



## Table of Contents

### CCIE Routing & Switching

#### ► Unit 1: Preparation

#### ▼ Unit 2: Switching

- Static MAC Address Table Entry
- Cisco Switch Virtualization
- Introduction to VLANs (Virtual LAN)
- How to configure VLANs
- 802.1Q Encapsulation
- How to configure a trunk between switches
- Cisco DTP (Dynamic Trunking Protocol) Negotiation
- 802.1Q Tunneling (Q-in-Q)
- Etherchannel over 802.1Q Tunneling
- How to change the Native VLAN
- VTP (VLAN Trunking Protocol)
- VTP Version 3
- Protected Port
- Private VLANs (PVLAN)
- Introduction to Spanning-Tree
- Spanning-Tree Cost Calculation
- PVST (Per VLAN Spanning Tree)
- Spanning-Tree Port States
- Spanning-Tree TCN (Topology Change Notification)
- Spanning-Tree Portfast
- Spanning-Tree UplinkFast

[Spanning-Tree Backbone Fast](#)  
[Rapid Spanning-Tree](#)  
[Rapid Spanning-Tree Configuration](#)  
[MST \(Multiple Spanning-Tree\)](#)  
[Spanning-Tree BPDUGuard](#)  
**[Spanning-Tree BPDUFILTER](#)**  
[Spanning-Tree RootGuard](#)  
[Spanning-Tree LoopGuard and UDLD](#)  
[FlexLinks](#)  
[Introduction to Etherchannel](#)  
[Layer 3 Etherchannel](#)  
[Cisco IOS SPAN and RSPAN](#)

- ▶ [Unit 3: IP Routing](#)
- ▶ [Unit 4: RIP](#)
- ▶ [Unit 5: EIGRP](#)
- ▶ [Unit 6: OSPF](#)
- ▶ [Unit 7: BGP](#)
- ▶ [Unit 8: Multicast](#)
- ▶ [Unit 9: IPv6](#)
- ▶ [Unit 10: Quality of Service](#)
- ▶ [Unit 11: Security](#)
- ▶ [Unit 12: System Management](#)
- ▶ [Unit 13: Network Services](#)
- ▶ [Unit 14: MPLS](#)

You are here: [Home](#) » [Cisco](#) » [CCIE Routing & Switching](#)

# Spanning-Tree BPDUFILTER



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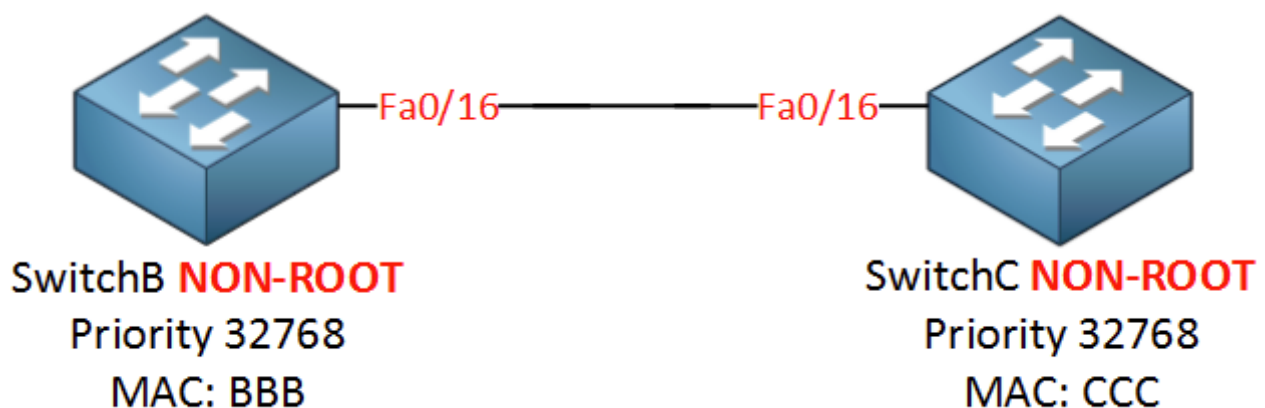
The spanning-tree BPDUFILTER works similar to [BPDUGuard](#) as it allows you to block malicious BPDUs. The difference is that BPDUGuard will put the interface that it receives the BPDU on in err-disable mode while BPDUFILTER just “filters” it. In this lesson we’ll take a good look at how BPDUFILTER works.

BPDUFILTER can be configured **globally** or on the **interface level** and there’s a difference:

- Global: if you enable BPDUfilter globally then any interface with portfast enabled will not send or receive any BPDUs. When you receive a BPDU on a portfast enabled interface then it will lose its portfast status, disables BPDU filtering and acts as a normal interface.
- Interface: if you enable BPDUfilter on the interface it will **ignore** incoming BPDUs and it will **not send** any BPDUs. This is the equivalent of disabling spanning-tree.

You have to be careful when you enable BPDUfilter on interfaces. You can use it on interfaces in access mode that connect to computers but make sure you never configure it on interfaces connected to other switches; if you do you might end up with a loop.

Let's use the following topology to demonstrate the BPDUfilter:



I'm going to use SwitchB and SwitchC to demonstrate BPDUfilter:

```
SwitchB(config)#interface fa0/16
SwitchB(config-if)#spanning-tree portfast trunk
SwitchB(config-if)#spanning-tree bpdudfilter enable
```

It will stop sending BPDUs and it will ignore whatever is received. Let's enable a debug to see what it does:

```
SwitchB#debug spanning-tree bpdud
```

You won't see any exciting messages but if you enable BPDU debugging you'll notice that it doesn't send any BPDUs anymore. If you want you can also enable BPDU debugging on SwitchC and you'll see that you won't receive any from SwitchB.

```
SwitchB(config)#interface fa0/16
```

```
SwitchB(config-if)#no spanning-tree bpdufilter enable
```

Let's get rid of the BPDUfilter command on the interface level and enable it globally:

```
SwitchB(config)#spanning-tree portfast bpdufilter default
```

You can also use the global command for BPDUfilter. This will enable BPDUfilter on all interfaces that have portfast.

That's all there is to it. Personally I wouldn't use this and use BPDUguard instead. If you don't expect BPDUs on an interface then it's better to get a notification (through err-disable) then not seeing what is going on...


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Viewing 9 posts - 1 through 9 (of 9 total)

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- March 24, 2015 at 17:54 [#11345 Reply](#)



Edwin P  
Participant

Hi Rene,

Do you know what exactly happens when BPDU filter and Guard are both enabled on a portfast enabled interface and then a BPDU's are suddenly received? I cannot find a clear answer on that anywhere. I read that BPDU filter takes precedence over BPDU guard when both configured on the interface, but it is still unclear to me what happens when in this case bpdu's are received on a port configured this way.

March 30, 2015 at 13:27 [#11346 Reply](#)



Rene Molenaar  
Keymaster  
Hi Edwin,

I just labbed this up. When you enable BPDU filter & guard at the same time then filter takes precedence. The BPDUs are ignored, the interface doesn't go in err-disabled because of BPDUGuard anymore.

Rene

March 30, 2015 at 19:21 [#11347 Reply](#)



Edwin P  
Participant  
Thanks Rene!

That thus confirms that the guard function is useless when both guard and filter are enabled on the interface, as the guard never kicks in due to the bpdu's being filtered beforehand

March 31, 2015 at 20:39 [#11348 Reply](#)



Rene Molenaar  
Keymaster  
Yup that's right 😊

May 29, 2015 at 18:25 [#11349 Reply](#)



Srinivasan C

Participant

Hi Rene,

Configuring command "spanning-tree portfast trunk" for trunk port is needed ?.

"spanning-tree bpdufilter enable" command anything to do with the above command.

Thanks,

SV

May 30, 2015 at 11:32 [#11350 Reply](#)



Rene Molenaar

Keymaster

spanning-tree portfast trunk is not required for trunks, it's only used to skip the different spanning-tree port states and jump to forwarding immediately.

Normally it's used for trunks to routers (router on a stick) or perhaps servers.

June 4, 2015 at 12:49 [#11351 Reply](#)



Srinivasan C

Participant

Hi Rene,

Thanks for your explanation!

SV

May 17, 2016 at 04:35 [#24243 Reply](#)



sims

Participant

Hi Rene ,

Global: if you enable BPDUfilter globally then any interface with portfast enabled will not send or receive any BPDUs. When you receive a BPDU on a portfast enabled interface then it will lose its portfast status, disables BPDU filtering and acts as a normal interface.

What does it mean of “disables BPDU filtering and acts as a normal interface” ?

**“Interface: if you enable BPDUfilter on the interface it will ignore incoming BPDUs and it will not send any BPDUs. This is the equivalent of disabling spanning-tree.”**

What if there is portfast enabled on these interface and enable bpdufilter also ?  
If this disable spanning tree , There is no use of portfast ?

Thanks

May 17, 2016 at 19:25 [#24261 Reply](#)



Andrew P  
Moderator  
Sims,

What does it mean of “disables BPDU filtering and acts as a normal interface” ?

It means that the switch realizes either there has been a change in topology, or the administrator has made an error. A BPDU should never be received on an interface on which BPDU filtering is enabled. When the filtering is enabled globally, this is a safety mechanism so that when a BPDU is received on a port where the global filtering was enabled, the Switch knows there must be another switch on the other side. In order to prevent a possible loop, the BPDU filtering is turned off just for this port, the portfast feature is disabled, and the switch will have this port go through the full spanning-tree states (instead of skipping straight to Forwarding).

What if there is portfast enabled on these interface and enable bpdufilter also ?  
If this disable spanning tree , There is no use of portfast?

Note that the method of enabling bpdu filtering locally at a port level does not have the same safety mechanism as globally enabling it (as was discussed above). Without the safety mechanism, there is a much higher chance that a loop can be created, and for this reason, most people try to avoid setting bpdu filtering at a port level.

I suspect that even with BPDU Filtering enabled for a port without having PortFast enabled, the port will still go through all STP states (Listening, Learning, Forwarding for regular STP). In other words, even if the switch would never receive or send a BPDU where filtering is disabled, it would still “go through the motions” of normal STP without PortFast telling it to skip ahead. If this is true, PortFast would still have a purpose.

I would encourage you to test this yourself and see what happens—I would like to know!

- Author  
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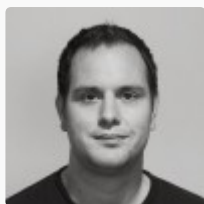
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