VSIT

Morden Networking
Practical # 1

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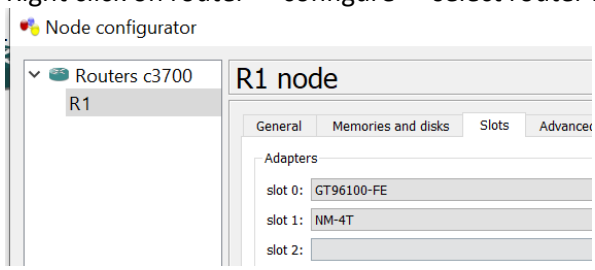
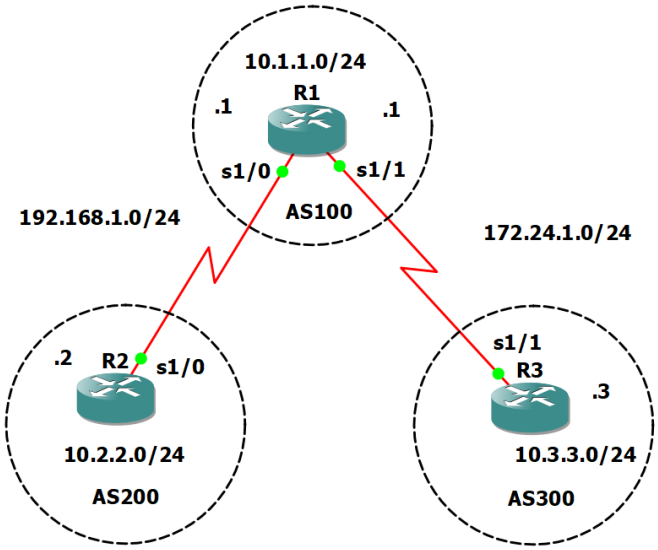
Subject/Course:	Morden Networking	**Class**	M.Sc. IT – Sem II
Topic	Using the AS_PATH attribute of BGP	**Batch**	1

Topic: Using the AS_PATH attribute (Autonomous System path attribute) of BGP(Border Gateway Protocol)

1. Open GNS3 and create a new project.
2. Drag and drop 3 routers as R1, R2, R3
3. Right click on router -> configure -> select router name -> slots -> Select slot 1 as NM-4T



4. Connect routers: R1 and R2 ==> s1/0 || R1 and R3 ==> s1/1
5. Label topology with given labels below and click on run

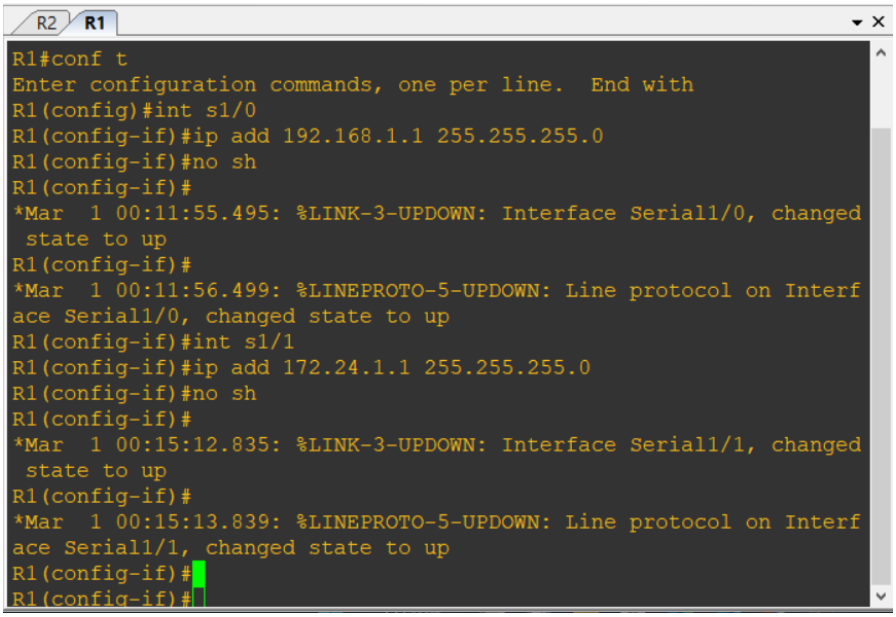


CONSOLE (On Router console type following commands one by one.)

R1 console

R1#conf t
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)#int s1/1
R1(config-if)#ip add 172.24.1.1 255.255.255.0
R1(config-if)#no sh



R2 console

R2#conf t
R2(config)#int s1/0
R2(config-if)#ip add 192.168.1.2 255.255.255.0
R2(config-if)#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)#
*Mar  1 00:08:14.683: %LINK-3-UPDOWN: Interface Serial1/0, changed
R2(config-if)#
*Mar  1 00:08:15.687: %LINEPROTO-5-UPDOWN: Line protocol on Interf
up
R2(config-if)#
*Mar  1 00:08:42.227: %LINEPROTO-5-UPDOWN: Line protocol on Interf
down
R2(config-if)#
```

R3 CONSOLE

R3#conf t
R3(config)#int s1/1
R3(config-if)#ip add 172.24.1.3 255.255.255.0
R3(config-if)#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
R3(config-if)#
*Mar  1 00:19:13.735: %LINK-3-UPDOWN: Interface Serial1/1, changed
 state to up
R3(config-if)#
*Mar  1 00:19:14.739: %LINEPROTO-5-UPDOWN: Line protocol on Interf
ace Serial1/1, changed state to up
R3(config-if)#
```

loopback address

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: Li
ace Loopback0, changed state to up
R3(config-if)#ip add 10.3.3.3 255.255.255.0
R3(config-if)#
```

bgp protocol

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)#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)#
```

do sh ip route

R2 R1 R3

```
Codes: C - connected, S - static, R - RIP, M - mobile
- BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA -
F inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA
ernal type 2
       E1 - OSPF external type 1, E2 - OSPF external
 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS leve
 L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default,
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
B       10.3.3.0 [20/0] via 172.24.1.3, 00:02:03
B       10.2.2.0 [20/0] via 192.168.1.2, 00:05:27
C       10.1.1.0 is directly connected, Loopback0
C    192.168.1.0/24 is directly connected, Serial1/0
R1(config-router)#
```

R2 R1 R3

```
R2(config-router)#
R2(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

     10.0.0.0/24 is subnetted, 3 subnets
B       10.3.3.0 [20/0] via 192.168.1.1, 00:02:52
C       10.2.2.0 is directly connected, Loopback0
B       10.1.1.0 [20/0] via 192.168.1.1, 00:05:33
C    192.168.1.0/24 is directly connected, Serial1/0
R2(config-router)#
```

```
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)#
```

OUTPUT

From R2(COMPANY) to R3(CUSTOMER)

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)#
```

From R3(CUSTOMER) to R2(COMPANY)

do ping 10.2.2.2 source lo0

```
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)#
```