

commands

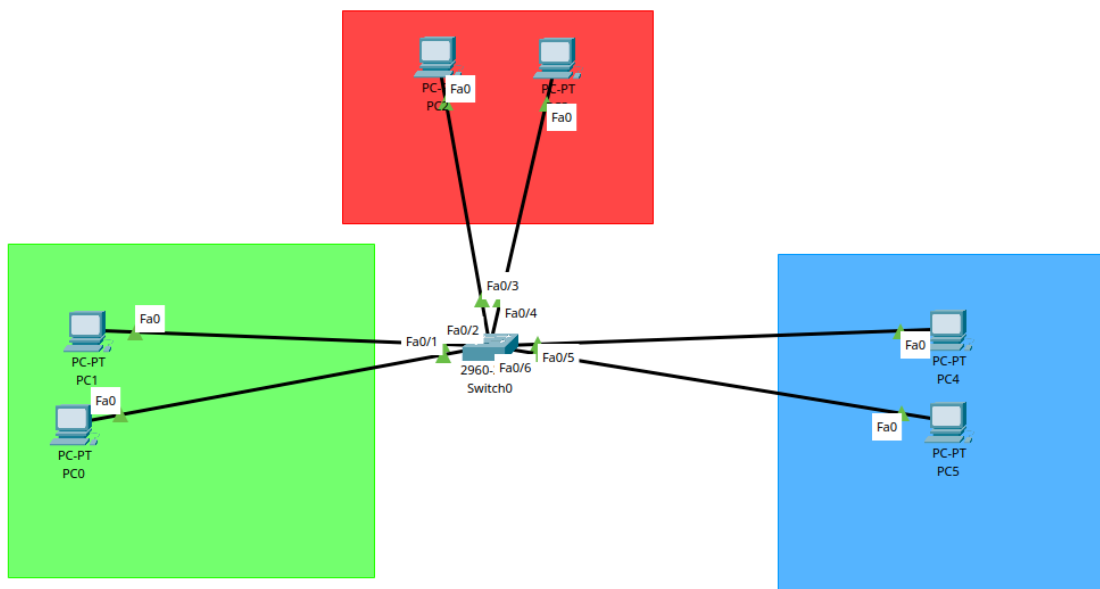
CN Lab programs config commands

Program 1



no config required

Program 2a - Simple VLAN



```
> enable # to enter privileged mode
> show vlan # to display the vlan table
```

in the switch run the commands

```
> enable
# config t
# vlan 10
# name green
# exit
# vlan 20
# name red
# exit
# vlan 30
# name blue
# exit
# show vlan
```

show vlan

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10	green	active	
20	red	active	
30	blue	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

new vlan are created but do not have any ports assigned

```
# config t
# interface range f0/1-2
```

```

# switchport mode access
# switchport access vlan 10
# interface range f0/3-4
# switchport mode access
# switchport access vlan 20
# interface range f0/5-6
# switchport mode access
# switchport access vlan 30
# exit
# exit
# show vlan

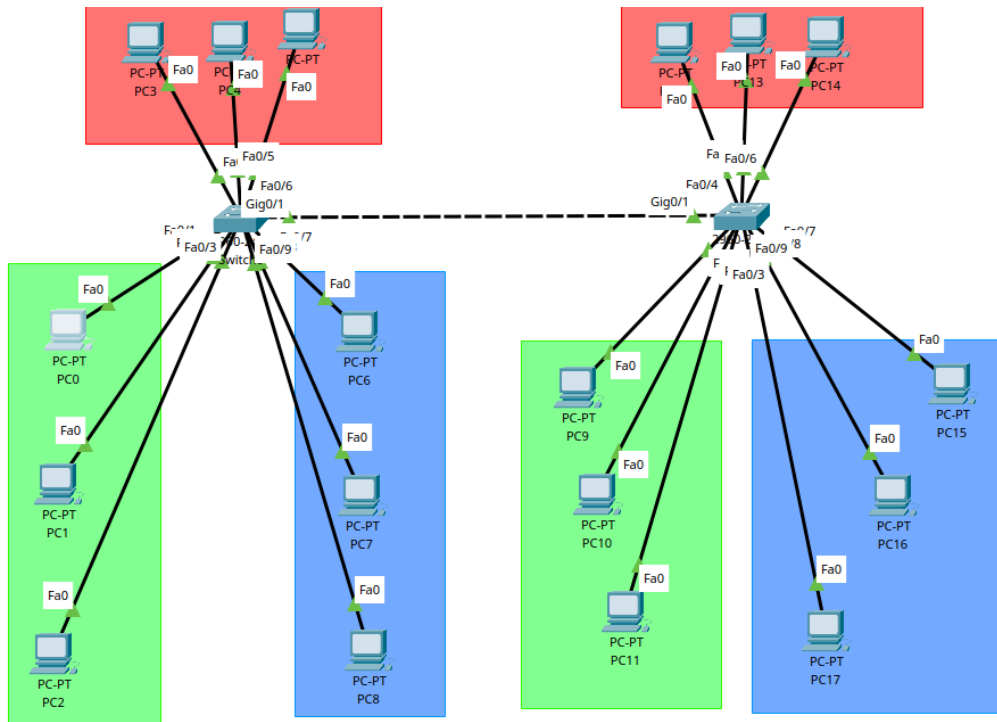
```

```
show vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/1, Gig0/2
10	green	active	Fa0/1, Fa0/2
20	red	active	Fa0/3, Fa0/4
30	blue	active	Fa0/5, Fa0/6
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

now we see the ports are added to respective vlan

Program 2b - VLAN trunk interface



do all the steps of program 2a in each switch

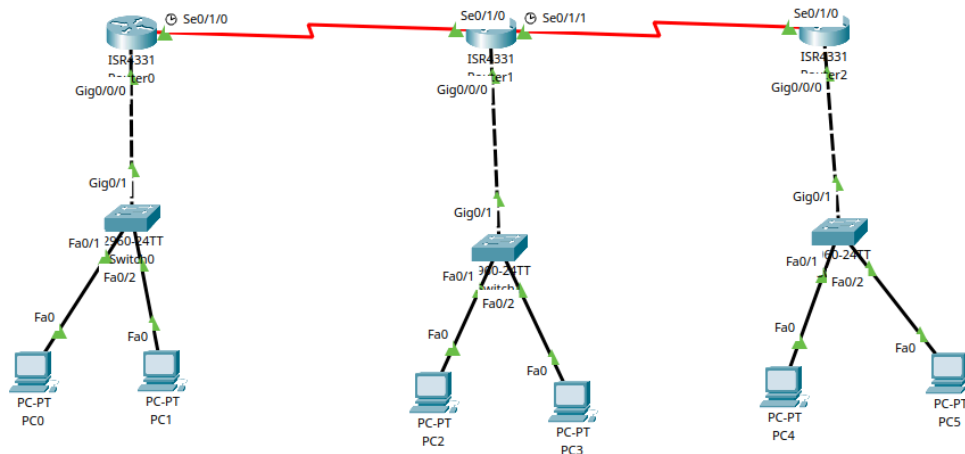
to setup trunk interface on Switch1

```
> enable
# config t
# interface gig0/1
# switchport mode trunk
# exit
```

to setup trunk interface on Switch2

```
> enable
# config t
# interface gig0/1
# switchport mode trunk
# exit
```

Program 3 - Static Routing



use the command

```
ip route [network address] [subnet mask] [next hop]
```

set appropriate ip address as well as network gateway for each PC.

at router 1

```
> enable
# config t
# ip route 192.168.3.0 255.255.255.0 192.168.2.2
# ip route 192.168.5.0 255.255.255.0 192.168.4.2
```

at router 2

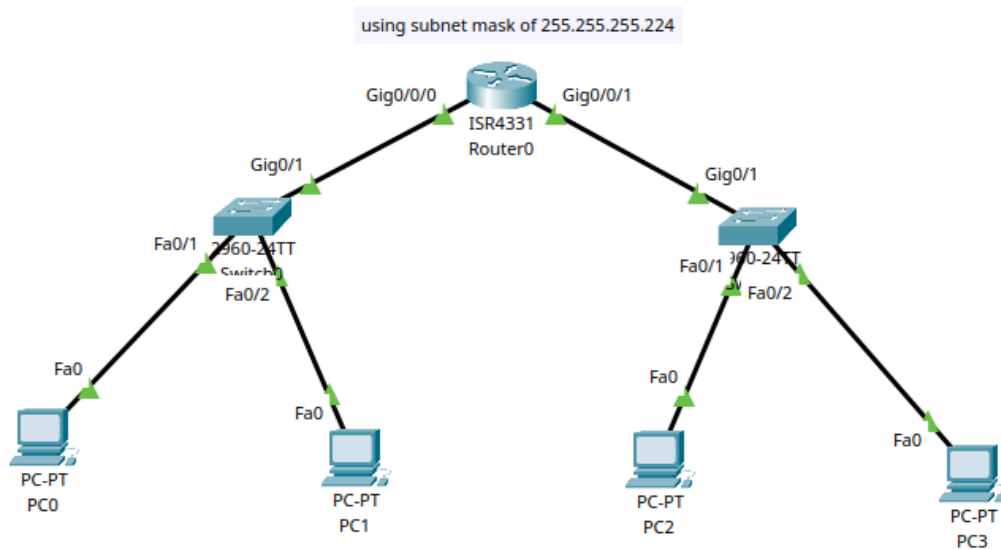
```
> enable
# config t
```

```
# ip route 192.168.1.0 255.255.255.0 192.168.2.1
# ip route 192.168.5.0 255.255.255.0 192.168.4.2
```

at router 3

```
> enable
# config t
# ip route 192.168.1.0 255.255.255.0 192.168.2.1
# ip route 192.168.3.0 255.255.255.0 192.168.4.1
```

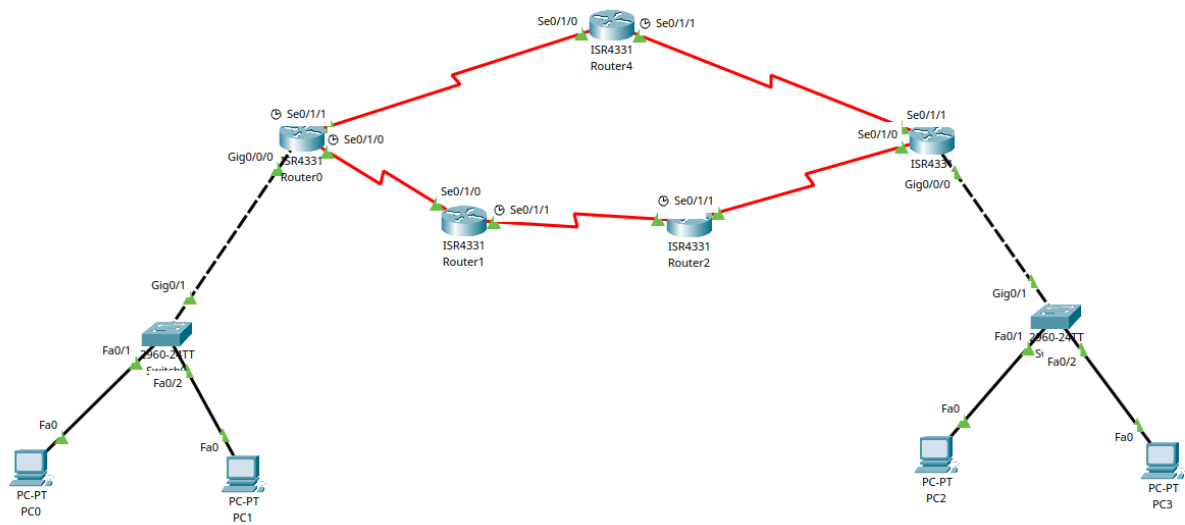
Program 4 - Subnetting



nothing much in terms of configuration. pick a topology and change the subnet mask according to requirement.

Program 5a - RIP routing

add the neighboring networks of the user using gui interface



Router0

Physical
Config
CLI
Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0/0

GigabitEthernet0/0/1

GigabitEthernet0/0/2

Serial0/1/0

Serial0/1/1

RIP Routing

Network

Add

Network Address

10.0.0.0

13.0.0.0

192.168.1.0

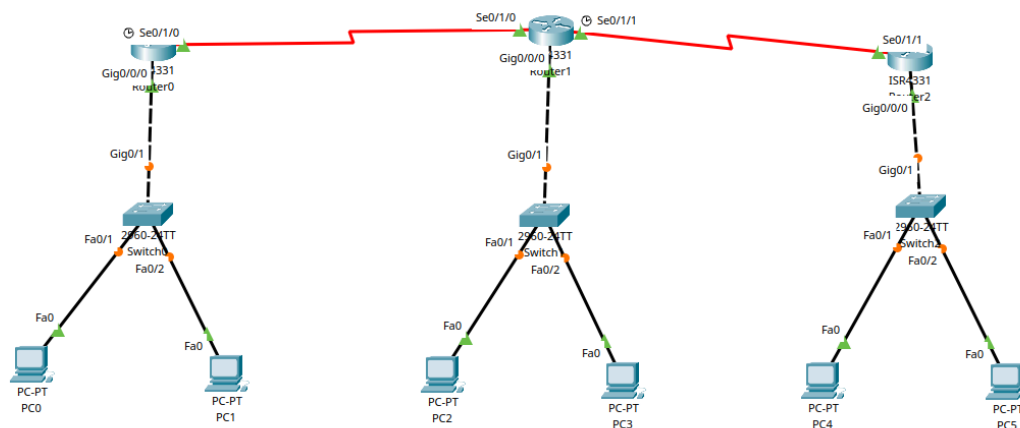
Remove

Equivalent IOS Commands

```

Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.1.0
Router(config-router)#network 10.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#
          
```

Program 5b - OSPF routing



router 1 configuration


```
> enable
# config t
# router ospf 1
# network 192.168.1.0 0.255.255.255 area 0
# network 10.0.0.0 0.255.255.255 area 0
```

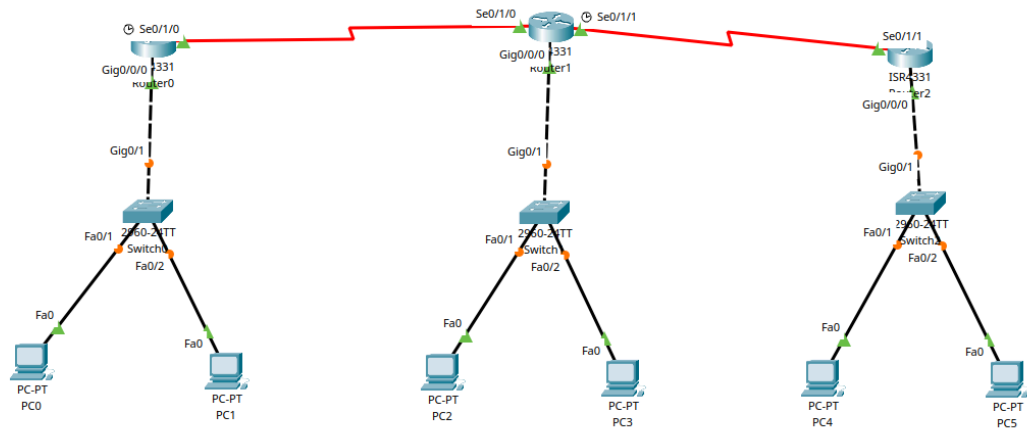
router 2 configuration

```
> enable
# config t
# router ospf 1
# network 192.168.2.0 0.255.255.255 area 0
# network 10.0.0.0 0.255.255.255 area 0
# network 11.0.0.0 0.255.255.255 area 0
```

router 3 configuration

```
> enable
# config t
# router ospf 1
# network 192.168.3.0 0.255.255.255 area 0
# network 11.0.0.0 0.255.255.255 area 0
```

Program 5c - EIGRP routing



router 1 configuration

```
> enable
# config t
# router eigrp 100
# network 192.168.1.0
# network 10.0.0.0
```

router 2 configuration

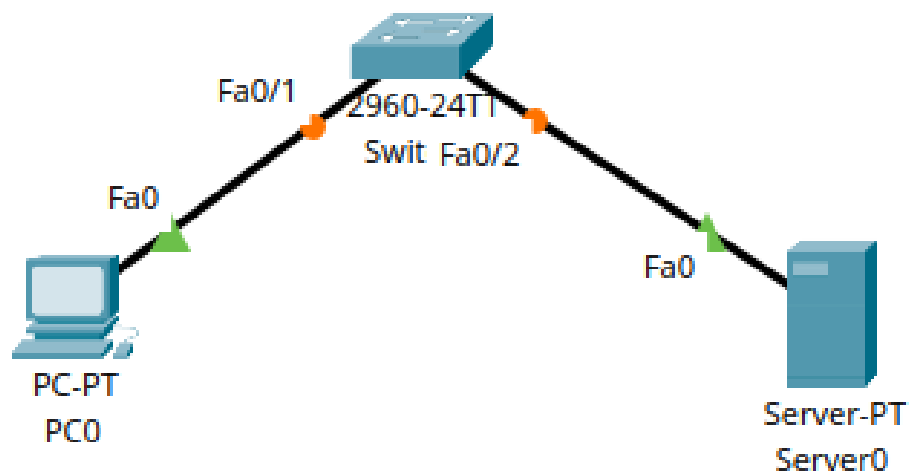
```
> enable
# config t
# router eigrp 100
# network 192.168.2.0
# network 10.0.0.0
# network 11.0.0.0
```

router 3 configuration

```
> enable
# config t
```

```
# router eigrp 100
# network 192.168.3.0
# network 11.0.0.0
```

Program 6 - DHCP



enable the dhcp service in the server.

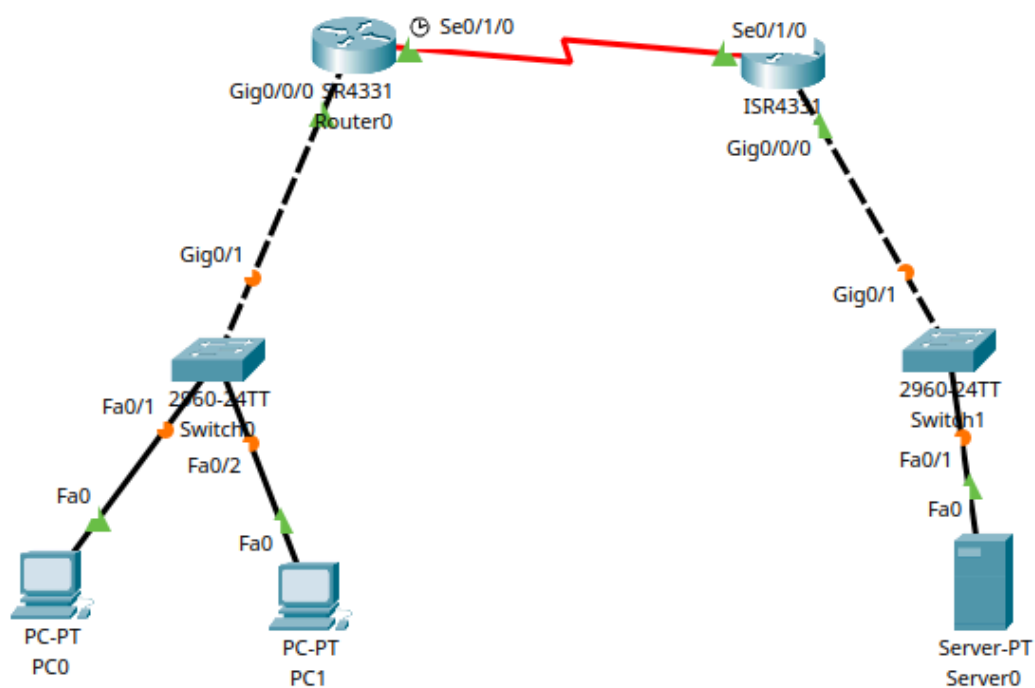
DHCP

Interface	FastEthernet0	Service	<input checked="" type="radio"/> On	<input type="radio"/> Off
Pool Name	serverPool			
Default Gateway	0.0.0.0			
DNS Server	0.0.0.0			
Start IP Address :	192	168	1	0
Subnet Mask:	255	255	255	0
Maximum Number of Users :	512			
TFTP Server:	0.0.0.0			
WLC Address:	0.0.0.0			
Add		Save		Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	0.0.0.0	0.0.0.0	192.168....	255.255....	512	0.0.0.0	0.0.0.0

then open IP configuration in the PC, and select DHCP.

Program 7 - NAT



to enable default routing, run the following in Router 1

```
# ip route 0.0.0.0 0.0.0.0 100.1.1.2
```

and the following in Router 2

```
# ip route 0.0.0.0 0.0.0.0 100.1.1.1
```

for static nat

in router 1

```
> enable
# config t
# ip nat inside source static 192.168.1.1 50.1.1.1
# ip nat inside source static 192.168.1.2 50.1.1.2
```

```
# interface gig0/0/0
# ip nat inside
# exit
# interface se0/1/0
# ip nat outside
```

to clear nat translations

in router 1

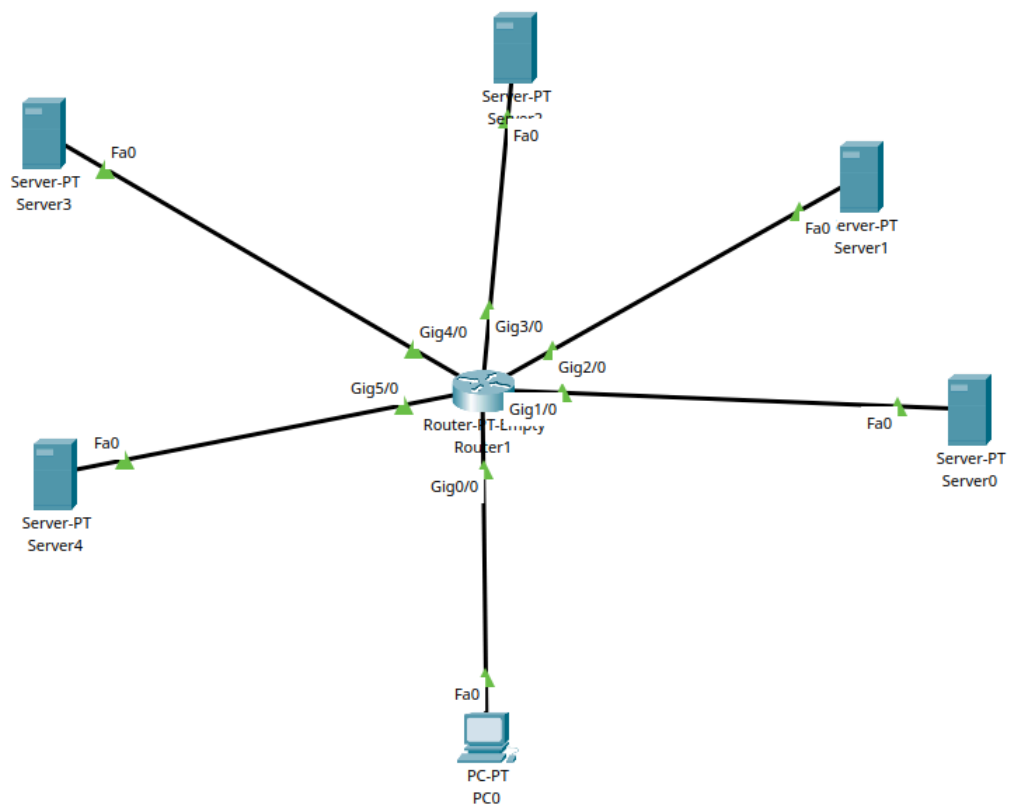
```
> enable
# clear ip nat translation *
# config t
# no ip nat inside source static 192.168.1.1 50.1.1.1
# no ip nat inside source static 192.168.1.2 50.1.1.2
```

for dynamic nat

in router 1

```
> enable
# config t
# access-list 55 permit 192.168.1.0 0.0.0.255
# ip nat pool CCNA 50.1.1.1 50.1.1.200 netmask
255.255.255.0
# ip nat inside source list 55 pool CCNA
# interface gig0/0/0
# ip nat inside
# exit
# interface se0/1/0
# ip nat outside
```

Program 8 - DNS



we have 4 levels of DNS server.

local → root → top level domain → authority server

in local DNS, the configuration is

Server0

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS Service

On

Off

Resource Records

NameType

A Record

Address

Add

Save

Remove

No.	Name	Type	Detail
0	root	A Record	30.30.30.1
1	www.google.com	NS	root

in root DNS, the configuration is

Server1

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS Service

On

Off

Resource Records

NameType

A Record

Address

Add

Save

Remove

No.	Name	Type	Detail
0	tld	A Record	40.40.40.1
1	www.google.com	NS	tld

in TLD, the configuration is

Server2

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS Service

☒ On

☐ Off

Resource Records

NameType

A Record

Address

Add

Save

Remove

No.	Name	Type	Detail
0	as	A Record	50.50.50.1
1	www.google.com	NS	as

in Authority server the configuration is,

The screenshot shows the 'Server3' configuration window with the 'Services' tab selected. On the left, a 'SERVICES' sidebar lists various services, with 'DNS' highlighted. The main area is titled 'DNS' and contains the following configuration options:

- DNS Service:** A toggle switch set to 'On'.
- Resource Records:** A section for adding DNS records.
- Name:** A text input field.
- Type:** A dropdown menu currently set to 'A Record'.
- Address:** A text input field.
- Buttons:** 'Add', 'Save', and 'Remove' buttons.
- Table:** A table displaying the configured resource records.

No.	Name	Type	Detail
0	www.google.com	A Record	60.60.60.1

now try to ping www.google.com from the PC.