168.11.129	8.8.8.8	192.168.11.130	255.255.255.128
BRANCH-2	192.168.12.1	8.8.8.8	192.168.12.2	255.255.255.192

EIGRP-File-Configurations

We make slight changes in routing protocol to routers in my topology.

We changed OSPF to EIGRP protocol.

In ADMIN-BRANCH:

ADMIN-BRANCH(config)# router eigrp 1

ADMIN-BRANCH(config-router)#net 192.168.12.64

ADMIN-BRANCH(config-router)#net 192.168.12.112

ADMIN-BRANCH(config-router)#net 192.168.12.96

ADMIN-BRANCH(config-router)#net 192.168.12.100

ADMIN-BRANCH(config-router)#net 209.165.201.4

ADMIN-BRANCH(config-router)#no auto-summary

In BRANCH-1:

BRANCH-1(config)#router eigrp 1

BRANCH-1(config-router)#net 192.168.10.0

BRANCH-1(config-router)#net 192.168.12.104

BRANCH-1(config-router)#net 192.168.12.96

BRANCH-1(config-router)#no auto-summary

BRANCH-1(config-router)#exit

In BRANCH-2:

BRANCH-2(config)#router eigrp 1

BRANCH-2(config-router)#net 192.168.12.0

BRANCH-2(config-router)#net 192.168.12.100

BRANCH-2(config-router)#net 192.168.12.108

BRANCH-2(config-router)#no auto-summary

BRANCH-2(config-router)#exit

In BRANCH-3:

BRANCH-3(config)#router eigrp 1

BRANCH-3(config-router)#net 192.168.11.0

BRANCH-3(config-router)#net 192.168.12.104

BRANCH-3(config-router)#no auto-summary

BRANCH-3(config-router)#exit

In BRANCH-4:

BRANCH-4(config)#router eigrp 1

BRANCH-4(config-router)#net 192.168.11.128

BRANCH-4(config-router)#net 192.168.12.108

BRANCH-4(config-router)#no auto-summary

BRANCH-4(config-router)#exit

In INTERNET:

INTERNET(config)#router eigrp 1

INTERNET(config-router)#net 192.168.50.0

INTERNET(config-router)#net 209.165.201.4

INTERNET(config-router)#no auto-summary

INTERNET(config-router)#exit

Screenshots Test Connectivity:

From pc that has ip 192.168.10.5 to pc that has ip 192.168.11.5

```
C:\>ping 192.168.11.5

Pinging 192.168.11.5 with 32 bytes of data:

Request timed out.
Reply from 192.168.11.5: bytes=32 time=1ms TTL=126
Reply from 192.168.11.5: bytes=32 time=35ms TTL=126
Reply from 192.168.11.5: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.11.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 35ms, Average = 12ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.11.130

```
C:\>ping 192.168.11.130

Pinging 192.168.11.130 with 32 bytes of data:

Request timed out.
Reply from 192.168.11.130: bytes=32 time=11ms TTL=124
Reply from 192.168.11.130: bytes=32 time=3ms TTL=124
Reply from 192.168.11.130: bytes=32 time=10ms TTL=124

Ping statistics for 192.168.11.130:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 11ms, Average = 8ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.12.5

```
C:\>ping 192.168.12.5

Pinging 192.168.12.5 with 32 bytes of data:

Request timed out.
Reply from 192.168.12.5: bytes=32 time=3ms TTL=125
Reply from 192.168.12.5: bytes=32 time=2ms TTL=125
Reply from 192.168.12.5: bytes=32 time=3ms TTL=125

Ping statistics for 192.168.12.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.12.66

```
C:\>ping 192.168.12.66

Pinging 192.168.12.66 with 32 bytes of data:

Request timed out.
Reply from 192.168.12.66: bytes=32 time=1ms TTL=126
Reply from 192.168.12.66: bytes=32 time=16ms TTL=126
Reply from 192.168.12.66: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.12.66:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 16ms, Average = 6ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.50.2

```
C:\>ping 192.168.50.2

Pinging 192.168.50.2 with 32 bytes of data:

Reply from 192.168.50.2: bytes=32 time=3ms TTL=125
Reply from 192.168.50.2: bytes=32 time=40ms TTL=125
Reply from 192.168.50.2: bytes=32 time=3ms TTL=125
Reply from 192.168.50.2: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.50.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 40ms, Average = 12ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.10.5

```
C:\>ping 192.168.10.5

Pinging 192.168.10.5 with 32 bytes of data:

Reply from 50.0.0.3: bytes=32 time=2ms TTL=125
Reply from 50.0.0.3: bytes=32 time=22ms TTL=125
Reply from 50.0.0.3: bytes=32 time=10ms TTL=125
Reply from 50.0.0.3: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 22ms, Average = 9ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.11.5

```
C:\>ping 192.168.11.5

Pinging 192.168.11.5 with 32 bytes of data:

Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124

Ping statistics for 192.168.11.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 3ms, Average = 3ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.11.130

```
C:\>ping 192.168.11.130

Pinging 192.168.11.130 with 32 bytes of data:

Reply from 209.165.201.5: bytes=32 time=3ms TTL=124
Reply from 209.165.201.5: bytes=32 time=4ms TTL=124
Reply from 209.165.201.5: bytes=32 time=5ms TTL=124
Reply from 209.165.201.5: bytes=32 time=6ms TTL=124

Ping statistics for 192.168.11.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 6ms, Average = 4ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.5

```
C:\>ping 192.168.12.5

Pinging 192.168.12.5 with 32 bytes of data:

Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.12.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 2ms, Average = 2ms
```

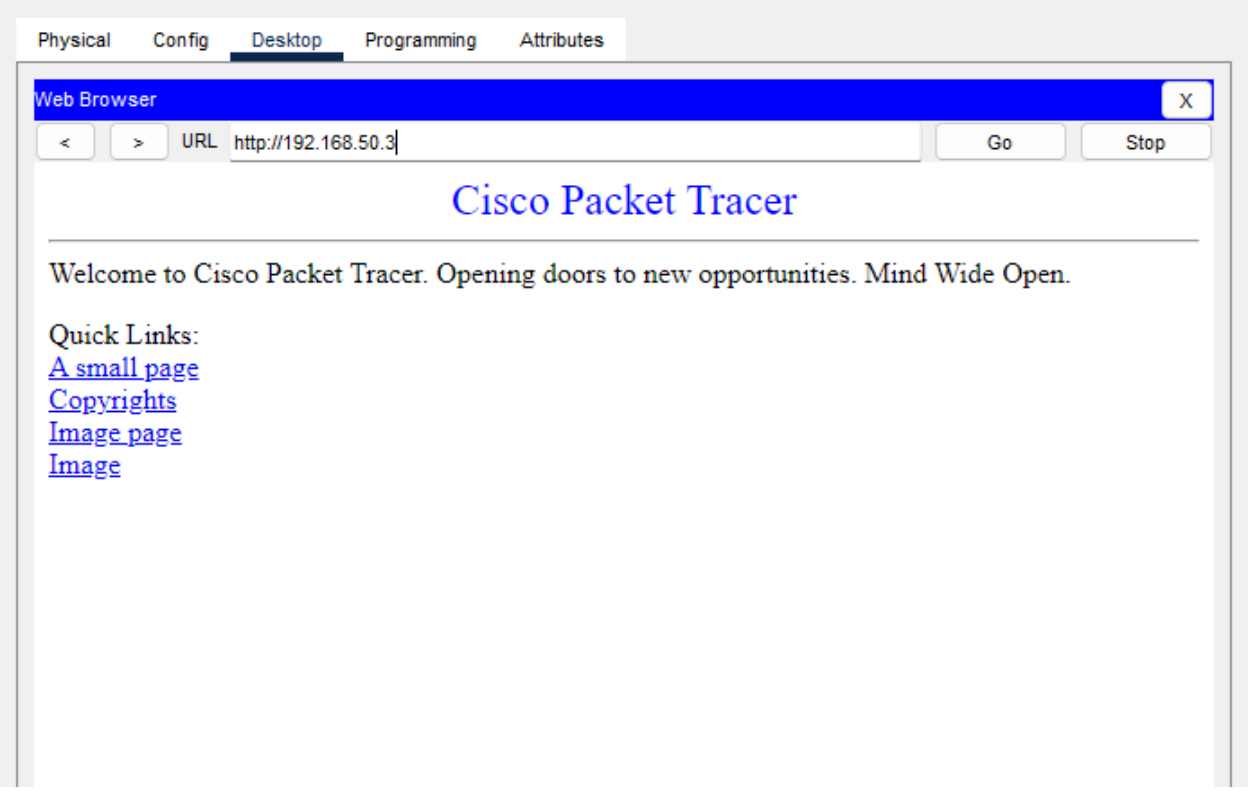
From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.66

```
C:\>ping 192.168.12.66

Pinging 192.168.12.66 with 32 bytes of data:

Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.12.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.114

```
C:\>ping 192.168.12.114

Pinging 192.168.12.114 with 32 bytes of data:

Reply from 202.165.201.114: bytes=32 time=16ms TTL=126
Reply from 202.165.201.114: bytes=32 time=14ms TTL=126
Reply from 202.165.201.114: bytes=32 time=14ms TTL=126
Reply from 202.165.201.114: bytes=32 time=19ms TTL=126

Ping statistics for 192.168.12.114:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 19ms, Average = 15ms
```

Access Outside-Server from my inside Network



RIP-File-Configurations

We make slight changes in routing protocol to routers in my topology.

We changed OSPF to RIP protocol.

In ADMIN-BRANCH:

ADMIN-BRANCH(config)# router rip

ADMIN-BRANCH(config-router)#version 2

ADMIN-BRANCH(config-router)#net 192.168.12.64

ADMIN-BRANCH(config-router)#net 192.168.12.112

ADMIN-BRANCH(config-router)#net 192.168.12.96

ADMIN-BRANCH(config-router)#net 192.168.12.100

ADMIN-BRANCH(config-router)#net 209.165.201.4

ADMIN-BRANCH(config-router)#no auto-summary

ADMIN-BRANCH(config-router)#exit

In BRANCH-1:

BRANCH-1(config)#router rip

BRANCH-1(config-router)#version 2

BRANCH-1(config-router)#net 192.168.10.0

BRANCH-1(config-router)#net 192.168.12.104

BRANCH-1(config-router)#net 192.168.12.96

BRANCH-1(config-router)#no auto-summary

BRANCH-1(config-router)#exit

In BRANCH-2:

```
BRANCH-2(config)#router rip
BRANCH-2(config-router)#version 2
BRANCH-2(config-router)#net 192.168.12.0
BRANCH-2(config-router)#net 192.168.12.100
BRANCH-2(config-router)#net 192.168.12.108
BRANCH-2(config-router)#no auto-summary
BRANCH-2(config-router)#exit
```

In BRANCH-3:

```
BRANCH-3(config)#router rip
BRANCH-3(config-router)#version 2
BRANCH-3(config-router)#net 192.168.11.0
BRANCH-3(config-router)#net 192.168.12.104
BRANCH-3(config-router)#no auto-summary
BRANCH-3(config-router)#exit
```

In BRANCH-4:

BRANCH-4(config)#router rip

BRANCH-4(config-router)#version 2

BRANCH-4(config-router)#net 192.168.11.128

BRANCH-4(config-router)#net 192.168.12.108

BRANCH-4(config-router)#no auto-summary

BRANCH-4(config-router)#exit

In INTERNET:

INTERNET(config)#router rip

INTERNET(config-router)#version 2

INTERNET(config-router)#net 192.168.50.0

INTERNET(config-router)#net 209.165.201.4

INTERNET(config-router)#no auto-summary

INTERNET(config-router)#exit

Screenshots Test Connectivity:

From pc that has ip 192.168.10.5 to pc that has ip 192.168.11.5

```
C:\>ping 192.168.11.5

Pinging 192.168.11.5 with 32 bytes of data:

Request timed out.
Reply from 192.168.11.5: bytes=32 time=1ms TTL=126
Reply from 192.168.11.5: bytes=32 time=35ms TTL=126
Reply from 192.168.11.5: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.11.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 35ms, Average = 12ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.11.130

```
C:\>ping 192.168.11.130

Pinging 192.168.11.130 with 32 bytes of data:

Request timed out.
Reply from 192.168.11.130: bytes=32 time=11ms TTL=124
Reply from 192.168.11.130: bytes=32 time=3ms TTL=124
Reply from 192.168.11.130: bytes=32 time=10ms TTL=124

Ping statistics for 192.168.11.130:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 11ms, Average = 8ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.12.5

```
C:\>ping 192.168.12.5

Pinging 192.168.12.5 with 32 bytes of data:

Request timed out.
Reply from 192.168.12.5: bytes=32 time=3ms TTL=125
Reply from 192.168.12.5: bytes=32 time=2ms TTL=125
Reply from 192.168.12.5: bytes=32 time=3ms TTL=125

Ping statistics for 192.168.12.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.12.66

```
C:\>ping 192.168.12.66

Pinging 192.168.12.66 with 32 bytes of data:

Request timed out.
Reply from 192.168.12.66: bytes=32 time=1ms TTL=126
Reply from 192.168.12.66: bytes=32 time=16ms TTL=126
Reply from 192.168.12.66: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.12.66:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 16ms, Average = 6ms
```

From pc that has ip 192.168.10.5 to pc that has ip 192.168.50.2

```
C:\>ping 192.168.50.2

Pinging 192.168.50.2 with 32 bytes of data:

Reply from 192.168.50.2: bytes=32 time=3ms TTL=125
Reply from 192.168.50.2: bytes=32 time=40ms TTL=125
Reply from 192.168.50.2: bytes=32 time=3ms TTL=125
Reply from 192.168.50.2: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.50.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 40ms, Average = 12ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.10.5

```
C:\>ping 192.168.10.5

Pinging 192.168.10.5 with 32 bytes of data:

Reply from 50.0.0.3: bytes=32 time=2ms TTL=125
Reply from 50.0.0.3: bytes=32 time=22ms TTL=125
Reply from 50.0.0.3: bytes=32 time=10ms TTL=125
Reply from 50.0.0.3: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 22ms, Average = 9ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.11.5

```
C:\>ping 192.168.11.5

Pinging 192.168.11.5 with 32 bytes of data:

Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124
Reply from 50.0.0.4: bytes=32 time=3ms TTL=124

Ping statistics for 192.168.11.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 3ms, Average = 3ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.11.130

```
C:\>ping 192.168.11.130

Pinging 192.168.11.130 with 32 bytes of data:

Reply from 209.165.201.5: bytes=32 time=3ms TTL=124
Reply from 209.165.201.5: bytes=32 time=4ms TTL=124
Reply from 209.165.201.5: bytes=32 time=5ms TTL=124
Reply from 209.165.201.5: bytes=32 time=6ms TTL=124

Ping statistics for 192.168.11.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 6ms, Average = 4ms
```

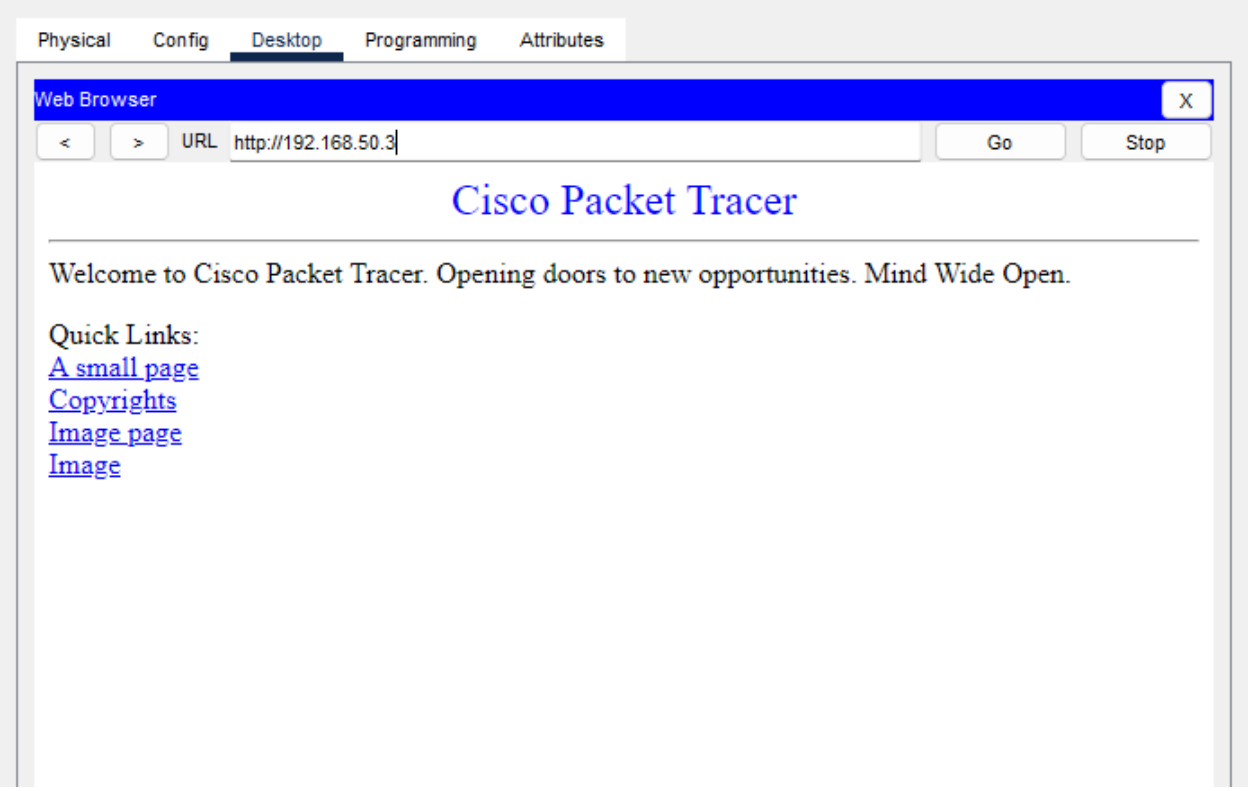
From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.5

```
C:\>ping 192.168.12.5

Pinging 192.168.12.5 with 32 bytes of data:

Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125
Reply from 209.165.201.5: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.12.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 2ms, Average = 2ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.66

```
C:\>ping 192.168.12.66

Pinging 192.168.12.66 with 32 bytes of data:

Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126
Reply from 202.165.201.66: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.12.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

From pc that has ip 192.168.50.2 to pc that has ip 192.168.12.114

```
C:\>ping 192.168.12.114

Pinging 192.168.12.114 with 32 bytes of data:

Reply from 202.165.201.114: bytes=32 time=16ms TTL=126
Reply from 202.165.201.114: bytes=32 time=14ms TTL=126
Reply from 202.165.201.114: bytes=32 time=14ms TTL=126
Reply from 202.165.201.114: bytes=32 time=19ms TTL=126

Ping statistics for 192.168.12.114:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 19ms, Average = 15ms
```

Access Outside-Server from my inside Network