



# Configuring Cisco Adapter FEX with FCoE

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## Overview

The Cisco Adapter Fabric Extender (FEX) feature allows you to create an FCoE connection to a FEX so that you can establish an FCoE connection to a server with a virtual interface card (VIC) adapter.

For example, you could use this feature to connect your Nexus switch to a Cisco UCS C-Series Rack-Mount Server that contains a Cisco UCS P81E Virtual Interface Card, or you could connect it to a third-party server that has a Broadcom BCM57712 Convergence Network Interface Card (C-NIC) installed.

The switch connects to the FEX through a virtual port channel (vPC) while the FEX connects to the server using a standard FCoE link between the FEX and the VIC adapter.

## Guidelines and Limitations

If you are using Enhanced vPC, the FEX can be associated with one and only one Cisco Nexus fabric for FCoE forwarding.

If you are using FabricPath, you must use a dedicated link for FCoE traffic.

If you are using a Cisco UCS C-Series Rack-Mount Server with a Cisco UCS P81E Virtual Interface Card (VIC), you must do the following:

- Configure the VIC in Network Interface Virtualization (NIV) mode, which makes the two unified ports appear to the system as virtual Host Bus Adapters (vHBAs).
- You cannot connect to the FEX through a VNP port. If this type of connection is used, NIV mode cannot be enabled on the VIC.
- You must set the NIC mode on the Cisco UCS C-Series Rack-Mount Server to **active-standby**.



**Note** The HP chassis has internal HP-branded VirtualConnect cards (the specific model is HP VC FlexFabric 10Gb/24-Port Module), which runs its own internal host-hiding NPV processes for both FC and Ethernet sides of things. Then the external links of that card go upstream to regular Cisco 2232PP FEX's, which are then attached to our Nexus core.

## Configuring Cisco Adapter FEX with FCoE

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>install feature-set virtualization</b> <b>Example:</b> <pre>switch(config) # install feature-set virtualization switch(config) #</pre>	Installs the virtualization feature set.
<b>Step 3</b>	<b>feature-set virtualization</b> <b>Example:</b> <pre>switch(config) # feature-set virtualization switch(config)#</pre>	Enables the virtualization feature.
<b>Step 4</b>	<b>fex <i>fex-chassis-ID</i></b> <b>Example:</b> <pre>switch(config) # fex 101 switch(config-fex) #</pre>	Enters configuration mode for the specified FEX.  The range for <i>fex-chassis_ID</i> is from 100 to 199.
<b>Step 5</b>	<b>fcoe</b> <b>Example:</b> <pre>switch(config-fex) # fcoe switch(config-fex) #</pre>	Enables Fibre Channel over Ethernet traffic on the FEX.
<b>Step 6</b>	<b>interface ethernet [<i>fex-chassis-ID/slot/port</i>]</b> <b>Example:</b> <pre>switch(config-fex) # interface ethernet 101/1/1 switch(config-if) #</pre>	Enters configuration mode for the specified Ethernet interface.  The range for <i>fex-chassis-ID</i> is from 100 to 199. The <i>slot</i> For FCoE, the range for <i>port</i> is from 1 to 32.  <b>Note</b> If this is a 10G breakout port, the <i>slot/port</i> syntax is <i>QSFP-module/port</i> .

	Command or Action	Purpose
<b>Step 7</b>	<b>switchport mode vntag</b> <b>Example:</b> <pre>switch(config-if) # switchport mode vntag switch(config-if) #</pre>	Configures the interface in port mode.
<b>Step 8</b>	<b>interface vethernet <i>veth-id</i></b> <b>Example:</b> <pre>switch(config-if) # interface vethernet 2 switch(config-if) #</pre>	<p>Creates a virtual Ethernet interface and enters configuration mode for that interface.</p> <p>The range of <i>veth-id</i> is from 1 to 1,048,575.</p> <p><b>Note</b> If you have two Cisco Nexus Series switches configured for redundancy, the virtual Ethernet interface ID must be unique on each switch.</p>
<b>Step 9</b>	<b>bind interface ethernet</b> <i>[fex-chassis-ID]/slot/port channel channel-no</i> <b>Example:</b> <pre>switch(config-if) # bind interface ethernet 101/1/1 channel 1 switch(config-if) #</pre>	<p>Binds the specified Ethernet interface to the specified port channel.</p> <p>The range for <i>fex-chassis-ID</i> is from 100 to 199. The <i>slot</i> must be 1. For FCoE, the range for <i>port</i> is from 1 to 32. The range for <i>channel-no</i> is from 1 to 4096.</p> <p><b>Note</b> If this is a 10G breakout port, the <i>slot/port</i> syntax is <i>QSFP-module/port</i>.</p>
<b>Step 10</b>	<b>switchport mode {trunk access}</b> <b>Example:</b> <pre>switch(config-if) # switchport mode trunk switch(config-if) #</pre>	Configures the interface as a trunk port or an access port.
<b>Step 11</b>	(Optional) <b>switchport trunk allowed vlan <i>vlan-ID</i></b> <b>Example:</b> <pre>switch(config-if) # switchport trunk allowed vlan 33 switch(config-if) #</pre>	<p>If you configured the interface as a trunk port, use this command to specify the VLAN for FCoE traffic.</p> <p>The range for <i>vlan-ID</i> is from 1 to 4094, except for the VLANs reserved for internal use.</p>
<b>Step 12</b>	(Optional) <b>switchport access vlan <i>vlan-ID</i></b> <b>Example:</b> <pre>switch(config-if) # switchport access vlan 33 switch(config-if) #</pre>	If you configured the interface as an access port, use this command to specify the VLAN for FCoE traffic.
<b>Step 13</b>	<b>interface vfc <i>vfc-id</i></b> <b>Example:</b>	Creates a virtual Fibre Channel interface on the switch and enters configuration mode.

	Command or Action	Purpose
	switch(config-if) # <b>interface vfc 4</b> switch(config-if) #	The range of <i>vfc-id</i> is from 1 to 8192.
<b>Step 14</b>	<b>bind interface vethernet</b> <i>veth-num</i>  <b>Example:</b> switch(config-if) # <b>bind interface veth</b> <b>2</b> switch(config-if) #	Binds the virtual Fibre Channel interface to the specified virtual Ethernet interface.  The range of <i>veth-num</i> is from 1 to 1048575.
<b>Step 15</b>	<b>no shutdown</b>  <b>Example:</b> switch(config-if) # <b>no shutdown</b> switch(config-if) #	Returns the interface to its default operational state.

### Example

This example show how to configure Cisco Adapter FEX with FCoE on SAN fabric A using FEX 101 and the Ethernet interface on channel 1 configured as a trunk port.

```
nexus5500-sanA(config)#configure terminal
nexus5500-sanA(config)# install feature-set virtualization
nexus5500-sanA(config)# feature-set virtualization
nexus5500-sanA(config)# fex 101
nexus5500-sanA(config-fex)# fcoe
nexus5500-sanA(config-fex)# interface ethernet 101/1/1
nexus5500-sanA(config-if)# switchport mode vntag
nexus5500-sanA(config-if)# interface veth 2
nexus5500-sanA(config-if)# bind interface eth 101/1/1 channel 1
nexus5500-sanA(config-if)# switchport mode trunk
nexus5500-sanA(config-if)# switchport trunk allowed vlan 33
nexus5500-sanA(config-if)# interface vfc 4
nexus5500-sanA(config-if)# bind interface veth 2
nexus5500-sanA(config-if)# no shutdown
```

```
nexus6000-sanA(config)#configure terminal
nexus6000-sanA(config)# install feature-set virtualization
nexus6000-sanA(config)# feature-set virtualization
nexus6000-sanA(config)# fex 101
nexus6000-sanA(config-fex)# fcoe
nexus6000-sanA(config-fex)# interface ethernet 101/1/1
nexus6000-sanA(config-if)# switchport mode vntag
nexus6000-sanA(config-if)# interface veth 2
nexus6000-sanA(config-if)# bind interface eth 101/1/1 channel 1
nexus6000-sanA(config-if)# switchport mode trunk
nexus6000-sanA(config-if)# switchport trunk allowed vlan 33
nexus6000-sanA(config-if)# interface vfc 4
nexus6000-sanA(config-if)# bind interface veth 2
nexus6000-sanA(config-if)# no shutdown
```

This example shows how to configure Cisco Adapter FEX with FCoE on SAN fabric B using FEX 102 and Ethernet interface on channel 2 as an access port:

```
nexus5500-sanB(config)#configure terminal
nexus5500-sanB(config)# install feature-set virtualization
```

```
nexus5500-sanB(config)# feature-set virtualization
nexus5500-sanB(config)# fex 102
nexus5500-sanB(config-fex)# fcoe
nexus5500-sanB(config-fex)# interface ethernet 102/1/1
nexus5500-sanB(config-if)# switchport mode vntag
nexus5500-sanB(config-if)# interface veth 5
nexus5500-sanB(config-if)# bind interface eth 102/1/1 channel 2
nexus5500-sanB(config-if)# switchport mode access
nexus5500-sanB(config-if)# switchport access vlan 40
nexus5500-sanB(config-if)# interface vfc 6
nexus5500-sanB(config-if)# bind interface veth 5
nexus5500-sanB(config-if)# no shutdown

nexus6000-sanB(config)#configure terminal
nexus6000-sanB(config)# install feature-set virtualization
nexus6000-sanB(config)# feature-set virtualization
nexus6000-sanB(config)# fex 102
nexus6000-sanB(config-fex)# fcoe
nexus6000-sanB(config-fex)# interface ethernet 102/1/1
nexus6000-sanB(config-if)# switchport mode vntag
nexus6000-sanB(config-if)# interface veth 5
nexus6000-sanB(config-if)# bind interface eth 102/1/1 channel 2
nexus6000-sanB(config-if)# switchport mode access
nexus6000-sanB(config-if)# switchport access vlan 40
nexus6000-sanB(config-if)# interface vfc 6
nexus6000-sanB(config-if)# bind interface veth 5
nexus6000-sanB(config-if)# no shutdown
```

