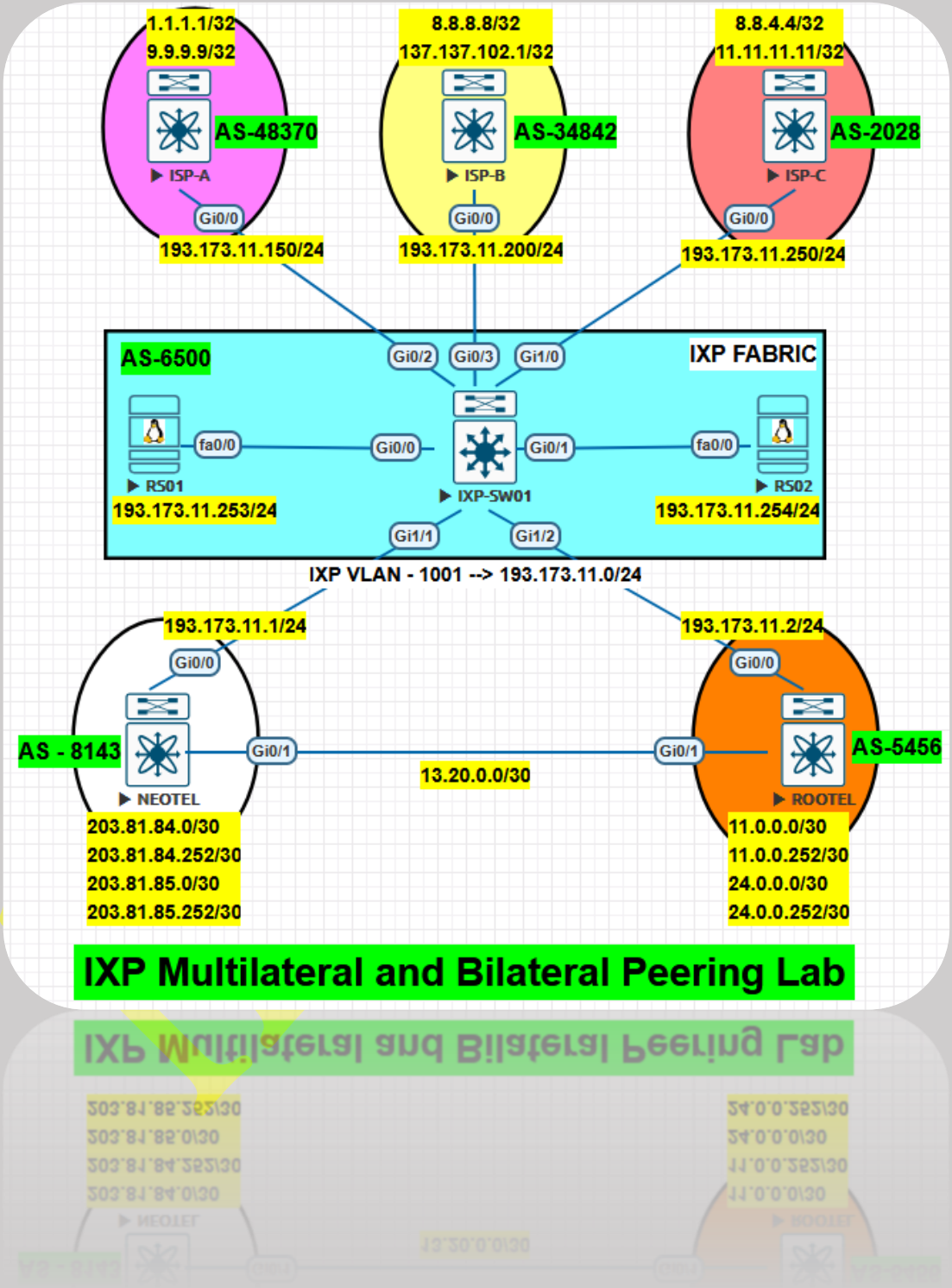
IXP Multilateral and Bilateral Peering Scenario



Lab Requirements

1. **NEOTEL** peers with ISPs A, B, and C using **IXP Multilateral peering** via route servers.
2. **NEOTEL** also peers with **ROOTEL** using two separate peerings:

a. A **private direct peering over dedicated fiber**, and
b. A **Bilateral peering** on the IXP fabric.

3. **ROOTEL** also peers with ISPs A, B, and C using IXP multilateral peering.

Multilateral Peering

IXP–SW01

```
vlan 1001
name MULTILATERAL–IXP
!
interface range gigabitEthernet 0/0–3,gi1/0–2
switchport mode access
switchport access vlan 1001
!
```

Route Server (RS01)

```
router bgp 6500
 bgp router–id 193.173.11.253
 neighbor 193.173.11.1 remote–as 8143
 neighbor 193.173.11.1 password ipx
 neighbor 193.173.11.1 timers 30 90
 neighbor 193.173.11.2 remote–as 5456
 neighbor 193.173.11.2 password ipx
 neighbor 193.173.11.2 timers 30 90
 neighbor 193.173.11.150 remote–as 48370
 neighbor 193.173.11.150 password ipx
```

neighbor 193.173.11.150 timers 30 90

neighbor 193.173.11.200 remote-as 34842

neighbor 193.173.11.200 password ipx

neighbor 193.173.11.200 timers 30 90

neighbor 193.173.11.250 remote-as 2028

neighbor 193.173.11.250 password ipx

neighbor 193.173.11.250 timers 30 90

!

Route Server (RS02)

router bgp 6500

bgp router-id 193.173.11.254

neighbor 193.173.11.1 remote-as 8143

neighbor 193.173.11.1 password ipx

neighbor 193.173.11.1 timers 30 90

neighbor 193.173.11.2 remote-as 5456

neighbor 193.173.11.2 password ipx

neighbor 193.173.11.2 timers 30 90

neighbor 193.173.11.150 remote-as 48370

neighbor 193.173.11.150 password ipx

neighbor 193.173.11.150 timers 30 90

neighbor 193.173.11.200 remote-as 34842

neighbor 193.173.11.200 password ipx

neighbor 193.173.11.200 timers 30 90

neighbor 193.173.11.250 remote-as 2028

```
 neighbor 193.173.11.250 password ipx
 neighbor 193.173.11.250 timers 30 90
!
```

ISP-A

```
router bgp 48370
 bgp router-id 193.173.11.150
 network 1.1.1.1 mask 255.255.255.255
 network 9.9.9.9 mask 255.255.255.255
 neighbor 193.173.11.253 remote-as 6500
 neighbor 193.173.11.253 password ipx
 neighbor 193.173.11.253 timers 30 90
 neighbor 193.173.11.254 remote-as 6500
 neighbor 193.173.11.254 password ipx
 neighbor 193.173.11.254 timers 30 90
!
```

ISP-B

```
router bgp 34842
 bgp router-id 193.173.11.200
 network 8.8.8.8 mask 255.255.255.255
 network 137.137.102.1 mask 255.255.255.255
 neighbor 193.173.11.253 remote-as 6500
 neighbor 193.173.11.253 password ipx
 neighbor 193.173.11.253 timers 30 90
 neighbor 193.173.11.254 remote-as 6500
```

neighbor 193.173.11.254 password ipx

neighbor 193.173.11.254 timers 30 90

!

ISP-C

router bgp 2028

bgp router-id 193.173.11.250

network 8.8.4.4 mask 255.255.255.255

network 11.11.11.11 mask 255.255.255.255

neighbor 193.173.11.253 remote-as 6500

neighbor 193.173.11.253 password ipx

neighbor 193.173.11.253 timers 30 90

neighbor 193.173.11.254 remote-as 6500

neighbor 193.173.11.254 password ipx

neighbor 193.173.11.254 timers 30 90

!

ROOTEL

router bgp 5456

bgp router-id 193.173.11.2

network 11.0.0.0 mask 255.255.255.252

network 11.0.0.252 mask 255.255.255.252

network 24.0.0.0 mask 255.255.255.252

network 24.0.0.252 mask 255.255.255.252

neighbor 193.173.11.253 remote-as 6500

neighbor 193.173.11.253 password ipx

neighbor 193.173.11.253 timers 30 90

neighbor 193.173.11.254 remote–as 6500

neighbor 193.173.11.254 password ipx

neighbor 193.173.11.254 timers 30 90

!

NEOTEL

*Peering with ISPs A, B, and C using **IXP Multilateral peering** via route servers.*

router bgp 8143

bgp router–id 193.173.11.1

network 203.81.84.0 mask 255.255.255.252

network 203.81.84.252 mask 255.255.255.252

network 203.81.85.0 mask 255.255.255.252

network 203.81.85.252 mask 255.255.255.252

neighbor 193.173.11.253 remote–as 6500

neighbor 193.173.11.253 password ipx

neighbor 193.173.11.253 timers 30 90

neighbor 193.173.11.254 remote–as 6500

neighbor 193.173.11.254 password ipx

neighbor 193.173.11.254 timers 30 90

!

Bilateral Peering with ROOTEL

*A **Bilateral peering** on the IXP fabric.*

NEOTEL

router bgp 8143

neighbor 193.173.11.2 remote–as 5456

neighbor 193.173.11.2 password kolwin!!!!

neighbor 193.173.11.2 timers 30 90

!

ROOTEL

router bgp 5456

neighbor 193.173.11.1 remote–as 8143

neighbor 193.173.11.1 password kolwin!!!!

neighbor 193.173.11.1 timers 30 90

!

A private direct peering over dedicated fiber.

NEOTEL

router bgp 8143

neighbor 13.20.0.2 remote–as 5456

neighbor 13.20.0.2 password backup_link

neighbor 13.20.0.2 timers 30 90

!

ROOTEL

router bgp 5456

neighbor 13.20.0.1 remote–as 8143

neighbor 13.20.0.1 password backup_link

neighbor 13.20.0.1 timers 30 90

!

Verification

RS01

```
RS01#sh ip bgp summary | be Nei
Neighbor        V           AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
193.173.11.1    4         8143     155     112       47    0    0 00:46:30        8
193.173.11.2    4         5456     158     108       47    0    0 00:46:36        8
193.173.11.150  4        48370     154     111       47    0    0 00:46:27        2
193.173.11.200  4        34842     155     112       47    0    0 00:46:32        2
193.173.11.250  4         2028     155     111       47    0    0 00:46:23        2
```

RS02

```
RS02#sh ip bgp summary | be Nei
Neighbor        V           AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
193.173.11.1    4         8143     157     113       83    0    0 00:47:27        8
193.173.11.2    4         5456     158     114       83    0    0 00:47:33        8
193.173.11.150  4        48370     156     115       83    0    0 00:47:37        2
193.173.11.200  4        34842     156     113       83    0    0 00:47:24        2
193.173.11.250  4         2028     156     112       83    0    0 00:47:28        2
```

NEOTEL

```
NEOTEL#sh ip bgp summary | be Nei
Neighbor        V           AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
13.20.0.2       4         5456     387     395      105    0    0 02:46:16       10
193.173.11.2    4         5456     161     160      105    0    0 01:08:40       10
193.173.11.253  4         6500     116     160      105    0    0 01:08:38       10
193.173.11.254  4         6500     115     159      105    0    0 01:08:37       10
```

```
      1.0.0.0/32 is subnetted, 1 subnets
B        1.1.1.1 [20/0] via 193.173.11.150, 01:11:16
      8.0.0.0/32 is subnetted, 2 subnets
B        8.8.4.4 [20/0] via 193.173.11.250, 01:11:16
B        8.8.8.8 [20/0] via 193.173.11.200, 01:11:16
      9.0.0.0/32 is subnetted, 1 subnets
B        9.9.9.9 [20/0] via 193.173.11.150, 01:11:16
      11.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
B        11.0.0.0/30 [20/0] via 13.20.0.2, 01:26:32
B        11.0.0.252/30 [20/0] via 13.20.0.2, 01:26:32
B        11.11.11.11/32 [20/0] via 193.173.11.250, 01:11:16
      24.0.0.0/30 is subnetted, 2 subnets
B        24.0.0.0 [20/0] via 13.20.0.2, 01:26:32
B        24.0.0.252 [20/0] via 13.20.0.2, 01:26:32
      137.137.0.0/32 is subnetted, 1 subnets
B        137.137.102.1 [20/0] via 193.173.11.200, 01:11:16
NEOTEL#
```

```
     Network          Next Hop            Metric LocPrf Weight Path
 *   1.1.1.1/32       193.173.11.2                           0 5456 6500 48370 i
 *                    13.20.0.2                              0 5456 6500 48370 i
 *                    193.173.11.150                         0 6500 48370 i
 *>                   193.173.11.150                         0 6500 48370 i
 *   8.8.4.4/32       193.173.11.2                           0 5456 6500 2028 i
 *                    13.20.0.2                              0 5456 6500 2028 i
 *                    193.173.11.250                         0 6500 2028 i
 *>                   193.173.11.250                         0 6500 2028 i
 *   8.8.8.8/32       193.173.11.200                         0 6500 34842 i
 *>                   193.173.11.200                         0 6500 34842 i
 *                    193.173.11.2                           0 5456 6500 34842 i
 *                    13.20.0.2                              0 5456 6500 34842 i
 *   9.9.9.9/32       193.173.11.2                           0 5456 6500 48370 i
 *                    13.20.0.2                              0 5456 6500 48370 i
 *                    193.173.11.150                         0 6500 48370 i
 *>                   193.173.11.150                         0 6500 48370 i
 *   11.0.0.0/30      193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2             0             0 5456 i
 *>                   13.20.0.2                0             0 5456 i
 *   11.0.0.252/30    193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2             0             0 5456 i
 *>                   13.20.0.2                0             0 5456 i
 *   11.11.11.11/32   193.173.11.2                           0 5456 6500 2028 i
 *                    13.20.0.2                              0 5456 6500 2028 i
 *                    193.173.11.250                         0 6500 2028 i
 *>                   193.173.11.250                         0 6500 2028 i
 *   24.0.0.0/30      193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2             0             0 5456 i
 *>                   13.20.0.2                0             0 5456 i
 *   24.0.0.252/30    193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2                           0 6500 5456 i
 *                    193.173.11.2             0             0 5456 i
 *>                   13.20.0.2                0             0 5456 i
 *   137.137.102.1/32 193.173.11.200                         0 6500 34842 i
 *>                   193.173.11.200                         0 6500 34842 i
 *                    193.173.11.2                           0 5456 6500 34842 i
 *                    13.20.0.2                              0 5456 6500 34842 i
 *>  203.81.84.0/30   0.0.0.0                  0         32768 i
 *>  203.81.84.252/30 0.0.0.0                  0         32768 i
 *>  203.81.85.0/30   0.0.0.0                  0         32768 i
 *>  203.81.85.252/30 0.0.0.0                  0         32768 i
NEOTEL#
```

Ko Lwin (Network)