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Network Configuration Example

Configuring IEEE 802.1p Priority Remapping on an FCoE-FC Gateway

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Introduction

This document describes FCoE priority remapping. It also provides a step-by-step configuration example for configuring FCoE priority remapping for a converged Ethernet network that uses priority 5 (IEEE code point 101) for FCoE traffic.

Benefits of Configuring IEEE 802.1p Priority Remapping on an FCoE-FC Gateway

A priority is a 3-bit IEEE 802.1p value (code point) in the priority code point (PCP) field of the Ethernet header. The IEEE 802.1p priority identifies traffic so that you can classify (map) the traffic into forwarding classes and apply class of service (CoS) to the forwarding classes, based on the priority value.

When a QFX Series switch acts as a Fibre Channel over Ethernet (FCoE) to Fibre Channel (FC) gateway (an FCoE-FC gateway), it connects an Ethernet network that carries FCoE traffic to an FC storage area network (SAN). The FCoE-FC gateway connects directly to the FC switch in the SAN. The industry-standard default priority assigned to FCoE traffic is priority 3 (IEEE 802.1p code point 011).

The default configuration of Juniper Networks® QFX Series switches classifies priority 3 to FCoE traffic. To support the default FCoE traffic configuration, by default the native FC interfaces on the QFX Series switch encapsulate FC traffic coming from the SAN in Ethernet with the IEEE 802.1p priority value 3 (011). So if your network uses priority 3 for FCoE traffic, you only need to configure priority-based flow control (PFC) to achieve lossless handling of FCoE traffic.

However, if your FCoE network uses a different priority than priority 3 to identify FCoE traffic, priority remapping enables you to classify FCoE traffic based on the IEEE 802.1p priority your network uses.

Priority remapping gives you the flexibility to use any IEEE 802.1p priority to identify FCoE traffic on your converged SAN and Ethernet network, so you can configure your converged network the way you want. In addition, if your network uses a priority other than priority 3 for FCoE traffic, you do not have to reconfigure your existing FCoE network to use the standard default priority for FCoE traffic, saving you time and money.

Priority remapping also means that you can use different priorities to identify FCoE traffic between the Ethernet (FCoE) network and different SAN networks. For example, you could map traffic between the Ethernet network and SAN A to a lossless forwarding class classified to priority 5 (101), and map traffic between the same Ethernet network and SAN B to a lossless forwarding class classified to priority 6 (110).

Each local FC fabric on an FCoE-FC gateway can connect to a different SAN, and the traffic destined for each SAN can be identified by its own priority. Using different priorities for FCoE flows to different SANs can help with accounting, and can reduce congestion if there are multiple FCoE flows destined for multiple SANs that come in to the same ingress interfaces.

Related Documentation

- Understanding CoS IEEE 802.1p Priority Remapping on an FCoE-FC Gateway on page 2

Understanding CoS IEEE 802.1p Priority Remapping on an FCoE-FC Gateway

When the QFX Series switch acts as an FCoE-FC gateway, it connects an Ethernet network that carries Fibre Channel over Ethernet (FCoE) traffic to a Fibre Channel (FC) network. Ethernet interfaces connect to the FCoE network. Native FC interfaces (NP_Ports) connect to the FC network.

FCoE traffic typically uses IEEE 802.1p priority 3 (code point 011). The QFX Series default configuration maps priority 3 traffic to the FCoE forwarding class. If your FCoE network uses priority 3 for FCoE traffic, you do not need to remap priorities, because the default configuration maps priority 3 to the FCoE forwarding class. (But you do need to enable PFC on IEEE 802.1p code point 3 on the Ethernet interfaces to achieve lossless behavior.)

However, if the FCoE network uses a different IEEE 802.1p priority than priority 3 for FCoE traffic, then you can use priority remapping to classify FCoE traffic into a lossless forwarding class mapped to that priority (and classified to that priority on the FCoE Ethernet interfaces in the ingress classifier). You specify the lossless forwarding class used for the FCoE traffic by configuring a fixed classifier and applying it to the native FC (NP_Port) interface. All traffic received from the FC SAN on that NP_Port interface is classified into the forwarding class specified in the fixed classifier.

When native FC interfaces on the FCoE-FC gateway encapsulate incoming FC traffic in Ethernet to create FCoE frames, by default they assign IEEE 802.1p code point 011 to the FCoE traffic, forward the traffic internally to the gateway Ethernet interfaces, and then forward the traffic to the FCoE network. Setting a rewrite value for the IEEE 802.1p code point configures the gateway native FC interface to assign the rewrite value priority to the FCoE frames when the native FC interface forwards the FCoE frames to the gateway Ethernet interface. Instead of a priority of 3, the FCoE frames use the priority specified in the rewrite value.

You can configure one rewrite value for each local FCoE-FC gateway fabric. All of the native FC interfaces in a particular fabric must use the same rewrite value. Native FC interfaces that belong to different FCoE-FC gateway fabrics can use different rewrite values.

Priority Remapping Configuration

Native FC interfaces on an FCoE-FC gateway receive native FC traffic from the FC SAN and encapsulate it in Ethernet to create FCoE frames. Priority remapping enables you to map the encapsulated FC traffic (the FCoE traffic) to any IEEE 802.1p priority. (This is similar to the rewrite rules you can configure to remap forwarding classes to code points on Ethernet egress interfaces, but the rewrite takes place at the ingress FC interface so

that the QFX Series switch uses the correct priority for FCoE traffic on the converged Ethernet network.)

To support lossless traffic flows, you must configure the remapped priority correctly on the native FC interfaces and also on the Ethernet interfaces that connect to the FCoE network. Achieving lossless behavior for FCoE traffic when you remap the FCoE priority requires configuring:

- A lossless forwarding class for FCoE traffic (or using the default *fcoe* forwarding class)
- A behavior aggregate (BA) classifier on the FCoE Ethernet interfaces to map the FCoE forwarding class to the IEEE 802.1p code points (priority) used for FCoE traffic on the FCoE network (the ingress classifier priority for the forwarding class must be the same as the rewrite value priority)
- A fixed classifier on the FCoE-FC gateway FC interface that maps all traffic from the FC network into the lossless FCoE forwarding class (the forwarding class must be lossless)
- A priority rewrite value that remaps the IEEE 802.1p code point on the FCoE-FC gateway FC interface to the priority used for FCoE traffic on the FCoE network
- An input congestion notification profile (CNP) to enable priority-based flow control (PFC) on the FCoE code point (the code point used as the rewrite value) at the Ethernet ingress interfaces

The ingress and egress configurations must match to achieve lossless behavior. The priority and the forwarding class specified in the BA classifier and in the CNP on the Ethernet ingress interfaces must match the fixed classifier and rewrite value on the FC interfaces. You must specify the same lossless FCoE forwarding class in each configuration and use the same IEEE 802.1p code point (priority) so that the FCoE traffic is properly classified into flows and so that those flows receive lossless treatment.

For example, if you configure a lossless forwarding class named *my_fcoe_fc* and your Ethernet network uses IEEE 802.1p priority 5 (code point 101) for FCoE traffic, then:

- The forwarding class configuration, the BA classifier, and the fixed classifier all specify *my_fcoe_fc* as the forwarding class.
- The BA classifier, the input CNP, and the rewrite value all specify the IEEE 802.1p code point 101.

Configuration Rules

The following configuration rules apply when you remap priorities on an FCoE-FC gateway:

- Each native FC interface (NP_Port) supports one IEEE 802.1p priority value. The interface rewrites the IEEE 802.1p code point of all incoming traffic on the interface to the rewrite value. (The FC interface uses either the default value of 3 or the rewrite value for all incoming traffic.)
- Ports in the same FCoE-FC gateway local fc-fabric must use the same rewrite value. For example, if ports fc-0/0/0 and fc-0/0/1 are in the same local FCoE-FC gateway fabric, they must use the same rewrite value. If you attempt to commit a configuration

that uses different IEEE 802.1p priority rewrite values, the system returns a commit error.

- Ports in different FCoE-FC gateway local fc-fabrics can use different rewrite values. An example scenario is:
  - Interfaces fc-0/0/0 and fc-0/0/1 are in FCoE-FC gateway fc-fabric *my_fc_fab1*.
  - Interfaces fc-0/0/4 and fc-0/0/5 are in FCoE-FC gateway fc-fabric *my_fc_fab2*.

  In this scenario, interfaces fc-0/0/0 and fc-0/0/1 must use the same rewrite value because they belong to the same local FC fabric on the gateway. Interfaces fc-0/0/4 and fc-0/0/5 also must use the same rewrite value because they belong to the same local FC fabric. However, the rewrite value you use for interfaces fc-0/0/0 and fc-0/0/1 can be different than the rewrite value you use for interfaces fc-0/0/4 and fc-0/0/5 because the interfaces belong to different local FC fabrics.
- You can apply the rewrite value only to native FC interfaces; you cannot apply the rewrite value configuration to Ethernet interfaces.
- The forwarding class specified in the fixed classifier on the native FC interface must be a lossless forwarding class. You cannot apply a fixed classifier to a native FC interface unless the associated forwarding class is lossless. (The forwarding class must be one of the two default lossless forwarding classes, or you must explicitly configure the forwarding class with the *no-loss* drop attribute.)
- The lossless forwarding class and IEEE 802.1p priority configuration must match on the FCoE-FC gateway native FC interfaces and Ethernet interfaces:
  - The same IEEE 802.1p priority (code point) must be enabled for PFC on the Ethernet ingress interfaces, classified to the lossless forwarding class used in the native FC interface fixed classifier, and set as the rewrite value on the native FC interfaces.
  - The same lossless forwarding class must be used in the fixed classifier on the native FC interfaces and in the classifier configuration on the Ethernet interfaces.

Fate Sharing

To ensure that congestion on one interface does not affect the fate of traffic on a native FC interface on which you remap priorities, avoid fate sharing (different traffic flows receiving the same CoS treatment) configurations.

You can avoid fate sharing by ensuring that the remapping priority (code point) on the native FC interface is classified only to the forwarding class used in the fixed classifier on all other interfaces. For example, if you configure a fixed classifier on an FC interface that classifies all of the traffic into lossless forwarding class myfcoe1 and remaps the priority to priority 5 (IEEE 802.1p code point 101), then in all other classifier configurations on all other interfaces, priority 5 should always be classified to forwarding class myfcoe1. If you classify priority 6 on another interface to forwarding class myfcoe1, then congestion on priority 6 traffic affects priority 5 traffic unfairly.

Related Documentation

- Benefits of Configuring IEEE 802.1p Priority Remapping on an FCoE-FC Gateway on page 1

Example: Configuring IEEE 802.1p Priority Remapping on an FCoE-FC Gateway

This example shows how to configure FCoE priority remapping for a converged Ethernet network that uses priority 5 (IEEE code point 101) for FCoE traffic. If your network uses priority 3 for FCoE traffic, then you do not need to remap the FCoE priority, because the default configuration supports lossless FCoE transport on priority 3.

Requirements

This example uses the following hardware and software components:

- One Juniper Networks QFX3500 Switch
- Junos OS Release 12.3 or later for the QFX Series

NOTE: This configuration example has been tested using the software release listed and is assumed to work on all later releases.

Overview

Native FC interfaces on an FCoE-FC gateway receive native FC traffic from the FC SAN and encapsulate it in Ethernet to create FCoE frames. Priority remapping enables you to map the encapsulated FC traffic (the FCoE traffic) to any IEEE 802.1p priority.

To support lossless FCoE traffic flows, you must configure the remapped priority correctly on the native FC interfaces and also on the Ethernet interfaces that connect to the FCoE network. Achieving lossless behavior for FCoE traffic when you remap the FCoE priority requires configuring:

- A lossless forwarding class for FCoE traffic (or using the default **fcoe** forwarding class)
- A behavior aggregate (BA) classifier on the FCoE Ethernet interfaces to map the FCoE forwarding class to the IEEE 802.1p code points (priority) used for FCoE traffic on the FCoE network (the ingress classifier priority for the forwarding class must be the same as the rewrite value priority)
- A fixed classifier on the FCoE-FC gateway FC interface that maps all traffic from the FC network into the lossless FCoE forwarding class (the forwarding class must be lossless)

- A priority rewrite value that remaps the IEEE 802.1p code point on the FCoE-FC gateway FC interface to the priority used for FCoE traffic on the FCoE network
- An input congestion notification profile (CNP) to enable priority-based flow control (PFC) on the FCoE code point (the code point used as the rewrite value) at the Ethernet interface ingress and an output CNP to configure flow control to pause the correct output queue at the Ethernet interface egress

NOTE: **Configuring or changing PFC on an interface blocks the entire port until the PFC change is completed. After a PFC change is completed, the port is unblocked and traffic resumes. Blocking the port stops ingress and egress traffic, and causes packet loss on all queues on the port until the port is unblocked.**

- A DCBX application and application map on the Ethernet interface to support DCBX application TLV exchange for the lossless FCoE traffic on the FCoE priority

The priority specified in the BA classifier, CNP, and DCBX application map on the Ethernet ingress interfaces must match the priority specified in the fixed classifier and rewrite value configurations on the FC interfaces. You must specify the same lossless FCoE forwarding class in each configuration and use the same IEEE 802.1p code point (priority) so that the FCoE traffic is properly classified into flows and so that those flows receive lossless treatment.

Topology

This example shows how to configure priority remapping of FCoE traffic on one native FC interface (fc-0/0/2) connected to the FC SAN and on one Ethernet interface (xe-0/0/27) connected to the converged Ethernet (FCoE) network. Both the native FC interface and the Ethernet interface belong to the same local FC fabric on the FCoE-FC gateway.

The converged Ethernet network uses priority 5 (IEEE 80.21p code point 101) for FCoE traffic. The native FC interface on the FCoE-FC gateway receives FC traffic from the FC SAN. The native FC interface encapsulates the FC traffic in Ethernet to create FCoE frames, tags the frames with the IEEE 802.1p priority value 101, and then forwards the FCoE frames to the FCoE-FC gateway Ethernet interface. Because traffic marked with IEEE 802.1p priority 5 is mapped to a lossless FCoE forwarding class, the traffic receives lossless treatment. The Ethernet interface forwards the FCoE traffic on to the Ethernet network.

FCoE traffic (tagged with priority 5) arriving at the FCoE-FC gateway from the Ethernet network receives lossless treatment and is forwarded to the native FC interface. The native FC interface removes the Ethernet encapsulation from the FCoE frames and forwards the resulting native FC traffic to the FC SAN.

Figure 1 on page 7 shows the topology for this example, and Table 1 on page 7 shows the configuration components for this example.

Figure 1: Topology of the IEEE 802.1p Priority Remapping Example

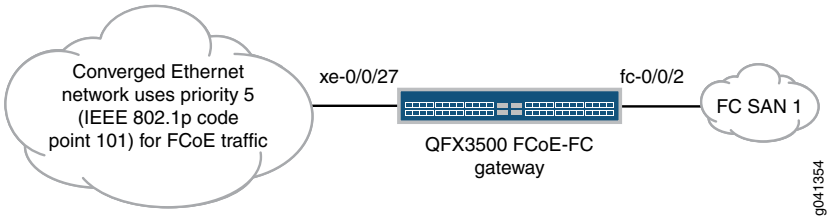

Table 1: Components of the IEEE 802.1p Priority Remapping Configuration Topology

Component	Settings
Hardware	QFX3500 Switch
Forwarding class configuration	Name—**fcoe1** Queue mapping—queue **5** Packet drop attribute—**no-loss** NOTE: The lossless forwarding class can be mapped to any output queue. However, because FCoE uses priority 5 in this example, matching that traffic to a forwarding class that uses queue 5 creates a configuration that is logical and easy to map because the priority and the queue are identified by the same number.
BA classifier (Ethernet interface)	Name—**fcoe_gw_classifier** Maps code point **101** (IEEE 802.1p priority 5) to the **fcoe1** forwarding class and assigns traffic a packet loss priority of **low**. The classifier is applied to Ethernet interface **xe-0/0/27**.
Fixed classifier (native FC interface)	Forwarding class—**fcoe1** The classifier is applied to native FC interface **fc-0/0/2**.
Rewrite value	IEEE 802.1p code point—**101** The rewrite value is applied to native FC interface **fc-0/0/2**.
PFC configuration (CNP on Ethernet interface)	Name—**fcoe1_p5_rewrite_cnp** Input CNP code point—**101** Output CNP code point—**101** Output CNP flow control queue—**5** Interface—**xe-0/0/27**

Table 1: Components of the IEEE 802.1p Priority Remapping Configuration Topology *(continued)*

Component	Settings
DCBX application mapping	Application name—**myfcoe5** Application ether-type—**0x8906** Application map name—**myfcoe5_map** Application map code points—**101** Interface—**xe-0/0/27** NOTE: LLDP and DCBX must be enabled on the interface. By default, LLDP and DCBX are enabled on all Ethernet interfaces.

The priority used to identify FCoE traffic (5, IEEE 802.1p code point 101) is configured for lossless transport across the QFX device on interfaces xe-0/0/27 and fc-0/0/2, which belong to the same local FC fabric on the FCoE-FC gateway.

On the Ethernet interface, the classifier maps priority 5 to a lossless forwarding class (fcoe1), the input CNP enables PFC on incoming priority 5 traffic, and the output CNP enables output queue 5 to respond to pause messages received from the peer on traffic tagged with priority 5. On the native FC interface, FC traffic is remapped from priority 3 (the default mapping) to priority 5 and assigned to the same lossless forwarding class, fcoe1, because of the fixed classifier configuration. In this way, traffic tagged with priority 5 on interfaces xe-0/0/27 and fc-0/0/2 receives lossless treatment.

NOTE: To avoid fate sharing, ensure that the remapped priority is classified only to the forwarding class used in the fixed classifier on all other interfaces. For example, if you configure a fixed classifier on an FC interface that classifies all of the traffic into lossless forwarding class fcoe1 and remaps the priority to priority 5 (IEEE 802.1p code point 101), then in all other classifier configurations on all other interfaces, priority 5 should always be classified to forwarding class fcoe1. If you classify priority 6 on another interface to forwarding class fcoe1, then congestion on priority 6 traffic affects priority 5 traffic unfairly.

NOTE: This example does not include scheduling (bandwidth allocation) configuration or the local FC fabric configuration. This examples focuses only on priority remapping.

Configuration

CLI Quick Configuration

To quickly configure IEEE 802.1p priority remapping on an FCoE-FC gateway, copy the following commands, paste them in a text file, remove line breaks, change variables and

details to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

```
set class-of-service forwarding-classes class fcoe1 queue-num 5 no-loss
set class-of-service classifiers ieee-802.1 fcoe_gw_classifier forwarding-class fcoe1
  loss-priority low code-points 101
set class-of-service interfaces xe-0/0/27 unit 0 classifiers ieee-802.1 fcoe_gw_classifier
set class-of-service interfaces fc-0/0/2 forwarding-class fcoe1
set class-of-service interfaces fc-0/0/2 rewrite-value input ieee-802.1p code-point 101
set class-of-service congestion-notification-profile fcoe1_p5_rewrite_cnp input ieee-802.1
  code-point 101 pfc
set class-of-service congestion-notification-profile fcoe1_p5_rewrite_cnp output ieee-802.1
  code-point 101 flow-control-queue 5
set class-of-service interfaces xe-0/0/27 congestion-notification-profile
  fcoe1_p5_rewrite_cnp
set applications application myfcoe5 ether-type 0x8906
set policy-options application-maps myfcoe5_app_map application myfcoe5 code-points
  101
set protocols dcbx interface xe-0/0/27 application-map myfcoe5_app_map
```

Step-by-Step Procedure

To configure a lossless forwarding class for FCoE traffic, classify FCoE traffic into that forwarding class, configure a rewrite value on the native FC interface for the FCoE traffic, enable PFC on the Ethernet interface, and configure DCBX application protocol TLV exchange for FCoE traffic:

1. Configure the lossless forwarding class (named **fcoe1** and mapped to output queue **5**) for FCoE traffic that uses IEEE 802.1p priority 5:

   ```
   [edit class-of-service]
   user@switch# set forwarding-classes class fcoe1 queue-num 5 no-loss
   ```

2. Configure an ingress classifier named **fcoe_gw_classifier** to map the FCoE priority (IEEE 802.1p code point **101**) to the lossless FCoE forwarding class (**fcoe1**):

   ```
   [edit class-of-service classifiers]
   user@switch# set ieee-802.1 fcoe_gw_classifier forwarding-class fcoe1 loss-priority
     low code-points 101
   ```

3. Apply the classifier named **fcoe_gw_classifier** to Ethernet interface **xe-0/0/27**:

   ```
   [edit class-of-service]
   user@switch# set interfaces xe-0/0/27 unit 0 classifiers ieee-802.1
     fcoe_gw_classifier
   ```

4. Configure the fixed classifier on the native FC interface, using the lossless FCoE forwarding class **fcoe1** (all traffic from the FC SAN is classified into the specified forwarding class).

   The traffic classified into this forwarding class is tagged with the priority value configured in the next step.

   ```
   [edit class-of-service]
   user@switch# set interfaces fc-0/0/2 forwarding-class fcoe1
   ```

5. Configure the rewrite value (IEEE 802.1p code point **101**) applied to all incoming traffic from the FC SAN on the native FC interface.

The rewrite value is the IEEE 802.1p priority that the encapsulated FCoE traffic classified into the **fcoe1** forwarding class uses on the converged Ethernet network.

```
[edit class-of-service]
user@switch# set interfaces fc-0/0/2 rewrite-value input ieee-802.1p code-point
  101
```

6. Configure the input stanza of the CNP (named **fcoe1_p5_rewrite_cnp**) to enable PFC on the FCoE priority on the Ethernet interface:

```
[edit class-of-service]
user@switch# set congestion-notification-profile fcoe1_p5_rewrite_cnp input
  ieee-802.1 code-point 101 pfc
```

7. Configure the output stanza of the CNP to enable output queue 5 to respond to pause messages received from the peer on traffic tagged with priority 5:

```
[edit class-of-service]
user@switch# set congestion-notification-profile fcoe1_p5_rewrite_cnp output
  ieee-802.1 code-point 101 flow-control-queue 5
```

8. Apply the CNP named **fcoe1_p5_rewrite_cnp** to Ethernet interface **xe-0/0/27**:

```
[edit class-of-service]
user@switch# set interfaces xe-0/0/27 congestion-notification-profile
  fcoe1_p5_rewrite_cnp
```

9. Configure a DCBX application for FCoE to map to the Ethernet interface, so that DCBX can exchange application protocol TLVs on the correct (remapped) IEEE 802.1p FCoE priority:

```
[edit]
user@switch# set applications application myfcoe5 ether-type 0x8906
```

10. Configure a DCBX application map to map the FCoE application to the correct (remapped) IEEE 802.1p FCoE priority:

```
[edit]
user@switch# set policy-options application-maps myfcoe5_app_map application
  myfcoe5 code-points 101
```

11. Apply the application map to the Ethernet interface so that DCBX exchanges FCoE application TLVs on the correct code point:

```
[edit]
user@switch# set protocols dcbx interface xe-0/0/27 application-map
  myfcoe5_app_map
```

Verification

To verify the configuration and proper operation of IEEE 802.1p priority remapping on an FCoE-FC gateway, perform these tasks:

Verifying the Forwarding Class Configuration

Purpose Verify that the lossless forwarding class **fcoe1** has been created.

Action Show the forwarding class configuration by using the operational command **show class-of-service forwarding class**:

```
user@switch> show class-of-service forwarding-class
Forwarding class                          ID      Queue  Policing priority  No-Loss

  best-effort                             0         0         normal        Disabled

  fcoe                                     1         3         normal         Enabled

  no-loss                                  2         4         normal         Enabled

  network-control                         3         7         normal        Disabled

  fcoe1                                    4         5         normal         Enabled

  mcast                                   8         8         normal        Disabled
```

Meaning The **show class-of-service forwarding-class** command shows all of the forwarding classes. The command output shows that the **fcoe1** forwarding class is configured on output queue **5** with the no-loss packet drop attribute enabled.

Because the default forwarding classes were not explicitly configured, they remain in their default state, including the lossless configuration of the **fcoe** and **no-loss** default forwarding classes.

Verifying the Behavior Aggregate Classifier Configuration

Purpose Verify that the classifier maps the forwarding classes to the correct IEEE 802.1p code points (priorities) and packet loss priorities.

Action List the classifier configured for priority remapping using the operational mode command **show class-of-service classifier name fcoe_gw_classifier**:

```
user@switch> show class-of-service classifier name fcoe_gw_classifier
Classifier: fcoe_gw_classifier, Code point type: ieee-802.1, Index: 13100
  Code point         Forwarding class                  Loss priority
  101                fcoe1                             low
```

Meaning The **show class-of-service classifier name fcoe_gw_classifier** command shows the IEEE 802.1p code points and the loss priorities that are mapped to the forwarding classes in the classifier. The command output shows that the classifier maps forwarding class **fcoe1** to IEEE 802.1p code point **101** (priority 5) with a packet loss priority of **low**.

Verifying the FC Interface Configuration (Fixed Classifier, Rewrite Value)

Purpose Verify that the native FC interface (NP_Port) classifies incoming traffic into forwarding class **fcoe1** and that the interface rewrite value is priority 5 (IEEE code point 101).

Action Display the FC interface configuration using the operational mode command **show configuration class-of-service interfaces fc-0/0/2**:

```
user@switch> show configuration class-of-service interfaces fc-0/0/2
rewrite-value {
    input {
        ieee-802.1 {
            code-point {
                101;
            }
        }
    }
}
forwarding-class fcoe1;
```

Meaning The **show configuration class-of-service interfaces fc-0/0/2** command shows that the rewrite value for incoming (input) traffic is IEEE 802.1p code point **101** (priority 5), and that the interface uses forwarding class **fcoe1** as the fixed classifier for all incoming traffic.

Verifying the Ethernet Interface PFC Configuration (CNP)

Purpose Verify that PFC is enabled on the correct priority (IEEE 802.1p code point **101**) for lossless transport and that flow control is enabled on the correct output queue (queue **5**) on the Ethernet interface.

Action List the congestion notification profile using the operational mode command **show class-of-service congestion-notification fcoe1_p5_rewrite_cnp**:

```
user@switch> show class-of-service congestion-notification fcoe1_p5_rewrite_cnp
Name: fcoe1_p5_rewrite_cnp, Index: 7061
Type: Input
Cable Length: 100 m
  Priority     PFC          MRU
  000          Disabled
  001          Disabled
  010          Disabled
  011          Disabled
  100          Disabled
  101          Enabled      2500
  110          Disabled
  111          Disabled
Type: Output
  Priority     Flow-Control-Queues
  101
               5
```

Meaning The **show class-of-service congestion-notification fcoe1_p5_rewrite_cnp** command shows the input and output stanzas of the CNP. The input stanza shows that PFC is enabled on IEEE 802.1p code point 101 (priority 5). The input stanza also shows that the CNP uses

the default values of 100 meters for the cable length value and 2500 bytes for the maximum receive unit (MRU) value.

The output stanza shows that flow control is enabled on output queue **5** for IEEE 802.1p priority code point **101** (priority 5).

Verifying the Ethernet Interface Configuration

Purpose Verify that the classifier **fcoe_gw_classifier** and the congestion notification profile **fcoe1_p5_rewrite_cnp** are configured on Ethernet interface **xe-0/0/27**.

Action List the ingress interfaces using the operational mode command **show configuration class-of-service interfaces xe-0/0/27**:

```
user@switch> show configuration class-of-service interfaces xe-0/0/27
congestion-notification-profile fcoe1_p5_rewrite_cnp;
unit 0 {
    classifiers {
        ieee-802.1 fcoe_gw_classifier;
    }
}
```

Meaning The **show configuration class-of-service interfaces xe-0/0/27** command shows that the congestion notification profile **fcoe1_p5_rewrite_cnp** is configured on the interface, and that the IEEE 802.1p classifier associated with the interface is **fcoe_gw_classifier**.

Verifying the DCBX Application Configuration

Purpose Verify that the DCBX application named **myfcoe5** for FCoE is configured.

Action List the DCBX applications by using the configuration mode command **show applications**:

```
user@switch# show applications
application myfcoe5 {
    ether-type 0x8906;
}
```

Meaning The **show applications** configuration mode command shows all of the configured applications. The output shows that the application **myfcoe5** is configured with an EtherType of **0x8906** (the correct EtherType for FCoE traffic).

Verifying the DCBX Application Map Configuration

Purpose Verify that the application map **myfcoe5_app_map** is configured.

Action List the application map by using the configuration mode command **show policy-options application-maps**:

```
user@switch# show policy-options application-maps
myfcoe5_app_map {
    application myfcoe5 code-points 101;
}
```

Meaning The **show policy-options application-maps** configuration mode command lists all of the configured application maps and the applications that belong to each application map. The output shows that there is one application map, **myfcoe5_app_map**, which consists of the application named **myfcoe5** mapped to IEEE 802.1p code point **101** (priority 5).

Verifying the DCBX Application Protocol Exchange Interface Configuration

Purpose Verify that the application map is applied to the correct interface (**xe-0/0/27**).

Action List the application maps using the configuration mode command **show protocols dcbx**:

```
user@switch# show protocols dcbx
interface xe-0/0/27.0 {
    application-map myfcoe5_app_map;
}
```

Meaning The **show protocols dcbx** configuration mode command lists the application map association with interfaces. The output shows that interface **xe-0/0/27** uses application map **myfcoe5_app_map**.

Related Documentation

- Benefits of Configuring IEEE 802.1p Priority Remapping on an FCoE-FC Gateway on page 1
- Understanding CoS IEEE 802.1p Priority Remapping on an FCoE-FC Gateway on page 2