# Route Summarization

This chapter contains the following sections:

## Route Summarization

Route summarization simplifies route tables by replacing many specific addresses with an single address. For example, 10.1.1.0/24, 10.1.2.0/24, and 10.1.3.0/24 can be replaced with 10.1.0.0/16. Route summarization policies enable routes to be shared efficiently among border leaf switches and their neighboring leaf switches. BGP, OSPF, or EIGRP route summarization policies are applied to a bridge domain or transit subnet. For OSPF, inter-area and external route summarization are supported. Summary routes are exported; they are not advertised within the fabric.

## Guidelines and Limitations

A route summarization policy configured under an external EPG will result in the summarized prefix being advertised to all of the BGP peers that are connected to the same border leaf switch and in the same VRF. This includes BGP peers that belong to different L3Outs if the same border leaf switch and VRF condition is met.

If you do not want this behavior to take place and you want to limit which BGP peers receive the aggregate route, block the routes where applicable using outbound route-maps on the respective L3Outs.

## Configuring Route Summarization for BGP, OSPF, and EIGRP Using the GUI

**Before you begin**

For each of the following configurations, you have already created an L3 Out. For the L3 Out, you can create external routed networks, subnets, and route summarization polices.

**Procedure**

**Step 1** Configure BGP route summarization using the GUI as follows:

a) On the menu bar, choose **Tenants** > **common**

b) In the Navigation pane, expand **Networking** > **L3Outs** .

c) Right-click on **L3Outs**, then select **Create L3Out**.
The **Create L3Out** wizard appears.

d) In the work pane, enter the necessary information (**Name**, **VRF**, and **L3 Domain**), then check the check
box next to **BGP**.

e) Click **Next**.
The **Nodes and Interfaces** window appears.

f) In the **Nodes and Interfaces** window, fill in the appropriate fields, then click **Next**.
The **Protocols** window appears.

g) In the **Protocols** window, fill in the appropriate fields, then click **Next**.
The **External EPG** window appears.

h) Enter a name in the **Name** field, then uncheck the **Default EPG for all external networks** field.
The **Subnets** field appears.

i) Click + above **Route Summarization Policy**.
The **Create Subnet** dialog box appears.

j) In the **Specify the Subnet** dialog box, you can associate a route summarization policy to the subnet as
follows:

**Example:**

- Enter an IP address in the **IP Address** field.

- Check the check box next to **Export Route Control Subnet**.

- Check the check box next to **External Subnets for the External EPG**.

- From the **BGP Route Summarization Policy** drop-down menu, select either **default** for an existing
(default) policy or **Create BGP route summarization policy** to create a new policy.

- If you selected **Create BGP route summarization policy**, the **Create BGP Route Summarization
Policy** dialog box appears. Enter a name for it in the **Name** field, check the **Control State** check box for
**Generate AS-SET information**, click **Submit**, click **OK**, the click **Finish**.

**Step 2** Configure OSPF inter-area and external summarization using the GUI as follows:

a) On the menu bar, choose **Tenants** > **common**.

b) In the Navigation pane, expand **Networking** > **L3Outs** > **External EPGs**, then click on the configured
external EPG.
The overview information for that configured external EPG appears.

c) In the work pane, click the + sign above **Route Summarization Policy**.
The **Create Subnet** dialog box appears.

d) In the **Specify the Subnet** dialog box, you can associate a route summarization policy to the subnet as
follows:

**Example:**

- Enter an IP address in the **IP Address** field.

- Check the check box next to **Export Route Control Subnet**.

- Check the check box next to **External Subnets for the External EPG**.

- From the **OSPF Route Summarization Policy** drop-down menu, choose either **default** for an existing (default) policy or **Create OSPF route summarization policy** to create a new policy.

- If you chose **Create OSPF route summarization policy**, the **Create OSPF Route Summarization Policy** dialog box appears. Enter a name for it in the **Name** field, check the check box next to **Inter-Area Enabled**, enter a value next to **Cost**, click **SUBMIT**.

**Step 3**     Configure EIGRP summarization using the GUI as follows:

a)  On the menu bar, choose **Tenants > common**
b)  In the Navigation pane, expand **Networking.> L3Outs**.
c)  Right-click on **L3Outs**, choose **Create L3Out**.
     The **Create L3Out** dialog box appears.
d)  In the work pane, check the check box next to **EIGRP**.
e)  Enter a name in the **Name** field, click **NEXT**.
     The **External EPG Networks** dialog box appears.
f)  In the work pane, click the + sign.
     The **Define an External Network** dialog box appears.
g)  Enter a name in the **Name** field, then click the + sign above **Route Summarization Policy**.
     The **Create Subnet** dialog box appears.
h)  In the **Specify the Subnet** dialog box, you can associate a route summarization policy to the subnet as follows:

**Example:**

- Enter an IP address in the **IP Address** field.

- Check the check box next to **Export Route Control Subnet**.

- Check the check box next to **External Subnets for the External EPG**.

- Check the check box next to **EIGRP Route Summarization**, click **OK**, click **OK**, click **FINISH**.