Managing Network Adapters

This chapter includes the following sections:

Overview of the Cisco UCS C-Series Network Adapters

Note The procedures in this chapter are available only when a Cisco UCS C-Series network adapter is installed in the chassis.

A Cisco UCS C-Series network adapter can be installed to provide options for I/O consolidation and virtualization support. The following adapters are available:

- Cisco UCS VIC 15238 Virtual Interface Card
- Cisco UCS VIC 15428 Virtual Interface Card
- Cisco UCS VIC 1497 Virtual Interface Card
- Cisco UCS VIC 1495 Virtual Interface Card
- Cisco UCS VIC 1457 Virtual Interface Card
- Cisco UCS VIC 1455 Virtual Interface Card
- Cisco UCS VIC 1387 Virtual Interface Card
- Cisco UCS VIC 1385 Virtual Interface Card
- Cisco UCS VIC 1227T Virtual Interface Card
- Cisco UCS VIC 1225 Virtual Interface Card

Note You must have same generation VIC cards on a server. For example, you cannot have a combination of 3rd generation and 4th generation VIC cards on a single server.

The interactive *UCS Hardware and Software Interoperability Utility* lets you view the supported components and configurations for a selected server model and software release. The utility is available at the following URL: http://www.cisco.com/web/techdoc/ucs/interoperability/matrix/matrix.html

Cisco UCS VIC 1497 Virtual Interface Card

The Cisco VIC 1497 is a dual-port Small Form-Factor (QSFP28) mLOM card designed for the M5 generation of Cisco UCS C-Series Rack Servers. The card supports 40/100-Gbps Ethernet and FCoE. The card can present PCIe standards-compliant interfaces to the host, and these can be dynamically configured as NICs and HBAs.

Cisco UCS VIC 1495 Virtual Interface Card

The Cisco UCS VIC 1495 is a dual-port Small Form-Factor (QSFP28) PCIe card designed for the M5 generation of Cisco UCS C-Series Rack Servers. The card supports 40/100-Gbps Ethernet and FCoE. The card can present PCIe standards-compliant interfaces to the host, and these can be dynamically configured as NICs and HBAs.

Cisco UCS VIC 1457 Virtual Interface Card

The Cisco UCS VIC 1457 is a quad-port Small Form-Factor Pluggable (SFP28) mLOM card designed for M5 generation of Cisco UCS C-Series rack servers. The card supports 10/25-Gbps Ethernet or FCoE. It incorporates Cisco's next-generation CNA technology and offers a comprehensive feature set, providing investment protection for future feature software releases. The card can present PCIe standards-compliant interfaces to the host, and these can be dynamically configured as NICs and HBAs.

Cisco UCS VIC 1455 Virtual Interface Card

The Cisco UCS VIC 1455 is a quad-port Small Form-Factor Pluggable (SFP28) half-height PCIe card designed for M5 generation of Cisco UCS C-Series rack servers. The card supports 10/25-Gbps Ethernet or FCoE. It incorporates Cisco's next-generation CNA technology and offers a comprehensive feature set, providing investment protection for future feature software releases. The card can present PCIe standards-compliant interfaces to the host, and these can be dynamically configured as NICs and HBAs.

Cisco UCS VIC 1387 Virtual Interface Card

The Cisco UCS VIC 1387 Virtual Interface Card is a dual-port Enhanced Quad Small Form-Factor Pluggable (QSFP) 40 Gigabit Ethernet and Fibre Channel over Ethernet (FCoE)-capable half-height PCI Express (PCIe) card designed exclusively for Cisco UCS C-Series Rack Servers. It incorporates Cisco's next-generation converged network adapter (CNA) technology, with a comprehensive feature set, providing investment protection for future feature software releases.

Cisco UCS VIC 1385 Virtual Interface Card

The Cisco UCS VIC 1385 Virtual Interface Cardis a dual-port Enhanced Quad Small Form-Factor Pluggable (QSFP) 40 Gigabit Ethernet and Fibre Channel over Ethernet (FCoE)-capable half-height PCI Express (PCIe) card designed exclusively for Cisco UCS C-Series Rack Servers. It incorporates Cisco's next-generation converged network adapter (CNA) technology, with a comprehensive feature set, providing investment protection for future feature software releases.

Cisco UCS VIC 1227T Virtual Interface Card

The Cisco UCS VIC 1227T Virtual Interface Card is a dual-port 10GBASE-T (RJ-45) 10-Gbps Ethernet and Fibre Channel over Ethernet (FCoE)–capable PCI Express (PCIe) modular LAN-on-motherboard (mLOM) adapter designed exclusively for Cisco UCS C-Series Rack Servers. New to Cisco rack servers, the mLOM slot can be used to install a Cisco VIC without consuming a PCIe slot, which provides greater I/O expandability. It incorporates next-generation converged network adapter (CNA) technology from Cisco, providing Fibre Channel connectivity over low-cost twisted pair cabling with a bit error rate (BER) of 10 to 15 up to 30 meters and investment protection for future feature releases.

Cisco UCS VIC 1225 Virtual Interface Card

The Cisco UCS VIC 1225 Virtual Interface Card is a high-performance, converged network adapter that provides acceleration for the various new operational modes introduced by server virtualization. It brings superior flexibility, performance, and bandwidth to the new generation of Cisco UCS C-Series Rack-Mount Servers.

Configuring Network Adapter Properties

Before you begin

- You must log in as a user with admin privileges to perform this task.
- The server must be powered on, or the properties will not display.

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** menu, click **Adapter Card SIOC1** or **Adapter Card SIOC2**.

Step 3 In the **Adapter Card Properties** area under the **General** tab, review the following information:

Name	Description
PCI Slot field	The PCI slot in which the adapter is installed.
Vendor field	The vendor for the adapter.
Product Name field	The product name for the adapter.
Product ID field	The product ID for the adapter.
Serial Number field	The serial number for the adapter.
Version ID field	The version ID for the adapter.
PCI Link field	The server to which the PCIe link is established.
Hardware Revision field	The hardware revision for the adapter.

Name	Description
Cisco IMC Management Enabled field	If this field displays **yes**, then the adapter is functioning in Cisco Card Mode and passing Cisco IMC management traffic through to the server Cisco IMC.
Configuration Pending field	If this field displays **yes**, the adapter configuration has changed in Cisco IMC but these changes have not been communicated to the host operating system. To activate the changes, an administrator must reboot the adapter.
ISCSI Boot Capable field	Whether iSCSI boot is supported on the adapter.
CDN Capable field	Whether CDN is supported on the adapter.
usNIC Capable field	Whether the adapter and the firmware running on the adapter support the usNIC.
Port Channel Capable field	Indicates whether Port Channel is supported on the adapter. **Note** This option is available only on some of the adapters and servers.
Description field	A user-defined description for the adapter. You can enter between 1 and 63 characters.
Enable FIP Mode check box	If checked, then FCoE Initialization Protocol (FIP) mode is enabled. FIP mode ensures that the adapter is compatible with current FCoE standards. **Note** We recommend that you use this option only when explicitly directed to do so by a technical support representative.

Name	Description
Enable LLDP check box	**Note** For LLDP change to be effective, it is required that you reboot the server. In case of S3260 chassis with two nodes, ensure to reboot the secondary node after making LLDP changes in the primary node. If checked, then Link Layer Discovery Protocol (LLDP) enables all the Data Center Bridging Capability Exchange protocol (DCBX) functionality, which includes FCoE, priority based flow control. By default, LLDP option is enabled. **Note** We recommend that you do not disable LLDP option, as it disables all the DCBX functionality.
Enable VNTAG Mode check box	If VNTAG mode is enabled: • vNICs and vHBAs can be assigned to a specific channel. • vNICs and vHBAs can be associated to a port profile. • vNICs can fail over to another vNIC if there are communication problems.
Port Channel check box	This option is enabled by default. When Port channel is enabled, two vNICs and two vHBAs are available for use on the adapter card. When disabled, four vNICs and four vHBAs are available for use on the adapter card. **Note** This option is available only on some of the adapters and servers.

Name	Description

Physical NIC Mode (Experimental) check box	**Important** **Physical NIC Mode** option is added on an experimental basis and the need to configure this option is rare.
	
	This option is disabled by default.
	
	When Physical NIC Mode is enabled, up-link ports of the VIC are set to pass-through mode. This allows the host to transmit packets without any modification. VIC ASIC does not rewrite the VLAN tag of the packets based on the VLAN and CoS settings for the vNIC.
	
	Note
	• This option is available for Cisco UCS VIC 14xx series and 15xxx series adapters.
	• For the VIC configuration changes to be effective, you must reboot the host.
	• This option cannot be enabled on an adapter that has:
	  • **Port Channel mode** enabled
	  • **VNTAG mode** enabled
	  • **LLDP** enabled
	  • **FIP mode** enabled
	  • **Cisco IMC Management Enabled** value set to **Yes**
	  • Multiple user created vNICs
	
	When Physical NIC Mode is enabled, the following message is displayed in a pop-up window:
	
	After physical nic-mode mode switch, vNIC configurations will be lost and new default vNICs will be created.
	
	Click **OK**.

Step 4 In the **Firmware** area, review the following information:

Name	Description
Running Version field	The firmware version that is currently active.

Name	Description
Backup Version field	The alternate firmware version installed on the adapter, if any. The backup version is not currently running. To activate it, administrators can click **Activate Firmware** in the **Actions** area. **Note** When you install new firmware on the adapter, any existing backup version is deleted and the new firmware becomes the backup version. You must manually activate the new firmware if you want the adapter to run the new version.
Startup Version field	The firmware version that will become active the next time the adapter is rebooted.
Bootloader Version field	The bootloader version associated with the adapter card.
Status field	The status of the last firmware activation that was performed on this adapter. **Note** The status is reset each time the adapter is rebooted.

Step 5 Click the **External Ethernet Interfaces** link to review the following information:

Note **External Ethernet Interfaces** opens in a different tab.

Name	Description
Port column	The uplink port ID.
Admin Speed column	The data transfer rate for the port. This can be one of the following: • **Auto** • **40 Gbps** • **4 x 10 Gbps** **Note** You can edit the **Admin Speed** column if Cisco UCS S3260 server SIOC is equipped with Cisco UCS VIC 1385. Select the port for which you want to edit the Admin Speed and click on the icon above the Port column. Click on save to save your changes. You need to choose 40 Gbps as the port speed if you are using a 40 Gbps switch.

Name	Description
Operating FEC Mode column	The value of **Operating FEC Mode** is the same as **Admin FEC mode** with these exceptions: • The value is Off when the speed is 10 Gbps or 40 Gbps. This is because FEC is not supported. • The value is Off for QSFP-100G-LR4-S transceiver. • The value is Off for QSFP-40/100-SRBD transceiver. For 14xx adapters, the **Operating FEC Mode** is set to the **Admin FEC Mode** value. The only exceptions are QSFP-40/100-SRBD and QSFP-100G-LR4-S as described in **Admin FEC Mode**. **Note** This option is available only on some of the adapters and servers. **Note** • For 25G interfaces on Nexus NXOS Switches with **Admin FEC** value set to **Auto**, the default value for Operating FEC is **cl74** (FC-FEC). • For 100G interfaces on Nexus Switches with the **Admin FEC** value set to **Auto**, the default value for Operating FEC is **cl91** (RS-FEC). The exceptions are QSFP-40/100-SRBD and QSFP-100G-LR4-S. The Operating FEC is forced to **Off** , regardless of the **Admin FEC** value. Refer to the **Admin FEC Mode** description for a successful connection with 14xx adapter.

Name	Description

Oper Link Training column	**Oper Link Training** values are fetched from the values set in the **Admin Link Training** drop-down list.
	Beginning from 4.2(2a), the below different settings apply only to Cisco UCS VIC 15xxx adapters and Copper cables at speeds 10G/25G/50G only.
	• If Admin Link Training is set to Auto, Adapter firmware sets Oper Link Training value (AutoNeg) as on or off, depending upon the transceivers.
	  • AutoNeg disabled with 25G copper
	  • AutoNeg enabled with 50G copper
	• If Admin Link Training is set to on, Adapter firmware sets Oper Link Training value as on.
	  • AutoNeg enabled with 25G copper
	  • AutoNeg enabled with 50G copper
	• If Admin Link Training is **off**, Adapter firmware sets **Oper Link Training** as **off**.
	  • AutoNeg disabled with 25G copper
	  • AutoNeg disabled with 50G copper
	Note For all non-passive copper cables, **Oper Link Training** (AN) mode is set to Off, irrespective of the **Admin Link Training** mode.
	Any changes in the **Admin Link Training** settings leads to the reset of the Series for that port, even if the **Oper Link Training** value remains the same.

MAC Address column	The MAC address of the uplink port.

Name	Description
Link State column	The current operational state of the uplink port. This can be one of the following: • **Fault** • **Link Up** • **Link Down** • **SFP ID Error** • **SFP Not Installed** • **SFP Security Check Failed** • **Unsupported SFP** **Note** • A Serdes reset causes the **Link State** field to change from **Link-Up** to **Link-down**. If the **Oper Link Training** setting is valid, Link-Partners determine a **Link-Up** or **Link-down** after the reset. • You might require to refresh the Web UI several times to view **Link State** field change.
Encap column	The mode in which adapter operates. This can be one of the following: • **CE**—Classical Ethernet mode. • **NIV**—Network Interface Virtualization mode.
Operating Speed column	The operating rate for the port. This can be one of the following: • **40 Gbps** • **4 x 10 Gbps** • **100 Gbps**
Connector Present column	Indicated whether or not the connector is present. This can be one of the following: • **Yes**—Connector is present. • **No**—Connector not present. **Note** This option is only available for some adapter cards.

Name	Description
Connector Supported column	Indicates whether or not the connector is supported by Cisco. This can be one of the following: • **Yes**—The connector is supported by Cisco. • **No**—The connector is not supported by Cisco. If the connector is not supported then the link will not be up. **Note** This option is only available for some adapter cards.
Connector Type column	The Cisco Product ID (PID) of the transceiver/cable that is present. **Note** This option is only available for some adapter cards.
Connector Vendor column	The vendor for the connector. **Note** This option is only available for some adapter cards.
Connector Part Number column	The Connector Vendor part number. **Note** This option is only available for some adapter cards.
Connector Part Revision column	The part revision of the Connector Vendor part number. **Note** This option is only available for some adapter cards.

Managing vHBAs

Guidelines for Managing vHBAs

When managing vHBAs, consider the following guidelines and restrictions:

- The SIOCs with the Cisco UCS Virtual Interface Cards provide two vHBAs and two vNICs by default. You can create up to 14 additional vHBAs or vNICs on these adapter cards.

  The Cisco UCS 1455 and 1457 Virtual Interface Cards, in non-port channel mode, provide four vHBAs and four vNICs by default. You can create up to 10 additional vHBAs or vNICs on these adapter cards in VNTAG mode.

Note If VNTAG mode is enabled for the adapter, you must assign a channel number to a vHBA when you create it.

- When using the Cisco UCS Virtual Interface Cards in an FCoE application, you must associate the vHBA with the FCoE VLAN. Follow the instructions in the **Modifying vHBA Properties** section to assign the VLAN.
- After making configuration changes, you must reboot the host for settings to take effect.

Viewing vHBA Properties

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to view.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** area, click the **vHBAs** tab.

Step 4 In the **vHBAs** pane, click **fc0** or **fc1**.

Step 5 In the **General** area of vHBA Properties, review the information in the following fields:

Name	Description
Name field	The name of the virtual HBA. This name cannot be changed after the vHBA has been created.
Initiator WWNN field	The WWNN associated with the vHBA. To let the system generate the WWNN, select **AUTO**. To specify a WWNN, click the second radio button and enter the WWNN in the corresponding field.
Initiator WWPN field	The WWPN associated with the vHBA. To let the system generate the WWPN, select **AUTO**. To specify a WWPN, click the second radio button and enter the WWPN in the corresponding field.
FC SAN Boot check box	If checked, the vHBA can be used to perform a SAN boot.
Persistent LUN Binding check box	If checked, any LUN ID associations are retained in memory until they are manually cleared.
Uplink Port drop-down list	The uplink port associated with the vHBA. **Note** This value cannot be changed for the system-defined vHBAs fc0 and fc1.
MAC Address field	The MAC address associated with the vHBA. To let the system generate the MAC address, select **AUTO**. To specify an address, click the second radio button and enter the MAC address in the corresponding field.

Name	Description
Default VLAN field	If there is no default VLAN for this vHBA, click **NONE**. Otherwise, click the second radio button and enter a VLAN ID between 1 and 4094 in the field.
PCI Order field	The order in which this vHBA will be used. To let the system set the order, select **ANY**. To specify an order, select the second radio button and enter an integer between 0 and 17.
vHBA Type drop-down list	**Note** This option is available only with 14xx series adapters. The vHBA type used in this policy. vHBAs supporting FC and FC-NVMe can now be created on the same adapter. The vHBA type used in this policy can be one of the following: • fc-initiator—Legacy SCSI FC vHBA initiator • fc-target—vHBA that supports SCSI FC target functionality **Note** This option is available as a Tech Preview. • fc-nvme-initiator—vHBA that is an FC NVME initiator, which discovers FC NVME targets and connects to them. • fc-nvme-target—vHBA that acts as an FC NVME target and provides connectivity to the NVME storage.
Class of Service field	The CoS for the vHBA. Select an integer between 0 and 6, with 0 being lowest priority and 6 being the highest priority. **Note** This option cannot be used in VNTAG mode.
Rate Limit field	The data rate limit for traffic on this vHBA, in Mbps. If you want this vHBA to have an unlimited data rate, select **OFF**. Otherwise, click the second radio button and enter an integer between 1 and 10,000. **Note** This option cannot be used in VNTAG mode.
EDTOV field	The error detect timeout value (EDTOV), which is the number of milliseconds to wait before the system assumes that an error has occurred. Enter an integer between 1,000 and 100,000. The default is 2,000 milliseconds.

Name	Description
RATOV field	The resource allocation timeout value (RATOV), which is the number of milliseconds to wait before the system assumes that a resource cannot be properly allocated. Enter an integer between 5,000 and 100,000. The default is 10,000 milliseconds.
Max Data Field Size field	The maximum size of the Fibre Channel frame payload bytes that the vHBA supports. Enter an integer between 256 and 2112.
Channel Number field	The channel number that will be assigned to this vHBA. Enter an integer between 1 and 1,000. **Note** VNTAG mode is required for this option.
PCI Link	It is read-only field.
Port Profile drop-down list	The port profile that should be associated with the vHBA, if any. This field displays the port profiles defined on the switch to which this server is connected. **Note** VNTAG mode is required for this option.

Step 6 In the **Error Recovery** area, review the information in the following fields:

Name	Description
FCP Error Recovery check box	If checked, the system uses FCP Sequence Level Error Recovery protocol (FC-TAPE).
Link Down Timeout field	The number of milliseconds the uplink port should be offline before it informs the system that the uplink port is down and fabric connectivity has been lost. Enter an integer between 0 and 240,000.
Port Down I/O Retry Count field	The number of times an I/O request to a port is returned because the port is busy before the system decides the port is unavailable. Enter an integer between 0 and 255.
IO Timeout Retry field	The time period till which the system waits for timeout before retrying. When a disk does not respond for I/O within the defined timeout period, the driver aborts the pending command, and resends the same I/O after the timer expires. Enter an integer between 1 and 59.
Port Down Timeout field	The number of milliseconds a remote Fibre Channel port should be offline before informing the SCSI upper layer that the port is unavailable. Enter an integer between 0 and 240,000.

Step 7 In the **Fibre Channel Interrupt** area, review the information in the following fields:

Name	Description
Interrupt Mode drop-down list	The preferred driver interrupt mode. This can be one of the following: • **MSIx**—Message Signaled Interrupts (MSI) with the optional extension. This is the recommended option. • **MSI**—MSI only. • **INTx**—PCI INTx interrupts.

Step 8 In the **Fibre Channel Port** area, review the information in the following fields:

Name	Description
I/O Throttle Count field	The number of I/O operations that can be pending in the vHBA at one time. Enter an integer between 1 and 1,024.
LUNs per Target field	The maximum number of LUNs that the driver will export. This is usually an operating system platform limitation. Enter an integer between 1 and 1,024 for Cisco UCS C-Series servers.
LUN Queue Depth field	The number of commands that the HBA can send or receive in a single chunk per LUN. This parameter adjusts the initial queue depth for all LUNs on the adapter. Default value is 20 for physical miniports and 250 for virtual miniports.

Step 9 In the **Fibre Channel Port FLOGI** area, review the information in the following fields:

Name	Description
FLOGI Retries field	The number of times that the system tries to log in to the fabric after the first failure. To specify an unlimited number of retries, select the **INFINITE** radio button. Otherwise select the second radio button and enter an integer into the corresponding field.
FLOGI Timeout field	The number of milliseconds that the system waits before it tries to log in again. Enter an integer between 1,000 and 255,000.

Step 10 In the **Fibre Channel Port PLOGI** area, review the information in the following fields:

Name	Description
PLOGI Retries field	The number of times that the system tries to log in to a port after the first failure. Enter an integer between 0 and 255.

Name	Description
PLOGI Timeout field	The number of milliseconds that the system waits before it tries to log in again. Enter an integer between 1,000 and 255,000.

Step 11 In the **I/O** area, review the information in the following fields:

Name	Description
CDB Transmit Queue Count field	The number of SCSI I/O queue resources the system should allocate. For Cisco UCS VIC 14xx series adapters, enter an integer between 1 and 64. For any other VIC adapter, enter an integer between 1 and 245.
CDB Transmit Queue Ring Size field	The number of descriptors in each SCSI I/O queue. Enter an integer between 64 and 512.

Step 12 In the **Receive/Transmit Queues** area, review the information in the following fields:

Name	Description
FC Work Queue Ring Size field	The number of descriptors in each transmit queue. Enter an integer between 64 and 128.
FC Receive Queue Ring Size field	The number of descriptors in each receive queue. Enter an integer between 64 and 2048.

Step 13 In the **Boot Table** area, review the information in the following fields:

Name	Description
Index column	The unique identifier for the boot target.
Target WWPN column	The World Wide Port Name (WWPN) that corresponds to the location of the boot image.
LUN column	The LUN ID that corresponds to the location of the boot image.
Add Boot Entry button	Opens a dialog box that allows you to specify a new WWPN and LUN ID.
Edit Boot Entry button	Opens a dialog box that allows you to change the WWPN and LUN ID for the selected boot target.
Delete Boot Entry button	Deletes the selected boot target after you confirm the deletion.

Step 14 In the **Persistent Bindings** area, review the information in the following fields:

Name	Description
Index column	The unique identifier for the binding.
Target WWPN column	The target World Wide Port Name with which the binding is associated.
Host WWPN column	The host World Wide Port Name with which the binding is associated.
Bus ID column	The bus ID with which the binding is associated.
Target ID column	The target ID on the host system with which the binding is associated.
Rebuild Persistent Bindings button	Clears all unused bindings and resets the ones that are in use.

Modifying vHBA Properties

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vHBAs** tab.

Step 4 In the **vHBAs** pane, click **fc0** or **fc1**.

Step 5 In the **General** area, update the following fields:

Name	Description
Name field	The name of the virtual HBA. This name cannot be changed after the vHBA has been created.
Initiator WWNN field	The WWNN associated with the vHBA. To let the system generate the WWNN, select **AUTO**. To specify a WWNN, click the second radio button and enter the WWNN in the corresponding field.
Initiator WWPN field	The WWPN associated with the vHBA. To let the system generate the WWPN, select **AUTO**. To specify a WWPN, click the second radio button and enter the WWPN in the corresponding field.
FC SAN Boot check box	If checked, the vHBA can be used to perform a SAN boot.
Persistent LUN Binding check box	If checked, any LUN ID associations are retained in memory until they are manually cleared.

Name	Description
Uplink Port drop-down list	The uplink port associated with the vHBA. **Note** This value cannot be changed for the system-defined vHBAs fc0 and fc1.
MAC Address field	The MAC address associated with the vHBA. To let the system generate the MAC address, select **AUTO**. To specify an address, click the second radio button and enter the MAC address in the corresponding field.
Default VLAN field	If there is no default VLAN for this vHBA, click **NONE**. Otherwise, click the second radio button and enter a VLAN ID between 1 and 4094 in the field.
PCI Order field	The order in which this vHBA will be used. To let the system set the order, select **ANY**. To specify an order, select the second radio button and enter an integer between 0 and 17.
vHBA Type drop-down list	**Note** This option is available only with 14xx series adapters. The vHBA type used in this policy. vHBAs supporting FC and FC-NVMe can now be created on the same adapter. The vHBA type used in this policy can be one of the following: • fc-initiator—Legacy SCSI FC vHBA initiator • fc-target—vHBA that supports SCSI FC target functionality **Note** This option is available as a Tech Preview. • fc-nvme-initiator—vHBA that is an FC NVME initiator, which discovers FC NVME targets and connects to them. • fc-nvme-target—vHBA that acts as an FC NVME target and provides connectivity to the NVME storage.
Class of Service field	The CoS for the vHBA. Select an integer between 0 and 6, with 0 being lowest priority and 6 being the highest priority. **Note** This option cannot be used in VNTAG mode.
Rate Limit field	The data rate limit for traffic on this vHBA, in Mbps. If you want this vHBA to have an unlimited data rate, select **OFF**. Otherwise, click the second radio button and enter an integer between 1 and 10,000. **Note** This option cannot be used in VNTAG mode.

Name	Description
EDTOV field	The error detect timeout value (EDTOV), which is the number of milliseconds to wait before the system assumes that an error has occurred. Enter an integer between 1,000 and 100,000. The default is 2,000 milliseconds.
RATOV field	The resource allocation timeout value (RATOV), which is the number of milliseconds to wait before the system assumes that a resource cannot be properly allocated. Enter an integer between 5,000 and 100,000. The default is 10,000 milliseconds.
Max Data Field Size field	The maximum size of the Fibre Channel frame payload bytes that the vHBA supports. Enter an integer between 256 and 2112.
Channel Number field	The channel number that will be assigned to this vHBA. Enter an integer between 1 and 1,000. **Note** VNTAG mode is required for this option.
PCI Link	It is read-only field.
Port Profile drop-down list	The port profile that should be associated with the vHBA, if any. This field displays the port profiles defined on the switch to which this server is connected. **Note** VNTAG mode is required for this option.

Step 6 In the **Error Recovery** area, update the following fields:

Name	Description
FCP Error Recovery check box	If checked, the system uses FCP Sequence Level Error Recovery protocol (FC-TAPE).
Link Down Timeout field	The number of milliseconds the uplink port should be offline before it informs the system that the uplink port is down and fabric connectivity has been lost. Enter an integer between 0 and 240,000.
Port Down I/O Retry Count field	The number of times an I/O request to a port is returned because the port is busy before the system decides the port is unavailable. Enter an integer between 0 and 255.

Name	Description
IO Timeout Retry field	The time period till which the system waits for timeout before retrying. When a disk does not respond for I/O within the defined timeout period, the driver aborts the pending command, and resends the same I/O after the timer expires. Enter an integer between 1 and 59.
Port Down Timeout field	The number of milliseconds a remote Fibre Channel port should be offline before informing the SCSI upper layer that the port is unavailable. Enter an integer between 0 and 240,000.

Step 7 In the **Fibre Channel Interrupt** area, update the following fields:

Name	Description
Interrupt Mode drop-down list	The preferred driver interrupt mode. This can be one of the following: • **MSIx**—Message Signaled Interrupts (MSI) with the optional extension. This is the recommended option. • **MSI**—MSI only. • **INTx**—PCI INTx interrupts.

Step 8 In the **Fibre Channel Port** area, update the following fields:

Name	Description
I/O Throttle Count field	The number of I/O operations that can be pending in the vHBA at one time. Enter an integer between 1 and 1,024.
LUNs per Target field	The maximum number of LUNs that the driver will export. This is usually an operating system platform limitation. Enter an integer between 1 and 1,024 for Cisco UCS C-Series servers.
LUN Queue Depth field	The number of commands that the HBA can send or receive in a single chunk per LUN. This parameter adjusts the initial queue depth for all LUNs on the adapter. Default value is 20 for physical miniports and 250 for virtual miniports.

Step 9 In the **Fibre Channel Port FLOGI** area, update the following fields:

Name	Description
FLOGI Retries field	The number of times that the system tries to log in to the fabric after the first failure. To specify an unlimited number of retries, select the **INFINITE** radio button. Otherwise select the second radio button and enter an integer into the corresponding field.

Name	Description
FLOGI Timeout field	The number of milliseconds that the system waits before it tries to log in again. Enter an integer between 1,000 and 255,000.

Step 10 In the **Fibre Channel Port PLOGI** area, update the following fields:

Name	Description
PLOGI Retries field	The number of times that the system tries to log in to a port after the first failure. Enter an integer between 0 and 255.
PLOGI Timeout field	The number of milliseconds that the system waits before it tries to log in again. Enter an integer between 1,000 and 255,000.

Step 11 In the **SCSI I/O** area, update the following fields:

Name	Description
CDB Transmit Queue Count field	The number of SCSI I/O queue resources the system should allocate. For Cisco UCS VIC 14xx series adapters, enter an integer between 1 and 64. For any other VIC adapter, enter an integer between 1 and 245.
CDB Transmit Queue Ring Size field	The number of descriptors in each SCSI I/O queue. Enter an integer between 64 and 512.

Step 12 In the **Receive/Transmit Queues** area, update the following fields:

Name	Description
FC Work Queue Ring Size field	The number of descriptors in each transmit queue. Enter an integer between 64 and 128.
FC Receive Queue Ring Size field	The number of descriptors in each receive queue. Enter an integer between 64 and 2048.

Step 13 Click **Save Changes**.

Step 14 In the **Boot Table** area, update the following fields or add a new entry:

Name	Description
Index column	The unique identifier for the boot target.
Target WWPN column	The World Wide Port Name (WWPN) that corresponds to the location of the boot image.

Name	Description
LUN column	The LUN ID that corresponds to the location of the boot image.
Add Boot Entry button	Opens a dialog box that allows you to specify a new WWPN and LUN ID.
Edit Boot Entry button	Opens a dialog box that allows you to change the WWPN and LUN ID for the selected boot target.
Delete Boot Entry button	Deletes the selected boot target after you confirm the deletion.

Step 15 In the **Persistent Bindings** area, update the following fields or add a new entry:

Name	Description
Index column	The unique identifier for the binding.
Target WWPN column	The target World Wide Port Name with which the binding is associated.
Host WWPN column	The host World Wide Port Name with which the binding is associated.
Bus ID column	The bus ID with which the binding is associated.
Target ID column	The target ID on the host system with which the binding is associated.
Rebuild Persistent Bindings button	Clears all unused bindings and resets the ones that are in use.

Creating a vHBA

The Cisco UCS Virtual Interface Cards provide two vHBAs and two vNICs by default. You can create up to 14 additional vHBAs or vNICs on these adapter cards.

Cisco UCS 1455 and 1457 Virtual Interface Cards, in non-port channel mode, provide four vHBAs and four vNICs by default. You can create up to 10 additional vHBAs or vNICs on these adapter cards.

Before you begin

Ensure that **Enable VNTAG Mode** under **Adapter Card Properties** in the **General** tab is checked.

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vHBAs** tab.

Step 4 In the **Host Fibre Channel Interfaces** area, choose one of these actions:

- To create a vHBA using default configuration settings, click **Add vHBA**.

- To create a vHBA using the same configuration settings as an existing vHBA, select that vHBA and click **Clone vHBA**.

The **Add vHBA** dialog box appears.

Step 5 In the **Add vHBA** dialog box, enter a name for the vHBA in the **Name** entry box.

Step 6 Configure the new vHBA as described in Modifying vHBA Properties, on page 17.

Step 7 Click **Add vHBA**.

What to do next

- Reboot the server to create the vHBA.

Deleting a vHBA

Default vHBAs cannot be deleted. You can delete any other vHBAs created using VNTAG mode.

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vHBAs** tab.

Step 4 In the **Host Fibre Channel Interfaces** area, select a vHBA or vHBAs from the table.

Note You cannot delete either of the two default vHBAs, **fc0** or **fc1**.

Step 5 Click **Delete vHBAs** and click **OK** to confirm.

What to do next

Reboot the server to delete the vHBA.

vHBA Boot Table

In the vHBA boot table, you can specify up to four LUNs from which the server can boot.

Creating a Boot Table Entry

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vHBAs** tab.

Step 4 Select a vHBA from the list of available vHBAs under **vHBAs** in the **vHBAs** tab.

The related **vHBA Properties** pane is displayed in the right hand side of the window.

Step 5 Scroll down to view **Boot Table** at the end of the page.

Step 6 Click the **Add Boot Entry** button to open the **Add Boot Entry** dialog box.

Step 7 In the **Add Boot Entry** dialog box, review the following information and perform the actions specified:

Name	Description
Index field	The default value for this field is **0**.
Target WWPN field	The World Wide Port Name (WWPN) that corresponds to the location of the boot image. Enter the WWPN in the format **hh:hh:hh:hh:hh:hh:hh:hh**.
LUN ID field	The LUN ID that corresponds to the location of the boot image. Enter an ID between 0 and 255.
Add Boot Entry button	Adds the specified location to the boot table.
Reset Values button	Clears the values currently entered in the fields.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

Deleting a Boot Table Entry

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vHBAs** tab.

Step 4 Select a vHBA from the list of available vHBAs under **vHBAs** in the **vHBAs** tab.

The related **vHBA Properties** pane is displayed in the right hand side of the window.

Step 5 Scroll down to view **Boot Table** at the end of the page.

Step 6 In the **Boot Table** area, click the entry to be deleted.

Step 7 Click **Delete Boot Entry** and click **OK** to confirm.

vHBA Persistent Binding

Persistent binding ensures that the system-assigned mapping of Fibre Channel targets is maintained after a reboot.

Viewing Persistent Bindings

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vHBAs** tab.

Step 4 In the **vHBAs** pane, click **fc0** or **fc1**.

Step 5 In the **Persistent Bindings** area, review the following information:

Name	Description
Index column	The unique identifier for the binding.
Target WWPN column	The target World Wide Port Name with which the binding is associated.
Host WWPN column	The host World Wide Port Name with which the binding is associated.
Bus ID column	The bus ID with which the binding is associated.
Target ID column	The target ID on the host system with which the binding is associated.
Rebuild Persistent Bindings button	Clears all unused bindings and resets the ones that are in use.

Rebuilding Persistent Bindings

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vHBAs** tab.

Step 4 In the **vHBAs** pane, click **fc0** or **fc1**.

Step 5 Scroll down to the **Persistent Bindings** area.

Step 6 Click the **Rebuild Persistent Bindings** button.

Step 7 Click **OK** to confirm.

Managing vNICs

Guidelines for Managing vNICs

When managing vNICs, consider the following guidelines and restrictions:

- The Cisco UCS Virtual Interface Cards provide two vHBAs and two vNICs by default. You can create up to 14 additional vHBAs or vNICs on these adapter cards.

  Additional vHBAs can be created using VNTAG mode.

  The Cisco UCS 1455 and 1457 Virtual Interface Cards, in non-port channel mode, provide four vHBAs and four vNICs by default. You can create up to 10 additional vHBAs or vNICs on these adapter cards.

Note If VNTAG mode is enabled for the adapter, you must assign a channel number to a vNIC when you create it.

- After making configuration changes, you must reboot the host for settings to take effect.

Viewing vNIC Properties

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to view.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.

Step 4 In the **vNICs** pane, click **eth0** or **eth1**.

Step 5 In the **General** area under **vNIC Properties** area, review the following fields:

General Area

Name	Description
Name field	The name for the virtual NIC. This name cannot be changed after the vNIC has been created.
CDN field	The Consistent Device Name (CDN) that you can assign to the ethernet vNICs on the VIC cards. Assigning a specific CDN to a device helps in identifying it on the host OS. **Note** This feature works only when the **CDN Support for VIC** token is enabled in the BIOS.
MTU field	The maximum transmission unit, or packet size, that this vNIC accepts. Enter an integer between 1500 and 9000.

Name	Description
Uplink Port drop-down list	The uplink port associated with this vNIC. All traffic for this vNIC goes through this uplink port.
MAC Address field	The MAC address associated with the vNIC. To let the adapter select an available MAC address from its internal pool, select **Auto**. To specify an address, click the second radio button and enter the MAC address in the corresponding field.
Class of Service field	The class of service to associate with traffic from this vNIC. Select an integer between 0 and 6, with 0 being lowest priority and 6 being the highest priority. **Note** This option cannot be used in VNTAG mode.
Trust Host CoS check box	Check this box if you want the vNIC to use the class of service provided by the host operating system.
PCI Order field	The order in which this vNIC will be used. To specify an order, enter an integer within the displayed range.
Default VLAN radio button	If there is no default VLAN for this vNIC, select **NONE**. Otherwise, select the second radio button and enter a VLAN ID between 1 and 4094 in the field. **Note** This option cannot be used in VNTAG mode.
VLAN Mode drop-down list	If you want to use VLAN trunking, select **TRUNK**. Otherwise, select **ACCESS**. **Note** This option cannot be used in VNTAG mode.

Name	Description
Rate Limit radio button	If you want this vNIC to have an unlimited data rate, select OFF. Otherwise, click the second radio button and enter a rate limit in the associated field. Enter an integer between 1 and 10,000 Mbps. For VIC 13xx controllers, you can enter an integer between 1 and 40,000 Mbps. For VIC 1455 and 1457 controllers: • If the adapter is connected to 25 Gbps link on a Switch, then you can enter an integer between 1 to 25,000 Mbps for the **Rate Limit** field. • If the adapter is connected to 10 Gbps link on a Switch, then you can enter an integer between 1 to 10,000 Mbps for the **Rate Limit** field. For VIC 1495 and 1497 controllers: • If the adapter is connected to 40 Gbps link on a switch, then you can enter an integer between 1 to 40,000 Mbps for the **Rate Limit** field. • If the adapter is connected to 100 Gbps link on a switch, then you can enter an integer between 1 to 100,000 Mbps for the **Rate Limit** field. **Note** This option cannot be used in VNTAG mode.
Channel Number field	Select the channel number that will be assigned to this vNIC. **Note** VNTAG mode is required for this option.
PCI Link field	The link through which vNICs can be connected. These are the following values: • **0** - The first cross-edged link where the vNIC is placed. • **1** - The second cross-edged link where the vNIC is placed. **Note** • This option is available only on some Cisco UCS C-Series servers.
Enable NVGRE check box	Check this box to enable Network Virtualization using Generic Routing Encapsulation. • This option is available only on some Cisco UCS C-Series servers. • This option is available only on C-Series servers with Cisco VIC 1385 cards.

Name	Description
Enable VXLAN check box	Check this box to enable Virtual Extensible LAN. • This option is available only on some Cisco UCS C-Series servers. • This option is available only on C-Series servers with Cisco VIC 1385 and VIC 14xx cards.
Geneve Offload check box	Beginning with release 4.1(2a), Cisco IMC supports Generic Network Virtualization Encapsulation (Geneve) Offload feature with Cisco VIC 14xx series adapters in ESX 7.0 (NSX-T 3.0) and ESX 6.7U3(NSX-T 2.5) OS. Geneve is a tunnel encapsulation functionality for network traffic . Check this box if you want to enable Geneve Offload encapsulation in Cisco VIC 14xx series adapters. Un-check this box to disable Geneve Offload, in order to prevent non-encapsulated UDP packets whose destination port numbers match with the Geneve destination port from being treated as tunneled packets. If you enable **Geneve Offload** feature, then Cisco recommends the following settings: • Transmit Queue Count—1 • Transmit Queue Ring Size—4096 • Receive Queue Count—8 • Receive Queue Ring Size—4096 • Completion Queue Count—9 • Interrupt Count—11 **Note** You cannot enable the following when **Geneve Offload** is enabled in a setup with Cisco VIC 14xx series: • RDMA on the same vNIC • usNIC on the same vNIC • Non-Port Channel Mode on Cisco VIC 145x adapters • aRFS • Advanced Filters • NetQueue • Physical NIC Mode Outer IPV6 is not supported with GENEVE Offload feature. Downgrade Limitation—If **Geneve Offload** is enabled, you cannot downgrade to any release earlier than 4.1(2a).

Name	Description
Advanced Filter check box	Check this box to enable advanced filter options in vNICs.
Port Profile drop-down list	Select the port profile that should be associated with the vNIC. This field displays the port profiles defined on the switch to which this server is connected. **Note** VNTAG mode is required for this option.
Enable PXE Boot check box	Check this box if the vNIC can be used to perform a PXE boot.
Enable VMQ check box	Check this box to enable Virtual Machine Queue (VMQ).
Enable Multi Queue check box	Check this box to enable the Multi Queue option on vNICs. When enabled multi queue vNICs will be available to the host. By default this is disabled. **Note** • Multi queue is supported only on C-Series servers with 14xx adapters. • VMQ must be in enabled state to enable this option. • When you enable this option on one of the vNICs, configuring only VMQ (without choosing multi-queue) on other vNICs is not supported. • When this option is enabled usNIC configuration will be disabled.
No. of Sub vNICs field	Number of sub vNICs available to the host when the multi queue option is enabled.
Enable aRFS check box	Check this box to enable Accelerated Receive Flow steering (aRFS). This option is available only on some Cisco UCS C-Series servers.
Enable Uplink Failover check box	Check this box if traffic on this vNIC should fail over to the secondary interface if there are communication problems. **Note** VNTAG mode is required for this option.
Failback Timeout field	After a vNIC has started using its secondary interface, this setting controls how long the primary interface must be available before the system resumes using the primary interface for the vNIC. Enter a number of seconds between 0 and 600. **Note** VNTAG mode is required for this option.

Step 6 In the **Ethernet Interrupt** area, review the information in the following fields:

Name	Description
Interrupt Count field	The number of interrupt resources to allocate. In general, this value should be equal to the number of completion queue resources. Enter an integer between 1 and 1024.
Interrupt Mode drop-down list	The preferred driver interrupt mode. This can be one of the following: • **MSI-X**—Message Signaled Interrupts (MSI) with the optional extension. This is the recommended option. • **MSI**—MSI only. • **INTx**—PCI INTx interrupts.
Coalescing Time field	The time to wait between interrupts or the idle period that must be encountered before an interrupt is sent. Enter an integer between 1 and 65535. To turn off interrupt coalescing, enter 0 (zero) in this field.
Coalescing Type drop-down list	This can be one of the following: • **MIN**—The system waits for the time specified in the **Coalescing Time** field before sending another interrupt event. • **IDLE**—The system does not send an interrupt until there is a period of no activity lasting as least as long as the time specified in the **Coalescing Time** field.

Step 7 In the **TCP Offload** area, review the information in the following fields:

Name	Description
Enable Large Receive check box	If checked, the hardware reassembles all segmented packets before sending them to the CPU. This option may reduce CPU utilization and increase inbound throughput. If cleared, the CPU processes all large packets.
Enable TCP Rx Offload Checksum Validation check box	If checked, the CPU sends all packet checksums to the hardware for validation. This option may reduce CPU overhead. If cleared, the CPU validates all packet checksums.
Enable TCP Segmentation Offload check box	If checked, the CPU sends large TCP packets to the hardware to be segmented. This option may reduce CPU overhead and increase throughput rate. If cleared, the CPU segments large packets. **Note** This option is also known as Large Send Offload (LSO).

Name	Description
Enable TCP Tx Offload Checksum Generation check box	If checked, the CPU sends all packets to the hardware so that the checksum can be calculated. This option may reduce CPU overhead. If cleared, the CPU calculates all packet checksums.

Step 8 In the **Receive Side Scaling** area, review the information in the following fields:

Name	Description
Enable TCP Receive Side Scaling check box	Receive Side Scaling (RSS) distributes network receive processing across multiple CPUs in multiprocessor systems. If checked, network receive processing is shared across processors whenever possible. If cleared, network receive processing is always handled by a single processor even if additional processors are available.
Enable IPv4 RSS check box	If checked, RSS is enabled on IPv4 networks.
Enable TCP-IPv4 RSS check box	If checked, RSS is enabled for TCP transmissions across IPv4 networks.
Enable IPv6 RSS check box	If checked, RSS is enabled on IPv6 networks.
Enable TCP-IPv6 RSS check box	If checked, RSS is enabled for TCP transmissions across IPv6 networks.
Enable IPv6 Extension RSS check box	If checked, RSS is enabled for IPv6 extensions.
Enable TCP-IPv6 Extension RSS check box	If checked, RSS is enabled for TCP transmissions across IPv6 networks.

Step 9 In the **Ethernet Receive Queue** area, review the information in the following fields:

Name	Description
Count field	The number of receive queue resources to allocate. Enter an integer between 1 and 256.
Ring Size field	The number of descriptors in each receive queue. Enter an integer between 64 and 4096.

Step 10 In the **Ethernet Transmit Queue** area, review the information in the following fields:

Name	Description
Count field	The number of transmit queue resources to allocate. Enter an integer between 1 and 256.
Ring Size field	The number of descriptors in each transmit queue. Enter an integer between 64 and 4096.

Step 11 In the **Completion Queue** area, review the information in the following fields:

Name	Description
Count field	The number of completion queue resources to allocate. In general, the number of completion queue resources you should allocate is equal to the number of transmit queue resources plus the number of receive queue resources. Enter an integer between 1 and 512.
Ring Size	The number of descriptors in each completion queue. This value cannot be changed.

Step 12 In the **Multi Queue** area, review the information in the following fields:

Name	Description
Receive Queue Count field	The number of receive queue resources to allocate. Enter an integer between 1 and 1000.
Transmit Queue Count field	The number of transmit queue resources to allocate. Enter an integer between 1 and 1000.
Completion Queue Count field	The number of completion queue resources to allocate. Enter an integer between 1 and 2000.

Step 13 In the **RoCE Properties** area, review the information in the following fields:

Name	Description
RoCE checkbox	Check the check box to change the RoCE Properties.
Queue Pairs field	The number of queue pairs per adapter. Enter an integer between 1 and 2048. We recommend that this number be an integer power of 2. The recommended value for queue pairs per vNIC is 2048.
Memory Regions field	The number of memory regions per adapter. Enter an integer between 1 and 524288. We recommend that this number be an integer power of 2. The recommended value is 131072. The number of memory regions supported should be enough to meet application requirements as the regions are primarily used to send operation channel semantics.

Name	Description
Resource Groups field	The number of resource groups per adapter. Enter an integer between 1 and 128. We recommend that this number be an integer power of 2 greater than or equal to the number of CPU cores on the system for optimum performance. The resource group defines the total number of hardware resources such as WQ, RQ, CQ, and interrupts required to support the RDMA functionality, and is based on the total number of processor cores available with the host. The host chooses to dedicate a particular resource group to a core to maximize performance and get a better non-uniform memory access.
Class of Service drop-down list	NO Drop QOS COS to be specified. This same value should be configured at the up link switch. Default No Drop QOS COS is 5. **Note** This option is available only on some adapters.

What to do next

Reboot the server to create the vHBA.

Modifying vNIC Properties

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.

Step 4 In the **vNICs** pane, click **eth0** or **eth1**.

Step 5 In the **General** area under **vNIC Properties** in the **vNICs** pane, update the following fields:

Name	Description
Name field	The name for the virtual NIC. This name cannot be changed after the vNIC has been created.
CDN field	The Consistent Device Name (CDN) that you can assign to the ethernet vNICs on the VIC cards. Assigning a specific CDN to a device helps in identifying it on the host OS. **Note** This feature works only when the **CDN Support for VIC** token is enabled in the BIOS.
MTU field	The maximum transmission unit, or packet size, that this vNIC accepts. Enter an integer between 1500 and 9000.

Name	Description
Uplink Port drop-down list	The uplink port associated with this vNIC. All traffic for this vNIC goes through this uplink port.
MAC Address field	The MAC address associated with the vNIC. To let the adapter select an available MAC address from its internal pool, select **Auto**. To specify an address, click the second radio button and enter the MAC address in the corresponding field.
Class of Service field	The class of service to associate with traffic from this vNIC. Select an integer between 0 and 6, with 0 being lowest priority and 6 being the highest priority. **Note** This option cannot be used in VNTAG mode.
Trust Host CoS check box	Check this box if you want the vNIC to use the class of service provided by the host operating system.
PCI Order field	The order in which this vNIC will be used. To specify an order, enter an integer within the displayed range.
Default VLAN radio button	If there is no default VLAN for this vNIC, select **NONE**. Otherwise, select the second radio button and enter a VLAN ID between 1 and 4094 in the field. **Note** This option cannot be used in VNTAG mode.
VLAN Mode drop-down list	If you want to use VLAN trunking, select **TRUNK**. Otherwise, select **ACCESS**. **Note** This option cannot be used in VNTAG mode.

Name	Description
Rate Limit radio button	If you want this vNIC to have an unlimited data rate, select OFF. Otherwise, click the second radio button and enter a rate limit in the associated field. Enter an integer between 1 and 10,000 Mbps. For VIC 13xx controllers, you can enter an integer between 1 and 40,000 Mbps. For VIC 1455 and 1457 controllers: • If the adapter is connected to 25 Gbps link on a Switch, then you can enter an integer between 1 to 25,000 Mbps for the **Rate Limit** field. • If the adapter is connected to 10 Gbps link on a Switch, then you can enter an integer between 1 to 10,000 Mbps for the **Rate Limit** field. For VIC 1495 and 1497 controllers: • If the adapter is connected to 40 Gbps link on a switch, then you can enter an integer between 1 to 40,000 Mbps for the **Rate Limit** field. • If the adapter is connected to 100 Gbps link on a switch, then you can enter an integer between 1 to 100,000 Mbps for the **Rate Limit** field. **Note** This option cannot be used in VNTAG mode.
Channel Number field	Select the channel number that will be assigned to this vNIC. **Note** VNTAG mode is required for this option.
PCI Link field	The link through which vNICs can be connected. These are the following values: • **0** - The first cross-edged link where the vNIC is placed. • **1** - The second cross-edged link where the vNIC is placed. **Note** • This option is available only on some Cisco UCS C-Series servers.
Enable NVGRE check box	Check this box to enable Network Virtualization using Generic Routing Encapsulation. • This option is available only on some Cisco UCS C-Series servers. • This option is available only on C-Series servers with Cisco VIC 1385 cards.

Name	Description
Enable VXLAN check box	Check this box to enable Virtual Extensible LAN. • This option is available only on some Cisco UCS C-Series servers. • This option is available only on C-Series servers with Cisco VIC 1385 and VIC 14xx cards.
Geneve Offload check box	Beginning with release 4.1(2a), Cisco IMC supports Generic Network Virtualization Encapsulation (Geneve) Offload feature with Cisco VIC 14xx series adapters in ESX 7.0 (NSX-T 3.0) and ESX 6.7U3(NSX-T 2.5) OS. Geneve is a tunnel encapsulation functionality for network traffic . Check this box if you want to enable Geneve Offload encapsulation in Cisco VIC 14xx series adapters. Un-check this box to disable Geneve Offload, in order to prevent non-encapsulated UDP packets whose destination port numbers match with the Geneve destination port from being treated as tunneled packets. If you enable **Geneve Offload** feature, then Cisco recommends the following settings: • Transmit Queue Count—1 • Transmit Queue Ring Size—4096 • Receive Queue Count—8 • Receive Queue Ring Size—4096 • Completion Queue Count—9 • Interrupt Count—11 **Note** You cannot enable the following when **Geneve Offload** is enabled in a setup with Cisco VIC 14xx series: • RDMA on the same vNIC • usNIC on the same vNIC • Non-Port Channel Mode on Cisco VIC 145x adapters • aRFS • Advanced Filters • NetQueue • Physical NIC Mode Outer IPV6 is not supported with GENEVE Offload feature. Downgrade Limitation—If **Geneve Offload** is enabled, you cannot downgrade to any release earlier than 4.1(2a).

Name	Description
Advanced Filter check box	Check this box to enable advanced filter options in vNICs.
Port Profile drop-down list	Select the port profile that should be associated with the vNIC. This field displays the port profiles defined on the switch to which this server is connected. **Note** VNTAG mode is required for this option.
Enable PXE Boot check box	Check this box if the vNIC can be used to perform a PXE boot.
Enable VMQ check box	Check this box to enable Virtual Machine Queue (VMQ).
Enable Multi Queue check box	Check this box to enable the Multi Queue option on vNICs. When enabled multi queue vNICs will be available to the host. By default this is disabled. **Note** • Multi queue is supported only on C-Series servers with 14xx adapters. • VMQ must be in enabled state to enable this option. • When you enable this option on one of the vNICs, configuring only VMQ (without choosing multi-queue) on other vNICs is not supported. • When this option is enabled usNIC configuration will be disabled.
No. of Sub vNICs field	Number of sub vNICs available to the host when the multi queue option is enabled.
Enable aRFS check box	Check this box to enable Accelerated Receive Flow steering (aRFS). This option is available only on some Cisco UCS C-Series servers.
Enable Uplink Failover check box	Check this box if traffic on this vNIC should fail over to the secondary interface if there are communication problems. **Note** VNTAG mode is required for this option.
Failback Timeout field	After a vNIC has started using its secondary interface, this setting controls how long the primary interface must be available before the system resumes using the primary interface for the vNIC. Enter a number of seconds between 0 and 600. **Note** VNTAG mode is required for this option.

Step 6 In the **Ethernet Interrupt** area, update the following fields:

Name	Description
Interrupt Count field	The number of interrupt resources to allocate. In general, this value should be equal to the number of completion queue resources. Enter an integer between 1 and 1024.
Coalescing Time field	The time to wait between interrupts or the idle period that must be encountered before an interrupt is sent. Enter an integer between 1 and 65535. To turn off interrupt coalescing, enter 0 (zero) in this field.
Coalescing Type drop-down list	This can be one of the following: • **MIN**—The system waits for the time specified in the **Coalescing Time** field before sending another interrupt event. • **IDLE**—The system does not send an interrupt until there is a period of no activity lasting as least as long as the time specified in the **Coalescing Time** field.
Interrupt Mode drop-down list	The preferred driver interrupt mode. This can be one of the following: • **MSI-X**—Message Signaled Interrupts (MSI) with the optional extension. This is the recommended option. • **MSI**—MSI only. • **INTx**—PCI INTx interrupts.

Step 7 In the **TCP Offload** area, update the following fields:

Name	Description
Enable Large Receive check box	If checked, the hardware reassembles all segmented packets before sending them to the CPU. This option may reduce CPU utilization and increase inbound throughput. If cleared, the CPU processes all large packets.
Enable TCP Segmentation Offload check box	If checked, the CPU sends large TCP packets to the hardware to be segmented. This option may reduce CPU overhead and increase throughput rate. If cleared, the CPU segments large packets. **Note** This option is also known as Large Send Offload (LSO).
Enable TCP Rx Offload Checksum Validation check box	If checked, the CPU sends all packet checksums to the hardware for validation. This option may reduce CPU overhead. If cleared, the CPU validates all packet checksums.

Name	Description
Enable TCP Tx Offload Checksum Generation check box	If checked, the CPU sends all packets to the hardware so that the checksum can be calculated. This option may reduce CPU overhead. If cleared, the CPU calculates all packet checksums.

Step 8 In the **Receive Side Scaling** area, update the following fields:

Name	Description
Enable TCP Receive Side Scaling check box	Receive Side Scaling (RSS) distributes network receive processing across multiple CPUs in multiprocessor systems. If checked, network receive processing is shared across processors whenever possible. If cleared, network receive processing is always handled by a single processor even if additional processors are available.
Enable IPv4 RSS check box	If checked, RSS is enabled on IPv4 networks.
Enable TCP-IPv4 RSS check box	If checked, RSS is enabled for TCP transmissions across IPv4 networks.
Enable IPv6 RSS check box	If checked, RSS is enabled on IPv6 networks.
Enable TCP-IPv6 RSS check box	If checked, RSS is enabled for TCP transmissions across IPv6 networks.
Enable IPv6 Extension RSS check box	If checked, RSS is enabled for IPv6 extensions.
Enable TCP-IPv6 Extension RSS check box	If checked, RSS is enabled for TCP transmissions across IPv6 networks.

Step 9 In the **Ethernet Receive Queue** area, update the following fields:

Name	Description
Count field	The number of receive queue resources to allocate. Enter an integer between 1 and 256.
Ring Size field	The number of descriptors in each receive queue. Enter an integer between 64 and 16384. VIC 14xx Series adapters support a 4K (4096) maximum Ring Size VIC15xxx Series adapters support up to 16K Ring Size.

Step 10 In the **Ethernet Transmit Queue** area, update the following fields:

Name	Description
Count field	The number of transmit queue resources to allocate. Enter an integer between 1 and 256.

Name	Description
Ring Size field	The number of descriptors in each transmit queue. Enter an integer between 64 and 16384. VIC 14xx Series adapters support a 4K (4096) maximum Ring Size VIC15xxx Series adapters support up to 16K Ring Size.

Step 11 In the **Completion Queue** area, update the following fields:

Name	Description
Count field	The number of completion queue resources to allocate. In general, the number of completion queue resources you should allocate is equal to the number of transmit queue resources plus the number of receive queue resources. Enter an integer between 1 and 512.
Ring Size	The number of descriptors in each completion queue. This value cannot be changed.

Step 12 In the **Multi Queue** area, update the following details:

Name	Description
Receive Queue Count field	The number of receive queue resources to allocate. Enter an integer between 1 and 1000.
Transmit Queue Count field	The number of transmit queue resources to allocate. Enter an integer between 1 and 1000.
Completion Queue Count field	The number of completion queue resources to allocate. In general, the number of completion queue resources you should allocate is equal to the number of transmit queue resources plus the number of receive queue resources. Enter an integer between 1 and 2000.

Step 13 In the **RoCE Properties** area, update the following fields:

Name	Description
RoCE check box	Check the check box to change the RoCE Properties. **Note** If **Multi Queue** RoCE is enabled, ensure that VMQ RoCE is also enabled.
Queue Pairs field	The number of queue pairs per adapter. Enter an integer between 1 and 2048. We recommend that this number be an integer power of 2.

Name	Description
Memory Regions field	The number of memory regions per adapter. Enter an integer between 1 and 524288. We recommend that this number be an integer power of 2.
Resource Groups field	The number of resource groups per adapter. Enter an integer between 1 and 128. We recommend that this number be an integer power of 2 greater than or equal to the number of CPU cores on the system for optimum performance.
Class of Service field	This field is read-only and is set to 5. **Note** This option is available only on some of the adapters.

Step 14 Click **Save Changes**.

What to do next

Reboot the server to modify the vNIC.

Creating a vNIC

The Cisco UCS Virtual Interface Cards provide two vHBAs and two vNICs by default. You can create up to 14 additional vHBAs or vNICs on these adapter cards.

The Cisco UCS 1455 and 1457 Virtual Interface Cards, in non-port channel mode, provide four vHBAs and four vNICs by default. You can create up to 10 additional vHBAs or vNICs on these adapter cards.

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.

Step 4 In the **Host Ethernet Interfaces** area, choose one of these actions:

- To create a vNIC using default configuration settings, click **Add vNIC**.
- To create a vNIC using the same configuration settings as an existing vNIC, select that vNIC and click **Clone vNIC**.

The **Add vNIC** dialog box appears.

Step 5 In the **Add vNIC** dialog box, enter a name for the vNIC in the **Name** entry box.

Step 6 In the **Add vNIC** dialog box, enter a channel number for the vNIC in the **Channel Number** entry box.

Note If VNTAG is enabled on the adapter, you must assign a channel number for the vNIC when you create it.

Step 7 Click **Add vNIC**.

What to do next

If configuration changes are required, configure the new vNIC as described in Modifying vNIC Properties, on page 34.

Deleting a vNIC

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.
Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.
Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.
Step 4 In the **Host Ethernet Interfaces** area, select a vNIC from the table.

Note You cannot delete either of the two default vNICs, **eth0** or **eth1**.

Step 5 Click **Delete vNIC** and click **OK** to confirm.

Configuring iSCSI Boot Capability

Configuring iSCSI Boot Capability for vNICs

To configure the iSCSI boot capability on a vNIC:

- You must log in with admin privileges to perform this task.
- To configure a vNIC to boot a server remotely from an iSCSI storage target, you must enable the PXE boot option on the vNIC.

Note You can configure a maximum of 2 iSCSI vNICs for each host.

Configuring iSCSI Boot Capability on a vNIC

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.
Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.
Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.
Step 4 In the **vNICs** pane, click **eth0** or **eth1**.

Step 5 Select the **iSCSI Boot Properties** area.

Step 6 In the **General** area, update the following fields:

Name	Description
Name field	The name of the vNIC.
DHCP Network check box	Whether DHCP Network is enabled for the vNIC. If enabled, the initiator network configuration is obtained from the DHCP server.
DHCP iSCSI check box	Whether DHCP iSCSI is enabled for the vNIC. If enabled and the DHCP ID is set, the initiator IQN and target information are obtained from the DHCP server. **Note** If DHCP iSCSI is enabled without a DHCP ID, only the target information is obtained.
DHCP ID field	The vendor identifier string used by the adapter to obtain the initiator IQN and target information from the DHCP server. Enter a string up to 64 characters.
DHCP Timeout field	The number of seconds to wait before the initiator assumes that the DHCP server is unavailable. Enter an integer between 60 and 300 (default: 60 seconds)
Link Timeout field	The number of seconds to wait before the initiator assumes that the link is unavailable. Enter an integer between 0 and 255 (default: 15 seconds)
LUN Busy Retry Count field	The number of times to retry the connection in case of a failure during iSCSI LUN discovery. Enter an integer between 0 and 255. The default is 15.
IP Version field	The IP version to use during iSCSI boot.

Step 7 In the **Initiator** area, update the following fields:

Name	Description
Name field	A regular expression that defines the name of the iSCSI initiator. You can enter any alphanumeric string as well as the following special characters: • . (period) • : (colon) • - (dash) **Note** The name is in the IQN format.

Name	Description
IP Address field	The IP address of the iSCSI initiator.
Subnet Mask field	The subnet mask for the iSCSI initiator.
Gateway field	The default gateway.
Primary DNS field	The primary DNS server address.
Initiator Priority drop-down list	The initiator priority drop-down list.
Secondary DNS field	The secondary DNS server address.
TCP Timeout field	The number of seconds to wait before the initiator assumes that TCP is unavailable. Enter an integer between 0 and 255 (default: 15 seconds)
CHAP Name field	The Challenge-Handshake Authentication Protocol (CHAP) name of the initiator.
CHAP Secret field	The Challenge-Handshake Authentication Protocol (CHAP) shared secret of the initiator.

Step 8 In the **Primary Target** area, update the following fields:

Name	Description
Name field	The name of the primary target in the IQN format.
IP Address field	The IP address of the target.
TCP Port field	The TCP port associated with the target.
Boot LUN field	The Boot LUN associated with the target.
CHAP Name field	The Challenge-Handshake Authentication Protocol (CHAP) name of the initiator.
CHAP Secret field	The Challenge-Handshake Authentication Protocol (CHAP) shared secret of the initiator.

Step 9 In the **Secondary Target** area, update the following fields:

Name	Description
Name field	The name of the secondary target in the IQN format.
IP Address field	The IP address of the target.
TCP Port field	The TCP port associated with the target.
Boot LUN field	The Boot LUN associated with the target.

Name	Description
CHAP Name field	The Challenge-Handshake Authentication Protocol (CHAP) name of the initiator.
CHAP Secret field	The Challenge-Handshake Authentication Protocol (CHAP) shared secret of the initiator.

Name	Description
Configure ISCSI button	Configures iSCSI boot on the selected vNIC.
Unconfigure ISCSI button	Removes the configuration from the selected vNIC.
Reset Values button	Restores the values for the vNIC to the settings that were in effect when this dialog box was first opened.
Cancel button	Closes the dialog box without making any changes.

Step 10 Click **Save Changes**.

Removing iSCSI Boot Configuration from a vNIC

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.
Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.
Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.
Step 4 In the **vNICs** pane, click **eth0** or **eth1**.
Step 5 Select the **iSCSI Boot Properties** area.
Step 6 Click the **Unconfigure ISCSI Boot** button at the bottom of the **iSCSI Boot Properties** area.

What to do next

Reboot the server to remove the iSCSI Boot Configuration.

Managing Cisco usNIC

Overview of Cisco usNIC

The Cisco user-space NIC (Cisco usNIC) feature improves the performance of software applications that run on the Cisco UCS servers in your data center by bypassing the kernel when sending and receiving networking

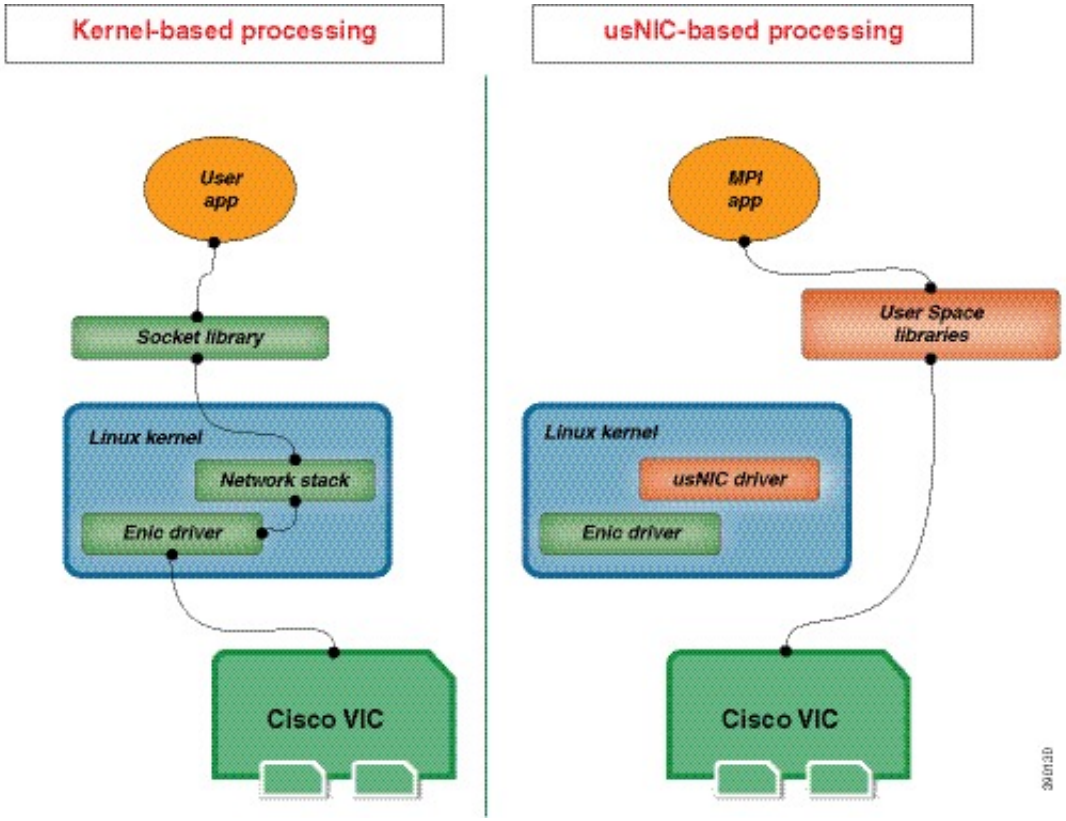
packets. The applications interact directly with a Cisco UCS VIC second generation or later generation adapter, such as the , which improves the networking performance of your high-performance computing cluster. To benefit from Cisco usNIC, your applications must use the Message Passing Interface (MPI) instead of sockets or other communication APIs.

Cisco usNIC offers the following benefits for your MPI applications:

- Provides a low-latency and high-throughput communication transport.
- Employs the standard and application-independent Ethernet protocol.
- Takes advantage of lowlatency forwarding, Unified Fabric, and integrated management support in the following Cisco data center platforms:
  - Cisco UCS server
  - Cisco UCS VIC second generation or later generation adapter
  - 10 or 40GbE networks

Standard Ethernet applications use user-space socket libraries, which invoke the networking stack in the Linux kernel. The networking stack then uses the Cisco eNIC driver to communicate with the Cisco VIC hardware. The following figure shows the contrast between a regular software application and an MPI application that uses Cisco usNIC.

Figure 1: Kernel-Based Network Communication versus Cisco usNIC-Based Communication



Viewing and Configuring Cisco usNIC using the Cisco IMC GUI

Before you begin

You must log in to the Cisco IMC GUI with admin privileges to perform this task. Click Play on this video to watch how to configure Cisco usNIC in Cisco IMC.

Procedure

Step 1 Log into the Cisco IMC GUI.

For more information about how to log into Cisco IMC, see Cisco UCS C-Series Servers Integrated Management Controller GUI Configuration Guide.

Step 2 In the **Navigation** pane, click the **Networking** menu.

Step 3 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 4 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.

Step 5 In the **vNICs** pane, click **eth0** or **eth1**.

Step 6 In the **usNIC** area, review and update the following fields.

Name	Description
Name	The name for the vNIC that is the parent of the usNIC. **Note** This field is read-only.
usNIC field	The number of usNICs assigned to the specific vNIC. Enter an integer between 0 and 225. To assign additional usNICs to a specified vNIC, enter value higher than the existing value. To delete usNICs from a specified vNIC, enter value smaller than the existing value. To delete all the usNICs assigned to a vNIC, enter zero.
Transmit Queue Count field	The number of transmit queue resources to allocate. Enter an integer between 1 and 256.
Receive Queue Count field	The number of receive queue resources to allocate. Enter an integer between 1 and 256.
Completion Queue Count field	The number of completion queue resources to allocate. In general, the number of completion queue resources you should allocate is equal to the number of transmit queue resources plus the number of receive queue resources. Enter an integer between 1 and 512.

Name	Description
Transmit Queue Ring Size field	The number of descriptors in each transmit queue. Enter an integer between 64 and 4096.
Receive Queue Ring Size field	The number of descriptors in each receive queue. Enter an integer between 64 and 4096.
Interrupt Count field	The number of interrupt resources to allocate. In general, this value should be equal to the number of completion queue resources. Enter an integer between 1 and 514.
Interrupt Coalescing Type drop-down list	This can be one of the following: • **MIN**—The system waits for the time specified in the **Coalescing Time** field before sending another interrupt event. • **IDLE**—The system does not send an interrupt until there is a period of no activity lasting as least as long as the time specified in the **Coalescing Time** field.
Interrupt Coalescing Timer Time field	The time to wait between interrupts or the idle period that must be encountered before an interrupt is sent. Enter an integer between 1 and 65535. To turn off interrupt coalescing, enter 0 (zero) in this field.
Class of Service field	The class of service to associate with traffic from this usNIC. Select an integer between 0 and 6, with 0 being lowest priority and 6 being the highest priority. **Note** This option cannot be used in VNTAG mode.
TCP Segment Offload check box	If checked, the CPU sends large TCP packets to the hardware to be segmented. This option may reduce CPU overhead and increase throughput rate. If cleared, the CPU segments large packets. **Note** This option is also known as Large Send Offload (LSO).
Large Receive check box	If checked, the hardware reassembles all segmented packets before sending them to the CPU. This option may reduce CPU utilization and increase inbound throughput. If cleared, the CPU processes all large packets.

Name	Description
TCP Tx Checksum check box	If checked, the CPU sends all packets to the hardware so that the checksum can be calculated. This option may reduce CPU overhead. If cleared, the CPU calculates all packet checksums.
TCP Rx Checksum check box	If checked, the CPU sends all packet checksums to the hardware for validation. This option may reduce CPU overhead. If cleared, the CPU validates all packet checksums.

Step 7 Click **Save Changes**.

The changes take effect upon the next server reboot.

Viewing usNIC Properties

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to view.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **vNICs** tab.

Step 4 In the **vNICs** pane, click **eth0** or **eth1**.

Step 5 In the **Host Ethernet Interfaces** pane's **usNIC Properties** area, review the information in the following fields:

Name	Description
Name	The name for the vNIC that is the parent of the usNIC. **Note** This field is read-only.
usNIC field	The number of usNICs assigned to the specific vNIC. Enter an integer between 0 and 225. To assign additional usNICs to a specified vNIC, enter value higher than the existing value. To delete usNICs from a specified vNIC, enter value smaller than the existing value. To delete all the usNICs assigned to a vNIC, enter zero.
Transmit Queue Count field	The number of transmit queue resources to allocate. Enter an integer between 1 and 256.

Name	Description
Receive Queue Count field	The number of receive queue resources to allocate. Enter an integer between 1 and 256.
Completion Queue Count field	The number of completion queue resources to allocate. In general, the number of completion queue resources you should allocate is equal to the number of transmit queue resources plus the number of receive queue resources. Enter an integer between 1 and 512.
Transmit Queue Ring Size field	The number of descriptors in each transmit queue. Enter an integer between 64 and 4096.
Receive Queue Ring Size field	The number of descriptors in each receive queue. Enter an integer between 64 and 4096.
Interrupt Count field	The number of interrupt resources to allocate. In general, this value should be equal to the number of completion queue resources. Enter an integer between 1 and 514.
Interrupt Coalescing Type drop-down list	This can be one of the following: • **MIN**—The system waits for the time specified in the **Coalescing Time** field before sending another interrupt event. • **IDLE**—The system does not send an interrupt until there is a period of no activity lasting as least as long as the time specified in the **Coalescing Time** field.
Interrupt Coalescing Timer Time field	The time to wait between interrupts or the idle period that must be encountered before an interrupt is sent. Enter an integer between 1 and 65535. To turn off interrupt coalescing, enter 0 (zero) in this field.
Class of Service field	The class of service to associate with traffic from this usNIC. Select an integer between 0 and 6, with 0 being lowest priority and 6 being the highest priority. **Note** This option cannot be used in VNTAG mode.

Name	Description
TCP Segment Offload check box	If checked, the CPU sends large TCP packets to the hardware to be segmented. This option may reduce CPU overhead and increase throughput rate. If cleared, the CPU segments large packets. **Note** This option is also known as Large Send Offload (LSO).
Large Receive check box	If checked, the hardware reassembles all segmented packets before sending them to the CPU. This option may reduce CPU utilization and increase inbound throughput. If cleared, the CPU processes all large packets.
TCP Tx Checksum check box	If checked, the CPU sends all packets to the hardware so that the checksum can be calculated. This option may reduce CPU overhead. If cleared, the CPU calculates all packet checksums.
TCP Rx Checksum check box	If checked, the CPU sends all packet checksums to the hardware for validation. This option may reduce CPU overhead. If cleared, the CPU validates all packet checksums.

Backing Up and Restoring the Adapter Configuration

Exporting the Adapter Configuration

The adapter configuration can be exported as an XML file to a remote server which can be one of the following:

- TFTP
- FTP
- SFTP
- SCP
- HTTP

Before you begin

Obtain the remote server IP address.

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 In the **Adapter Card SIOC1 or Adapter Card SIOC2** pane, click the **General** tab.

Step 4 In the **Actions** area of the **General** tab, click **Export vNIC**.

The **Export vNIC** dialog box opens.

Step 5 In the **Export Adapter Configuration** dialog box, update the following fields:

Name	Description
Export To drop-down list	The remote server type. This can be one of the following: • **TFTP Server** • **FTP Server** • **SFTP Server** • **SCP Server** • **HTTP Server** **Note** If you chose SCP or SFTP as the remote server type while performing this action, a pop-up window is displayed with the message *Server (RSA) key fingerprint is <server_finger_print_ID> Do you wish to continue?*. Click Yes or No depending on the authenticity of the server fingerprint. The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.
IP Address or Host Name field	The IPv4 or IPv6 address, or hostname of the server to which the adapter configuration file will be exported. Depending on the setting in the **Export to** drop-down list, the name of the field may vary.
Path and Filename field	The path and filename Cisco IMC should use when exporting the file to the remote server.
Username	The username the system should use to log in to the remote server. This field does not apply if the protocol is TFTP or HTTP.
Password	The password for the remote server username. This field does not apply if the protocol is TFTP or HTTP.

Step 6 Click **Export vNIC**.

Importing the Adapter Configuration

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to modify.

Step 3 Select the **General** tab.

Step 4 In the **Actions** area of the **General** tab, click **Import vNIC**.

The **Import vNIC** dialog box is displayed.

Step 5 In the **Import vNIC** dialog box, update the following fields:

Name	Description
Import from drop-down list	The remote server type. This can be one of the following: • **TFTP Server** • **FTP Server** • **SFTP Server** • **SCP Server** • **HTTP Server** **Note** If you chose SCP or SFTP as the remote server type while performing this action, a pop-up window is displayed with the message *Server (RSA) key fingerprint is <server_finger_print_ID> Do you wish to continue?*. Click Yes or No depending on the authenticity of the server fingerprint. The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.
IP Address or Host Name field	The IPv4 or IPv6 address, or hostname of the server on which the adapter configuration file resides. Depending on the setting in the **Import from** drop-down list, the name of the field may vary.
Path and Filename field	The path and filename of the configuration file on the remote server.
Username	The username the system should use to log in to the remote server. This field does not apply if the protocol is TFTP or HTTP.
Password	The password for the remote server username. This field does not apply if the protocol is TFTP or HTTP.

Step 6 Click **Import vNIC**.

What to do next

Reboot the server to apply the imported configuration.

Restoring Adapter Defaults

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to restore to default settings.

Step 3 Select the **General** tab.

Step 4 In the **Actions** area of the **General** tab, click **Reset To Defaults** and click **OK** to confirm.

Resetting the Adapter

Procedure

Step 1 In the **Navigation** pane, click the **Networking** menu.

Step 2 In the **Networking** pane, select the Adapter Card SIOC1 or Adapter Card SIOC2 that you want to reset.

Step 3 Select the **General** tab.

Step 4 In the **Actions** area of the **General** tab, click **Reset** and click **OK** to confirm.

Note Resetting the adapter also resets the host.