



Creating Port Profiles

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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: <ul style="list-style-type: none">• 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.
Enabled	When enabled, a port profile behaves as follows: <ul style="list-style-type: none">• 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 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	<p>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.</p> <p>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, dynamic binding would be appropriate for your port group.</p>
Ephemeral	<p>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 distributed virtual switch (DVS) ports are shared. Ports are not allocated from the port group pool.</p> <p>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 the auto purge setting. The VMware Virtual Infrastructure Methodology (VIM) automatically deletes virtual Ethernet interfaces (vEths) that are attached to port profiles with ephemeral port binding.</p> <p>For information about configuring auto purge using the svs veth auto-config-purge command, see the <i>Cisco Nexus 1000V for VMware Interface Configuration Guide</i>.</p>

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, we recommend 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 also rejected by the port profile.
- If you create a port profile with a command error, for example a private VLAN mapping error or service policy map error, 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**



Note Behavior during shutdown: In 5.2(1)SV3(1.1) and later, when you shut down a virtual Ethernet interface or a port profile assigned to virtual Ethernet interfaces, the corresponding link goes down. In releases earlier than 5.2(1)SV3(1.1), the corresponding link remains up.

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 that you have set is not supported by the virtual Ethernet module (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.

Port Profile Configuration Limits

The following table lists the configuration limits for port profiles.

Feature	VEM	DVS
Ports per port profile	1024	2048
Port profiles	6144	6144

For information about the number of port profiles and system port profiles that are currently created, and the number of port profiles and system port profiles that are available, run the following command: **show resource-availability port-profile**.

Default Settings

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

Parameter	Default
capability l3control	No

Parameter	Default
description	—
administrative state	all ports disabled
switchport mode (access or trunk)	access
system vlan <i>vlan_list</i>	—
type	vethernet
access port vlan	VLAN 1
max-ports	32
min-ports	1
vmware port-group <i>name</i>	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.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# port-profile [type { ethernet vethernet }] <i>name</i>	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: <ul style="list-style-type: none"> • <i>name</i>—The port profile name can contain up to 80 alphanumeric characters, is not case-sensitive, and must be unique for each port profile on the Cisco Nexus 1000V. The port profile name cannot contain any spaces.

	Command or Action	Purpose
		<p>Note Starting with Cisco Nexus 1000V Release 5.2(1)SV3(1.2), the port profile name can include all ASCII special characters except forward slash (/), back slash (\), percent (%), and question mark (?).</p> <p>Note For Cisco Nexus 1000V Release 5.2(1)SV3(1.1), the port profile name can include the following special characters: period (.), underscore (_), and hyphen (-).</p> <ul style="list-style-type: none"> • type—(Optional) The port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type. <p>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).</p> <p>Note If a port profile is configured as an Ethernet type, it cannot be used to configure VMware virtual ports.</p>
Step 3	(Optional) switch(config-port-prof)# description <i>profile_description</i>	Adds a description of up to 80 ASCII characters to the port profile. This description is automatically pushed to the vCenter Server.
Step 4	(Optional) switch(config-port-prof)# show port-profile [brief expand-interface usage] [name <i>profile-name</i>]	Displays the configuration for verification.
Step 5	switch(config-port-prof)# copy running-config startup-config	<p>Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.</p> <p>Note We recommend that you copy the running configuration to the startup configuration after creating a port profile. This ensures that there are no discrepancies between the configurations in the vCenter Server and the VSM after a VSM reload.</p>

Example

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
  pinning control-vlan: -
  pinning packet-vlan: -
  max ports: -
  inherit:
  config attributes:
  evaluated config attributes:
  assigned interfaces:
  port-group:
  system vlans: none
  capability l3control: no
  capability iscsi-multipath: no
  capability vxlan: no
  capability l3-vservice: no
  port-profile role: none
  port-binding: static
switch(config-port-prof)# copy running-config startup-config
[#####] 100%
Copy complete, now saving to disk (please wait)...
```

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.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# port-profile [type { ethernet vethernet }] <i>name</i>	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: <ul style="list-style-type: none"> • <i>name</i>—The port profile name can be up to 80 alphanumeric characters and must be unique for each port profile on the Cisco Nexus 1000V.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • type—(Optional) The port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type. <p>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).</p> <p>Note If a port profile is configured as an Ethernet type, it cannot be used to configure VMware virtual ports.</p>
Step 3	switch(config-port-prof)# vmware port-group [pg_name]	<p>Designates the port profile as a VMware port group.</p> <p>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.</p>
Step 4	switch(config-port-prof)# max-ports num	<p>Designates the maximum number of ports that can be assigned to this non-uplink port profile. The default is 32 ports.</p> <p>When the specified maximum number of ports is reached, no more ports can be assigned.</p>
Step 5	(Optional) switch(config-port-prof)# show port-profile [brief expand-interface usage] [name profile-name]	Displays the configuration for verification.
Step 6	(Optional) switch(config-port-prof)# copy running-config startup-config	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: <ul style="list-style-type: none"> • 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 [VLAN Ranges, on page 7](#).

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# port-profile [type { ethernet vethernet }] <i>name</i>	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:

	Command or Action	Purpose
		<ul style="list-style-type: none"> • <i>name</i>—The port profile name can be up to 80 alphanumeric characters and must be unique for each port profile on the Cisco Nexus 1000V. • <i>type</i>—(Optional) The port profile type can be Ethernet or vEthernet. Once configured, the type cannot be changed. The default is the vEthernet type. <p>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).</p> <p>Note If a port profile is configured as an Ethernet type, it cannot be used to configure VMware virtual ports.</p>
Step 3	switch(config-port-prof)# switchport mode trunk	<p>Designates that the interfaces are to be used as a trunking ports.</p> <p>A trunk port transmits untagged packets for the native VLAN and transmits encapsulated, tagged packets for all other VLANs.</p>
Step 4	switch(config-port-prof)# no shutdown	Administratively enables all ports in the profile.
Step 5	(Optional) switch(config-port-prof)# switchport trunk allowed vlan { <i>allowed-vlans</i> add <i>vlans</i> except <i>vlans</i> remove <i>vlans</i> all none }	<p>Designates the port profile as trunking and defines VLAN access to it as follows:</p> <ul style="list-style-type: none"> • <i>allowed-vlans</i>—Defines VLAN IDs that are allowed on the port. Valid range is from 1 through 4094. • add—Lists VLAN IDs to add to the list of those allowed on the port. • <i>vlan</i>—Defines VLAN IDs to be acted upon according to the keyword associated with it. Valid range is from 1 through 4094. • except—Lists VLAN IDs that are not allowed on the port. • 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.

	Command or Action	Purpose
		<ul style="list-style-type: none"> none—Indicates that no VLAN IDs are allowed on the port. <p>Note If you do not configure allowed VLANs, the default VLAN 1 is used as the allowed VLAN.</p>
Step 6	(Optional) switch(config-port-prof)# switchport trunk native vlan <i>vlan-id</i>	<p>Sets the trunking native characteristics when the interface is in trunking mode.</p> <p>If you do not configure a native VLAN, then the default VLAN 1 is used as the native VLAN.</p>
Step 7	(Optional) switch(config-port-prof)# show port-profile [brief expand-interface usage] [name <i>profile-name</i>]	Displays the configuration for verification.
Step 8	(Optional) switch(config-port-prof)# copy running-config startup-config	Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Example

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:
port-group:
system vlans: none
capability l3control: no
capability iscsi-multipath: no
capability vxlan: no
capability l3-vservice: no
port-profile role: none
port-binding: static
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.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# port-profile [type { ethernet vethernet }] <i>name</i>	<p>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:</p> <ul style="list-style-type: none"> • <i>name</i>—The port profile name can be up to 80 alphanumeric 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. <p>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).</p> <p>Note If a port profile is configured as an Ethernet type, it cannot be used to configure VMware virtual ports.</p>
Step 3	switch(config-port-prof)# switchport mode access	Designates that the interfaces are used as access ports.
Step 4	switch(config-port-prof)# no shutdown	Administratively enables all ports in the profile.

	Command or Action	Purpose
Step 5	(Optional) switch(config-port-prof)# switchport access vlan [vlan-id-access]	Assigns an access VLAN ID to this port profile. Note If you do not specify a VLAN ID, VLAN 1 is used automatically.
Step 6	(Optional) switch(config-port-prof)# show port-profile [brief expand-interface usage] [name profile-name]	Displays the configuration for verification.
Step 7	(Optional) switch(config-port-prof)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

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:
  port-group:
  system vlans: none
  capability l3control: no
  capability iscsi-multipath: no
  capability vxlan: no
  capability l3-vservice: no
  port-profile role: none
  port-binding: static
switch(config-port-prof)#
```

Clearing a Port Management Policy

You can 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.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# port-profile <i>name</i>	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: <ul style="list-style-type: none"> • shutdown—Reverts port profile ports to the shutdown state. • switchport mode—Reverts port profile ports to switch access ports.
Step 4	(Optional) switch(config-port-prof)# show port-profile [brief expand-interface usage] [<i>name profile-name</i>]	Displays the configuration for verification.
Step 5	(Optional) switch(config-port-prof)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

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

```
switch# configure terminal
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:
port-group:
system vlans: none
capability l3control: no
capability iscsi-multipath: no
capability vxlan: no
capability l3-vservice: no
port-profile role: none
port-binding: static
switch(config-port-prof)#

```

Port Binding for vEthernet Port Profiles Configuration

Configuring a Default Port Binding Type

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

Before you begin

- 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.
- You can use the `port-binding static auto expand` command to use more than 1024 ports per profile (up to the platform limit).

Procedure

	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: <ul style="list-style-type: none"> • Static—A DVPortID is assigned from the port group pool when you first assign the port group to the port. The DVPortID

	Command or Action	Purpose
		<p>persists for the life of the network adapter. The port group has a fixed number of ports.</p> <p>If you include the auto option, the Cisco Nexus 1000V creates port profiles with both min-ports and max-ports, which are initially inherited from the global defaults and which you can redefine at a later time. By configuring the binding type with the auto option, the Cisco Nexus 1000V adjusts the number of ports per profile created at the vCenter server based on the usage of the port groups.</p> <ul style="list-style-type: none"> • 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. <p>The auto option for dynamic binding works as described for static binding.</p> <ul style="list-style-type: none"> • 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	(Optional) switch(config-port-prof)# show running-config	Displays the configuration for verification.
Step 4	(Optional) switch(config-port-prof)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

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.



Note Max-port configuration and ephemeral port-binding are opposite provisioning configurations. Max-port configuration involves reserving the DVPorts for future use in the vCenter Server, whereas ephemeral port-binding releases DVPorts when a VM is powered off. Every port profile on Cisco Nexus 1000V has a default static port-binding with the default max-port configuration set to 32. If you change the port binding to ephemeral, the max-port configuration becomes invalid.

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.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# port-profile [type { vethernet }] <i>profile-name</i>	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: <ul style="list-style-type: none"> • 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. <p>If you include the auto option, the Cisco Nexus 1000V creates port profiles with both min-ports and max-ports, which are initially inherited from the global defaults and which you can redefine 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.</p>

	Command or Action	Purpose
		<ul style="list-style-type: none"> • 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. <p>The auto option for dynamic binding works as described above for static binding.</p> <ul style="list-style-type: none"> • 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	(Optional) switch(config-port-prof)# show port-profile [name <i>profile-name</i>]	Displays the configuration for verification.
Step 5	(Optional) switch(config-port-prof)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

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 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.

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.

	Command or Action	Purpose
Step 2	switch(config)# port-profile [type {vethernet}] <i>profile-name</i>	Enters port profile configuration mode for the named vEthernet port profile.
Step 3	switch(config-port-prof)# vmware port-group [<i>pg_name</i>]	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)# port-binding {static [auto [expand]] dynamic [auto] ephemeral}	Configures a default port binding type to be applied automatically to all new vEthernet port profiles unless explicitly configured otherwise: <ul style="list-style-type: none"> • 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, the Cisco Nexus 1000V creates port profiles with both min-ports and max-ports, which are initially inherited from the global defaults and which you can redefine at a later time. By configuring the binding type with the auto option, the Cisco Nexus 1000V adjusts the number of ports per profile created at the vCenter server based on the usage of the port groups. By configuring the binding type with the auto expand option, the vCenter server automatically increases the number of ports per profile (up to the DVS maximum value) without any involvement from the Cisco Nexus 1000V. The number of ports per profile can be higher than the specified max-ports limit. • 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.

	Command or Action	Purpose
		<p>The auto option for dynamic binding works as described above for static binding.</p> <ul style="list-style-type: none"> • 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 <i>number</i>	<p>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.</p> <p>When the specified maximum number of ports is reached, no more ports can be assigned. This is not applicable when the static auto expand port binding is used as described in the previous step.</p> <p>The valid range is 1 to 1024.</p> <p>Note Do not configure a value less than min-ports.</p>
Step 6	switch(config-port-prof)# min-ports <i>number</i>	<p>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.</p> <p>The valid range is 1 to 1024.</p> <p>Note Do not configure a value greater than max-ports.</p>
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.
Step 8	(Optional) switch(config-port-prof)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

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.

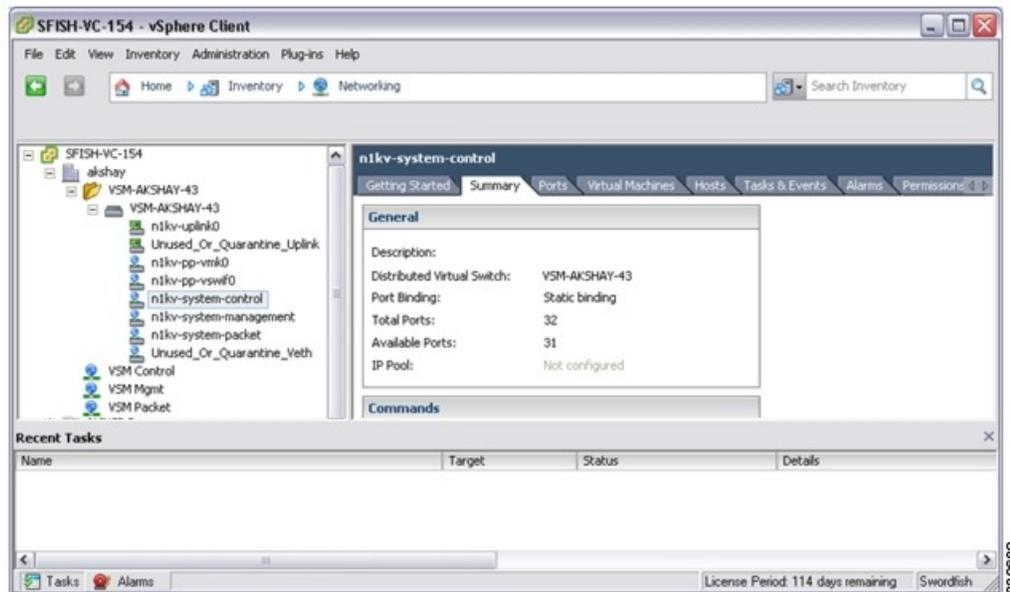
Procedure

Step 1 From your DVS in the **Networking** tab, choose the port group.

Step 2 Click the **Summary** tab.

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

Example



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](#).

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	switch(config)# port-profile [type { vethernet }] <i>profile-name</i>	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 <i>profile-name</i>]	Displays the configuration for verification.
Step 5	(Optional) switch(config-port-prof)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

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
  type: Vethernet
  description: allaccess4
  status: enabled
  pinning control-vlan: -
  pinning packet-vlan: -
  max ports: 32
  inherit:
  config attributes:
    channel-group auto mode on
  evaluated config attributes:
    channel-group auto mode on
  assigned interfaces:
  port-group:
  system vlans: none
  capability l3control: no
```

```

capability iscsi-multipath: no
capability vxlan: no
capability l3-vservice: no
port-profile role: none
port-binding: static
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](#).

Procedure

	Command or Action	Purpose
Step 1	switch# configure terminal	Enters global configuration mode.
Step 2	(Optional) switch(config)# show running-configuration port-profile <i>profile_name</i>	Displays the configuration of the specified port profile.
Step 3	switch(config)# no port-profile <i>profile_name</i>	Removes the port profile configuration and operational settings. Note A port profile cannot be deleted if an associated vEthernet interface is active. To delete a port profile, you must remove all of the active vEthernet interfaces from this port profile or migrate them to another port profile. Then you can delete the port profile. 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	(Optional) switch(config)# show port-profile virtual usage [name <i>profile-name</i>]	Displays the configuration for verification.
Step 5	(Optional) switch(config)# copy running-config startup-config	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

This example shows how to remove a port profile that still has an active vEthernet interface associated with it:

```
switch# configure terminal
switch(config)# show running-configuration port-profile temp
version 5.2(1)SV3(1.1)
port-profile type vethernet temp
switchport mode access
switchport access vlan 1331
ip port access-group acl in
no showutdown
max-ports 5
state enabled
vmware port-group
interface Vethernet252
inherit port-profile temp

switch(config)# no port-profile temp
ERROR: Profile cannot be deleted if associated interface is active
switch(config)#
```

You log into the VMware vCenter and edit the settings of the virtual machine that has the network adapter that is using the port profile named temp. You migrate the vEthernet interface to another port profile named VM_PP_NIC1_VLAN_1331.

```
switch(config)# show running-config port-profile temp
version 5.2(1)SV3(1.1)
port-profile type vethernet temp
switchport mode access
switchport access vlan 1331
no showutdown
max-ports 5
state enabled
vmware port-group

switch(config)# show port-profile virtual usage name temp
-----
Port Profile Port Adapter Owner
-----

switch(config)# no port-profile temp
switch(config)# show port-profile virtual usage name temp
ERROR: port-profile temp does not exist
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	Release	Feature Information
Port binding	4.2(1)SV1(4a)	You can configure a static port binding with the auto option. 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 a 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 an accurate configuration.
Port profile type	4.0(4)SV1(2)	Port profile types are configured as either Ethernet or vEthernet (the default).
[no] capability uplink command	4.0(4)SV1(2)	Replaced the capability uplink command with the port-profile [type {ethernet vethernet}] name command. To configure a port profile with an uplink capability, configure the port profile as an Ethernet type. Removed the no capability uplink command.
Port profiles	4.0(4)SV1(1)	This feature was introduced.