Configuring Network-Related Policies

This chapter includes the following sections:

Configuring vNIC Templates

vNIC Template

This policy defines how a vNIC on a server connects to the LAN. This policy is also referred to as a vNIC LAN connectivity policy.

You need to include this policy in a service profile for it to take effect.

Configuring a vNIC Template

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name*.
Step 2	UCS-A /org # **create vnic-templ** *vnic-templ-name* [**eth-if** *vlan-name*] [**fabric** {**a** | **b**}] [**target** [**adapter** | **vm**]]	Creates a vNIC template and enters organization vNIC template mode.
Step 3	UCS-A /org/vnic-templ # **set descr** *description*	(Optional) Provides a description for the vNIC template.

	Command or Action	Purpose
Step 4	UCS-A /org/vnic-templ # **set fabric** {**a** | **b**}	(Optional) Specifies the fabric to use for the vNIC. If you did not specify the fabric when creating the vNIC template in Step 2, then you have the option to specify it with this command.
Step 5	UCS-A /org/vnic-templ # **set mac-pool** *mac-pool-name*	Specifies the MAC pool to use for the vNIC.
Step 6	UCS-A /org/vnic-templ # **set mtu** *mtu-value*	Specified the maximum transmission unit, or packet size, that the vNIC accepts.
Step 7	UCS-A /org/vnic-templ # **set nw-control-policy** *policy-name*	Specifies the network control policy to use for the vNIC.
Step 8	UCS-A /org/vnic-templ # **set pin-group** *group-name*	Specifies the LAN pin group to use for the vNIC.
Step 9	UCS-A /org/vnic-templ # **set qos-policy** *policy-name*	Specifies the QoS policy to use for the vNIC.
Step 10	UCS-A /org/vnic-templ # **set stats-policy** *policy-name*	Specifies the server and server component statistics threshold policy to use for the vNIC.
Step 11	UCS-A /org/vnic-templ # **set type** {**initial-template** | **updating-template**}	Specifies the vNIC template update type. If you do not want vNIC instances created from this template to be automatically updated when the template is updated, use the **initial-template** keyword; otherwise, use the **updating-template** keyword to ensure that all vNIC instance are updated when the vNIC template is updated.
Step 12	UCS-A /org/vnic-templ # **commit-buffer**	Commits the transaction to the system configuration.

The following example configures a vNIC template and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # create vnic template VnicTempFoo
UCS-A /org/vnic-templ* # set descr "This is a vNIC template example."
UCS-A /org/vnic-templ* # set fabric a
UCS-A /org/vnic-templ* # set mac-pool pool137
UCS-A /org/vnic-templ* # set mtu 8900
UCS-A /org/vnic-templ* # set nw-control-policy ncp5
UCS-A /org/vnic-templ* # set pin-group PinGroup54
UCS-A /org/vnic-templ* # set qos-policy QosPol5
UCS-A /org/vnic-templ* # set stats-policy ServStatsPolicy
UCS-A /org/vnic-templ* # set type updating-template
UCS-A /org/vnic-templ* # commit-buffer
UCS-A /org/vnic-templ #
```

Deleting a vNIC Template

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name*.
Step 2	UCS-A /org # **delete vnic-templ** *vnic-templ-name*	Deletes the specified vNIC template.
Step 3	UCS-A /org # **commit-buffer**	Commits the transaction to the system configuration.

The following example deletes the vNIC template named VnicTempFoo and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete vnic template VnicTempFoo
UCS-A /org* # commit-buffer
UCS-A /org #
```

Configuring Ethernet Adapter Policies

Ethernet and Fibre Channel Adapter Policies

These policies govern the host-side behavior of the adapter, including how the adapter handles traffic. For example, you can use these policies to change default settings for the following:

- Queues
- Interrupt handling
- Performance enhancement
- RSS hash
- Failover in an cluster configuration with two fabric interconnects

Note For Fibre Channel adapter policies, the values displayed by Cisco UCS Manager may not match those displayed by applications such as QLogic SANsurfer. For example, the following values may result in an apparent mismatch between SANsurfer and Cisco UCS Manager:

- Max LUNs Per Target—SANsurfer has a maximum of 256 LUNs and does not display more than that number. Cisco UCS Manager supports a higher maximum number of LUNs.
- Link Down Timeout—In SANsurfer, you configure the timeout threshold for link down in seconds. In Cisco UCS Manager, you configure this value in milliseconds. Therefore, a value of 5500 ms in Cisco UCS Manager displays as 5s in SANsurfer.
- Max Data Field Size—SANsurfer has allowed values of 512, 1024, and 2048. Cisco UCS Manager allows you to set values of any size. Therefore, a value of 900 in Cisco UCS Manager displays as 512 in SANsurfer.

Operating System Specific Adapter Policies

By default, Cisco UCS provides a set of Ethernet adapter policies and Fibre Channel adapter policies. These policies include the recommended settings for each supported server operating system. Operating systems are sensitive to the settings in these policies. Storage vendors typically require non-default adapter settings. You can find the details of these required settings on the support list provided by those vendors.

Important We recommend that you use the values in these policies for the applicable operating system. Do not modify any of the values in the default policies unless directed to do so by Cisco Technical Support.

However, if you are creating an Ethernet adapter policy for a Windows OS (instead of using the default Windows adapter policy), you must use the following formulas to calculate values that work with Windows:

Completion Queues = Transmit Queues + Receive Queues
Interrupt Count = (Completion Queues + 2) rounded up to nearest power of 2

For example, if Transmit Queues = 1 and Receive Queues = 8 then:

Completion Queues = 1 + 8 = 9
Interrupt Count = (9 + 2) rounded up to the nearest power of 2 = 16

Configuring an Ethernet Adapter Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name*.

	Command or Action	Purpose
Step 2	UCS-A /org # **create eth-policy** *policy-name*	Creates the specified Ethernet adapter policy and enters organization Ethernet policy mode.
Step 3	UCS-A /org/eth-policy # **set comp-queue count** *count*	(Optional) Configures the Ethernet completion queue.
Step 4	UCS-A /org/eth-policy # **set descr** *description*	(Optional) Provides a description for the policy. **Note** If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any **show** command output.
Step 5	UCS-A /org/eth-policy # **set failover timeout** *timeout-sec*	(Optional) Configures the Ethernet failover.
Step 6	UCS-A /org/eth-policy # **set interrupt** {**coalescing-time** *sec* | **coalescing-type** {**idle** | **min**} | **count** *count* | **mode** {**intx** | **msi** | **msi-x**}}	(Optional) Configures the Ethernet interrupt.
Step 7	UCS-A /org/eth-policy # **set offload** {**large-receive** | **tcp-rx-checksum** | **tcp-segment** | **tcp-tx-checksum**} {**disabled** | **enabled**}	(Optional) Configures the Ethernet offload.
Step 8	UCS-A /org/eth-policy # **set recv-queue** {**count** *count* | **ring-size** *size-num*}	(Optional) Configures the Ethernet receive queue.
Step 9	UCS-A /org/eth-policy # **set rss receivesidescaling** {**disabled** | **enabled**}	(Optional) Configures the RSS.
Step 10	UCS-A /org/eth-policy # **set trans-queue** {**count** *count* | **ring-size** *size-num*}	(Optional) Configures the Ethernet transmit queue.
Step 11	UCS-A /org/eth-policy # **commit-buffer**	Commits the transaction to the system configuration.

The following example configures an Ethernet adapter policy, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # create eth-policy EthPolicy19
UCS-A /org/eth-policy* # set comp-queue count 16
UCS-A /org/eth-policy* # set descr "This is an Ethernet adapter policy example."
UCS-A /org/eth-policy* # set failover timeout 300
UCS-A /org/eth-policy* # set interrupt count 64
UCS-A /org/eth-policy* # set offload large-receive disabled
UCS-A /org/eth-policy* # set recv-queue count 32
UCS-A /org/eth-policy* # set rss receivesidescaling enabled
UCS-A /org/eth-policy* # set trans-queue
UCS-A /org/eth-policy* # commit-buffer
UCS-A /org/eth-policy #
```

Deleting an Ethernet Adapter Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org** *org-name*	Enters organization mode for the specified organization. To enter the root organization mode, type / as the *org-name*.
Step 2	UCS-A /org # **delete eth-policy** *policy-name*	Deletes the specified Ethernet adapter policy.
Step 3	UCS-A /org # **commit-buffer**	Commits the transaction to the system configuration.

The following example deletes the Ethernet adapter policy named EthPolicy19 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete eth-policy EthPolicy19
UCS-A /org* # commit-buffer
UCS-A /org #
```

Configuring Network Control Policies

Network Control Policy

This policy configures the network control settings for the Cisco UCS instance, including the following:

- Whether the Cisco Discovery Protocol (CDP) is enabled or disabled
- How the VIF behaves if no uplink port is available in end-host mode
- Whether the server can use different MAC addresses when sending packets to the fabric interconnect

Configuring a Network Control Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org /**	Enters the root organization mode.
Step 2	UCS-A /org # **create nwctrl-policy** *policy-name*	Creates the specified network control policy, and enters organization network control policy mode.
Step 3	UCS-A /org/nwctrl-policy # {**disable** | **enable**} **cdp**	Disables or enables Cisco Discovery Protocol (CDP).

	Command or Action	Purpose
Step 4	UCS-A /org/nwctrl-policy # **set uplink-fail-action** {**link-down** | **warning**}	Specifies the action to be taken when no uplink port is available in end-host mode. Use the **link-down** keyword to change the operational state of a vNIC to down when uplink connectivity is lost on the fabric interconnect, and facilitate fabric failover for vNICs. Use the **warning** keyword to maintain server-to-server connectivity even when no uplink port is available, and disable fabric failover when uplink connectivity is lost on the fabric interconnect. The default uplink failure action is link-down.
Step 5	UCS-A /org/nwctrl-policy # {**create mac-security**	Enters organization network control policy MAC security mode
Step 6	UCS-A /org/nwctrl-policy/mac-security # {**set forged-transmit** {**allow** | **deny**}	Allows or denies the forging of MAC addresses when sending traffic. MAC security is disabled when forged MAC addresses are allowed, and MAC security is enabled when forged MAC addresses are denied. By default, forged MAC addresses are allowed (MAC security is disabled).
Step 7	UCS-A /org/nwctrl-policy/mac-security # **commit-buffer**	Commits the transaction to the system configuration.

The following example creates a network control policy named ncp5, enables CDP, sets the uplink fail action to link-down, denies forged MAC addresses (enables MAC security), and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create nwctrl-policy ncp5
UCS-A /org/nwctrl-policy* # enable cdp
UCS-A /org/nwctrl-policy* # set uplink-fail-action link-down
UCS-A /org/nwctrl-policy* # create mac-security
UCS-A /org/nwctrl-policy/mac-security* # set forged-transmit deny
UCS-A /org/nwctrl-policy/mac-security* # commit-buffer
UCS-A /org/nwctrl-policy/mac-security #
```

Deleting a Network Control Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org /**	Enters the root organization mode.
Step 2	UCS-A /org # **delete nwctrl-policy** *policy-name*	Deletes the specified network control policy.
Step 3	UCS-A /org # **commit-buffer**	Commits the transaction to the system configuration.

The following example deletes the network control policy named ncp5 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete nwctrl-policy ncp5
UCS-A /org* # commit-buffer
UCS-A /org #
```