QoS for L3Outs

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L3Outs QoS

L3Out QoS can be configured using Contracts applied at the external EPG level. Starting with Release 4.0(1), L3Out QoS can also be configured directly on the L3Out interfaces.

Note If you are running Cisco APIC Release 4.0(1) or later, we recommend using the custom QoS policies applied directly to the L3Out to configure QoS for L3Outs.

Packets are classified using the ingress DSCP or CoS value so it is possible to use custom QoS policies to classify the incoming traffic into Cisco ACI QoS queues. A custom QoS policy contains a table mapping the DSCP/CoS values to the user queue and to the new DSCP/CoS value (in case of marking). If there is no mapping for a specific DSCP/CoS value, the user queue is selected by the QoS priority setting of the ingress L3Out interface if configured.

L3Outs QoS Guidelines and Limitations

The following guidelines apply to configuring QoS for L3Outs:

- Custom QoS policy is not supported for Layer 3 multicast traffic sourced from outside the ACI fabric (received from L3Out).
- When configuring the QoS policy via contracts to be enforced on the border leaf where the L3Out is located, the VRF instance must be in egress mode (Policy Control Enforcement Direction must be "Egress").

  Starting with Release 4.0(1), custom QoS setting can be configured directly on an L3Out and applied for the traffic coming from the border leaf, as such, the VRF does not need to be in egress mode.

- To enable the QoS policy to be enforced, the VRF Policy Control Enforcement Preference must be "Enforced."
- When configuring the Contract that controls communication between the L3Out and other EPGs, include the QoS class or target DSCP in the contract or subject.

Note Only configure a QoS class or target DSCP in the contract, not in the external EPG (`l3extInstP`).

- When creating a contract subject, you must choose a QoS priority level. You cannot choose Unspecified.

Note With the exception of Custom QoS Policies as a custom QoS Policy will set the DSCP/CoS value even if the QoS Class is set to Unspecified. When QoS level is unspecified, it by default takes as Level 3 default queue. No unspecified is supported and valid.

- Starting with Release 4.0(1), QoS supports new levels 4, 5, and 6 configured under Global policies, EPG, L3out, custom QoS, and Contracts. The following limitations apply:
  - Number of classes that can be configured with Strict priority is up to 5.
  - The 3 new classes are not supported with non-EX and non-FX switches.
  - If traffic flows between non-EX or non-FX switches and EX or FX switches, the traffic will use QoS level 3.
  - For communicating with FEX for new classes, the traffic carries a Layer 2 COS value of 0.
- Starting with Release 4.0(1), you can configure QoS Class or create a Custom QoS Policy to apply on an L3Out Interface.

Configuring QoS Directly on L3Out Using GUI

This section describes how to configure QoS directly on an L3Out. This is the preferred way of configuring L3Out QoS starting with Cisco APIC Release 4.0(1).

Procedure

Step 1 From the main menu bar, select **Tenants** > ***<tenant-name>*** .

Step 2 In the left-hand navigation pane, expand **Tenant <tenant-name>** > **Networking** > **L3Outs** > ***<routed-network-name>*** > **Logical Node Profiles** > ***<node-profile-name>*** > **Logical Interface Profiles** > **<interface-profile-name>**.

You may need to create new network, node profile, and interface profile if none exists.

Step 3 In the main window pane, configure custom QoS for your L3Out.

You can choose to configure a standard QoS level priority using the **QoS Priority** drop-down list. Alternatively, you can set an existing or create a new custom QoS policy from the **Custom QoS Policy** dropdown.

Configuring QoS Contracts for L3Outs Using GUI

This section describes how to configure QoS for L3Outs using Contracts.

Note Starting with Release 4.0(1), we recommend using custom QoS policies for L3Out QoS as described in Configuring QoS Directly on L3Out Using GUI, on page 2 instead.

Configuring QoS classification using a contract as described in this section will take priority over any QoS policies configured directly on the L3Out.

Procedure

Step 1 Configure the VRF instance for the tenant consuming the L3Out to support QoS to be enforced on the border leaf switch that is used by the L3Out.

a) From the main menu bar, choose **Tenants** > ***<tenant-name>*** .
b) In the **Navigation** pane, expand **Networking**, right-click **VRFs**, and choose **Create VRF**.
c) Enter the name of the VRF.
d) In the **Policy Control Enforcement Preference** field, choose **Enforced.**
e) In the **Policy Control Enforcement Direction** choose **Egress**

VRF enforcement must be set to `Egress` when the QoS classification is done in the contract.

f) Complete the VRF configuration according to the requirements for the L3Out.

Step 2 When configuring filters for contracts to enable communication between the EPGs consuming the L3Out, include a QoS class or target DSCP to enforce the QoS priority in traffic ingressing through the L3Out.

a) On the Navigation pane, under the tenant that that will consume the L3Out, expand **Contracts**, right-click **Filters** and choose **Create Filter**.
b) In the **Name** field, enter a filter name.
c) In the **Entries** field, click **+** to add a filter entry.
d) Add the Entry details, click **Update** and **Submit**.
e) Expand the previously created filter and click on a filter entry.
f) Set the **Match DSCP** field to the desired DSCP level for the entry, for example, **EF**.

Step 3 Add a contract.

a) Under **Contracts**, right-click **Standard** and choose **Create Contract**.
b) Enter the name of the contract.
c) In the **QoS Class** field, choose the QoS priority for the traffic governed by this contract. Alternatively, you can choose a **Target DSCP** value.

Configuring QoS classification using a contract as described in this section will take priority over any QoS policies configured directly on the L3Out.

d) Click the **+** icon on **Subjects** to add a subject to the contract.
e) Enter a name for the subject.
f) In the QoS Priority field, choose the desired priority level. You cannot choose **Unspecified**.
g) Under **Filter Chain**, click the **+** icon on **Filters** and choose the filter you previously created, from the drop down list.
h) Click **Update**.
i) On the **Create Contract Subject** dialog box, click **OK**.