

Home

Configuring Back-to-Back vPCs on Cisco Nexus Switches

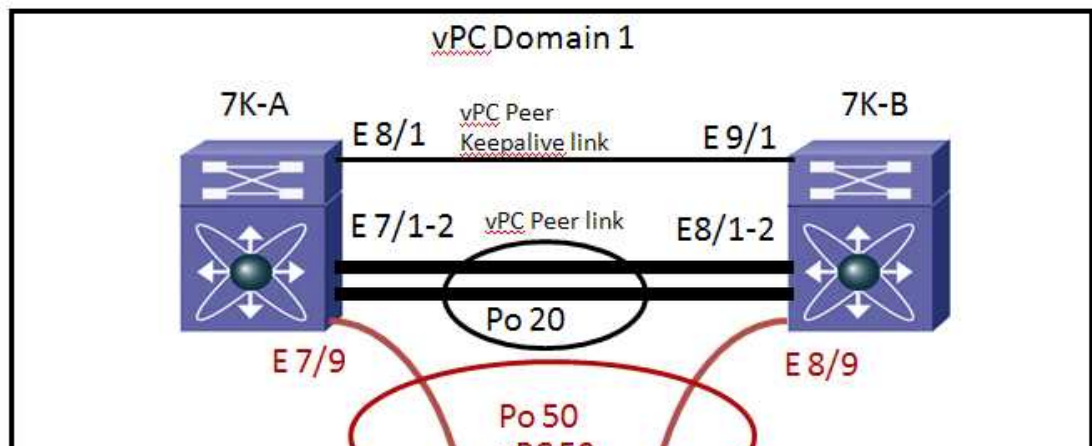


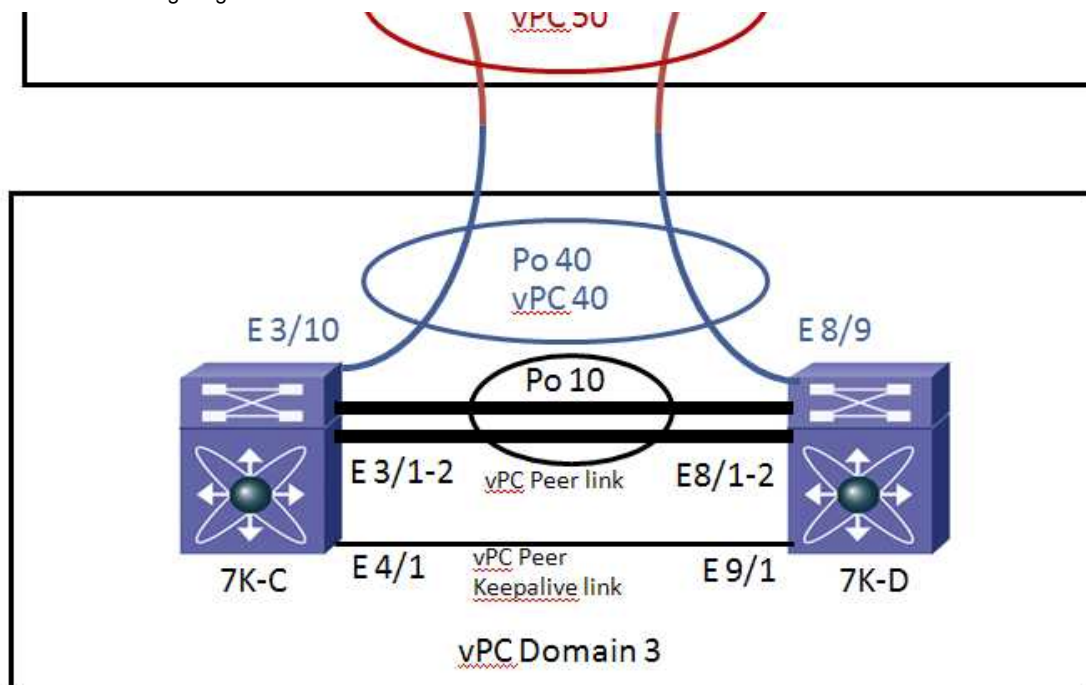
Recently I was talking to one of my co-workers about connecting back-to-back virtual Portchannels (vPCs) from one pair of Nexus 7000s (or 5000s). For example, you might have a data center with lots of VLANs, and decide that while you are implementing TRILL and before you implement FabricPath, you will minimize STP with vPCs. The back-to-back vPCs will give you a loopless design.

Cisco mentions back-to-back vPCs in the Cisco Data Center Interconnect Design and Implementation Guide

http://www.cisco.com/en/US/solutions/collateral/ns340/ns517/ns224/ns949/ns304/ns975/data_center_interconnect_design_guide.pdf under the "2 Sites vPC-vPC Case Study", and also calls them multi-layer vPCs in their recent configuration guides.

I decided to put together a set of configurations on paper to see what they would look like. Here is the layout:





In my example, 7K-A & 7K-B are at the core layer, 7K-C and 7K-D are at the distribution or access layer. I used different PortChannel numbers mostly to could, and I thought it might help illustrate the different devices. I chose different interface numbers for the same reason.

Here are the slightly commented config fragments I put together:

```

. . .
hostname 7K-A
!
feature lacp
feature vpc
! enable the VLANs needed
vlan 1-50
!
! enable ports that will be used for peer link w/ 7K-B
interface ethernet 7/1-2
 switchport
 switchport mode trunk
 switchport trunk allowed vlan 1-50
 switchport trunk native vlan 6
 channel-group 20 mode active
 exit
!
! enable peer keepalive (in this case, use separate VRF)
vrf context pkal
interface ethernet 8/1
 vrf member pkal
 ip address 172.23.145.17/30
 no shut
!
! configure VPC switch domain
vpc domain 1
 peer-keepalive destination 172.23.145.18 source 172.23.145.17 vrf pkal
!
! configure the peer link
interface port-channel 20
 vpc peer-link
 exit
!
! Configure the interface for the port channel to 7K-C off of the vPC
interface ethernet 7/9
 switchport
 switchport mode trunk
 switchport trunk allowed vlan 1-50
 switchport trunk native vlan 6
 channel-group 50 mode active
 exit
interface port-channel 50
 vpc 50
 exit
!

```

```
. . .
hostname 7K-B
!
feature lACP
feature vpc
! enable the VLANs needed
vlan 1-50
!
! enable ports that will be used for peer link to 7K-A
interface ethernet 8/1-2
  switchport
  switchport mode trunk
  switchport trunk allowed vlan 1-50
  switchport trunk native vlan 6
  channel-group 20 mode active
  exit
!
! enable peer keepalive (in this case, use separate VRF)
vrf context pkal
interface ethernet 9/1
  vrf member pkal
  ip address 172.23.145.18/30
  no shut
!
! configure VPC switch domain
vpc domain 1
  peer-keepalive destination 172.23.145.17 source 172.23.145.18 vrf pkal
!
! configure the peer link
interface port-channel 20
  vpc peer-link
  exit
!
! Configure the interface for the port channel 7K-D off of the vPC.
interface ethernet 8/9
  switchport
  switchport mode trunk
  switchport trunk allowed vlan 1-50
  switchport trunk native vlan 6
  channel-group 50 mode active
  exit
interface port-channel 50
  vpc 50
  exit
. . .
!
```

```
. . .
hostname 7K-C
!
feature lACP
feature vpc
! enable the VLANs needed
vlan 1-50
!
! enable ports that will be used for peer link
interface ethernet 3/1-2
  switchport
  switchport mode trunk
  switchport trunk allowed vlan 1-50
  switchport trunk native vlan 6
  channel-group 10 mode active
  exit
!
! enable peer keepalive (in this case, use separate VRF)
vrf context pkal2
interface ethernet 4/1
  vrf member pkal2
  ip address 172.23.146.33/30
  no shut
!
! configure VPC switch domain
```

```

: configure vpc switch domain
! note the 7K-C / 7K-D vPC topology has a different Domain ID than the 7K-A / 7K-B vPC topology
vpc domain 2
peer-keepalive destination 172.23.146.34 source 172.23.146.33 vrf pkal2
!
! configure the peer link
interface port-channel 10
vpc peer-link
exit
!
! Configure the interface for the port channel to 7K-A off of the vPC.
interface ethernet 3/10
switchport
switchport mode trunk
switchport trunk allowed vlan 1-50
switchport trunk native vlan 6
channel-group 40 mode active
exit
interface port-channel 40
vpc 40
exit
. . .
!
```

```

. . .
hostname 7K-D
!
feature lacp
feature vpc
! enable the VLANs needed
vlan 1-50
!
! enable ports that will be used for peer link
interface ethernet 8/1-2
switchport
switchport mode trunk
switchport trunk allowed vlan 1-50
switchport trunk native vlan 6
channel-group 10 mode active
exit
!
! enable peer keepalive (in this case, use separate VRF)
vrf context pkal
interface ethernet 9/1
vrf member pkal2
ip address 172.23.146.34/30
no shut
!
! configure VPC switch domain

! note the 7K-C / 7K-D vPC topology has a different Domain ID than the 7K-A / 7K-B vPC topology
vpc domain 2
peer-keepalive destination 172.23.146.33 source 172.23.146.34 vrf pkal2
!
! configure the peer link
interface port-channel 10
vpc peer-link
exit
!
! Configure the interface for the port channel to the remote data center off of the vPC.
interface ethernet 8/9
switchport
switchport mode trunk
switchport trunk allowed vlan 1-50
switchport trunk native vlan 6
channel-group 40 mode active
exit
interface port-channel 40
vpc 40
exit
. . .
!
```

-- cwr

If you would like some additional details, the following references should be helpful:

Configuring vPCs from Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 5.x

Virtual PortChannels: Building Networks without Spanning Tree Protocol

Comments (6)

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Instructor

written by Mike Crane, November 29, 2010

very nice....I think you may want to add "Domain 2" to the middle of the diagram....

thanks for sharing!

Mike

Follow up to Mike

written by Carole Warner Reece, February 01, 2011

Hi Mike -

I don't think "Domain 2" is needed in the diagram. A vPC domain is just an arbitrary number assigned to a pair of switches that share vPC information. I show two domains (1 and 3), and that they do not need to be sequential.

Carole

IP Design Engineer

written by Peter Ahremark, February 23, 2011

I notice that you write 'or 5000s', well it doesn't work to do the same configuration in Nexus 5000 since it doesn't support creating more VRF's for the peer keepalive (at least not in the 4.2(1)N2(1) that I have been working with. You should update the text either by removing the 'or 5000s' or mention which N that is needed to enable this in a Nexus 5000 (if possible at all) or multiple configurations depending on hardware platform.

Data Center Network engineer

written by Mike Ballard, April 26, 2011

In your layout you do not have N7K-A connected to N7K-D and N7K-B to N7K-C. Seem to defeat the purpose of vPC and multi-chassis ether channel. Is a configuration such as that break anything?

Thanks

A physical mesh vPC?

written by Matt, May 25, 2011

Can this scenario work with cross links from 7K-A to 7K-D and 7K-B to 7K-C as well as those links shown above? Basically a four link vPC (instead of the two shown above), or would this fall into issues with the loop prevention mechanism?

Thanks!

PortChannel Between DCs

written by Andre Gustavo Lomonaco, June 16, 2011

Hi Carole,

Great Article

Is better to use different PortChannels numbers (in this case 40 and 50) or to use the same PortChannel Number in all the Nexus to make the vPC the DataCenters ??

My Best Regards,

Andre Lomonaco

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