



# Configuring Policies

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This chapter includes the following sections:

- [Configuring Dynamic vNIC Connection Policies, page 1](#)
- [Creating a Custom Adapter Policy for SR-IOV, page 5](#)

## Configuring Dynamic vNIC Connection Policies

### Dynamic vNIC Connection Policy



**Note**

In an SR-IOV topology, such as a Hyper-V or KVM cluster, a Virtual Function (VF) takes the place of the dynamic vNIC. The VF is essentially a restricted version of the dynamic vNIC, in which all system communication and configuration of the VF is performed through the associated physical function (PF).

The dynamic vNIC connection policy determines how the connectivity between VMs and dynamic vNICs is configured. This policy is required for Cisco UCS domains that include servers with VIC adapters on which you have installed VMs and configured dynamic vNICs.

#### **Ethernet Adapter Policy**

Each dynamic vNIC connection policy includes an Ethernet adapter policy and designates the number of vNICs that can be configured for any server associated with a service profile that includes the policy.

For Hyper-V, use the predefined Ethernet adapter policy named Windows.

## Server Migration



**Note** If you migrate a server that is configured with dynamic vNICs, the dynamic interface used by the vNICs fails and notifies you of that failure.

When the server comes back up, assigns new dynamic vNICs to the server. If you are monitoring traffic on the dynamic vNIC, you must reconfigure the monitoring source.

## Creating a Dynamic vNIC Connection Policy

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	UCS-A# <b>scope org</b> <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, enter / as the <i>org-name</i> .
<b>Step 2</b>	UCS-A /org # <b>create dynamic-vnic-conn-policy</b> <i>policy-name</i>	<p>Creates the specified vNIC connection policy and enters organization vNIC connection policy mode.</p> <p>This name can be between 1 and 32 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), : (colon), and . (period), and you cannot change this name after the object is saved.</p> <p><b>Note</b> Do not specify "default" as the value for the dynamic vNIC connection policy name. Cisco UCS Manager automatically resolves any empty policy references to "default". Any service profiles or service profile templates with only static vNICs defined will automatically reference the policy "default" when it is present. If you specify "default" for the dynamic vNIC connection policy name, then unexpected dynamic vNICs might be created on those service profiles or service profile templates.</p>
<b>Step 3</b>	UCS-A /org/dynamic-vnic-conn-policy # <b>set desc</b> <i>description</i>	<p>(Optional)</p> <p>Provides a description for the policy.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p> <p>If your description includes spaces or nonalphanumeric characters, you must begin and end your description with double quotation marks. The quotation marks do not appear in the description field of any <b>show</b> command output.</p>
<b>Step 4</b>	UCS-A /org/dynamic-vnic-conn-policy # <b>set adapter-policy</b> <i>policy-name</i>	Specifies the Ethernet adapter policy to use for this policy. The adapter policy must already exist.

	Command or Action	Purpose
<b>Step 5</b>	UCS-A /org/dynamic-vnic-conn-policy # <b>set dynamic-eth</b> { <i>dynamic-eth-num</i>   <b>off</b> }	Specifies the number of dynamic vNICs to use for this policy. Enter an integer between 0 and 256. The default is 54. <b>Note</b> Components of your system may limit this number to fewer than 256 vNICs.
<b>Step 6</b>	UCS-A /org/dynamic-vnic-conn-policy # <b>set protection</b> { <b>protected</b>   <b>protected-pref-a</b>   <b>protected-pref-b</b> }	Dynamic vNICs are always protected in Cisco UCS, but this command allows you to select a preferred fabric, if any. You can choose one of the following options: <ul style="list-style-type: none"> <li>• <b>protected</b>—Cisco UCS uses whichever fabric is available.</li> <li>• <b>protected-pref-a</b>—Cisco UCS attempts to use fabric A, but fails over to fabric B if necessary.</li> <li>• <b>protected-pref-b</b>—Cisco UCS attempts to use fabric B, but fails over to fabric A if necessary.</li> </ul>
<b>Step 7</b>	UCS-A /org/dynamic-vnic-conn-policy # <b>commit-buffer</b>	Commits the transaction.

The following example shows how to create a dynamic vNIC connection policy named MyDynVnicConnPolicy that uses the system-provided Ethernet adapter policy for 12 dynamic vNICs and commit the transaction:

```
UCS-A# scope org /
UCS-A /org # create dynamic-vnic-conn-policy MyDynVnicConnPolicy
UCS-A /org/dynamic-vnic-conn-policy* # set adapter-policy
UCS-A /org/dynamic-vnic-conn-policy* # set desc "Dynamic vNIC for Eth policy"
UCS-A /org/dynamic-vnic-conn-policy* # set dynamic-eth 12
UCS-A /org/dynamic-vnic-conn-policy* # commit-buffer
UCS-A /org/dynamic-vnic-conn-policy #
```

## Deleting a Dynamic vNIC Connection Policy

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	UCS-A# <b>scope org</b> <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, enter / as the <i>org-name</i> .
<b>Step 2</b>	UCS-A /org # <b>delete</b> <b>dynamic-vnic-conn-policy</b> <i>policy-name</i>	Deletes the specified vNIC connection policy.
<b>Step 3</b>	UCS-A /org # <b>commit-buffer</b>	Commits the transaction.

The following example shows how to delete the dynamic vNIC connection policy named MyDynVnicConnPolicy and commit the transaction:

```
UCS-A# scope org /
UCS-A /org # delete dynamic-vnic-conn-policy MyDynVnicConnPolicy
UCS-A /org* # commit-buffer
UCS-A /org #
```

## Viewing Dynamic vNIC Properties in a VM

### Before You Begin

The VM must be operational.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	UCS-A# <b>scope system</b>	Enters system mode.
<b>Step 2</b>	UCS-A /system # <b>scope vm-mgmt</b>	Enters VM management mode.
<b>Step 3</b>	UCS-A /system/vm-mgmt # <b>show virtual-machine</b>	(Optional) Displays the running virtual machines.
<b>Step 4</b>	UCS-A /system/vm-mgmt # <b>scope virtual-machine uuid</b>	Enters command mode for the virtual machine that contains the dynamic vNIC.
<b>Step 5</b>	UCS-A /system/vm-mgmt/virtual-machine # <b>show vnic [detail]</b>	Displays the vNIC properties.

The following example shows how to display the properties of a dynamic vNIC in a VM:

```
UCS-A# scope system
UCS-A /system # scope vm-mgmt

UCS-A /system/vm-mgmt # show virtual-machine
Virtual Machine:
  UUID: 420a00c8-934b-4ae3-6af5-2ce9b8bd0f44
  Service Profile: org-root/ls-PTS-ch6-7
  Server: sys/chassis-6/blade-7
  Status: Online
.
.
.
UCS-A /system/vm-mgmt # scope virtual-machine 420a08b0-cda7-9e0a-424f-01ec8653eea0
UCS-A /system/vm-mgmt/virtual-machine # show vnic detail

vNIC:
  Name: 4479
  Status: Online
  MAC Address: 00:50:56:8A:07:B5
  Profile Name: VM-mgmt
  Virtual Adapter: sys/chassis-1/blade-1/adapter-1/host-eth-9
  Vnic Dn: org-root/ls-PTS-ch1-1/ether-dynamic-prot-009
  Current Task:

UCS-A /system/vm-mgmt/virtual-machine #
```

## Creating a Custom Adapter Policy for SR-IOV

The predefined **SRIOV** Ethernet adapter policy supports up to 32 CPU threads. If the server has more than 32 CPU threads, you must follow this procedure to create and specify a custom adapter policy that supports a number of interrupts equal to the number of CPU threads.

For more information about creating an adapter policy, see "Configuring Ethernet Adapter Policies" in the *Cisco UCS Manager CLI Configuration Guide*.

### Before You Begin

Determine the number of CPU threads used by your server using the **show server cpu chassis/blade detail** command.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	UCS-A# <b>scope org</b> <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type <i>/</i> as the <i>org-name</i> .
<b>Step 2</b>	UCS-A /org # <b>create eth-policy</b> <i>name</i>	Creates an Ethernet adapter policy and enters organization Ethernet policy mode.  This name can be between 1 and 16 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen) and _ (underscore), and you cannot change this name after the object has been saved.
<b>Step 3</b>	UCS-A /org/eth-policy # <b>set descr</b> <i>description</i>	(Optional) Provides a description for the policy.  <b>Note</b> 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 <b>show</b> command output.
<b>Step 4</b>	UCS-A /org/eth-policy # <b>set trans-queue count</b> <i>1</i>	Configures the Ethernet transmit queue.
<b>Step 5</b>	UCS-A /org/eth-policy # <b>set trans-queue ring-size</b> <i>256</i>	
<b>Step 6</b>	UCS-A /org/eth-policy # <b>set recv-queue count</b> <i>4</i>	Configures the Ethernet receive queue.
<b>Step 7</b>	UCS-A /org/eth-policy # <b>set recv-queue ring-size</b> <i>512</i>	

	Command or Action	Purpose
Step 8	UCS-A /org/eth-policy # <b>set comp-queue count 5</b>	Configures the Ethernet completion queue.
Step 9	UCS-A /org/eth-policy # <b>set interrupt coalescing-time 125</b>	
Step 10	UCS-A /org/eth-policy # <b>set interrupt coalescing-type min</b>	
Step 11	UCS-A /org/eth-policy # <b>set interrupt count interrupt-count</b>	Set <i>interrupt-count</i> equal to the number of CPU threads used by the server.
Step 12	UCS-A /org/eth-policy # <b>set interrupt mode msi-x</b>	
Step 13	UCS-A /org/eth-policy # <b>set offload large-receive enabled</b>	
Step 14	UCS-A /org/eth-policy # <b>set offload tcp-rx-checksum enabled</b>	
Step 15	UCS-A /org/eth-policy # <b>set offload tcp-segment enabled</b>	
Step 16	UCS-A /org/eth-policy # <b>set offload tcp-tx-checksum enabled</b>	
Step 17	UCS-A /org/eth-policy # <b>set rss receivesidescaling enabled</b>	
Step 18	UCS-A /org/eth-policy # <b>commit-buffer</b>	Commits the transaction to the system configuration.

The following example configures a custom Ethernet adapter policy for SR-IOV with 40 threads and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create eth-policy SRIOV
UCS-A /org/eth-policy* # set descr "This is an Ethernet adapter policy for SR-IOV."
UCS-A /org/eth-policy* # set trans-queue count 1
UCS-A /org/eth-policy* # set trans-queue ring-size 256
UCS-A /org/eth-policy* # set recv-queue count 4
UCS-A /org/eth-policy* # set recv-queue ring-size 512
UCS-A /org/eth-policy* # set comp-queue count 5
UCS-A /org/eth-policy* # set interrupt coalescing-time 125
UCS-A /org/eth-policy* # set interrupt coalescing-type min
UCS-A /org/eth-policy* # set interrupt count 40
UCS-A /org/eth-policy* # set interrupt mode msi-x
UCS-A /org/eth-policy* # set offload large-receive enabled
UCS-A /org/eth-policy* # set offload tcp-rx-checksum enabled
UCS-A /org/eth-policy* # set offload tcp-segment enabled
UCS-A /org/eth-policy* # set offload tcp-tx-checksum enabled
UCS-A /org/eth-policy* # set rss receivesidescaling enabled
UCS-A /org/eth-policy* # commit-buffer
UCS-A /org/eth-policy #
```