Creating Port Profiles

This chapter contains the following sections:

Information About Port Profiles

Information About Port Profile States

The following table describes port profile behavior.

State	Behavior
Disabled (the default)	When disabled, a port profile behaves as follows: • Its configuration is not applied to assigned ports. • If exporting policies to a VMware port group, the port group is not created on the vCenter Server.

State	Behavior
Enabled	When enabled, a port profile behaves as follows: • Its configuration is applied to assigned ports. • If configured with the VMware port-group attribute, the port group is created on the vCenter Server.

Information About vEthernet Port Binding

You can configure either static, dynamic, or ephemeral port binding for vEthernet port profiles. The following table shows how this setting controls how ports are assigned in the VMware port group.

Type	Behavior
Static (the default)	A DVPortID is assigned from the port group pool when you first assign the port group to the port. The DVPortID persists for the life of the network adapter. The port group has a fixed number of ports.
Dynamic	A DVPortID is assigned to a virtual machine only when the virtual machine is powered on and its NIC is in a connected state. The DVPortID is freed when the virtual machine is powered off or the virtual machine's NIC is disconnected. Virtual machines connected to a port group configured with dynamic binding must be powered on and off through the VMware vCenter Server. Dynamic binding can be used in environments where you have more virtual machines than available ports, but do not plan to have a greater number of virtual machines active than you have available ports. For example, if you have 300 virtual machines and 100 ports, but will never have more than 90 virtual machines active at one time, then dynamic binding would be appropriate for your port group.
Ephemeral	A new DVPortID is assigned to the port every time the VM is powered on. The port keeps this same DVPortID while the VM is up. All available DVS ports are shared. Ports are not allocated from the port group pool. **Note** If a system administrator changes the port profile assignment for an interface, any manual configuration on the interface is purged if either port profile is configured with ephemeral port binding. This purging of manual configurations occurs regardless of your auto purge setting.

Guidelines and Limitations for Creating Port Profiles

- Once a port profile is created as either an Ethernet or vEthernet type, you cannot change the type.
- In an installation where multiple Ethernet port profiles are active on the same VEM, it is recommended that they do not carry the same VLAN(s). The allowed VLAN list should be mutually exclusive.

Overlapping VLANs can be configured but may cause duplicate packets to be received by virtual machines in the network.

- To maintain consistency between the port profile definition and what is applied to an interface, if a port profile modification is rejected by any port, the modification is rejected by the port profile too.
- If you create a port profile with a command error, for example a private VLAN mapping error or service policy map error, then an attempt to apply this port profile to an interface shuts down the interface. The error is not copied to the interface and a system message is generated with details of the error. In this case, you must correct the error in the port profile. Then return the interface to service and apply the corrected port profile using the following command sequence:

1. **no shutdown**
2. **default shutdown**

For more information, see the *Cisco Nexus 1000V Troubleshooting Guide*.

- MTU can only be configured for uplink, Ethernet type port profiles.
- If you configure MTU for an Ethernet port profile, your ESX host may generate the following error:

  ```
  2010 Nov 15 04:35:27 my-n1k %VEM_MGR-SLOT3-1-VEM_SYSLOG_ALERT: vssnet :
  sf_platform_set_mtu: Failed setting MTU for VMW port with portID 33554475.
  ```

  In this case, the MTU value you have set is not supported by the VEM physical NIC. See your VMware documentation for more information about supported MTU for PNIC.
- Before configuring a port profile, the Cisco Nexus 1000V software must be initially configured. For information, see the *Cisco Nexus 1000V Installation and Upgrade Guide*.
- The Cisco Nexus 1000V must be connected to the VMware vCenter Server.

Default Settings

The following table lists the default settings in the port profile configuration.

Parameter	Default
capability l3control	No
description	-
administrative state	all ports disabled
switchport mode (**access** or **trunk**)	**access**
system vlan *vlan_list*	-
type	**vethernet**
access port vlan	VLAN 1
max-ports	32

Parameter	Default
min-ports	32
vmware port-group *name*	Port profile name
vEthernet port-bindings	Static

Configuring Port Profiles

Creating a Port Profile

Before You Begin

- You are logged in to the CLI in EXEC mode.
- You know whether the ports need to be initialized with system settings.
- You have identified the characteristics needed for this port profile.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*
3. (Optional) switch(config-port-prof)# **description** *profile_description*
4. (Optional) switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [*name profile-name*]
5. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*	Enters port profile configuration mode for the named port profile. If the port profile does not already exist, it is created using the following characteristics: • *name*—The port profile name can be up to 80 characters and must be unique for each port profile on the Cisco Nexus 1000V. • **type**—(Optional) The port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type. Defining a port profile type as Ethernet allows the port profile to be used for physical (Ethernet) ports. In the vCenter Server, the

	Command or Action	Purpose
		corresponding port group can be selected and assigned to physical ports (PNICs). **Note** If a port profile is configured as an Ethernet type, then it cannot be used to configure VMware virtual ports.
Step 3	switch(config-port-prof)# **description** *profile_description*	(Optional) Adds a description of up to 80 ASCII characters in length to the port profile. This description is automatically pushed to vCenter Server.
Step 4	switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [*name profile-name*]	(Optional) Displays the configuration for verification.
Step 5	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to create a new port profile:

```
switch(config)# port-profile type ethernet AllAccess1
switch(config-port-prof)# description all_access
switch(config-port-prof)# show port-profile name AllAccess1
port-profile AllAccess1
  description: all_access
  type: ethernet
  status: disabled
  capability l3control: no
  pinning control-vlan: -
  pinning packet-vlan: -
  system vlans: none
  port-group:
  max ports: -
  inherit:
  config attributes:
  evaluated config attributes:
  assigned interfaces:
switch(config-port-prof)#
```

Configuring VMware Attributes

Before You Begin

- You are logged in to the CLI in EXEC mode.
- You know if you will configure the VMware port group with the same name as the port profile or if you will specify an alternate name for the VMware port group.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*
3. switch(config-port-prof)# **vmware port-group** [*pg_name*]
4. switch(config-port-prof)# **max-ports** *num*
5. (Optional) switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]
6. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*	Enters port profile configuration mode for the named port profile. If the port profile does not already exist, it is created using the following characteristics: • *name*—The port profile name can be up to 80 characters and must be unique for each port profile on the Cisco Nexus 1000V. • **type**—(Optional) The port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type. Defining a port profile type as Ethernet allows the port profile to be used for physical (Ethernet) ports. In the vCenter Server, the corresponding port group can be selected and assigned to physical ports (PNICs). **Note** If a port profile is configured as an Ethernet type, then it cannot be used to configure VMware virtual ports.
Step 3	switch(config-port-prof)# **vmware port-group** [*pg_name*]	Designates the port profile as a VMware port group. The port profile is mapped to a VMware port group of the same name unless you specify a name here. When you connect the VSM to vCenter Server, the port group is distributed to the virtual switch on the vCenter Server.
Step 4	switch(config-port-prof)# **max-ports** *num*	Designates the maximum number of ports that can be assigned to this non-uplink port profile. The default is 32 ports. When the specified maximum number of ports is reached, no more ports can be assigned.
Step 5	switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]	(Optional) Displays the configuration for verification.
Step 6	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Port Mode Configuration

VLAN Ranges

In accordance with the IEEE 802.1Q standard, up to 4094 VLANs are supported. The following table describes the available VLAN ranges and their use.

Table 1: VLAN Ranges

VLAN Numbers	Range	Usage
1	Normal	Cisco default. You can use this VLAN, but you cannot modify or delete it.
2-1005	Normal	You can create, use, modify, and delete these VLANs.
1006-4094	Extended	You can create, name, and use these VLANs. You cannot change the following parameters: • State is always active. • VLAN is always enabled. You cannot shut down these VLANs.
3968-4047 and 4094	Internally allocated	These 80 VLANs, plus VLAN 4094, are allocated for internal device use. You cannot create, delete, or modify any VLANs within the block reserved for internal use.

Configuring a Trunking Profile

Before You Begin

- You are logged in to the CLI in EXEC mode.
- You have already created the port profile using the Creating a Port Profile, on page 4 procedure.
- You know the needed VLAN configuration for this port profile and that it is to be used in trunk mode.
- A VLAN must already be created on the switch before you can assign it to a port profile.
- You know the supported VLAN ranges described in Configuring Port Mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*
3. switch(config-port-prof)# **switchport mode trunk**
4. switch(config-port-prof)# **no shutdown**
5. (Optional) switch(config-port-prof)# **switchport trunk allowed vlan** {*allowed-vlans* | **add** *add-vlans* | **except** *except-vlans* | **remove** *remove-vlans* | **all** | **none**}
6. (Optional) switch(config-port-prof)# **switchport trunk native vlan** *vlan-id*
7. (Optional) switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]
8. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*	Enters port profile configuration mode for the named port profile. If the port profile does not already exist, it is created using the following characteristics: • *name*—The port profile name can be up to 80 characters and must be unique for each port profile on the Cisco Nexus 1000V. • **type**—(Optional) The port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type. Defining a port profile type as Ethernet allows the port profile to be used for physical (Ethernet) ports. In the vCenter Server, the corresponding port group can be selected and assigned to physical ports (PNICs). **Note** If a port profile is configured as an Ethernet type, then it cannot be used to configure VMware virtual ports.
Step 3	switch(config-port-prof)# **switchport mode trunk**	Designates that the interfaces are to be used as a trunking ports. A trunk port transmits untagged packets for the native VLAN and transmits encapsulated, tagged packets for all other VLANs.
Step 4	switch(config-port-prof)# **no shutdown**	Administratively enables all ports in the profile.
Step 5	switch(config-port-prof)# **switchport trunk allowed vlan** {*allowed-vlans* | **add** *add-vlans* | **except** *except-vlans* | **remove** *remove-vlans* | **all** | **none**}	(Optional) Designates the port profile as trunking and defines VLAN access to it as follows: • *allowed-vlans*—Defines VLAN IDs that are allowed on the port. • **add**—Lists VLAN IDs to add to the list of those allowed on the port. • **except**—Lists VLAN IDs that are not allowed on the port.

	Command or Action	Purpose
		• **remove—**Lists VLAN IDs whose access is to be removed from the port. • **all—**Indicates that all VLAN IDs are allowed on the port, unless exceptions are also specified. • **none—**Indicates that no VLAN IDs are allowed on the port. **Note** If you do not configure allowed VLANs, then the default VLAN 1 is used as the allowed VLAN.
Step 6	switch(config-port-prof)# **switchport trunk native vlan** *vlan-id*	(Optional) Sets the trunking native characteristics when the interface is in trunking mode. If you do not configure a native VLAN, then the default VLAN 1 is used as the native VLAN.
Step 7	switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]	(Optional) Displays the configuration for verification.
Step 8	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

This example shows how to configure a trunking port profile, allowing all VLANs, and setting VLAN 3 as its native VLAN.

```
switch# configure terminal
switch(config)# port-profile TrunkProf
switch(config-port-prof)# switchport mode trunk
switch(config-port-prof)# no shutdown
switch(config-port-prof)# switchport trunk allowed vlan all
switch(config-port-prof)# switchport trunk native vlan 3
switch(config-port-prof)# show port-profile name TrunkProf
port-profile TrunkProf
  description:
  type: vethernet
  status: disabled
  capability l3control: no
  pinning control-vlan: -
  pinning packet-vlan: -
  system vlans: none
  port-group:
  max ports: 32
  inherit:
  config attributes:
    switchport mode trunk
    switchport trunk native vlan 3
    switchport trunk allowed vlan all
    no shutdown
  evaluated config attributes:
    switchport mode trunk
    switchport trunk native vlan 3
    switchport trunk allowed vlan all
    no shutdown
  assigned interfaces:
switch(config-port-prof)#
```

Configuring an Access Profile

An access port transmits packets on only one untagged VLAN. You can specify the VLAN, and it becomes the access VLAN. If you do not specify a VLAN for an access port, that interface carries traffic only on the default VLAN 1.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*
3. switch(config-port-prof)# **switchport mode access**
4. switch(config-port-prof)# **no shutdown**
5. (Optional) switch(config-port-prof)# **switchport access vlan** [*vlan-id-access*]
6. (Optional) switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]
7. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** [**type** {**ethernet** | **vethernet**}] *name*	Enters port profile configuration mode for the named port profile. If the port profile does not already exist, it is created using the following characteristics: • *name*—The port profile name can be up to 80 characters and must be unique for each port profile on the Cisco Nexus 1000V. • **type**—(Optional) The port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type. Defining a port profile type as Ethernet allows the port profile to be used for physical (Ethernet) ports. In the vCenter Server, the corresponding port group can be selected and assigned to physical ports (PNICs). **Note** If a port profile is configured as an Ethernet type, then it cannot be used to configure VMware virtual ports.
Step 3	switch(config-port-prof)# **switchport mode access**	Designates that the interfaces are to be used as a trunking ports. A trunk port transmits untagged packets for the native VLAN and transmits encapsulated, tagged packets for all other VLANs.
Step 4	switch(config-port-prof)# **no shutdown**	Administratively enables all ports in the profile.
Step 5	switch(config-port-prof)# **switchport access vlan** [*vlan-id-access*]	(Optional) Assigns an access VLAN ID to this port profile.

	Command or Action	Purpose
		Note If you do not specify a VLAN ID, then VLAN 1 is used automatically.
Step 6	switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]	(Optional) Displays the configuration for verification.
Step 7	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to configure a port profile with switch access ports, enabling the ports, and then adding an access VLAN:

```
switch# configure terminal
switch(config)# port-profile AccessProf
switch(config-port-prof)# switchport mode access
switch(config-port-prof)# no shutdown
switch(config-port-prof)# switchport access vlan 300
switch(config-port-prof)# show port-profile name AccessProf
port-profile AccessProf
  description: allaccess4
  type: vethernet
  status: disabled
  capability l3control: no
  pinning control-vlan: -
  pinning packet-vlan: -
  system vlans: none
  port-group: AccessProf
  max ports: 5
  inherit:
  config attributes:
    switchport mode access
    switchport access vlan 300
    no shutdown
  evaluated config attributes:
    switchport mode access
    switchport access vlan 300
    no shutdown
  assigned interfaces:
switch(config-port-prof)#
```

Clearing a Port Management Policy

You can use this procedure to remove either of the following port management policies from an existing port profile configuration:

- **shutdown**
- **switchport mode**

Note After removing the configuration for an attribute, the attribute does not appear in **show** command output.

Before You Begin

- You are logged in to the CLI in EXEC mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** *name*
3. **default** {**shutdown** | **switchport mode**}
4. (Optional) switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]
5. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** *name*	Enters port profile configuration mode for the named port profile.
Step 3	**default** {**shutdown** | **switchport mode**}	Removes either the shutdown or the switchport mode configuration from the port profile. • **shutdown**—Reverts port profile ports to the shutdown state. • **switchport mode**—Reverts port profile ports to switch access ports.
Step 4	switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]	(Optional) Displays the configuration for verification.
Step 5	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to change the administrative state of a port profile back to its default setting (all ports disabled):

```
switch# configure treminal
switch(config)# port-profile AccessProf
switch(config-port-prof)# default shutdown
switch(config-port-prof)# show port-profile name AccessProf
port-profile AccessProf
  description: allaccess4
  type: vethernet
  status: disabled
  capability l3control: no
  pinning control-vlan: 8
  pinning packet-vlan: 8
  system vlans: none
  port-group: AccessProf
```

```
  max ports: 5
  inherit:
  config attributes:
    switchport mode access
  evaluated config attributes:
    switchport mode access
  assigned interfaces:
switch(config-port-prof)#
```

Port Binding for vEthernet Port Profiles Configuration

Configuring a Default Port Binding Type

You can use this procedure to configure the type of port binding (static, dynamic, or ephemeral) to apply by default to all new vEthernet port profiles.

Before You Begin

Before beginning this procedure, you must know or do the following:

- You are logged in to the CLI in EXEC mode.
- You know the type of port binding (static, dynamic, or ephemeral) you want to use as a default for all new vEthernet port profiles.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile default port-binding** {**static** [**auto**] **dynamic** [**auto**] | **ephemeral**}
3. (Optional) switch(config-port-prof)# **show running-config**
4. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile default port-binding** {**static** [**auto**] **dynamic** [**auto**] | **ephemeral**}	Configures a default port binding type to be applied automatically to all new vEthernet port profiles unless explicitly configured otherwise: • **Static**: A DVPortID is assigned from the port group pool when you first assign the port group to the port. The DVPortID persists for the life of the network adapter. The port group has a fixed number of ports. If you include the **auto** option, Cisco Nexus 1000V creates port profiles with both min-ports and max-ports, which are initially inherited from the global defaults and can be redefined by the user at a later time. By configuring the binding type with the **auto** option, Cisco Nexus 1000V adjusts the number of

	Command or Action	Purpose
		ports per profile created at the vCenter server based on the usage of the port groups. • **Dynamic**: A DVPortID is assigned to a virtual machine only when the virtual machine is powered on and its NIC is in a connected state. The DVPortID is freed when the virtual machine is powered off or the virtual machine's NIC is disconnected. The **auto** option for dynamic binding works as described for static binding. • **Ephemeral**: A new DVPortID is assigned to the port every time the VM is powered on. The port keeps this same DVPortID while the VM is up. All available DVS ports are shared. Ports are not allocated from the port group pool.
Step 3	switch(config-port-prof)# **show running-config**	(Optional) Displays the configuration for verification.
Step 4	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to configure the dynamic port binding type as the default for all new vEthernet port profiles created:

```
switch# configure terminal
switch(config)# port-profile default port-binding dynamic
switch(config-port-prof)#
```

Configuring Port Binding for a vEthernet Port Profile

You can use this procedure to configure the type of port binding (static, dynamic, or ephemeral) for an existing vEthernet port profile.

Before You Begin

- You are logged in to the CLI in EXEC mode.
- You have already created the vEthernet port profile using Creating a Port Profile, on page 4.
- You know the type of port binding (static, dynamic, or ephemeral) you want to apply to this vEthernet port profile.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** [**type** {**vethernet**}] *profile-name*
3. switch(config-port-prof)# **port-binding** {**static** [**auto**] **dynamic** [**auto**] | **ephemeral**}
4. (Optional) switch(config-port-prof)# **show port-profile** [**name** *profile-name*]
5. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** [**type** {**vethernet**}] *profile-name*	Enters port profile configuration mode for the named vEthernet port profile.
Step 3	switch(config-port-prof)# **port-binding** {**static** [**auto**] **dynamic** [**auto**] | **ephemeral**}	Configures a default port binding type to be applied automatically to all new vEthernet port profiles unless explicitly configured otherwise: • **Static**: A DVPortID is assigned from the port group pool when you first assign the port group to the port. The DVPortID persists for the life of the network adapter. The port group has a fixed number of ports. ◦ **auto**: Port profiles are created with both min-ports and max-ports, which are initially inherited from the global defaults and can be redefined by the user at a later time. By configuring the binding type with the **auto** option, the Cisco Nexus 1000V will adjust the number of ports per profile created at the vCenter server based on the usage of the port groups. • **Dynamic**: A DVPortID is assigned to a virtual machine only when the virtual machine is powered on and its NIC is in a connected state. The DVPortID is freed when the virtual machine is powered off or the virtual machine's NIC is disconnected. ◦ See **auto** option above. • **Ephemeral**: A new DVPortID is assigned to the port every time the VM is powered on. The port keeps this same DVPortID while the VM is up. All available DVS ports are shared. Ports are not allocated from the port group pool.
Step 4	switch(config-port-prof)# **show port-profile** [**name** *profile-name*]	(Optional) Displays the configuration for verification.

	Command or Action	Purpose
Step 5	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to configure the dynamic port binding type for the existing port profile named target-pp.

```
switch# configure terminal
switch(config)# port-profile target-pp
switch(config-port-prof)# port-binding dynamic
switch(config-port-prof)#
```

Configuring a Port Profile with Dynamic or Static Port Binding

You can use this procedure to configure a port profile (static or dynamic) with or without the auto option.

Before You Begin

You are logged in to the CLI in EXEC mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** [**type** {**vethernet**}] *profile-name*
3. switch(config-port-prof)# **vmware port-group** [*pg_name*]
4. switch(config-port-prof)# **port-binding** {**static** [**auto**] **dynamic** [**auto**] | **ephemeral**}
5. switch(config-port-prof)# **max-ports** *number*
6. switch(config-port-prof)# **min-ports** *number*
7. switch(config-port-prof)# **state enabled**
8. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** [**type** {**vethernet**}] *profile-name*	Enters port profile configuration mode for the named vEthernet port profile.
Step 3	switch(config-port-prof)# **vmware port-group** [*pg_name*]	Designates the port profile as a VMware port group. The port profile is mapped to a VMware port group of the same name unless you specify a name here. When you connect the VSM to vCenter Server, the port group is distributed to the virtual switch on the vCenter Server.

	Command or Action	Purpose
Step 4	switch(config-port-prof)# **port-binding** {**static** [**auto**] **dynamic** [**auto**] | **ephemeral**}	Configures a default port binding type to be applied automatically to all new vEthernet port profiles unless explicitly configured otherwise: • **Static**: A DVPortID is assigned from the port group pool when you first assign the port group to the port. The DVPortID persists for the life of the network adapter. The port group has a fixed number of ports. ◦ **auto**: Port profiles are created with both min-ports and max-ports, which are initially inherited from the global defaults and can be redefined by the user at a later time. By configuring the binding type with the **auto** option, the Cisco Nexus 1000V will adjust the number of ports per profile created at the vCenter server based on the usage of the port groups. • **Dynamic**: A DVPortID is assigned to a virtual machine only when the virtual machine is powered on and its NIC is in a connected state. The DVPortID is freed when the virtual machine is powered off or the virtual machine's NIC is disconnected. ◦ See **auto** option above. • **Ephemeral**: A new DVPortID is assigned to the port every time the VM is powered on. The port keeps this same DVPortID while the VM is up. All available DVS ports are shared. Ports are not allocated from the port group pool.
Step 5	switch(config-port-prof)# **max-ports** *number*	Designates the maximum number of ports that can be assigned to this non-uplink port profile. The default value is the global default at the time of port profile creation. When the specified maximum number of ports is reached, no more ports can be assigned. The valid range is 1 to 1024. **Note** Do not configure a value less than min-ports.
Step 6	switch(config-port-prof)# **min-ports** *number*	Designates the minimum number of ports that can be assigned to this non-uplink port profile. The default value is the global default at the time of port profile creation. The valid range is 1 to 1024. **Note** Do not configure a value greater than max-ports.
Step 7	switch(config-port-prof)# **state enabled**	Enables the port profile and applies its configuration to the assigned ports. If the port profile is a VMware port group, the port group will be created in the vswitch on vCenter Server.

	Command or Action	Purpose
Step 8	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to configure the dynamic auto port binding type:

```
switch# configure terminal
switch(config)# port-profile type vethernet dynamic_auto_pp
switch(config-port-prof)# vmware port-group
switch(config-port-prof)# port-binding dynamic auto
switch(config-port-prof)# max-ports 128
switch(config-port-prof)# min-ports 64
switch(config-port-prof)# state enabled
switch(config-port-prof)# copy running-config startup-config
```

Verifying Port Binding on vCenter Server

Before You Begin

You are logged in to vCenter Server on the host.

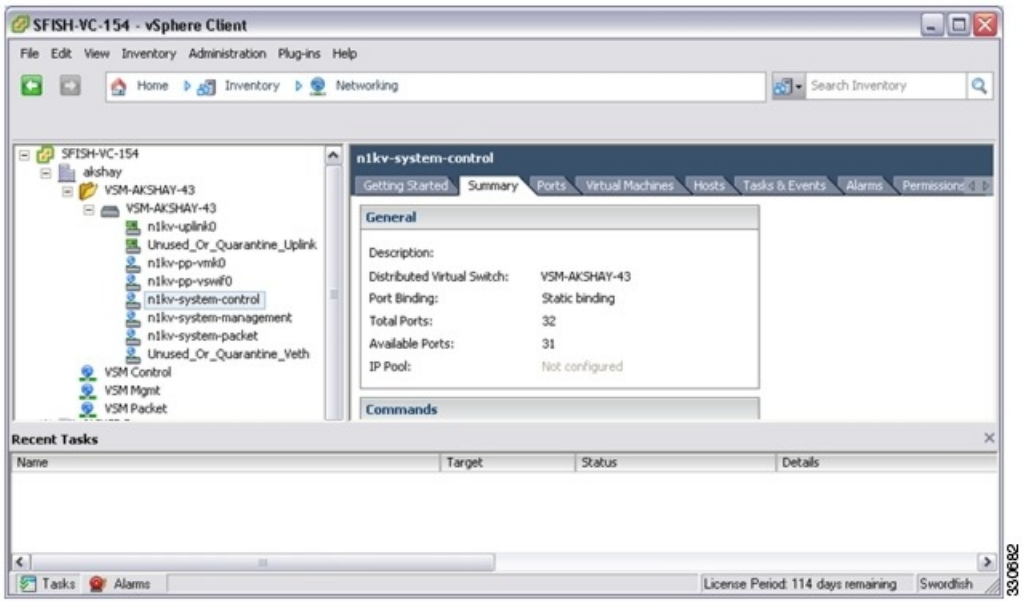
SUMMARY STEPS

1. From your DVS in the **Networking** tab, choose the port group, and then click the **Summary** tab.

DETAILED STEPS

From your DVS in the **Networking** tab, choose the port group, and then click the **Summary** tab.

Figure 1: vSphere Client Summary Tab Window



The **General** section of the **Summary** tab displays the type of port binding for this port group.

Enabling a Port Profile

Before You Begin

- You are logged in to the CLI in EXEC mode.
- You have already created the port profile using Creating a Port Profile, on page 4.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **port-profile** [**type** {**vethernet**}] *profile-name*
3. switch(config-port-prof)# **state enabled**
4. switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]
5. (Optional) switch(config-port-prof)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **port-profile** [**type** {**vethernet**}] *profile-name*	Enters port profile configuration mode for the named vEthernet port profile.
Step 3	switch(config-port-prof)# **state enabled**	Enables the port profile and applies its configuration to the assigned ports. If the port profile is a VMware port group, the port group will be created in the vswitch on vCenter Server.
Step 4	switch(config-port-prof)# **show port-profile** [**brief** | **expand-interface** | **usage**] [**name** *profile-name*]	Displays the configuration for verification.
Step 5	switch(config-port-prof)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to enable a port profile.

```
switch# configure terminal
switch(config)# port-profile AccessProf
switch(config-port-prof)# state enabled
switch(config-port-prof)# show port-profile name AccessProf
port-profile AccessProf
  description: allaccess4
  status: enabled
capability l3control: no
  pinning control-vlan: -
  pinning packet-vlan: -
  system vlans: none
  port-group:
  max ports: 32
  inherit:
  config attributes:
    channel-group auto mode on
  evaluated config attributes:
    channel-group auto mode on
  assigned interfaces:
switch(config-port-prof)#
```

Removing a Port Profile

Before You Begin

- You are logged in to the CLI in EXEC mode.
- If the port profile is inherited by another port profile, you need to remove the inheritance from the other port profile before removing this port profile. If you do not remove the inheritance first, the procedure fails. See Removing Inherited Policies from a Port Profile.

SUMMARY STEPS

1. switch# **configure terminal**
2. (Optional) switch(config)# **show port-profile virtual usage name** *profile_name*
3. switch(config)# **no port-profile** *profile_name*
4. (Optional) switch(config)# **show port-profile** [**name** *profile-name*]
5. (Optional) switch(config)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **show port-profile virtual usage name** *profile_name*	(Optional) Verifies if active interfaces use this port profile. **Note** You cannot remove a port profile if there are active interfaces associated with it.
Step 3	switch(config)# **no port-profile** *profile_name*	Removes the port profile configuration and operational settings. When you remove a port profile that is mapped to a VMware port group, the associated port group and settings within the vCenter Server are also removed.
Step 4	switch(config)# **show port-profile** [**name** *profile-name*]	(Optional) Displays the configuration for verification.
Step 5	switch(config)# **copy running-config startup-config**	(Optional) Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

This example shows how to remove a port profile:

```
switch# configure terminal
switch(config)# show port-profile virtual usage name AccessProf
--------------------------------------------------------------------------------
Port Profile               Port        Adapter        Owner
--------------------------------------------------------------------------------
n1kv-uplink0               Po1
                           Eth3/2      vmnic1         localhost.
                           Eth3/3      vmnic2         localhost.
vlan1767                   Veth7       Net Adapter 1  all-tool-7
AccessProf                 vEth12      vmnic1         localhost.
switch(config)# no port-profile AccessProf
switch(config)# show port-profile name AccessProf
ERROR: port-profile AccessProf does not exist
switch(config)# copy running-config startup-config
switch(config)#
```

Standards for Creating Port Profiles

No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.

Feature History for Port Profiles

Feature Name	Releases	Feature Information
Port Binding	4.2(1)SV1(4a)	You can configure a static port binding with the **auto** option.
Port Binding	4.2(1)SV1(4a)	You can configure a port binding with the **dynamic** [**auto**] option.
Atomic Inheritance	4.2(1)SV1(4)	Port Profile configuration applied to member interfaces.
Port Profile Rollback	4.2(1)SV1(4)	After configuration failure, a port profile and its member interfaces are rolled back to the last good configuration.
Interface Quarantine	4.2(1)SV1(4)	After a configuration failure, interfaces are shut down to maintain accurate configuration.
Port Profile Type	4.0(4)SV1(2)	Port profiles are configured as either Ethernet or vEthernet type. By default, a port profile is created as vEthernet type.
[**no**] **capability uplink** command	4.0(4)SV1(2)	The **capability uplink** command has been replaced with the **port-profile** [**type** {**ethernet** | **vethernet**}] *name* command. To configure a port profile with uplink capability, configure the port profile as an Ethernet type. The **no capability uplink** command has been removed.
Port Profiles	4.0(4)SV1(1)	This feature was introduced.