



Configuring Cisco Unified FEX Nexus 2348UPQ with Fiber Channel Interfaces

This chapter provides details about configuring native fiber channels on Cisco Nexus 2348UPQ FEX, and contains the following sections:

- [Information About Fiber Channel Ports on Cisco Nexus 2348UPQ, on page 1](#)
- [Topologies for Fiber Channel-FEX, on page 3](#)
- [Configuring Fibre Channel-FEX Ports on Cisco Nexus 2348UPQ, on page 4](#)

Information About Fiber Channel Ports on Cisco Nexus 2348UPQ

Cisco Nexus 2348UPQ FEX ASIC supports native FC ports. This feature was introduced in 7.3(0)N1(1).

There are 48 host Interface (HIF) ports and six 40-G Network Interface (NI) ports. HIF ports are unified ports that enable a combination of 1 or 10-G Ethernet and 2, 4, 8, or 16G FC interfaces. You can convert and use the HIF ports as FC ports. You can configure the HIF ports to run 2, 4, 8, or 16-G FCs.

Save the port type configuration (port type FC or Ethernet) on the switch. After port type conversion, reload the FEX for the configuration to be downloaded and the conversion to take effect. If the ports are of FC type, only mode F is supported.



Note If you reload only the switch, the FEX will not be reloaded. The port type conversion will not take place on the FEX unless you reload the FEX.

The FC ports on Nexus 2348UPQ are supported only on the Cisco Nexus 5600 switches.

Guidelines and Limitations

Cisco Nexus 2348UPQ FEX with FC interfaces has the following guidelines and limitations:

- FEX number (ID) range is from 100 to 130.
- You can configure only odd-numbered HIF ports for the 16-G FC. The adjacent even-numbered ports must be changed to the out-of-service state.

- When there is a combination of both FC and Ethernet ports, there can only be one set of contiguous FC ports and one set of contiguous Ethernet ports. The FC ports should be the first set of ports. FC ports always start from port 1.
- FC ports must be configured in groups of 4 ports.
- When the speed is **Auto**, the 16-G port comes up at 8-G speed. For the ports to come up at 16-G speed, use the **switchport speed 16000** command to explicitly set the speed to 16-G.
- Configuration of the FC-HIF ports must be the same in both the primary and the secondary virtual PortChannel (vPC) switches. For example, the port speed, port mode, port vSAN and so on.
- Any port range that is not explicitly configured with a port type is set to the other type on reload. For example, if ports 25 to 48 are explicitly configured as Ethernet, then ports 1 to 24 will be set to type FC on reload.
- In the Active-Active FEX configuration with FC ports, the port-conversion CLI should be configured on both the vPC peer switches.
- You cannot connect the NPV or NPIV device to the FC ports in the Cisco N2348UPQ FEX, but you can connect it directly to the the NPIV enabled parent switch of the Cisco Nexus 2348UPQ FEX.
- We recommend that you operate the uplink port at 40-G speed. If you use the uplink in 10-G mode there will be over subscription.
- When an odd-numbered HIF port is configured as 16-G FC, the even-numbered HIF port next to it cannot be used either as an Ethernet port or as an FC port. For the FC-FEX HIF odd-numbered port to operate at 16 Gbps speed, you must place the immediately succeeding even-numbered port in the ' out-of-service ' state. This restriction does not apply for 2, 4, or 8-G speed.
- Interface-based zoning using FC-FEX ports is not supported.
- F-port trunking and F-port channel are not supported on FC-FEX ports.
- For FC traffic, only Source IDentifier (SID) / Destination IDentifier (DID) based load-balancing is supported.

Fiber Channel Port Representation

The FC HIF ports on the FEX are represented on the switch through the following parameters:

```
fc FEX number/mod-number/port-number
For example, fc 100/1/1
```

Buffer-to-Buffer Credits

Buffer-to-buffer credits (BB_credits) are a flow-control mechanism to ensure that Fibre Channel interfaces do not drop frames. BB_credits are negotiated on a per-hop basis.

The default value of *receive BB_credit* is 32 and the maximum value is 128. The range is from 1 to 128.

Supported Small Form-Factor Pluggable (SFP)

The supported SFPs are: DS-SFP-FC16G-SW, DS-SFP-FC8G-SW, and DS-SFP-FC4G-SW.

SPAN Destinations for Fiber Channel-FEX Ports

SPAN destinations refer to the interfaces that monitor source ports. The Cisco Nexus 5600 Series switch supports Ethernet and Fibre Channel interfaces as SPAN destinations.

Table 1: SPAN Source and Destination

Source SPAN	Destination SPAN
Fibre Channel (HIF Port)	Ethernet (Base Port)
Fibre Channel (HIF Port)	Ethernet (HIF Port)

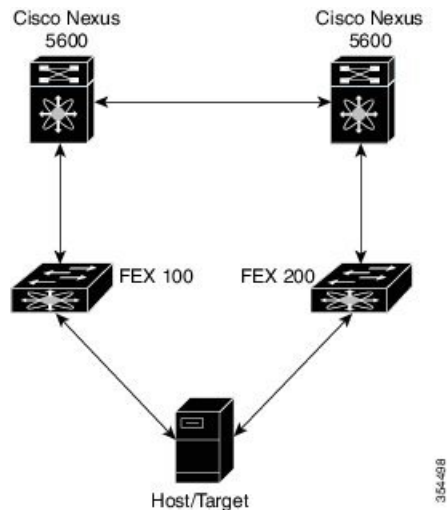
Topologies for Fiber Channel-FEX

The FC-FEX HIF ports can only be connected to FC devices and run as mode F. The Cisco Nexus 5600 switches connected to FEX N2348UPQ could either run in the Switching mode or the N Port Virtualization (NPV) mode.

Straight-Through FEX

In the Straight-Through FEX topology, each FEX has one parent or a master switch which sends the port configuration to the FEX. On the switch, the FEX is first made FCoE operational. After which the FEX is attached to the switch and reloaded with the port configuration sent from the switch.

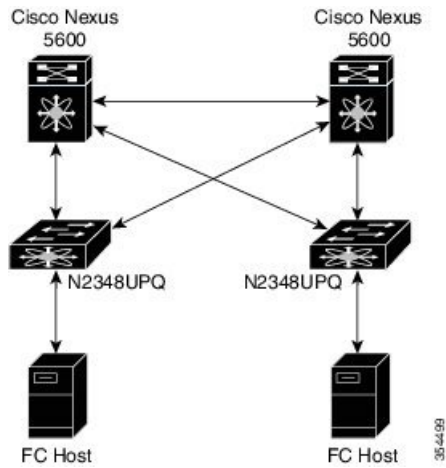
Figure 1: Straight-Through FEX



Active-Active FEX

In an Active - Active topology, each FEX is connected to two switches. The switch that connects to the FEX and configures FCoE first, becomes the primary or the master switch for the FEX. The master switch owns the FEX and the switch ID of the master switch is stored on the FEX.

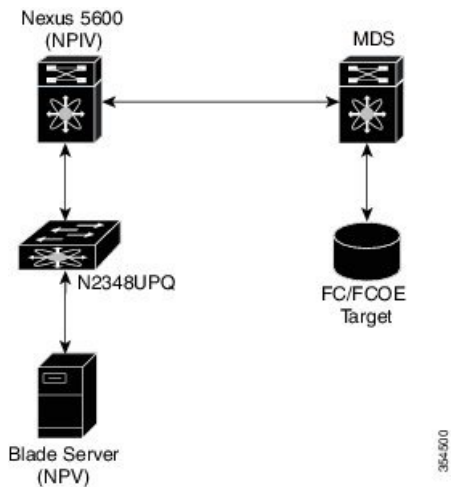
Figure 2: Active-Active FEX



Note In the Active-Active FEX configuration with FC ports, the port-conversion CLI should be configured on both the virtual PortChannel (vPC) peer switches.

The following scenario is not supported:

Figure 3: Scenario Not Supported



Configuring Fibre Channel-FEX Ports on Cisco Nexus 2348UPQ

Cisco Nexus 2348UPQ Fabric Extender (FEX) ASIC supports native Fiber Channel (FC) ports. This feature was introduced in 7.3(0)N1(1).

Perform the following task to configure the Fibre Channel-FEX ports on Cisco Nexus 2348UPQ.

Before you begin

- You must enable FCoE using the **feature fcoe** command.
- You must enable Fabric Extender (FEX) feature using the **feature fex** command.

For information on how to bring a FEX up, see the [Cisco Nexus 5600 Series NX-OS Layer 2 Switching Configuration Guide, Release 7.x](#) guide.

Procedure

Step 1 Enter global configuration mode:

```
switch# configure terminal
```

Step 2 Required: Enter configuration mode for the specified FEX:

```
switch(config)# fex number
```

For FC-FEX support the FEX number range is from 100 to 130.

Step 3 Specify the range of ports that need to be converted to FC ports:

```
switch(config-fex)# port port-number type fc
```

The port numbers should always be in multiples of four. The FC port must be configured from port 1.

Note This command is accepted only when the FEX state is ONLINE.

Step 4 Required: End the current configuration session and exit to EXEC mode:

```
switch(config-fex)# end
```

Step 5 Reload the specified FEX:

```
switch# reload fex number
```

Step 6 Enter global configuration mode:

```
switch# configure terminal
```

Step 7 Change the succeeding even port to the 'out-of-service' state for the port to operate in 16000 Mbps speed:

```
switch(config)# interface fc fex number/slot/port
```

```
switch(config-if)# out-of-service
```

Putting an interface out-of-service will cause its shared resource configuration to revert to default.

```
Do you wish to continue(y/n)? [n] y
```

Note When the odd numbered HIF port is configured as 16G FC, the even-numbered HIF port next to it cannot be used either as Ethernet port or as an FC port. For the FC-FEX HIF odd port to operate the 16000 Mbps speed, you must place the first immediately succeeding even port in the 'out-of-service' state. This restriction does not apply for 2/4/8G speed.

Step 8 Select the Fibre Channel interface and enter the interface configuration mode:

```
switch(config-if)# interface fc fex number/slot/port
```

Step 9 Configure the port speed:

```
switch(config-if)# switchport speed { 1000 | 16000 | 2000 | 4000 | 8000 | auto }
```

The default value is **auto**. When value of speed is **auto**, the port **auto max speed** is 8000 Mbps. The speed should be explicitly configured for 16000 Mbps.

Note FEX FC port does not support speed 1000.

Step 10 Configure the port mode:

```
switch(config-if)# switchport mode { E | F | NP | SD | auto }
```

The default mode is **Auto**. When the conversion is done, the port will come up in mode F automatically. Although other switchport modes can be configured, only mode F is supported.

Step 11 Configure the *receive BB_credit* for the port:

```
switch(config-if)# switchport fcrxbbcredit credit
```

The range is from 1 to 128.

Configuring Fiber Channel-FEX on Cisco Nexus 2348UPQ

This example shows a running configuration, followed by a verification command that displays the FC-FEX configuration details. Replace the placeholders with relevant values for your setup.

```
switch# configure terminal
switch(config)# fex 100
switch(config-fex)# port 1-8 type fc
switch (config-fex)# end
switch# reload fex 100
switch# configure terminal
switch(config)# interface fc100/1/2
switch(config-if)out-of-service
switch(config-if)# interface fc 100/1/1
switch(config-if)# switchport speed 16000
switch(config-if)# switchport mode auto
switch(config-if)# switchport fcrxbbcredit 100
.
.
.
switch# show interface fc 100/1/1

fc100/1/1 is up
switch# show interface fc 100/1/1
Fc100/1/1 is up
  Hardware is Fibre Channel, SFP is short wave laser w/o OFC (SN)
  Port WWN is 2d:01:8c:60:4f:36:a4:40
  Admin port mode is auto, trunk mode is on
  snmp link state traps are enabled
  Port mode is F, FCID is 0x4105c0
  Port vsan is 1001
  Speed is 16 Gbps
  Transmit B2B Credit is 32
  Receive B2B Credit is 32
  Receive data field Size is 2112
  Beacon is turned off
  1 minute input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
```

```

1 minute output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
470139527 frames input, 1006098506128 bytes
  0 discards, 0 errors
  0 CRC, 0 unknown class
  0 too long, 0 too short
452260180 frames output, 967469790688 bytes
  0 discards, 0 errors
2385 input OLS, 1 LRR, 0 NOS, 0 loop inits
227 output OLS, 3 LRR, 2276 NOS, 0 loop inits
last clearing of "show interface" counters never
32 receive B2B credit remaining
32 transmit B2B credit remaining
0 low priority transmit B2B credit remaining
Interface last changed at Tue Aug  7 10:15:57 2001
.
.
.
.
switch# show fex fcid-hash-info

FEX  INTERFACE  VSAN   FCID      Fabric Port  FEX Uplink (Port Name)
100  fc125/1/1    1001   0x410620  Eth8/7       9                (2/1)
.
.
.
.

switch# show fex 100 fcid-hash-info

FEX  INTERFACE  VSAN   FCID      Fabric Port  FEX Uplink (Port Name)
100  fc125/1/1    1001   0x410620  Eth8/7       9                (2/1)
.
.
.
.

switch# show fex 100 fcid-hash-info fcid 0x410620
FEX  INTERFACE  VSAN   FCID      Fabric Port  FEX Uplink (Port Name)
125  fc125/1/1    1001   0x410620  Eth8/7       9                (2/1)

```



Note Use the **show fex fcid-hash-info** command to display the FEX uplink information for each FCID traffic flow.

Configuring Active-Active FEX

Before you begin

Configure vPC on both the switches (Switch 1 and Switch 2). To configure vPC, refer to the steps described in the *Cisco Nexus 5000 Series Switches Virtual PortChannel Quick Configuration Guide*.

Procedure

Step 1 Required: On Switch 1, enter global configuration mode:

```
switch1# configure terminal
```

Step 2 On Switch 1, enter configuration mode for the specified FEX:

```
switch1(config)# fex number
```

For FC-FEX support the FEX number range is from 100 to 130.

Step 3 Required: Specify the range of ports that need to be converted to FC ports:

```
switch1(config)# port port-number type fc
```

The port numbers should always be in multiples of four. The FC port must be configured from port 1.

Note This command is accepted only when the FEX state is ONLINE.

Note In the active-active topology, you must configure the port type CLI in both the switches (vPC peers) before reloading the FEX.

Step 4 Enable Fibre Channel over Ethernet traffic on the FEX:

```
switch1(config)# fcoe
```

Step 5 On Switch B, perform [Step 1](#) to [Step 4](#).

Step 6 On Switch 1, reload the specified FEX:

```
switch1(config)# reload fex number
```

Note For FEX interface related configuration, refer to the configuration steps in [Configuring Fibre Channel-FEX Ports on Cisco Nexus 2348UPQ, on page 4](#).

Configuring Active-Active FEX

This example shows you how to display information about the FEX configuration.

```
switch# show fex
```

FEX Number	FEX Description	FEX State	FEX Model	Fex Serial
120	FEX0120	Online	N2K-C2348UPQ	FOC1818R2MF