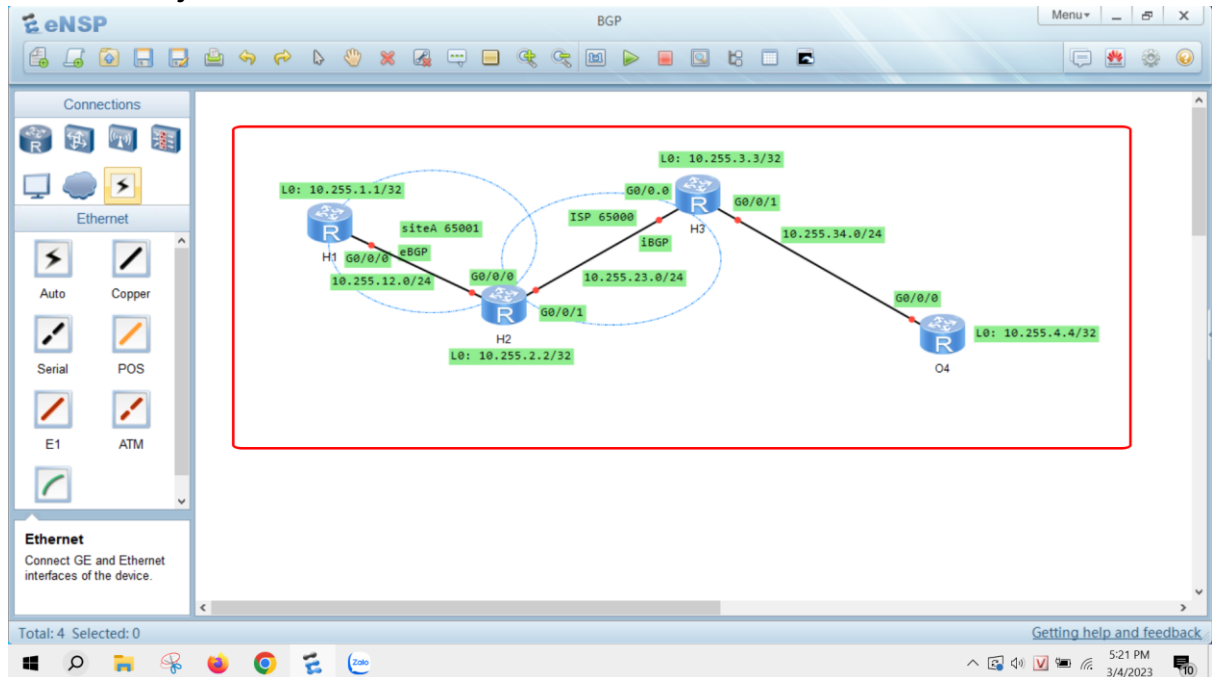


Mô hình Project BGP



1. Cấu hình đặt ip address các router

R1 :

```
#
interface GigabitEthernet0/0/0
ip address 10.255.12.1 255.255.255.0
#
interface GigabitEthernet0/0/1
#
interface NULL0
#
interface LoopBack0
ip address 10.255.1.1 255.255.255.255
#
```

R2 :

```
#
interface GigabitEthernet0/0/0
ip address 10.255.12.2 255.255.255.0
#
interface GigabitEthernet0/0/1
ip address 10.255.23.2 255.255.255.0
#
interface NULL0
#
interface LoopBack0
ip address 10.255.2.2 255.255.255.255
#
```

R3:

```
#
interface GigabitEthernet0/0/0
 ip address 10.255.23.3 255.255.255.0
#
interface GigabitEthernet0/0/1
 ip address 10.255.34.3 255.255.255.0
#
interface NULL0
#
interface LoopBack0
 ip address 10.255.3.3 255.255.255.255
#
```

O4:

```
#
interface GigabitEthernet0/0/0
 ip address 10.255.34.4 255.255.255.0
#
interface GigabitEthernet0/0/1
#
interface GigabitEthernet0/0/2
#
interface GigabitEthernet0/0/3
#
wlan
#
interface NULL0
#
interface LoopBack0
 ip address 10.255.4.4 255.255.255.255
#
```

2. Cấu hình OSPF Area Backbone trên site H23 thuộc Core ISP , dùng IP Loopback 0 làm Router-ID

R2

```
#
ospf 1 router-id 10.255.2.2
 area 0.0.0.0
  network 10.255.2.2 0.0.0.0
  network 10.255.23.0 0.0.0.255
#
```

```

[H2]
[H2]
[H2] ping -a 10.255.2.2 10.255.3.3
  PING 10.255.3.3: 56 data bytes, press CTRL_C to break
    Reply from 10.255.3.3: bytes=56 Sequence=1 ttl=255 time=20 ms
    Reply from 10.255.3.3: bytes=56 Sequence=2 ttl=255 time=20 ms
    Reply from 10.255.3.3: bytes=56 Sequence=3 ttl=255 time=20 ms
    Reply from 10.255.3.3: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.255.3.3: bytes=56 Sequence=5 ttl=255 time=30 ms

--- 10.255.3.3 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 20/22/30 ms

[H2]

```

R3

```

#
ospf 1 router-id 10.255.3.3
 area 0.0.0.0
   network 10.255.3.3 0.0.0.0
   network 10.255.23.0 0.0.0.255
#

```

```

[H3]
[H3]
[H3]
[H3] ping -a 10.255.3.3 10.255.2.2
  PING 10.255.2.2: 56 data bytes, press CTRL_C to break
    Reply from 10.255.2.2: bytes=56 Sequence=1 ttl=255 time=30 ms
    Reply from 10.255.2.2: bytes=56 Sequence=2 ttl=255 time=20 ms
    Reply from 10.255.2.2: bytes=56 Sequence=3 ttl=255 time=30 ms
    Reply from 10.255.2.2: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.255.2.2: bytes=56 Sequence=5 ttl=255 time=20 ms

--- 10.255.2.2 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 20/24/30 ms

[H3]

```

3. Cấu hình BGP Speaker các loopback0 làm BGP router-id và iBGP trên R2 và R3 (thuộc ISP) , eBGP trên R1 và R2 , quảng bá loopback0 của R1 vào eBGP

iBGP

H2:config

```

#
bgp 65000
  router-id 10.255.2.2
  peer 10.255.12.1 as-number 65001
  peer 10.255.23.3 as-number 65000
#
  ipv4-family unicast
    undo synchronization
    network 10.255.1.0 255.255.255.255
    network 10.255.2.0 255.255.255.255
    network 10.255.2.2 255.255.255.255
    peer 10.255.12.1 enable
    peer 10.255.23.3 enable
#

```

KQ:

```

[H2]display bgp peer
BGP local router ID : 10.255.2.2
Local AS number : 65000
Total number of peers : 2          Peers in established state : 2

  Peer          V      AS  MsgRcvd  MsgSent  OutQ  Up/Down    State Pre
fRcv
  10.255.12.1   4      65001    42      44      0 00:39:08 Established
1
  10.255.23.3   4      65000    53      57      0 00:50:42 Established
1
[H2]

```

H3 :

```

#
bgp 65000
  peer 10.255.23.2 as-number 65000
#
  ipv4-family unicast
    undo synchronization
    network 10.255.4.0 255.255.255.255
    peer 10.255.23.2 enable
#

```

KQ :

```
[H3]display bgp peer
BGP local router ID : 10.255.3.3
Local AS number : 65000
Total number of peers : 1          Peers in established state : 1

  Peer          V          AS  MsgRcvd  MsgSent  OutQ  Up/Down      State Pre
fRcv
10.255.23.2     4      65000     59      56      0 00:53:11 Established
2
[H3]
```

eBGP

R1 :

config

```
#
bgp 65001
router-id 10.255.1.1
peer 10.255.12.2 as-number 65000
#
ipv4-family unicast
undo synchronization
network 10.255.1.1 255.255.255.255
peer 10.255.12.2 enable
#
```

KQ :

```
[H1]display bgp peer
BGP local router ID : 10.255.1.1
Local AS number : 65001
Total number of peers : 1          Peers in established state : 1

  Peer          V          AS  MsgRcvd  MsgSent  OutQ  Up/Down      State Pre
fRcv
10.255.12.2     4      65000     40      39      0 00:36:57 Established
2
[H1]
```

R2 :

config

```

bgp 65000
router-id 10.255.2.2
peer 10.255.12.1 as-number 65001
peer 10.255.23.3 as-number 65000
#
ipv4-family unicast
undo synchronization
network 10.255.1.0 255.255.255.255
network 10.255.2.0 255.255.255.255
network 10.255.2.2 255.255.255.255
peer 10.255.12.1 enable
peer 10.255.23.3 enable
#

```

KQ :

```

[H2]display bgp peer
BGP local router ID : 10.255.2.2
Local AS number : 65000
Total number of peers : 2          Peers in established state : 2

  Peer          V      AS  MsgRcvd  MsgSent  OutQ  Up/Down      State Pre
fRcv
10.255.12.1    4      65001    42      44      0 00:39:08 Established
1
10.255.23.3    4      65000    53      57      0 00:50:42 Established
1
[H2]

```

4. Cấu hình R3 kết nối đến loopback0 của O4 thông qua static route ,quảng bá static route đó vào iBGP

R3 :

```

bgp 65000
peer 10.255.23.2 as-number 65000
#
ipv4-family unicast
undo synchronization
network 10.255.4.0 255.255.255.255
peer 10.255.23.2 enable
#
ospf 1 router-id 10.255.3.3
area 0.0.0.0
network 10.255.3.3 0.0.0.0
network 10.255.23.0 0.0.0.255
#
ip route-static 10.255.1.1 255.255.255.255 10.255.23.2
ip route-static 10.255.4.0 255.255.255.255 10.255.34.4
ip route-static 10.255.4.4 255.255.255.255 10.255.34.4

```

5. O4 kết nối đến Loopback0 của R1 thông qua Static Route và kết nối H1 và O4 thông nhau

H1

```

#
ip route-static 10.255.4.4 255.255.255.255 10.255.12.2
ip route-static 10.255.23.0 255.255.255.0 10.255.12.2
ip route-static 10.255.34.0 255.255.255.0 10.255.12.2

```

H2

```

#
ip route-static 10.255.1.1 255.255.255.255 10.255.12.1
ip route-static 10.255.4.4 255.255.255.255 10.255.23.3
ip route-static 10.255.34.0 255.255.255.0 10.255.23.3
#

```

H3

```

#
ip route-static 10.255.1.1 255.255.255.255 10.255.23.2
ip route-static 10.255.4.0 255.255.255.255 10.255.34.4
ip route-static 10.255.4.4 255.255.255.255 10.255.34.4

```

O4 :

```

#
ip route-static 10.255.1.1 255.255.255.255 10.255.34.3
ip route-static 10.255.3.3 255.255.255.255 10.255.34.3
ip route-static 10.255.12.0 255.255.255.0 10.255.34.3
ip route-static 10.255.23.0 255.255.255.0 10.255.34.3
#

```

KQ ping :

trên H1 thực hiện ping loopback0 của H1 qua loopback0 của O4

```
<H1>system-view
Enter system view, return user view with Ctrl+Z.
[H1]ping -a 10.255.1.1 10.255.4.4
  PING 10.255.4.4: 56 data bytes, press CTRL_C to break
    Reply from 10.255.4.4: bytes=56 Sequence=1 ttl=253 time=60 ms
    Reply from 10.255.4.4: bytes=56 Sequence=2 ttl=253 time=50 ms
    Reply from 10.255.4.4: bytes=56 Sequence=3 ttl=253 time=40 ms
    Reply from 10.255.4.4: bytes=56 Sequence=4 ttl=253 time=30 ms
    Reply from 10.255.4.4: bytes=56 Sequence=5 ttl=253 time=30 ms

  --- 10.255.4.4 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 30/42/60 ms

[H1]
```

```
[H1]
[H1]ping 10.255.4.4
  PING 10.255.4.4: 56 data bytes, press CTRL_C to break
    Reply from 10.255.4.4: bytes=56 Sequence=1 ttl=253 time=40 ms
    Reply from 10.255.4.4: bytes=56 Sequence=2 ttl=253 time=40 ms
    Reply from 10.255.4.4: bytes=56 Sequence=3 ttl=253 time=30 ms
    Reply from 10.255.4.4: bytes=56 Sequence=4 ttl=253 time=40 ms
    Reply from 10.255.4.4: bytes=56 Sequence=5 ttl=253 time=50 ms

  --- 10.255.4.4 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 30/40/50 ms

[H1]
```


Trên O4 thực hiện ping loopback0 của O4 qua loopback0 của H1

```
[O4]
[O4] ping -a 10.255.4.4 10.255.1.1
  PING 10.255.1.1: 56 data bytes, press CTRL_C to break
    Reply from 10.255.1.1: bytes=56 Sequence=1 ttl=253 time=30 ms
    Reply from 10.255.1.1: bytes=56 Sequence=2 ttl=253 time=70 ms
    Reply from 10.255.1.1: bytes=56 Sequence=3 ttl=253 time=60 ms
    Reply from 10.255.1.1: bytes=56 Sequence=4 ttl=253 time=30 ms
    Reply from 10.255.1.1: bytes=56 Sequence=5 ttl=253 time=30 ms

--- 10.255.1.1 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
 round-trip min/avg/max = 30/44/70 ms

[O4]
```

```
[O4] ping 10.255.1.1
  PING 10.255.1.1: 56 data bytes, press CTRL_C to break
    Reply from 10.255.1.1: bytes=56 Sequence=1 ttl=253 time=50 ms
    Reply from 10.255.1.1: bytes=56 Sequence=2 ttl=253 time=40 ms
    Reply from 10.255.1.1: bytes=56 Sequence=3 ttl=253 time=80 ms
    Reply from 10.255.1.1: bytes=56 Sequence=4 ttl=253 time=40 ms
    Reply from 10.255.1.1: bytes=56 Sequence=5 ttl=253 time=50 ms

--- 10.255.1.1 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
 round-trip min/avg/max = 40/52/80 ms

[O4]
```