Configuring UCS Components for VM-FEX

This chapter includes the following sections:

Creating a Dynamic vNIC Connection Policy for VM-FEX for Hyper-V

The vNICs created by this procedure become VFs when they are associated with an SR-IOV PF in a service profile. The maximum number of VFs that you can create depends on the number of adapters and the number of configured PFs and vHBAs, according to the following formula:

Number of dynamic vNICs = (116 * number of adapters) - number of PFs - number of vHBAs

Before You Begin

For more information on dynamic vNIC connection policies, see Configuring Policies.

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, enter / as the *org-name* .
Step 2	UCS-A /org # **create dynamic-vnic-conn-policy** *policy-name*	Creates the specified vNIC connection policy and enters organization vNIC connection policy mode. The *policy-name* can be between 1 and 32 alphanumeric characters. You cannot use spaces or any special characters other than -

	Command or Action	Purpose
		(hyphen) or _ (underscore), and you cannot change this name after the object has been saved.
		Note 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.
Step 3	UCS-A /org/dynamic-vnic-conn-policy # **set desc** *description*	(Optional) Provides a description for the policy. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote). 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 **show** command output.
Step 4	UCS-A /org/dynamic-vnic-conn-policy # **set adapter-policy** *policy-name*	Specifies the Ethernet adapter policy to use for this policy. The adapter policy must already exist. For Hyper-V, specify the predefined **Windows** adapter policy.
Step 5	UCS-A /org/dynamic-vnic-conn-policy # **set dynamic-eth** {*dynamic-eth-num* | **off**}	Specifies the number of dynamic vNICs to use for this policy. Enter an integer between 0 and the maximum number as determined by the following formula: Number of dynamic vNICs = (116 * number of adapters) - number of PFs - number of vHBAs
Step 6	UCS-A /org/dynamic-vnic-conn-policy # **set protection** {**protected** | **protected-pref-a** | **protected-pref-b**}	(Optional) 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: • **protected**—Cisco UCS uses whichever fabric is available. • **protected-pref-a**—Cisco UCS attempts to use fabric A, but fails over to fabric B if necessary. • **protected-pref-b**—Cisco UCS attempts to use fabric B, but fails over to fabric A if necessary.
Step 7	UCS-A /org/dynamic-vnic-conn-policy # **commit-buffer**	Commits the transaction.

The following example shows how to create a dynamic vNIC connection policy named MyDynVnicConnPolicy that uses the predefined Windows adapter policy for 21 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 Windows
UCS-A /org/dynamic-vnic-conn-policy* # set desc "Dynamic vNIC for Eth policy"
UCS-A /org/dynamic-vnic-conn-policy* # set dynamic-eth 21
UCS-A /org/dynamic-vnic-conn-policy* # commit-buffer
UCS-A /org/dynamic-vnic-conn-policy #
```

Configuring a Service Profile for VM-FEX for Hyper-V

Creating a Service Profile for VM-FEX for Hyper-V

The service profile created by this procedure configures the BIOS settings required for Hyper-V.

Before You Begin

For more information on configuring service profiles, see the *Cisco UCS Manager CLI Configuration Guide*.

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 service-profile** *profile-name* **instance**	Creates the specified service profile instance and enters organization service profile mode.
		Enter a unique *profile-name* to identify this service profile.
		This name can be between 2 and 32 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), : (colon), and . (period), and this name must be unique across all service profiles and service profile templates within the same organization.
Step 3	UCS-A /org/service-profile # **set bios-policy SRIOV**	The predefined **SRIOV** BIOS policy configures the required BIOS settings for Hyper-V.
Step 4	Configure other desired profile settings, but do not configure a dynamic vNIC connection policy.	

The following example shows how to create a service profile instance and commit the transaction:

```
UCS-A# scope org /
UCS-A /org # create service-profile SPHyperV instance
UCS-A /org/service-profile* # set bios-policy SRIOV
UCS-A /org/service-profile* # commit-buffer
UCS-A /org/service-profile #
```

What to Do Next

- Create PF vNIC for the service profile.

- Associate the service profile with a server.

Creating the PF Interface

This procedure creates the SR-IOV PF interface.

Before You Begin

For more information on configuring service profiles, see the *Cisco UCS Manager CLI Configuration Guide*.

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 # **scope service-profile** *profile-name*	Enters organization service profile mode for the specified service.
Step 3	UCS-A /org/service-profile # **create vnic** *vnic-name* **fabric a**	Creates a vNIC for the service profile and enters organization service profile vNIC mode.
Step 4	UCS-A /org/service-profile/vnic # **set adapter-policy SRIOV**	Specifies the **SRIOV** adapter policy to use for the vNIC.
		Note The predefined **SRIOV** adapter policy supports up to 32 CPU threads. If the server has more than 32 CPU threads, you must create and specify a custom adapter policy that supports a number of interrupts equal to the number of CPU threads. Follow the instructions in Creating a Custom Adapter Policy for SR-IOV.
Step 5	UCS-A /org/service-profile/vnic # **create dynamic-conn-policy-ref** *dynamic-conn-policy-name*	Specify the dynamic vNIC connection policy that you created using the predefined **Windows** adapter policy.
Step 6	Configure other desired profile settings.	
Step 7	UCS-A /org/service-profile/vnic # **exit**	Returns to service-profile mode.

	Command or Action	Purpose
Step 8	UCS-A /org/service-profile # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to create a PF interface and commit the transaction:

```
UCS-A# scope org /
UCS-A /org # scope service-profile SPHyperV
UCS-A /org/service-profile # create vnic vnicPF0 fabric a
UCS-A /org/service-profile/vnic* # set adapter-policy SRIOV
UCS-A /org/service-profile/vnic* # create dynamic-conn-policy-ref MyDynVnicConnPolicy
UCS-A /org/service-profile/vnic* # exit
UCS-A /org/service-profile* # commit-buffer
UCS-A /org/service-profile #
```

Associating the Service Profile with a Server

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 # **scope service-profile** *profile-name*	Enters organization service profile mode for the service profile.
Step 3	UCS-A /org/service-profile # **associate** {**server** *chassis-id* / *slot-id*}	Associates the service profile with a server.
Step 4	UCS-A /org/service-profile # **commit-buffer**	Commits the transaction to the system configuration.

The following example associates the service profile named SPHyperV with the server in slot 4 of chassis 1 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # scope service-profile SPHyperV
UCS-A /org/service-profile* # associate server 1/4
UCS-A /org/service-profile* # commit-buffer
UCS-A /org/service-profile #
```

Creating a Port Profile for VM-FEX for Hyper-V

Note   In a VM-FEX for Hyper-V system, the following conditions apply:

- The **set max-ports** command applies to the cluster; there is no distributed virtual switch (DVS).

- The **set host-nwio-perf** command has no effect.

Before You Begin

For general information about port profiles and profile clients, see Configuring Port Profiles.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope system**	Enters system mode.
Step 2	UCS-A /system # **scope vm-mgmt**	Enters system VM management mode.
Step 3	UCS-A /system/vm-mgmt # **scope profile-set**	Enters system VM management profile set mode.
Step 4	UCS-A /system/vm-mgmt/profile-set # **create port-profile** *profile-name*	Creates the specified port profile and enters system VM management profile set port profile 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.
Step 5	UCS-A /system/vm-mgmt/profile-set/port-profile # **set descr** *description*	(Optional) Provides a description for the port profile. **Note** If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks do not appear in the description field of any **show** command output.
Step 6	UCS-A /system/vm-mgmt/profile-set/port-profile # **create vlan** *vlan-name*	Specifies a VLAN to use for the port profile.
Step 7	UCS-A /system/vm-mgmt/profile-set/port-profile/vlan # **set default-net yes**	Sets the VLAN as the default network.

	Command or Action	Purpose
Step 8	UCS-A /system/vm-mgmt/profile-set/port-profile/vlan # **exit**	Returns to port profile mode.
Step 9	Configure any other desired settings.	Detailed information about port profile configuration can be found in Configuring Port Profiles. In many cases, the default settings are sufficient.
Step 10	UCS-A /system/vm-mgmt/profile-set/port-profile # **commit-buffer**	Commits the transaction.

The following example shows how to create and configure a port profile named MyProfile and commit the transaction:

```
UCS-A# scope system
UCS-A /system # scope vm-mgmt
UCS-A /system/vm-mgmt # scope profile-set
UCS-A /system/vm-mgmt/profile-set # create port-profile MyProfile
UCS-A /system/vm-mgmt/profile-set/port-profile* # set descr "This is my port profile"
UCS-A /system/vm-mgmt/profile-set/port-profile* # create vlan vlan701
UCS-A /system/vm-mgmt/profile-set/port-profile/vlan* # set default-net yes
UCS-A /system/vm-mgmt/profile-set/port-profile/vlan* # exit
UCS-A /system/vm-mgmt/profile-set/port-profile* # commit-buffer
UCS-A /system/vm-mgmt/profile-set/port-profile #
```

What to Do Next

Create a cluster and a profile client.

Creating a Cluster

We recommend that you create one or more dedicated clusters for Hyper-V instead of using the default cluster automatically created by Cisco UCS Manager.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope system**	Enters system mode.
Step 2	UCS-A /system # **scope vm-mgmt**	Enters system VM management mode.
Step 3	UCS-A /system/vm-mgmt # **scope cluster-set**	Enters system VM management cluster set mode.
Step 4	UCS-A /system/vm-mgmt/cluster-set # **create cluster** *cluster-name*	Creates the specified port cluster and enters cluster mode. The cluster name can be between 1 and 16 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen)

	Command or Action	Purpose
		and _ (underscore), and you cannot change the name after the cluster has been saved.
Step 5	UCS-A /system/vm-mgmt/cluster-set/cluster # **set id** *cluster-id*	Creates a unique identifier for the cluster. The *cluster-id* must contain exactly 34 hexadecimal (0-9 and a-f) characters and 4 dashes (-) in the following format: XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXXXXXX. For example: 01234567-0123-4567-89ab-0123456789abcd.
Step 6	UCS-A /system/vm-mgmt/cluster-set/cluster # **commit-buffer**	Commits the transaction.

The following example shows how to create a cluster and commit the transaction:

```
UCS-A# scope system
UCS-A /system # scope vm-mgmt
UCS-A /system/vm-mgmt # scope cluster-set
UCS-A /system/vm-mgmt/cluster-set # create cluster MyCluster
UCS-A /system/vm-mgmt/cluster-set/cluster* # set cluster-id
87654321-0123-4567-abcd-0123456789abcdef
UCS-A /system/vm-mgmt/cluster-set/cluster* # commit-buffer
UCS-A /system/vm-mgmt/cluster-set/cluster #
```

Creating a Profile Client for VM-FEX for Hyper-V

In a Hyper-V system, the profile client determines the cluster to which the port profile is applied.

For more information about profile clients, see Port Profile Clients.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope system**	Enters system mode.
Step 2	UCS-A /system # **scope vm-mgmt**	Enters system VM management mode.
Step 3	UCS-A /system/vm-mgmt # **scope profile-set**	Enters system VM management profile set mode.
Step 4	UCS-A /system/vm-mgmt/profile-set # **scope port-profile** *profile-name*	Enters system VM management profile set port profile mode for the specified port profile.
Step 5	UCS-A /system/vm-mgmt/profile-set/port-profile # **create client** *client-name*	Creates the specified port profile client and enters system VM management profile set port profile client mode. This name can be between 1 and 16 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen) and _

	Command or Action	Purpose
		(underscore), and you cannot change this name after the object has been saved.
Step 6	UCS-A /system/vm-mgmt/profile-set/port-profile/client # **set descr** *description*	(Optional) Provides a description for the port profile client. **Note** If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks do not appear in the description field of any **show** command output.
Step 7	UCS-A /system/vm-mgmt/profile-set/port-profile/client # **set cluster** *cluster-name*	Specifies the cluster to which the port profile is applied.
Step 8	UCS-A /system/vm-mgmt/profile-set/port-profile/client # **commit-buffer**	Commits the transaction.

The following example shows how to create a port profile client named MyClient that applies the port profile to the cluster named MyCluster and commit the transaction:

```
UCS-A# scope system
UCS-A /system # scope vm-mgmt
UCS-A /system/vm-mgmt # scope profile-set
UCS-A /system/vm-mgmt/profile-set # scope port-profile MyProfile
UCS-A /system/vm-mgmt/profile-set/port-profile* # create client MyClient
UCS-A /system/vm-mgmt/profile-set/port-profile/client* # set descr "This is the client for
 my port profile"
UCS-A /system/vm-mgmt/profile-set/port-profile/client* # set cluster MyCluster
UCS-A /system/vm-mgmt/profile-set/port-profile/client* # commit-buffer
UCS-A /system/vm-mgmt/profile-set/port-profile/client #
```