F29DC 2024 Lab 5
Network Topologies

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Topology A Configuration

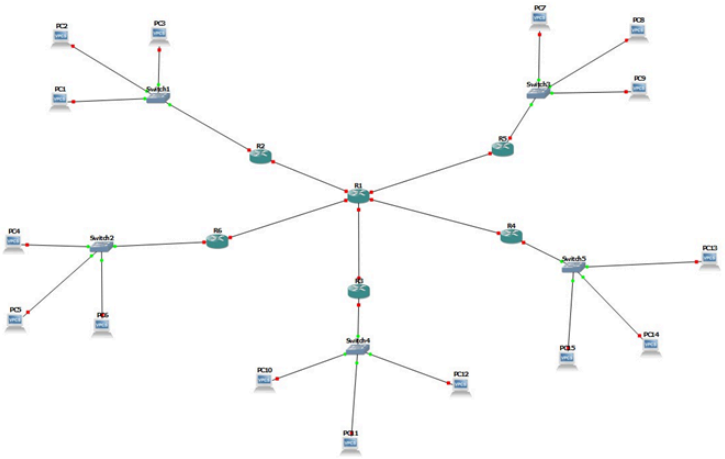

Image 1.1 : Setting up VPC's with respective switches and routers.

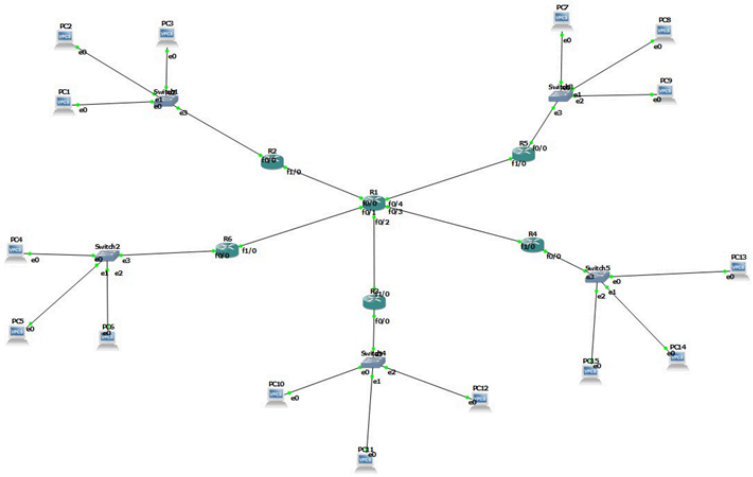

Image 1.2 : Starting the connections.

```
PC1> ip 192.168.1.1 192.168.1.254
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.254
```

```
PC2> ip 192.168.1.2 192.168.1.254
Checking for duplicate address...
PC1 : 192.168.1.2 255.255.255.0 gateway 192.168.1.254
```

```
PC3> ip 192.168.1.3 192.168.1.254
Checking for duplicate address...
PC1 : 192.168.1.3 255.255.255.0 gateway 192.168.1.254
```

```
PC4> ip 192.168.2.1 192.168.2.254
Checking for duplicate address...
PC1 : 192.168.2.1 255.255.255.0 gateway 192.168.2.254
```

```
PC5> ip 192.168.2.2 192.168.2.254
Checking for duplicate address...
PC1 : 192.168.2.2 255.255.255.0 gateway 192.168.2.254
```

```
PC6> ip 192.168.2.3 192.168.2.254
Checking for duplicate address...
PC1 : 192.168.2.3 255.255.255.0 gateway 192.168.2.254
```

```
PC7> ip 192.168.5.1 192.168.5.254
Checking for duplicate address...
PC1 : 192.168.5.1 255.255.255.0 gateway 192.168.5.254
```

```
PC8> ip 192.168.5.2 192.168.5.254
Checking for duplicate address...
PC1 : 192.168.5.2 255.255.255.0 gateway 192.168.5.254
```

```
PC9> ip 192.168.5.3 192.168.5.254
Checking for duplicate address...
PC1 : 192.168.5.3 255.255.255.0 gateway 192.168.5.254
```

```
PC10> ip 192.168.3.1 192.168.3.254
Checking for duplicate address...
PC1 : 192.168.3.1 255.255.255.0 gateway 192.168.3.254
```

```
PC11> ip 192.168.3.2 192.168.3.254
Checking for duplicate address...
PC1 : 192.168.3.2 255.255.255.0 gateway 192.168.3.254

PC12> ip 192.168.3.3 192.168.3.254
Checking for duplicate address...
PC1 : 192.168.3.3 255.255.255.0 gateway 192.168.3.254

PC13> ip 192.168.4.1 192.168.4.254
Checking for duplicate address...
PC1 : 192.168.4.1 255.255.255.0 gateway 192.168.4.254

PC14> ip 192.168.4.2 192.168.4.254
Checking for duplicate address...
PC1 : 192.168.4.2 255.255.255.0 gateway 192.168.4.254

PC15> ip 192.168.4.3 192.168.4.254
Checking for duplicate address...
PC1 : 192.168.4.3 255.255.255.0 gateway 192.168.4.254
```

Image 1.3 : Providing IP's for the VPC's.

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#int f0/0
R1(config-if)#no switchport
R1(config-if)#ip address
*Mar  1 00:02:21.703: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R1(config-if)#ip address 10.0.1.2
% Incomplete command.

R1(config-if)#ip address 10.0.1.2 255.255.255.0
R1(config-if)#no shutdown
```

```
R1(config-if)#int f0/1
R1(config-if)#no switchport
R1(config-if)#ip address
*Mar  1 00:03:13.755: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to up
R1(config-if)#ip address 10.0.2.2 255.255.255.0
R1(config-if)#no shutdown
```

```
R1(config-if)#int f0/2
R1(config-if)#no switchport
R1(config-if)#ip address
*Mar  1 00:04:20.011: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/2, changed state to up
R1(config-if)#ip address 10.0.3.2 255.255.255.0
R1(config-if)#no shutdown
```

```
R1(config-if)#int f0/4
R1(config-if)#no switchport
R1(config-if)#ip addre
*Mar  1 00:07:10.479: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, cha
nged state to down
R1(config-if)#ip address
*Mar  1 00:07:12.567: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/4, changed state to up
R1(config-if)#ip address 10.0.5.2 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#end
R1#
*Mar  1 00:07:44.287: %SYS-5-CONFIG_I: Configured from console by console
R1#write
Building configuration...
[OK]
```

```
R1#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            10.0.1.2        YES manual up                    up

FastEthernet0/1            10.0.2.2        YES manual up                    up

FastEthernet0/2            10.0.3.2        YES manual up                    up

FastEthernet0/3            10.0.4.2        YES manual up                    up

FastEthernet0/4            10.0.5.2        YES manual up                    up

FastEthernet0/5            unassigned      YES unset  up                    down

FastEthernet0/6            unassigned      YES unset  up                    down

FastEthernet0/7            unassigned      YES unset  up                    down

FastEthernet0/8            unassigned      YES unset  up                    down

FastEthernet0/9            unassigned      YES unset  up                    down
```

Image 1.4 : Providing IP’s for the R1.

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#int f0/0
R2(config-if)#ip address 192.168.1.254 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
*Mar  1 00:09:53.315: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 00:09:54.315: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R2(config-if)#int f1/0
R2(config-if)#ip address 10.0.1.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
*Mar  1 00:10:33.607: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state t
o up
*Mar  1 00:10:34.607: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et1/0, changed state to up
R2(config-if)#end
```

```
R2#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            192.168.1.254   YES manual up                    up
FastEthernet1/0            10.0.1.1        YES manual up                    up
FastEthernet2/0            unassigned      YES unset  administratively down down
FastEthernet3/0            unassigned      YES unset  administratively down down
R2#
```

Image 1.5 : Providing IP's for the R2.

```
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip address 192.168.3.254 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
*Mar  1 00:12:21.067: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 00:12:22.067: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R3(config-if)#int f1/0
R3(config-if)#ip address 10.0.3.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#end
R3#
*Mar  1 00:13:01.459: %SYS-5-CONFIG_I: Configured from console by console
R3#
*Mar  1 00:13:02.023: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state t
o up
*Mar  1 00:13:03.023: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et1/0, changed state to up
R3#write
Building configuration...
[OK]
R3#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.3.254   YES manual up                    up

FastEthernet1/0            10.0.3.1        YES manual up                    up

FastEthernet2/0            unassigned      YES unset  administratively down down

FastEthernet3/0            unassigned      YES unset  administratively down down

R3#
```

Image 1.6 : Providing IP’s for the R3.

```
R4#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R4(config)#interface fastEthernet 0/0
R4(config-if)#ip address 192.168.4.254 255.255.255.0
R4(config-if)#no shutdown
R4(config-if)#
*Mar  1 02:04:16.331: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 02:04:17.331: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R4(config-if)#interface fastEthernet 1/0
R4(config-if)#ip address 10.0.4.1 255.255.255.0
R4(config-if)#no shutdown
R4(config-if)#
*Mar  1 02:05:05.591: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state t
o up
*Mar  1 02:05:06.591: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et1/0, changed state to up
R4(config-if)#^Z
R4#wri
*Mar  1 02:05:12.435: %SYS-5-CONFIG_I: Configured from console by console
R4#write
Building configuration...
[OK]
```

```
R4#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.4.254   YES manual up                    up

FastEthernet1/0            10.0.4.1        YES manual up                    up

FastEthernet2/0            unassigned      YES unset  administratively down down

FastEthernet3/0            unassigned      YES unset  administratively down down

R4#
```

Image 1.7 : Providing the IP’s for the R4.

```
R5#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R5(config)#interface fastEthernet 0/0
R5(config-if)#ip address 192.168.5.254 255.255.255.0
R5(config-if)#no shutdown
R5(config-if)#
*Mar  1 02:07:22.723: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 02:07:23.723: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R5(config-if)#interface fastEthernet 1/0
R5(config-if)#ip address 10.0.5.1 255.255.255.0
R5(config-if)#no shutdown
R5(config-if)#^Z
R5#
*Mar  1 02:07:53.187: %SYS-5-CONFIG_I: Configured from console by console
R5#
*Mar  1 02:07:53.951: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state t
o up
*Mar  1 02:07:54.951: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et1/0, changed state to up
R5#write
Building configuration...
[OK]
```

```
R5#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.5.254   YES manual up                    up

FastEthernet1/0            10.0.5.1        YES manual up                    up

FastEthernet2/0            unassigned      YES unset  administratively down down

FastEthernet3/0            unassigned      YES unset  administratively down down

R5#
```

Image 1.8 : Providing IP’s for the R5.

```
R6#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R6(config)#interface fastEthernet 0/0
R6(config-if)#ip address 192.168.2.254 255.255.255.0
R6(config-if)#no shutdown
R6(config-if)#
*Mar  1 02:18:44.867: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 02:18:45.867: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R6(config-if)#interface fastEthernet 1/0
R6(config-if)#ip address 10.0.2.1 255.255.255.0
R6(config-if)#no shutdown
R6(config-if)#^Z
R6#
*Mar  1 02:19:40.615: %SYS-5-CONFIG_I: Configured from console by console
R6#w
*Mar  1 02:19:41.719: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state t
o up
*Mar  1 02:19:42.719: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et1/0, changed state to up
R6#write
Building configuration...
[OK]
```

```
R6#
*Mar  1 02:20:11.815: %SYS-5-CONFIG_I: Configured from console by console
R6#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.2.254   YES manual up                    up

FastEthernet1/0            10.0.2.1        YES manual up                    up

FastEthernet2/0            unassigned      YES unset  administratively down down

FastEthernet3/0            unassigned      YES unset  administratively down down

R6#
```

Image 1.9 : Providing IP’s for the R6.

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#network 10.0.1.2
R1(config-router)#network 10.0.2.2
R1(config-router)#network 10.0.3.2
R1(config-router)#network 10.0.4.2
R1(config-router)#network 10.0.5.2
R1(config-router)#^Z
R1#
```

Image 1.10 : RIP configuration for R1.

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 192.168.1.254
R2(config-router)#network 10.0.1.1
R2(config-router)#^Z
R2#
*Mar  1 00:11:16.811: %SYS-5-CONFIG_I: Configured from console by console
R2#write\

% Unknown command or computer name, or unable to find computer address
R2#write
Building configuration...
[OK]
```

Image 1.11 : RIP configuration for R2.

```
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#network 192.168.3.254
R3(config-router)#network 10.0.3.1
R3(config-router)#^Z
R3#
```

Image 1.12 : RIP configuration for R3.

```
R4#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R4(config)#router rip
R4(config-router)#version 2
R4(config-router)#network 192.168.4.1
R4(config-router)#network 10.0.4.1
R4(config-router)#^Z
R4#
```

Image 1.13 : RIP configuration for R4.

```
R5#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R5(config)#router rip
R5(config-router)#version 2
R5(config-router)#network 192.168.5.254
R5(config-router)#network 10.0.5.1
R5(config-router)#^Z
R5#
```

Image 1.14 : RIP configuration for R5.

```
R6#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R6(config)#router RIP
R6(config-router)#version 2
R6(config-router)#network 192.168.2.254
R6(config-router)#network 10.0.2.1
R6(config-router)#^Z
R6#
```

Image 1.15 : RIP configuration for R6.

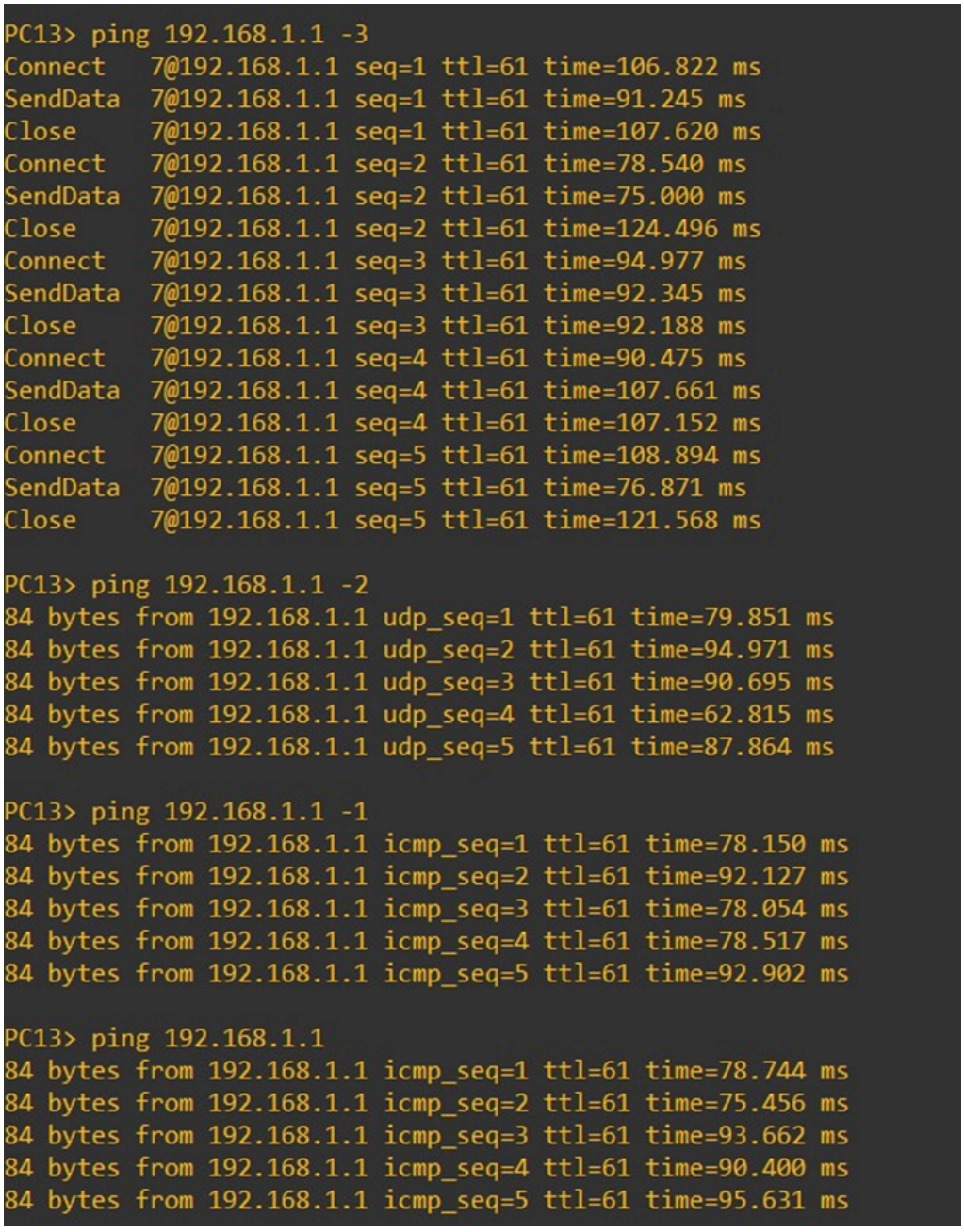

Image 1.16 : Pinging PC1 - PC13 using ICMP, TCP, UDP & normal ping.

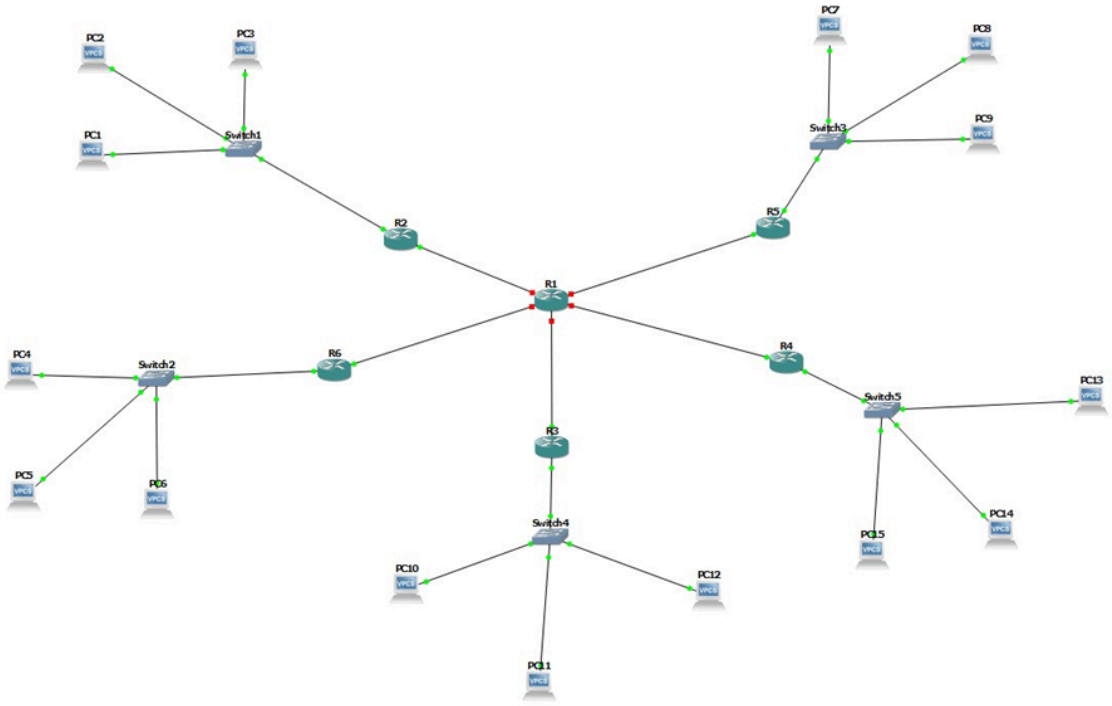

Image 1.17 : Stopping the R1 router.

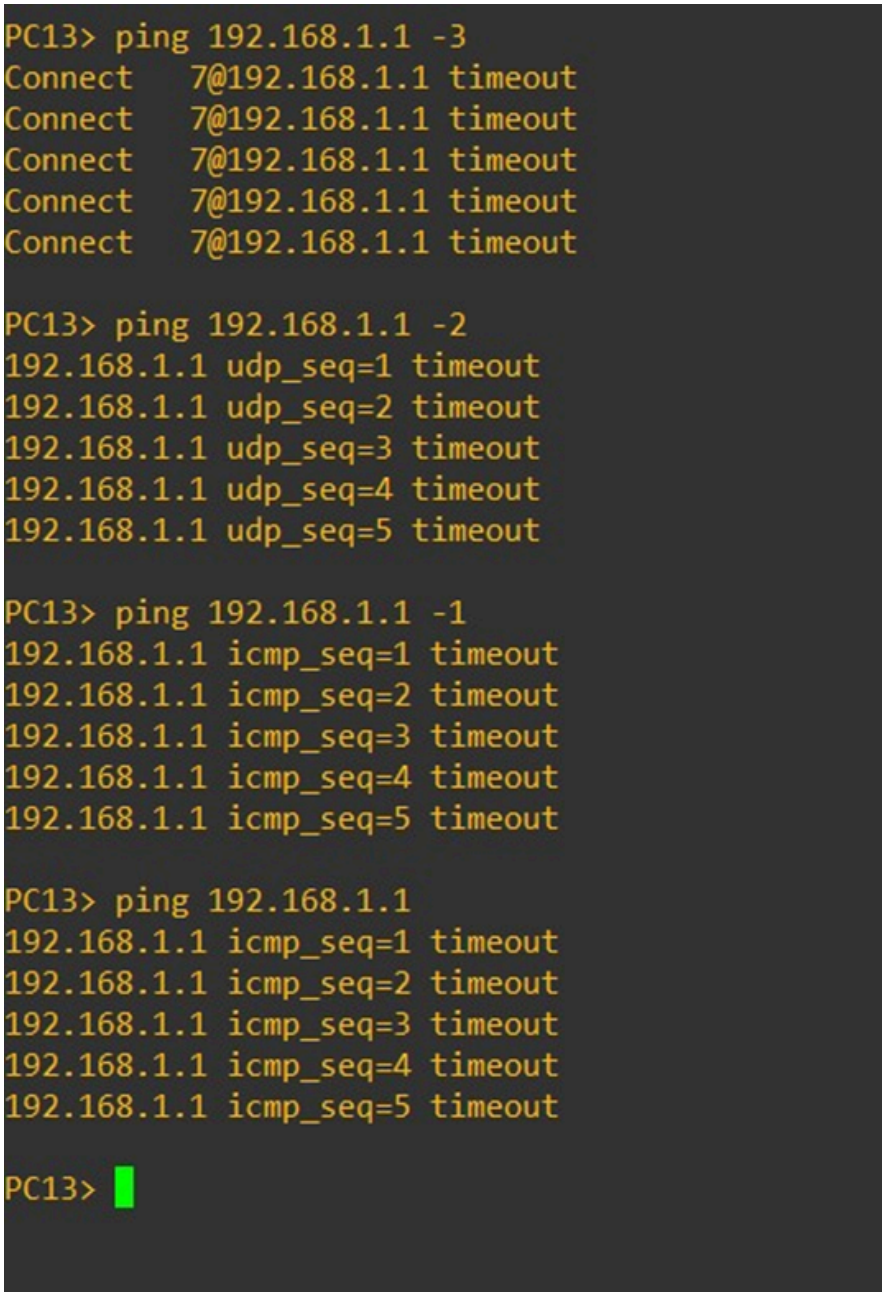

Image 1.18 : Pinging PC1 - PC13 using ICMP, TCP, UDP & normal ping.

Topology B Configuration

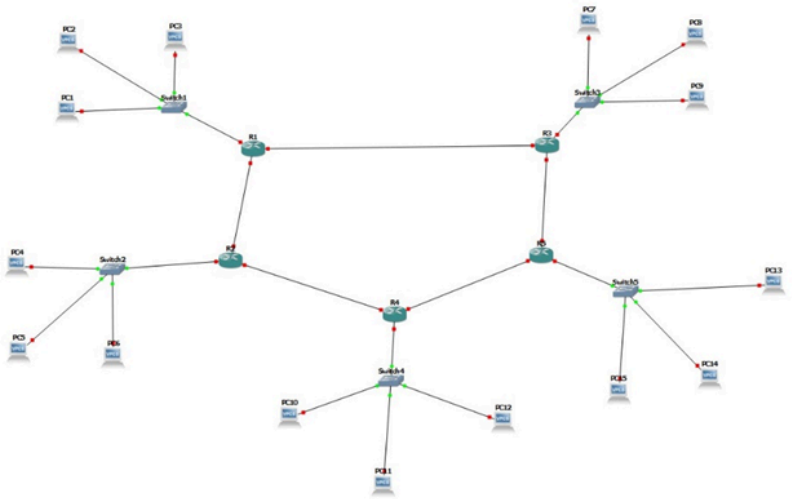

Image 2.1 : Setting up VPC's with respective switches and routers.

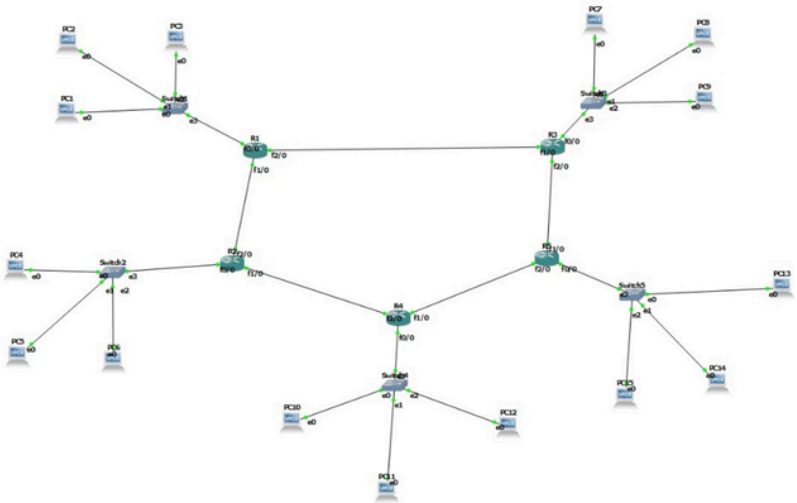

Image 2.2 : Starting the connections.

```
R1(config)#interface fastEthernet 0/0
R1(config-if)#no switchport
                ^
% Invalid input detected at '^' marker.

R1(config-if)#ip address 192.168.1.254 255.255.255.0
R1(config-if)#no shutdown
```

```
R1(config)#interface fastEthernet 2/0
R1(config-if)#ip address 10.0.3.2 255.255.255.0
R1(config-if)#no shutdown
```

```
R1(config-if)#interface fastEthernet 1/0
R1(config-if)#ip address 10.0.1.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#^Z
```

```
R1#
*Mar  1 00:04:00.975: %SYS-5-CONFIG_I: Configured from console by console
R1#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.1.254   YES NVRAM  up                    up

FastEthernet1/0            10.0.1.1        YES manual up                    up

FastEthernet2/0            10.0.3.2        YES manual up                    up

FastEthernet3/0            unassigned      YES NVRAM  administratively down down

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

Image 2.3 : Providing IP's for the R1.

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#interface fastEthernet 0/0
R2(config-if)#ip address 192.168.2.254 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
```

```
R2(config)#interface fastEthernet 2/0
R2(config-if)#ip address 10.0.1.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
```

```
R2(config-if)#interface fastEthernet 1/0
R2(config-if)#ip address 10.0.2.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#^Z
```

```
R2#
*Mar  1 00:06:19.003: %SYS-5-CONFIG_I: Configured from console by console
R2#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.2.254   YES NVRAM  up                    up

FastEthernet1/0            10.0.2.1        YES manual up                    up

FastEthernet2/0            10.0.1.2        YES manual up                    up

FastEthernet3/0            unassigned      YES NVRAM  administratively down down

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

Image 2.4 : Providing IP's for the R2.

```
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface fastEthernet 0/0
R3(config-if)#ip address 192.168.3.254 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
```

```
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface fastEthernet 2/0
R3(config-if)#ip address 10.0.5.2 255.255.255.0
R3(config-if)#no shutdown
```

```
R3(config-if)#interface fastEthernet 1/0
R3(config-if)#ip address 10.0.3.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#^Z
```

```
R3#
*Mar  1 00:06:46.115: %SYS-5-CONFIG_I: Configured from console by console
R3#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.3.254   YES NVRAM  up                    up

FastEthernet1/0            10.0.3.1        YES manual up                    up

FastEthernet2/0            10.0.5.2        YES manual up                    up

FastEthernet3/0            unassigned      YES NVRAM  administratively down down

R3#
```

Image 2.5 : Providing IP's for the R3.

```
R4#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R4(config)#interface fastEthernet 0/0
R4(config-if)#ip address 192.168.4.254 255.255.255.0
R4(config-if)#no shutdown
R4(config-if)#
```

```
R4#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R4(config)#interface fastEthernet 2/0
R4(config-if)#ip address 10.0.2.2 255.255.255.0
R4(config-if)#no shutdown
```

```
R4(config-if)#interface fastEthernet 1/0
R4(config-if)#ip address 10.0.4.1 255.255.255.0
R4(config-if)#no shutdown
R4(config-if)#^Z
```

```
R4#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.4.254   YES NVRAM  up                    up

FastEthernet1/0            10.0.4.1        YES manual up                    up

FastEthernet2/0            10.0.2.2        YES manual up                    up

FastEthernet3/0            unassigned      YES NVRAM  administratively down down

R4#write
```

Image 2.6 : Providing IP’s for the R4.

```
R5#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R5(config)#interface fastEthernet 0/0
R5(config-if)#ip address 192.168.5.254
% Incomplete command.

R5(config-if)#ip address 192.168.5.254 255.255.255.0
R5(config-if)#no shutdown
```

```
R5(config)#interface fastEthernet 2/0
R5(config-if)#ip address 10.0.4.2 255.255.255.0
R5(config-if)#no shutdown
```

```
R5(config-if)#interface fastEthernet 1/0
R5(config-if)#ip address 10.0.5.1 255.255.255.0
R5(config-if)#no shutdown
R5(config-if)#^Z
R5#
```

```
R5#
*Mar  1 00:12:13.791: %SYS-5-CONFIG_I: Configured from console by console
R5#show ip interface brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            192.168.5.254   YES NVRAM  up                    up

FastEthernet1/0            10.0.5.1        YES manual up                    up

FastEthernet2/0            10.0.4.2        YES manual up                    up

FastEthernet3/0            unassigned      YES NVRAM  administratively down down

R5#write
```

Image 2.7 : Providing IP’s for the R5.

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router RIP
R1(config-router)#version 2
R1(config-router)#network 192.168.1.254
R1(config-router)#network 10.0.3.2
R1(config-router)#network 10.0.1.1
R1(config-router)#^Z
R1#
```

Image 2.8 : RIP configuration for R1.

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router RIP
R2(config-router)#version 2
R2(config-router)#network 192.168.2.254
R2(config-router)#network 10.0.1.2
R2(config-router)#network 10.0.2.1
R2(config-router)#^Z
R2#
```

Image 2.9 : RIP configuration for R2.

```
R3#
*Mar  1 00:06:17.623: %SYS-5-CONFIG_I: Configured from console by console
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router RIP
R3(config-router)#version 2
R3(config-router)#network 192.168.3.254
R3(config-router)#network 10.0.5.2
R3(config-router)#network 10.0.3.1
R3(config-router)#^Z
R3#
```

Image 2.10 : RIP configuration for R3.

```
R4#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R4(config)#router RIP
R4(config-router)#version 2
R4(config-router)#network 192.168.4.254
R4(config-router)#network 10.0.4.1
R4(config-router)#network 10.0.2.2
R4(config-router)#^Z
R4#
```

Image 2.11 : RIP configuration for R4.

```
R5#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R5(config)#router RIP
R5(config-router)#version 2
R5(config-router)#network 192.168.5.254
R5(config-router)#network 10.0.4.2
R5(config-router)#network 10.0.5.1
R5(config-router)#^Z
R5#
```

Image 2.12 : RIP configuration for R5.

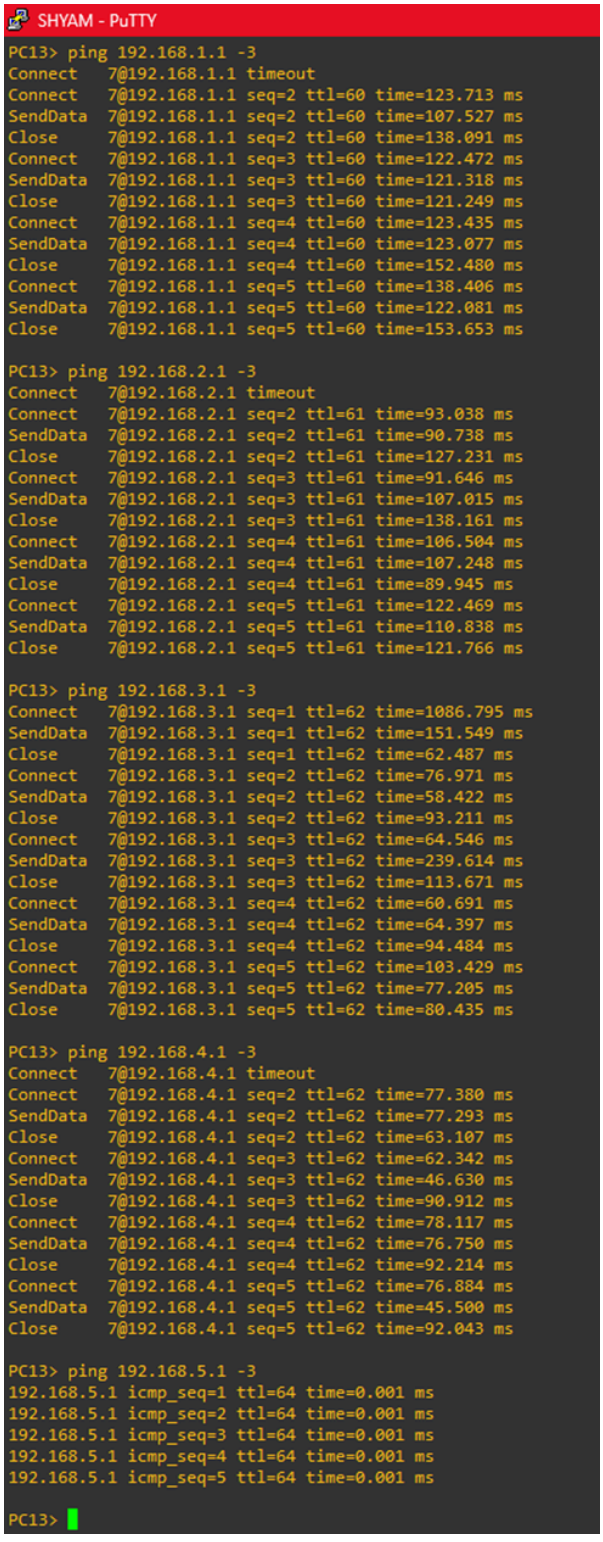

Image 2.13 : Pinging PC13 with other PC's connected via different routers.

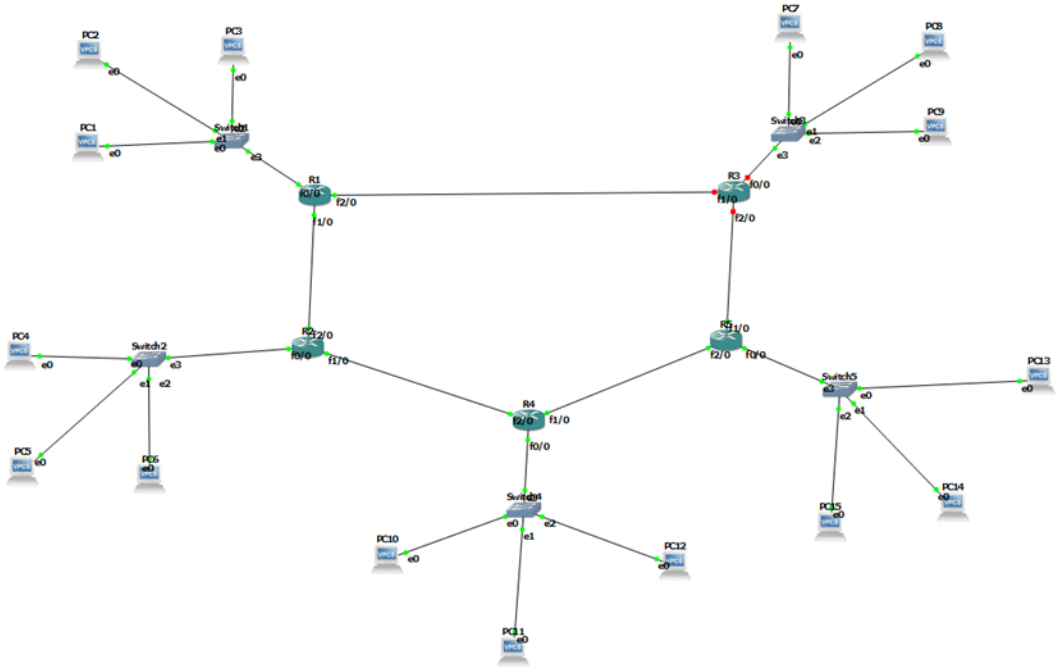

Image 2.14 : Stopping the R3 router.

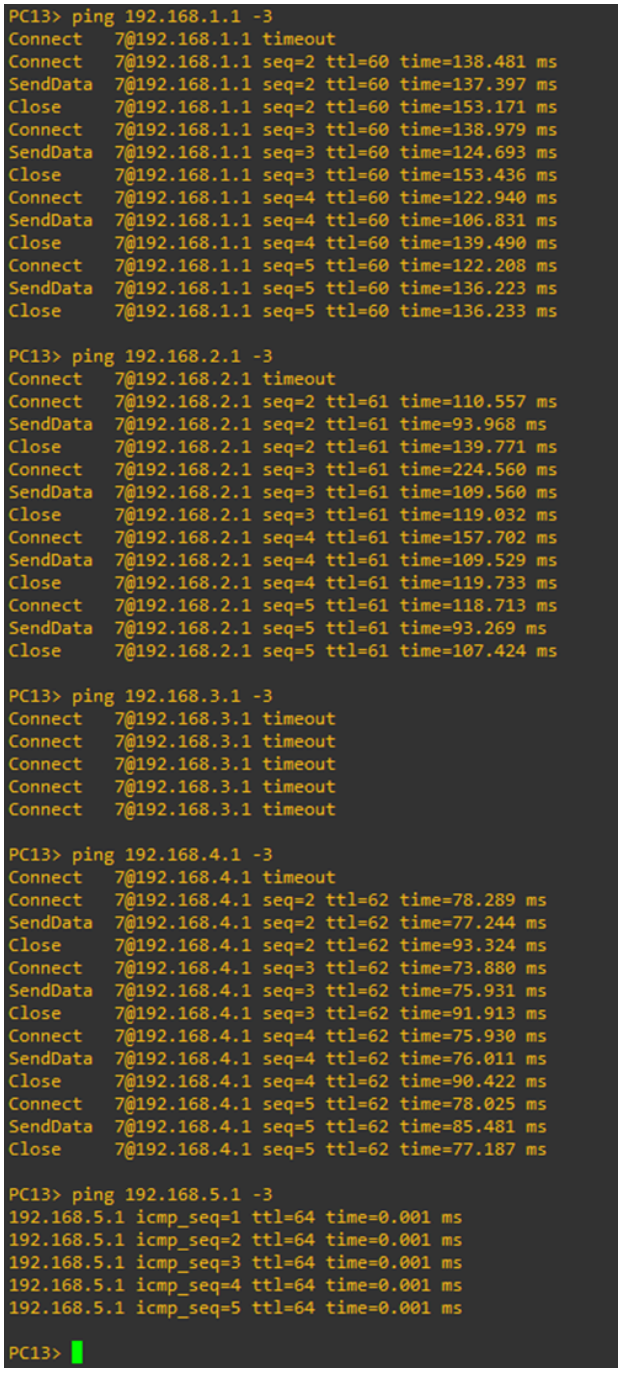

Image 2.15 : Pinging PC13 with other PC's connected via different routers.

Connects with every PC except PC7, connected with R3.
