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Cisco Portfast Configuration



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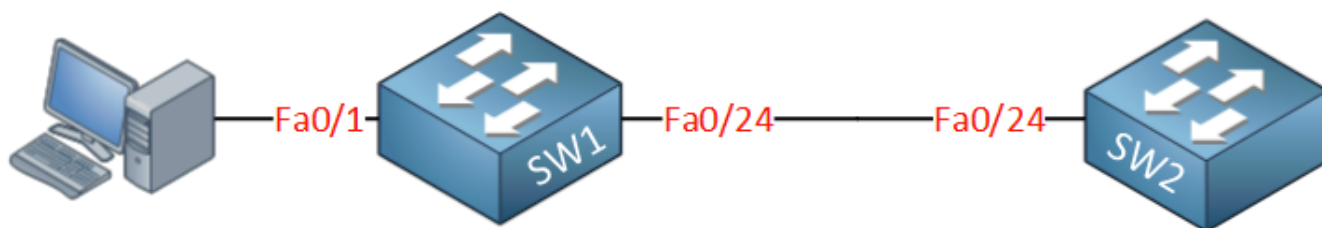
Portfast is a Cisco proprietary solution to deal with [spanning-tree topology changes](#). If you don't know how spanning-tree reacts to topology changes then I highly recommend you to [read this tutorial](#) before you continue reading. It helps to truly understand why we need portfast.

Portfast does two things for us:

- Interfaces with portfast enabled that come up will go to forwarding mode immediately, the interface will skip the listening and learning state.
- A switch will never generate a topology change notification for an interface that has portfast enabled.

It's a good idea to enable portfast on interfaces that are connected to hosts because these interfaces are likely to go up and down all the time. Don't enable portfast on an interface to another hub or switch.

Let's take a look at the difference of an interface with and without portfast. I'll be using the following topology for this:



I have two switches and one host connected to SW1. The only reason I have two switches is so SW1 has another switch that it can send topology notification changes to. Let's look at the without portfast scenario first...

Portfast disabled

To see the interesting stuff I will enable a debug on SW1:

```
SW1#debug spanning-tree events
Spanning Tree event debugging is on
```

Once I plug in the cable to connect the host to SW1 this is what happens:

```
SW1#
STP: VLAN0001 Fa0/1 -> listening
STP: VLAN0001 Fa0/1 -> learning
STP: VLAN0001 Fa0/1 -> forwarding
```

This is just normal spanning-tree behavior, it walks through the listening and learning states and ends up in forwarding.

Each time I unplug the cable, spanning-tree will generate a topology change notification. There's a nice command that you can use to check how many have been sent so far:

```
SW1#show spanning-tree detail
```

```
VLAN0001 is executing the ieee compatible Spanning Tree protocol
Bridge Identifier has priority 32768, sysid 1, address 0019.569d.5700
Configured hello time 2, max age 20, forward delay 15
Current root has priority 32769, address 0011.bb0b.3600
Root port is 26 (FastEthernet0/24), cost of root path is 19
Topology change flag not set, detected flag not set
Number of topology changes 5 last change occurred 00:02:09 ago
    from FastEthernet0/1
Times: hold 1, topology change 35, notification 2
    hello 2, max age 20, forward delay 15
Timers: hello 0, topology change 0, notification 0, aging 300
```

As you can see there have been 5 topology changes so far on VLAN 1. Let's unplug the cable to the host to see what happens:

```
SW1#
```

```
STP: VLAN0001 sent Topology Change Notice on Fa0/24
```

Spanning-tree will send a topology change notification on the interface towards SW2 and the counter will increase:

```
SW1#show spanning-tree detail | include changes
```

```
Number of topology changes 6 last change occurred 00:01:12 ago
```

In short, everytime we unplug the cable the switch will generate a TCN. Let's see the difference when we enable portfast...

Portfast enabled

All we have to do is enable portfast on the FastEthernet 0/1 interface that connects our host:

```
SW1(config)#interface FastEthernet 0/1
```

```
SW1(config-if)#spanning-tree portfast
```

```
%Warning: portfast should only be enabled on ports connected to a single
host. Connecting hubs, concentrators, switches, bridges, etc... to this
interface when portfast is enabled, can cause temporary bridging loops.
Use with CAUTION
```

```
%Portfast has been configured on FastEthernet0/1 but will only
have effect when the interface is in a non-trunking mode.
```

We get a big warning that portfast shouldn't be used on interfaces that connect to other switches etc.



There is also a global command "**spanning-tree portfast default**" that will enable portfast on all interfaces that are in access mode. The result will be the same but it saves you from enabling it on each interface separately.

Let's connect our host again:

```
SW1#
```

```
STP: VLAN0001 Fa0/1 ->jump to forwarding from blocking
```

Great, the interface skips the listening and learning state and goes to forwarding immediately. Also, the switch will no longer generate topology change notifications when you unplug this cable anymore.

Want to take a look for yourself? Here you will find the configuration of SW1.

SW1

```
hostname SW1
!
interface FastEthernet0/1
  spanning-tree portfast
!
end
```

I hope this has been helpful to understand portfast, if you enjoyed this tutorial, please share it with your friends or colleagues.


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- September 10, 2014 at 02:53 [#11601 Reply](#)



Edson Soares

Your articles are so useful, it totally saved me.

It's a pleasure to read a text so well detailed and clear, you went straight to the point and also used a very interesting methodology to keep our focus in the subject.

Thank you

September 10, 2014 at 22:23 [#11602 Reply](#)



Vik
Rene,

Do you make any labs in packet tracer?

September 11, 2014 at 10:18 [#11603 Reply](#)



Rene Molenaar
Keymaster
Hi Vik,

The labs on GNS3Vault were created in GNS3, I haven't created anything in packet tracer but it should be simple to recreate. Nowadays people use GNS3, IOU, packet tracer, the 1000v VMware image and real hardware. It takes too much time to create a startup config for any possible method.

Rene

October 4, 2015 at 04:12 [#17745 Reply](#)



Gabriel S
Participant
Rene,

Thanks for this explanation 😊

Hugs

March 18, 2016 at 15:42 [#22804 Reply](#)



William V
Participant
Rene

Hop you are well – do you know at all if the current CCNA blueprint / exam covers any other additional spanning tree enhancement features besides Portfast such as UDLD , Backbonefast, Uplinkfast – I ask since after searching the current blueprint there is not reference or doesn't seem to be to any of these

Many thanks in advance

Will

March 18, 2016 at 17:22 [#22808 Reply](#)



Rene Molenaar
Keymaster
Hi Will,

Backbonefast, Uplinkfast and UDL are on the CCNP SWITCH blueprint so I don't expect to see those on the CCNA exam(s). They aren't on the CCNA blueprint.

Portfast is something you should practice though 😊

Rene

March 30, 2016 at 14:55 [#23043 Reply](#)



Arthur F
Participant
Very clear and easy to understand. Great job 😊

April 28, 2016 at 22:02 [#23676 Reply](#)



Mohammad Hasanuz Z
Participant
Thanks dear 😊

May 29, 2016 at 22:49 [#24566 Reply](#)



chandru k
Participant
Hi Rene,

What happens when Portfast is enabled on a port but BPDU filter is not globally enabled and the port receives a BPDU.

Thanks,

May 30, 2016 at 01:50 [#24567 Reply](#)



Andrew P
Moderator
Chandru,

The port will lose its portfast status, and will continue to function like a normal port (without Portfast). It will not be disabled unless BPDU Guard was also enabled.

FYI: Rene has a [Lesson related to this topic here](#)

May 31, 2016 at 12:14 [#24606 Reply](#)



chandru k
Participant

Thanks Andrew. I have one more question, What is the real use of BPDU filter command in a Global mode, if a normal portfast can achieve the same functionality. Why do we need to enable BPDU filter at the global level and what enhancement does it provide at the global level. BPDU filter lesson says.

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.

May 31, 2016 at 17:22 [#24624 Reply](#)



Andrew P
Moderator
Chandru,

BPDUFilter Global and Portfast serve very different purposes:

The most important thing that portfast does is define which ports should be ignored for spanning-tree re-convergence events. In other words, you want to make sure your access-level ports, where people might be plugging/unplugging their devices all the time, will not cause the

entire spanning-tree topology run its STP calculation every time an event occurs. Secondly, it tells the port in question to skip the listening/learning and go straight to forwarding.

One thing that PortFast does NOT do is prevent the sending of BPDUs—only BPDU Filtering does that.

When running BPDUFilter, you should do so only at the global level. The reason is at the global level it has a built in protection mechanism where if a BPDU is received on a port that has global filtering enabled, this port will fall back to being a “normal” port that sends/receives BPDUs. This protection is not present when enabling filtering on a per port basis which may result in a layer 2 loop (broadcast storm).

June 1, 2016 at 07:11 [#24640 Reply](#)



chandru k

Participant

Thanks Andrew. Now i can understand completely. I misunderstood that portfast will not send BPDU's.

- Author
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