



Cisco® Nexus Switches

Replacing Cisco Nexus 5596 cluster switches with Cisco Nexus 3132Q-V cluster switches

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Replacing a Cisco Nexus 5596 cluster switch with a Cisco Nexus 3132Q-V cluster switch

You must be aware of certain configuration information, port connections and cabling requirements when you are replacing a Cisco Nexus 5596 cluster switch with a Cisco Nexus 3132Q-V cluster switch.

- The following cluster switches are supported:
 - Nexus 5596
 - Nexus 3132Q-V
- The number of 10 GbE and 40/100 GbE ports are defined in the reference configuration files (RCFs) available on the [Cisco® Cluster Network Switch Reference Configuration File Download](#) page.
- The cluster switches use the following ports for connections to nodes:
 - Ports e1/1-40 (10 GbE): Nexus 5596
 - Ports e1/1-30 (40/100 GbE): Nexus 3132Q-V
- The cluster switches use the following Inter-Switch Link (ISL) ports:
 - Ports e1/41-48 (10 GbE): Nexus 5596
 - Ports e1/31-32 (40/100 GbE): Nexus 3132Q-V
- The *Hardware Universe* contains information about supported cabling to Nexus 3132Q-V switches:
 - Nodes with 10 GbE cluster connections require QSFP to SFP+ optical fiber breakout cables or QSFP to SFP+ copper breakout cables.
 - Nodes with 40/100 GbE cluster connections require supported QSFP/QSFP28 optical modules with fiber cables or QSFP/QSFP28 copper direct-attach cables.
- The cluster switches use the appropriate ISL cabling:
 - Beginning: Nexus 5596 to Nexus 5596 (SFP+ to SFP+)
 - 8x SFP+ fiber or copper direct-attach cables
 - Interim: Nexus 5596 to Nexus 3132Q-V (QSFP to 4xSFP+ break-out)
 - 1x QSFP to SFP+ fiber break-out or copper break-out cables
 - Final: Nexus 3132Q-V to Nexus 3132Q-V (QSFP28 to QSFP28)
 - 2x QSFP28 fiber or copper direct-attach cables
- On Nexus 3132Q-V switches, you can operate QSFP/QSFP28 ports as either 40/100 Gigabit Ethernet or 4 x10 Gigabit Ethernet modes.

By default, there are 32 ports in the 40/100 Gigabit Ethernet mode. These 40 Gigabit Ethernet ports are numbered in a 2-tuple naming convention. For example, the second 40 Gigabit Ethernet port is numbered as 1/2. The process of changing the configuration from 40 Gigabit Ethernet to 10 Gigabit Ethernet is called *breakout* and the process of changing the configuration from 10 Gigabit Ethernet to 40 Gigabit Ethernet is called *breakin*. When you break out a 40/100 Gigabit Ethernet port into 10 Gigabit Ethernet ports, the resulting ports are numbered using a 3-tuple naming convention. For example, the break-out ports of the second 40 Gigabit Ethernet port are numbered as 1/2/1, 1/2/2, 1/2/3, and 1/2/4.
- On the left side of Nexus 3132Q-V switches is a set of 4 SFP+ ports multiplexed to that QSFP28 port.

By default, the RCF is structured to use the QSFP28 port.

Note: You can make 4x SFP+ ports active instead of a QSFP port for Nexus 3132Q-V switches by using the `hardware profile front portmode sfp-plus` command. Similarly, you can reset Nexus 3132Q-V switches to use a QSFP port instead of 4x SFP+ ports by using the `hardware profile front portmode qsfp` command.

- You have configured some of the ports on Nexus 3132Q-V switches to run at 10 GbE or 40/100 GbE.

Note: You can break out the first six ports into 4x10 GbE mode by using the `interface breakout module 1 port 1-6 map 10g-4x` command. Similarly, you can regroup the first six QSFP+ ports from breakout configuration by using the `no interface breakout module 1 port 1-6 map 10g-4x` command.

- You have done the planning, migration, and read the required documentation on 10 GbE and 40/100 GbE connectivity from nodes to Nexus 3132Q-V cluster switches.
- The ONTAP and NX-OS versions supported in this procedure are on the *Cisco Ethernet Switches* page.

[Cisco Ethernet Switches](#)

How to replace a Cisco Nexus 5596 cluster switch with a Cisco Nexus 3132Q-V cluster switch

To replace an existing Nexus 5596 cluster switch with a Nexus 3132Q-V cluster switch, you must perform a specific sequence of tasks.

About this task

The examples in this procedure describe replacing Nexus 5596 switches with Nexus 3132Q-V switches. You can use these steps (with modifications) to replace other older Cisco switches. The procedure uses the following switch and node nomenclature:

- The command outputs might vary depending on different releases of ONTAP.
- The Nexus 5596 switches to be replaced are CL1 and CL2.
- The Nexus 3132Q-V switches to replace the Nexus 5596 switches are C1 and C2.
- n1_clus1 is the first cluster logical interface (LIF) connected to cluster switch 1 (CL1 or C1) for node n1.
- n1_clus2 is the first cluster LIF connected to cluster switch 2 (CL2 or C2) for node n1.
- n1_clus3 is the second LIF connected to cluster switch 2 (CL2 or C2) for node n1.
- n1_clus4 is the second LIF connected to cluster switch 1 (CL1 or C1) for node n1.
- The nodes are n1, n2, n3, and n4.
- The number of 10 GbE and 40/100 GbE ports are defined in the reference configuration files (RCFs) available on the [Cisco® Cluster Network Switch Reference Configuration File Download](#) page.

Note: The procedure requires the use of both ONTAP commands and Cisco Nexus 3000 Series Switches commands; ONTAP commands are used unless otherwise indicated.

Note: The examples in this procedure use four nodes: Two nodes use four 10 GbE cluster interconnect ports: e0a, e0b, e0c, and e0d. The other two nodes use two 40/100 GbE cluster interconnect ports: e4a, e4e. The *Hardware Universe* lists the actual cluster ports on your platforms.

This procedure covers the following scenarios:

- The cluster starts with two nodes connected and functioning in a 2 Nexus 5596 cluster switches.
- The cluster switch CL2 to be replaced by C2 (steps 1 to 19):

- Traffic on all cluster ports and LIFs on all nodes connected to CL2 are migrated onto the first cluster ports and LIFs connected to CL1.
- Disconnect cabling from all cluster ports on all nodes connected to CL2, and then use supported break-out cabling to reconnect the ports to new cluster switch C2.
- Disconnect cabling between ISL ports between CL1 and CL2, and then use supported break-out cabling to reconnect the ports from CL1 to C2.
- Traffic on all cluster ports and LIFs connected to C2 on all nodes is reverted.
- The cluster switch CL2 to be replaced by C2 (steps 20 to 33)
 - Traffic on all cluster ports or LIFs on all nodes connected to CL1 are migrated onto the second cluster ports or LIFs connected to C2.
 - Disconnect cabling from all cluster port on all nodes connected to CL1 and reconnect, using supported break-out cabling, to new cluster switch C1.
 - Disconnect cabling between ISL ports between CL1 and C2, and reconnect using supported cabling, from C1 to C2.
 - Traffic on all cluster ports or LIFs connected to C1 on all nodes is reverted.
- Two FAS9000 nodes have been added to cluster with examples showing cluster details (steps 34 to 37).

Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message: **system node autosupport invoke -node * -type all -message MAINT=xh**
 x is the duration of the maintenance window in hours.

Note: The message notifies technical support of this maintenance task so that automatic case creation is suppressed during the maintenance window.

2. Display information about the devices in your configuration:

network device-discovery show

The following example shows how many cluster interconnect interfaces have been configured in each node for each cluster interconnect switch:

```
cluster::> network device-discovery show
Node      Local Port   Discovered Device      Interface      Platform
-----
n1        /cdp
          e0a      CL1          Ethernet1/1    N5K-C5596UP
          e0b      CL2          Ethernet1/1    N5K-C5596UP
          e0c      CL2          Ethernet1/2    N5K-C5596UP
          e0d      CL1          Ethernet1/2    N5K-C5596UP
n2        /cdp
          e0a      CL1          Ethernet1/3    N5K-C5596UP
          e0b      CL2          Ethernet1/3    N5K-C5596UP
          e0c      CL2          Ethernet1/4    N5K-C5596UP
          e0d      CL1          Ethernet1/4    N5K-C5596UP
8 entries were displayed.
```

3. Determine the administrative or operational status for each cluster interface:
 - a. Display the network port attributes:

network port show

The following example displays the network port attributes on a system:

```
cluster::*> network port show -role cluster
(network port show)
Node: n1
Port      IPspace      Broadcast Domain Link MTU      Speed(Mbps) Health Ignore
Admin/Oper Status      Status
-----
```

```

-----
e0a    Cluster    Cluster    up    9000  auto/10000 -    -
e0b    Cluster    Cluster    up    9000  auto/10000 -    -
e0c    Cluster    Cluster    up    9000  auto/10000 -    -
e0d    Cluster    Cluster    up    9000  auto/10000 -    -

Node: n2

Port      IPspace      Broadcast Domain Link MTU  Speed(Mbps) Health Ignore
Admin/Oper Status      Health Status
-----
e0a    Cluster    Cluster    up    9000  auto/10000 -    -
e0b    Cluster    Cluster    up    9000  auto/10000 -    -
e0c    Cluster    Cluster    up    9000  auto/10000 -    -
e0d    Cluster    Cluster    up    9000  auto/10000 -    -
8 entries were displayed.
    
```

b. Display information about the logical interfaces:

network interface show

The following example displays the general information about all of the LIFs on your system:

```

cluster::*> network interface show -role cluster
(network interface show)
Vserver      Logical      Status      Network      Current      Current      Is
Interface    Admin/Oper   Address/Mask Node          Port         Home
-----
Cluster
n1_clus1    up/up       10.10.0.1/24 n1           e0a         true
n1_clus2    up/up       10.10.0.2/24 n1           e0b         true
n1_clus3    up/up       10.10.0.3/24 n1           e0c         true
n1_clus4    up/up       10.10.0.4/24 n1           e0d         true
n2_clus1    up/up       10.10.0.5/24 n2           e0a         true
n2_clus2    up/up       10.10.0.6/24 n2           e0b         true
n2_clus3    up/up       10.10.0.7/24 n2           e0c         true
n2_clus4    up/up       10.10.0.8/24 n2           e0d         true
8 entries were displayed.
    
```

c. Display information about the discovered cluster switches:

system cluster-switch show

The following example displays the cluster switches that are known to the cluster, along with their management IP addresses:

```

cluster::*> system cluster-switch show
Switch      Type          Address      Model
-----
CL1         cluster-network 10.10.1.101  NX5596
  Serial Number: 01234567
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.1(1)N1(1)
  Version Source: CDP
CL2         cluster-network 10.10.1.102  NX5596
  Serial Number: 01234568
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.1(1)N1(1)
  Version Source: CDP
2 entries were displayed.
    
```

4. Set the `-auto-revert` parameter to **false** on cluster LIFs `clus1` and `clus2` on both nodes:

network interface modify

```

cluster::*> network interface modify -vserver node1 -lif clus1 -auto-revert false
cluster::*> network interface modify -vserver node1 -lif clus2 -auto-revert false
    
```

```
cluster::*> network interface modify -vserver node2 -lif clus1 -auto-revert false  
cluster::*> network interface modify -vserver node2 -lif clus2 -auto-revert false
```

- 5. Verify that the appropriate RCF and image are installed on the new 3132Q-V switches as necessary for your requirements, and make the essential site customizations, such as users and passwords, network addresses, and so on.

You must prepare both switches at this time. If you need to upgrade the RCF and image, follow these steps:

- a. Go to the *Cisco Ethernet Switches* page on the NetApp Support Site.
[Cisco Ethernet Switches](#)
- b. Note your switch and the required software versions in the table on that page.
- c. Download the appropriate version of the RCF.
- d. Click **CONTINUE** on the **Description** page, accept the license agreement, and then follow the instructions on the **Download** page to download the RCF.
- e. Download the appropriate version of the image software.

See the *ONTAP 8.x or later Cluster and Management Network Switch Reference Configuration Files* Download page, and then click the appropriate version.

To find the correct version, see the *ONTAP 8.x or later Cluster Network Switch Download* page.

- 6. Migrate the LIFs associated with the second Nexus 5596 switch to be replaced:

network interface migrate

The following example shows n1 and n2, but LIF migration must be done on all of the nodes:

```
cluster::*> network interface migrate -vserver Cluster -lif n1_clus2 -source-node n1 -  
destination-node n1 -destination-port e0a  
cluster::*> network interface migrate -vserver Cluster -lif n1_clus3 -source-node n1 -  
destination-node n1 -destination-port e0d  
cluster::*> network interface migrate -vserver Cluster -lif n2_clus2 -source-node n2 -  
destination-node n2 -destination-port e0a  
cluster::*> network interface migrate -vserver Cluster -lif n2_clus3 -source-node n2 -  
destination-node n2 -destination-port e0d
```

- 7. Verify the cluster's health:

network interface show

The following example shows the result of the previous `network interface migrate` command:

```
cluster::*> network interface show -role cluster  
(network interface show)  
Vserver      Logical      Status      Network      Current      Current      Is  
-----      Interface   Admin/Oper  Address/Mask  Node         Port         Home  
-----  
Cluster  
      n1_clus1   up/up      10.10.0.1/24  n1          e0a         true  
      n1_clus2   up/up      10.10.0.2/24  n1          e0a         false  
      n1_clus3   up/up      10.10.0.3/24  n1          e0d         false  
      n1_clus4   up/up      10.10.0.4/24  n1          e0d         true  
      n2_clus1   up/up      10.10.0.5/24  n2          e0a         true  
      n2_clus2   up/up      10.10.0.6/24  n2          e0a         false  
      n2_clus3   up/up      10.10.0.7/24  n2          e0d         false  
      n2_clus4   up/up      10.10.0.8/24  n2          e0d         true  
8 entries were displayed.
```

- 8. Shut down the cluster interconnect ports that are physically connected to switch CL2:

network port modify

The following commands shut down the specified ports on n1 and n2, but the ports must be shut down on all nodes:

```
cluster::*> network port modify -node n1 -port e0b -up-admin false
```

```
cluster::*> network port modify -node n1 -port e0c -up-admin false
cluster::*> network port modify -node n2 -port e0b -up-admin false
cluster::*> network port modify -node n2 -port e0c -up-admin false
```

9. Ping the remote cluster interfaces and perform an RPC server check:

cluster ping-cluster

The following example shows how to ping the remote cluster interfaces:

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1      e0a    10.10.0.1
Cluster n1_clus2 n1      e0b    10.10.0.2
Cluster n1_clus3 n1      e0c    10.10.0.3
Cluster n1_clus4 n1      e0d    10.10.0.4
Cluster n2_clus1 n2      e0a    10.10.0.5
Cluster n2_clus2 n2      e0b    10.10.0.6
Cluster n2_clus3 n2      e0c    10.10.0.7
Cluster n2_clus4 n2      e0d    10.10.0.8

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 16 path(s):
  Local 10.10.0.1 to Remote 10.10.0.5
  Local 10.10.0.1 to Remote 10.10.0.6
  Local 10.10.0.1 to Remote 10.10.0.7
  Local 10.10.0.1 to Remote 10.10.0.8
  Local 10.10.0.2 to Remote 10.10.0.5
  Local 10.10.0.2 to Remote 10.10.0.6
  Local 10.10.0.2 to Remote 10.10.0.7
  Local 10.10.0.2 to Remote 10.10.0.8
  Local 10.10.0.3 to Remote 10.10.0.5
  Local 10.10.0.3 to Remote 10.10.0.6
  Local 10.10.0.3 to Remote 10.10.0.7
  Local 10.10.0.3 to Remote 10.10.0.8
  Local 10.10.0.4 to Remote 10.10.0.5
  Local 10.10.0.4 to Remote 10.10.0.6
  Local 10.10.0.4 to Remote 10.10.0.7
  Local 10.10.0.4 to Remote 10.10.0.8
Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)
```

10. Shut down the ISL ports 41 through 48 on the active Nexus 5596 switch CL1:

The following example shows how to shut down ISL ports 41 through 48 on the Nexus 5596 switch CL1:

```
(CL1)# configure
(CL1)(Config)# interface e1/41-48
(CL1)(config-if-range)# shutdown
(CL1)(config-if-range)# exit
(CL1)(Config)# exit
(CL1)#
```

If you are replacing a Nexus 5010 or 5020, specify the appropriate port numbers for ISL from page 1.

11. Build a temporary ISL between CL1 and C2.

The following example shows a temporary ISL being set up between CL1 and C2:

```
C2# configure
C2(config)# interface port-channel 2
C2(config-if)# switchport mode trunk
C2(config-if)# spanning-tree port type network
C2(config-if)# mtu 9216
C2(config-if)# interface breakout module 1 port 24 map 10g-4x
C2(config)# interface e1/24/1-4
C2(config-if-range)# switchport mode trunk
C2(config-if-range)# mtu 9216
C2(config-if-range)# channel-group 2 mode active
C2(config-if-range)# exit
C2(config-if)# exit
```

- 12. On all nodes, remove all cables attached to the Nexus 5596 switch CL2.

With supported cabling, reconnect disconnected ports on all nodes to the Nexus 3132Q-V switch C2.

- 13. Remove all the cables from the Nexus 5596 switch CL2.

Attach the appropriate Cisco QSFP to SFP+ break-out cables connecting port 1/24 on the new Cisco 3132Q-V switch, C2, to ports 45 to 48 on existing Nexus 5596, CL1.

- 14. Verify that interfaces eth1/45-48 already have channel-group 1 mode active in their running configuration.

- 15. Bring up ISLs ports 45 through 48 on the active Nexus 5596 switch CL1.
The following example shows ISLs ports 45 through 48 being brought up:

```
(CL1)# configure
(CL1)(Config)# interface e1/45-48
(CL1)(config-if-range)# no shutdown
(CL1)(config-if-range)# exit
(CL1)(Config)# exit
(CL1)#
```

- 16. Verify that the ISLs are up on the Nexus 5596 switch CL1:

show port-channel summary

Ports eth1/45 through eth1/48 should indicate (P) meaning that the ISL ports are up in the port-channel:

Example

```
CL1# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
       I - Individual    H - Hot-standby (LACP only)
       s - Suspended     r - Module-removed
       S - Switched      R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
```

Group	Port-Channel	Type	Protocol	Member Ports
1	Po1(SU)	Eth	LACP	Eth1/41(D) Eth1/42(D) Eth1/43(D) Eth1/44(D) Eth1/45(P) Eth1/46(P) Eth1/47(P) Eth1/48(P)

- 17. Verify that the ISLs are up on the 3132Q-V switch C2:

show port-channel summary

Ports eth1/24/1, eth1/24/2, eth1/24/3, and eth1/24/4 should indicate (P) meaning that the ISL ports are up in the port-channel:

```
C2# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
```

```

I - Individual      H - Hot-standby (LACP only)
s - Suspended      r - Module-removed
S - Switched       R - Routed
U - Up (port-channel)
M - Not in use. Min-links not met
    
```

Group	Port-Channel	Type	Protocol	Member Ports
1	Po1(SU)	Eth	LACP	Eth1/31(D) Eth1/32(D)
2	Po2(SU)	Eth	LACP	Eth1/24/1(P) Eth1/24/2(P) Eth1/24/3(P) Eth1/24/4(P)

18. On all nodes, bring up all the cluster interconnect ports connected to the 3132Q-V switch C2:

network port modify

The following example shows the specified ports being brought up on nodes n1 and n2:

```

cluster::*> network port modify -node n1 -port e0b -up-admin true
cluster::*> network port modify -node n1 -port e0c -up-admin true
cluster::*> network port modify -node n2 -port e0b -up-admin true
cluster::*> network port modify -node n2 -port e0c -up-admin true
    
```

19. On all nodes, revert all of the migrated cluster interconnect LIFs connected to C2:

network interface revert

The following example shows the migrated cluster LIFs being reverted to their home ports on nodes n1 and n2:

```

cluster::*> network interface revert -vserver Cluster -lif n1_clus2
cluster::*> network interface revert -vserver Cluster -lif n1_clus3
cluster::*> network interface revert -vserver Cluster -lif n2_clus2
cluster::*> network interface revert -vserver Cluster -lif n2_clus3
    
```

20. Verify all the cluster interconnect ports are now reverted to their home:

network interface show

The following example shows that the LIFs on clus2 reverted to their home ports and shows that the LIFs are successfully reverted if the ports in the Current Port column have a status of **true** in the Is Home column. If the Is Home value is **false**, the LIF has not been reverted.

```

cluster::*> network interface show -role cluster
(network interface show)
Vserver      Logical Interface      Status      Network      Current      Current      Is
              Interface      Admin/Oper  Address/Mask Node          Port         Home
-----
Cluster
n1_clus1     up/up          10.10.0.1/24  n1           e0a          true
n1_clus2     up/up          10.10.0.2/24  n1           e0b          true
n1_clus3     up/up          10.10.0.3/24  n1           e0c          true
n1_clus4     up/up          10.10.0.4/24  n1           e0d          true
n2_clus1     up/up          10.10.0.5/24  n2           e0a          true
n2_clus2     up/up          10.10.0.6/24  n2           e0b          true
n2_clus3     up/up          10.10.0.7/24  n2           e0c          true
n2_clus4     up/up          10.10.0.8/24  n2           e0d          true
8 entries were displayed.
    
```

21. Verify that the clustered ports are connected:

network port show

The following example shows the result of the previous network port modify command, verifying that all the cluster interconnects are **up**:

```

cluster::*> network port show -role cluster
(network port show)
Node: n1
    
```

Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	Health Status	Ignore Health Status
e0a	Cluster	Cluster	up	9000	auto/10000	-	-
e0b	Cluster	Cluster	up	9000	auto/10000	-	-
e0c	Cluster	Cluster	up	9000	auto/10000	-	-
e0d	Cluster	Cluster	up	9000	auto/10000	-	-

Node: n2

Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	Health Status	Ignore Health Status
e0a	Cluster	Cluster	up	9000	auto/10000	-	-
e0b	Cluster	Cluster	up	9000	auto/10000	-	-
e0c	Cluster	Cluster	up	9000	auto/10000	-	-
e0d	Cluster	Cluster	up	9000	auto/10000	-	-

8 entries were displayed.

22. Ping the remote cluster interfaces and perform an RPC server check:

cluster ping-cluster

The following example shows how to ping the remote cluster interfaces:

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1      e0a  10.10.0.1
Cluster n1_clus2 n1      e0b  10.10.0.2
Cluster n1_clus3 n1      e0c  10.10.0.3
Cluster n1_clus4 n1      e0d  10.10.0.4
Cluster n2_clus1 n2      e0a  10.10.0.5
Cluster n2_clus2 n2      e0b  10.10.0.6
Cluster n2_clus3 n2      e0c  10.10.0.7
Cluster n2_clus4 n2      e0d  10.10.0.8

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 16 path(s):
  Local 10.10.0.1 to Remote 10.10.0.5
  Local 10.10.0.1 to Remote 10.10.0.6
  Local 10.10.0.1 to Remote 10.10.0.7
  Local 10.10.0.1 to Remote 10.10.0.8
  Local 10.10.0.2 to Remote 10.10.0.5
  Local 10.10.0.2 to Remote 10.10.0.6
  Local 10.10.0.2 to Remote 10.10.0.7
  Local 10.10.0.2 to Remote 10.10.0.8
  Local 10.10.0.3 to Remote 10.10.0.5
  Local 10.10.0.3 to Remote 10.10.0.6
  Local 10.10.0.3 to Remote 10.10.0.7
  Local 10.10.0.3 to Remote 10.10.0.8
  Local 10.10.0.4 to Remote 10.10.0.5
  Local 10.10.0.4 to Remote 10.10.0.6
  Local 10.10.0.4 to Remote 10.10.0.7
  Local 10.10.0.4 to Remote 10.10.0.8
Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)
```

23. On each node in the cluster, migrate the interfaces associated with the first Nexus 5596 switch, CL1, to be replaced:

network interface migrate

The following example shows the ports or LIFs being migrated on nodes n1 and n2:

```
cluster::*> network interface migrate -vserver Cluster -lif n1_clus1 -source-node n1 -
destination-node n1 -destination-port e0b
cluster::*> network interface migrate -vserver Cluster -lif n1_clus4 -source-node n1 -
destination-node n1 -destination-port e0c
cluster::*> network interface migrate -vserver Cluster -lif n2_clus1 -source-node n2 -
destination-node n2 -destination-port e0b
cluster::*> network interface migrate -vserver Cluster -lif n2_clus4 -source-node n2 -
destination-node n2 -destination-port e0c
```

24. Verify the cluster status:

network interface show

The following example shows that the required cluster LIFs have been migrated to appropriate cluster ports hosted on cluster switch C2:

```
(network interface show)
Vserver      Logical      Status      Network      Current      Current      Is
-----      -
Cluster
n1_clus1     up/up       10.10.0.1/24  n1           e0b          false
n1_clus2     up/up       10.10.0.2/24  n1           e0b          true
n1_clus3     up/up       10.10.0.3/24  n1           e0c          true
n1_clus4     up/up       10.10.0.4/24  n1           e0c          false
n2_clus1     up/up       10.10.0.5/24  n2           e0b          false
n2_clus2     up/up       10.10.0.6/24  n2           e0b          true
n2_clus3     up/up       10.10.0.7/24  n2           e0c          true
n2_clus4     up/up       10.10.0.8/24  n2           e0c          false
8 entries were displayed.
```

25. On all the nodes, shut down the node ports that are connected to CL1:

network port modify

The following example shows the specified ports being shut down on nodes n1 and n2:

```
cluster::*> network port modify -node n1 -port e0a -up-admin false
cluster::*> network port modify -node n1 -port e0d -up-admin false
cluster::*> network port modify -node n2 -port e0a -up-admin false
cluster::*> network port modify -node n2 -port e0d -up-admin false
```

26. Shut down the ISL ports 24, 31, and 32 on the active 3132Q-V switch C2: **shutdown**

The following example shows how to shut down ISLs 24, 31, and 32:

```
C2# configure
C2(Config)# interface e1/24/1-4
C2(config-if-range)# shutdown
C2(config-if-range)# exit
C2(config)# interface 1/31-32
C2(config-if-range)# shutdown
C2(config-if-range)# exit
C2(config-if)# exit
C2#
```

27. On all nodes, remove all cables attached to the Nexus 5596 switch CL1.

With supported cabling, reconnect disconnected ports on all nodes to the Nexus 3132Q-V switch C1.

28. Remove the QSFP breakout cable from Nexus 3132Q-V C2 ports e1/24.

Connect ports e1/31 and e1/32 on C1 to ports e1/31 and e1/32 on C2 using supported Cisco QSFP optical fiber or direct-attach cables.

29. Restore the configuration on port 24 and remove the temporary Port Channel 2 on C2.

```
C2# configure
C2(config)# no interface breakout module 1 port 24 map 10g-4x
C2(config)# no interface port-channel 2
C2(config-if)# int e1/24
C2(config-if)# description 40GbE Node Port
C2(config-if)# spanning-tree port type edge
C2(config-if)# spanning-tree bpduguard enable
C2(config-if)# mtu 9216
C2(config-if-range)# exit
C2(config)# exit
C2# copy running-config startup-config
[#####] 100%
Copy Complete.
```

- 30. Bring up ISL ports 31 and 32 on C2, the active 3132Q-V switch: **no shutdown**

The following example shows how to bring up ISLs 31 and 32 on the 3132Q-V switch C2:

```
C2# configure
C2(config)# interface ethernet 1/31-32
C2(config-if-range)# no shutdown
C2(config-if-range)# exit
C2(config)# exit
C2# copy running-config startup-config
[#####] 100%
Copy Complete.
```

- 31. Verify that the ISL connections are **up** on the 3132Q-V switch C2: **show port-channel summary**

Ports Eth1/31 and Eth1/32 should indicate (**P**), meaning that both the ISL ports are **up** in the port-channel:

```
C1# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
       I - Individual    H - Hot-standby (LACP only)
       s - Suspended    r - Module-removed
       S - Switched     R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met

-----
Group Port-      Type   Protocol  Member Ports
Channel
-----
1     Po1(SU)    Eth    LACP      Eth1/31(P)  Eth1/32(P)
```

- 32. On all nodes, bring up all the cluster interconnect ports connected to the new 3132Q-V switch C1:

network port modify

The following example shows all the cluster interconnect ports being brought up for n1 and n2 on the 3132Q-V switch C1:

```
cluster::*> network port modify -node n1 -port e0a -up-admin true
cluster::*> network port modify -node n1 -port e0d -up-admin true
cluster::*> network port modify -node n2 -port e0a -up-admin true
cluster::*> network port modify -node n2 -port e0d -up-admin true
```

- 33. Verify the status of the cluster node port: **network port show**

The following example verifies that all cluster interconnect ports on all nodes on the new 3132Q-V switch C1 are **up**:

```
cluster::*> network port show -role cluster
(network port show)
Node: n1
```

```

Port          IPspace      Broadcast Domain Link MTU      Speed(Mbps) Health Ignore
-----
e0a           Cluster      Cluster          up  9000    auto/10000 -      -
e0b           Cluster      Cluster          up  9000    auto/10000 -      -
e0c           Cluster      Cluster          up  9000    auto/10000 -      -
e0d           Cluster      Cluster          up  9000    auto/10000 -      -

Node: n2

Port          IPspace      Broadcast Domain Link MTU      Speed(Mbps) Health Ignore
-----
e0a           Cluster      Cluster          up  9000    auto/10000 -      -
e0b           Cluster      Cluster          up  9000    auto/10000 -      -
e0c           Cluster      Cluster          up  9000    auto/10000 -      -
e0d           Cluster      Cluster          up  9000    auto/10000 -      -
8 entries were displayed.
    
```

34. On all nodes, revert the specific cluster LIFs to their home ports:

network interface revert

The following example shows the specific cluster LIFs being reverted to their home ports on nodes n1 and n2:

```

cluster::*> network interface revert -vserver Cluster -lif n1_clus1
cluster::*> network interface revert -vserver Cluster -lif n1_clus4
cluster::*> network interface revert -vserver Cluster -lif n2_clus1
cluster::*> network interface revert -vserver Cluster -lif n2_clus4
    
```

35. Verify that the interface is home:

network interface show

The following example shows the status of cluster interconnect interfaces is **up** and **Is** home for n1 and n2:

```

cluster::*> network interface show -role cluster
(network interface show)
Vserver      Logical      Status      Network      Current      Current      Is
-----
Cluster
              n1_clus1    up/up       10.10.0.1/24  n1           e0a         true
              n1_clus2    up/up       10.10.0.2/24  n1           e0b         true
              n1_clus3    up/up       10.10.0.3/24  n1           e0c         true
              n1_clus4    up/up       10.10.0.4/24  n1           e0d         true
              n2_clus1    up/up       10.10.0.5/24  n2           e0a         true
              n2_clus2    up/up       10.10.0.6/24  n2           e0b         true
              n2_clus3    up/up       10.10.0.7/24  n2           e0c         true
              n2_clus4    up/up       10.10.0.8/24  n2           e0d         true
8 entries were displayed.
    
```

36. Ping the remote cluster interfaces and then perform a remote procedure call server check:

cluster ping-cluster

The following example shows how to ping the remote cluster interfaces:

```

cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1      e0a  10.10.0.1
Cluster n1_clus2 n1      e0b  10.10.0.2
Cluster n1_clus3 n1      e0c  10.10.0.3
Cluster n1_clus4 n1      e0d  10.10.0.4
Cluster n2_clus1 n2      e0a  10.10.0.5
Cluster n2_clus2 n2      e0b  10.10.0.6
Cluster n2_clus3 n2      e0c  10.10.0.7
Cluster n2_clus4 n2      e0d  10.10.0.8
    
```

```

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 16 path(s):
  Local 10.10.0.1 to Remote 10.10.0.5
  Local 10.10.0.1 to Remote 10.10.0.6
  Local 10.10.0.1 to Remote 10.10.0.7
  Local 10.10.0.1 to Remote 10.10.0.8
  Local 10.10.0.2 to Remote 10.10.0.5
  Local 10.10.0.2 to Remote 10.10.0.6
  Local 10.10.0.2 to Remote 10.10.0.7
  Local 10.10.0.2 to Remote 10.10.0.8
  Local 10.10.0.3 to Remote 10.10.0.5
  Local 10.10.0.3 to Remote 10.10.0.6
  Local 10.10.0.3 to Remote 10.10.0.7
  Local 10.10.0.3 to Remote 10.10.0.8
  Local 10.10.0.4 to Remote 10.10.0.5
  Local 10.10.0.4 to Remote 10.10.0.6
  Local 10.10.0.4 to Remote 10.10.0.7
  Local 10.10.0.4 to Remote 10.10.0.8
Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)
    
```

- 37. Expand the cluster by adding nodes to the Nexus 3132Q-V cluster switches.
- 38. Display the information about the devices in your configuration:

- network device-discovery show
- network port show -role cluster
- network interface show -role cluster
- system cluster-switch show

The following examples show nodes n3 and n4 with 40 GbE cluster ports connected to ports e1/7 and e1/8, respectively on both the Nexus 3132Q-V cluster switches, and both nodes have joined the cluster. The 40 GbE cluster interconnect ports used are e4a and e4e.

```

cluster::> network device-discovery show
Node      Local Port   Discovered Device      Interface      Platform
-----
n1        /cdp
          e0a     C1       Ethernet1/1/1 Ethernet1/1/1  N3K-C3132Q-V
          e0b     C2       Ethernet1/1/1 Ethernet1/1/1  N3K-C3132Q-V
          e0c     C2       Ethernet1/1/2 Ethernet1/1/2  N3K-C3132Q-V
          e0d     C1       Ethernet1/1/2 Ethernet1/1/2  N3K-C3132Q-V
n2        /cdp
          e0a     C1       Ethernet1/1/3 Ethernet1/1/3  N3K-C3132Q-V
          e0b     C2       Ethernet1/1/3 Ethernet1/1/3  N3K-C3132Q-V
          e0c     C2       Ethernet1/1/4 Ethernet1/1/4  N3K-C3132Q-V
          e0d     C1       Ethernet1/1/4 Ethernet1/1/4  N3K-C3132Q-V
n3        /cdp
          e4a     C1       Ethernet1/7   Ethernet1/7   N3K-C3132Q-V
          e4e     C2       Ethernet1/7   Ethernet1/7   N3K-C3132Q-V
n4        /cdp
          e4a     C1       Ethernet1/8   Ethernet1/8   N3K-C3132Q-V
          e4e     C2       Ethernet1/8   Ethernet1/8   N3K-C3132Q-V
12 entries were displayed.
    
```

```

cluster::*> network port show -role cluster
(network port show)
Node: n1
    
```

```

Node: n1
-----
Port      IPspace      Broadcast Domain Link MTU      Speed(Mbps) Health Ignore
Admin/Oper Status      Health
Status
-----
e0a      Cluster      Cluster      up   9000    auto/10000 -      -
e0b      Cluster      Cluster      up   9000    auto/10000 -      -
e0c      Cluster      Cluster      up   9000    auto/10000 -      -
e0d      Cluster      Cluster      up   9000    auto/10000 -      -

Node: n2
-----
Port      IPspace      Broadcast Domain Link MTU      Speed(Mbps) Health Ignore
Admin/Oper Status      Health
Status
-----
e0a      Cluster      Cluster      up   9000    auto/10000 -      -
e0b      Cluster      Cluster      up   9000    auto/10000 -      -
e0c      Cluster      Cluster      up   9000    auto/10000 -      -
e0d      Cluster      Cluster      up   9000    auto/10000 -      -

Node: n3
-----
Port      IPspace      Broadcast Domain Link MTU      Speed(Mbps) Health Ignore
Admin/Oper Status      Health
Status
-----
e4a      Cluster      Cluster      up   9000    auto/40000 -      -
e4e      Cluster      Cluster      up   9000    auto/40000 -      -

Node: n4
-----
Port      IPspace      Broadcast Domain Link MTU      Speed(Mbps) Health Ignore
Admin/Oper Status      Health
Status
-----
e4a      Cluster      Cluster      up   9000    auto/40000 -      -
e4e      Cluster      Cluster      up   9000    auto/40000 -      -
    
```

12 entries were displayed.

```

cluster::*> network interface show -role cluster
(network interface show)
-----
Vserver      Logical      Status      Network      Current      Current      Is
Interface    Admin/Oper   Address/Mask Node          Port         Home
-----
Cluster
n1_clus1     up/up       10.10.0.1/24 n1           e0a          true
n1_clus2     up/up       10.10.0.2/24 n1           e0b          true
n1_clus3     up/up       10.10.0.3/24 n1           e0c          true
n1_clus4     up/up       10.10.0.4/24 n1           e0d          true
n2_clus1     up/up       10.10.0.5/24 n2           e0a          true
n2_clus2     up/up       10.10.0.6/24 n2           e0b          true
n2_clus3     up/up       10.10.0.7/24 n2           e0c          true
n2_clus4     up/up       10.10.0.8/24 n2           e0d          true
n3_clus1     up/up       10.10.0.9/24 n3           e4a          true
n3_clus2     up/up       10.10.0.10/24 n3          e4e          true
n4_clus1     up/up       10.10.0.11/24 n4          e4a          true
n4_clus2     up/up       10.10.0.12/24 n4          e4e          true
    
```

12 entries were displayed.

```

cluster::*> system cluster-switch show
-----
Switch      Type          Address      Model
-----
C1          cluster-network 10.10.1.103 NX3132V
  Serial Number: FOX000001
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.0(3)I4(1)
  Version Source: CDP
C2          cluster-network 10.10.1.104 NX3132V
  Serial Number: FOX000002
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.0(3)I4(1)
    
```



```
Version Source: CDP
CL1          cluster-network  10.10.1.101    NX5596
  Serial Number: 01234567
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.1(1)N1(1)
  Version Source: CDP
CL2          cluster-network  10.10.1.102    NX5596
  Serial Number: 01234568
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.1(1)N1(1)
  Version Source: CDP

4 entries were displayed.
```

- 39. Remove the replaced Nexus 5596 if they are not automatically removed: **system cluster-switch delete**

The following example shows how to remove the Nexus 5596:

```
cluster::> system cluster-switch delete -device CL1
cluster::> system cluster-switch delete -device CL2
```

- 40. Configure clusters clus1 and clus2 to auto revert on each node and confirm:

```
cluster::*> network interface modify -vserver node1 -lif clus1 -auto-revert true
cluster::*> network interface modify -vserver node1 -lif clus2 -auto-revert true
cluster::*> network interface modify -vserver node2 -lif clus1 -auto-revert true
cluster::*> network interface modify -vserver node2 -lif clus2 -auto-revert true
```

- 41. Verify that the proper cluster switches are monitored: **system cluster-switch show**

```
cluster::> system cluster-switch show

Switch          Type          Address          Model
-----
C1              cluster-network  10.10.1.103    NX3132V
  Serial Number: FOX000001
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.0(3)I4(1)
  Version Source: CDP

C2              cluster-network  10.10.1.104    NX3132V
  Serial Number: FOX000002
  Is Monitored: true
  Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software, Version
                    7.0(3)I4(1)
  Version Source: CDP

2 entries were displayed.
```

- 42. Enable the cluster switch health monitor log collection feature for collecting switch-related log files:

```
system cluster-switch log setup-password
system cluster-switch log enable-collection
```

```
cluster::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
```

```
Choose from the following list:
C1
C2

cluster::*> system cluster-switch log setup-password

Enter the switch name: C1
RSA key fingerprint is e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster::*> system cluster-switch log setup-password

Enter the switch name: C2
RSA key fingerprint is 57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster::*> system cluster-switch log enable-collection

Do you want to enable cluster log collection for all nodes in the cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster::*>
```

Note: If any of these commands return an error, contact NetApp support.

43. If you suppressed automatic case creation, reenable it by invoking an AutoSupport message:
system node autosupport invoke -node * -type all -message MAINT=END

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