Configure ECMP with IP SLA on FTD Managed by FDM

Contents

Introduction

This document describes how to configure ECMP along with IP SLA on a FTD that is managed by FDM.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- ECMP configuration on Cisco Secure Firewall Threat Defense (FTD)
- IP SLA configuration on Cisco Secure Firewall Threat Defense (FTD)
- Cisco Secure Firewall Device Manager (FDM)

Components Used

The information in this document is based on this software and hardware version:

- Cisco FTD version 7.4.1 (Build 172)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure

that you understand the potential impact of any command.

Background Information

This document describes how to configure Equal-Cost Multi-Path (ECMP) along with Internet Protocol Service Level Agreement (IP SLA) on a Cisco FTD that is managed by Cisco FDM. ECMP allows you to group interfaces together on FTD and load balance traffic across multiple interfaces. IP SLA is a mechanism that monitors end to end connectivity through the exchange of regular packets. Along with ECMP, IP SLA can be implemented in order to ensure availability of the next hop. In this example, ECMP is utilized to distribute packets equally over two Internet Service Provider (ISP) circuits. At the same time, an IP SLA keeps track of connectivity, ensuring a seamless transition to any available circuits in the event of a failure.

Specific requirements for this document include:

- Access to the devices with a user account with administrator privileges
- Cisco Secure Firewall Threat Defense version 7.1 or higher

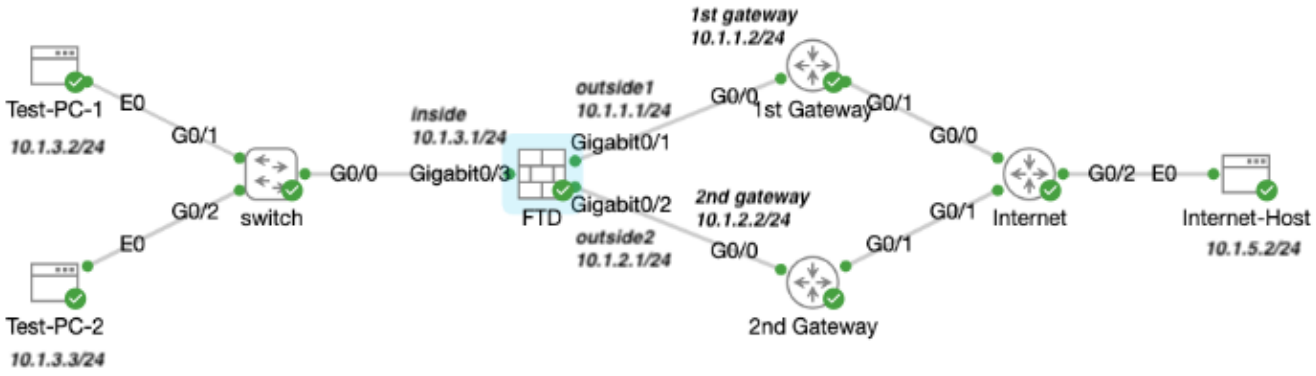
Configure

Network Diagram

In this example, Cisco FTD has two outside interfaces: **outside1** and **outside2** . Each one connects to an ISP gateway, outside1 and outside2 belongs to same ECMP zone named outside.

The traffic from internal network is routed through FTD and get load balanced to the internet through the two ISP.

At the same time, FTD uses IP SLAs in order to monitor connectivity to each ISP Gateway. In case of failure on any of the ISP circuit, FTD failovers to the the other ISP gateway to maintain business continuity.

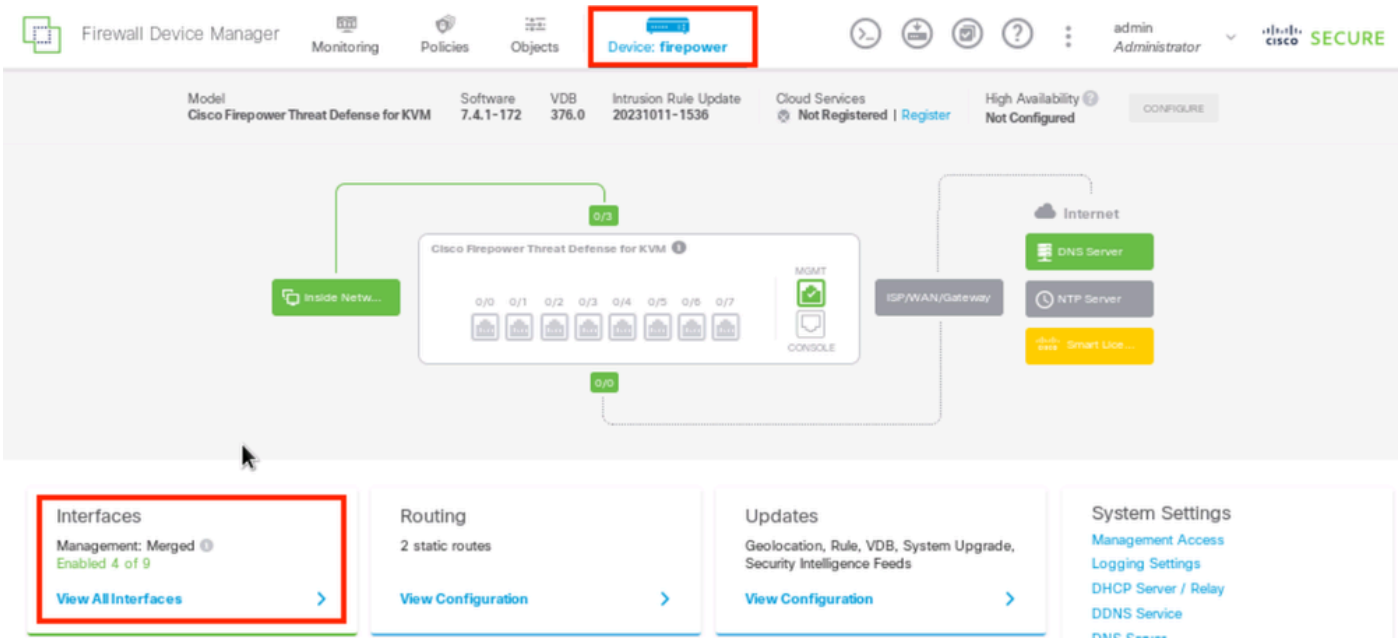


Network Diagram

Configurations

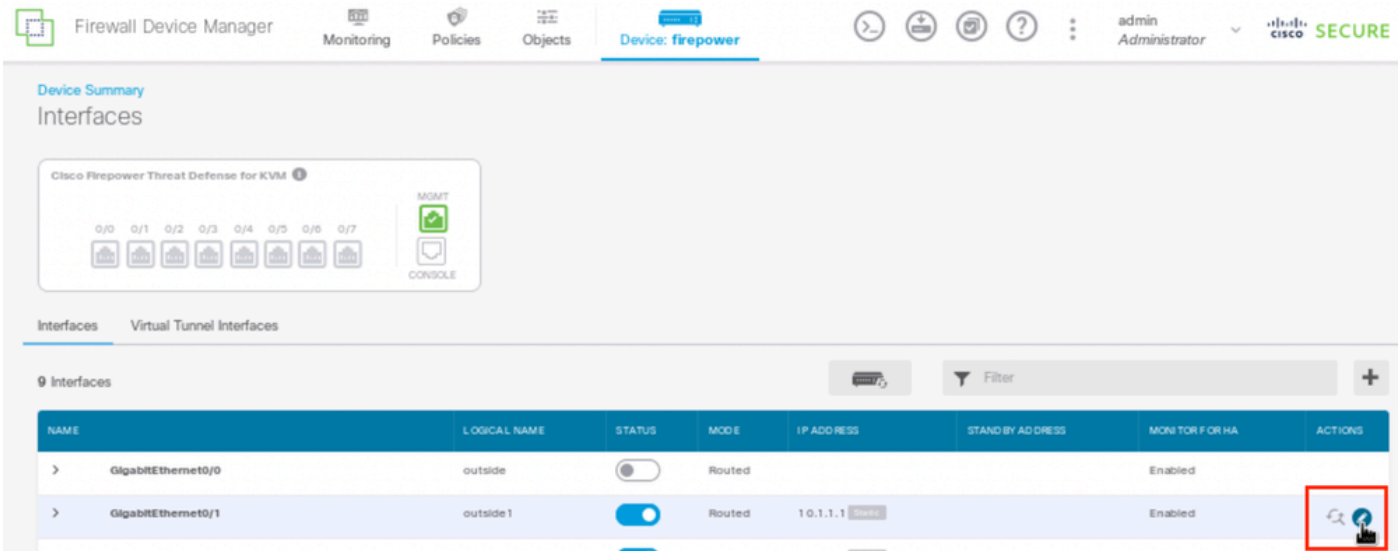
Step 0. Pre-configure Interfaces/Objects

Log into the FDM web GUI, click **Device** , then click the link in the **Interfaces** summary. The **Interfaces** list shows the available interfaces, their names, addresses, and states.



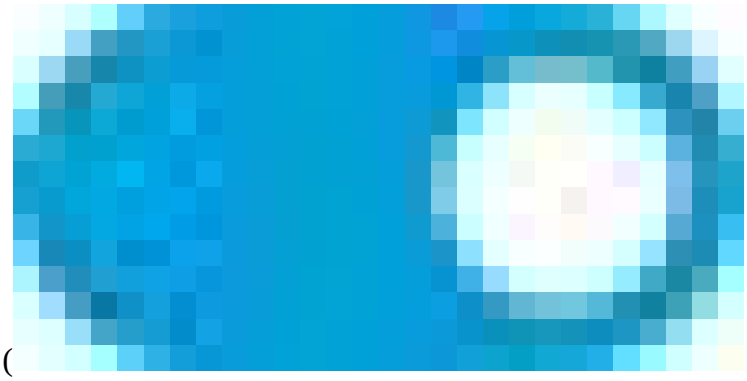
FDM Device Interface

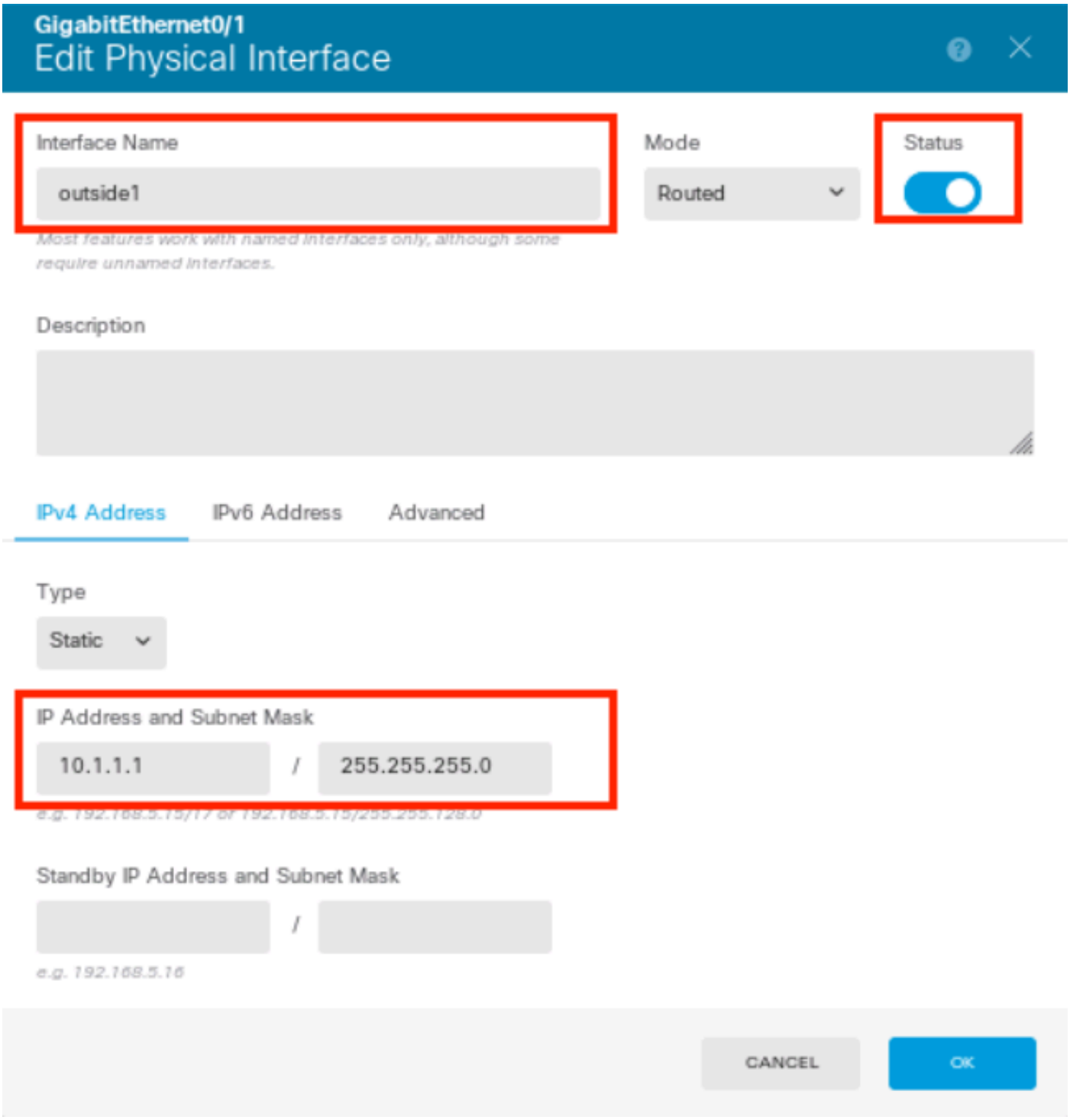
Click the edit icon (
) for the physical interface you want to edit. In this example **GigabitEthernet0/1**.



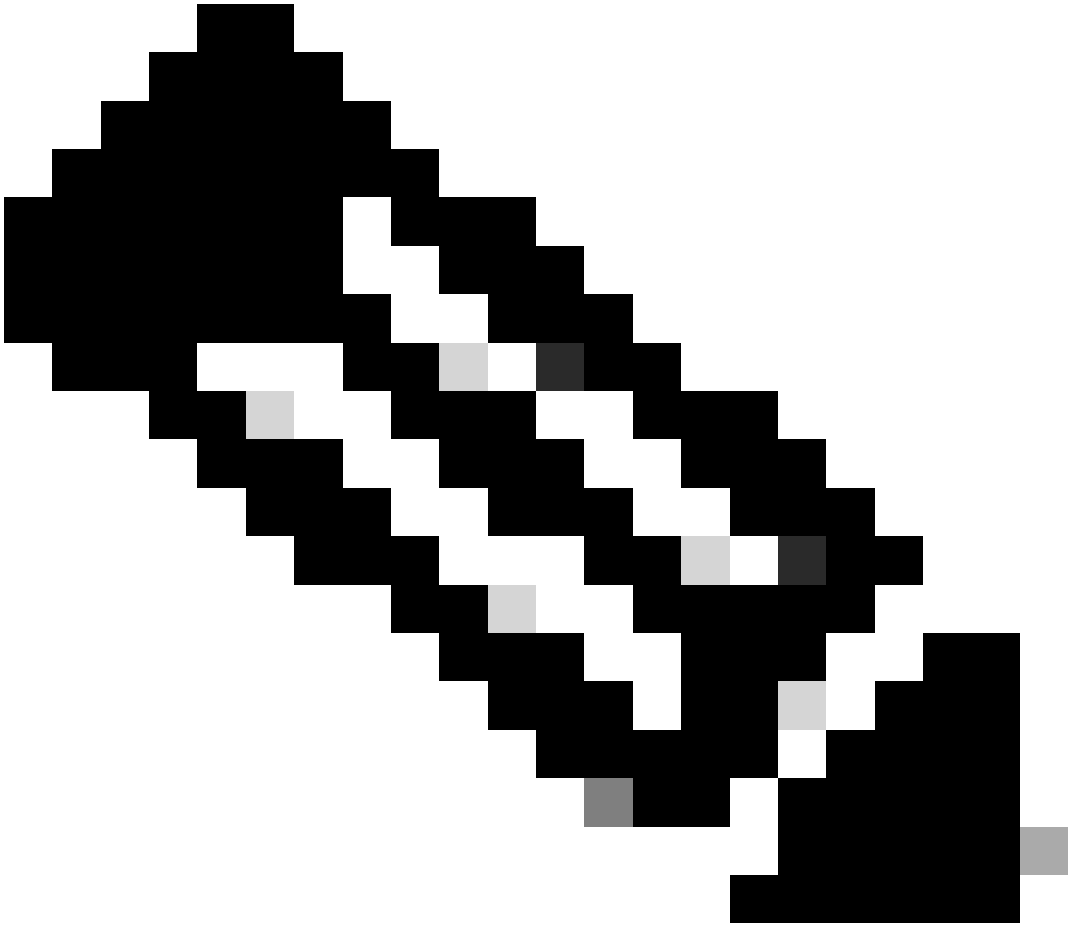
Step 0 Interface Gi0/1

In the **Edit Physical Interface** window:

1. Set the **Interface Name** , in this case **outside1** .
2. Set the **Status** slider to the enabled setting ().
3. Click the **IPv4 Address** tab and configure the IPv4 address, in this case **10.1.1.1/24**.
4. Click **OK**.

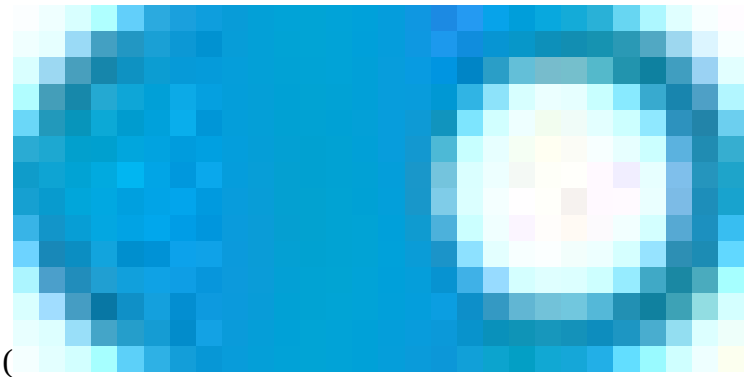


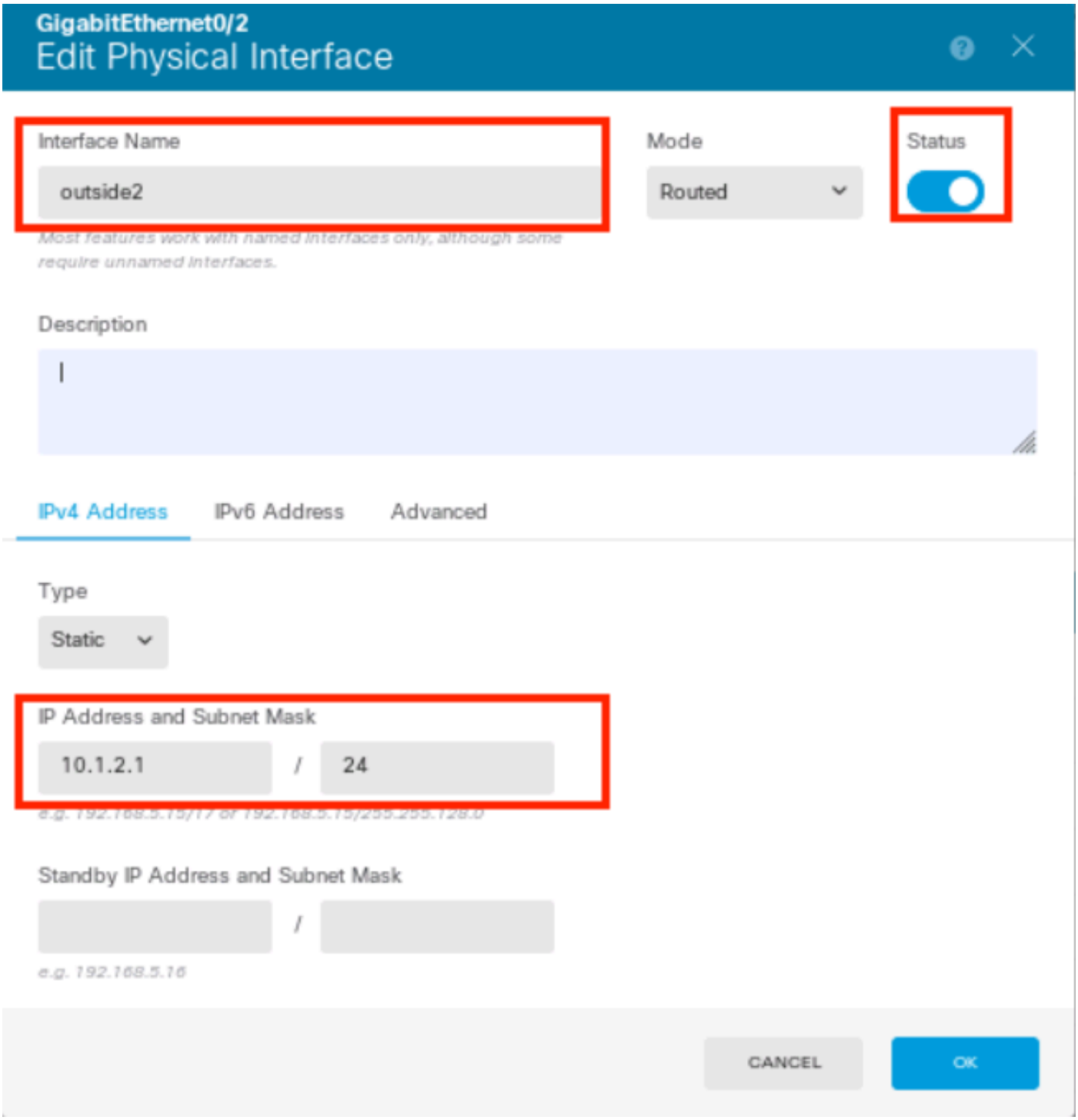
Step 0 Edit Interface Gi0/1



Note: Only routed interfaces can be associated with an ECMP zone.

Repeat the similar steps to configure the interface for the Secondary ISP connection, in this example the physical interface is **GigabitEthernet0/2** . In the **Edit Physical Interface** window:

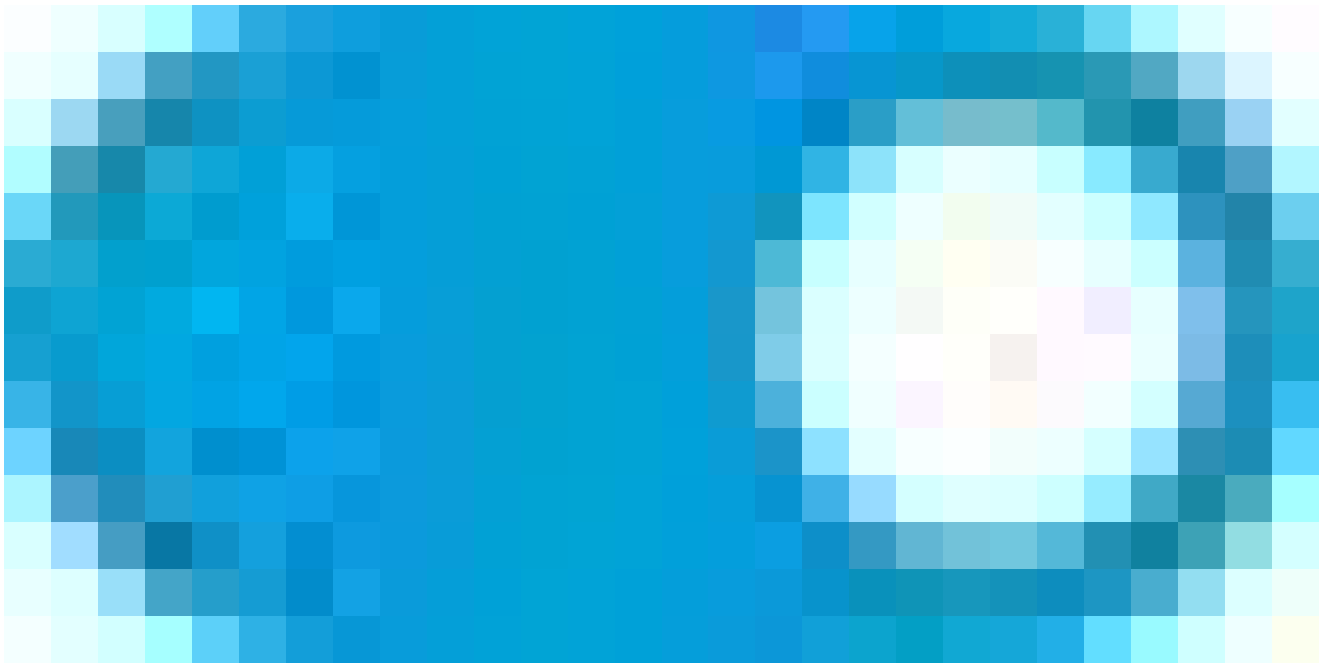
1. Set the **Interface Name** , in this case **outside2**.
2. Set the **Status** slider to the enabled setting ().
3. Click the **IPv4 Address** tab and configure the IPv4 address, in this case **10.1.2.1/24**.
4. Click **OK** .



Step 0 Edit Interface Gi0/2

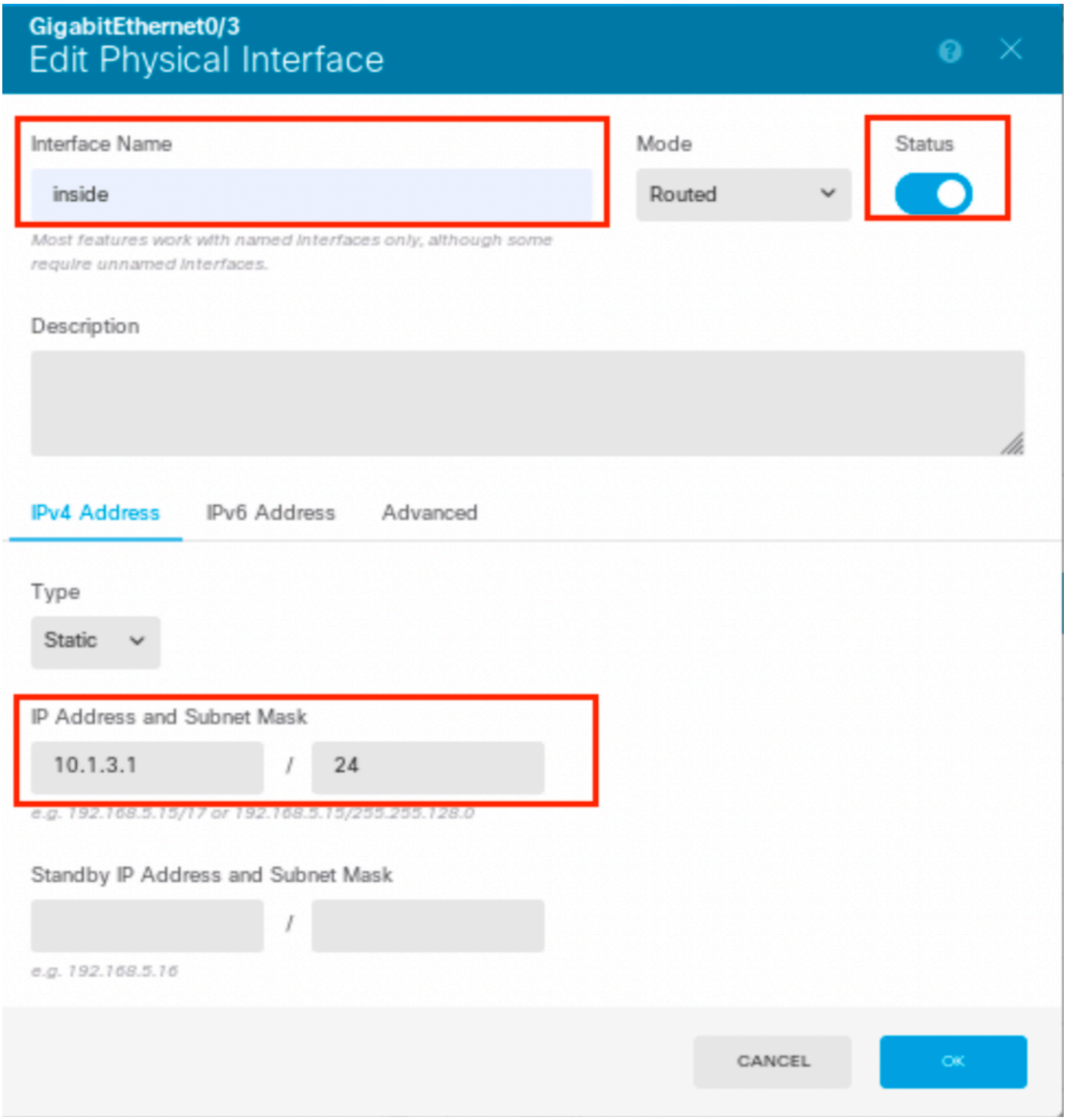
Repeat the similar steps to configure the interface for the inside connection, in this example the physical interface is **GigabitEthernet0/3**. In the **Edit Physical Interface** window:

1. Set the **Interface Name** , in this case **inside** .
2. Set the **Status** slider to the enabled setting (



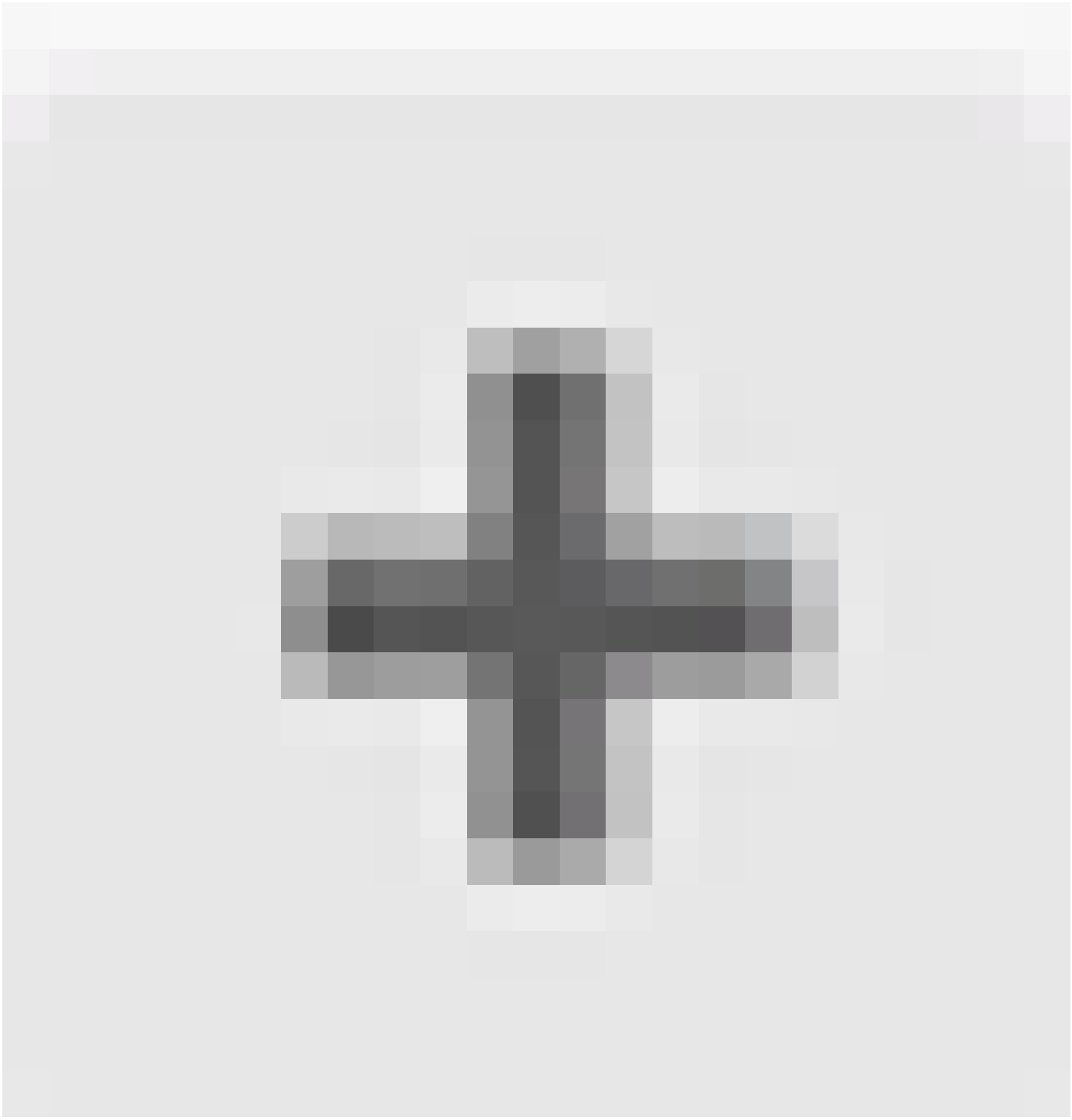
).

3. Click the **IPv4 Address** tab and configure the IPv4 address, in this case **10.1.3.1/24**.
4. Click **OK** .

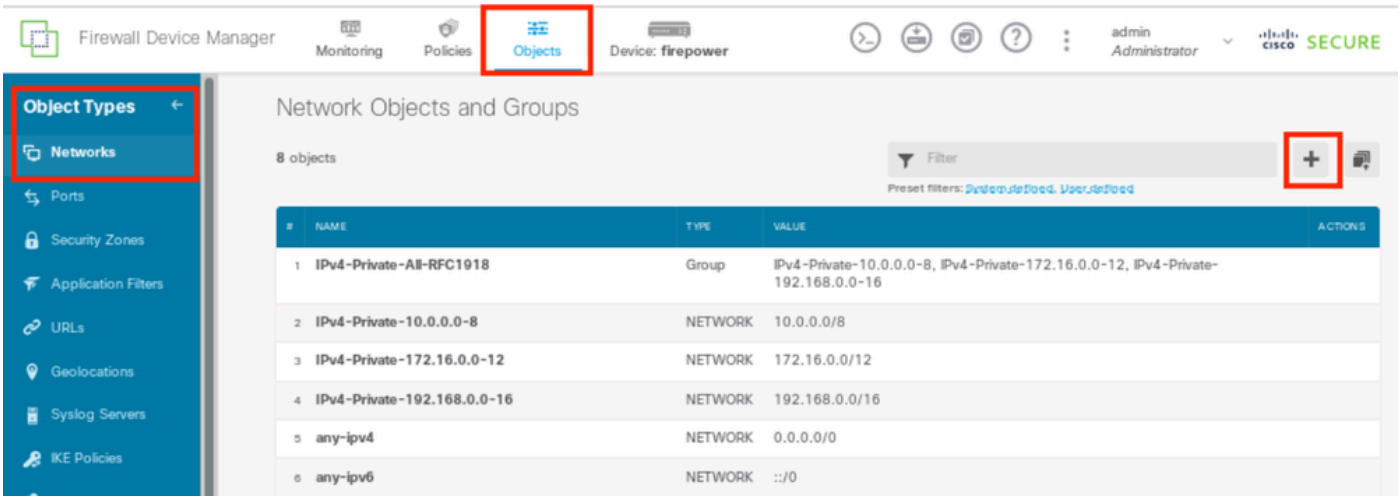


Step 0 Edit Interface Gi0/3

Navigate to **Objects > Object Types > Networks** , click the add icon (



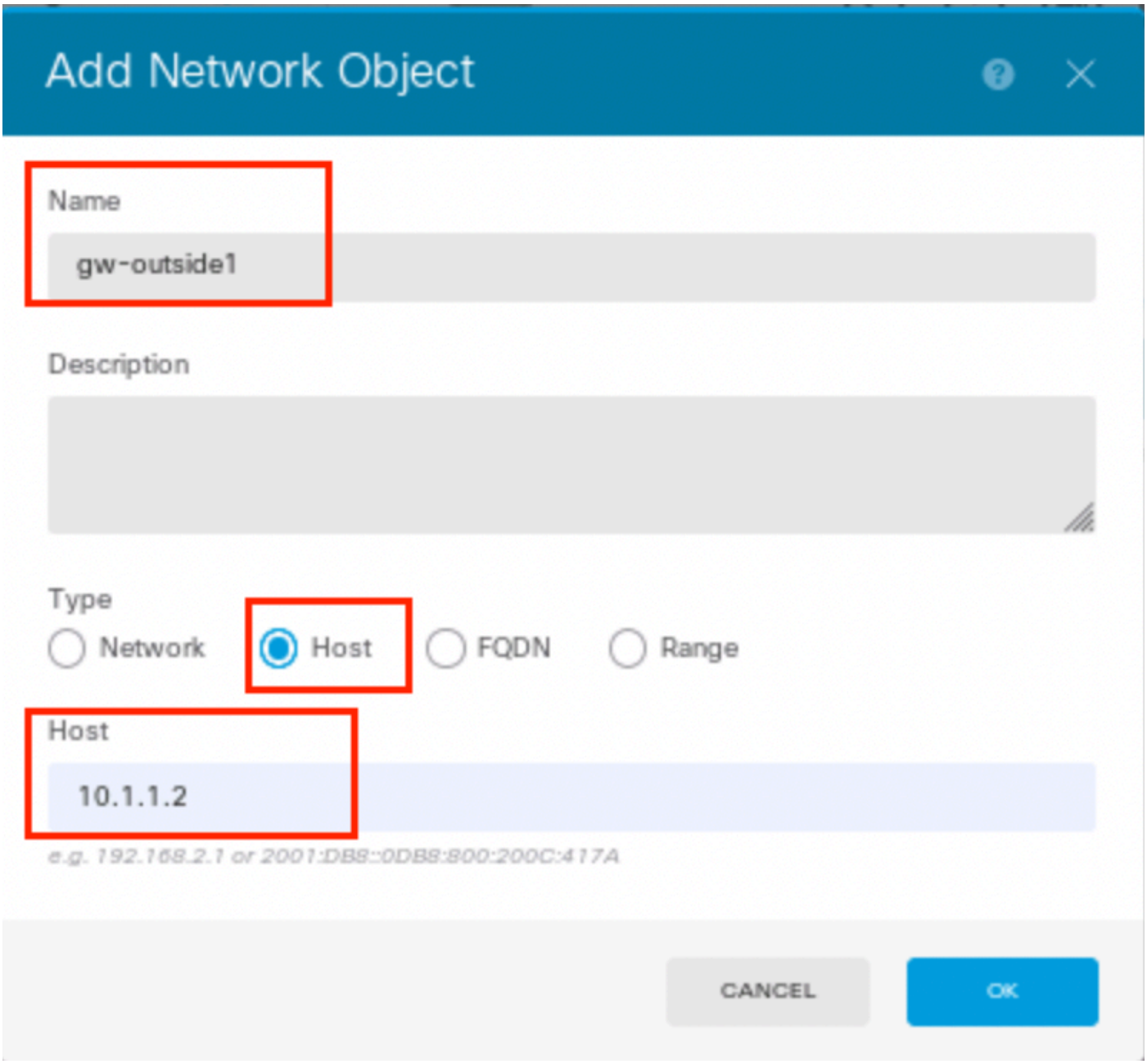
) to add new object.



Step 0 Object1

In the **Add Network Object** window, configure the first ISP gateway:

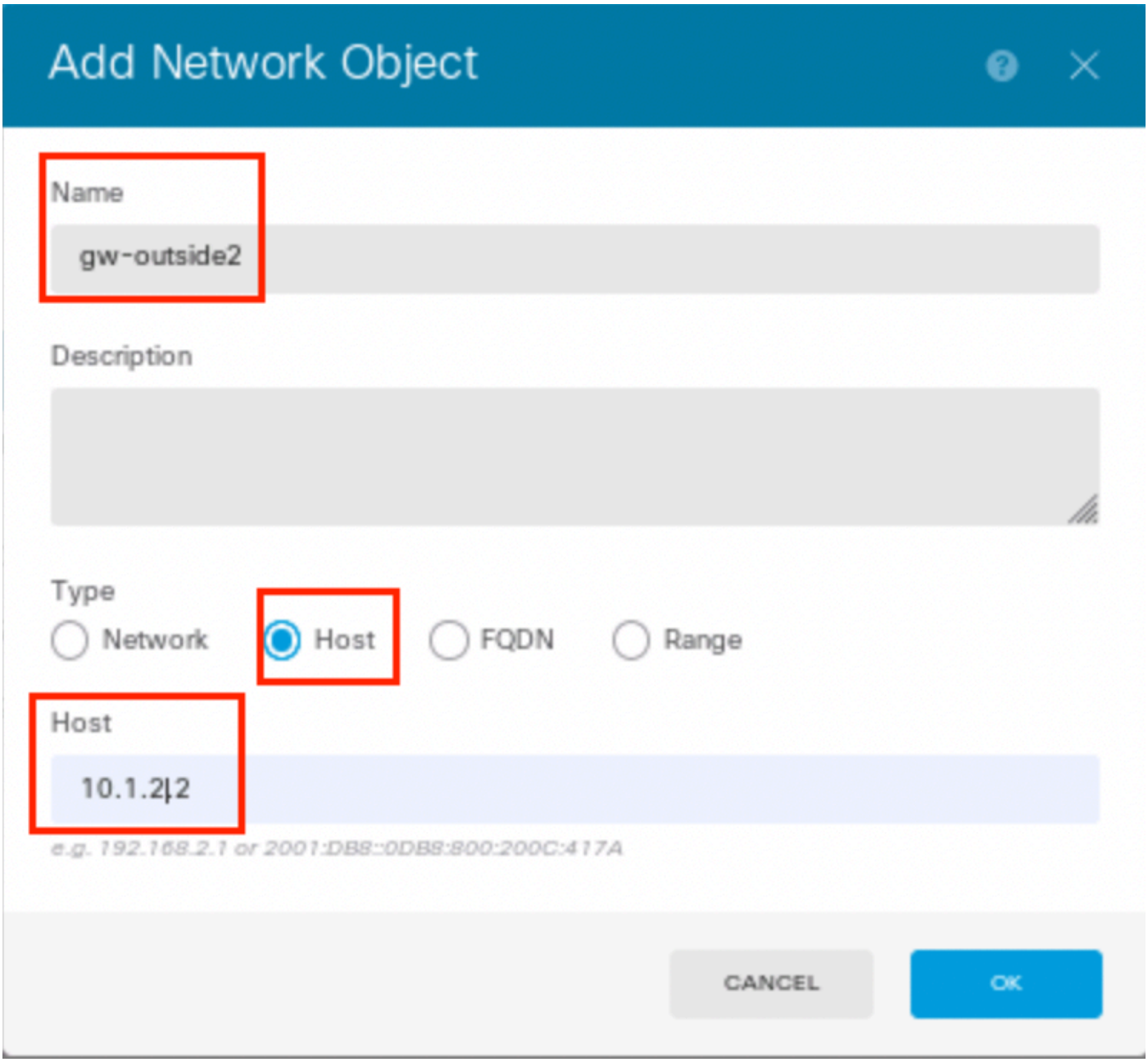
1. Set the **Name** of the object, in this case **gw-outside1**.
2. Select the **Type** of the object, in this case **Host**.
3. Set the IP address of the **Host** , in this case **10.1.1.2**.
4. Click **OK** .



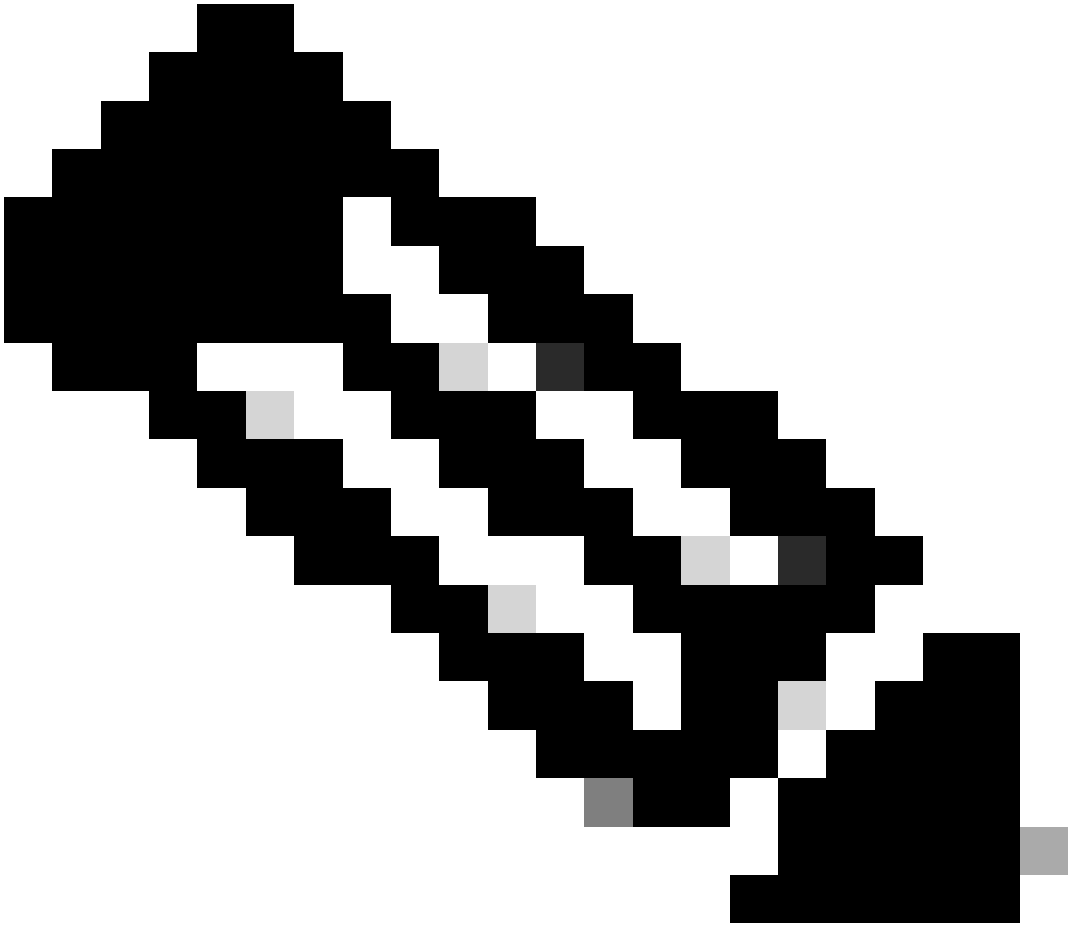
Step 0 Object2

Repeat the similar steps to configure another network object for the second ISP gateway:

1. Set the **Name** of the object, in this case **gw-outside2**.
2. Select the **Type** of the object, in this case **Host**.
3. Set the IP address of the **Host** , in this case **10.1.2.2**.
4. Click **OK** .



Step 0 Object3



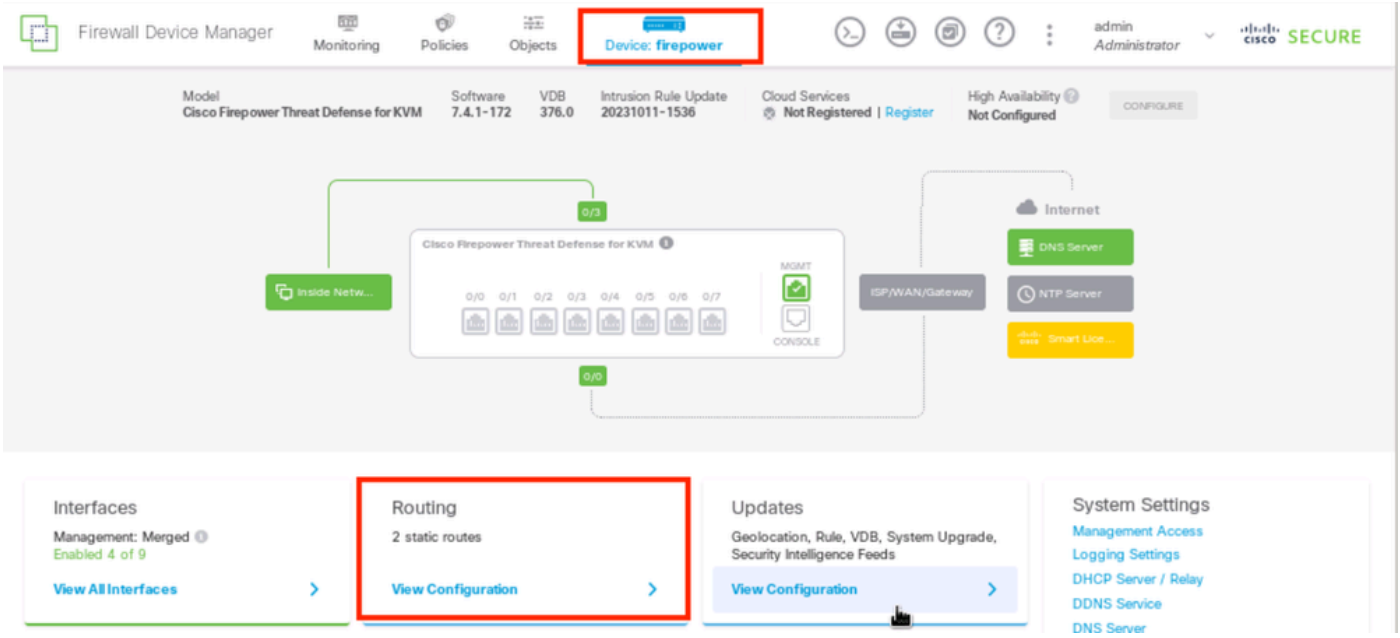
Note: You must have your access control policy being configured on FTD to permit the traffic, this part is not included in this document.

Step 1. Configure ECMP Zone

Navigate to **Device** , then click the link in the **Routing** summary.

If you enabled virtual routers, click the view icon (

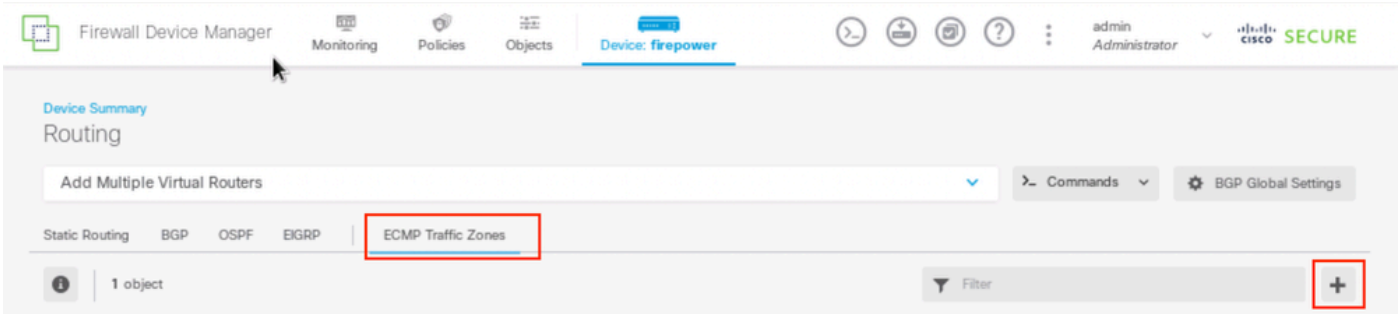
) for the router in which you are configuring a static route. In this case virtual routers are not enabled.



Step 1 ECMP Zone1

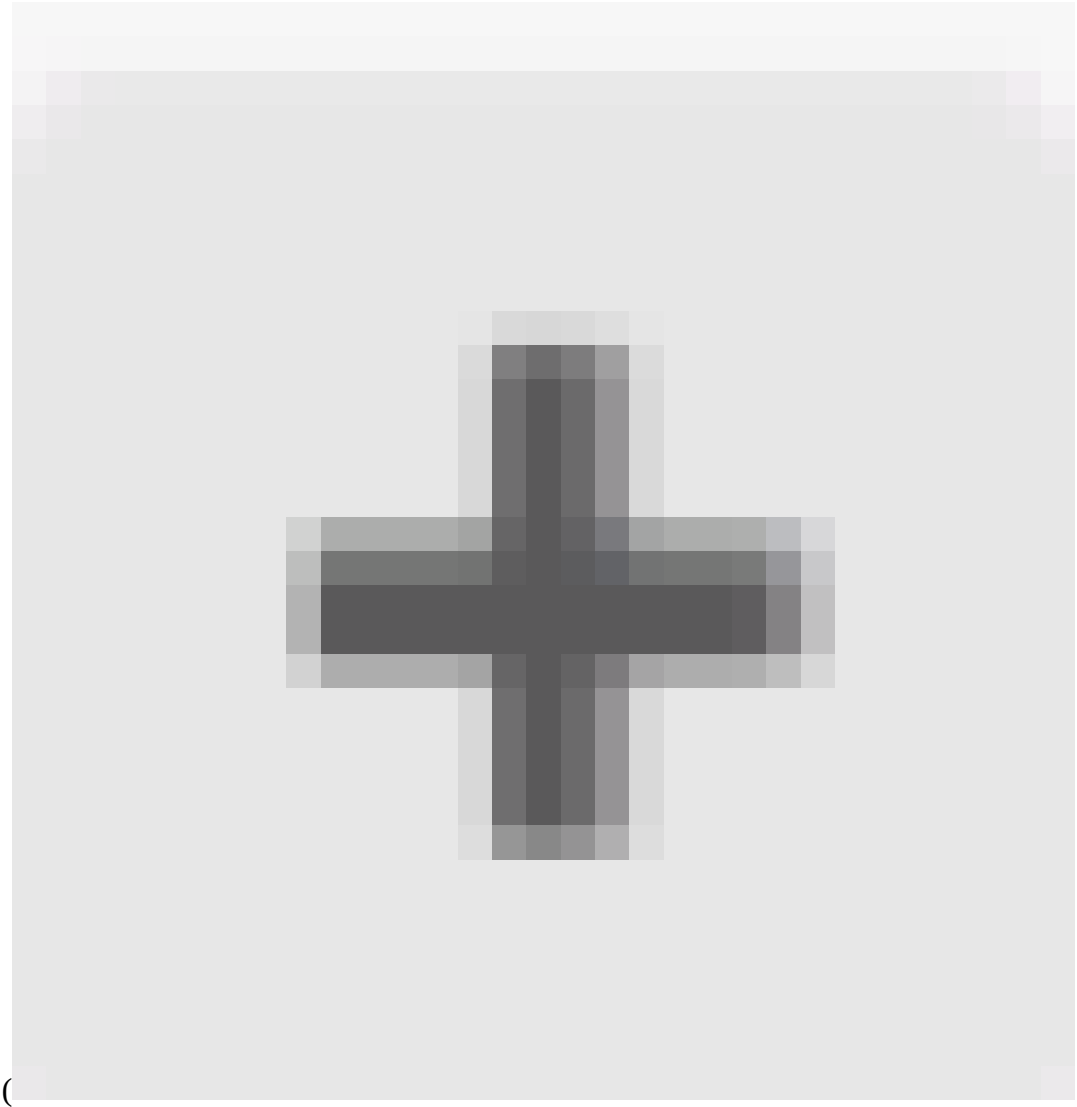
Click the **ECMP Traffic Zones** tab, then click the add icon (

) to add a new zone.



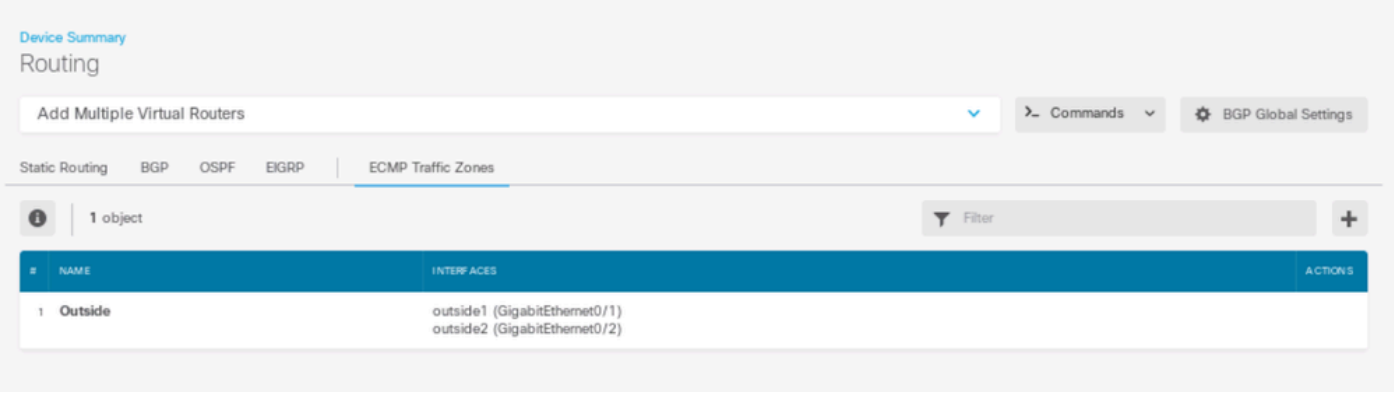
Step 1 ECMP Zone2

In the **Add ECMP Traffic Zone** window:

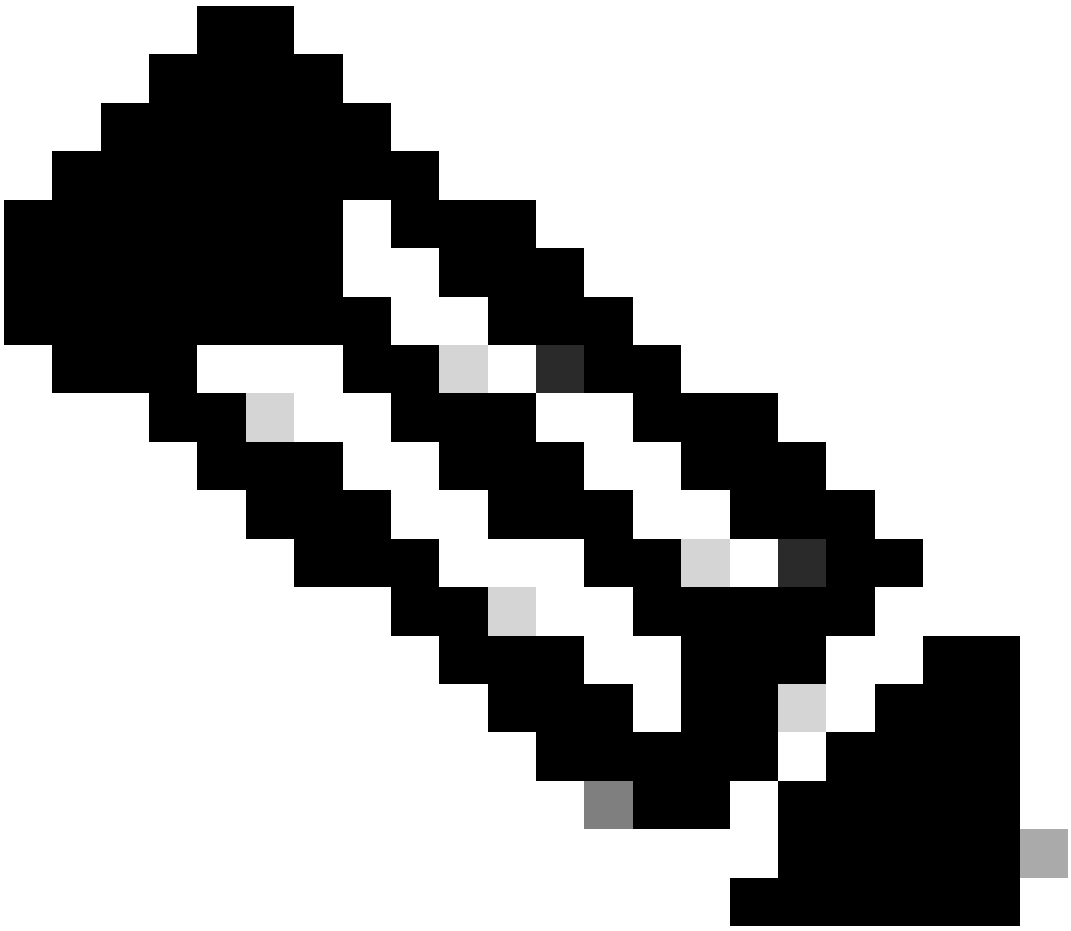
1. Set the **Name** for the ECMP zone and optionally, a description.
2. Click the add icon () to select up to 8 **Interfaces** to include in the zone. In this example, the ECMP name is **Outside** , interfaces **outside1** and **outside2** are added to the zone.
3. Click **OK** .

Step 1 ECMP Zone3

Both interfaces **outside1** and **outside2** have been added to ECMP zone **outside** sucessfully.

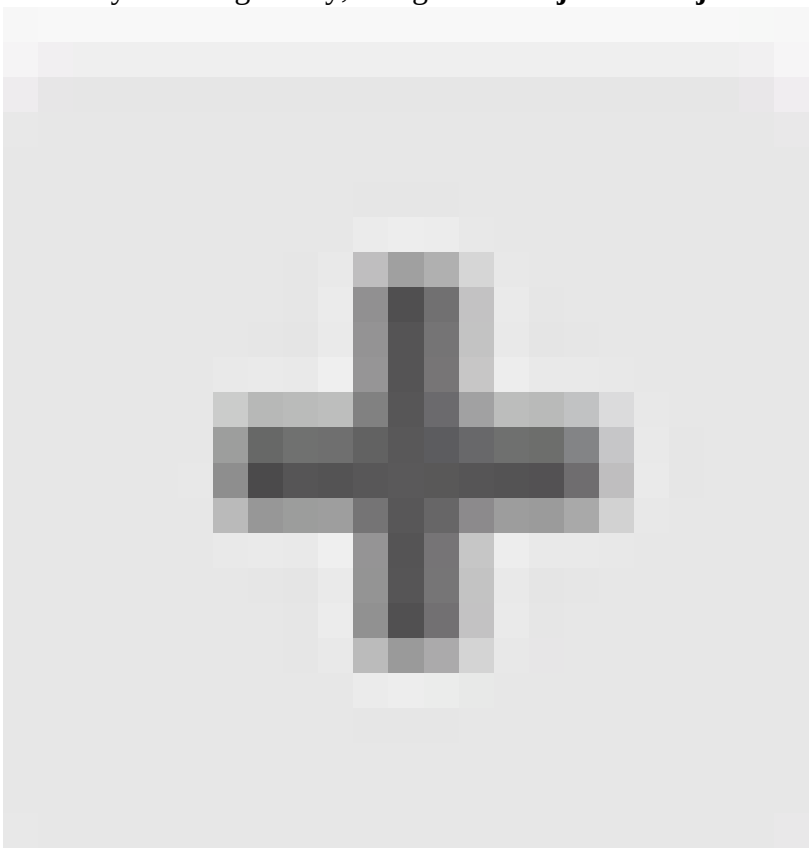


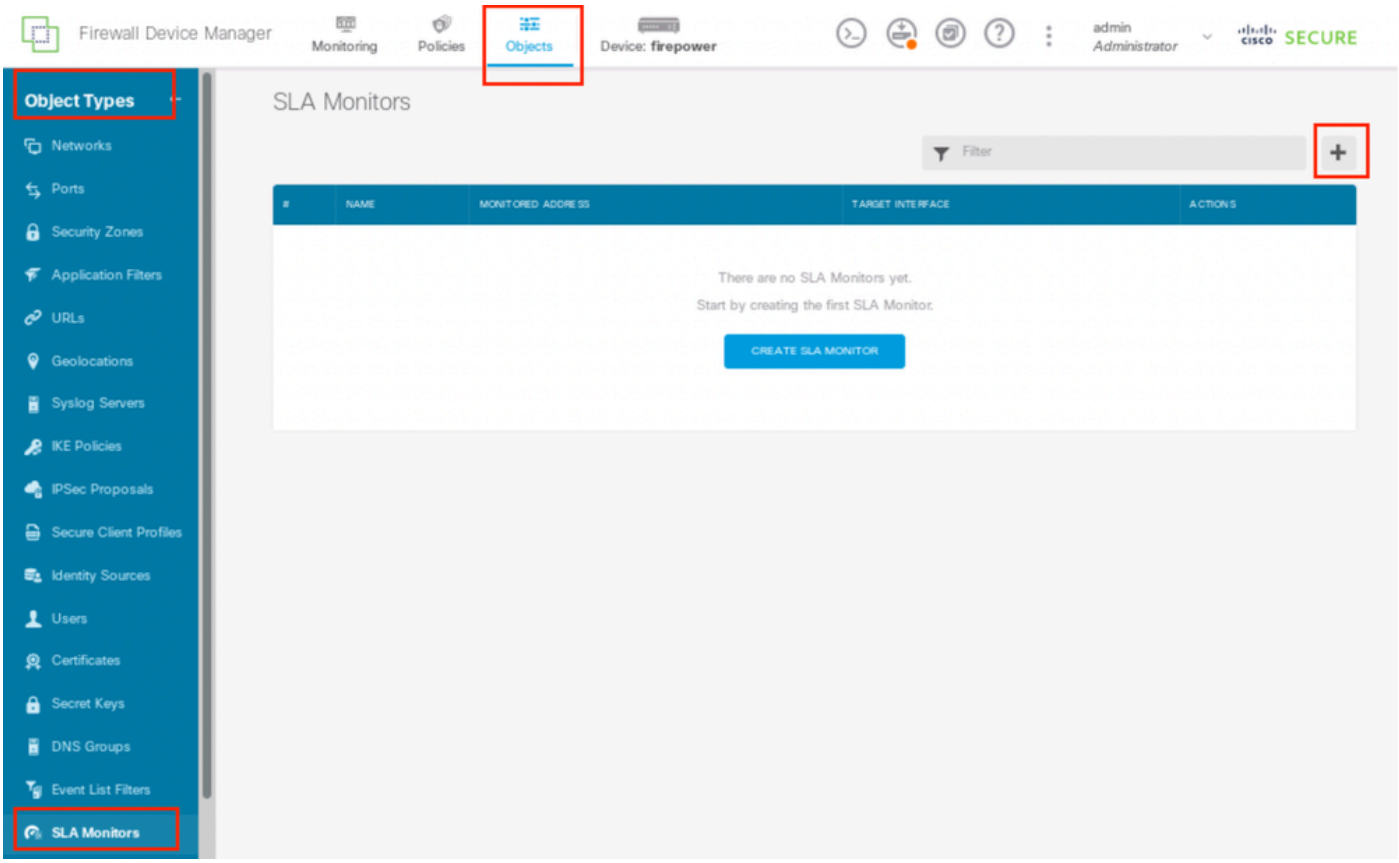
Step 1 ECMP Zone4



Note: An ECMP routing traffic zone is not related to security zones. Creating a security zone that contains the outside1 and outside2 interfaces does not implement a traffic zone for ECMP routing purposes.

Step 2. Configure IP SLA Objects

To define the SLA objects used to monitor connectivity to each gateway, navigate to **Objects > Object Types > SLA Monitors** , click the add icon () to add a new SLA monitor for the first ISP connection.



Step2 IP SLA1

In the **Add SLA Monitor Object** window:

1. Set the **Name** for the SLA monitor object and optionally, a description, in this case **sla-outside1**.
2. Set the **Monitor Address** , in this case **gw-outside1** (the first ISP gateway).
3. Set the **Target Interface** through which the monitor address is reachable, in this case **outside1** .
4. Addtionally, it is also possible to adjust the **Timeout** and **Threshold** . Click **OK** .

Add SLA Monitor Object

Name

sla-outside1

Description

Monitor Address

gw-outside1

Target Interface

outside1 (GigabitEthernet0/1)

IP ICMP ECHO OPTIONS

Following properties have following correlation: Threshold ≤ Timeout ≤ Frequency

Threshold

5000 milliseconds

0 - 2147483647

Timeout

5000 milliseconds

0 - 604800000

Frequency

60000 milliseconds

1000 - 604800000, multiple of 1000

Type of Service

0

0 - 255

Number of Packets

1

0 - 100

Data Size

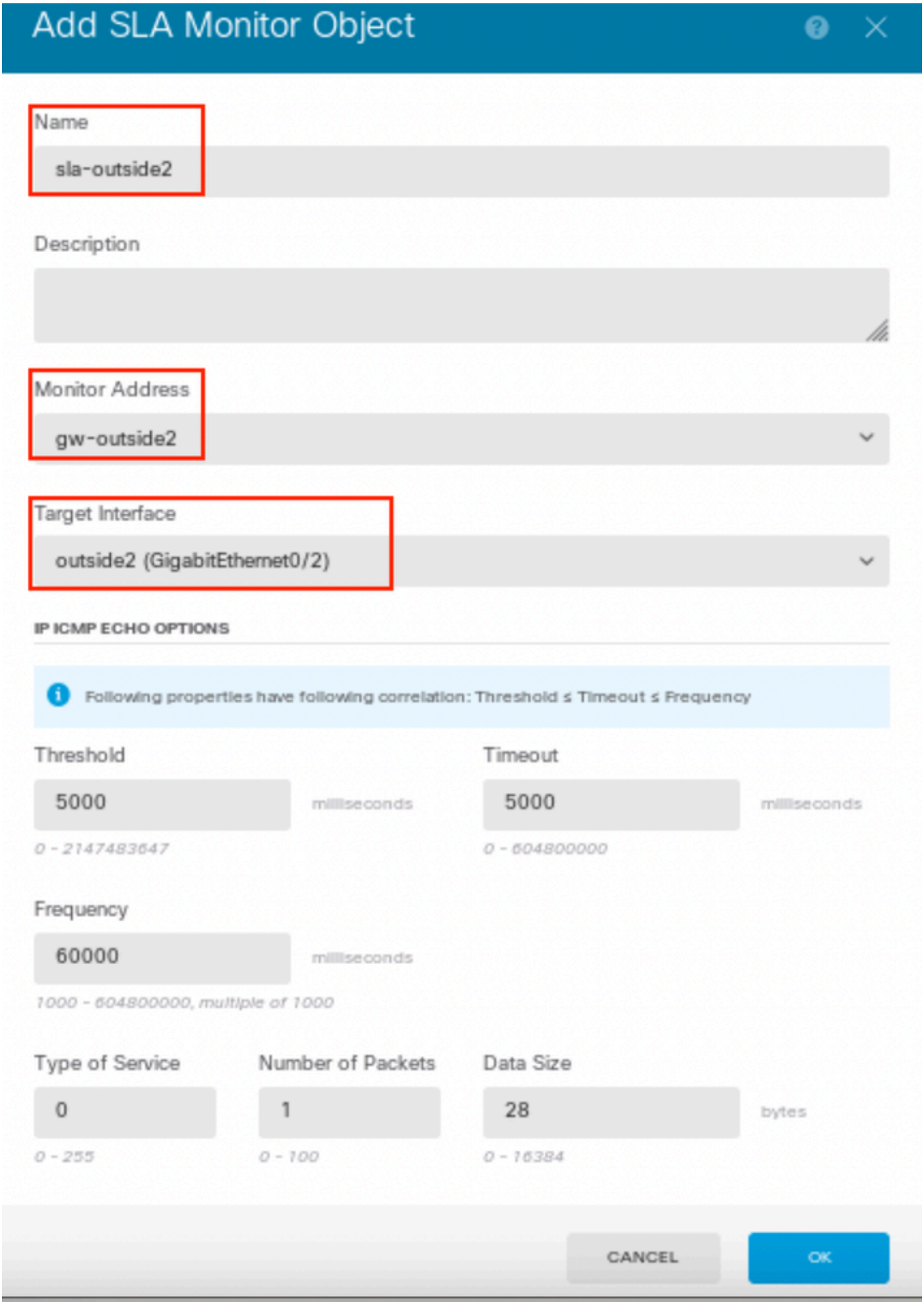
28 bytes

0 - 16384

CANCEL OK

Repeat the similar step to configure another SLA Monitor Object for the second ISP connection, in the **Add SLA Monitor Object** window:

1. Set the **Name** for the SLA monitor object and optionally, a description, in this case **sla-outside2** .
2. Set the **Monitor Address** , in this case **gw-outside2** (the second ISP gateway).
3. Set the **Target Interface** through which the monitor address is reachable, in this case **outside2**.
4. Addtionally, it is also possible to adjust the **Timeout** and **Threshold**. Click **OK** .

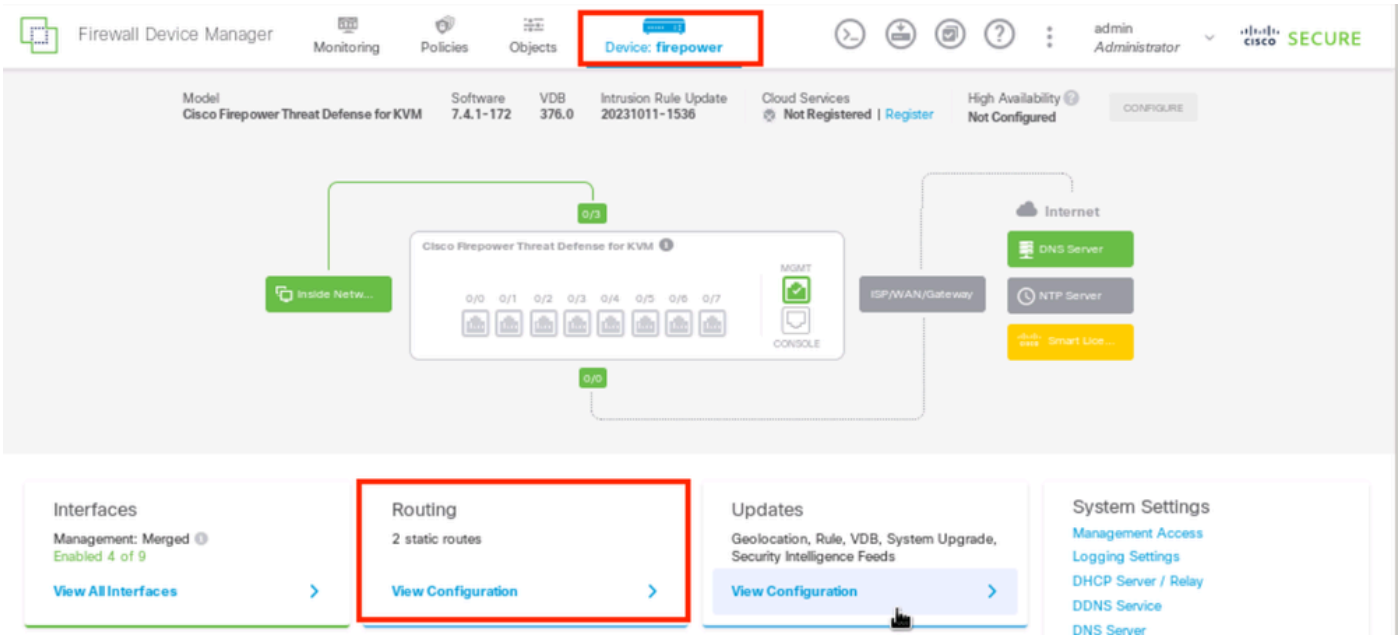

Add SLA Monitor Object
Name
sla-outside2
Description
Monitor Address
gw-outside2
Target Interface
outside2 (GigabitEthernet0/2)
IP ICMP ECHO OPTIONS
Following properties have following correlation: Threshold ≤ Timeout ≤ Frequency
Threshold
5000
milliseconds
0 - 2147483647
Timeout
5000
milliseconds
0 - 604800000
Frequency
60000
milliseconds
1000 - 604800000, multiple of 1000
Type of Service
0
0 - 255
Number of Packets
1
0 - 100
Data Size
28
bytes
0 - 16384
CANCEL
OK

Step2 IP SLA3

Step 3. Configure Static Routes with Route Track

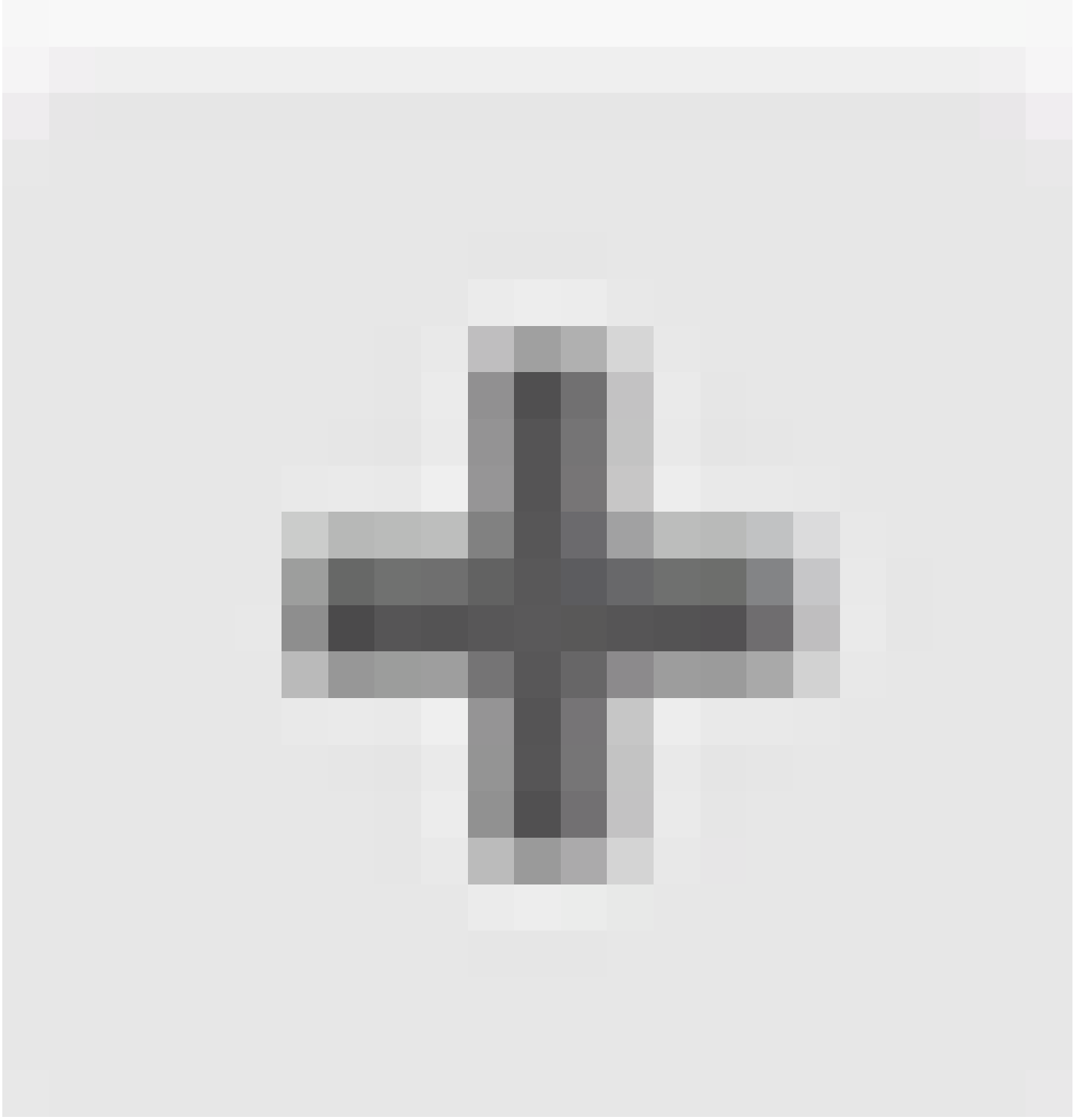
Navigate to **Device** , then click the link in the **Routing** summary.

If you enabled virtual routers, click the view icon (
) for the router in which you are configuring a static route. In this case virtual routers are not enabled.



Step 3 Route1

On the **Static Routing** page, click the add icon (

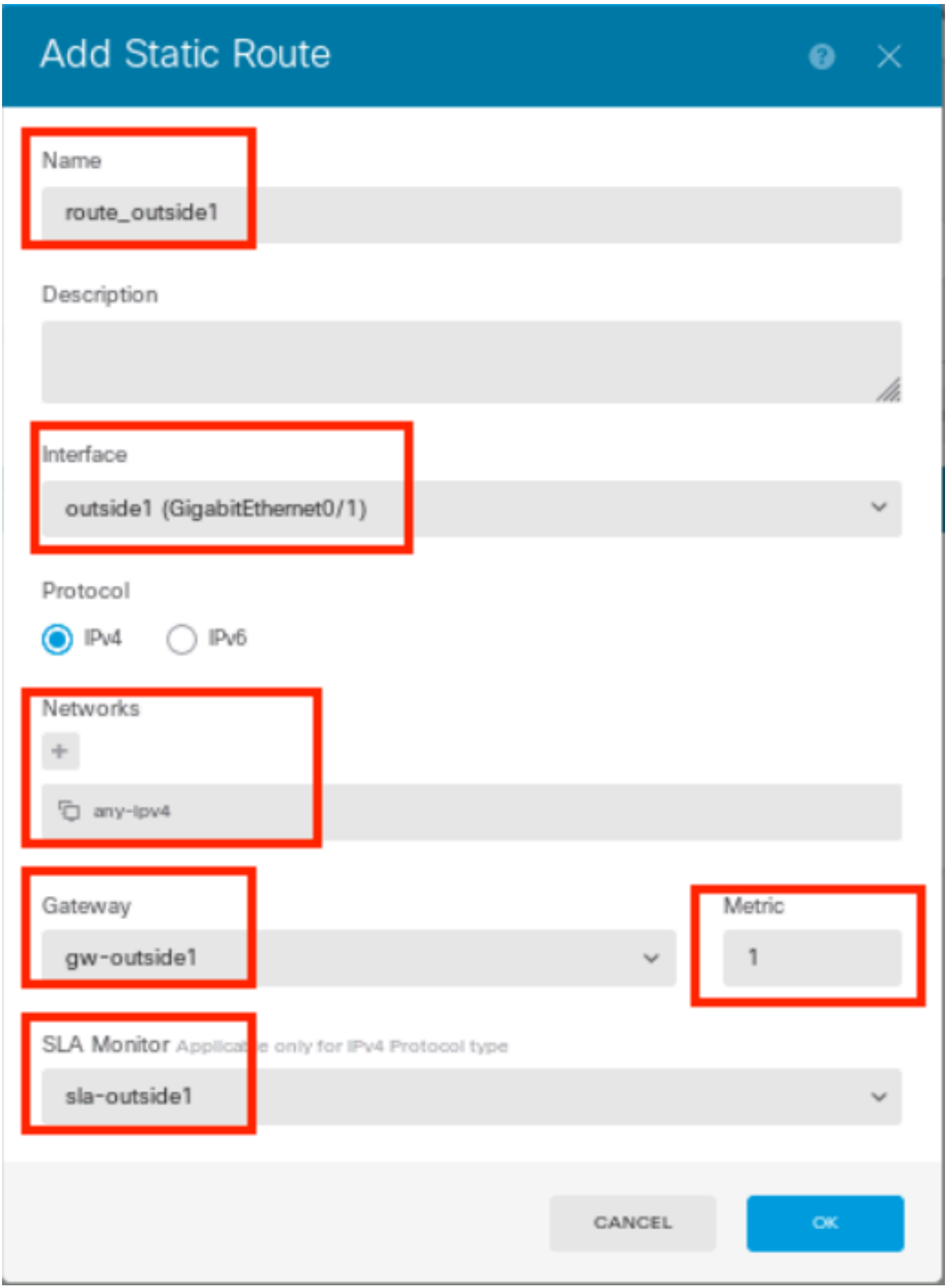


) to add a new static route for the first ISP link.

In the **Add Static Route** window:

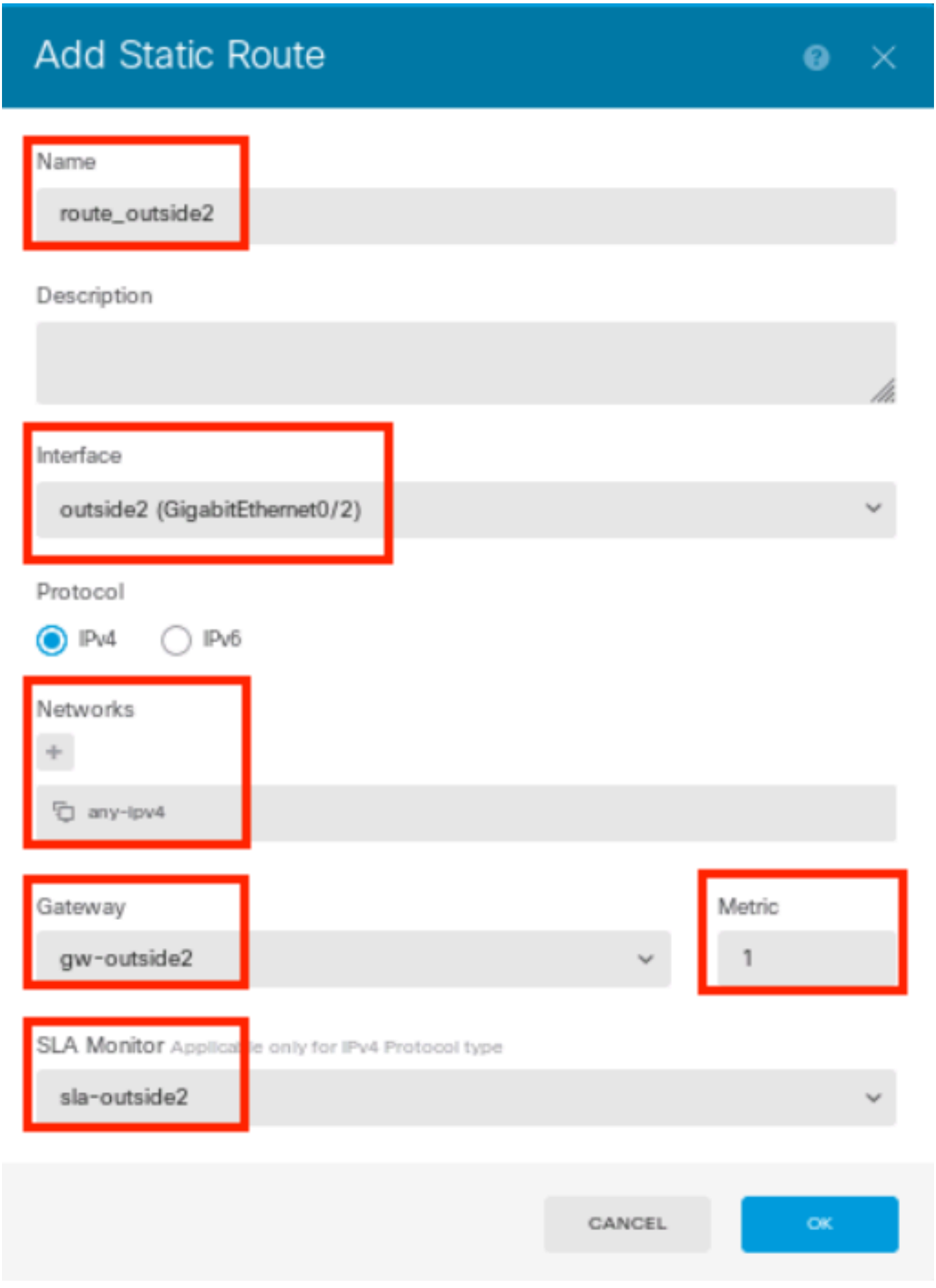
1. Set the **Name** of the route and optionally, the description. In this case **route_outside1**.
2. From the **Interface** drop-down list, select the interface through which you want to send traffic, the gateway address needs to be accessible though the interface. In this case **outside1 (GigabitEthernet0/1)**.
3. Select the **Networks** that identify the desination networks or hosts that use the gateway in this route. In this case the pre-defined **any-ipv4**.
4. From the **Gateway** drop-down list, select the network object that identifies the IP address of the gateway, Traffic is sent to this address. In this case **gw-outside1** (the first ISP gateway).
5. Set the **Metric** of the route, between 1 and 254. In this example **1**.
6. From the **SLA Monitor** drop-down list, select the SLA monitor object. In this case **sla-outside1**.

7. Click **OK** .


Add Static Route
Name
route_outside1
Description
Interface
outside1 (GigabitEthernet0/1)
Protocol
IPv4
IPv6
Networks
any-ipv4
Gateway
gw-outside1
Metric
1
SLA Monitor
sla-outside1
CANCEL
OK

Repeat the similar step to configure another static route for the second ISP connection, in the **Add Static Route** window:

1. Set the **Name** of the route and optionally, the description. In this case **route_outside2**.
2. From the **Interface** drop-down list, select the interface through which you want to send traffic, the gateway address needs to be accessible though the interface. In this case **outside2 (GigabitEthernet0/2)**.
3. Select the **Networks** that identify the desination networks or hosts that use the gateway in this route. In this case the pre-defined **any-ipv4**.
4. From the **Gateway** drop-down list, select the network object that identifies the IP address of the gateway, Traffic is sent to this address. In this case **gw-outside2** (the second ISP gateway).
5. Set the **Metric** of the route, between 1 and 254. In this example **1**.
6. From the **SLA Monitor** drop-down list, select the SLA monitor object. In this scenario, **sla-outside2**.
7. Click **OK** .



Step 3 Route3

You have 2 routes via the **outside1** and **outside2** interfaces with route tracks.

Step 3 Route4

Deploy the change to FTD.

Verify

Log into the CLI of the FTD, run the command `show zone` to check information about ECMP traffic zones, including the interfaces that are part of each zone.

<#root>

```
> show zone
Zone:
```

Outside

```
 ecmp
    Security-level: 0
```

Zone member(s): 2

outside2 GigabitEthernet0/2

outside1 GigabitEthernet0/1

Run the command `show running-config route` to check the running configuration for the routing configuration, in this case there are two static routes with route tracks.

<#root>

```
> show running-config route
```

route outside1 0.0.0.0 0.0.0.0 10.1.1.2 1 track 1

route outside2 0.0.0.0 0.0.0.0 10.1.2.2 1 track 2

Run the command show route to check the routing table, in this case there are two default routes are via the interface outside1 and outside2 with equal cost, traffic can be distributed between two ISP circuits.

<#root>

```
> show route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, V - VPN
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, + - replicated route
SI - Static InterVRF, BI - BGP InterVRF
Gateway of last resort is 10.1.2.2 to network 0.0.0.0

S* 0.0.0.0 0.0.0.0 [1/0] via 10.1.2.2, outside2
                   [1/0] via 10.1.1.2, outside1

C 10.1.1.0 255.255.255.0 is directly connected, outside1
L 10.1.1.1 255.255.255.255 is directly connected, outside1
C 10.1.2.0 255.255.255.0 is directly connected, outside2
L 10.1.2.1 255.255.255.255 is directly connected, outside2
C 10.1.3.0 255.255.255.0 is directly connected, inside
L 10.1.3.1 255.255.255.255 is directly connected, inside
```

Run the command show sla monitor configuration to check the configuration of the SLA monitor.

<#root>

```
> show sla monitor configuration
SA Agent, Infrastructure Engine-II
Entry number: 1037119999
Owner:
Tag:

Type of operation to perform: echo

Target address: 10.1.1.2

Interface: outside1

Number of packets: 1
Request size (ARR data portion): 28
Operation timeout (milliseconds): 5000
```

```
Type Of Service parameters: 0x0
Verify data: No
Operation frequency (seconds): 60
Next Scheduled Start Time: Start Time already passed
Group Scheduled : FALSE
Life (seconds): Forever
Entry Ageout (seconds): never
Recurring (Starting Everyday): FALSE
Status of entry (SNMP RowStatus): Active
Enhanced History:

Entry number: 1631063762
Owner:
Tag:
```

Type of operation to perform: echo

Target address: 10.1.2.2

Interface: outside2

```
Number of packets: 1
Request size (ARR data portion): 28
Operation timeout (milliseconds): 5000
Type Of Service parameters: 0x0
Verify data: No
Operation frequency (seconds): 60
Next Scheduled Start Time: Start Time already passed
Group Scheduled : FALSE
Life (seconds): Forever
Entry Ageout (seconds): never
Recurring (Starting Everyday): FALSE
Status of entry (SNMP RowStatus): Active
Enhanced History:
```

Run the command show sla monitor operational-state to confirm the state of the SLA Monitor. In this case you can find “Timeout occurred: FALSE” in the command output, it indicates that the ICMP echo to the gateway is replying, so the default route through target interface is active and installed in routing table.

<#root>

```
> show sla monitor operational-state
Entry number: 1037119999
Modification time: 04:14:32.771 UTC Tue Jan 30 2024
Number of Octets Used by this Entry: 2056
Number of operations attempted: 79
Number of operations skipped: 0
Current seconds left in Life: Forever
Operational state of entry: Active
Last time this entry was reset: Never
Connection loss occurred: FALSE
```

Timeout occurred: FALSE

```
Over thresholds occurred: FALSE
```

```
Latest RTT (milliseconds): 1
Latest operation start time: 05:32:32.791 UTC Tue Jan 30 2024
Latest operation return code: OK
RTT Values:
RTTAvg: 1 RTTMin: 1 RTTMax: 1
NumOfRTT: 1 RTTSum: 1 RTTSum2: 1

Entry number: 1631063762
Modification time: 04:14:32.771 UTC Tue Jan 30 2024
Number of Octets Used by this Entry: 2056
Number of operations attempted: 79
Number of operations skipped: 0
Current seconds left in Life: Forever
Operational state of entry: Active
Last time this entry was reset: Never
Connection loss occurred: FALSE
```

`Timeout occurred: FALSE`

```
Over thresholds occurred: FALSE
Latest RTT (milliseconds): 1
Latest operation start time: 05:32:32.791 UTC Tue Jan 30 2024
Latest operation return code: OK
RTT Values:
RTTAvg: 1 RTTMin: 1 RTTMax: 1
NumOfRTT: 1 RTTSum: 1 RTTSum2: 1
```

Load Balancing

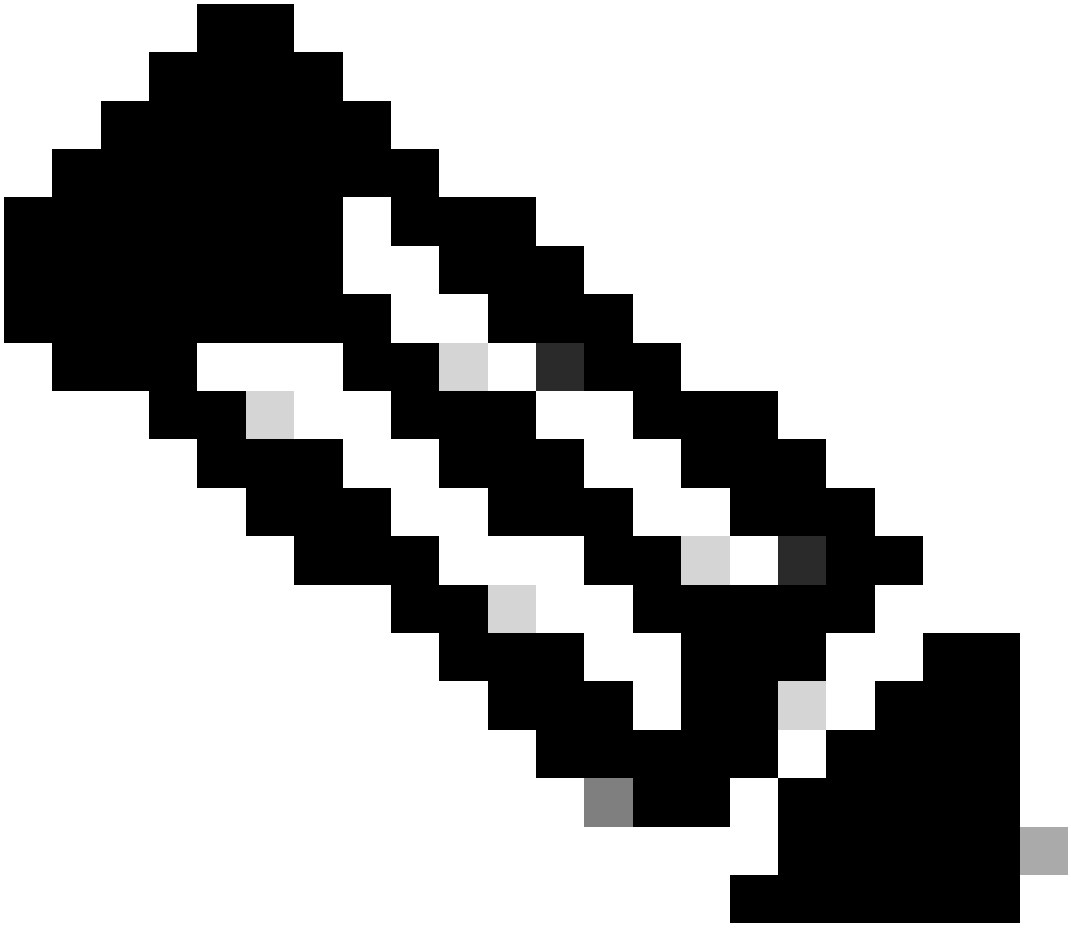
Initial traffic through FTD to verify if ECMP load balance the traffic among the gateways in ECMP zone. In this case, initiate SSH connection from Test-PC-1 (10.1.3.2) and Test-PC-2 (10.1.3.4) towards Internet-Host (10.1.5.2), run the command `show conn` to confirm that the traffic is load-balanced between two ISP links, Test-PC-1 (10.1.3.2) goes through interface outside1, Test-PC-2 (10.1.3.4) goes through interface outside2.

<#root>

```
> show conn
4 in use, 14 most used
Inspect Snort:
preserve-connection: 2 enabled, 0 in effect, 12 most enabled, 0 most in effect
```

`TCP inside 10.1.3.4:41652 outside2 10.1.5.2:22, idle 0:02:10, bytes 5276, flags UIO N1`

`TCP inside 10.1.3.2:57484 outside1 10.1.5.2:22, idle 0:00:04, bytes 5276, flags UIO N1`



Note: Traffic is load balanced among the specified gateways based on an algorithm that hashes the source and destination IP addresses, incoming interface, protocol, source and destination ports. when you run the test, the traffic you simulate can be routed to the same gateway due to the hash algorithm, this is expected, change any value among the 6 tuples (source IP, Destination IP, incoming interface, protocol, source port, destination port) to make change on the hash result.

Lost Route

If the link to the first ISP Gateway is down, in this case, shut down the first gateway router to simulate. If the FTD does not receive an echo reply from first ISP gateway within the threshold timer specified in the SLA Monitor object, the host is considered unreachable and marked as down. Tracked route to first gateway is also removed from routing table.

Run the command `show sla monitor operational-state` to confirm the current state of the SLA Monitor. In this case you can find “Timeout occurred: True” in the command output, it indicates that the ICMP echo to the first ISP gateway is not responding.

<#root>

```
> show sla monitor operational-state
Entry number: 1037119999
Modification time: 04:14:32.771 UTC Tue Jan 30 2024
Number of Octets Used by this Entry: 2056
Number of operations attempted: 121
Number of operations skipped: 0
Current seconds left in Life: Forever
Operational state of entry: Active
Last time this entry was reset: Never
Connection loss occurred: FALSE
```

Timeout occurred: TRUE

```
Over thresholds occurred: FALSE
Latest RTT (milliseconds): NoConnection/Busy/Timeout
Latest operation start time: 06:14:32.801 UTC Tue Jan 30 2024
Latest operation return code: Timeout
RTT Values:
RTTAvg: 0 RTTMin: 0 RTTMax: 0
NumOfRTT: 0 RTTSum: 0 RTTSum2: 0

Entry number: 1631063762
Modification time: 04:14:32.771 UTC Tue Jan 30 2024
Number of Octets Used by this Entry: 2056
Number of operations attempted: 121
Number of operations skipped: 0
Current seconds left in Life: Forever
Operational state of entry: Active
Last time this entry was reset: Never
Connection loss occurred: FALSE
```

Timeout occurred: FALSE

```
Over thresholds occurred: FALSE
Latest RTT (milliseconds): 1
Latest operation start time: 06:14:32.802 UTC Tue Jan 30 2024
Latest operation return code: OK
RTT Values:
RTTAvg: 1 RTTMin: 1 RTTMax: 1
NumOfRTT: 1 RTTSum: 1 RTTSum2: 1
```

Run the command **show route** to check the current routing table, the route to the first ISP gateway through interface outside1 is removed, there is only one active default route to the second ISP gateway through interface outside2.

<#root>

```
> show route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, V - VPN
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, + - replicated route
SI - Static InterVRF, BI - BGP InterVRF
Gateway of last resort is 10.1.2.2 to network 0.0.0.0
```

```
S* 0.0.0.0 0.0.0.0 [1/0] via 10.1.2.2, outside2


C 10.1.1.0 255.255.255.0 is directly connected, outside1
L 10.1.1.1 255.255.255.255 is directly connected, outside1
C 10.1.2.0 255.255.255.0 is directly connected, outside2
L 10.1.2.1 255.255.255.255 is directly connected, outside2
C 10.1.3.0 255.255.255.0 is directly connected, inside
L 10.1.3.1 255.255.255.255 is directly connected, inside
```

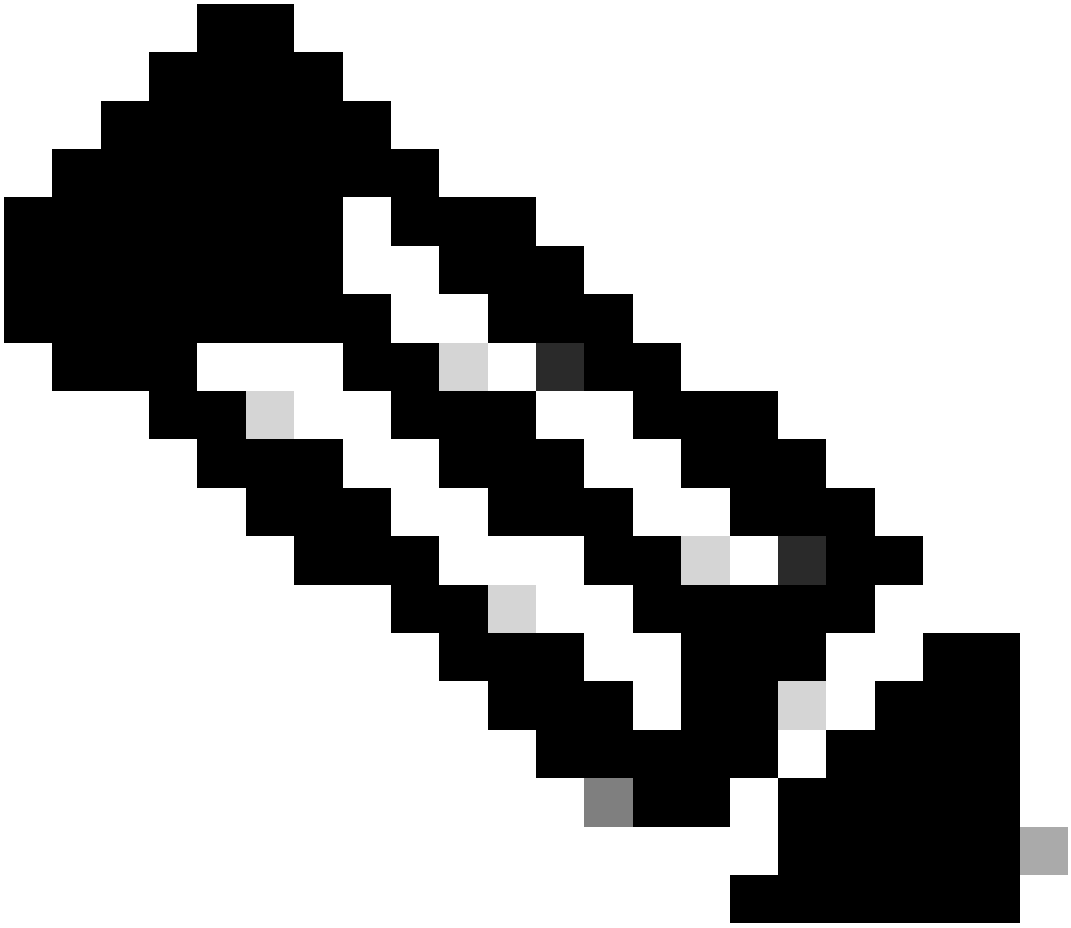
Run the command `show conn` , you can find the two connetion are still up. SSH sessions are also active on Test-PC-1 (10.1.3.2) and Test-PC-2 (10.1.3.4) without any interruption.

<#root>

```
> show conn
4 in use, 14 most used
Inspect Snort:
preserve-connection: 2 enabled, 0 in effect, 12 most enabled, 0 most in effect


TCP inside 10.1.3.4:41652 outside2 10.1.5.2:22, idle 0:19:29, bytes 5276, flags UIO N1


TCP inside 10.1.3.2:57484 outside1 10.1.5.2:22, idle 0:17:22, bytes 5276, flags UIO N1
```



Note: You can notice in the output of `show conn` , SSH session from Test-PC-1 (10.1.3.2) is still through interface outside1, although the default route through interface outside1 has been removed from routing table. this is expected and by design, the actual traffic flows through interface outside2. If you initiate new connection from Test-PC-1 (10.1.3.2) to Internet-Host (10.1.5.2), you can find all the traffic are through interface outside2.

Troubleshoot

In order to validate the routing table change, run command `debug ip routing` .

In this example, when the link to first ISP gateway is down, the route through interface outside1 is removed from routing table.

<#root>

```
> debug ip routing
IP routing debugging is on

RT:
```

ip_route_delete 0.0.0.0 0.0.0.0 via 10.1.1.2, outside1

ha_cluster_synced 0 routetype 0

RT: del 0.0.0.0 via 10.1.1.2, static metric [1/0]NP-route: Delete-Output 0.0.0.0/0 hop_count:1 , via 0.0

RT(mgmt-only):

NP-route: Update-Output 0.0.0.0/0 hop_count:1 , via 10.1.2.2, outside2

NP-route: Update-Input 0.0.0.0/0 hop_count:1 Distance:1 Flags:0X0 , via 10.1.2.2, outside2

Run the command show route to confirm the current routing table.

<#root>

```
> show route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, V - VPN
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, + - replicated route
SI - Static InterVRF, BI - BGP InterVRF
Gateway of last resort is 10.1.2.2 to network 0.0.0.0
```

S* 0.0.0.0 0.0.0.0 [1/0] via 10.1.2.2, outside2

```
C 10.1.1.0 255.255.255.0 is directly connected, outside1
L 10.1.1.1 255.255.255.255 is directly connected, outside1
C 10.1.2.0 255.255.255.0 is directly connected, outside2
L 10.1.2.1 255.255.255.255 is directly connected, outside2
C 10.1.3.0 255.255.255.0 is directly connected, inside
L 10.1.3.1 255.255.255.255 is directly connected, inside
```

When the link to first ISP gateway is up again, the route through interface outside1 is added back to routing table.

<#root>

```
> debug ip routing
IP routing debugging is on

RT(mgmt-only):
```

NP-route: Update-Output 0.0.0.0/0 hop_count:1 , via 10.1.2.2, outside2

```
NP-route: Update-Output 0.0.0.0/0 hop_count:1 , via 10.1.1.2, outside2
```

```
NP-route: Update-Input 0.0.0.0/0 hop_count:2 Distance:1 Flags:0X0 , via 10.1.2.2, outside2
via 10.1.1.2, outside1
```

Run the command `show route` to confirm the current routing table.

```
> show route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, V - VPN
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, + - replicated route
SI - Static InterVRF, BI - BGP InterVRF
Gateway of last resort is 10.1.2.2 to network 0.0.0.0

S* 0.0.0.0 0.0.0.0 [1/0] via 10.1.2.2, outside2
[1/0] via 10.1.1.2, outside1
C 10.1.1.0 255.255.255.0 is directly connected, outside1
L 10.1.1.1 255.255.255.255 is directly connected, outside1
C 10.1.2.0 255.255.255.0 is directly connected, outside2
L 10.1.2.1 255.255.255.255 is directly connected, outside2
C 10.1.3.0 255.255.255.0 is directly connected, inside
L 10.1.3.1 255.255.255.255 is directly connected, inside
```

Related Information

- Cisco Technical Support & Downloads