



# Configuring BPDU Guard

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## Information About Bridge Protocol Data Unit Guard Feature

The Bridge Protocol Data Unit (BPDU) Guard feature is one of the Spanning Tree Protocol (STP) enhancements. This feature enhances switch network reliability, manageability, and security.

STP ensures a loop-free topology for any Ethernet LAN. STP prevents loops and broadcast radiation. We recommend that you enable BPDU Guard on access ports so that any end user devices on these ports that have BPDU Guard enabled cannot influence the topology. Any malfunctioning device that is connected to a vEthernet port can flood the Layer 2 network with unwanted BPDU that causes STP to break down. When you enable BPDU Guard feature on the access-ports, it shuts down the port that receives a BPDU. To bring up a port disabled by BPDU guard, you must remove the device and then restart the port by entering the **shut/no shut** command described later in this document.

## Prerequisites for BPDU Guard

BPDU Guard has the following prerequisite:

- To configure BPDU Guard, you must install the Advanced Edition license on the Cisco Nexus 1000V switch.

## Enabling or Disabling BPDU Guard Feature Globally

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>[no] spanning-tree port type edge bpduguard default</b>	Globally enables or disables the BPDU Guard.
<b>Step 3</b>	switch(config)# <b>show spanning-tree bpduguard info</b>	(Optional) Displays the BPDU Guard state.
<b>Step 4</b>	switch(config)# <b>show switch edition</b>	(Optional) Displays the features that requires the Advanced Edition license on the Cisco Nexus 1000V switch.

This example shows how to enable BPDU Guard globally:

```
switch# configure terminal
switch(config)# spanning-tree port type edge bpduguard default
switch(config)# show spanning-tree bpduguard info
Global spanning-tree bpduguard status: Enabled
```

```
switch(config)# show switch edition
Switch Edition: ADVANCED (3.0)
```

```
Feature Status
Name          State          Licensed      In version
-----
cts           disabled      Y             1.0
dhcp-snooping disabled      Y             1.0
vxlan-gateway disabled      Y             1.0
bgp           enabled       Y             3.0
bpduguard    enabled       Y             3.0
```

```
License Status
Edition      Available  In Use      Expiry Date
-----
Advanced    30         2           Never
```

```
Scale Support
Edition      Modules      Virtual Ports
-----
Essential    128          4096
Advanced     256          12288
```

## Enabling or Disabling BPDU Guard Mode on Port Profile

You can enable or disable BPDU Guard for a specific port profile. Configuring BPDU Gguard for a specific port profile will overwrite global configuration for the vEthernet ports that inherits the port profile. If you disable BPDU Guard globally, you can enable it for a specific port profile to overwrite the global configuration mode. The vEthernet ports under that port profile can receive BPDU packets without going to an error-disabled mode. Similarly, if you enable BPDU Guard is enabled globally, you can disable it for a specific port profile.



**Note** This port profile configuration overwrites the global configuration.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>port-profile</b> <i>profile_id</i>	Enters port-profile configuration mode.
<b>Step 3</b>	switch(config-port-prof)# <b>spanning-tree bpduguard</b> {enable   disable}	Enables or disables BPDU Guard for the particular vlan ID. <b>Note</b> You can remove the BPDU configuration from the port profile by using the <code>spanning-tree bpduguard</code> command.
<b>Step 4</b>	switch(config-port-prof)# <b>end</b>	Exits port profile configuration mode.
<b>Step 5</b>	switch(config)# <b>show interface virtual spanning-tree bpduguard status</b>	(Optional) Displays the vEthernet ports and the BPDU Guard status for all interfaces. <b>Note</b> If a vEthernet port is inheriting global BPDU Guard settings, it does not display the status.
<b>Step 6</b>	switch(config)# <b>show interface virtual spanning-tree bpduguard status module</b> <i>module_no</i>	(Optional) Displays the vEthernet ports and BPDU Guard status for a specific module.

This example shows how to enable BPDU Guard on a VLAN port profile:

```
switch# configure terminal
switch(config)# port-profile VLAN-1238
switch(config-port-prof)# spanning-tree bpduguard enable
switch(config-port-prof)# end
switch(config)# show interface virtual spanning-tree bpduguard status
Veth77      Enabled
Veth770     -
Veth771     -
Veth772     -
Veth773     -
Veth774     Disabled
Veth775     -
Veth776     -
Veth777     Enabled
Veth778     -
Veth779     Enabled
```

## Enabling or Disabling BPDU Guard on a vEthernet Port

You can enable or disable the BPDU Guard for a specific port. Configuring BPDU Guard for a specific port overrides global and port profile configurations. If you disable BPDU Guard globally or at a port profile level, you can enable it for a specific port to override you disable global or port profile configurations. The port can

receive BPDU packets without going to an error-disabled mode. Similarly, if you enable BPDU Guard globally or at a port profile level, you can disable it for a specific port.

**Note**

This vEthernet port configuration overrides the global and port-profile level configuration.

**Procedure**

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>interface vethernet port</b>	Enters port \configuration mode.
<b>Step 3</b>	switch(config-if)# <b>spanning-tree bpduguard{enable   disable}</b>	Enables or disables BPDU Guard for the particular vEthernet port. <b>Note</b> You can remove the BPDU configuration from the port profile by using the no spanning-tree bpduguard command.
<b>Step 4</b>	switch(config-if)# <b>end</b>	Exits the port configuration mode.
<b>Step 5</b>	switch(config)# <b>show interface virtual spanning-tree bpduguard status</b>	(Optional) Displays the vEthernet ports and the BPDU Guard status for all interfaces. <b>Note</b> If a vEthernet port is inheriting global BPDU Guard settings, it does not display the status.

This example shows how to enable BPDU Guard on a VLAN port profile:

```
switch# configure terminal
switch(config)# interface vethernet 77
switch(config-if)# spanning-tree bpduguard enable
switch(config-port-prof)# end
switch(config)# show interface virtual spanning-tree bpduguard status
Veth77      Enabled
Veth770     -
Veth771     -
Veth772     -
Veth773     -
Veth774     Disabled
Veth775     -
Veth776     -
Veth777     Enabled
Veth778     -
Veth779     Enabled
```

## Bringing up a vEthernet Port

### Before You Begin

- You are getting the Err\_disable : BPDU guard violation 1t1 (port id) , ifindex(1c000030) error.

- Ensure that the device that caused the port to shut down is removed from the network.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	switch# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 2</b>	switch(config)# <b>interface vethernet</b> <i>vethernet port</i>	Enters port configuration mode.
<b>Step 3</b>	switch(config-if)# <b>shut</b>	Shuts down the vEthernet administratively.
<b>Step 4</b>	switch(config-if)# <b>no shut</b>	Starts the vEthernet port.
<b>Step 5</b>	switch(config-if)# <b>show interface vethernet</b> <i>port id</i>	(Optional) Displays the vEthernet port information.

This example shows how to bring up a vEthernet port:

```
switch# configure terminal
switch(config)# interface vethernet 4
switch(config-if)# shut
switch(config-if)# 2014 May 19 02:13:09 switch ethpm[2808]: %ETHPORT-5-IF_DOWN_ADMIN_DOWN:

Interface Vethernet4 is down (Administratively down)
no shut
2014 May 19 02:13:11 switch ethpm[2808]: %ETHPORT-5-IF_ADMIN_UP: Interface Vethernet4 is
admin up .
switch(config-if)# 2014 May 19 02:13:11 switch ethpm[2808]: %ETHPORT-5-IF_UP: Interface
Vethernet4 is up in mode access
end
switch#
switch# 2014 May 19 02:13:13 switch vshd[32105]: %VSHD-5-VSHD_SYSLOG_CONFIG_I: Configured
from vty by admin on 7.1.4.25@pts/0
switch# show interface vethernet 4
Vethernet4 is up
  Port description is OST-SUSE-2-E100-1, Network Adapter 2
  Hardware: Virtual, address: 0050.5681.4a36 (bia 0050.5681.4a36)
  Owner is VM "OST-SUSE-2-E100-1", adapter is Network Adapter 2
  Active on module 8
  VMware DVS port 11906
  Port-Profile is VLAN-1238
  MTU 1500 bytes
  Port mode is access
  5 minute input rate 1240 bits/second, 2 packets/second
  5 minute output rate 312 bits/second, 0 packets/second
Rx
  6715801 Input Packets 6714907 Unicast Packets
  836 Multicast Packets 58 Broadcast Packets
  0 Jumbo Packets
  6997031276 Bytes
Tx
  8113 Output Packets 0 Unicast Packets
  3296 Multicast Packets 4817 Broadcast Packets 426 Flood Packets
  0 Jumbo Packets
  780299 Bytes
  0 Input Packet Drops 0 Output Packet Drops
```

## Feature History for BPDU Guard

Feature Name	Release Name	Description
BPDU Guard	5.2(1)SV3(1.1)	This feature was introduced.