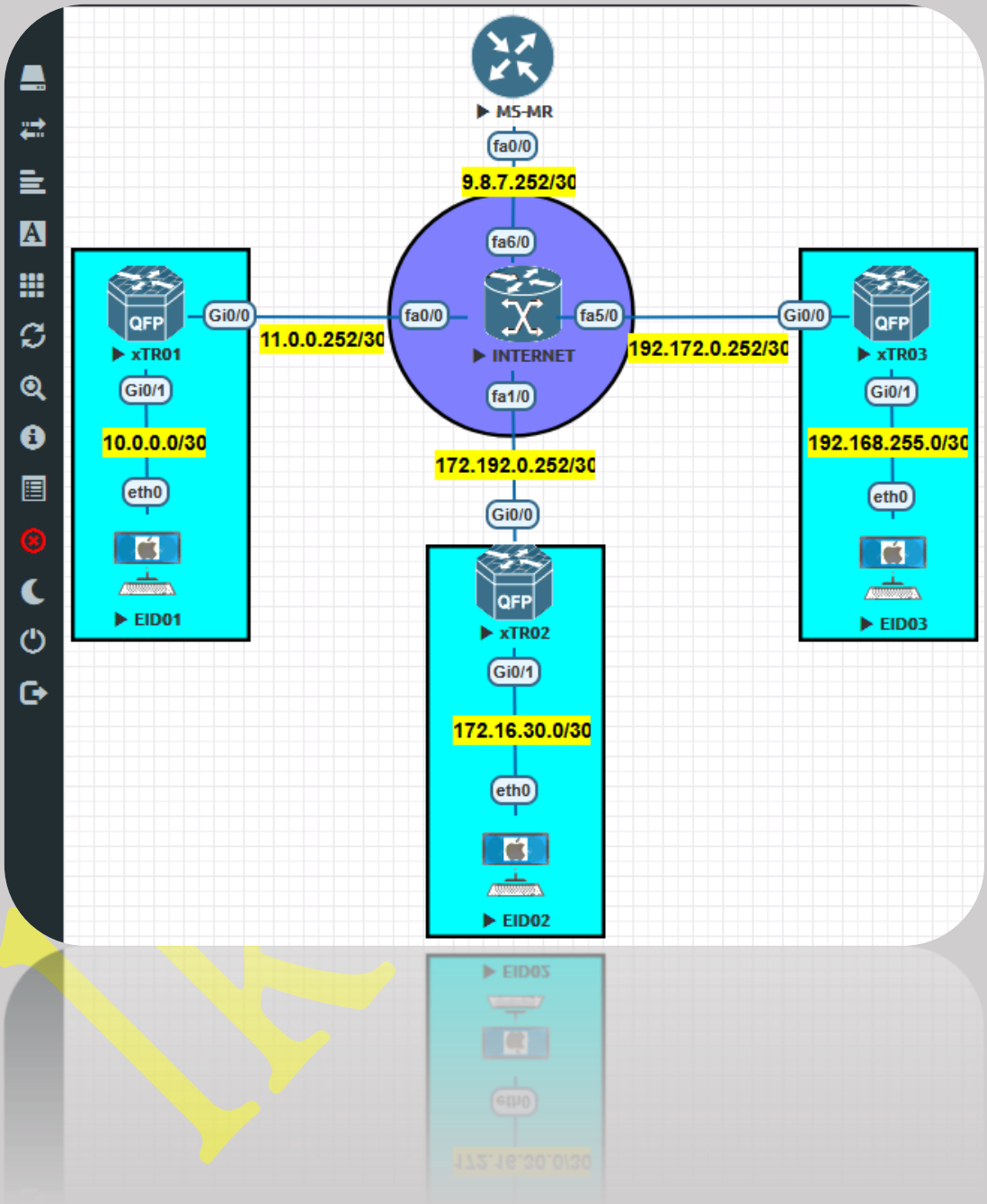
Locator/ID Separation Protocol (LISP)



Lab Requirements

1. Each EID endpoint must be able to communicate with other EID endpoints through the Internet via *LISP encapsulation*.
2. Direct IP reachability between EID subnets without LISP is not required; communication must occur *only after successful EID-to-RLOC mapping resolution and LISP encapsulation over the underlay Internet*.

MS/MR SERVER

```
ip route 0.0.0.0 0.0.0.0 9.8.7.253
!
router lisp
 site CENTER
  authentication-key CENTER
  eid-prefix 172.16.30.0/30
  exit
 !
 site LEFT
  authentication-key LEFT
  eid-prefix 10.0.0.0/30
  exit
 !
 site RIGHT
  authentication-key RIGHT
  eid-prefix 192.168.255.0/30
  exit
 !
 ipv4 map-server
 ipv4 map-resolver
 exit
!
```

xTR01

```
ip route 0.0.0.0 0.0.0.0 11.0.0.253
!
router lisp
 database-mapping 10.0.0.0/30 11.0.0.254 priority 1 weight 100
 ipv4 itr map-resolver 9.8.7.254
 ipv4 itr
 ipv4 etr map-server 9.8.7.254 key LEFT
 ipv4 etr
 exit
!
```

xTR02

```
ip route 0.0.0.0 0.0.0.0 172.192.0.253
!
router lisp
 database-mapping 172.16.30.0/30 172.192.0.254 priority 1 weight 100
 ipv4 itr map-resolver 9.8.7.254
 ipv4 itr
 ipv4 etr map-server 9.8.7.254 key CENTER
 ipv4 etr
 exit
!
```

xTR03

```
ip route 0.0.0.0 0.0.0.0 192.172.0.253
```

!

router **lisp**

database-mapping **192.168.255.0/30** **192.172.0.254** priority 1 weight 100

ipv4 itr map-resolver **9.8.7.254**

ipv4 itr

ipv4 etr map-server **9.8.7.254** key **RIGHT**

ipv4 etr

exit

!

Verification

MS/MR SERVER

```
MS-MR#sh lisp site
LISP Site Registration Information

Site Name      Last      Up   Who Last            Inst     EID Prefix
               Register       Registered          ID
CENTER         00:00:47  yes  172.192.0.254                172.16.30.0/30
LEFT           00:00:07  yes  11.0.0.254                   10.0.0.0/30
RIGHT          00:00:39  yes  192.172.0.254                192.168.255.0/30
MS-MR#
```

xTR01

```
xTR01#sh ip lisp map-cache
LISP IPv4 Mapping Cache for EID-table default (IID 0), 3 entries

0.0.0.0/0, uptime: 00:22:38, expires: never, via static send map-request
  Negative cache entry, action: send-map-request
172.16.30.0/30, uptime: 00:20:34, expires: 23:39:25, via map-reply, complete
  Locator        Uptime    State      Pri/Wgt
  172.192.0.254  00:20:34  up           1/100
192.168.255.0/30, uptime: 00:01:04, expires: 23:58:55, via map-reply, complete
  Locator        Uptime    State      Pri/Wgt
  192.172.0.254  00:01:04  up           1/100
```

xTR02

```
xTR02#sh ip lisp map-cache
LISP IPv4 Mapping Cache for EID-table default (IID 0), 3 entries

0.0.0.0/0, uptime: 00:23:28, expires: never, via static send map-request
  Negative cache entry, action: send-map-request
10.0.0.0/30, uptime: 00:21:26, expires: 23:38:34, via map-reply, complete
  Locator      Uptime    State      Pri/Wgt
  11.0.0.254   00:21:26  up           1/100
192.168.255.0/30, uptime: 00:01:26, expires: 23:58:33, via map-reply, complete
  Locator        Uptime    State      Pri/Wgt
  192.172.0.254  00:01:26  up           1/100
```

xTR03

```
xTR03#sh ip lisp map-cache
LISP IPv4 Mapping Cache for EID-table default (IID 0), 3 entries

0.0.0.0/0, uptime: 00:24:13, expires: never, via static send map-request
  Negative cache entry, action: send-map-request
10.0.0.0/30, uptime: 00:02:37, expires: 23:57:22, via map-reply, complete
  Locator      Uptime    State      Pri/Wgt
  11.0.0.254   00:02:37  up           1/100
172.16.30.0/30, uptime: 00:02:10, expires: 23:57:49, via map-reply, complete
  Locator        Uptime    State      Pri/Wgt
  172.192.0.254  00:02:10  up           1/100
```

EID01

```
EID01> ping 172.16.30.1

84 bytes from 172.16.30.1 icmp_seq=1 ttl=61 time=19.349 ms
84 bytes from 172.16.30.1 icmp_seq=2 ttl=61 time=16.501 ms
84 bytes from 172.16.30.1 icmp_seq=3 ttl=61 time=21.414 ms
84 bytes from 172.16.30.1 icmp_seq=4 ttl=61 time=16.010 ms
84 bytes from 172.16.30.1 icmp_seq=5 ttl=61 time=11.464 ms

EID01> ping 192.168.255.1

84 bytes from 192.168.255.1 icmp_seq=1 ttl=61 time=21.644 ms
84 bytes from 192.168.255.1 icmp_seq=2 ttl=61 time=20.571 ms
84 bytes from 192.168.255.1 icmp_seq=3 ttl=61 time=13.526 ms
84 bytes from 192.168.255.1 icmp_seq=4 ttl=61 time=12.157 ms
84 bytes from 192.168.255.1 icmp_seq=5 ttl=61 time=13.452 ms
```

EID02

```
EID02> ping 10.0.0.1

84 bytes from 10.0.0.1 icmp_seq=1 ttl=61 time=13.855 ms
84 bytes from 10.0.0.1 icmp_seq=2 ttl=61 time=18.978 ms
84 bytes from 10.0.0.1 icmp_seq=3 ttl=61 time=20.211 ms
84 bytes from 10.0.0.1 icmp_seq=4 ttl=61 time=11.060 ms
84 bytes from 10.0.0.1 icmp_seq=5 ttl=61 time=15.109 ms

EID02> ping 192.168.255.1

84 bytes from 192.168.255.1 icmp_seq=1 ttl=61 time=19.190 ms
84 bytes from 192.168.255.1 icmp_seq=2 ttl=61 time=21.511 ms
84 bytes from 192.168.255.1 icmp_seq=3 ttl=61 time=12.102 ms
84 bytes from 192.168.255.1 icmp_seq=4 ttl=61 time=19.145 ms
84 bytes from 192.168.255.1 icmp_seq=5 ttl=61 time=11.050 ms
```

EID03

```
EID03> ping 10.0.0.1

84 bytes from 10.0.0.1 icmp_seq=1 ttl=61 time=17.427 ms
84 bytes from 10.0.0.1 icmp_seq=2 ttl=61 time=18.732 ms
84 bytes from 10.0.0.1 icmp_seq=3 ttl=61 time=17.533 ms
84 bytes from 10.0.0.1 icmp_seq=4 ttl=61 time=18.977 ms
84 bytes from 10.0.0.1 icmp_seq=5 ttl=61 time=15.494 ms

EID03> ping 172.16.30.1

84 bytes from 172.16.30.1 icmp_seq=1 ttl=61 time=20.235 ms
84 bytes from 172.16.30.1 icmp_seq=2 ttl=61 time=20.519 ms
84 bytes from 172.16.30.1 icmp_seq=3 ttl=61 time=15.489 ms
84 bytes from 172.16.30.1 icmp_seq=4 ttl=61 time=11.264 ms
84 bytes from 172.16.30.1 icmp_seq=5 ttl=61 time=19.098 ms
```

Ko Lwin (Network)