



Configuring Long-distance Over FCoE

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Configuring Long-distance Over FCoE

N9K-C93180YC-FX supports long distance (up to 10 kilometers) on FCoE ISLs. The support is applicable on 10G, 25G, and 40G speeds. For line rate traffic without drops, the ingress buffer sizes and pause/resume thresholds need to be increased on long-distance ISLs. This can be achieved by applying custom long-distance FCoE policies to the ISL ports. The default FCoE-related system level network-qos and queuing policies allocate fixed ingress buffer sizes and pause/resume thresholds to all Ethernet ports. To facilitate the increase of ingress buffer allocation for long-distance ISLs, it may be required to decrease the ingress buffer allocation for a few Ethernet ports by using custom short distance FCoE policies.



Note It is recommended to use FCoE long distance ISLs only for SAN traffic.

Table 1: FCoE Long Distance Across Different Speeds

Speed	Distance
10G	10 Km
25G	10 Km
40G	10 Km

**Note**

- Ingress buffer allocation for Ethernet ports that are not bound to VFC or for Ethernet ports bound to VFC (with short distance requirements, that is less than 100 meters) can be decreased by using the custom short distance FCoE policies.
- When policy is changed on ports running traffic, there will be momentary drop in traffic.
- If ingress buffer allocation failure happens for an Ethernet port, shut/no shut has to be executed on the port after the ingress buffer is made available for the Ethernet port to come up.

Configurations for Different Types of Policies

Configurations vary for different types of policies, that is, default system level policy and interface level custom policies for different speeds, as follows:

• Default System Level Policy for FCoE

```
switch(config)# system qos
switch(config-sys-qos)# service-policy type network-qos default-fcoe-nq-policy
switch(config-sys-qos)# service-policy type queuing input default-fcoe-in-que-policy
switch(config-sys-qos)# service-policy type queuing output default-fcoe-out-policy
```

The default settings for system level policy for FCoE are as follows:

- Buffer-size - 104000
- Pause-threshold - 20800
- Resume-threshold - 19136

• Interface Level Custom Policies for Different Speeds

Custom policies for long distance that need to be applied to Ethernet port/port channel bound to VFC/VFC-PO ISLs with long distance support are as follows:

• Long Distance Policy for 10G ISLs

```
switch(config)# policy-map type queuing ld_10G_fcoe_in_que_policy
switch(config-pmap-que)# class type queuing c-in-q1
switch(config-pmap-c-que)# bandwidth percent 90
switch(config-pmap-c-que)# pause buffer-size 166400 pause-threshold 20800
resume-threshold 19136
switch(config-pmap-c-que)# class type queuing c-in-q-default
switch(config-pmap-c-que)# bandwidth percent 10
switch(config-pmap-c-que)

switch(config)# policy-map type queuing ld_10G_fcoe_in_que_policy
switch(config-pmap-que)# class type queuing c-in-q1
switch(config-pmap-c-que)# bandwidth percent 90
switch(config-pmap-c-que)# pause buffer-size 291200 pause-threshold 145600
resume-threshold 143936
switch(config-pmap-c-que)# class type queuing c-in-q-default
switch(config-pmap-c-que)# bandwidth percent 10
```

• Long Distance Policy for 25G ISLs

```
switch(config)# policy-map type queuing ld_25G_fcoe_in_que_policy
switch(config-pmap-que)# class type queuing c-in-q1
```

```

switch(config-pmap-c-que)# bandwidth percent 90
switch(config-pmap-c-que)# pause buffer-size 384800 pause-threshold 20800
resume-threshold 19136
switch(config-pmap-c-que)# class type queuing c-in-q-default
switch(config-pmap-c-que)# bandwidth percent 10
switch(config-pmap-c-que)#

switch(config)# policy-map type queuing ld_25G_fcoe_in_que_policy
switch(config-pmap-que)# class type queuing c-in-ql
switch(config-pmap-c-que)# bandwidth percent 90
switch(config-pmap-c-que)# pause buffer-size 728000 pause-threshold 364000
resume-threshold 362336
switch(config-pmap-c-que)# class type queuing c-in-q-default
switch(config-pmap-c-que)# bandwidth percent 10
switch(config-pmap-c-que)#

```

• Long Distance Policy for 40G ISLs

```

switch(config)# policy-map type queuing ld_40G_fcoe_in_que_policy
switch(config-pmap-que)# class type queuing c-in-ql
switch(config-pmap-c-que)# bandwidth percent 90
switch(config-pmap-c-que)# pause buffer-size 728000 pause-threshold 78208
resume-threshold 76544
switch(config-pmap-c-que)# class type queuing c-in-q-default
switch(config-pmap-c-que)# bandwidth percent 10
switch(config-pmap-c-que)#

switch(config)# policy-map type queuing ld_40G_fcoe_in_que_policy
switch(config-pmap-que)# class type queuing c-in-ql
switch(config-pmap-c-que)# bandwidth percent 90
switch(config-pmap-c-que)# pause buffer-size 1299584 pause-threshold 649792
resume-threshold 648128
switch(config-pmap-c-que)# class type queuing c-in-q-default
switch(config-pmap-c-que)# bandwidth percent 10
switch(config-pmap-c-que)#

```

Custom Policy for Ingress Buffer Size and Pause/Resume Thresholds

If sufficient buffers are not available to bring up long-distance ports, then fine tuning the buffers allocated to any 10G/25G Ethernet ports (with short distance requirements, that is, less than 100 meters) using default policies is required. If sufficient buffers are not available to bring up long-distance ports, a buffer allocation failure message appears. A sample buffer allocation failure message is as follows:

```

switch(config-if)# interface ethernet1/8
switch(config-if)# service-policy type queuing input ld_10G_fcoe_in_que_policy
switch(config-if)# no shutdown
2022 Oct 31 07:39:21 HW1 %$ VDC-1 %$ %ACLQOS-SLOT1-2-ACLQOS_FAILED: ACLQOS failure: Ingress
  buffer allocation failed for interface Ethernet1/8

```

Create a custom policy to free up the required buffers and apply it to the existing Ethernet ports or to Ethernet ports bound for VFC that is used for short distance connectivity.

```

switch(config)# policy-map type queuing 100m_fcoe_in_que_policy
switch(config-pmap-que)# class type queuing c-in-ql
switch(config-pmap-c-que)# bandwidth percent 50
switch(config-pmap-c-que)# pause buffer-size 41600 pause-threshold 20800 resume-threshold
19136
switch(config-pmap-c-que)# class type queuing c-in-q-default
switch(config-pmap-c-que)# bandwidth percent 50
switch(config-pmap-c-que)#

```

Required number of Ethernet Ports to Reduce Ingress Buffers on per Long Distance FCoE ISL

The following table displays the number of Ethernet ports needing an ingress buffer size reduction to accommodate a single long distance FCoE ISL of a given speed.

Table 2: Recommendation to Reduce Ingress Buffer Size

Speed	Recommendation
10G long distance ISL	Apply 100m_fcoe_in_que_policy on one 10G/25G port
25G long distance ISL	Apply 100m_fcoe_in_que_policy on five 10G/25G ports
40G long distance ISL	Apply 100m_fcoe_in_que_policy on nine 10G/25G ports

Configuration Examples of Policy Applied to Ethernet Interfaces

The following section includes configuration examples of policy applied to Ethernet interfaces for enabling 10G, 25G and 40G FCoE long distance ISLs.

```
switch(config)# interface ethernet 1/1
switch(config-if)# service-policy type queuing input ld_10G_fcoe_in_que_policy
switch(config-if)#
```

```
switch(config)# interface ethernet 1/2
switch(config-if)# service-policy type queuing input ld_25G_fcoe_in_que_policy
switch(config-if)#
```

```
switch(config)# interface ethernet 1/3
switch(config-if)# service-policy type queuing input ld_40G_fcoe_in_que_policy
switch(config-if)#
```

```
switch(config)# interface ethernet 1/4
switch(config-if)# service-policy type queuing input 100m_fcoe_in_que_policy
switch(config-if)#
```

Verifying Configuration of Long-Distance Over FCoE

To display configuration information about long-distance over FCoE, perform one of the following tasks:

Command	Purpose
show queuing interface eth <i>eth port</i>	Displays the allocated ingress buffer availability and pause/resume thresholds.
show running-config interface ethernet <i>eth port</i>	Displays the information about configuration.