190905104
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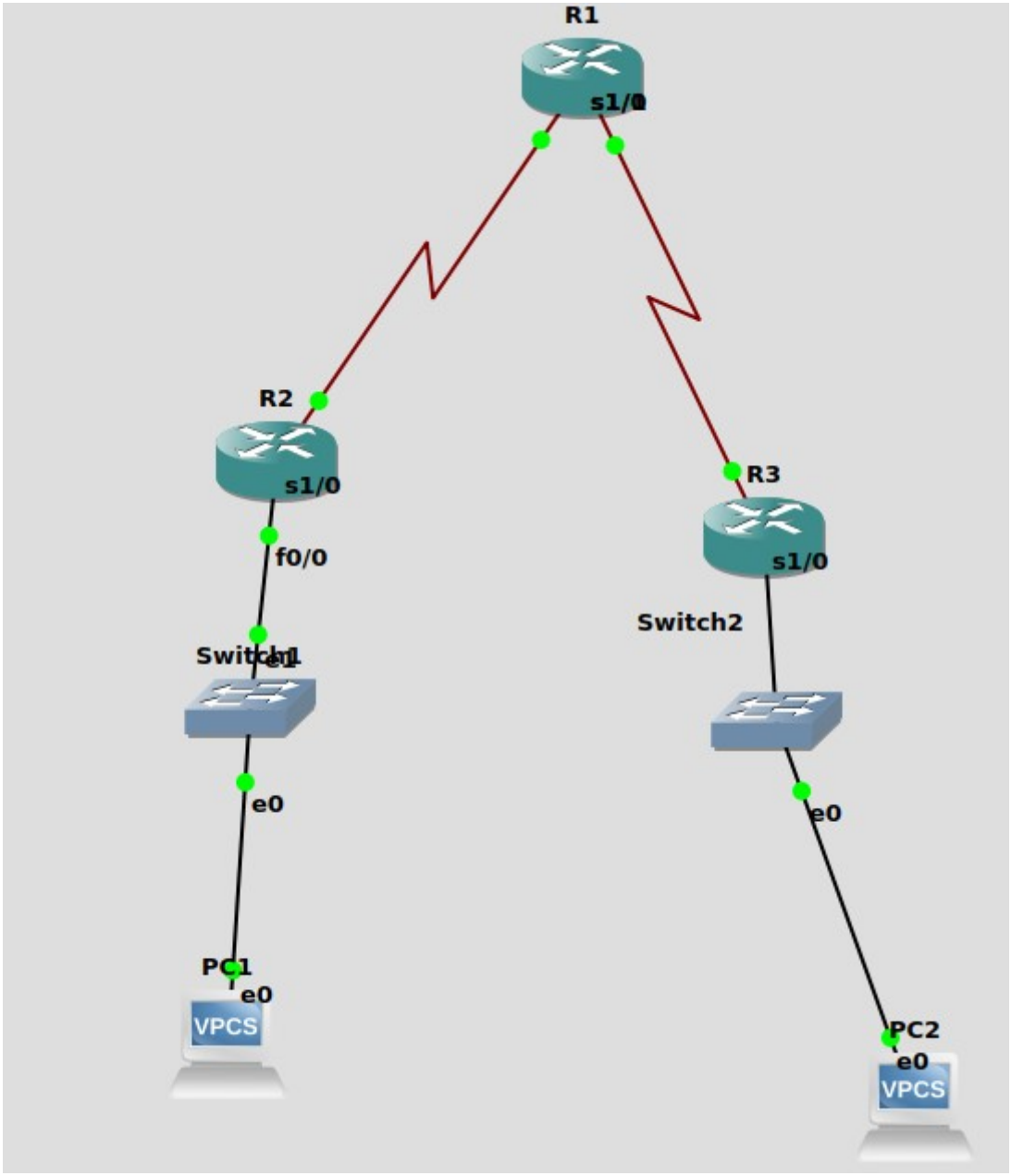
Lab 8

Study of Dynamic Routing Protocols using GNS3

1)



Setting up R1:

```
R1#conf t
Enter configuration commands, one per line.  E
R1(config)#int s1/0
R1(config-if)#ip add 100.1.1.2 255.255.255.0
R1(config-if)#no shut
R1(config-if)#
*Nov 30 08:15:49.667: %LINK-3-UPDOWN: Interfac
R1(config-if)#
*Nov 30 08:15:49.667: %ENTITY_ALARM-6-INFO: CL
istrative State Down
R1(config-if)#int
*Nov 30 08:15:50.671: %LINEPROTO-5-UPDOWN: Lin
 changed state to up
R1(config-if)#int s1/1
R1(config-if)#ip add 20.1.1.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#
```

```
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#network 20.1.1.0
R1(config-router)#network 100.1.1.0
```

```
R1#show ip int brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            unassigned      YES unset  administratively down down

Serial1/0                  100.1.1.2       YES manual up                    up

Serial1/1                  20.1.1.1        YES manual up                    up
```

Setting up R2:

```
R2#conf t
Enter configuration commands, one per line.  E
R2(config)#int f0/0
R2(config-if)#ip add 172.16.2.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#int s1
*Nov 30 08:16:46.139: %LINK-3-UPDOWN: Interfac
o up
R2(config-if)#int s1
*Nov 30 08:16:46.139: %ENTITY_ALARM-6-INFO: CL
istrative State Down
*Nov 30 08:16:47.139: %LINEPROTO-5-UPDOWN: Lin
et0/0, changed state to up
R2(config-if)#int s1/0
R2(config-if)#ip add 100.1.1.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#exit
```

```
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 172.16.0.0
R2(config-router)#network 100.1.1.0
R2(config-router)#exit
R2(config)#
```

```
R2#show ip int brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            172.16.2.1      YES manual up                    up

Serial1/0                  100.1.1.1       YES manual up                    up

Serial1/1                  unassigned      YES unset  administratively down down

Serial1/2                  unassigned      YES unset  administratively down down

Serial1/3                  unassigned      YES unset  administratively down down
```

Setting up R3:

```
R3#conf t
Enter configuration commands, one per line.  E
R3(config)#int s1/0
R3(config-if)#ip add 20.1.1.2 255.255.255.0
R3(config-if)#no shut
R3(config-if)#int
*Nov 30 08:17:33.903: %LINK-3-UPDOWN: Interfac
R3(config-if)#int
*Nov 30 08:17:33.903: %ENTITY_ALARM-6-INFO: CL
istrative State Down
R3(config-if)#int f0
*Nov 30 08:17:34.907: %LINEPROTO-5-UPDOWN: Lin
 changed state to up
R3(config-if)#int f0/0
R3(config-if)#ip add 10.2.2.1 255.255.255.0
R3(config-if)#no shut
```

```
R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#network 10.2.2.0
R3(config-router)#network 20.1.1.0
R3(config-router)#exit
```

```
R3#show ip int brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            10.2.2.1        YES manual up                    up

Serial1/0                  20.1.1.2        YES manual up                    up

Serial1/1                  unassigned      YES unset  administratively down down
```

PC1:

```
PC1> ip 172.16.2.10 172.16.2.1
Checking for duplicate address...
PC1 : 172.16.2.10 255.255.255.0 gateway 172.16.2.1
```

PC2:

```
PC2> ip 10.2.2.20 10.2.2.1
Checking for duplicate address...
PC2 : 10.2.2.20 255.255.255.0 gateway 10.2.2.1
```

Checking if PC1 and PC2 can communicate:

```
PC1> ping 10.2.2.20

10.2.2.20 icmp_seq=1 timeout
84 bytes from 10.2.2.20 icmp_seq=2 ttl=61 time=40.357 ms
84 bytes from 10.2.2.20 icmp_seq=3 ttl=61 time=40.777 ms
84 bytes from 10.2.2.20 icmp_seq=4 ttl=61 time=40.213 ms
84 bytes from 10.2.2.20 icmp_seq=5 ttl=61 time=40.298 ms
```

show ip route for R1:

```
Gateway of last resort is not set

     100.0.0.0/24 is subnetted, 1 subnets
C       100.1.1.0 is directly connected, Serial1/0
     20.0.0.0/24 is subnetted, 1 subnets
C       20.1.1.0 is directly connected, Serial1/1
R    172.16.0.0/16 [120/1] via 100.1.1.1, 00:00:06, Serial1/0
R    10.0.0.0/8 [120/1] via 20.1.1.2, 00:00:12, Serial1/1
```

show ip route for R2:

```
Gateway of last resort is not set

     100.0.0.0/24 is subnetted, 1 subnets
C       100.1.1.0 is directly connected, Serial1/0
R    20.0.0.0/8 [120/1] via 100.1.1.2, 00:00:04, Serial1/0
     172.16.0.0/24 is subnetted, 1 subnets
C       172.16.2.0 is directly connected, FastEthernet0/0
R    10.0.0.0/8 [120/1] via 100.1.1.2, 00:00:04, Serial1/0
```

show ip route for R3:

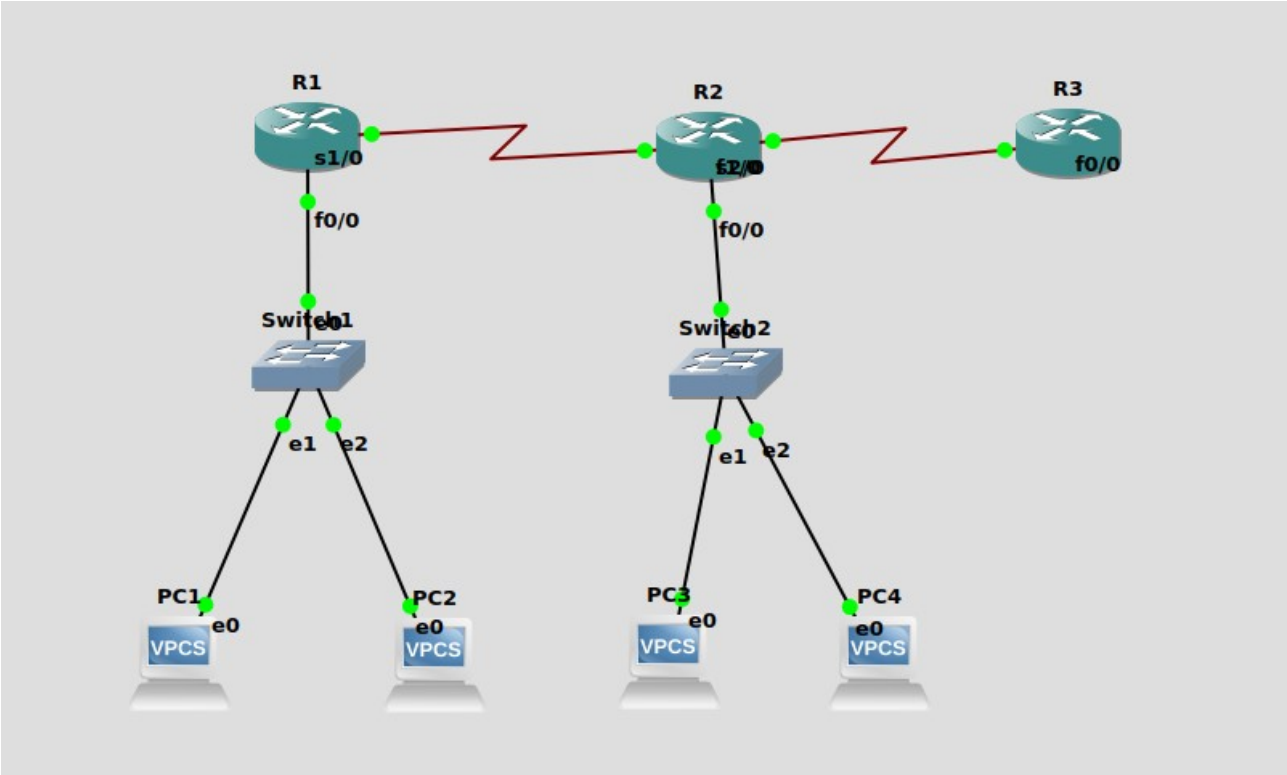
```
Gateway of last resort is not set

R    100.0.0.0/8 [120/1] via 20.1.1.1, 00:00:26, Serial1/0
     20.0.0.0/24 is subnetted, 1 subnets
C       20.1.1.0 is directly connected, Serial1/0
R    172.16.0.0/16 [120/1] via 20.1.1.1, 00:00:26, Serial1/0
     10.0.0.0/24 is subnetted, 1 subnets
C       10.2.2.0 is directly connected, FastEthernet0/0
```

```
R3#show ip protocol
Routing Protocol is "rip"
```

```
R3#show ip rip database
10.0.0.0/8    auto-summary
10.2.2.0/24    directly connected, FastEthernet0/0
20.0.0.0/8    auto-summary
20.1.1.0/24    directly connected, Serial1/0
100.0.0.0/8    auto-summary
100.0.0.0/8
    [1] via 20.1.1.1, 00:00:17, Serial1/0
172.16.0.0/16    auto-summary
172.16.0.0/16
    [1] via 20.1.1.1, 00:00:17, Serial1/0
```

2)




```
R1#show ip int brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            10.0.0.1        YES manual up                    up

Serial1/0                  192.168.1.1     YES manual up                    up
```

```
R2#show ip int brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            20.0.0.1        YES manual up                    up

FastEthernet1/0            150.150.150.1   YES manual up                    up

Serial2/0                  192.168.1.2     YES manual up                    up
```

```
R3#show ip int brief
Interface                  IP-Address      OK? Method Status                Prot
ocol
FastEthernet0/0            150.150.150.2   YES manual up                    up
```

Ping PC3 from PC1

```
PC1> ping 20.0.0.2

20.0.0.2 icmp_seq=1 timeout
84 bytes from 20.0.0.2 icmp_seq=2 ttl=62 time=39.867 ms
84 bytes from 20.0.0.2 icmp_seq=3 ttl=62 time=39.934 ms
84 bytes from 20.0.0.2 icmp_seq=4 ttl=62 time=39.728 ms
84 bytes from 20.0.0.2 icmp_seq=5 ttl=62 time=101.336 ms
```

Ping R3 from PC1

```
PC1> ping 150.150.150.1

84 bytes from 150.150.150.1 icmp_seq=1 ttl=254 time=28.935 ms
84 bytes from 150.150.150.1 icmp_seq=2 ttl=254 time=29.197 ms
84 bytes from 150.150.150.1 icmp_seq=3 ttl=254 time=29.647 ms
84 bytes from 150.150.150.1 icmp_seq=4 ttl=254 time=29.820 ms
84 bytes from 150.150.150.1 icmp_seq=5 ttl=254 time=28.754 ms
```

R2:

```
20.0.0.0/8 is directly connected, FastEthernet0/0
10.0.0.0/8 [110/65] via 192.168.1.1, 00:04:54, Serial2/0
192.168.1.0/24 is directly connected, Serial2/0
150.150.0.0/24 is subnetted, 1 subnets
   150.150.150.0 is directly connected, FastEthernet1/0
```

R3:

```
O IA 20.0.0.0/8 [110/2] via 150.150.150.1, 00:06:34, FastEthernet0/0
O IA 10.0.0.0/8 [110/66] via 150.150.150.1, 00:06:34, FastEthernet0/0
O IA 192.168.1.0/24 [110/65] via 150.150.150.1, 00:06:34, FastEthernet0/0
     150.150.0.0/24 is subnetted, 1 subnets
C       150.150.150.0 is directly connected, FastEthernet0/0
```

```
R2#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.1.1       0   FULL/  -        00:00:31    192.168.1.1     Serial2/0
150.150.150.2     1   FULL/BDR        00:00:35    150.150.150.2   FastEthernet1/
0
```

```
R2#show ip ospf database

            OSPF Router with ID (192.168.1.2) (Process ID 200)

                Router Link States (Area 0)

Link ID         ADV Router      Age         Seq#       Checksum Link count
192.168.1.1     192.168.1.1     582         0x80000003 0x00DA93 3
192.168.1.2     192.168.1.2     569         0x80000003 0x000958 3

                Summary Net Link States (Area 0)

Link ID         ADV Router      Age         Seq#       Checksum
150.150.150.0   192.168.1.2     565         0x80000001 0x0047C4

                Router Link States (Area 1)

Link ID         ADV Router      Age         Seq#       Checksum Link count
150.150.150.2   150.150.150.2   520         0x80000002 0x00EF2C 1
192.168.1.2     192.168.1.2     519         0x80000002 0x00606E 1

                Net Link States (Area 1)

Link ID         ADV Router      Age         Seq#       Checksum
150.150.150.1   192.168.1.2     519         0x80000001 0x003A9C

                Summary Net Link States (Area 1)

Link ID         ADV Router      Age         Seq#       Checksum
10.0.0.0        192.168.1.2     585         0x80000001 0x007411
20.0.0.0        192.168.1.2     596         0x80000001 0x006F4C
192.168.1.0     192.168.1.2     596         0x80000001 0x0030F5
```

```
R1#show ip ospf database

            OSPF Router with ID (192.168.1.1) (Process ID 200)

                Router Link States (Area 0.0.0.0)

Link ID         ADV Router      Age         Seq#       Checksum Link count
192.168.1.1     192.168.1.1     1006        0x80000003 0x00DA93 3
192.168.1.2     192.168.1.2     996         0x80000003 0x000958 3

                Summary Net Link States (Area 0.0.0.0)

Link ID         ADV Router      Age         Seq#       Checksum
150.150.150.0   192.168.1.2     991         0x80000001 0x0047C4
```

```
R3#show ip ospf database

            OSPF Router with ID (150.150.150.2) (Process ID 200)

                Router Link States (Area 1)

Link ID         ADV Router      Age         Seq#       Checksum Link count
150.150.150.2   150.150.150.2   600         0x80000002 0x00EF2C 1
192.168.1.2     192.168.1.2     601         0x80000002 0x00606E 1

                Net Link States (Area 1)

Link ID         ADV Router      Age         Seq#       Checksum
150.150.150.1   192.168.1.2     601         0x80000001 0x003A9C

                Summary Net Link States (Area 1)

Link ID         ADV Router      Age         Seq#       Checksum
10.0.0.0        192.168.1.2     651         0x80000001 0x007411
20.0.0.0        192.168.1.2     651         0x80000001 0x006F4C
192.168.1.0     192.168.1.2     651         0x80000001 0x0030F5
```