# QoS Preservation Across IPN for ACI Fabrics, 4.1.1

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# New and changed information

The following table provides an overview of the significant changes up to this current release. The table does not provide an exhaustive list of all changes or of the new features up to this release.

| Release Version | Feature | Description |
| --- | --- | --- |
| Nexus Dashboard 4.1.1 | Improved navigation and workflow when configuring QoS preservation across IPN | Beginning with Nexus Dashboard 4.1.1, the navigation and workflow when configuring QoS preservation across IPN in Nexus Dashboard have been enhanced. |

# QoS and global DSCP policy

Cisco ACI Quality of Service (QoS) feature allows you to classify the network traffic in your fabric and then to prioritize and police the traffic flow to help avoid congestion in your network. When traffic is classified within the fabric, it is assigned a QoS Priority Level, which is then used throughout the fabric to provide the most desirable flow of packets through the network.

Nexus Dashboard supports configuration of QoS level based on source EPG or a specific Contract. Additional options are available in each fabric directly. You can find detailed information on ACI QoS in *Cisco APIC and QoS*.

When traffic is sent and received within the Cisco ACI fabric, the QoS Level is determined based on the CoS value of the VXLAN packet's outer header. In certain use cases, such as multi-pod or remote leaf topologies, the traffic must transit an inter-fabric network, where devices that are not under Cisco APIC's management may modify the CoS values in the packets. In these cases you can preserve the ACI QoS Level between parts of the same fabric or different fabrics by creating a mapping between the Cisco ACI QoS level and the DSCP value within the packet.

# DSCP policy guidelines and limitations

When configuring the global DSCP translation policy, the following guidelines apply.

- Global DSCP policy is supported for on-premises fabrics only.
- When defining the global DSCP policy, you must pick a unique value for each QoS Level.
- When assigning QoS level, you can choose to assign it to a specific Contract or an entire EPG.

  If multiple QoS levels could apply for any given traffic, only one is applied using the following precedence:

  - Contract QoS level: If QoS is enabled in the Contract, the QoS level specified in the contract is used.
  - Source EPG QoS level: If QoS level is not specified for the Contract, the QoS level set for the source EPG is used.
  - Default QoS level: If no QoS level is specified, the traffic is assigned Level 3 QoS class by default.

# Configure global DSCP policy

*Before you begin:*

- You should be familiar with Quality of Service (QoS) functionality within ACI fabrics.

  QoS is described in more detail in *Cisco APIC and QoS*.

When traffic is sent and received within a Cisco ACI fabric, it is prioritized based on the ACI QoS Level, which is determined based on the CoS value of the VXLAN packet's outer header. When traffic exits the ACI fabric toward an inter-fabric network, for example in multipod and remote leaf switch topologies, the QoS level is translated into a DSCP value which is included in the outer header of the VXLAN-encapsulated packet.

This section describes how to define the DSCP translation policy for traffic entering or exiting ACI fabric. This is required when traffic must transit through non-ACI networks, where devices that are not under Cisco APIC's management may modify the CoS values in the transiting packets.

1. Navigate to the **Orchestration** window.

   **Manage > Orchestration**

2. Create a new tenant policy.

   a. Choose **Tenant Templates > Tenant Policies**.

   b. On the **Tenant Policy Templates** page, click **Create Tenant Policy Template**.

   c. In the **Tenant Policies** page's right properties sidebar, provide the **Name** for the template.

   d. From the **Select a Tenant** drop-down, choose the tenant with which you want to associate this template.

      All the policies that you create int his template as described in the following steps will be associated with the selected tenant and deployed to it when you push the template to a specific fabric.

   By default, the new template is empty, so you must add one or more tenant policies as described in the following steps. You don't have to create every policy available in the template - you can define one or more policies of each type to deploy along with this template. If you don't want to create a specific policy, simply skip the step that describes it.

3. Create a QoS DSCP policy.

   a. From the **+Create Object** drop-down, select **QoS DSCP**.

   b. In the right properties sidebar, provide the **Name** for the policy.

   c. (Optional) Click **Add Description** and provide a description for the policy.

   d. Provide policy details.

      - **Admin State** - Enables or disables the policy.
      - **Advanced Settings** - Click the arrow next to this section to expand.
        Choose the DSCP value for each ACI QoS level. Each drop-down contains the default list of available DSCP values. You must choose a unique DSCP value for each level.

   e. Repeat this step to create any additional QoS DSCP policies.

Typically, we recommend applying this policy consistently across all fabrics that are part of your Multi-Fabric domain.

4. Assign the policy to one or more fabrics.
    a. In the Fabric Policies template view, select **Actions > Add/Remove Fabrics**.
    b. In the **Add Fabrics to <tempalte>** dialog, select one or more fabrics for this policy template and click **Ok**.
    c. In the Fabric Policies template view, click **Deploy**.

    After you save and deploy, the DSCP policy settings will be pushed to each fabric. You can verify the configuration by signing in to the fabric's APIC and navigating to **Tenants > infra > Policies > Protocol > DSCP class-CoS translation policy for L3 traffic**.

*What to do next:*

After you have defined the global DSCP policy, you can assign the ACI QoS Levels to EPGs or Contracts as described in Set QoS level for EPGs and contracts.

# Set QoS level for EPGs and contracts

*Before you begin:*

- You must have defined the global DSCP policy, as described in Configure global DSCP policy.
- You should be familiar with Quality of Service (QoS) functionality within ACI fabrics.

  QoS is described in more detail in *Cisco APIC and QoS*.

This section describes how to choose an ACI QoS level for traffic in your fabrics. You can choose to specify QoS for individual Contracts or entire EPGs.

1. Navigate to the **Orchestration** page.

   **Manage > Orchestration**

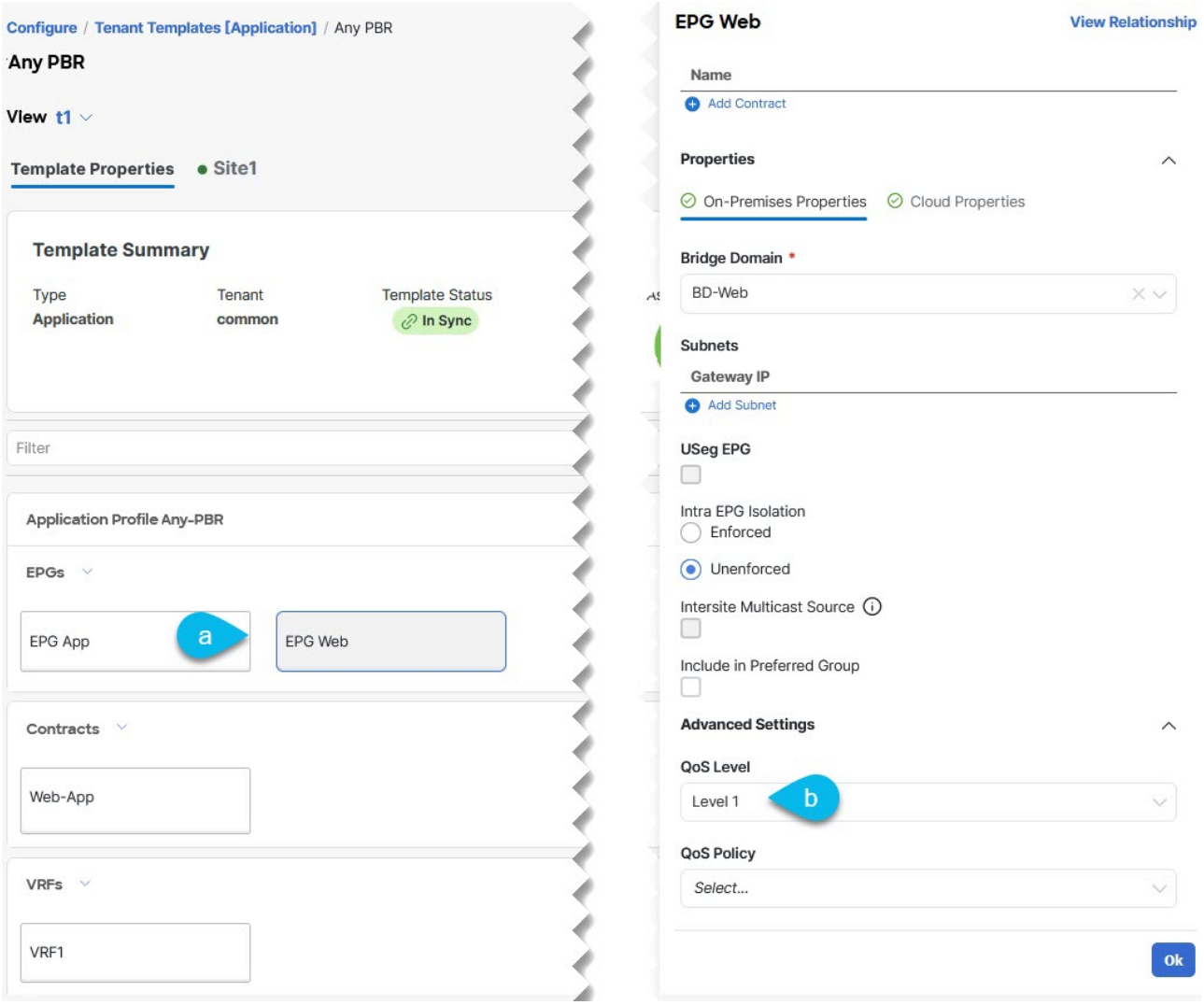
2. Choose the Schema that you want to edit.

   a. Choose **Tenanat Templates > Applications**.

   b. Click the name of the schema that you want to edit or **Add Schema** to create a new one.

   The **Edit policy** page opens.

3. Pick a QoS Level for an EPG.




*Edit policy*

a. In the main pane, scroll down to the **EPG** area and select an EPG or click **Create EPG** to create a new one.

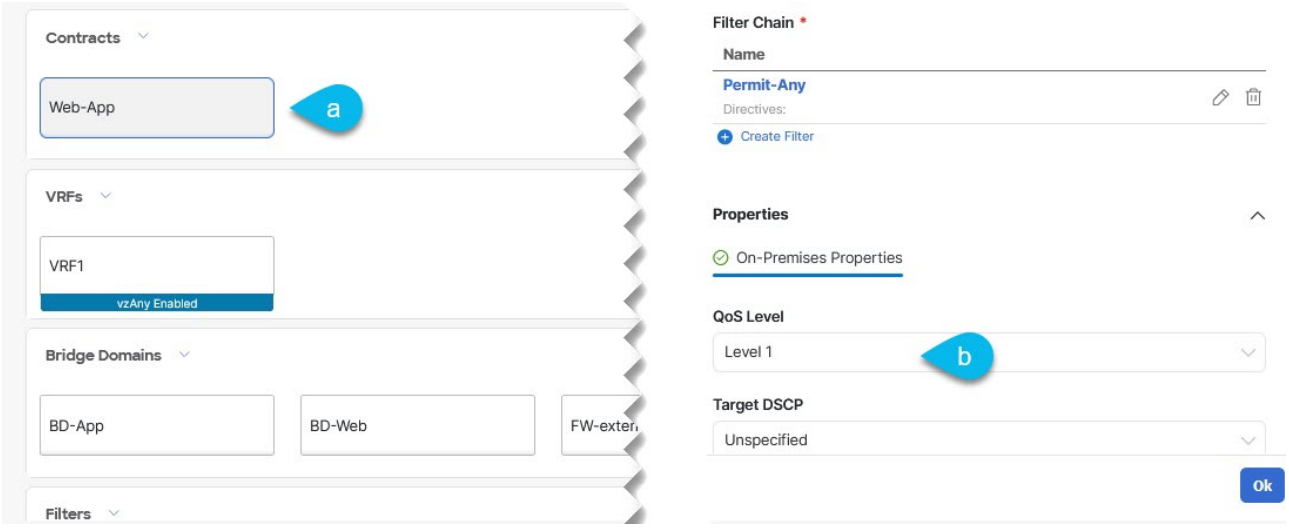
b. In the right sidebar, scroll down to the **QoS Level** drop-down and choose the QoS Level you want to assign to the EPG.

4. (Optional) Pick a QoS Level for an External EPG.

a. In the main pane, scroll down to the **External EPG** area and select an EPG or click **Create External EPG** to create a new one.

b. In the right sidebar, scroll down to the **QoS Level** drop-down and choose the QoS Level you want to assign to the External EPG.

5. Pick a QoS Level for a Contract.




*Pick a QoS Level*

a. In the main pane, scroll down to the **Contract** area and select a Contract or click **Create Contract** to create a new one.

b. In the right sidebar, scroll down to the **QoS Level** drop-down and choose the QoS Level you want to assign to the Contract.

6. Click **Ok** to save.

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