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# H Commands

This chapter describes the Cisco NX-OS commands that begin with H that are used to manage a Cisco Nexus 2000 Series Fabric Extender from a Cisco Nexus 5000 Series switch.

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# hardware buffer-threshold

To limit the amount of input hardware buffer usage for each Fabric Extender, use the **hardware buffer-threshold** command. To revert to the default and allow a Fabric Extender to use all available hardware buffer space, use the **no** form of this command.

**hardware** *fex_card_typ* **buffer-threshold** *buffer-limit*

**no hardware** *fex_card_typ* **buffer-threshold**

## Syntax Description

| | |
|---|---|
| *fex_card_type* | Fabric Extender card type. The following Fabric Extender card types are supported:<br>• **N2148T**—Fabric Extender 48x1G 4x10G SFP+ Module<br>See the "Usage Guidelines" section for a description of this Fabric Extender. |
| *buffer-limit* | Buffer threshold limit in bytes. The range is from 81920 to 316160. |

## Command Default

None

## Command Modes

Fabric extender configuration mode

## Command History

| Release | Modification |
|---|---|
| 4.2(1)N2(1) | This command was introduced. |

## Usage Guidelines

**Note** This command is supported only on a Cisco Nexus 2148T Fabric Extender.

The Cisco Nexus 2148T Fabric Extender has four 10-Gigabit Ethernet fabric interfaces for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces for its downlink connection to servers or hosts.

The **buffer-threshold** keyword sets the consumption level of input buffers before an indication is sent to the egress queue to start observing the tail drop threshold. If the buffer usage is lower than the configured buffer threshold, the tail drop threshold is ignored.

## Examples

This example shows how to configure the hardware buffer threshold limit on a Cisco Nexus 2148T Fabric Extender:

```
switch(config)# fex 110
switch(config-fex)# hardware N2148T buffer-threshold 163840
switch(config-fex)#
```

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This example shows how to remove the hardware buffer threshold configured on a Cisco Nexus 2148T Fabric Extender:

```
switch(config)# fex 110
switch(config-fex)# no hardware N2148T buffer-threshold
switch(config-fex)#
```

## Related Commands

| Command | Description |
|---|---|
| **fex** | Creates a Fabric Extender and enters fabric extender configuration mode. |
| **show fex** | Displays all configured Fabric Extender chassis connected to the switch. |
| **show queuing interface** | Displays information about interface queuing parameters, including buffer threshold and queue limits. |
| **show running-config fex** | Displays the running configuration for Fabric Extenders. |

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# hardware queue-limit

To control the egress queue tail drop threshold level on a Fabric Extender, use the **hardware queue-limit** command. To disable the drop threshold and allow a Fabric Extender to use all available hardware buffer space, use the **no** form of this command.

**hardware** *fex_card_typ* **queue-limit** [*queue-limit*] [**rx** | **tx**]

**no hardware** *fex_card_typ* **queue-limit** [**rx** | **tx**]

## Syntax Description

| | |
|---|---|
| *fex_card_type* | Fabric Extender card type. The following Fabric Extender card types are supported:<br>• **N2148T**—Fabric Extender 48x1G 4x10G SFP+ Module<br>• **N2224TP**—Fabric Extender 24x1G 2x10G SFP+ Module<br>• **N2232P**—Fabric Extender 32x10G SFP+ 8x10G SFP+ Module<br>• **N2232TM**—Fabric Extender 32x10GBase-T 8x10G SFP+ Module<br>• **N2248T**—Fabric Extender 48x1G 4x10G SFP+ Module<br>• **N2248TP-E**—Fabric Extender 48x1G 4x10G SFP+ Module<br>See the "Usage Guidelines" section for a description of these Fabric Extenders. |
| *queue-limit* | (Optional) Queue limit in bytes. The range is from 81920 to 652800 for a Cisco Nexus 2148T Fabric Extender, from 32768 to 33538048 for a on a Cisco Nexus 2248TP-E Fabric Extender, and from 5120 to 652800 for all other supported Fabric Extenders. |
| **rx** | (Optional) Specifies the default queue-limit for receiving (ingress).<br>**Note** This keyword is supported only on a Cisco Nexus 2248TP-E Fabric Extender. |
| **tx** | (Optional) Specifies the default queue-limit for transmission (egress).<br>**Note** This keyword is supported only on a Cisco Nexus 2248TP-E Fabric Extender. |

## Command Default

The default queue-limit for **rx** (ingress) on a Cisco Nexus 2248TP-E Fabric Extender is 1MB.

The default queue-limit for **tx** (egress) on a Cisco Nexus 2248TP-E Fabric Extender is 4MB.

## Command Modes

Fabric extender configuration mode

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## Command History

| Release | Modification |
|---|---|
| 4.2(1)N2(1) | This command was introduced. |
| 5.1(3)N1(1) | The Cisco Nexus 2248TP-E Fabric Extender was introduced. The **rx** and **tx** keywords was introduced for this Fabric Extender.<br><br>The queue limit is chnaged to 5120 to 652800 bytes for all Cisco Nexus 2000 Series Fabric Extender, except Cisco Nexus 2148T Fabric Extender and Cisco Nexus 2248TP-E Fabric Extender.<br><br>**Note** On a Cisco Nexus 5000 Series switch that runs a Cisco NX-OS release prior to 5.1(3)N1(1), the queue limit range was from 2560 to 652800 bytes. |

## Usage Guidelines

You can use a lower queue limit value on the Fabric Extender to prevent one blocked receiver from affecting traffic being sent to other noncongested receivers (head-of-line blocking); however, this will increase burst absorption on the ingress traffic. A higher queue limit value provides better burst absorption and less head-of-line blocking protection.

### Supported Cisco Nexus 2000 Series Fabric Extender

The following Cisco Nexus 2000 Series Fabric Extenders are supported on a Cisco Nexus 5000 Series switch that runs a Cisco NX-OS release 4.2(1)N2(1):

- Cisco Nexus 2148T Fabric Extender—It has four 10-Gigabit Ethernet fabric interfaces for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces for its downlink connection to servers or hosts.
- Cisco Nexus N2224TP Fabric Extender—It has two 10-Gigabit Ethernet fabric interfaces with small form-factor pluggable (SFP+) interface adapters for its uplink connection to the parent Cisco Nexus 5000 Series switch and 24 1000BASE-T (1-Gigabit) Ethernet host interfaces for its downlink connection to servers or hosts. It does not support Fibre Channel over Ethernet (FCoE).
- Cisco Nexus 2232P Fabric Extender—It has eight 10-Gigabit Ethernet fabric interfaces with small form-factor pluggable (SFP+) interface adapters for its uplink connection to the parent Cisco Nexus 5000 Series switch and 32 10-Gigabit Ethernet fabric interfaces with SFP+ interface adapters for its downlink connection to servers or hosts.
- Cisco Nexus 2248T Fabric Extender—It has four 10-Gigabit Ethernet fabric interfaces with SFP+ interface adapters for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces for its downlink connection to servers or hosts.

The following Cisco Nexus 2000 Series Fabric Extenders are supported on a Cisco Nexus 5000 Series switch that runs a Cisco NX-OS release 5.0(3)N2(1):

- Cisco Nexus 2148T Fabric Extender—It has four 10-Gigabit Ethernet fabric interfaces for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces for its downlink connection to servers or hosts.
- Cisco Nexus N2224TP Fabric Extender—It has two 10-Gigabit Ethernet fabric interfaces with small form-factor pluggable (SFP+) interface adapters for its uplink connection to the parent Cisco Nexus 5000 Series switch and 24 1000BASE-T (1-Gigabit) Ethernet host interfaces for its downlink connection to servers or hosts. It does not support Fibre Channel over Ethernet (FCoE).
- Cisco Nexus 2232P Fabric Extender—It has eight 10-Gigabit Ethernet fabric interfaces with small form-factor pluggable (SFP+) interface adapters for its uplink connection to the parent Cisco Nexus 5000 Series switch and 32 10-Gigabit Ethernet fabric interfaces with SFP+ interface adapters for its downlink connection to servers or hosts.

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- Cisco Nexus 2232TM Fabric Extender—It has eight 10-Gigabit Ethernet fabric interfaces with small form-factor pluggable (SFP+) interface adapters for its uplink connection to the parent Cisco Nexus 5000 Series switch and 32 10-Gigabit BASE-T Ethernet fabric interfaces for its downlink connection to servers or hosts.
- Cisco Nexus 2248T Fabric Extender—It has four 10-Gigabit Ethernet fabric interfaces with SFP+ interface adapters for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces for its downlink connection to servers or hosts.

The following Cisco Nexus 2000 Series Fabric Extenders was introduced on a Cisco Nexus 5000 Series switch that runs a Cisco NX-OS release 5.1(3)N1(1):

- Cisco Nexus N2248TP-E Fabric Extender—It has four 10-Gigabit Ethernet fabric interfaces for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces with small form-factor pluggable (SFP+) interface adapters for its downlink connection to servers or hosts.

## Examples

This example shows how to configure the hardware buffer queue limit on a Cisco Nexus 2248T Fabric Extender:

```
switch(config)# fex 110
switch(config-fex)# hardware N2248T queue-limit 327680
switch(config-fex)#
```

This example shows how to remove the hardware buffer queue limit configured on a Cisco Nexus 2248T Fabric Extender:

```
switch(config)# fex 110
switch(config-fex)# no hardware N2248T queue-limit
switch(config-fex)#
```

## Related Commands

| Command | Description |
|---|---|
| **fex** | Creates a Fabric Extender and enters fabric extender configuration mode. |
| **show fex** | Displays all configured Fabric Extender chassis connected to the switch. |
| **show queuing interface** | Displays information about interface queuing parameters, including buffer threshold and queue limits. |
| **show running-config fex** | Displays the running configuration for Fabric Extenders. |

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# hardware shared-buffer-size

To configure the shared buffer size for a Cisco Nexus 2000 Series Fabric Extender, use the **hardware shared-buffer-size** command. To revert to the default setting, use the **no** form of this command.

**hardware** *fex_card_type* **shared-buffer-size** [*buffer-size*]

**no hardware** *fex_card_type* **shared-buffer-size** [*buffer-size*]

## Syntax Description

| | |
|---|---|
| *fex_card_type* | Fabric Extender card type. The following Fabric Extender card types are supported:<br>• **N2248TP-E**—Fabric Extender 48x1G 4x10G SFP+ Module<br>See the "Usage Guidelines" section for a description of this Fabric Extender. |
| *buffer-size* | (Optional) Shared buffer size (KB). The range is from 10800KB to 25392KB. |

## Command Default

The default size of the shared buffer is 25392KB.

## Command Modes

Fabric Extender configuration mode

## Command History

| Release | Modification |
|---|---|
| 5.1(3)N1(1) | This command was introduced.<br>The Cisco Nexus N2248TP-E Fabric Extender was introduced. |

## Usage Guidelines

**Note** This command is supported only on a Cisco Nexus 2248TP-E Fabric Extender.

The Cisco Nexus N2248TP-E Fabric Extender has four 10-Gigabit Ethernet fabric interfaces for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces with small form-factor pluggable (SFP+) interface adapters for its downlink connection to servers or hosts.

The total available buffer is 32MB which is shared in both direction (ingress, egress).

The default size of the shared buffer is 25392KB. However, when configuring an Ethernet-based pause no-drop class, the shared buffer size changes to 10800KB. This change is required to increase the dedicated buffer that supports the pause no-drop class. The pause no-drop class does not use buffer space from the shared-pool.

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## Examples

This example shows how to configure the hardware buffer size on a Cisco Nexus 2248TP-E Fabric Extender:

```
switch# configure terminal
switch(config)# fex 100
switch(config-fex)# hardware N2248TTP-E shared-buffer-size 25000
switch(config-fex)#
```

This example shows how to remove the hardware pause no-drop configuration between a Cisco Nexus 2248TTP-E Fabric Extender and a switch:

```
switch# configure terminal
switch(config)# fex 100
switch(config-fex)# no hardware N2248TTP-E shared-buffer-size 25000
switch(config-fex)#
```

## Related Commands

| Command | Description |
|---|---|
| **fex** | Creates a Fabric Extender and enters fabric extender configuration mode. |
| **show fex** | Displays all configured Fabric Extender chassis connected to the switch. |
| **show running-config fex** | Displays the running configuration for Fabric Extenders. |

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# hardware uplink-pause-no-drop

To configure a pause no-drop class up to a distance of 3000 meters between the Cisco Nexus 2000 Series Fabric Extender and a Cisco Nexus 5000 Series switch, use the **hardware uplink-pause-no-drop** command. To revert to the default setting, use the **no** form of this command.

**hardware** *fex_card_type* **uplink-pause-no-drop distance** [*distance-value*]

**no hardware** *fex_card_type* **uplink-pause-no-drop distance** [*distance-value*]

## Syntax Description

| | |
|---|---|
| *fex_card_type* | Fabric Extender card type. The following Fabric Extender card types are supported:<br>• **N2248TP-E**—Fabric Extender 48x1G 4x10G SFP+ Module<br>See the "Usage Guidelines" section for a description of this Fabric Extender. |
| **distance** | Specifies the distance between the Fabric Extender and switch. |
| *distance-value* | (Optional) Distance in meters. The range is from 300 to 3000. |

## Command Default

The default distance between a Fabric Extender and the switch is 300 meters.

## Command Modes

Fabric Extender configuration mode

## Command History

| Release | Modification |
|---|---|
| 5.1(3)N1(1) | This command was introduced.<br>The Cisco Nexus N2248TP-E Fabric Extender was introduced. |

## Usage Guidelines

**Note** This command is supported only on a Cisco Nexus 2248TP-E Fabric Extender.

The Cisco Nexus N2248TP-E Fabric Extender has four 10-Gigabit Ethernet fabric interfaces for its uplink connection to the parent Cisco Nexus 5000 Series switch and 48 1000BASE-T (1-Gigabit) Ethernet host interfaces with small form-factor pluggable (SFP+) interface adapters for its downlink connection to servers or hosts.

## Examples

This example shows how to configure the hardware pause no-drop class up to a distance of 3000 meters between a Cisco Nexus 2248TTP-E Fabric Extender and a switch:

```
switch# configure terminal
switch(config)# fex 100
switch(config-fex)# hardware N2248TTP-E pause-no-drop distance 3000
switch(config-fex)#
```

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This example shows how to remove the hardware pause no-drop configuration between a Cisco Nexus 2248TTP-E Fabric Extender and a switch:

```
switch# configure terminal
switch(config)# fex 100
switch(config-fex)# no hardware N2248TTP-E pause-no-drop distance 3000
switch(config-fex)#
```

## Related Commands

| Command | Description |
|---|---|
| **fex** | Creates a Fabric Extender and enters fabric extender configuration mode. |
| **show fex** | Displays all configured Fabric Extender chassis connected to the switch. |
| **show running-config fex** | Displays the running configuration for Fabric Extenders. |