Configuring Ports and Port Channels

This chapter includes the following sections:

Unified Ports on the Fabric Interconnect

Unified ports are ports on the fabric interconnect that can be configured to carry either Ethernet or Fibre Channel traffic. These ports are not reserved. A Cisco UCS domain cannot use these ports until you configure them.

Note When you configure a port on a fabric interconnect, the administrative state is automatically set to enabled. If the port is connected to another device, this may cause traffic disruption. You can disable the port after configuring it.

Configurable beacon LEDs indicate which unified ports are configured for the selected port mode.

Port Modes

The port mode determines whether a unified port on the fabric interconnect is configured to carry Ethernet or Fibre Channel traffic. You configure the port mode in Cisco UCS Manager. However, the fabric interconnect does not automatically discover the port mode.

Changing the port mode deletes the existing port configuration and replaces it with a new logical port. Any objects associated with that port configuration, such as VLANs and VSANS, are also removed. There is no restriction on the number of times you can change the port mode for a unified port.

Port Types

The port type defines the type of traffic carried over a unified port connection.

By default, unified ports changed to Ethernet port mode are set to the Ethernet uplink port type. Unified ports changed to Fibre Channel port mode are set to the Fibre Channel uplink port type. You cannot unconfigure Fibre Channel ports.

Changing the port type does not require a reboot.

Ethernet Port Mode

When you set the port mode to Ethernet, you can configure the following port types:

- Server ports
- Ethernet uplink ports
- Ethernet port channel members
- FCoE ports
- Appliance ports
- Appliance port channel members
- SPAN destination ports
- SPAN source ports

Note For SPAN source ports, configure one of the port types and then configure the port as SPAN source.

Fibre Channel Port Mode

When you set the port mode to Fibre Channel, you can configure the following port types:

- Fibre Channel uplink ports
- Fibre Channel port channel members
- Fibre Channel storage ports
- FCoE Uplink ports
- SPAN source ports

Note For SPAN source ports, configure one of the port types and then configure the port as SPAN source.

Cisco UCS Mini Scalability Ports

The Cisco UCS 6324 Fabric Interconnect contains a scalability port as well as four unified ports. The scalability port is a 40GB QSFP+ breakout port that, with proper cabling, can support four 1G or 10G SFP+ ports. A scalability port can be used as a licensed server port for supported Cisco UCS rack servers, as an appliance port, or as an FCoE port.

In the Cisco UCS Manager GUI, the scalability port is displayed as **Scalability Port 5** below the **Ethernet Ports** node. The individual breakout ports are displayed as **Port 1** through **Port 4**.

In the Cisco UCS Manager CLI, the scalability port is not displayed, but the individual breakout ports are displayed as **Br-Eth1/5/1** through **Br-Eth1/5/4**.

Configuring Scalability Ports

To configure ports, port channel members or SPAN members on the scalability port, scope into the scalability port first, then follow the steps for a standard unified port.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-server**	Enters Ethernet server mode.
Step 2	UCS-A /eth-server # **scope fabric** {**a** | **b**}	Enters Ethernet server fabric mode for the specified fabric.
Step 3	UCS-A /eth-server/fabric # **scope aggr-interface** *slot-num port-num*	Enters ethernet server fabric aggregate interface mode for the scalability port.
Step 4	UCS-A /eth-server/fabric/aggr-interface # **show interface**	Displays the interfaces on the scalability port.
Step 5	UCS-A /eth-server/fabric/aggr-interface # **create interface** *slot-num port-num*	Creates an interface for the specified Ethernet server port.

	Command or Action	Purpose
Step 6	UCS-A /eth-server/fabric/aggr-interface # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to create an interface for Ethernet server port 3 on the fabric A scalability port and commit the transaction:

```
UCS-A# scope eth-server
UCS-A /eth-server # scope fabric a
UCS-A /eth-server/fabric # scope aggr-interface 1 5
UCS-A /eth-server/fabric/aggr-interface # show interface
Interface:

Slot Id Aggr-Port ID Port Id  Admin State Oper State    State Reason
------- ------------ -------- ----------- ------------- ------------
      1            5        1 Enabled     Up
      1            5        2 Enabled     Up
      1            5        3 Enabled     Admin Down    Administratively Down
      1            5        4 Enabled     Admin Down    Administratively Down

UCS-A /eth-server/fabric/aggr-interface # create interface 1 3
UCS-A /eth-server/fabric/aggr-interface* # commit-buffer
UCS-A /eth-server/fabric/aggr-interface #
```

Beacon LEDs for Unified Ports

Each port on the 6200 series fabric interconnect has a corresponding beacon LED. When the **Beacon LED** property is configured, the beacon LEDs illuminate, showing you which ports are configured in a given port mode.

You can configure the **Beacon LED** property to show you which ports are grouped in one port mode: either Ethernet or Fibre Channel. By default, the Beacon LED property is set to Off.

Note For unified ports on the expansion module, you can reset the **Beacon LED** property to the default value of **Off** during expansion module reboot.

Guidelines for Configuring Unified Ports

Consider the following guidelines and restrictions when configuring unified ports:

Port Mode Placement

Because the Cisco UCS Manager GUI interface uses a slider to configure the port mode for unified ports , it automatically enforces the following restrictions which limits how port modes can be assigned to unified ports. When using the Cisco UCS Manager CLI interface, these restrictions are enforced when you commit the transaction to the system configuration. If the port mode configuration violates any of the following restrictions, the Cisco UCS Manager CLI displays an error:

- Ethernet ports must be grouped together in a block.

- Fibre Channel ports must be grouped together in a block.
- Alternating Ethernet and Fibre Channel ports is not supported.

Special Considerations for UCS Manager CLI Users

Because the Cisco UCS Manager CLI does not validate port mode changes until you commit the buffer to the system configuration, it is easy to violate the grouping restrictions if you attempt to commit the buffer before creating at least two new interfaces. To prevent errors, we recommend that you wait to commit your changes to the system configuration until you have created new interfaces for all of the unified ports changing from one port mode to another.

Commiting the buffer before configuring multiple interfaces will result in an error, but you do not need to start over. You can continue to configure unified ports until the configuration satisfies the aforementioned requirements.

Cautions and Guidelines for Configuring Unified Uplink Ports and Unified Storage Ports

The following are cautions and guidelines to follow while working with unified uplink ports and unified storage ports:

- In an unified uplink port, if you enable one component as a SPAN source, the other component will automatically become a SPAN source.

  Note If you create or delete a SPAN source under the Ethernet uplink port, Cisco UCS Manager automatically creates or deletes a SPAN source under the FCoE uplink port. The same happens when you create a SPAN source on the FCOE uplink port.

- You must configure a non default native VLAN on FCoE and unified uplink ports. This VLAN is not used for any traffic. Cisco UCS Manager will reuse an existing fcoe-storage-native-vlan for this purpose. This fcoe-storage-native-vlan will be used as a native VLAN on FCoE and unified uplinks.
- In an unified uplink port, if you do not specify a non default VLAN for the Ethernet uplink port the fcoe-storage-native-vlan will be assigned as the native VLAN on the unified uplink port. If the Ethernet port has a non default native VLAN specified as native VLAN, this will be assigned as the native VLAN for unified uplink port.
- When you create or delete a member port under an Ethernet port channel, Cisco UCS Manager automatically creates or deletes the member port under FCoE port channel. The same happens when you create or delete a member port in FCoE port channel.
- When you configure an Ethernet port as a standalone port, such as server port, Ethernet uplink, FCoE uplink or FCoE storage and make it as a member port for an Ethernet or FCOE port channel, Cisco UCS Manager automatically makes this port as a member of both Ethernet and FCoE port channels.
- When you remove the membership for a member port from being a member of server uplink, Ethernet uplink, FCoE uplink or FCoE storage, Cisco UCS Manager deletes the corresponding members ports from Ethernet port channel and FCoE port channel and creates a new standalone port.

- For unified uplink ports and unified storage ports, when you create two interfaces, only one license is checked out. As long as either interface is enabled, the license remains checked out. The license will be released only if both the interfaces are disabled for a unified uplink port or a unified storage port.

Effect of Port Mode Changes on Data Traffic

Port mode changes can cause an interruption to the data traffic for the Cisco UCS domain. The length of the interruption and the traffic that is affected depend upon the configuration of the Cisco UCS domain and the module on which you made the port mode changes.

Impact of Port Mode Changes on the Fixed Module in a Cluster Configuration

A cluster configuration has two fabric interconnects. After you make port changes to the fixed module, the fabric interconnect reboots. The impact on the data traffic depends upon whether or not you have configured the server vNICs to failover to the other fabric interconnect when one fails.

If you change the port modes on the fixed modules of both fabric interconnects simultaneously, all data traffic through the fabric interconnects are interrupted for approximately eight minutes while the fabric interconnects reboot.

Impact of Port Mode Changes on the Fixed Module in a Standalone Configuration

A standalone configuration has only one fabric interconnect. After you make port changes to the fixed module, the fabric interconnect reboots. All data traffic through the fabric interconnect is interrupted for approximately eight minutes while the fabric interconnect reboots.

FC Links Rebalancing

The FC uplinks balance automatically when FC Port Channels are utilized. To create FC Port Channels, refer to Configuring a Fibre Channel Port Channel, on page 34.

For the FC uplinks that are not members of the Port Channels (Individual ISLs), load balancing is done according to the FC uplinks balancing algorithm. For a vHBA of a host or service profile to choose an available FC uplink, when FC uplink trunking is disabled, the uplink and vHBA must belong to the same VSAN

For each vHBA, the algorithm searches for an FC uplink in the following order:

1. Least used FC uplink based on the number of vHBAs currently bound to the uplink.
2. If FC uplinks are equally balanced, then round robin is used.

This process continues for all the other vHBAs. The algorithm also considers other parameters such as pre-fip/fip adapters and number of flogis. You may not see the least-used component when there are less than six flogis.

After a port configuration or any other uplink state changes, if the traffic passing through the FC uplinks is no longer balanced, you can re-balance the traffic by resetting the vHBA(s) on each adapter and allow the load balancing algorithm to evaluate for the current state of the FC uplinks.

Configuring the Port Mode

Caution Changing the port mode can cause an interruption in data traffic because changes to the fixed module require a reboot of the fabric interconnect.

If the Cisco UCS domain has a cluster configuration that is set up for high availability and servers with service profiles that are configured for failover, traffic fails over to the other fabric interconnect and data traffic is not interrupted when the port mode is changed on the fixed module.

In the Cisco UCS Manager CLI, there are no new commands to support Unified Ports. Instead, you change the port mode by scoping to the mode for the desired port type and then creating a new interface. When you create a new interface for an already configured slot ID and port ID, UCS Manager deletes the previously configured interface and creates a new one. If a port mode change is required because you configure a port that previously operated in Ethernet port mode to a port type in Fibre Channel port mode, UCS Manager notes the change.

Note Expansions modules are not supported with Cisco UCS Mini.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope** *port-type-mode*	Enters the specified port type mode for one of the following port types: **eth-server** For configuring server ports. **eth-storage** For configuring Ethernet storage ports and Ethernet storage port channels. **eth-traffic-mon** For configuring Ethernet SPAN ports. **eth-uplink** For configuring Ethernet uplink ports. **fc-storage** For configuring Fibre Channel storage ports.

	Command or Action	Purpose
		fc-traffic-mon For configuring Fibre Channel SPAN ports. **fc-uplink** For configuring Fibre Channel uplink ports and Fibre Channel uplink port channels.
Step 2	UCS-A */port-type-mode* # **scope fabric** {**a** | **b**}	Enters the specified port type mode for the specified fabric.
Step 3	UCS-A */port-type-mode*/fabric # **create interface** *slot-id port-id*	Creates an interface for the specified port type. If you are changing the port type from Ethernet port mode to Fibre Channel port mode, or vice-versa, the following warning appears: `Warning: This operation will change the port mode (from Ethernet to FC or vice-versa). When committed, this change will require the module to restart.`
Step 4	Create new interfaces for other ports belonging to the Ethernet or Fibre Channel port block.	There are several restrictions that govern how Ethernet and Fibre Channel ports can be arranged on a fixed or expansion module. Among other restrictions, it is required that you change ports in groups of two. Violating any of the restrictions outlined in the Guidelines for Configuring Unified Ports section will result in an error.
Step 5	UCS-A */port-type-mode*/fabric/interface # **commit-buffer**	Commits the transaction to the system configuration.

Based on the module for which you configured the port modes, data traffic for the Cisco UCS domain is interrupted as follows:

- Fixed module—The fabric interconnect reboots. All data traffic through that fabric interconnect is interrupted. In a cluster configuration that provides high availability and includes servers with vNICs that are configured for failover, traffic fails over to the other fabric interconnect and no interruption occurs. Changing the port mode for both sides at once results in both fabric interconnects rebooting simultaneously and a complete loss of traffic until both fabric interconnects are brought back up.

  It takes about 8 minutes for the fixed module to reboot.

- Expansion module—The module reboots. All data traffic through ports in that module is interrupted.

  It takes about 1 minute for the expansion module to reboot.

The following example changes ports 3 and 4 on slot 1 from Ethernet uplink ports in Ethernet port mode to uplink Fibre Channel ports in Fibre Channel port mode:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # create interface 1 3
```

```
Warning: This operation will change the port mode (from Ethernet to FC or vice-versa).
When committed, this change will require the fixed module to restart.
UCS-A /fc-uplink/fabric/interface* # up
UCS-A /fc-uplink/fabric* #create interface 1 4
Warning: This operation will change the port mode (from Ethernet to FC or vice-versa).
When committed, this change will require the fixed module to restart.
UCS-A /fc-uplink/fabric/interface* #commit-buffer
```

Configuring the Beacon LEDs for Unified Ports

Complete the following task for each module for which you want to configure beacon LEDs.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fabric-interconnect** {**a** | **b**}	Enters fabric interconnect mode for the specified fabric.
Step 2	UCS-A /fabric # **scope card** *slot-id*	Enters card mode for the specified fixed or expansion module.
Step 3	UCS-A /fabric/card # **scope beacon-led**	Enters beacon LED mode.
Step 4	UCS-A /fabric/card/beacon-led # **set admin-state** {**eth** | **fc** | **off**}	Specifies which port mode is represented by illuminated beacon LED lights. **eth** All of the Unified Ports configured in Ethernet mode illuminate. **fc** All of the Unified Ports configured in Fibre Channel mode illuminate. **off** Beacon LED lights for all ports on the module are turned off.
Step 5	UCS-A /fabric/card/beacon-led # **commit-buffer**	Commits the transaction to the system configuration.

The following example illuminates all of the beacon lights for Unified Ports in Ethernet port mode and commits the transaction:

```
UCS-A# scope fabric-interconnect a
UCS-A /fabric # scope card 1
UCS-A /fabric/card # scope beacon-led
UCS-A /fabric/card/beacon-led # set admin-state eth
UCS-A /fabric/card/beacon-led* # commit-buffer
UCS-A /fabric/card/beacon-led #
```

Physical and Backplane Ports

Displaying Physical Port Statistics Obtained From the ASIC

Procedure

	Command or Action	Purpose
Step 1	UCS-A /fabric-interconnect # **connect nxos** {**a** | **b**}	Enters NX-OS mode for the fabric interconnect.
Step 2	UCS-A(nxos)# **show interface ethernet** *slot/port*	Displays physical port statistics that are obtained from the ASIC.

The following example shows how to display physical port statistics that are obtained from the ASIC:

```
UCS-A /fabric-interconnect # connect nxos a
UCS-A(nxos)# show interface ethernet 1/11

Ethernet1/11 is up
 Dedicated Interface
  Hardware: 40000 Ethernet, address: a46c.2ae3.0e1a (bia a46c.2ae3.0e1a)
  Description: S: Server
  MTU 1500 bytes, BW 40000000 Kbit, DLY 10 usec
  reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA
  Port mode is fex-fabric
  full-duplex, 40 Gb/s, media type is 40G
  Beacon is turned off
  Input flow-control is off, output flow-control is off
  Rate mode is dedicated
  Switchport monitor is off
  EtherType is 0x8100
  Last link flapped 01:25:42
  Last clearing of "show interface" counters never
  2 interface resets
  30 seconds input rate 22664 bits/sec, 2833 bytes/sec, 3 packets/sec
  30 seconds output rate 9512 bits/sec, 1189 bytes/sec, 1189 bytes/sec, 4 packets/sec
  Load-Interval #2: 5 minute (300 seconds)
    input rate 33.80 Kbps, 5 pps; output rate 1.23 Mbps, 71 pps
  RX
    126057 unicast packets  1744 multicast packets  12877 broadcast packets
    140693 input packets  28702696 bytes
    3351 jumbo packets  0 storm suppression bytes
    0 runts  0 giants  0 CRC  0 no buffer
    0 input error  0 short frame  0 overrun   0 underrun  0 ignored
    0 watchdog  0 bad etype drop  0 bad proto drop  0 if down drop
    0 input with dribble  184 input discard
    0 Rx pause
  TX
    919778 unicast packets  6991 multicast packets  29 broadcast packets
    926798 output packets  1237109219 bytes
    794275 jumbo packets
    0 output errors  0 collision  0 deferred  0 late collision
    0 lost carrier  0 no carrier  0 babble 0 output discard
    0 Tx pause

  Errors on Peer port (NIF):
  RX
    8300 toolong frames  8400 undersize frames  8500 fragment frames
```

```
  8600 crcErr_not_stomped frames  8700 crcErr_stomped frames  8800 inRangeErr frames
TX
  8200 frames_with_error
```

Displaying Physical Ports on the Fabric Interconnect That Correspond to Physical Ports on BCM

Procedure

	Command or Action	Purpose
Step 1	UCS-A /fabric-interconnect # **connect nxos** {**a** | **b**}	Enters NX-OS mode for the fabric interconnect.
Step 2	UCS-A(nxos)# **show hardware internal bcm-usd info port-info** | **grep** *interface_slot_id*	Displays physical ports on a fabric interconnect that correspond to physical ports on BCM.

The following example shows how to display physical ports on a fabric interconnect that correspond to physical ports on BCM:

```
UCS-A /fabric-interconnect # connect nxos a
UCS-A(nxos)# show hardware internal bcm-usd info port-info | grep Eth 1/11

Eth1/11      0x1a00a000  41 xe-40   57   CR4 sw 4044 0 uta  2240     0 fd dis blk dis dis
ena 40G 40G up
```

Verifying Status of Backplane Ports

Procedure

	Command or Action	Purpose
Step 1	UCS-A /fabric-interconnect # **connect nxos** {**a** | **b**}	Enters NX-OS mode for the fabric interconnect.
Step 2	UCS-A(nxos)# **show interface br**	Displays the configuration of the interface, including the speed and status of the backplane ports.

The following example shows how to verify the status of backplane ports for fabric interconnect A:

```
UCS-A /fabric-interconnect # connect nxos a
UCS-A(nxos)# show interface br
```

```
--------------------------------------------------------------------------------
Ethernet      VLAN   Type Mode   Status  Reason                   Speed     Port
Interface                                                                  Ch #
--------------------------------------------------------------------------------
Eth1/1        1       eth  access down    SFP not inserted           40G(D) --
Eth1/2        1       eth  access down    SFP not inserted           40G(D) --
Br-Eth1/3/1   1       eth  access down    Administratively down      10G(D) --
Br-Eth1/3/2   1       eth  access down    Administratively down      10G(D) --
Br-Eth1/3/3   1       eth  access down    Administratively down      10G(D) --
Br-Eth1/3/4   1       eth  access down    Administratively down      10G(D) --
Eth1/4        1       eth  access down    SFP not inserted           40G(D) --
Br-Eth1/5/1   4044    eth  trunk  down    Link not connected         10G(D) --
Br-Eth1/5/2   4044    eth  trunk  down    Link not connected         10G(D) --
Br-Eth1/5/3   4044    eth  trunk  down    Link not connected         10G(D) --
Br-Eth1/5/4   4044    eth  trunk  down    Link not connected         10G(D) --
Eth1/6        1       eth  access down    SFP not inserted           40G(D) --
Eth1/7        1       eth  access down    SFP not inserted           40G(D) --
Eth1/8        1       eth  access down    SFP not inserted           40G(D) --
Eth1/9        1       eth  access down    SFP not inserted           40G(D) --
Eth1/10       1       eth  access down    SFP not inserted           40G(D) --
Eth1/11       1       eth  fabric up      none                       40G(D) --
Eth1/12       1       eth  access down    SFP not inserted           40G(D) --
Eth1/13       1       eth  access down    SFP not inserted           40G(D) --
Eth1/14       1       eth  access down    SFP not inserted           40G(D) --
Eth1/15       1       eth  access down    SFP not inserted           40G(D) --
Eth1/16       1       eth  access down    SFP not inserted           40G(D) --
Eth1/17       1       eth  access down    SFP not inserted           40G(D) --
Eth1/18       1       eth  access down    SFP not inserted           40G(D) --
Eth1/19       1       eth  access down    SFP not inserted           40G(D) --
Eth1/20       1       eth  access down    SFP not inserted           40G(D) --
Br-Eth1/21/1  1       eth  trunk  up      none                       10G(D) --
Br-Eth1/21/2  1       eth  trunk  up      none                       10G(D) --
Br-Eth1/21/3  1       eth  trunk  down    Link not connected         10G(D) --
Br-Eth1/21/4  1       eth  trunk  up      none                       10G(D) --
Eth1/22       1       eth  access down    SFP not inserted           40G(D) --
Eth1/23       1       eth  access down    SFP not inserted           40G(D) --
Eth1/24       1       eth  access down    SFP not inserted           40G(D) --
Eth1/25       1       eth  access down    SFP not inserted           40G(D) --
Eth1/26       1       eth  access down    SFP not inserted           40G(D) --
Eth1/27       1       eth  access down    SFP not inserted           40G(D) --
Eth1/28       1       eth  access down    SFP not inserted           40G(D) --
Eth1/29       1       eth  access down    SFP not inserted           40G(D) --
Eth1/30       1       eth  access down    SFP not inserted           40G(D) --
Eth1/31       1       eth  access down    SFP not inserted           40G(D) --
Eth1/32       1       eth  access down    SFP not inserted           40G(D) --

--------------------------------------------------------------------------------
Port-channel VLAN    Type Mode   Status  Reason                    Speed   Protocol
Interface
--------------------------------------------------------------------------------
Po1285       1       eth  vntag  up      none                       a-10G(D)  none
Po1286       1       eth  vntag  up      none                       a-10G(D)  none
Po1287       1       eth  vntag  up      none                       a-10G(D)  none
Po1288       1       eth  vntag  up      none                       a-10G(D)  none
Po1289       1       eth  vntag  up      none                       a-10G(D)  none

--------------------------------------------------------------------------------
Port   VRF          Status IP Address                              Speed    MTU
--------------------------------------------------------------------------------
mgmt0  --           down   10.197.157.252                         --       1500

--------------------------------------------------------------------------------
Vethernet     VLAN   Type Mode   Status  Reason                   Speed
--------------------------------------------------------------------------------
Veth691       4047   virt trunk  down    nonParticipating         auto
Veth692       4047   virt trunk  up      none                     auto
Veth693       1      virt trunk  down    nonParticipating         auto
Veth695       1      virt trunk  up      none                     auto
Veth699       1      virt trunk  up      none                     auto

--------------------------------------------------------------------------------
```

```
Interface Secondary VLAN(Type)                    Status Reason
------------------------------------------------------------------------------
Vlan1     --                                      down   Administratively down

------------------------------------------------------------------------------
Ethernet       VLAN   Type Mode   Status  Reason                 Speed     Port
Interface                                                                Ch #
------------------------------------------------------------------------------
Eth1/1/1       1       eth  vntag  up      none                    10G(D) 1286
Eth1/1/2       1       eth  access down    Administratively down   10G(D) --
Eth1/1/3       1       eth  vntag  up      none                    10G(D) 1286
Eth1/1/4       1       eth  access down    Administratively down   10G(D) --
Eth1/1/5       1       eth  vntag  up      none                    10G(D) 1287
Eth1/1/6       1       eth  access down    Administratively down   10G(D) --
Eth1/1/7       1       eth  vntag  up      none                    10G(D) 1287
Eth1/1/8       1       eth  access down    Administratively down   10G(D) --
Eth1/1/9       1       eth  vntag  up      none                    10G(D) 1289
Eth1/1/10      1       eth  access down    Administratively down   10G(D) --
Eth1/1/11      1       eth  vntag  up      none                    10G(D) 1289
Eth1/1/12      1       eth  access down    Administratively down   10G(D) --
Eth1/1/13      1       eth  vntag  up      none                    10G(D) 1285
Eth1/1/14      1       eth  access down    Administratively down   10G(D) --
Eth1/1/15      1       eth  vntag  up      none                    10G(D) 1285
Eth1/1/16      1       eth  access down    Administratively down   10G(D) --
Eth1/1/17      1       eth  access down    Administratively down   10G(D) --
Eth1/1/18      1       eth  vntag  up      none                    10G(D) 1288
Eth1/1/19      1       eth  access down    Administratively down   10G(D) --
Eth1/1/20      1       eth  vntag  up      none                    10G(D) 1288
Eth1/1/21      1       eth  access down    Administratively down   10G(D) --
Eth1/1/22      1       eth  access down    Administratively down   10G(D) --
Eth1/1/23      1       eth  access down    Administratively down   10G(D) --
Eth1/1/24      1       eth  access down    Administratively down   10G(D) --
Eth1/1/25      1       eth  access down    Administratively down   10G(D) --
Eth1/1/26      1       eth  access down    Administratively down   10G(D) --
Eth1/1/27      1       eth  access down    Administratively down   10G(D) --
Eth1/1/28      1       eth  access down    Administratively down   10G(D) --
Eth1/1/29      1       eth  access down    Administratively down   10G(D) --
Eth1/1/30      1       eth  access down    Administratively down   10G(D) --
Eth1/1/31      1       eth  access down    Administratively down   10G(D) --
Eth1/1/32      1       eth  access down    Administratively down   10G(D) --
Eth1/1/33      4044    eth  trunk  up      none                   1000(D) --
```

Server Ports

Configuring a Server Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-server**	Enters Ethernet server mode.
Step 2	UCS-A /eth-server # **scope fabric** {**a** | **b**}	Enters Ethernet server fabric mode for the specified fabric.
Step 3	UCS-A /eth-server/fabric # **create interface** *slot-num port-num*	Creates an interface for the specified Ethernet server port.

	Command or Action	Purpose
Step 4	UCS-A /eth-server/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to create an interface for Ethernet server port 4 on slot 1 of fabric B and commit the transaction:

```
UCS-A# scope eth-server
UCS-A /eth-server # scope fabric b
UCS-A /eth-server/fabric # create interface 1 4
UCS-A /eth-server/fabric* # commit-buffer
UCS-A /eth-server/fabric #
```

Unconfiguring a Server Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-server**	Enters Ethernet server mode.
Step 2	UCS-A /eth-server # **scope fabric** {**a** | **b**}	Enters Ethernet server fabric mode for the specified fabric.
Step 3	UCS-A /eth-server/fabric # **delete interface** *slot-num port-num*	Deletes the interface for the specified Ethernet server port.
Step 4	UCS-A /eth-server/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example unconfigures Ethernet server port 12 on slot 1 of fabric B and commits the transaction:

```
UCS-A# scope eth-server
UCS-A /eth-server # scope fabric b
UCS-A /eth-server/fabric # delete interface 1 12
UCS-A /eth-server/fabric* # commit-buffer
UCS-A /eth-server/fabric #
```

Uplink Ethernet Ports

Configuring an Uplink Ethernet Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric a** | **b**}	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **create interface** *slot-num port-num*	Creates an interface for the specified Ethernet uplink port.
Step 4	UCS-A /eth-uplink/fabric # **set speed** {**10gbps** | **1gbps**}	(Optional) Sets the speed for the specified Ethernet uplink port.
Step 5	UCS-A /eth-uplink/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to create an interface for Ethernet uplink port 3 on slot 2 of fabric B, set the speed to 10 gbps, and commit the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric b
UCS-A /eth-uplink/fabric # create interface 2 3
UCS-A /eth-uplink/fabric # set speed 10gbps
UCS-A /eth-uplink/fabric* # commit-buffer
UCS-A /eth-uplink/fabric #
```

Unconfiguring an Uplink Ethernet Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric** {**a** | **b**}	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **delete interface** *slot-num port-num*	Deletes the interface for the specified Ethernet uplink port.

	Command or Action	Purpose
Step 4	UCS-A /eth-uplink/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example unconfigures Ethernet uplink port 3 on slot 2 of fabric B and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric b
UCS-A /eth-uplink/fabric # delete interface 2 3
UCS-A /eth-uplink/fabric* # commit-buffer
UCS-A /eth-uplink/fabric #
```

Appliance Ports

Appliance ports are only used to connect fabric interconnects to directly attached NFS storage.

Note When you create a new appliance VLAN, its IEEE VLAN ID is not added to the LAN Cloud. Therefore, appliance ports that are configured with the new VLAN remain down, by default, due to a pinning failure. To bring up these appliance ports, you have to configure a VLAN in the LAN Cloud with the same IEEE VLAN ID.

Cisco UCS Manager supports up to four appliance ports per fabric interconnect.

Configuring an Appliance Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # **scope fabric**{**a** | **b**}	Enters Ethernet storage mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **create interface** *slot-num port-num*	Creates an interface for the specified appliance port.
Step 4	UCS-A /eth-storage/fabric/interface # **set portmode** {**access** | **trunk**}	(Optional) Specifies whether the port mode is access or trunk. By default, the mode is set to trunk.

	Command or Action	Purpose
		Note If traffic for the appliance port needs to traverse the uplink ports, you must also define each VLAN used by this port in the LAN cloud. For example, you need the traffic to traverse the uplink ports if the storage is also used by other servers, or if you want to ensure that traffic fails over to the secondary fabric interconnect if the storage controller for the primary fabric interconnect fails.
Step 5	UCS-A /eth-storage/fabric/interface # **set pingroupname** *pin-group name*	(Optional) Specifies the appliance pin target to the specified fabric and port, or fabric and port channel.
Step 6	UCS-A /eth-storage/fabric/interface # **set prio** *sys-class-name*	(Optional) Specifies the QoS class for the appliance port. By default, the priority is set to best-effort. The sys-class-name argument can be one of the following class keywords: • **Fc—**Use this priority for QoS policies that control vHBA traffic only. • **Platinum—**Use this priority for QoS policies that control vNIC traffic only. • **Gold—**Use this priority for QoS policies that control vNIC traffic only. • **Silver—**Use this priority for QoS policies that control vNIC traffic only. • **Bronze—**Use this priority for QoS policies that control vNIC traffic only. • **Best Effort—**Do not use this priority. It is reserved for the Basic Ethernet traffic lane. If you assign this priority to a QoS policy and configure another system class as CoS 0, Cisco UCS Manager does not default to this system class. It defaults to the priority with CoS 0 for that traffic.
Step 7	UCS-A /eth-storage/fabric/interface # **set adminspeed** {**10gbps** | **1 gbps**}	(Optional) Specifies the admin speed for the interface. By default, the admin speed is set to 10gbps.
Step 8	UCS-A /eth-storage/fabric/interface # **commit buffer**	Commits the transaction to the system configuration.

The following example creates an interface for an appliance port 2 on slot 3 of fabric B, sets the port mode to access, pins the appliance port to a pin group called pingroup1, sets the QoS class to fc, sets the admin speed to 10 gbps, and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric b
UCS-A /eth-storage/fabric # create interface 3 2
UCS-A /eth-storage/fabric* # set portmode access
UCS-A /eth-storage/fabric* # set pingroupname pingroup1
UCS-A /eth-storage/fabric* # set prio fc
UCS-A /eth-storage/fabric* # set adminspeed 10gbps
UCS-A /eth-storage/fabric* # commit-buffer
UCS-A /eth-storage/fabric #
```

What to Do Next

Assign a VLAN or target MAC address for the appliance port.

Assigning a Target MAC Address to an Appliance Port or Appliance Port Channel

The following procedure assigns a target MAC address to an appliance port. To assign a target MAC address to an appliance port channel, scope to the port channel instead of the interface.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # **scope fabric** {**a** | **b**}	Enters Ethernet storage mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **scope interface** *slot-id port-id*	Enters Ethernet interface mode for the specified interface. **Note** To assign a target MAC address to an appliance port channel, use the **scope port-channel** command instead of **scope interface** .
Step 4	UCS-A /eth-storage/fabric/interface # **create eth-target** *eth-target name*	Specifies the name for the specified MAC address target.
Step 5	UCS-A /eth-storage/fabric/interface/eth-target # **set mac-address** *mac-address*	Specifies the MAC address in nn:nn:nn:nn:nn:nn format.

The following example assigns a target MAC address for an appliance device on port 3, slot 2 of fabric B and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage* # scope fabric b
UCS-A /eth-storage/fabric* # scope interface 2 3
UCS-A /eth-storage/fabric/interface* # create eth-target macname
UCS-A /eth-storage/fabric/interface* # set mac-address 01:23:45:67:89:ab
```

```
UCS-A /eth-storage/fabric/interface* # commit-buffer
UCS-A /eth-storage/fabric #
```

The following example assigns a target MAC address for appliance devices on port channel 13 of fabric B and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage* # scope fabric b
UCS-A /eth-storage/fabric* # scope port-channel 13
UCS-A /eth-storage/fabric/port-channel* # create eth-target macname
UCS-A /eth-storage/fabric/port-channel* # set mac-address 01:23:45:67:89:ab
UCS-A /eth-storage/fabric/port-channel* # commit-buffer
UCS-A /eth-storage/fabric #
```

Creating an Appliance Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A/eth-storage# **create vlan** *vlan-name vlan-id*	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet storage VLAN mode
Step 3	UCS-A/eth-storage/vlan# **set sharing primary**	Saves the changes.
Step 4	UCS-A/eth-storage/vlan# **commit buffer**	Commits the transaction to the system configuration.
Step 5	UCS-A/eth-storage# **create vlan** *vlan-name vlan-id*	Creates a named VLAN, specifies the VLAN name and VLAN ID, and enters Ethernet storage VLAN mode .
Step 6	UCS-A/eth-storage/vlan# **set sharing community**	Associates the primary VLAN to the secondary VLAN that you are creating.
Step 7	UCS-A/eth-storage/vlan# **set pubnwname** *primary vlan-name*	Specifies the primary VLAN to be associated with this secondary VLAN.
Step 8	UCS-A/eth-storage/vlan# **commit buffer**	Commits the transaction to the system configuration.

The following example creates an appliance port:

```
UCS-A# scope eth-storage
UCS-A/eth-storage# create vlan PRI600 600
UCS-A/eth-storage/vlan* # set sharing primary
UCS-A/eth-storage/vlan* # commit-buffer
UCS-A/eth-storage # create vlan COM602 602
UCS-A/eth-storage/vlan* # set sharing isolated
UCS-A/eth-storage/vlan* # set pubnwname PRI600
UCS-A/eth-storage/vlan* # commit-buffer
```

Mapping an Appliance Port to a Community VLAN

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A/eth-storage# **scope fabric** {*a*|*b*}	Enters Ethernet storage fabric interconnect mode for the specified fabric interconnect.
Step 3	UCS-A/eth-storage/fabric# **create interface** *slot-num port-num*	Creates an interface for the specified Ethernet server port.
Step 4	UCS-A/eth-storage/fabric/interface# **exit**	Exits from the interface. **Note** Ensure you commit the transaction after associating with the VLAN.
Step 5	UCS-A/eth-storage/fabric# **exit**	Exits from the fabric.
Step 6	UCS-A/eth-storage# **scope vlan** *vlan-name*	Enters the specified VLAN. **Note** Ensure community VLAN is created in the appliance cloud.
Step 7	UCS-A/eth-storage/vlan# **create member-port** *fabric slot-num port-num*	Creates the member port for the specified fabric, assigns the slot number, and port number and enters member port configuration.
Step 8	UCS-A/eth-storage/vlan/member-port# **commit**	Commits the transaction to the system configuration.

The following example maps an appliance port to an community VLAN:

```
UCS-A# scope eth-storage
UCS-A/eth-storage# scope fabric a
UCS-A/eth-storage/fabric# create interface 1 22
UCS-A/eth-storage/fabric/interface*# exit
UCS-A/eth-storage/fabric*# exit
UCS-A/eth-storage*# scope vlan COM602
UCS-A/eth-storage/vlan*# create member-port a 1 22
UCS-A/eth-storage/vlan/member-port* commit
```

Unconfiguring an Appliance Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A # **scope eth-storage**	Enters Ethernet storage mode.

	Command or Action	Purpose
Step 2	UCS-A /eth-storage # **scope fabric** {**a** | **b**}	Enters Ethernet storage mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **delete eth-interface** *slot-num port-num*	Deletes the interface for the specified appliance port.
Step 4	UCS-A /eth-storage/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example unconfigures appliance port 3 on slot 2 of fabric B and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric b
UCS-A /eth-storage/fabric # delete eth-interface 2 3
UCS-A /eth-storage/fabric* # commit-buffer
UCS-A /eth-storage/fabric #
```

FCoE Uplink Ports

FCoE uplink ports are physical Ethernet interfaces between the fabric interconnects and the upstream Ethernet switch, used for carrying FCoE traffic. With this support the same physical Ethernet port can carry both Ethernet traffic and Fibre Channel traffic.

FCoE uplink ports connect to upstream Ethernet switches using the FCoE protocol for Fibre Channel traffic. This allows both the Fibre Channel traffic and Ethernet traffic to flow on the same physical Ethernet link.

Note FCoE uplinks and unified uplinks enable the multi-hop FCoE feature, by extending the unified fabric up to the distribution layer switch.

You can configure the same Ethernet port as any of the following:

- **FCoE uplink port—**As an FCoE uplink port for only Fibre Channel traffic.
- **Uplink port—**As an Ethernet port for only Ethernet traffic.
- **Unified uplink port—**As a unified uplink port to carry both Ethernet and Fibre Channel traffic.

Configuring a FCoE Uplink Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters FC Uplink mode.

	Command or Action	Purpose
Step 2	UCS-A /fc-uplink # **scope fabric**{**a** | **b**}	Enters FC - Uplink mode for the specific fabric.
Step 3	UCS-A /fc-uplink/fabric # **create fcoeinterface** *slot-numberport-number*	Creates interface for the specified FCoE uplink port.
Step 4	UCS-A /fc-uplink/fabric/fabricinterface # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates an interface for FCoE uplink port 1 on slot 8 of fabric A and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # create fcoeinterface 1 8
UCS-A /fc-uplink/fabric/fcoeinterface* # commit-buffer
UCS-A /fc-uplink/fabric/fcoeinterface #
```

Unconfiguring a FCoE Uplink Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters FC Uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric**{**a** | **b**}	Enters FC - Uplink mode for the specific fabric.
Step 3	UCS-A /fc-uplink/fabric # **delete fcoeinterface** *slot-numberport-number*	Deletes the specified interface.
Step 4	UCS-A /fc-uplink/fabric/fabricinterface # **commit-buffer**	Commits the transaction to the system configuration.

The following example deletes the FCoE uplink interface on port 1 on slot 8 of fabric A and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # delete fcoeinterface 1 8
UCS-A /fc-uplink/fabric/fcoeinterface* # commit-buffer
UCS-A /fc-uplink/fabric/fcoeinterface #
```

Viewing FCoE Uplink Ports

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters FC Uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric**{**a** | **b**}	Enters FC - Uplink mode for the specific fabric.
Step 3	UCS-A /fc-uplink/fabric # **show fcoeinterface**	Lists the available interfaces.

The following example displays the available FCoE uplink interfaces on fabric A:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # show fcoeinterface
FCoE Interface:

Slot Id    Port Id    Admin State Operational State Operational State Reason  Li
c State            Grace Prd
---------- ---------- ----------- ----------------- ------------------------ --
------------------ ---------
         1         26 Enabled     Indeterminate                               Li
cense Ok                    0

Fcoe Member Port:

Port-channel Slot  Port  Oper State      State Reason
------------ ----- ----- --------------- ------------
1                1    10 Sfp Not Present Unknown
1                1     3 Sfp Not Present Unknown
1                1     4 Sfp Not Present Unknown
1                1     6 Sfp Not Present Unknown
1                1     8 Sfp Not Present Unknown
2                1     7 Sfp Not Present Unknown
UCS-A /fc-uplink/fabric #
```

Unified Uplink Ports

When you configure an Ethernet uplink and an FCoE uplink on the same physical Ethernet port, it is called a unified uplink port. You can individually enable or disable either the FCoE or Ethernet interfaces independently.

- Enabling or disabling the FCoE uplink results in the corresponding VFC being enabled or disabled.
- Enabling or disabling an Ethernet uplink results in the corresponding physical port being enabled or disabled.

If you disable an Ethernet uplink, it disables the underlying physical port in a unified uplink. Therefore, even when the FCoE uplink is enabled, the FCoE uplink also goes down. But if you disable an FCoE uplink, only the VFC goes down. If the Ethernet uplink is enabled, it can still function properly in the unified uplink port.

Configuring a Unified Uplink Port

To configure a unified uplink port, you will convert an existing FCoE uplink port as a unified port.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric** {**a** | **b**}	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **create interface** *15*	Converts the FCoE uplink port as a unified port.
Step 4	UCS-A /eth-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates a unified uplink port on an existing FCoE port:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric b
UCS-A /eth-uplink/fabric # create interface 1 5
UCS-A /eth-uplink/fabric/interface* # commit-buffer
UCS-A /eth-uplink/interface #
```

FCoE and Fibre Channel Storage Ports

Configuring a Fibre Channel Storage or FCoE Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-storage**	Enters Fibre Channel storage mode.
Step 2	UCS-A /fc-storage # **scope fabric** {**a** | **b**}	Enters Fibre Channel storage mode for the specified fabric.
Step 3	UCS-A /fc-storage/fabric # **create interface** {**fc** | **fcoe**} *slot-num port-num*	Creates an interface for the specified Fibre Channel storage port.
Step 4	UCS-A /fc-storage/fabric # **commit-buffer**	Commits the transaction.

The following example creates an interface for Fibre Channel storage port 10 on slot 2 of fabric A and commits the transaction:

```
UCS-A# scope fc-storage
UCS-A /fc-storage # scope fabric a
UCS-A /fc-storage/fabric* # create interface fc 2 10
UCS-A /fc-storage/fabric # commit-buffer
```

What to Do Next

Assign a VSAN.

Unconfiguring a Fibre Channel Storage or FCoE Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-storage**	Enters Fibre Channel storage mode.
Step 2	UCS-A /fc-storage # **scope fabric** {**a** | **b**}	Enters Fibre Channel storage mode for the specified fabric.
Step 3	UCS-A /fc-storage/fabric # **delete interface** {**fc** | **fcoe**} *slot-num port-num*	Deletes the interface for the specified Fibre Channel or FCoE storage port.
Step 4	UCS-A /fc-storage/fabric # **commit-buffer**	Commits the transaction.

The following example unconfigures Fibre Channel storage port 10 on slot 2 of fabric A and commits the transaction:

```
UCS-A# scope fc-storage
UCS-A /fc-storage # scope fabric a
UCS-A /fc-storage/fabric* # delete interface fc 2 10
UCS-A /fc-storage/fabric # commit-buffer
```

Restoring a Fibre Channel Storage Port Back to an Uplink Fibre Channel Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b**}	Enters Fibre Channel uplink mode for the specified fabric.
Step 3	UCS-A /fc-uplink/fabric # **create interface** *slot-num port-num*	Creates an interface for the specified Fibre Channel uplink port.
Step 4	UCS-A /fc-uplink/fabric # **commit-buffer**	Commits the transaction.

The following example creates an interface for Fibre Channel uplink port 10 on slot 2 of fabric A and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric* # create interface 2 10
UCS-A /fc-uplink/fabric # commit-buffer
```

Uplink Ethernet Port Channels

An uplink Ethernet port channel allows you to group several physical uplink Ethernet ports (link aggregation) to create one logical Ethernet link to provide fault-tolerance and high-speed connectivity. In Cisco UCS Manager, you create a port channel first and then add uplink Ethernet ports to the port channel. You can add up to 16 uplink Ethernet ports to a port channel.

Important The state of a configured port changes to unconfigured in the following scenarios:

- The port is deleted or removed from a port channel. The port channel can be of any type, such as, uplink or storage.
- A port channel is deleted.

Note Cisco UCS uses Link Aggregation Control Protocol (LACP), not Port Aggregation Protocol (PAgP), to group the uplink Ethernet ports into a port channel. If the ports on the upstream switch are not configured for LACP, the fabric interconnects treat all ports in an uplink Ethernet port channel as individual ports, and therefore forward packets.

Configuring an Uplink Ethernet Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric** {**a** | **b** }	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **create port-channel** *port-num*	Creates a port channel on the specified Ethernet uplink port, and enters Ethernet uplink fabric port channel mode.

	Command or Action	Purpose
Step 4	UCS-A /eth-uplink/fabric/port-channel # {**enable** | **disable**}	(Optional) Enables or disables the administrative state of the port channel. The port channel is disabled by default.
Step 5	UCS-A /eth-uplink/fabric/port-channel # **set name** *port-chan-name*	(Optional) Specifies the name for the port channel.
Step 6	UCS-A /eth-uplink/fabric/port-channel # **set flow-control-policy** *policy-name*	(Optional) Assigns the specified flow control policy to the port channel.
Step 7	UCS-A /eth-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates a port channel on port 13 of fabric A, sets the name to portchan13a, enables the administrative state, assigns the flow control policy named flow-con-pol432 to the port channel, and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
UCS-A /eth-uplink/fabric # create port-channel 13
UCS-A /eth-uplink/fabric/port-channel* # enable
UCS-A /eth-uplink/fabric/port-channel* # set name portchan13a
UCS-A /eth-uplink/fabric/port-channel* # set flow-control-policy flow-con-pol432
UCS-A /eth-uplink/fabric/port-channel* # commit-buffer
UCS-A /eth-uplink/fabric/port-channel #
```

Unconfiguring an Uplink Ethernet Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric** {**a** | **b** }	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **delete port-channel** *port-num*	Deletes the port channel on the specified Ethernet uplink port.
Step 4	UCS-A /eth-uplink/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example unconfigures the port channel on port 13 of fabric A and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
```

```
UCS-A /eth-uplink/fabric # delete port-channel 13
UCS-A /eth-uplink/fabric* # commit-buffer
UCS-A /eth-uplink/fabric #
```

Adding a Member Port to an Uplink Ethernet Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric** {**a** | **b** }	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **scope port-channel** *port-num*	Enters Ethernet uplink fabric port channel mode for the specified port channel.
Step 4	UCS-A /eth-uplink/fabric/port-channel # **create member-port** *slot-num port-num*	Creates the specified member port from the port channel and enters Ethernet uplink fabric port channel member port mode.
Step 5	UCS-A /eth-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example adds the member port on slot 1, port 7 to the port channel on port 13 of fabric A and commits the transaction.

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
UCS-A /eth-uplink/fabric # scope port-channel 13
UCS-A /eth-uplink/fabric/port-channel # create member-port 1 7
UCS-A /eth-uplink/fabric/port-channel* # commit-buffer
UCS-A /eth-uplink/fabric/port-channel #
```

Deleting a Member Port from an Uplink Ethernet Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric** {**a** | **b** }	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **scope port-channel** *port-num*	Enters Ethernet uplink fabric port channel mode for the specified port channel.

	Command or Action	Purpose
Step 4	UCS-A /eth-uplink/fabric/port-channel # **delete member-port** *slot-num port-num*	Deletes the specified member port from the port channel.
Step 5	UCS-A /eth-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example deletes a member port from the port channel on port 13 of fabric A and commits the transaction:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric a
UCS-A /eth-uplink/fabric # scope port-channel 13
UCS-A /eth-uplink/fabric/port-channel # delete member-port 1 7
UCS-A /eth-uplink/fabric/port-channel* # commit-buffer
UCS-A /eth-uplink/fabric/port-channel #
```

Appliance Port Channels

An appliance port channel allows you to group several physical appliance ports to create one logical Ethernet storage link for the purpose of providing fault-tolerance and high-speed connectivity. In Cisco UCS Manager, you create a port channel first and then add appliance ports to the port channel. You can add up to eight appliance ports to a port channel.

Configuring an Appliance Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # **scope fabric** {**a** | **b** }	Enters Ethernet storage fabric mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **create port-channel** *port-num*	Creates a port channel on the specified Ethernet storage port, and enters Ethernet storage fabric port channel mode.
Step 4	UCS-A /eth-storage/fabric/port-channel # {**enable** | **disable**}	(Optional) Enables or disables the administrative state of the port channel. The port channel is disabled by default.
Step 5	UCS-A /eth-storage/fabric/port-channel # **set name** *port-chan-name*	(Optional) Specifies the name for the port channel.

	Command or Action	Purpose
Step 6	UCS-A /eth-storage/fabric/port-channel # **set pingroupname** *pin-group name*	(Optional) Specifies the appliance pin target to the specified fabric and port, or fabric and port channel.
Step 7	UCS-A /eth-storage/fabric/port-channel # **set portmode** {**access** | **trunk**}	(Optional) Specifies whether the port mode is access or trunk. By default, the mode is set to trunk.
Step 8	UCS-A /eth-storage/fabric/port-channel # **set prio** *sys-class-name*	(Optional) Specifies the QoS class for the appliance port. By default, the priority is set to best-effort. The sys-class-name argument can be one of the following class keywords: • **Fc—**Use this priority for QoS policies that control vHBA traffic only. • **Platinum—**Use this priority for QoS policies that control vNIC traffic only. • **Gold—**Use this priority for QoS policies that control vNIC traffic only. • **Silver—**Use this priority for QoS policies that control vNIC traffic only. • **Bronze—**Use this priority for QoS policies that control vNIC traffic only. • **Best Effort—**Do not use this priority. It is reserved for the Basic Ethernet traffic lane. If you assign this priority to a QoS policy and configure another system class as CoS 0, Cisco UCS Manager does not default to this system class. It defaults to the priority with CoS 0 for that traffic.
Step 9	UCS-A /eth-storage/fabric/port-channel # **set speed** {**1gbps** | **2gbps** | **4gbps** | **8gbps** | **auto**}	(Optional) Specifies the speed for the port channel.
Step 10	UCS-A /eth-storage/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates a port channel on port 13 of fabric A and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric a
UCS-A /eth-storage/fabric # create port-channel 13
UCS-A /eth-storage/fabric/port-channel* # enable
UCS-A /eth-storage/fabric/port-channel* # set name portchan13a
```

```
UCS-A /eth-storage/fabric/port-channel* # set pingroupname pingroup1
UCS-A /eth-storage/fabric/port-channel* # set portmode access
UCS-A /eth-storage/fabric/port-channel* # set prio fc
UCS-A /eth-storage/fabric/port-channel* # set speed 2gbps
UCS-A /eth-storage/fabric/port-channel* # commit-buffer
UCS-A /eth-storage/fabric/port-channel #
```

Unconfiguring an Appliance Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # **scope fabric** {**a** | **b** }	Enters Ethernet storage fabric mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **delete port-channel** *port-num*	Deletes the port channel from the specified Ethernet storage port.
Step 4	UCS-A /eth-storage/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example unconfigures the port channel on port 13 of fabric A and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric a
UCS-A /eth-storage/fabric # delete port-channel 13
UCS-A /eth-storage/fabric* # commit-buffer
UCS-A /eth-storage/fabric #
```

Enabling or Disabling an Appliance Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # **scope fabric** {**a** | **b** }	Enters Ethernet storage mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **scope port-channel** *port-chan-name*	Enters Ethernet storage port channel mode.
Step 4	UCS-A /eth-storage/fabric/port-channel # {**enable** | **disable** }	Enables or disables the administrative state of the port channel. The port channel is disabled by default.

	Command or Action	Purpose
Step 5	UCS-A /eth-storage/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example enables port channel 13 on fabric A and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric a
UCS-A /eth-storage/fabric # scope port-channel 13
UCS-A /eth-storage/fabric/port-channel* # enable
UCS-A /eth-storage/fabric/port-channel* # commit-buffer
UCS-A /eth-storage/fabric/port-channel #
```

Adding a Member Port to an Appliance Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # **scope fabric** {**a** | **b** }	Enters Ethernet storage fabric mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **scope port-channel** *port-num*	Enters Ethernet storage fabric port channel mode for the specified port channel.
Step 4	UCS-A /eth-storage/fabric/port-channel # **create member-port** *slot-num port-num*	Creates the specified member port from the port channel and enters Ethernet storage fabric port channel member port mode.
Step 5	UCS-A /eth-storage/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example adds the member port on slot 1, port 7 to the port channel on port 13 of fabric A and commits the transaction.

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric a
UCS-A /eth-storage/fabric # scope port-channel 13
UCS-A /eth-storage/fabric/port-channel # create member-port 1 7
UCS-A /eth-storage/fabric/port-channel* # commit-buffer
UCS-A /eth-storage/fabric/port-channel #
```

Deleting a Member Port from an Appliance Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-storage**	Enters Ethernet storage mode.
Step 2	UCS-A /eth-storage # **scope fabric** {**a** | **b** }	Enters Ethernet storage fabric mode for the specified fabric.
Step 3	UCS-A /eth-storage/fabric # **scope port-channel** *port-num*	Enters Ethernet storage fabric port channel mode for the specified port channel.
Step 4	UCS-A /eth-storage/fabric/port-channel # **delete member-port** *slot-num port-num*	Deletes the specified member port from the port channel.
Step 5	UCS-A /eth-storage/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example deletes a member port from the port channel on port 13 of fabric A and commits the transaction:

```
UCS-A# scope eth-storage
UCS-A /eth-storage # scope fabric a
UCS-A /eth-storage/fabric # scope port-channel 13
UCS-A /eth-storage/fabric/port-channel # delete member-port 1 7
UCS-A /eth-storage/fabric/port-channel* # commit-buffer
UCS-A /eth-storage/fabric/port-channel #
```

Fibre Channel Port Channels

A Fibre Channel port channel allows you to group several physical Fibre Channel ports (link aggregation) to create one logical Fibre Channel link to provide fault-tolerance and high-speed connectivity. In Cisco UCS Manager, you create a port channel first and then add Fibre Channel ports to the port channel.

Note Fibre Channel port channels are not compatible with non-Cisco technology.

You can create up to four Fibre Channel port channels in each Cisco UCS domain with Cisco UCS 6200 and 6300 Series fabric interconnects. Each Fibre Channel port channel can include a maximum of 16 uplink Fibre Channel ports.

You can create up to two Fibre Channel port channels in each Cisco UCS domain with Cisco UCS 6324 fabric interconnects. Each Fibre Channel port channel can include a maximum of four uplink Fibre Channel ports.

Ensure that the Fibre Channel port channel on the upstream NPIV switch is configured with its channel mode as **active**. If both the member port(s) and peer port(s) do not have the same channel mode configured, the port channel will not come up. When the channel mode is configured as **active**, the member ports initiate port channel protocol negotiation with the peer port(s) regardless of the channel group mode of the peer port. If

the peer port, while configured in a channel group, does not support the port channel protocol, or responds with a nonnegotiable status, it defaults to the On mode behavior. The **active** port channel mode allows automatic recovery without explicitly enabling and disabling the port channel member ports at either end.

This example shows how to configure channel mode as active:

```
switch(config)# int po114
switch(config-if)# channel mode active
```

Configuring a Fibre Channel Port Channel

Note If you are connecting two Fibre Channel port channels, the admin speed for both port channels must match for the link to operate. If the admin speed for one or both of the Fibre Channel port channels is set to auto, Cisco UCS adjusts the admin speed automatically.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b** }	Enters Fibre Channel uplink fabric mode for the specified fabric.
Step 3	UCS-A /fc-uplink/fabric # **create port-channel** *port-num*	Creates a port channel on the specified Fibre Channel uplink port, and enters Fibre Channel uplink fabric port channel mode.
Step 4	UCS-A /fc-uplink/fabric/port-channel # {**enable** | **disable**}	(Optional) Enables or disables the administrative state of the port channel. The port channel is disabled by default.
Step 5	UCS-A /fc-uplink/fabric/port-channel # **set name** *port-chan-name*	(Optional) Specifies the name for the port channel.
Step 6	UCS-A /fc-uplink/fabric/port-channel # **set speed** {**1gbps** | **2gbps** | **4gbps** | **8gbps** | **auto**}	(Optional) Specifies the speed for the port channel.
Step 7	UCS-A /fc-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates port channel 13 on fabric A, sets the name to portchan13a, enables the administrative state, sets the speed to 2 Gbps, and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # create port-channel 13
UCS-A /fc-uplink/fabric/port-channel* # enable
UCS-A /fc-uplink/fabric/port-channel* # set name portchan13a
UCS-A /fc-uplink/fabric/port-channel* # set speed 2gbps
```

```
UCS-A /fc-uplink/fabric/port-channel* # commit-buffer
UCS-A /fc-uplink/fabric/port-channel #
```

Unconfiguring a Fibre Channel Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b** }	Enters Fibre Channel uplink fabric mode for the specified fabric.
Step 3	UCS-A /fc-uplink/fabric # **delete port-channel** *port-num*	Deletes the port channel on the specified Fibre Channel uplink port.
Step 4	UCS-A /fc-uplink/fabric # **commit-buffer**	Commits the transaction to the system configuration.

The following example unconfigures port channel 13 on fabric A and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # delete port-channel 13
UCS-A /fc-uplink/fabric* # commit-buffer
UCS-A /fc-uplink/fabric #
```

Adding Channel Mode Active To The Upstream NPIV Fibre Channel Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b** }	Enters Fibre Channel uplink fabric mode for the specified fabric.
Step 3	UCS-A /fc-uplink/fabric # **create port-channel** *port-num*	Creates a port channel on the specified Fibre Channel uplink port, and enters Fibre Channel uplink fabric port channel mode.
Step 4	UCS-A /fc-uplink/fabric/port-channel # {**enable** | **disable**}	(Optional) Enables or disables the administrative state of the port channel. The port channel is disabled by default.

	Command or Action	Purpose
Step 5	UCS-A /fc-uplink/fabric/port-channel # **set name** *port-chan-name*	(Optional) Specifies the name for the port channel.
Step 6	UCS-A /fc-uplink/fabric/port-channel # **scope** *port-chan-name*	(Optional) Specifies the name for the port channel.
Step 7	UCS-A /fc-uplink/fabric/port-channel # **channel mode** {**active**}	(Optional) Configures the channel-mode active on the upstream NPIV switch.
Step 8	UCS-A /fc-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example enables channel mode to active:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # create port-channel 13
UCS-A /fc-uplink/fabric/port-channel* # enable
UCS-A /fc-uplink/fabric/port-channel* # set name portchan13a
UCS-A /fc-uplink/fabric/port-channel* # channel mode active
UCS-A /fc-uplink/fabric/port-channel* # commit-buffer
UCS-A /fc-uplink/fabric/port-channel # exit
UCS-A /fc-uplink/fabric/ # show port-channel database

portchan13a
    Administrative channel mode is active
    Operational channel mode is active

UCS-A /fc-uplink/fabric/ #
```

Enabling or Disabling a Fibre Channel Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b** }	Enters Fibre Channel uplink mode for the specified fabric.
Step 3	UCS-A /fc-uplink/fabric # **scope port-channel** *port-chan-name*	Enters Fibre Channel uplink port channel mode.
Step 4	UCS-A /fc-uplink/fabric/port-channel # {**enable** | **disable** }	Enables or disables the administrative state of the port channel. The port channel is disabled by default.

The following example enables port channel 13 on fabric A and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # scope port-channel 13
UCS-A /fc-uplink/fabric/port-channel* # enable
UCS-A /fc-uplink/fabric/port-channel* # commit-buffer
UCS-A /fc-uplink/fabric/port-channel #
```

Adding a Member Port to a Fibre Channel Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b** }	Enters Fibre Channel uplink fabric mode for the specified fabric.
Step 3	UCS-A /fc-uplink/fabric # **scope port-channel** *port-num*	Enters Fibre Channel uplink fabric port channel mode for the specified port channel.
Step 4	UCS-A /fc-uplink/fabric/port-channel # **create member-port** *slot-num port-num*	Creates the specified member port from the port channel and enters Fibre Channel uplink fabric port channel member port mode.
Step 5	UCS-A /fc-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example adds the member port on slot 1, port 7 to port channel 13 on fabric A and commits the transaction.

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # scope port-channel 13
UCS-A /fc-uplink/fabric # create member-port 1 7
UCS-A /fc-uplink/fabric/port-channel* # commit-buffer
UCS-A /fc-uplink/fabric/port-channel #
```

Deleting a Member Port from a Fibre Channel Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b**}	Enters Fibre Channel uplink fabric mode for the specified fabric.

	Command or Action	Purpose
Step 3	UCS-A /fc-uplink/fabric # **scope port-channel** *port-num*	Enters Fibre Channel uplink fabric port channel mode for the specified port channel.
Step 4	UCS-A /fc-uplink/fabric/port-channel # **delete member-port** *slot-num port-num*	Deletes the specified member port from the port channel.
Step 5	UCS-A /fc-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example deletes a member port from port channel 13 on fabric A and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # scope port-channel 13
UCS-A /fc-uplink/fabric # delete member-port 1 7
UCS-A /fc-uplink/fabric/port-channel* # commit-buffer
UCS-A /fc-uplink/fabric/port-channel #
```

FCoE Port Channels

An FCoE port channel allows you to group several physical FCoE ports to create one logical FCoE port channel. At a physical level, the FCoE port channel carries FCoE traffic over an Ethernet port channel. So an FCoE port channel with a set of members is essentially an ethernet port channel with the same members. This Ethernet port channel is used as a physical transport for FCoE traffic.

For each FCoE port channel, Cisco UCS Manager creates a VFC internally and binds it to an Ethernet port channel. FCoE traffic received from the hosts is sent over the VFC the same way as the FCoE traffic is sent over Fibre Channel uplinks.

Configuring a FCoE Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters FC Uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b**}	Enters FC - Uplink mode for the specific fabric.
Step 3	UCS-A /fc-uplink/fabric # **create fcoe-port-channel** *number*	Creates port channel for the specified FCoE uplink port.
Step 4	UCS-A /fc-uplink/fabric/fabricinterface # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates an interface for FCoE uplink port 1 on slot 4 of fabric A and commits the transaction:

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # create fcoe-port-channel 4
UCS-A /fc-uplink/fabric/fcoe-port-channel* # commit-buffer
UCS-A /fc-uplink/fabric/fcoe-port-channel #
```

Adding a Member Port to a FCoE Uplink Port Channel

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope fc-uplink**	Enters Fibre Channel uplink mode.
Step 2	UCS-A /fc-uplink # **scope fabric** {**a** | **b** }	Enters Fibre Channel uplink fabric mode for the specified fabric.
Step 3	UCS-A /fc-uplink/fabric # **scope fcoe-port-channel** *ID*	Enters FCoE uplink port channel mode for the specified port channel.
Step 4	UCS-A /fc-uplink/fabric/fcoe-port-channel # **create member-port** *slot-num port-num*	Creates the specified member port from the port channel and enters FCoE uplink fabric port channel member port mode. **Note** If the FCoE uplink port channel is a unified uplink port channel, you will get the following message: Warning: if this is a unified port channel then member will be added to the ethernet port channel of the same id as well.
Step 5	UCS-A /fc-uplink/fabric/fcoe-port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example adds the member port on slot 1, port 7 to FCoE port channel 13 on fabric A and commits the transaction.

```
UCS-A# scope fc-uplink
UCS-A /fc-uplink # scope fabric a
UCS-A /fc-uplink/fabric # scope fcoe-port-channel 13
UCS-A /fc-uplink/fabric # create member-port 1 7
UCS-A /fc-uplink/fabric/fcoe-port-channel* # commit-buffer
UCS-A /fc-uplink/fabric/fcoe-port-channel #
```

Unified Uplink Port Channel

When you create an Ethernet port channel and an FCoE port channel with the same ID, it is called a unified uplink port channel. When the unified port channel is created, a physical Ethernet port channel and a VFC

are created on the fabric interconnect with the specified members. The physical Ethernet port channel is used to carry both Ethernet and FCoE traffic. The VFC binds FCoE traffic to the Ethernet port channel.

The following rules will apply to the member port sets of the unified uplink port channel:

- The Ethernet port channel and FCoE port channel on the same ID, must have the same set of member ports.
- When you add a member port channel to the Ethernet port channel, Cisco UCS Manager adds the same port channel to FCoE port channel as well. Similarly, adding a member to the FCoE port channel adds the member port to the Ethernet port channel.
- When you delete a member port from one of the port channels, Cisco UCS Manager automatically deletes the member port from the other port channel.

If you disable an Ethernet uplink port channel, it disables the underlying physical port channel in a unified uplink port channel. Therefore, even when the FCoE uplink is enabled, the FCoE uplink port channel also goes down. If you disable an FCoE uplink port channel, only the VFC goes down. If the Ethernet uplink port channel is enabled, it can still function properly in the unified uplink port channel.

Configuring a Unified Uplink Port Channel

To configure a unified uplink port channel, you will convert an existing FCoE uplink port channel as a unified port channel.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope eth-uplink**	Enters Ethernet uplink mode.
Step 2	UCS-A /eth-uplink # **scope fabric** {**a** | **b**}	Enters Ethernet uplink fabric mode for the specified fabric.
Step 3	UCS-A /eth-uplink/fabric # **create port-channel** *ID*	Creates a port channel for the specified Ethernet uplink port.
Step 4	UCS-A /eth-uplink/fabric/port-channel # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates a unified uplink port channel on an existing FCoE port channel:

```
UCS-A# scope eth-uplink
UCS-A /eth-uplink # scope fabric b
UCS-A /eth-uplink/fabric # create port-channel 2
UCS-A /eth-uplink/fabric/port-channel* # commit-buffer
UCS-A /eth-uplink/fabric #
```

Event Detection and Action

Cisco UCS Manager uses the statistics collection policy to monitor and trigger an alarm when there are faults in the network interface ports connected from the I/O module (IOM) to the fabric interconnect.

The error statistics for the network interface ports is called NiErrStats and consists of the following errors:

NiErrStats Error Name	Description
frameTx	Collects the TX_FRM_ERROR counter values.
tooLong	Collects the RX_TOOLONG counter values.
tooShort	Collects the sum of RX_UNDERSIZE and RX_FRAGMENT counter values.
Crc	Collects the sum of RX_CRERR_NOT_STOMPED and RX_CRCERR_STOMPED counter values.
inRange	Collects the RX_INRANGEERR counter values.

Note The network interface port statistics is collected only from active ports and the information is sent to Cisco UCS Manager.

Policy-Based Port Error Handling

If Cisco UCS Manager detects any errors on active NI ports, and if the error-disable feature is enabled, Cisco UCS Manager automatically disables the respective FI port that is connected to the NI port that had errors. When a FI port is error disabled, it is effectively shut down and no traffic is sent or received on that port.

The error-disable function serves two purposes:

- It lets you know which FI port is error-disabled and that the connected NI Port has errors.
- It eliminates the possibility that this port can cause other ports, which are connected to the same Chassis/FEX, to fail. Such a failure can occur when the NI port has errors, which can ultimately cause serious network issues. The error-disable function helps prevent these situations.

Creating Threshold Definition

Procedure

	Command or Action	Purpose
Step 1	UCS-A # **scope eth-server**	Enters Ethernet storage mode.
Step 2	UCS-A/eth-server # **scope stats-threshold-policy default**	Enters statistics threshold policy mode.
Step 3	UCSA/eth-server/stats-threshold-policy # **create class** *class-name*	Creates the specified statistics threshold policy class and

	Command or Action	Purpose
		enters the organization statistics threshold policy class mode. To see a list of the available class name keywords, enter the **create class ?** command in organization threshold policy mode.
Step 4	UCS-A/eth-server/stats-threshold-policy/class # **create property** *property-name*	Creates the specified statistics threshold policy class property and enters the organization statistics threshold policy class property mode. To see a list of the available property name keywords, enter the **create property ?** command in organization threshold policy class mode.
Step 5	UCS-A/eth-server/stats-threshold-policy/class/property # **set normal-value** *value*	Specifies the normal value for the class property. The *value* format can vary depending on the class property being configured. To see the required format, enter the **set normal-value ?** command in organization statistics threshold policy class property mode.
Step 6	UCS-A/eth-server/stats-threshold-policy/class/property # **create threshold-value** {*above-normal* | *below-normal*} {*cleared* | *condition* | *critical* | *info* | *major* | *minor* | *warning*}	Creates the specified threshold value for the class property and enters the organization statistics threshold policy class property threshold value mode.
Step 7	UCS-A/eth-server/stats-threshold-policy/class/property/threshold-value # **set** {**deescalating** | **escalating**} *value*	Specifies the deescalating and escalating class property threshold value. The *value* format can vary depending on the class property threshold value being configured. To see the required format, enter the **set deescalating ?** or **set escalating ?** command in the organization statistics

	Command or Action	Purpose
		threshold policy class property threshold value mode.
Step 8	UCS-A/eth-server/stats-threshold-policy/class/property/threshold-value # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to create a threshold definition:

```
UCS-A # scope eth-server
UCS-A /eth-server # scope stats-threshold-policy default
UCS-A /eth-server/stats-threshold-policy # create class ni-ether-error-stats
UCS-A /eth-server/stats-threshold-policy/class* # create property crc-delta
UCS-A /eth-server/stats-threshold-policy/class/property* # set normal-value 0
UCS-A /eth-server/stats-threshold-policy/class/property* # create threshold-value above-normal
 major
UCS-A /eth-server/stats-threshold-policy/class/property/threshold-value* # set escalating
5
UCS-A /eth-server/stats-threshold-policy/class/property/threshold-value* # set deescalating
 3
UCS-A /eth-server/stats-threshold-policy/class/property/threshold-value* # commit-buffer
```

Configuring Error Disable on a Fabric Interconnect Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A # **scope eth-server**	Enters Ethernet storage mode.
Step 2	UCS-A/eth-server # **scope stats-threshold-policy default**	Enters statistics threshold policy mode.
Step 3	UCSA/eth-server/stats-threshold-policy # **scope class** *class-name*	Enters the organization statistics threshold policy class mode for the specified statistics threshold policy class.
Step 4	UCS-A/eth-server/stats-threshold-policy/class # **scope property** *property-name*	Enters the organization statistics threshold policy class property mode for the specified statistics threshold policy class property.
Step 5	UCS-A/eth-server/stats-threshold-policy/class/property # **set error-disable-fi-port** {**yes** | **no**}	Specifies the error disable state for the class property. Use the **no** option to disable error disable for the class property.
Step 6	UCS-A/eth-server/stats-threshold-policy/class/property* # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to enable error disable on an FI port:

```
UCS-A # scope eth-server
UCS-A /eth-server # scope stats-threshold-policy default
UCS-A /eth-server/stats-threshold-policy # scope class ni-ether-error-stats
UCS-A /eth-server/stats-threshold-policy/class # scope property crc-delta
UCS-A /eth-server/stats-threshold-policy/class/property # set error-disable-fi-port yes
UCS-A /eth-server/stats-threshold-policy/class/property* # commit-buffer
```

Configuring Auto Recovery on a Fabric Interconnect Port

Procedure

	Command or Action	Purpose
Step 1	UCS-A # **scope eth-server**	Enters Ethernet storage mode.
Step 2	UCS-A/eth-server # **scope stats-threshold-policy default**	Enters statistics threshold policy mode.
Step 3	UCSA/eth-server/stats-threshold-policy # **scope class** *class-name*	Enters the organization statistics threshold policy class mode for the specified statistics threshold policy class.
Step 4	UCS-A/eth-server/stats-threshold-policy/class # **scope property** *property-name*	Enters the organization statistics threshold policy class property mode for the specified statistics threshold policy class property.
Step 5	UCS-A/eth-server/stats-threshold-policy/class/property # **set auto-recovery** {**enabled** | **disabled**}	Specifies the auto recovery state for the class property. Use the **disabled** option to disable auto recovery for the class property.
Step 6	UCS-A/eth-server/stats-threshold-policy/class/property* # **set auto-recovery-time** *time*	Specifies the time in minutes after which the port is automatically re-enabled. The auto recovery time can range from 0 minutes to 4294967295 minutes.
Step 7	UCS-A/eth-server/stats-threshold-policy/class/property* # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to configure auto recovery on an FI port:

```
UCS-A # scope eth-server
UCS-A /eth-server # scope stats-threshold-policy default
UCS-A /eth-server/stats-threshold-policy # scope class ni-ether-error-stats
UCS-A /eth-server/stats-threshold-policy/class # scope property crc-delta
UCS-A /eth-server/stats-threshold-policy/class/property # set auto-recovery enabled
UCS-A /eth-server/stats-threshold-policy/class/property* # set auto-recovery-time 5
```

```
UCS-A /eth-server/stats-threshold-policy/class/property* # commit-buffer
```

Viewing the Network Interface Port Error Counters

Procedure

	Command or Action	Purpose
Step 1	UCS-A # **scope chassis** *chassis-num*	Enters chassis mode for the specified chassis.
Step 2	UCS-A/chassis # **scope iom** {**a** | **b**}	Enters chassis IOM mode for the specified IOM.
Step 3	UCS-A/chassis/iom # **scope port-group fabric**	Enters the network interface port.
Step 4	UCS-A/chassis/iom/port-group # **scope fabric-if** *fabric-if number*	Enters the specified network interface port number.
Step 5	UCS-A/chassis/iom/port-group/fabric-if # **show stats**	Displays the error counters for the network interface port.

The following example shows how to display the statistics for the network interface ports:

```
UCS-A # scope chassis 1
UCS-A/chassis # scope iom a
UCS-A/chassis/iom # scope port-group fabric
UCS-A/chassis/iom/port-group # scope faric-if 1
UCS-A/chassis/iom/port-group/fabric-if # show stats
NI Ether Error Stats:
Time Collected: 2014-08-20T15:37:24:688
Monitored Object: sys/chassis-1/slot-1/fabric/port-1/ni-err-stats
Suspect: Yes
Crc (errors): 5000
Frame Tx (errors): 0
Too Long (errors): 0
Too Short (errors): 0
In Range (errors): 0
Thresholded: 0
```

Adapter Port Channels

An adapter port channel groups into one logical link all the physical links going from a Cisco UCS Virtual Interface Card (VIC) into an I/O.

Adapter port channels are created and managed internally by Cisco UCS Manager when it detects that the correct hardware is present. Adapter port channels cannot be configured manually. Adapter port channels are viewable using the Cisco UCS Manager GUI or the Cisco UCS Manager CLI.

Viewing Adapter Port Channels

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope chassis** *chassis-num*	Enters chassis mode for the specified chassis.
Step 2	UCS-A /chassis # **scope iom** {**a** **b**}	Enters chassis IOM mode for the specified IOM.
Step 3	UCS-A /chassis/iom # **scope port group**	Enters port group mode for the specified port group.
Step 4	UCS-A /chassis/iom/port group # **show host-port-channel** [**detail** | **expand**]	Displays the adapter port channels on the specified chassis.

This following example shows how to display information on host port channels within a port group mode:

```
UCS-A # scope chassis 1
UCS-A /chassis # scope iom a
UCS-A /chassis/iom # scope port group
UCS-A /chassis/iom/port group # show host-port-channel

Host Port channel:

  Port Channel Id Fabric ID Oper State       State Reason
    -------------- --------- ---------------- ------------
                1289 B         Up
                1290 B         Up
                1306 B         Up
                1307 B         Up
                1309 B         Up
                1315 B         Up

UCS-A /chassis/iom/port group #
```