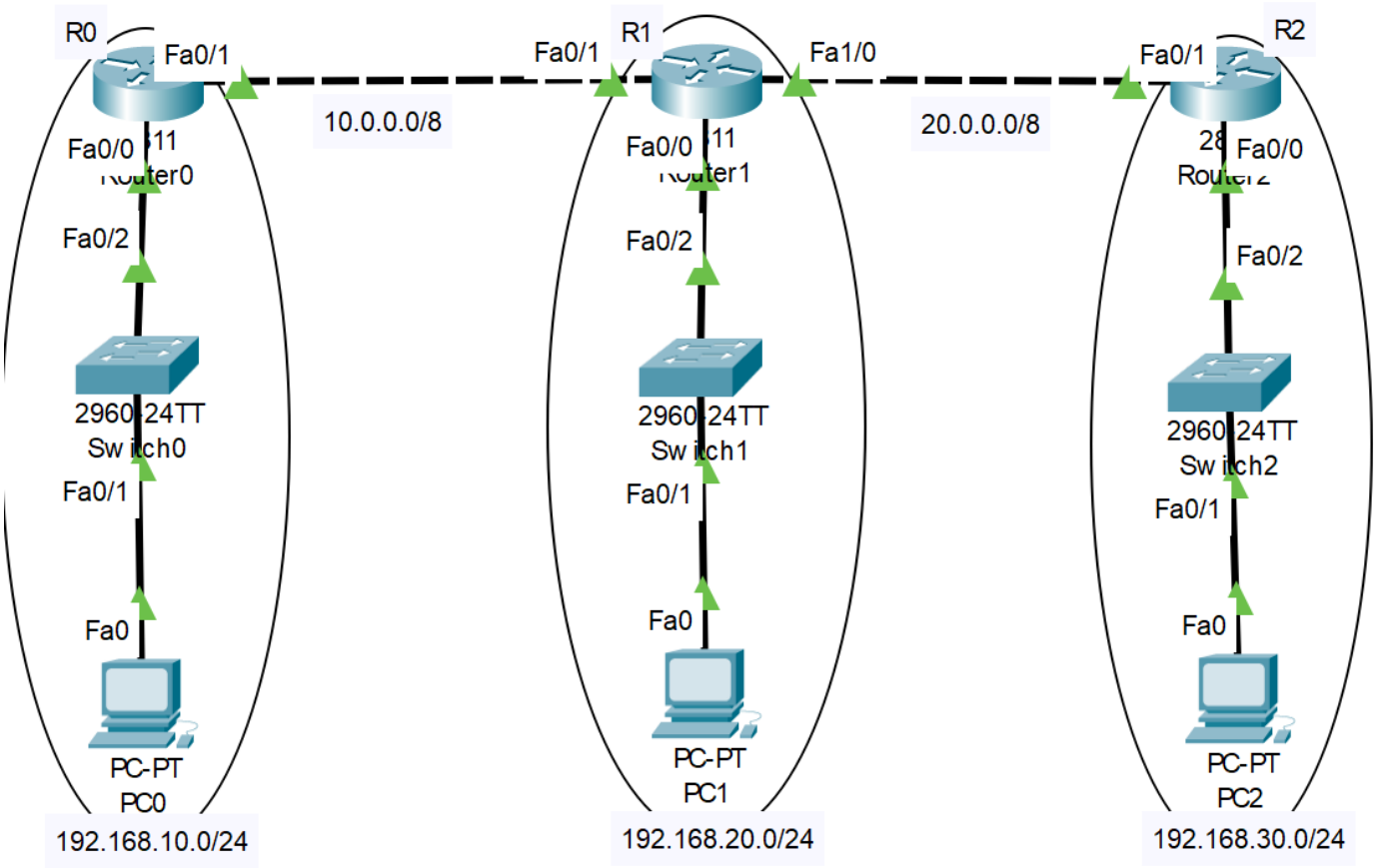
Configure RIPv2



In RIPv2, you need to write direct connected networks within your routers.
List of total networks:

- 10.0.0.0
- 20.0.0.0
- 192.168.10.0
- 192.168.20.0
- 192.168.30.0

Now adding all these networks to all the routers.

Configuring Router R0:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R0
R0(config)#
R0(config)#
R0(config)#versio
R0(config)#router rip
R0(config-router)#version 2
R0(config-router)#network 10.0.0.0
R0(config-router)#network 20.0.0.0
R0(config-router)#network 192.168.10.0
R0(config-router)#network 192.168.20.0
R0(config-router)#network 192.168.30.0
R0(config-router)#exit
R0(config)#
R0(config)#
```

Configuring Router R1:

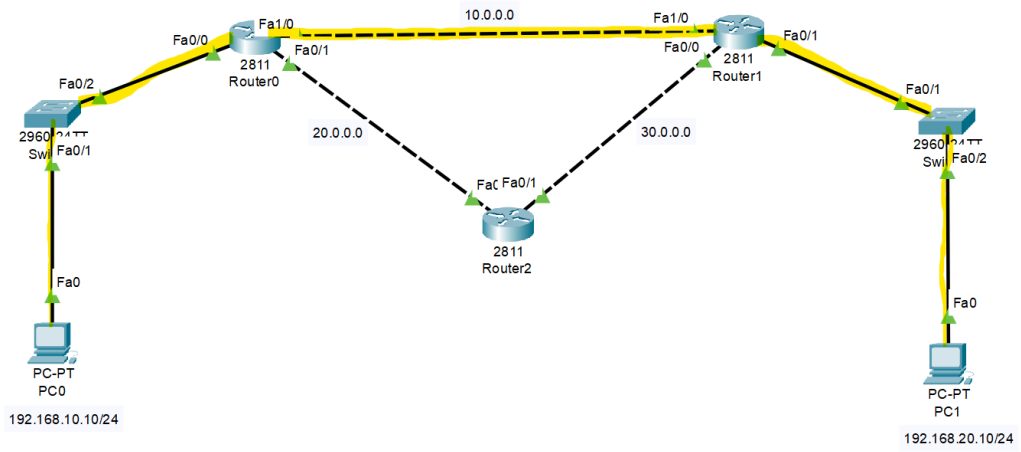
```
R1>en
R1>enable
R1#conf
R1#configure ter
R1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#network 10.0.0.0
R1(config-router)#network 20.0.0.0
R1(config-router)#network 192.168.10.0
R1(config-router)#network 192.168.20.0
R1(config-router)#network 192.168.30.0
R1(config-router)#exit
R1(config)#
R1(config)#
```

Configuring Router R2:

```
R2>en
R2#conf
R2#configure ter
R2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 10.0.0.0
R2(config-router)#network 20.0.0.0
R2(config-router)#network 192.168.10.0
R2(config-router)#network 192.168.20.0
R2(config-router)#network 192.168.30.0
R2(config-router)#
R2(config-router)#exit
R2(config)#
R2(config)#
```

OSPF (Open Shortest Path First)

- Enter networks connected to every router directly.



Syntax: **#network <network-range> <wildcard> <area> 0**

Subnet Mask	Wildcard mask
255.0.0.0	0.255.255.255
255.255.0.0	0.0.255.255
255.255.255.0	0.0.0.255

Configuring Router R0:

```
Router>en
Router>enable
Router#conf
Router#configure ter
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 192.168.10.0 0.0.0.255 area 0
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#wr
Building configuration...
[OK]
Router#
```

Configuring Router R1:

```
Router>en
Router>enable
Router#conf
Router#configure ter
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 2
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network
00:22:00: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.10.1 on FastEthernet1/0 from LOADING to
FULL, Loading Don
% Incomplete command.
Router(config-router)#network 30.0.0.0 0.0.0.255 area 0
Router(config-router)#network 192.168.20.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#wr
Building configuration...
[OK]
Router#
```

Configuring Router R2:

```
Router>en
Router>enable
Router#conf
Router#configure ter
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 3

Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#wr
Building configuration...
[OK]
Router#
```

EIGRP (Enhanced Interior Gateway Routing Protocol)

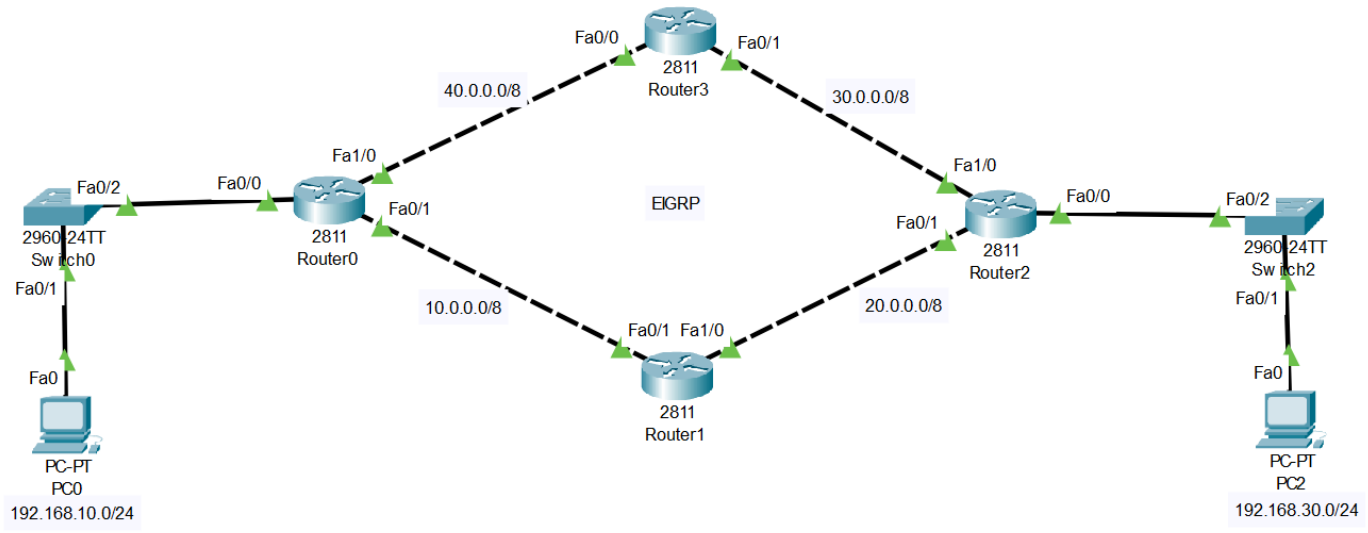
Steps:

1. Becoming neighbor.
2. Exchange routing info.
3. Choose best route.

Condition to become neighbor

- Autonomous System number (AS) must be same.
- Subnet must be same.
- Authentication.

Here, only directly connected networks.



Configuring Router R0:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R0
R0(config)#
R0(config)#router eigrp 30
R0(config-router)#network 192.168.10.0 0.0.0.255
R0(config-router)#network 40.0.0.0 0.255.255.255
R0(config-router)#network 10.0.0.0 0.255.255.255
R0(config-router)#exit
R0(config)#^Z
R0#
%SYS-5-CONFIG_I: Configured from console by console

R0#wr
Building configuration...
[OK]
R0#
```

Configuring Router R1:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R1
R1(config)#router eigrp 30
R1(config-router)#network 40.0.0.0 0.255.255.255
R1(config-router)#network 30.0.0.0 0.255.255.255
R1(config-router)#exit
R1(config)#^Z
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#wr
Building configuration...
[OK]
R1#
R1#
```

Configuring Router R2:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R2
R2(config)#
R2(config)#router eigrp 30
R2(config-router)#network 30.0.0.0 0.255.255.255
R2(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 30: Neighbor 30.0.0.1 (FastEthernet1/0) is up: new adjacency

R2(config-router)#network 20.0.0.0 0.255.255.255
R2(config-router)#network 192.168.30.0 0.0.0.255
R2(config-router)#exit
R2(config)#
R2(config)#^Z
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#wr
R2#write
Building configuration...
[OK]
R2#
```

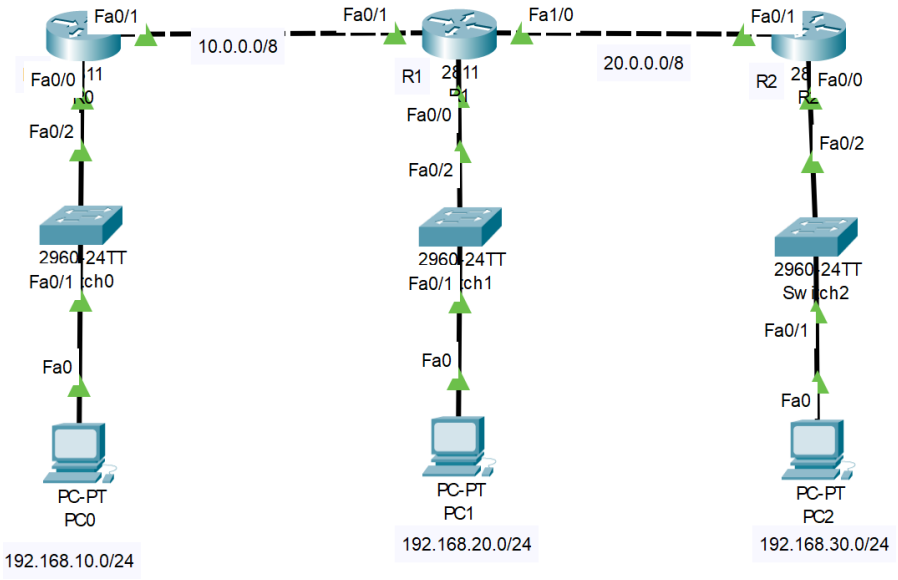
Configuring Router R3:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R3
R3(config)#
R3(config)#
R3(config)#router eigrp 30
R3(config-router)#network 40.0.0.0 0.255.255.255
R3(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 30: Neighbor 40.0.0.1 (FastEthernet0/0) is up: new adjacency

R3(config-router)#network 30.0.0.0 0.255.255.255
R3(config-router)#exit
R3(config)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#wr
R3#write
Building configuration...
[OK]
R3#
```

ACL:



Without ACL, PC0 will ping PC2 using any routing protocol.

With ACL, PC0 will ping PC1 but PC0 will not ping PC2

Applying ACL on router R2.

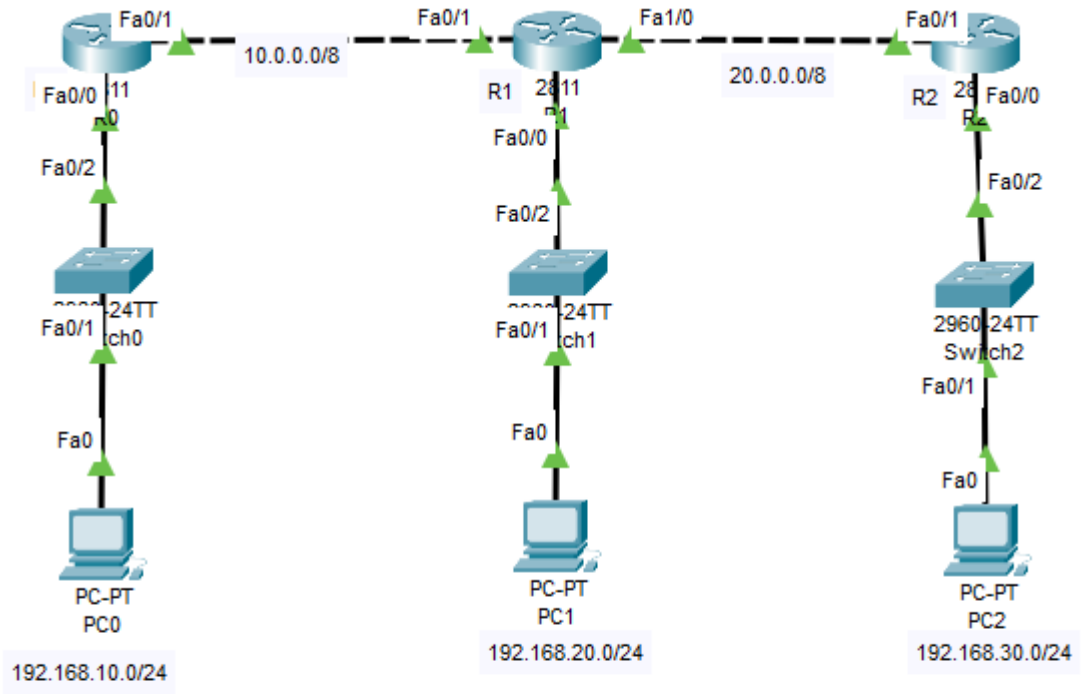
```
R2>en
R2>enable
R2#show ip pr
R2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 21 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface             Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/0       22
  FastEthernet0/1       22
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
           10.0.0.0
           20.0.0.0
           192.168.10.0
           192.168.20.0
           192.168.30.0
Passive Interface(s):
Routing Information Sources:
           Gateway         Distance      Last Update
           20.0.0.1              120      00:00:25
Distance: (default is 120)
```

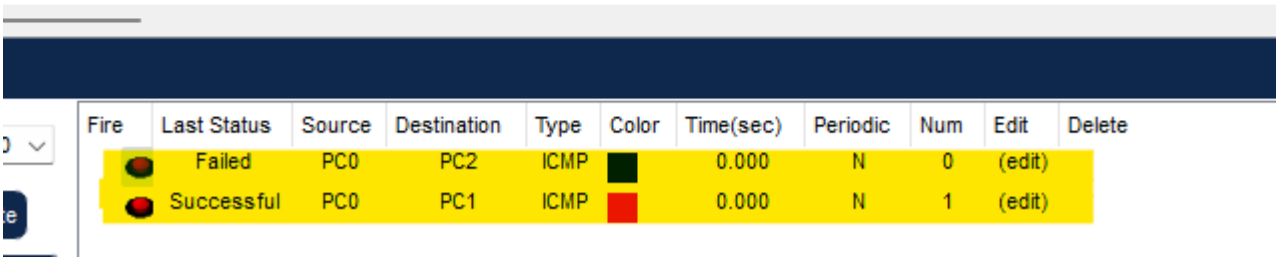
```
R2#conf
R2#configure ter
R2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#acc
R2(config)#access-list 10 deny host 192.168.10.10
R2(config)#
R2(config)#acce
R2(config)#access-list 10 permi
R2(config)#access-list 10 permit any
R2(config)#
R2(config)#show
R2(config)#ex
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#show ac
R2#show access-lists
Standard IP access list 10
    10 deny host 192.168.10.10
    20 permit any

R2#conf
R2#configure t
R2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#inte
R2(config)#interface fa
R2(config)#interface fastEthernet 0/1
R2(config-if)#ip acc
R2(config-if)#ip access-group 10 in
R2(config-if)#
```

After pinging:





Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Failed	PC0	PC2	ICMP		0.000	N	0	(edit)	
	Successful	PC0	PC1	ICMP		0.000	N	1	(edit)	