TH-IX

CONFIGURATION GUIDE

(FOR MEMBER)

THAILAND INTERNET EXCHANGE (THIX) TEAM

NATIONAL TELECOM PCL

TH-IX Configuration Guide (For Member)

Peering LAN Prefix

The IPv4 prefix for the TH-IX peering LAN (61.19.60.0/23) is part of AS4652, and is not supposed to be globally routable. This means the following:

1. Don’t configure "network 61.19.60.0/23" in your router's BGP configuration

2. Don’t redistribute the route, a supernet, or a more specific outside of your AS.

Cisco Configuration Hints

1. Global Config

Cisco IOS/IOS-XE

no cdp run

Cisco IOS-XR

no cdp

Cisco NX-OS

no cdp enable

2. Interface Configuration

ICMP redirects, Proxy ARP and Directed Broadcast are disabled by default in IOS-XR. ICMP redirect messages are disabled by default on the interface except the HSRP (Hot Standby Router Protocol) is configured.

```
no ip redirects
no ip proxy-arp
no ip directed-broadcast
```

Below follows a sample interface configuration for Cisco routers

Cisco IOS

```
interface <Your Interface>
 description Link to TH-IX
 ip address 61.19.6x.y 255.255.254.0
 no ip redirects
 no ip proxy-arp
 ipv6 address 2001:C38:8000:xx:xxxx:1/64
 ipv6 nd ra suppress all
 no shutdown
```

Cisco IOS-XR

```
interface <Your Interface>
 description Link to TH-IX
 ipv4 address 61.19.6x.y 255.255.254.0
 ipv6 address 2001:C38:8000::xx:xxxx:1/64
 ipv6 nd suppress-ra
 no shutdown
```

Cisco NX-OS

```
interface <Your Interface>
  description Link to TH-IX
  no shutdown
  ip address 61.19.6x.y/23
  ipv6 address 2001:C38:8000::xx:xxxx:1/64
  ipv6 nd suppress-ra
  no shutdown
```

3. Route Server Detail

```
rs-bkk-01.thix
ASN: 4652
IPv4: 61.19.60.1
IPv6: 2001:c38:8000::4652:1

rs-ntb-01.thix
ASN: 4652
IPv4: 61.19.61.1
IPv6: 2001:c38:8000::4652:2
```

Below follows a sample configuration for Cisco routers to announce a prefix to the route servers:

Cisco IOS

```
router bgp <Your ASN>
 bgp always-compare-med
 no bgp enforce-first-as      >> (Don't forget!! this command)
 bgp log-neighbor-changes
 neighbor THIX-RS peer-group
 neighbor THIX-RS remote-as 4652
 neighbor 61.19.60.1 peer-group THIX-RS
 neighbor 61.19.60.1 description rs-bkk-01.thix
 neighbor 61.19.61.1 peer-group THIX-RS
 neighbor 61.19.61.1 description rs-ntb-01.thix
 address-family ipv4
  neighbor THIX-RS send-community both
  neighbor THIX-RS soft-reconfiguration inbound
  neighbor THIX-RS route-map TO-RS out
router bgp <Your ASN>
  neighbor THIX-RS-6 peer-group
  neighbor THIX-RS-6 remote-as 4652
  address-family ipv6
   neighbor THIX-RS-6 send-community both
   neighbor THIX-RS-6 soft-reconfiguration inbound
   neighbor THIX-RS-6 route-map TO-RS-6 out
   neighbor 2001:C38:8000::4652:1 peer-group THIX-RS-6
   neighbor 2001:C38:8000::4652:1 description rs-bkk-01.thix
   neighbor 2001:C38:8000::4652:2 peer-group THIX-RS-6
   neighbor 2001:C38:8000::4652:2 description rs-ntb-01.thix

ip prefix-list TO-RS seq 10 permit 192.168.101.0/24

ipv6 prefix-list TO-RS-6 seq 10 permit 2001:DB8:101::/48

route-map TO-RS permit 10
 match ip address prefix-list TO-RS

route-map TO-RS-6 permit 10
 match ipv6 address prefix-list TO-RS-6
```

Cisco IOS-XR

```
router bgp <Your ASN>
 bgp enforce-first-as disable    >> (Don't forget this command)

 neighbor-group THIX-RS
  remote-as 4652
  address-family ipv4 unicast
   send-community-ebgp
   route-policy FROM-RS in
   route-policy TO-RS out
   soft-reconfiguration inbound
```

```
 neighbor-group THIX-RS-6
  remote-as 4652
  address-family ipv6 unicast
   send-community-ebgp
   route-policy FROM-RS in
   route-policy TO-RS out
   soft-reconfiguration inbound

 neighbor 61.19.60.1
  use neighbor-group THIX-RS
  description rs-bkk-01.thix

 neighbor 61.19.61.1
  use neighbor-group THIX-RS
  description rs-ntb-01.thix


prefix-set TO-RS
   192.168.101.0/24
end-set

prefix-set TO-RS-6
   2001:DB8:101::/48
end-set

route-policy TO-RS
   if destination in TO-RS then
     pass
  elseif destination in TO-RS-6 then
     pass
  endif
end-policy

route-policy FROM-RS
   pass
end-policy
```

Cisco NX-OS

```
router bgp <Your ASN>
 no bgp enforce-first-as>> (Don't forget!! this command)
 template peer THIX-RS
  description Neighbor to Route Server TH-IX IPv4
  remove-private-as
  address-family ipv4 unicast
   route-map TO-RS out
   soft-reconfiguration inbound
   send-community both

neighbor 61.19.60.1 remote-as 4652
 inherit peer THIX-RS

neighbor 61.19.61.1 remote-as 4652
 inherit peer THIX-RS
```

```
 template peer THIX-RS-6
  description Neighbor to Route Server TH-IX IPv6
  remove-private-as
  address-family ipv6 unicast
   route-map TO-RS-6 out
   soft-reconfiguration inbound
   send-community both

 neighbor 2001:C38:8000::4652:1 remote-as 4652
  inherit peer THIX-RS-6

 neighbor 2001:C38:8000::4652:2 remote-as 4652
  inherit peer THIX-RS-6

ip prefix-list TO-RS seq 10 permit 192.168.101.0/24
ipv6 prefix-list TO-RS-6 seq 10 permit 2001:DB8:101::/48

route-map TO-RS permit 10
  match ip address prefix-list TO-RS

route-map TO-RS-6 permit 10
  match ipv6 address prefix-list TO-RS-6
```

Cisco Aggregated Links (LACP)

Configure the port-channel as active.

Cisco IOS

```
interface Port-channel<number>
 description THIX Aggregated Link
 ip address 61.19.6x.y 255.255.254.0
 no ip redirects
 no ip proxy-arp
 ipv6 address 2001:C38:8000::xx:xxxx:1/64
 ipv6 nd ra suppress all

interface GigabitEthernet0/0/0
 description Link to THIX Port 1
 no ip address
 channel-group <number> mode active

interface GigabitEthernet0/0/1
 description Link to THIX Port 2
 no ip address
 channel-group <number> mode active
```

Cisco IOS-XR

```
interface Bundle-Ether<number>
 description THIX Aggregated Link
 ipv4 address 61.19.6x.y 255.255.254.0
 ipv6 nd suppress-ra
 ipv6 address 2001:C38:8000::xx:xxxx:1/64

interface TenGigE0/4/0/0
 description Link to THIX Port 1
 bundle id <number> mode active

interface TenGigE0/4/0/0
 description Link to THIX Port 2
 bundle id <number> mode active
```

IPv6 Configuration

To suppress IPv6 router advertisement transmissions on a LAN interface, use these command in an appropriate configuration mode.

Cisco IOS/IOS-XE

```
ipv6 nd ra suppress all
```

Cisco IOS-XR/NX-OS

```
ipv6 nd suppress-ra
```

IPv6 Numbering Scheme

The IPv6 set-up on the THIX ISP peering LAN is as follows:

- The prefix in use is: 2001:c38:8000::/64
- The prefix is sourced from AS4652.

The suffix (‘allocation’) scheme for 16 bits ASNs is as follows:

2001:c38:8000::x:xxxx:n

The suffix (‘allocation’) scheme for 32 bits ASNs is as follows:

2001:c38:8000::xx:xxxx:n

The, "x:xxxx" or “xx:xxxx” is your (zero-padded) AS number in decimals and “n” is a serial number depending on the number of interfaces you are using for IPv6 peerings (starting from 1 for the first interface, 2 for the second interface and so on).

Examples:

TH-IX uses AS4652 (zero-padded: 004652), so its IPv6 peering addresses are:

2001:c38:8000::4652:1/64
2001:c38:8000::4652:2/64

A member with a 16-bit ASN of 64523 would use:

2001:c38:8000::6:4523:1/64
2001:c38:8000::6:4523:2/64

A member with a 32-bit ASN of 195000 would use:

2001:c38:8000::19:5000:1/64
2001:c38:8000::19:5000:2/64