



# **Migrate switches**

## **Cluster and storage switches**

NetApp

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# Migrate switches

## Migrate a Cisco Nexus 5596 cluster switch to a Cisco Nexus 3132Q-V cluster switch

Follow this procedure to replace an existing Nexus 5596 cluster switch with a Nexus 3132Q-V cluster switch.

### Review requirements

Review the Cisco Nexus 5596 requirements in [Requirements for replacing Cisco Nexus 3132Q-V cluster switches](#).

For more information, see:

- [Cisco Ethernet Switch description page](#)
- [Hardware Universe](#)

### Replace the switch

#### About the examples

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

#### About this task

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 - 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
  - 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.

## Step 1: Prepare for replacement

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

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.



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
```

### Show example

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
```

## Show example

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

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

Ignore

Health      Health      Speed (Mbps)
Port        IPspace      Broadcast Domain Link MTU  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

Ignore

Health      Health      Speed (Mbps)
Port        IPspace      Broadcast Domain Link MTU  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 -
-

8 entries were displayed.
```

b. Display information about the logical interfaces:

```
network interface show
```

## Show example

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

```
cluster::*> network interface show -role cluster
(network interface show)

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

c. Display information about the discovered cluster switches:

```
system cluster-switch show
```

### Show example

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
```



### Show example

```
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.
- 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 FilesDownload* 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
```

### Show example

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
```

## Show example

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

```
cluster::*> network interface show -role cluster
(network interface show)

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

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

```
network port modify
```

### Show example

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
```

## Show example

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:

#### Show example

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.

11. Build a temporary ISL between CL1 and C2.

#### Show example

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
```

## Step 2: Configure ports

1. 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.

2. 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.

3. Verify that interfaces eth1/45-48 already have channel-group 1 mode active in their running configuration.
4. Bring up ISLs ports 45 through 48 on the active Nexus 5596 switch CL1.

#### Show example

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)#
```

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

```
show port-channel summary
```

#### Show example

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-          Type  Protocol  Member Ports
      Channel
-----
-----
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)
```

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

```
show port-channel summary
```

**Show example**

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-          Type  Protocol  Member Ports
Channel
-----
-----
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)
```

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

```
network port modify
```

**Show example**

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
```

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

```
network interface revert
```



### Show example

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
```

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

```
network interface show
```

## Show example

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)

```

	Logical	Status	Network	Current
Current Is				
Vserver	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.

## 10. Verify that the clustered ports are connected:

```
network port show
```

## Show example

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
```

```
Ignore
```

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	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
```

```
Ignore
```

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	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	-
-							

```
8 entries were displayed.
```

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

```
cluster ping-cluster
```

## Show example

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)
```

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

```
network interface migrate
```

**Show example**

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
```

13. Verify the cluster status:

```
network interface show
```

### Show example

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

```
(network interface show)

Current Is      Logical   Status   Network   Current
Vserver   Interface Admin/Oper Address/Mask Node
Port      Home
-----
Cluster
e0b        n1_clus1   up/up    10.10.0.1/24  n1
false
e0b        n1_clus2   up/up    10.10.0.2/24  n1
true
e0c        n1_clus3   up/up    10.10.0.3/24  n1
true
e0c        n1_clus4   up/up    10.10.0.4/24  n1
false
e0b        n2_clus1   up/up    10.10.0.5/24  n2
false
e0b        n2_clus2   up/up    10.10.0.6/24  n2
true
e0c        n2_clus3   up/up    10.10.0.7/24  n2
true
e0c        n2_clus4   up/up    10.10.0.8/24  n2
false
8 entries were displayed.

-----
```

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

```
network port modify
```

### Show example

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
```

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

shutdown

### Show example

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#
```

16. 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.

17. 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.

18. 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.

```

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

#### Show example

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.

```

### Step 3: Verify the configuration

1. Verify that the ISL connections are up on the 3132Q-V switch C2:

```
show port-channel summary
```

### Show example

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)
```

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

```
network port modify
```

### Show example

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
```

3. Verify the status of the cluster node port:

```
network port show
```

## Show example

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

Ignore

Health
Port      IPspace      Broadcast Domain Link MTU  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

Ignore

Health
Port      IPspace      Broadcast Domain Link MTU  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  -
-
8 entries were displayed.
```

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

```
network interface revert
```

### Show example

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
```

### 5. Verify that the interface is home:

```
network interface show
```

## Show example

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

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

```
cluster ping-cluster
```

## Show example

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)
```

7. Expand the cluster by adding nodes to the Nexus 3132Q-V cluster switches.

8. 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`

## Show example

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	N3K-
C3132Q-V	e0b	C2	Ethernet1/1/1	N3K-
C3132Q-V	e0c	C2	Ethernet1/1/2	N3K-
C3132Q-V	e0d	C1	Ethernet1/1/2	N3K-
C3132Q-V				
n2	/cdp			
	e0a	C1	Ethernet1/1/3	N3K-
C3132Q-V	e0b	C2	Ethernet1/1/3	N3K-
C3132Q-V	e0c	C2	Ethernet1/1/4	N3K-
C3132Q-V	e0d	C1	Ethernet1/1/4	N3K-
C3132Q-V				
n3	/cdp			
	e4a	C1	Ethernet1/7	N3K-
C3132Q-V	e4e	C2	Ethernet1/7	N3K-
C3132Q-V				
n4	/cdp			
	e4a	C1	Ethernet1/8	N3K-
C3132Q-V	e4e	C2	Ethernet1/8	N3K-
C3132Q-V				

12 entries were displayed.

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



```

Ignore
Speed (Mbps)
Health  Health
Port    IPspace  Broadcast Domain Link MTU  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

```

Ignore
Speed (Mbps)
Health  Health
Port    IPspace  Broadcast Domain Link MTU  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: n3

```

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

```

```

-

Node: n4

Ignore

Health      Health      Speed (Mbps)
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status      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)
```

		Logical	Status	Network	Current
Current Is					
Vserver	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 Model	Type	Address
-----		
C1 NX3132V	cluster-network	10.10.1.103
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 NX3132V	cluster-network	10.10.1.104
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 NX5596	cluster-network	10.10.1.101
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 NX5596	cluster-network	10.10.1.102
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.

9. Remove the replaced Nexus 5596 if they are not automatically removed:

```
system cluster-switch delete
```

**Show example**

The following example shows how to remove the Nexus 5596:

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

10. Configure clusters clus1 and clus2 to auto revert on each node and confirm.

**Show example**

```
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
```

11. Verify that the proper cluster switches are monitored:

```
system cluster-switch show
```

## Show example

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

Switch Model	Type	Address
-----		
C1 NX3132V	cluster-network	10.10.1.103
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 NX3132V	cluster-network	10.10.1.104
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.

12. 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
```

## Show example

```
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::~*>
```



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

13. If you suppressed automatic case creation, reenable it by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=END
```

# Migrate from CN1610 cluster switches to Cisco Nexus 3132Q-V cluster switches

Follow this procedure to replace the existing CN1610 cluster switches with Cisco Nexus 3132Q-V cluster switches.

## Review requirements

Review the NetApp CN1610 requirements requirements in [Requirements for replacing Cisco Nexus 3132Q-V cluster switches](#).

For more information, see:

- [NetApp CN1601 and CN1610 description page](#)
- [Cisco Ethernet Switch description page](#)
- [Hardware Universe](#)

## Replace the switch

### Switch and node nomenclature

The examples in this procedure use the following switch and node nomenclature:

- The command outputs might vary depending on different releases of ONTAP software.
- The CN1610 switches to be replaced are CL1 and CL2.
- The Nexus 3132Q-V switches to replace the CN1610 switches are C1 and C2.
- n1\_clus1 is the first cluster logical interface (LIF) that is connected to cluster switch 1 (CL1 or C1) for node n1.
- n1\_clus2 is the first cluster LIF that is connected to cluster switch 2 (CL2 or C2) for node n1.
- n1\_clus3 is the second LIF that is connected to cluster switch 2 (CL2 or C2) for node n1.
- n1\_clus4 is the second LIF that is 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.

### About the examples

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 fiber cables: e4a and e4e.

The [Hardware Universe](#) has information about the cluster fiber cables on your platforms.

### About this task

This procedure covers the following scenario:

- The cluster starts with two nodes connected to two CN1610 cluster switches.



- Cluster switch CL2 to be replaced by C2
  - 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 breakout cabling to reconnect the ports to new cluster switch C2.
  - Disconnect cabling between ISL ports CL1 and CL2, and then use supported breakout cabling to reconnect the ports from CL1 to C2.
  - Traffic on all cluster ports and LIFs connected to C2 on all nodes is reverted.
- Cluster switch CL1 to be replaced by C1
  - Traffic on all cluster ports and LIFs on all nodes connected to CL1 are migrated onto the second cluster ports and LIFs connected to C2.
  - Disconnect cabling from all cluster ports on all nodes connected to CL1, and then use supported breakout cabling to reconnect the ports to new cluster switch C1.
  - Disconnect cabling between ISL ports CL1 and C2, and then use supported breakout cabling to reconnect the ports from C1 to C2.
  - Traffic on all migrated cluster ports and LIFs connected to C1 on all nodes is reverted.



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

## Step 1: Prepare for replacement

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.



The AutoSupport 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
```

### Show example

The following example displays 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	0/1	CN1610
	e0b	CL2	0/1	CN1610
	e0c	CL2	0/2	CN1610
	e0d	CL1	0/2	CN1610
n2	/cdp			
	e0a	CL1	0/3	CN1610
	e0b	CL2	0/3	CN1610
	e0c	CL2	0/4	CN1610
	e0d	CL1	0/4	CN1610

8 entries were displayed.

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

```
network port show
```

## Show example

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  Link  MTU  Speed (Mbps)  Health  Ignore
Status                                     Status  Health
-----
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  Link  MTU  Speed (Mbps)  Health  Ignore
Status                                     Status  Health
-----
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

### Show example

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

```
cluster::*> network interface show -role Cluster
(network interface show)
```

	Logical	Status	Network	Current	Current
Is	Interface	Admin/Oper	Address/Mask	Node	Port
Vserver					
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
```

### Show example

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
CN1610
    Serial Number: 01234567
    Is Monitored: true
    Reason:
    Software Version: 1.2.0.7
    Version Source: ISDP

CL2                                  cluster-network    10.10.1.102
CN1610
    Serial Number: 01234568
    Is Monitored: true
    Reason:
    Software Version: 1.2.0.7
    Version Source: ISDP

2 entries were displayed.
```

4. Set the `-auto-revert` parameter to false on cluster LIFs `clus1` and `clus4` on both nodes:

```
network interface modify
```

### Show example

```
cluster::*> network interface modify -vserver node1 -lif clus1 -auto
-revert false
cluster::*> network interface modify -vserver node1 -lif clus4 -auto
-revert false
cluster::*> network interface modify -vserver node2 -lif clus1 -auto
-revert false
cluster::*> network interface modify -vserver node2 -lif clus4 -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 any 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. See the [Cisco Ethernet Switches](#) page on NetApp Support Site.
- 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.

[Cisco® Cluster and Management Network Switch Reference Configuration File Download](#)

6. Migrate the LIFs associated with the second CN1610 switch to be replaced:

```
network interface migrate
```



You must migrate the cluster LIFs from a connection to the node, either through the service processor or node management interface, which owns the cluster LIF being migrated.

#### Show example

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

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

7. Verify the cluster's health:

```
network interface show
```

## Show example

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

```
cluster::*> network interface show -role Cluster
(network interface show)
```

Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home
-----	-----	-----	-----	-----	-----	-----
Cluster						
true	n1_clus1	up/up	10.10.0.1/24	n1	e0a	
false	n1_clus2	up/up	10.10.0.2/24	n1	e0a	
false	n1_clus3	up/up	10.10.0.3/24	n1	e0d	
true	n1_clus4	up/up	10.10.0.4/24	n1	e0d	
true	n2_clus1	up/up	10.10.0.5/24	n2	e0a	
false	n2_clus2	up/up	10.10.0.6/24	n2	e0a	
false	n2_clus3	up/up	10.10.0.7/24	n2	e0d	
true	n2_clus4	up/up	10.10.0.8/24	n2	e0d	

8 entries were displayed.

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

```
network port modify
```

### Show example

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 then perform a remote procedure call server check:

```
cluster ping-cluster
```



**Show example**

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 13 through 16 on the active CN1610 switch CL1:

shutdown

### Show example

The following example shows how to shut down ISL ports 13 through 16 on the CN1610 switch CL1:

```
(CL1)# configure
(CL1)(Config)# interface 0/13-0/16
(CL1)(Interface 0/13-0/16)# shutdown
(CL1)(Interface 0/13-0/16)# exit
(CL1)(Config)# exit
(CL1)#
```

11. Build a temporary ISL between CL1 and C2:

### Show example

The following example builds a temporary ISL between CL1 (ports 13-16) and C2 (ports e1/24/1-4):

```
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
```

## Step 2: Configure ports

1. On all nodes, remove the cables that are attached to the CN1610 switch CL2.

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

2. Remove four ISL cables from ports 13 to 16 on the CN1610 switch CL1.

You must attach appropriate Cisco QSFP to SFP+ breakout cables connecting port 1/24 on the new Cisco 3132Q-V switch C2, to ports 13 to 16 on existing CN1610 switch CL1.



When reconnecting any cables to the new Cisco 3132Q-V switch, you must use either optical fiber or Cisco twinax cables.

3. To make the ISL dynamic, configure the ISL interface 3/1 on the active CN1610 switch to disable the static mode: `no port-channel static`

This configuration matches with the ISL configuration on the 3132Q-V switch C2 when the ISLs are brought up on both switches in step 11

#### Show example

The following example shows the configuration of the ISL interface 3/1 using the `no port-channel static` command to make the ISL dynamic:

```
(CL1)# configure
(CL1)(Config)# interface 3/1
(CL1)(Interface 3/1)# no port-channel static
(CL1)(Interface 3/1)# exit
(CL1)(Config)# exit
(CL1)#
```

4. Bring up ISLs 13 through 16 on the active CN1610 switch CL1.

#### Show example

The following example illustrates the process of bringing up ISL ports 13 through 16 on the port-channel interface 3/1:

```
(CL1)# configure
(CL1)(Config)# interface 0/13-0/16,3/1
(CL1)(Interface 0/13-0/16,3/1)# no shutdown
(CL1)(Interface 0/13-0/16,3/1)# exit
(CL1)(Config)# exit
(CL1)#
```

5. Verify that the ISLs are up on the CN1610 switch CL1:

```
show port-channel
```

The "Link State" should be Up, "Type" should be Dynamic, and the "Port Active" column should be True for ports 0/13 to 0/16:

Show example

```
(CL1)# show port-channel 3/1
Local Interface..... 3/1
Channel Name..... ISL-LAG
Link State..... Up
Admin Mode..... Enabled
Type..... Dynamic
Load Balance Option..... 7
(Enhanced hashing mode)
```

Mbr Ports	Device/ Timeout	Port Speed	Port Active
-----	-----	-----	-----
0/13	actor/long partner/long	10 Gb Full	True
0/14	actor/long partner/long	10 Gb Full	True
0/15	actor/long partner/long	10 Gb Full	True
0/16	actor/long partner/long	10 Gb Full	True

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

```
show port-channel summary
```

### Show example

Ports Eth1/24/1 through Eth1/24/4 should indicate (P), meaning that all four ISL ports are up in the port-channel. Eth1/31 and Eth1/32 should indicate (D) as they are not connected:

```
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-          Type      Protocol  Member Ports
      Channel
-----
-----
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)
```

7. Bring up all of the cluster interconnect ports that are connected to the 3132Q-V switch C2 on all of the nodes:

```
network port modify
```

### Show example

The following example shows how to bring up the cluster interconnect ports connected to the 3132Q-V switch C2:

```
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
```

8. Revert all of the migrated cluster interconnect LIFs that are connected to C2 on all of the nodes:

```
network interface revert
```

### Show example

```
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
```

9. Verify that all of the cluster interconnect ports are reverted to their home ports:

```
network interface show
```

## Show example

The following example shows that the LIFs on clus2 are 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`, then the LIF is not reverted.

```
cluster::*> network interface show -role cluster
(network interface show)
```

Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home
Cluster	n1_clus1	up/up	10.10.0.1/24	n1	e0a	true
true	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
true	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
true	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
true	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
true	n2_clus2	up/up	10.10.0.6/24	n2	e0b	true
true	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
true	n2_clus4	up/up	10.10.0.8/24	n2	e0d	true

8 entries were displayed.

## 10. Verify that all of the cluster ports are connected:

```
network port show
```



## Show example

The following example shows the result of the previous `network port modify` command, verifying that all of 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/Open	Health Status	Ignore Health
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/Open	Health Status	Ignore Health
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.

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

```
cluster ping-cluster
```

**Show example**

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)

```

12. On each node in the cluster, migrate the interfaces that are associated with the first CN1610 switch CL1, to

be replaced:

```
network interface migrate
```

### Show example

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

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

### 13. Verify the cluster status:

```
network interface show
```

## Show example

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

```
cluster::*> network interface show -role Cluster
(network interface show)
```

Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home
-----	-----	-----	-----	-----	-----	-----
Cluster						
false	n1_clus1	up/up	10.10.0.1/24	n1	e0b	
true	n1_clus2	up/up	10.10.0.2/24	n1	e0b	
true	n1_clus3	up/up	10.10.0.3/24	n1	e0c	
false	n1_clus4	up/up	10.10.0.4/24	n1	e0c	
false	n2_clus1	up/up	10.10.0.5/24	n2	e0b	
true	n2_clus2	up/up	10.10.0.6/24	n2	e0b	
true	n2_clus3	up/up	10.10.0.7/24	n2	e0c	
false	n2_clus4	up/up	10.10.0.8/24	n2	e0c	

8 entries were displayed.

14. Shut down the node ports that are connected to CL1 on all of the nodes:

```
network port modify
```

### Show example

The following example shows how to shut down the specified ports 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
```

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

shutdown

### Show example

The following example shows how to shut down ISLs 24, 31, and 32 on the active 3132Q-V switch C2:

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

16. Remove the cables that are attached to the CN1610 switch CL1 on all of the nodes.

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

17. Remove the QSFP cables from Nexus 3132Q-V C2 port e1/24.

You must 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.

18. Restore the configuration on port 24 and remove the temporary port-channel 2 on C2, by copying the running-configuration file to the startup-configuration file.

### Show example

The following example copies the running-configuration file to the startup-configuration file:

```
C2# configure
C2(config)# no interface breakout module 1 port 24 map 10g-4x
C2(config)# no interface port-channel 2
C2(config-if)# interface 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.
```

19. Bring up ISL ports 31 and 32 on C2, the active 3132Q-V switch:

```
no shutdown
```

### Show example

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.
```

## Step 3: Verify the configuration

1. 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.

### Show example

```
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)
```

2. Bring up all of the cluster interconnect ports connected to the new 3132Q-V switch C1 on all of the nodes:

```
network port modify
```

### Show example

The following example shows how to bring up all of the cluster interconnect ports connected to the new 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
```

3. Verify the status of the cluster node port:

```
network port show
```



## Show example

The following example verifies that all of the cluster interconnect ports on n1 and n2 on the new 3132Q-V switch C1 are up:

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

Node: n1

Port  IPspace  Broadcast  Link  MTU  Speed (Mbps)  Health  Ignore
Status  Domain      Admin/Open  Status  Health
-----  -
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  Link  MTU  Speed (Mbps)  Health  Ignore
Status  Domain      Admin/Open  Status  Health
-----  -
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.
```

4. Revert all of the migrated cluster interconnect LIFs that were originally connected to C1 on all of the nodes:

```
network interface revert
```

### Show example

The following example shows how to revert the migrated cluster LIFs to their home ports:

```
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
```

5. Verify that the interface is now home:

```
network interface show
```

## Show example

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 Home	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is
-----	-----	-----	-----	-----	-----	-----
Cluster						
true	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	

8 entries were displayed.

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

```
cluster ping-cluster
```

**Show example**

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)

```

7. Expand the cluster by adding nodes to the Nexus 3132Q-V cluster switches.

8. 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`

## Show example

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	N3K-C3132Q-V
	e0b	C2	Ethernet1/1/1	N3K-C3132Q-V
	e0c	C2	Ethernet1/1/2	N3K-C3132Q-V
n2	/cdp			
	e0d	C1	Ethernet1/1/2	N3K-C3132Q-V
	e0a	C1	Ethernet1/1/3	N3K-C3132Q-V
	e0b	C2	Ethernet1/1/3	N3K-C3132Q-V
n3	/cdp			
	e0c	C2	Ethernet1/1/4	N3K-C3132Q-V
	e0d	C1	Ethernet1/1/4	N3K-C3132Q-V
	e4a	C1	Ethernet1/7	N3K-C3132Q-V
n4	/cdp			
	e4e	C2	Ethernet1/7	N3K-C3132Q-V
	e4a	C1	Ethernet1/8	N3K-C3132Q-V
	e4e	C2	Ethernet1/8	N3K-C3132Q-V

12 entries were displayed.

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

Node: n1

		Broadcast		Speed (Mbps)		Health	
Ignore							
Port	IPspace	Domain	Link	MTU	Admin/Open	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

		Broadcast			Speed (Mbps)	Health	
Ignore							
Port	IPspace	Domain	Link	MTU	Admin/Open	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

		Broadcast			Speed (Mbps)	Health	
Ignore							
Port	IPspace	Domain	Link	MTU	Admin/Open	Status	
Health	Status						
-----	-----	-----	-----	-----	-----	-----	
-----	-----						
e4a	cluster	cluster	up	9000	auto/40000	-	-
e4e	cluster	cluster	up	9000	auto/40000	-	-

Node: n4

		Broadcast			Speed (Mbps)	Health	
Ignore							
Port	IPspace	Domain	Link	MTU	Admin/Open	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)
```

Is	Logical	Status	Network	Current	Current
Vserver	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	CN1610
Serial Number: 01234567			
Is Monitored: true			
Reason:			
Software Version: 1.2.0.7			
Version Source: ISDP			
CL2	cluster-network	10.10.1.102	
CN1610			
Serial Number: 01234568			
Is Monitored: true			
Reason:			
Software Version: 1.2.0.7			
Version Source: ISDP			

4 entries were displayed.

9. Remove the replaced CN1610 switches if they are not automatically removed:

```
system cluster-switch delete
```

### Show example

The following example shows how to remove the CN1610 switches:

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

10. Configure clusters clus1 and clus4 to `-auto-revert` on each node and confirm:

### Show example

```
cluster::*> network interface modify -vserver node1 -lif clus1 -auto
-revert true
cluster::*> network interface modify -vserver node1 -lif clus4 -auto
-revert true
cluster::*> network interface modify -vserver node2 -lif clus1 -auto
-revert true
cluster::*> network interface modify -vserver node2 -lif clus4 -auto
-revert true
```

11. Verify that the proper cluster switches are monitored:

```
system cluster-switch show
```

## Show example

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

Switch Model	Type	Address
-----		
C1 NX3132V	cluster-network	10.10.1.103
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 NX3132V	cluster-network	10.10.1.104
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.

12. 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
```

## Show example

```
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::*>
```



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

13. If you suppressed automatic case creation, reenable it by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=END
```

# Migrate from a switchless cluster to a two-node switched cluster

If you have a two-node switchless cluster, you can follow this procedure to migrate to a two-node switched cluster that includes Cisco Nexus 3132Q-V cluster network switches. The replacement procedure is a nondisruptive procedure (NDO).

## Review requirements

### Ports and node connections

Make sure you understand the port and node connections and cabling requirements when you migrate to a two-node switched cluster with Cisco Nexus 3132Q-V cluster switches.

- The cluster switches use the Inter-Switch Link (ISL) ports e1/31-32.
- The [Hardware Universe](#) contains information about supported cabling to Nexus 3132Q-V switches:
  - The nodes with 10 GbE cluster connections require QSFP optical modules with breakout fiber cables or QSFP to SFP+ copper break-out cables.
  - The 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: 2x QSFP28 fiber or copper direct-attach cables.
- On Nexus 3132Q-V, you can operate QSFP ports as either 40/100 Gb Ethernet or 4 x10 Gb Ethernet modes.

By default, there are 32 ports in the 40/100 Gb Ethernet mode. These 40 Gb Ethernet ports are numbered in a 2-tuple naming convention. For example, the second 40 Gb Ethernet port is numbered as 1/2. The process of changing the configuration from 40 Gb Ethernet to 10 Gb Ethernet is called *breakout* and the process of changing the configuration from 10 Gb Ethernet to 40 Gb Ethernet is called *breakin*. When you break out a 40/100 Gb Ethernet port into 10 Gb Ethernet ports, the resulting ports are numbered using a 3-tuple naming convention. For example, the breakout ports of the second 40/100 Gb Ethernet port are numbered as 1/2/1, 1/2/2, 1/2/3, 1/2/4.

- On the left side of Nexus 3132Q-V is a set of four SFP+ ports multiplexed to the first QSFP port.

By default, the RCF is structured to use the first QSFP port.

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

- Make sure you configured some of the ports on Nexus 3132Q-V to run at 10 GbE or 40/100 GbE.

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.

- 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.

### What you'll need

- Configurations properly set up and functioning.
- Nodes running ONTAP 9.4 or later.
- All cluster ports in the `up` state.
- The Cisco Nexus 3132Q-V cluster switch is supported.
- The existing cluster network configuration has:
  - The Nexus 3132 cluster infrastructure that is redundant and fully functional on both switches.
  - The latest RCF and NX-OS versions on your switches.

The [Cisco Ethernet Switches](#) page has information about the ONTAP and NX-OS versions supported in this procedure.

- Management connectivity on both switches.
- Console access to both switches.
- All cluster logical interfaces (LIFs) in the `up` state without being migrated.
- Initial customization of the switch.
- All the ISL ports enabled and cabled.

In addition, you must plan, migrate, and read the required documentation on 10 GbE and 40/100 GbE connectivity from nodes to Nexus 3132Q-V cluster switches.

## Migrate the switches

### About the examples

The examples in this procedure use the following switch and node nomenclature:

- Nexus 3132Q-V cluster switches, C1 and C2.
- The nodes are n1 and n2.



The examples in this procedure use two nodes, each utilizing two 40/100 GbE cluster interconnect ports e4a and e4e. The [Hardware Universe](#) has details about the cluster ports on your platforms.

### About this task

This procedure covers the following scenarios:

- n1\_clus1 is the first cluster logical interface (LIF) to be connected to cluster switch C1 for node n1.
- n1\_clus2 is the first cluster LIF to be connected to cluster switch C2 for node n1.
- n2\_clus1 is the first cluster LIF to be connected to cluster switch C1 for node n2.
- n2\_clus2 is the second cluster LIF to be connected to cluster switch C2 for node n2.
- 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 procedure requires the use of both ONTAP commands and Cisco Nexus 3000 Series Switches commands; ONTAP commands are used unless otherwise indicated.

- The cluster starts with two nodes connected and functioning in a two-node switchless cluster setting.
- The first cluster port is moved to C1.
- The second cluster port is moved to C2.
- The two-node switchless cluster option is disabled.

### Step 1: Prepare for migration

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.



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

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

```
network port show
```



## Show example

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

Ignore

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

Node: n2

Ignore

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

4 entries were displayed.
```

### b. Display information about the logical interfaces:

```
network interface show
```

### Show example

```
cluster::*> network interface show -role cluster
(network interface show)

      Logical      Status      Network      Current
Current Is
Vserver   Interface  Admin/Oper  Address/Mask  Node
Port      Home
-----
Cluster
      n1_clus1      up/up      10.10.0.1/24      n1
e4a      true
      n1_clus2      up/up      10.10.0.2/24      n1
e4e      true
      n2_clus1      up/up      10.10.0.3/24      n2
e4a      true
      n2_clus2      up/up      10.10.0.4/24      n2
e4e      true
4 entries were displayed.
```

3. Verify that the appropriate RCFs and image are installed on the new 3132Q-V switches as necessary for your requirements, and make any 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 software, you must follow these steps:

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

### Step 2: Move first cluster port to C1

1. On Nexus 3132Q-V switches C1 and C2, disable all node-facing ports C1 and C2, but do not disable the ISL ports.

## Show example

The following example shows ports 1 through 30 being disabled on Nexus 3132Q-V cluster switches C1 and C2 using a configuration supported in RCF NX3132\_RCF\_v1.1\_24p10g\_26p40g.txt:

```
C1# copy running-config startup-config
[#####] 100%
Copy complete.
C1# configure
C1(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-
4,e1/7-30
C1(config-if-range)# shutdown
C1(config-if-range)# exit
C1(config)# exit

C2# copy running-config startup-config
[#####] 100%
Copy complete.
C2# configure
C2(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-
4,e1/7-30
C2(config-if-range)# shutdown
C2(config-if-range)# exit
C2(config)# exit
```

2. Connect ports 1/31 and 1/32 on C1 to the same ports on C2 using supported cabling.
3. Verify that the ISL ports are operational on C1 and C2:

```
show port-channel summary
```

## Show example

```
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)

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

### 4. Display the list of neighboring devices on the switch:

```
show cdp neighbors
```

## Show example

```
C1# show cdp neighbors
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-
Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater,
                  V - VoIP-Phone, D - Remotely-Managed-Device,
                  s - Supports-STP-Dispute

Device-ID           Local Intrfce  Hldtme Capability  Platform
Port ID
C2                  Eth1/31       174      R S I s         N3K-C3132Q-V
Eth1/31
C2                  Eth1/32       174      R S I s         N3K-C3132Q-V
Eth1/32

Total entries displayed: 2

C2# show cdp neighbors
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-
Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater,
                  V - VoIP-Phone, D - Remotely-Managed-Device,
                  s - Supports-STP-Dispute

Device-ID           Local Intrfce  Hldtme Capability  Platform
Port ID
C1                  Eth1/31       178      R S I s         N3K-C3132Q-V
Eth1/31
C1                  Eth1/32       178      R S I s         N3K-C3132Q-V
Eth1/32

Total entries displayed: 2
```

### 5. Display the cluster port connectivity on each node:

```
network device-discovery show
```

### Show example

The following example shows a two-node switchless cluster configuration.

```
cluster::*> network device-discovery show
```

Node	Local Port	Discovered Device	Interface	Platform
n1	/cdp			
	e4a	n2	e4a	FAS9000
	e4e	n2	e4e	FAS9000
n2	/cdp			
	e4a	n1	e4a	FAS9000
	e4e	n1	e4e	FAS9000

6. Migrate the clus1 interface to the physical port hosting clus2:

```
network interface migrate
```

Execute this command from each local node.

### Show example

```
cluster::*> network interface migrate -vserver Cluster -lif n1_clus1  
-source-node n1  
-destination-node n1 -destination-port e4e  
cluster::*> network interface migrate -vserver Cluster -lif n2_clus1  
-source-node n2  
-destination-node n2 -destination-port e4e
```

7. Verify the cluster interfaces migration:

```
network interface show
```

### Show example

```
cluster::*> network interface show -role cluster
(network interface show)
      Logical      Status      Network      Current
Current Is
Vserver      Interface  Admin/Oper Address/Mask      Node
Port      Home
-----
Cluster
      n1_clus1      up/up      10.10.0.1/24      n1
e4e      false
      n1_clus2      up/up      10.10.0.2/24      n1
e4e      true
      n2_clus1      up/up      10.10.0.3/24      n2
e4e      false
      n2_clus2      up/up      10.10.0.4/24      n2
e4e      true
4 entries were displayed.
```

### 8. Shut down cluster ports clus1 LIF on both nodes:

```
network port modify
```

```
cluster::*> network port modify -node n1 -port e4a -up-admin false
cluster::*> network port modify -node n2 -port e4a -up-admin false
```

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

```
cluster ping-cluster
```

## Show example

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1      e4a 10.10.0.1
Cluster n1_clus2 n1      e4e 10.10.0.2
Cluster n2_clus1 n2      e4a 10.10.0.3
Cluster n2_clus2 n2      e4e 10.10.0.4

Local = 10.10.0.1 10.10.0.2
Remote = 10.10.0.3 10.10.0.4
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 32 path(s):
    Local 10.10.0.1 to Remote 10.10.0.3
    Local 10.10.0.1 to Remote 10.10.0.4
    Local 10.10.0.2 to Remote 10.10.0.3
    Local 10.10.0.2 to Remote 10.10.0.4
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
1 paths up, 0 paths down (tcp check)
1 paths up, 0 paths down (ucp check)
```

### 10. Disconnect the cable from e4a on node n1.

You can refer to the running configuration and connect the first 40 GbE port on the switch C1 (port 1/7 in this example) to e4a on n1 using supported cabling on Nexus 3132Q-V.



When reconnecting any cables to a new Cisco cluster switch, the cables used must be either fiber or cabling supported by Cisco.

### 11. Disconnect the cable from e4a on node n2.

You can refer to the running configuration and connect e4a to the next available 40 GbE port on C1, port 1/8, using supported cabling.

### 12. Enable all node-facing ports on C1.



### Show example

The following example shows ports 1 through 30 being enabled on Nexus 3132Q-V cluster switches C1 and C2 using the configuration supported in RCF NX3132\_RCF\_v1.1\_24p10g\_26p40g.txt:

```
C1# configure
C1(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-4,e1/7-30
C1(config-if-range)# no shutdown
C1(config-if-range)# exit
C1(config)# exit
```

13. Enable the first cluster port, e4a, on each node:

```
network port modify
```

### Show example

```
cluster::*> network port modify -node n1 -port e4a -up-admin true
cluster::*> network port modify -node n2 -port e4a -up-admin true
```

14. Verify that the clusters are up on both nodes:

```
network port show
```

### Show example

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

Ignore

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

Node: n2

Ignore

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

4 entries were displayed.
```

15. For each node, revert all of the migrated cluster interconnect LIFs:

```
network interface revert
```

### Show example

The following example shows the migrated LIFs being reverted to their home ports.

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

16. Verify that all of the cluster interconnect ports are now reverted to their home ports:

```
network interface show
```

The `Is Home` column should display a value of `true` for all of the ports listed in the `Current Port` column. If the displayed value is `false`, the port has not been reverted.

#### Show example

```
cluster::*> network interface show -role cluster
(network interface show)
Current Is Logical Status Network Current
Vserver Interface Admin/Oper Address/Mask Node
Port Home
-----
Cluster
e4a n1_clus1 up/up 10.10.0.1/24 n1
true
e4e n1_clus2 up/up 10.10.0.2/24 n1
true
e4a n2_clus1 up/up 10.10.0.3/24 n2
true
e4e n2_clus2 up/up 10.10.0.4/24 n2
true
4 entries were displayed.
```

### Step 3: Move second cluster port to C2

1. Display the cluster port connectivity on each node:

```
network device-discovery show
```

### Show example

```
cluster::*> network device-discovery show
```

	Local	Discovered		
Node	Port	Device	Interface	Platform
-----				
n1	/cdp			
	e4a	C1	Ethernet1/7	N3K-C3132Q-V
	e4e	n2	e4e	FAS9000
n2	/cdp			
	e4a	C1	Ethernet1/8	N3K-C3132Q-V
	e4e	n1	e4e	FAS9000

2. On the console of each node, migrate clus2 to port e4a:

```
network interface migrate
```

### Show example

```
cluster::*> network interface migrate -vserver Cluster -lif n1_clus2
-source-node n1
-destination-node n1 -destination-port e4a
cluster::*> network interface migrate -vserver Cluster -lif n2_clus2
-source-node n2
-destination-node n2 -destination-port e4a
```

3. Shut down cluster ports clus2 LIF on both nodes:

```
network port modify
```

The following example shows the specified ports being shut down on both nodes:

```
cluster::*> network port modify -node n1 -port e4e -up-admin false
cluster::*> network port modify -node n2 -port e4e -up-admin false
```

4. Verify the cluster LIF status:

```
network interface show
```

### Show example

```
cluster::*> network interface show -role cluster
(network interface show)
      Logical      Status      Network      Current
Current Is
Vserver      Interface  Admin/Oper Address/Mask      Node
Port      Home
-----
Cluster
e4a          n1_clus1    up/up      10.10.0.1/24      n1
true
e4a          n1_clus2    up/up      10.10.0.2/24      n1
false
e4a          n2_clus1    up/up      10.10.0.3/24      n2
true
e4a          n2_clus2    up/up      10.10.0.4/24      n2
false
4 entries were displayed.
```

5. Disconnect the cable from e4e on node n1.

You can refer to the running configuration and connect the first 40 GbE port on the switch C2 (port 1/7 in this example) to e4e on n1 using supported cabling on Nexus 3132Q-V.

6. Disconnect the cable from e4e on node n2.

You can refer to the running configuration and connect e4e to the next available 40 GbE port on C2, port 1/8, using supported cabling.

7. Enable all node-facing ports on C2.

### Show example

The following example shows ports 1 through 30 being enabled on Nexus 3132Q-V cluster switches C1 and C2 using a configuration supported in RCF NX3132\_RCF\_v1.1\_24p10g\_26p40g.txt:

```
C2# configure
C2(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-
4,e1/7-30
C2(config-if-range)# no shutdown
C2(config-if-range)# exit
C2(config)# exit
```

8. Enable the second cluster port, e4e, on each node:

```
network port modify
```

The following example shows the specified ports being brought up:

```
cluster::*> network port modify -node n1 -port e4e -up-admin true
cluster::*> network port modify -node n2 -port e4e -up-admin true
```

9. For each node, revert all of the migrated cluster interconnect LIFs:

```
network interface revert
```

The following example shows the migrated LIFs being reverted to their home ports.

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

10. Verify that all of the cluster interconnect ports are now reverted to their home ports:

```
network interface show
```

The `Is Home` column should display a value of `true` for all of the ports listed in the `Current Port` column. If the displayed value is `false`, the port has not been reverted.

### Show example

```
cluster::*> network interface show -role cluster
(network interface show)
      Logical      Status      Network      Current
Current Is
Vserver      Interface  Admin/Oper Address/Mask      Node
Port      Home
-----
Cluster
      n1_clus1      up/up      10.10.0.1/24      n1
e4a      true
      n1_clus2      up/up      10.10.0.2/24      n1
e4e      true
      n2_clus1      up/up      10.10.0.3/24      n2
e4a      true
      n2_clus2      up/up      10.10.0.4/24      n2
e4e      true
4 entries were displayed.
```

11. Verify that all of the cluster interconnect ports are in the up state.

```
network port show -role cluster
```

## Show example

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

Ignore

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

Node: n2

Ignore

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

4 entries were displayed.
```

## Step 4: Disable the two-node switchless cluster option

1. Display the cluster switch port numbers each cluster port is connected to on each node:

```
network device-discovery show
```



Show example

```
cluster::*> network device-discovery show
```

Local		Discovered		
Node	Port	Device	Interface	Platform
-----				
-----				
n1	/cdp			
	e4a	C1	Ethernet1/7	N3K-C3132Q-V
	e4e	C2	Ethernet1/7	N3K-C3132Q-V
n2	/cdp			
	e4a	C1	Ethernet1/8	N3K-C3132Q-V
	e4e	C2	Ethernet1/8	N3K-C3132Q-V

2. Display discovered and monitored cluster switches:

```
system cluster-switch show
```

### Show example

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

Switch Model	Type	Address
C1 NX3132V	cluster-network	10.10.1.101
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 NX3132V	cluster-network	10.10.1.102
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.

3. Disable the two-node switchless configuration settings on any node:

```
network options switchless-cluster
```

```
network options switchless-cluster modify -enabled false
```

4. Verify that the switchless-cluster option has been disabled.

```
network options switchless-cluster show
```

## Step 5: Verify the configuration

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

```
cluster ping-cluster
```

### Show example

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1      e4a 10.10.0.1
Cluster n1_clus2 n1      e4e 10.10.0.2
Cluster n2_clus1 n2      e4a 10.10.0.3
Cluster n2_clus2 n2      e4e 10.10.0.4

Local = 10.10.0.1 10.10.0.2
Remote = 10.10.0.3 10.10.0.4
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 32 path(s):
    Local 10.10.0.1 to Remote 10.10.0.3
    Local 10.10.0.1 to Remote 10.10.0.4
    Local 10.10.0.2 to Remote 10.10.0.3
    Local 10.10.0.2 to Remote 10.10.0.4
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
1 paths up, 0 paths down (tcp check)
1 paths up, 0 paths down (ucp check)
```

2. 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
```

## Show example

```
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::*>
```



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

3. If you suppressed automatic case creation, re-enable it by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=END
```

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