Title:
Cisco CCNA / CCNP Certification: How And Why To Build An Etherchannel

Word Count:
755

Summary:
Etherchannels are in use all over the world, as well as on your CCNA and CCNP
exams. Learn how to build and support an EC in this tutorial from Chris Bryant,
CCIE #12933.

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ccna, pass, free, exam, icnd, intro, ccnp, etherchannel, switch, root, bridge,
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Article Body:
CCNA and CCNP candidates are well-versed in Spanning-Tree Protocol, and one of
the great things about STP is that it works well with little or no additional
configuration. There is one situation where STP works against us just a bit
while it prevents switching loops, and that is the situation where two switches
have multiple physical connections.

You would think that if you have two separate physical connections between two
switches, twice as much data could be sent from one switch to the other than if
there was only one connection. STP doesn't allow this by default, however in an
effort to prevent switching loops from forming, one of the paths will be
blocked.

SW1 and SW2 are connected via two separate physical connections, on ports
fast0/11 and fast 0/12. As we can see here on SW1, only port 0/11 is actually
forwarding traffic. STP has put the other port into blocking mode (BLK).

SW1#show spanning vlan 10

(some output removed for clarity)

Interface Role Sts Cost Prio.Nbr Type

Fa0/11   Root FWD 19 128.11 P2p

```
Fa0/12    Altn BLK 19 128.12 P2p
```

While STP is helping us by preventing switching loops, STP is also hurting us by preventing us from using a perfectly valid path between SW1 and SW2. We could literally double the bandwidth available between the two switches if we could use that path that is currently being blocked.

The secret to using the currently blocked path is configuring an Etherchannel. An Etherchannel is simply a logical bundling of 2 - 8 physical connections between two Cisco switches.

Configuring an Etherchannel is actually quite simple. Use the command "channel-group 1 mode on" on every port you want to be placed into the Etherchannel. Of course, this must be done on both switches if you configure an Etherchannel on one switch and don't do so on the correct ports on the other switch, the line protocol will go down and stay there.

The beauty of an Etherchannel is that STP sees the Etherchannel as one connection. If any of the physical connections inside the Etherchannel go down, STP does not see this, and STP will not recalculate. While traffic flow between the two switches will obviously be slowed, the delay in transmission caused by an STP recalculation is avoided. An Etherchannel also allows us to use multiple physical connections at one time.

Here's how to put these ports into an Etherchannel:

```
SW1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

SW1(config)#interface fast 0/11

SW1(config-if)#channel-group 1 mode on

Creating a port-channel interface Port-channel 1


SW1(config-if)#interface fast 0/12

SW1(config-if)#channel-group 1 mode on


SW2#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

SW2(config)#int fast 0/11

SW2(config-if)#channel-group 1 mode on

SW2(config-if)#int fast 0/12

SW2(config-if)#channel-group 1 mode on

The command "show interface trunk" and "show spanning-tree vlan 10" will be used
to verify the Etherchannel configuration.

SW2#show interface trunk (some output removed for clarity)

Port Mode Encapsulation Status Native vlan

Po1 desirable 802.1q trunking 1

SW2#show spanning vlan 10 (some output removed for clarity)

Interface Role Sts Cost Prio.Nbr Type

Po1   Desg FWD 12   128.65 P2p

Before configuring the Etherchannel, we saw individual ports here. Now we see
"Po1", which stands for the interface "port-channel1". This is the logical
interface created when an Etherchannel is built. We are now using both physical
paths between the two switches at one time!

That's one major benefit in action let's see another. Ordinarily, if the single
open path between two trunking switches goes down, there is a significant delay
while another valid path is opened - close to a minute in some situations. We
will now shut down port 0/11 on SW2 and see the effect on the etherchannel.

SW2#conf t

Enter configuration commands, one per line. End with CNTL/Z.

SW2(config)#int fast 0/11

SW2(config-if)#shutdown

3w0d: %LINK-5-CHANGED: Interface FastEthernet0/11, changed
state to administratively down

SW2#show spanning vlan 10

VLAN0010

Spanning tree enabled protocol ieee

Interface Role Sts Cost Prio.Nbr Type

Po1   Desg FWD 19   128.65 P2p

SW2#show interface trunk

Port Mode Encapsulation   Status   Native vlan

Po1 desirable 802.1q   trunking   1

The Etherchannel did not go down! STP sees the Etherchannel as a single link
therefore, as far as STP is concerned, nothing happened.

Building an Etherchannel and knowing how it can benefit your network is an
essential skill for CCNA and CCNP success, and it comes in very handy on the job
as well. Make sure you are comfortable with building one before taking Cisco's
exams!