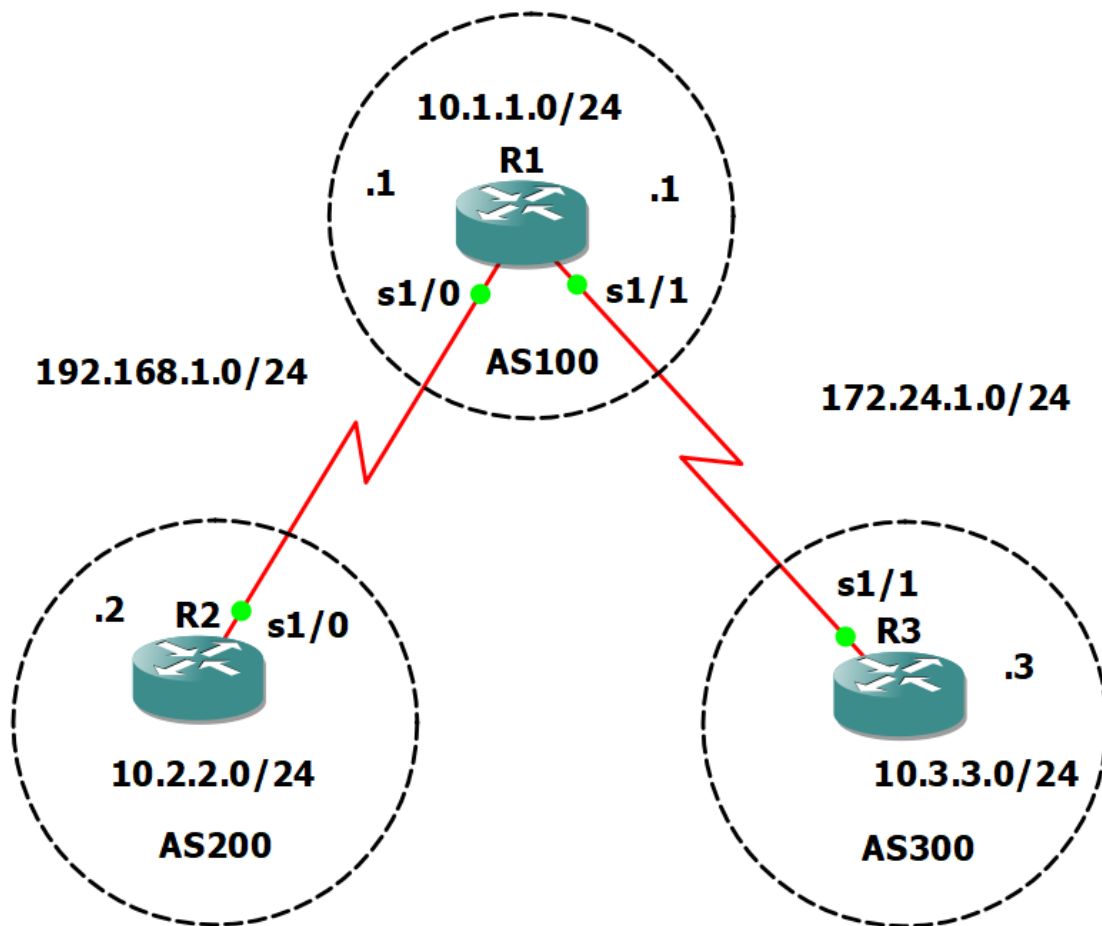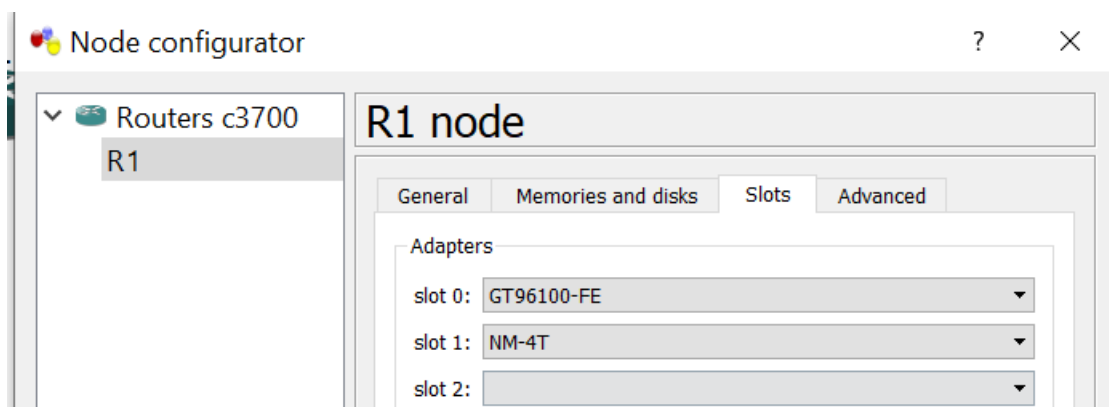**Practical No: 2**   Ninad Karlekar 22306A1012   Date: 13/03/2023

Aim: Implementation of BGP using AS_path attribute.

Take 3 routers -> Configure -> slots -> NM-4T

On Router console type following commands one by one.

R1 Console

conf t

int s1/0

ip add 192.168.1.1 255.255.255.0

no sh

int s1/1

ip add 172.24.1.1 255.255.255.0

no sh

```
R1#conf t
Enter configuration commands, one per line.  End with
R1(config)#int s1/0
R1(config-if)#ip add 192.168.1.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar  1 00:11:55.495: %LINK-3-UPDOWN: Interface Serial1/0, changed
 state to up
R1(config-if)#
*Mar  1 00:11:56.499: %LINEPROTO-5-UPDOWN: Line protocol on Interf
ace Serial1/0, changed state to up
R1(config-if)#int s1/1
R1(config-if)#ip add 172.24.1.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
```

R2 Console

conf t

int s1/0

ip add 192.168.1.2 255.255.255.0

no sh

```
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#int s1/0
R2(config-if)#ip add 192.168.1.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
```

R3 Console

conf t

int s1/1

ip add 172.24.1.3 255.255.255.0

no sh

```
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#int s1/1
R3(config-if)#ip add 172.24.1.3 255.255.255.0
R3(config-if)#no sh
```

To add loopback address ,On Router console type following commands one by one.
R1 Console
int lo0
ip add 10.1.1.1 255.255.255.0

```
R1(config-if)#
R1(config-if)#int lo0
R1(config-if)#
*Mar  1 00:26:35.995: %LINEPROTO-5-UPDOWN: Line p
ace Loopback0, changed state to up
R1(config-if)#ip add 10.1.1.1 255.255.255.0
R1(config-if)#
```

R2 Console
int lo0
ip add 10.2.2.2 255.255.255.0

```
R2(config-if)#int lo0
R2(config-if)#ip a
*Mar  1 00:27:31.011: %LINEPROTO-5-UPDOWN: Line
ace Loopback0, changed state to up
R2(config-if)#ip add 10.2.2.2 255.255.255.0
R2(config-if)#
```

R3 Console
int lo0
ip add 10.3.3.3 255.255.255.0

```
R3(config-if)#int lo0
R3(config-if)#
*Mar  1 00:23:08.683: %LINEPROTO-5-UPDOWN: Line pro
ace Loopback0, changed state to up
R3(config-if)#ip add 10.3.3.3 255.255.255.0
R3(config-if)#
```

To add bgp protocol, On Router console type following commands one by one.
R1 Console
router bgp 100

neighbor 192.168.1.2 remote-as 200
neighbor 172.24.1.3 remote-as 300
network 10.1.1.0 mask 255.255.255.0

```
R1(config-if)#
R1(config-if)#router bgp 100
R1(config-router)#neighbor 192.168.1.2 remote-as 200
R1(config-router)#neighbor 172.24.1.3 remote-as 300
*Mar  1 00:39:51.291: %BGP-5-ADJCHANGE: neighbor 192.168
1.2 Up
R1(config-router)#neighbor 172.24.1.3 remote-as 300
R1(config-router)#network 10.1.1.0 mask 255.255.255.0
R1(config-router)#
```

R2 Console
router bgp 200
neighbor 192.168.1.1 remote-as 100
network 10.2.2.0 mask 255.255.255.0

```
R2(config-if)#
R2(config-if)#router bgp 200
R2(config-router)#neighbor 192.168.1.1 remote-as 100
R2(config-router)#network 10.2.2.0 mask 255.255.255.0
R2(config-router)#
```

R3 Console
router bgp 300
neighbor 172.24.1.1 remote-as 100
network 10.3.3.0 mask 255.255.255.0

```
R3(config-if)#router bgp 300
R3(config-router)#neighbor 172.24.1.1 remote-as 100
R3(config-router)#network
*Mar  1 00:42:31.635: %BGP-5-ADJCHANGE: neighbor 172.24
.1 Up
R3(config-router)#network 10.3.3.0 mask 255.255.255.0
R3(config-router)#
```

To show ip route type following command in each router console
do sh ip route

```
R2    R1    R3                                        ▼ ✕

R3(config-router)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B
- BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSP
F inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA ext
ernal type 2
       E1 - OSPF external type 1, E2 - OSPF external type
 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1,
 L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U -
per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

     172.24.0.0/24 is subnetted, 1 subnets
C       172.24.1.0 is directly connected, Serial1/1
     10.0.0.0/24 is subnetted, 3 subnets
C       10.3.3.0 is directly connected, Loopback0
B       10.2.2.0 [20/0] via 172.24.1.1, 00:01:42
B       10.1.1.0 [20/0] via 172.24.1.1, 00:01:42
R3(config-router)#
R3(config-router)#
```

To verify output type following commands: (OUTPUT)

do ping 10.3.3.3 source lo0

```
R2(config-router)#do ping 10.3.3.3 source lo0

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.3.3.3, timeout is 2
seconds:
Packet sent with a source address of 10.2.2.2
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max
 = 44/57/68 ms
R2(config-router)#
```

do ping 10.2.2.2 source lo0

```
B         10.1.1.0 [20/0] via 172.24.1.1, 00:01:42
R3(config-router)#do ping 10.2.2.2 source lo0

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.2.2.2, timeout is 2
seconds:
Packet sent with a source address of 10.3.3.3
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max
 = 60/64/68 ms
R3(config-router)#
```