



# **Cisco Nexus 3132Q-V switches**

## **ONTAP Systems Switches**

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# Table of Contents

- Cisco Nexus 3132Q-V switches . . . . . 1
  - Cisco Nexus 3132Q-V switches . . . . . 1
  - Migrate to a two-node switched cluster with Cisco Nexus 3132Q-V cluster switches . . . . . 1
  - Install a Cisco Nexus 3132Q-V cluster switch and a pass-through panel in a NetApp cabinet . . . . . 22
  - Install NX-OS software and RCFs on Cisco Nexus 3132Q-V cluster switches . . . . . 26
  - Replace Cisco Nexus 3132Q-V cluster switches . . . . . 56
  - Replace a Cisco Nexus 5596 cluster switch with a Cisco Nexus 3132Q-V cluster switch . . . . . 80
  - Replace CN1610 cluster switches with Cisco Nexus 3132Q-V cluster switches . . . . . 109

# Cisco Nexus 3132Q-V switches

## Cisco Nexus 3132Q-V switches

You can use the Cisco Nexus 3132Q-V switches as cluster switches in your AFF or FAS cluster.

- You can install NX-OS and reference configuration files (RCFs) on the Cisco Nexus 3132Q-V cluster switch.
- You can migrate from a two-node switchless cluster environment to a two-node switched environment using Cisco Nexus 3132Q-V cluster switches.
- You can replace a defective Cisco Nexus 3132Q-V switch in a cluster and download the switch operating system and reference configuration file.
- You can replace Cisco Nexus 5596, Nexus 5020, or Nexus 5010 cluster switches with Cisco Nexus 3132Q-V switches.
- You can replace NetApp CN1610 switches with Cisco Nexus 3132Q-V cluster switches.

## Migrate to a two-node switched cluster with Cisco Nexus 3132Q-V cluster switches

You must be aware of certain configuration information, port connections and cabling requirements when you migrate to a two-node switched cluster with Cisco Nexus 3132Q-V cluster switches.

- The number of 10 GbE and 40/100 GbE ports are defined in the reference configuration files (RCFs) available on the [Cisco ® Cluster Network Switch Reference Configuration File Download](#) page.
- The cluster switches use the 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.

- You must have 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.

- You must have done the planning, migration, and read the required documentation on 10 GbE and 40/100 GbE connectivity from nodes to Nexus 3132Q-V cluster switches.

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

## How to migrate a two-node switched cluster with Cisco Nexus 3132Q-V cluster switches

If you have a two-node switchless cluster, you can migrate nondisruptively to a two-node switched cluster that includes Cisco Nexus 3132Q-V cluster network switches.

### Before you begin

- The configurations must be properly set up and functioning.
- The nodes must be running ONTAP 9.4 or later.
- All cluster ports must be in the `up` state.
- The Cisco Nexus 3132Q-V cluster switch must be supported.
- The existing cluster network configuration must have:
  - The Nexus 3132 cluster infrastructure that is redundant and fully functional on both switches.

The latest RCF and NX-OS versions on your switches.

- 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.

### About this task

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.

- 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 moved to C1 ([Steps 1- 20](#))
- The second cluster port moved to C2 ([Steps 21- 32](#)).
- Disable the two-node switchless cluster option ([Steps 33- 35](#))

## Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

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

x is the duration of the maintenance window in hours.



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
```

```

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.

```

b. Display information about the logical interfaces:

```
network interface show
```

```

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

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

```

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

```
show port-channel summary
```



```
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)
```

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

```
show cdp neighbors
```

```
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
```

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

```
network device-discovery show
```

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

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

```
network interface migrate
```

Execute this command from each local node.

```
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
```

11. Verify the cluster interfaces migration:

```
network interface show
```

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

## 12. 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
```

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

```
cluster ping-cluster
```

```

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)

```

14. 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.

15. 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.

16. Enable all node-facing ports on C1.

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
```

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

```
network port modify
```

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

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

```
network port show
```

```
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.
```

19. 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_clus1
cluster::*> network interface revert -vserver Cluster -lif n2_clus1
```

20. 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.

```
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	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.

21. Display the cluster port connectivity on each node:

```
network device-discovery show
```

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

Node	Local	Discovered	Interface	Platform
	Port	Device		
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

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

```
network interface migrate
```



```
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
```

### 23. 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
```

### 24. Verify the cluster LIF status:

```
network interface show
```

```
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					
	n1_clus1	up/up	10.10.0.1/24	n1	e4a
true					
	n1_clus2	up/up	10.10.0.2/24	n1	e4a
false					
	n2_clus1	up/up	10.10.0.3/24	n2	e4a
true					
	n2_clus2	up/up	10.10.0.4/24	n2	e4a
false					
4 entries were displayed.					

### 25. 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.

### 26. 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.

27. Enable all node-facing ports on C2.

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
```

28. 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
```

29. 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
```

30. 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.

```

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					
	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.

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

```
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.
```

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

```
network device-discovery show
```

```
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
```

33. Display discovered and monitored cluster switches:

```
system cluster-switch show
```

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

Switch	Type	Address	Model
-----			
C1	cluster-network	10.10.1.101	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	10.10.1.102	NX3132V
Serial Number: FOX000002			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.0(3)I4(1)			
Version Source: CDP			

2 entries were displayed.

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

```
network options switchless-cluster
```

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

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

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

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

```
cluster ping-cluster
```

```

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)

```

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

```

system cluster-switch log setup-password

system cluster-switch log enable-collection

```

```

cluster::*> **system cluster-switch log setup-password**
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
C1
C2

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

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

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

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

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

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

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

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

Enabling cluster switch log collection.

cluster::*>

```



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

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

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

# Install a Cisco Nexus 3132Q-V cluster switch and a pass-through panel in a NetApp cabinet

You can install the Cisco Nexus 3132Q-V switch and pass-through panel in a NetApp cabinet with the standard brackets that are included with the switch.

## Before you begin

You must have reviewed the initial preparation requirements, kit contents, and safety precautions.

[Cisco Nexus 3000 Series Hardware Installation Guide](#)

## About this task

- For each switch, you must supply the eight 10-32 or 12-24 screws and clip nuts to mount the brackets and slider rails to the front and rear cabinet posts.
- You must use the Cisco standard rail kit to install the switch in a NetApp cabinet.



The jumper cords are not included with the pass-through kit and should be included with your switches. If they were not shipped with the switches, you can order them from NetApp (part number X1558A-R6).

## Steps

1. Install the pass-through blanking panel in the NetApp cabinet.

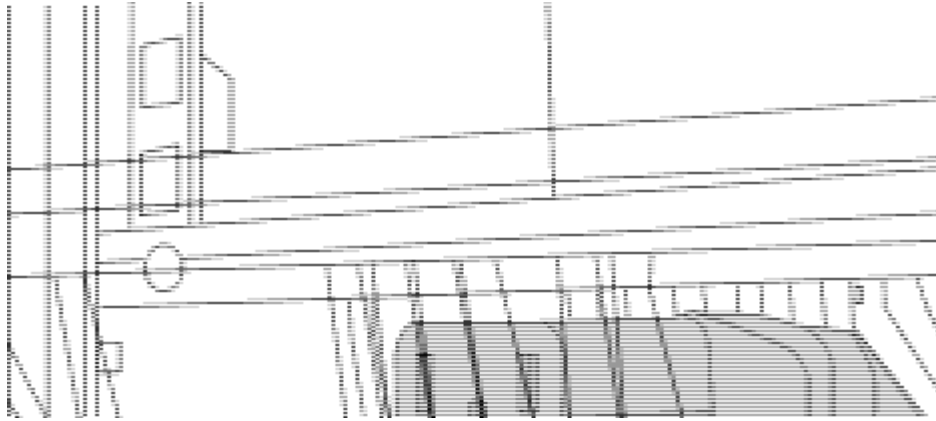
The pass-through panel kit is available from NetApp (part number X8784-R6).

The NetApp pass-through panel kit contains the following hardware:

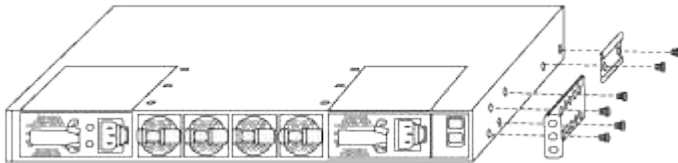
- One pass-through blanking panel
- Four 10-32 x .75 screws
- Four 10-32 clip nuts
  - a. Determine the vertical location of the switches and blanking panel in the cabinet.

In this procedure, the blanking panel will be installed in U40.
  - b. Install two clip nuts on each side in the appropriate square holes for front cabinet rails.
  - c. Center the panel vertically to prevent intrusion into adjacent rack space, and then tighten the screws.
  - d. Insert the female connectors of both 48-inch jumper cords from the rear of the panel and through the brush assembly.

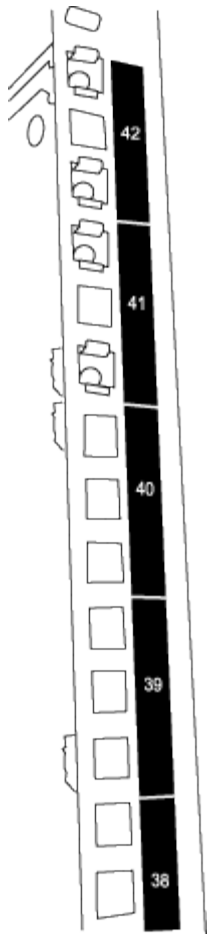




1. Female connector of the jumper cord.
2. Install the rack-mount brackets on the Nexus 3132Q-V switch chassis.
  - a. Position a front rack-mount bracket on one side of the switch chassis so that the mounting ear is aligned with the chassis faceplate (on the PSU or fan side), and then use four M4 screws to attach the bracket to the chassis.



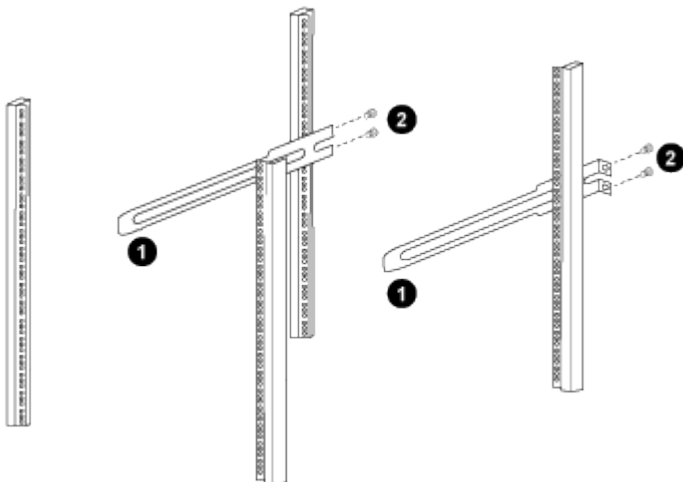
- b. Repeat step 2a with the other front rack-mount bracket on the other side of the switch.
  - c. Install the rear rack-mount bracket on the switch chassis.
  - d. Repeat step 2c with the other rear rack-mount bracket on the other side of the switch.
3. Install the clip nuts in the square hole locations for all four IEA posts.



The two 3132Q-V switches will always be mounted in the top 2U of the cabinet RU41 and 42.

4. Install the slider rails in the cabinet.

- a. Position the first slider rail at the RU42 mark on the back side of the rear left post, insert screws with the matching thread type, and then tighten the screws with your fingers.



1. As you gently slide the slider rail, align it to the screw holes in the rack.
2. Tighten the screws of the slider rails to the cabinet posts.

- b. Repeat step 4a for the right side rear post.

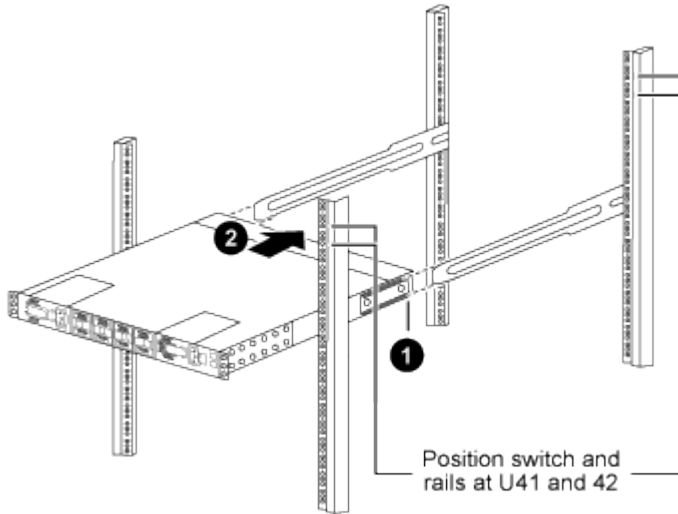
c. Repeat steps 4a and 4b at the RU41 locations on the cabinet.

5. Install the switch in the cabinet.



This step requires two people: one person to support the switch from the front and another to guide the switch into the rear slider rails.

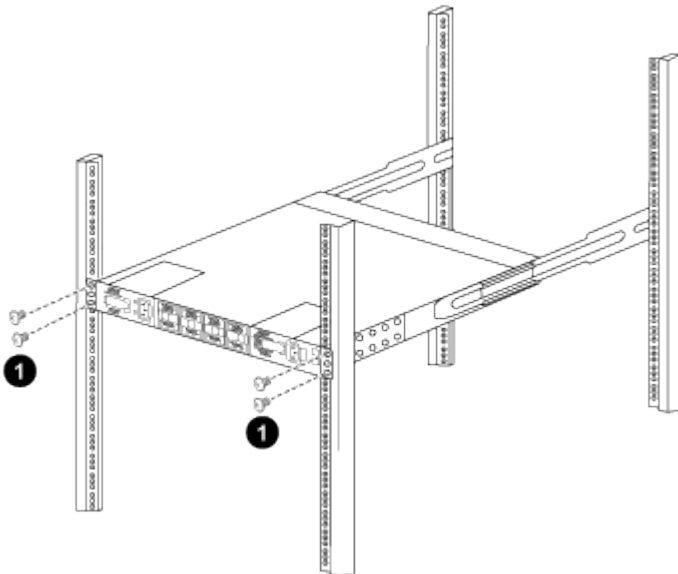
a. Position the back of the switch at RU41.



1. As the chassis is pushed toward the rear posts, align the two rear rack-mount guides with the slider rails.

2. Gently slide the switch until the front rack-mount brackets are flush with the front posts.

b. Attach the switch to the cabinet.



1. With one person holding the front of the chassis level, the other person should fully tighten the four rear screws to the cabinet posts.

c. With the chassis now supported without assistance, fully tighten the front screws to the posts.

d. Repeat steps 5a through 5c for the second switch at the RU42 location.



By using the fully installed switch as a support, it is not necessary to hold the front of the second switch during the installation process.

6. When the switches are installed, connect the jumper cords to the switch power inlets.
7. Connect the male plugs of both jumper cords to the closest available PDU outlets.



To maintain redundancy, the two cords must be connected to different PDUs.

8. Connect the management port on each 3132Q-V switch to either of the management switches (if ordered) or connect them directly to your management network.

The management port is the upper-right port located on the PSU side of the switch. The CAT6 cable for each switch needs to be routed through the pass-through panel after the switches are installed to connect to the management switches or management network.

## Install NX-OS software and RCFs on Cisco Nexus 3132Q-V cluster switches

The Cisco NX-OS software and reference configuration files (RCFs) must be installed on Cisco Nexus 3132Q-V cluster switches.

### Before you begin

The following conditions must exist before you install the NX-OS software and Reference Configurations Files (RCFs) on the cluster switch:

- The cluster must be fully functioning (there should be no errors in the logs or similar issues).
- You must have checked or set your desired boot configuration in the RCF to reflect the desired boot images if you are installing only NX-OS and keeping your current RCF version.
- If you need to change the boot configuration to reflect the current boot images, you must do so before reapplying the RCF so that the correct version is instantiated on future reboots.
- You must have a console connection to the switch, required when installing the RCF.
- You must have consulted the switch compatibility table on the [Cisco Ethernet switch](#) page for the supported ONTAP, NX-OS, and RCF versions.
- There can be command dependencies between the command syntax in the RCF and that found in versions of NX-OS.
- You must have referred to the appropriate software and upgrade guides available on the Cisco web site for complete documentation on the Cisco switch upgrade and downgrade procedures on [Cisco Nexus 3000 Series Switches](#).
- You must have the current RCF.

### About this task

The examples in this procedure use two nodes. These nodes use two 10GbE cluster interconnect ports e0a and e0b.

See the [Hardware Universe](#) to verify the correct cluster ports on your platforms.



The command outputs might vary depending on different releases of ONTAP.

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

- The names of the two Cisco switches are `cs1` and `cs2`.
- The node names are `cluster1-01` and `cluster1-02`.
- The cluster LIF names are `cluster1-01_clus1` and `cluster1-01_clus2` for `cluster1-01` and `cluster1-02_clus1` and `cluster1-02_clus2` for `cluster1-02`.
- The `cluster1: :*>` prompt indicates the name of the cluster.



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

## Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

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

where `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. Change the privilege level to advanced, entering `y` when prompted to continue:

```
set -privilege advanced
```

The advanced prompt (`*>`) appears.

3. Display how many cluster interconnect interfaces are configured in each node for each cluster interconnect switch:

```
network device-discovery show -protocol cdp
```

```
cluster1::*> network device-discovery show -protocol cdp
```

Node/ Protocol	Local Port	Discovered Device (LLDP: ChassisID)	Interface	Platform
cluster1-02/cdp	e0a	cs1	Eth1/2	N3K-
C3132Q-V	e0b	cs2	Eth1/2	N3K-
C3132Q-V				
cluster1-01/cdp	e0a	cs1	Eth1/1	N3K-
C3132Q-V	e0b	cs2	Eth1/1	N3K-
C3132Q-V				

4 entries were displayed.

4. Check the administrative or operational status of each cluster interface.

a. Display the network port attributes:

```
network port show -ipSPACE Cluster
```

```
cluster1::*> network port show -ipSPACE Cluster
```

Node: cluster1-02

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

Node: cluster1-01

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

4 entries were displayed.

b. Display information about the LIFs:

```
network interface show -vserver Cluster
```

```
cluster1::*> network interface show -vserver Cluster
```

Current Is	Logical	Status	Network	Current
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
-----				
Cluster				
	cluster1-01_clus1	up/up	169.254.209.69/16	
cluster1-01	e0a true			
	cluster1-01_clus2	up/up	169.254.49.125/16	
cluster1-01	e0b true			
	cluster1-02_clus1	up/up	169.254.47.194/16	
cluster1-02	e0a true			
	cluster1-02_clus2	up/up	169.254.19.183/16	
cluster1-02	e0b true			

4 entries were displayed.

##### 5. Ping the remote cluster LIFs:

```
cluster ping-cluster -node node-name
```

```

cluster1::*> cluster ping-cluster -node cluster1-02
Host is cluster1-02
Getting addresses from network interface table...
Cluster cluster1-01_clus1 169.254.209.69 cluster1-01 e0a
Cluster cluster1-01_clus2 169.254.49.125 cluster1-01 e0b
Cluster cluster1-02_clus1 169.254.47.194 cluster1-02 e0a
Cluster cluster1-02_clus2 169.254.19.183 cluster1-02 e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 4 path(s):
    Local 169.254.19.183 to Remote 169.254.209.69
    Local 169.254.19.183 to Remote 169.254.49.125
    Local 169.254.47.194 to Remote 169.254.209.69
    Local 169.254.47.194 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)

```

6. Verify that the auto-revert command is enabled on all cluster LIFs:

```
network interface show -vserver Cluster -fields auto-revert
```

```

cluster1::*> network interface show -vserver Cluster -fields auto-revert

```

Vserver	Logical Interface	Auto-revert
Cluster	cluster1-01_clus1	true
	cluster1-01_clus2	true
	cluster1-02_clus1	true
	cluster1-02_clus2	true

```

4 entries were displayed.

```

7. For ONTAP 9.8 and later, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files by using the commands:

```
system switch ethernet log setup-password
```



```
system switch ethernet log enable-collection
```

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs1
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>

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs2
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>

cluster1::*> system switch ethernet 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.

cluster1::*>
```



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

8. For ONTAP releases 9.5P16, 9.6P12, and 9.7P10 and later patch releases, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files by using the commands:

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

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

```

cluster1::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs1
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>

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs2
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>

cluster1::*> 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.

cluster1::*>

```



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

## Install the NX-OS software

You can use this procedure to install the NX-OS software on the Nexus 3132Q-V cluster switch.

### Steps

1. Connect the cluster switch to the management network.

2. Use the `ping` command to verify connectivity to the server hosting the NX-OS software and the RCF.

This example verifies that the switch can reach the server at IP address 172.19.2.1:

```
cs2# ping 172.19.2.1
Pinging 172.19.2.1 with 0 bytes of data:

Reply From 172.19.2.1: icmp_seq = 0. time= 5910 usec.
```

3. Copy the NX-OS software to the Nexus 3132Q-V switch.

```
cs2# copy sftp: bootflash: vrf management
Enter source filename: /code/nxos.9.3.4.bin
Enter hostname for the sftp server: 172.19.2.1
Enter username: user1

Outbound-ReKey for 172.19.2.1:22
Inbound-ReKey for 172.19.2.1:22
user1@172.19.2.1's password: xxxxxxxx
sftp> progress
Progress meter enabled
sftp> get /code/nxos.9.3.4.bin /bootflash/nxos.9.3.4.bin
/code/nxos.9.3.4.bin 100% 1261MB 9.3MB/s 02:15
sftp> exit
Copy complete, now saving to disk (please wait)...
Copy complete.
```

4. Verify the running version of the NX-OS software:

```
cs2# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (C) 2002-2020, Cisco and/or its affiliates.
All rights reserved.
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otherwise stated, there is no warranty, express or implied, including
but not
limited to warranties of merchantability and fitness for a particular
purpose.
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```

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http://www.opensource.org/licenses/lgpl-2.1.php and  
http://www.gnu.org/licenses/old-licenses/library.txt.
```

#### Software

```
    BIOS: version 04.25  
NXOS: version 9.3(3)  
    BIOS compile time: 01/28/2020  
    NXOS image file is: bootflash:///nxos.9.3.3.bin  
                        NXOS compile time: 12/22/2019 2:00:00 [12/22/2019  
14:00:37]
```

#### Hardware

```
    cisco Nexus 3132QV Chassis (Nexus 9000 Series)  
    Intel(R) Core(TM) i3- CPU @ 2.50GHz with 16399900 kB of memory.  
    Processor Board ID FOxxxxxxx23
```

```
    Device name: cs2  
    bootflash: 15137792 kB  
    usb1: 0 kB (expansion flash)
```

```
Kernel uptime is 79 day(s), 10 hour(s), 23 minute(s), 53 second(s)
```

```
Last reset at 663500 usecs after Mon Nov 2 10:50:33 2020  
    Reason: Reset Requested by CLI command reload  
    System version: 9.3(3)  
    Service:
```

#### plugin

```
    Core Plugin, Ethernet Plugin
```

```
Active Package(s):  
cs2#
```

## 5. Install the NX-OS image.

Installing the image file causes it to be loaded every time the switch is rebooted.

```
cs2# install all nxos bootflash:nxos.9.3.4.bin  
Installer will perform compatibility check first. Please wait.  
Installer is forced disruptive
```

Verifying image bootflash:/nxos.9.3.4.bin for boot variable "nxos".

[ ] 100% -- SUCCESS

Verifying image type.

[ ] 100% -- SUCCESS

Preparing "nxos" version info using image bootflash:/nxos.9.3.4.bin.

[ ] 100% -- SUCCESS

Preparing "bios" version info using image bootflash:/nxos.9.3.4.bin.

[ ] 100% -- SUCCESS

Performing module support checks.

[ ] 100% -- SUCCESS

Notifying services about system upgrade.

[ ] 100% -- SUCCESS

Compatibility check is done:

Module	bootable	Impact	Install-type	Reason
1	yes	disruptive	reset	default

upgrade is not hitless

Images will be upgraded according to following table:

Module	Image	Running-Version(pri:alt)	New-
Version	Upg-Required		
1	nxos	9.3(3)	9.3(4)
yes			
1	bios	v04.25(01/28/2020):v04.25(10/18/2016)	
v04.25(01/28/2020)	no		

Switch will be reloaded for disruptive upgrade.

Do you want to continue with the installation (y/n)? [n] **y**

Install is in progress, please wait.

Performing runtime checks.

[ ] 100% -- SUCCESS

Setting boot variables.

```
[ ] 100% -- SUCCESS
```

```
Performing configuration copy.
```

```
[ ] 100% -- SUCCESS
```

```
Module 1: Refreshing compact flash and upgrading bios/loader/bootrom.
```

```
Warning: please do not remove or power off the module at this time.
```

```
[ ] 100% -- SUCCESS
```

```
Finishing the upgrade, switch will reboot in 10 seconds.
```

```
cs2#
```

## 6. Verify the new version of NX-OS software after the switch has rebooted:

```
show version
```

```
cs2# show version
```

```
Cisco Nexus Operating System (NX-OS) Software
```

```
TAC support: http://www.cisco.com/tac
```

```
Copyright (C) 2002-2020, Cisco and/or its affiliates.
```

```
All rights reserved.
```

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http://opensource.org/licenses/gpl-3.0.html and  
http://www.opensource.org/licenses/lgpl-2.1.php and  
http://www.gnu.org/licenses/old-licenses/library.txt.
```

```
Software
```

```
  BIOS: version 04.25
```

```
NXOS: version 9.3(4)
```

```
  BIOS compile time: 05/22/2019
```

```
  NXOS image file is: bootflash://nxos.9.3.4.bin
```

```
NXOS compile time: 4/28/2020 21:00:00 [04/29/2020 06:28:31]
```

#### Hardware

```
cisco Nexus 3132QV Chassis (Nexus 9000 Series)
Intel(R) Core(TM) i3- CPU @ 2.50GHz with 16399900 kB of memory.
Processor Board ID FOxxxxxxx23
```

```
Device name: cs2
```

```
bootflash: 15137792 kB
```

```
usb1: 0 kB (expansion flash)
```

```
Kernel uptime is 79 day(s), 10 hour(s), 23 minute(s), 53 second(s)
```

```
Last reset at 663500 usecs after Mon Nov 2 10:50:33 2020
```

```
Reason: Reset Requested by CLI command reload
```

```
System version: 9.3(4)
```

```
Service:
```

#### plugin

```
Core Plugin, Ethernet Plugin
```

```
Active Package(s):
```

```
cs2#
```

7. Upgrade the EPLD image and reboot the switch.

```
cs2# show version module 1 epld
```

EPLD Device	Version
MI FPGA	0x12
IO FPGA	0x11

```
cs2# install epld bootflash:n9000-epld.9.3.4.img module 1
```

Compatibility check:

Module	Type	Upgradable	Impact	Reason
1	SUP	Yes	disruptive	Module Upgradable

Retrieving EPLD versions.... Please wait.

Images will be upgraded according to following table:

Module	Type	EPLD	Running-Version	New-Version	Upg-Required
1	SUP	MI FPGA	0x12	0x12	No
1	SUP	IO FPGA	0x11	0x12	Yes

The above modules require upgrade.

The switch will be reloaded at the end of the upgrade

Do you want to continue (y/n) ? [n] y

Proceeding to upgrade Modules.

Starting Module 1 EPLD Upgrade

Module 1 : IO FPGA [Programming] : 100.00% ( 64 of 64 sectors)

Module 1 EPLD upgrade is successful.

Module	Type	Upgrade-Result
1	SUP	Success

Module 1 EPLD upgrade is successful.

```
cs2#
```

8. After the switch reboot, log in again, upgrade the EPLD golden image and reboot the switch once again.



```

cs2# install epld bootflash:n9000-epld.9.3.4.img module 1 golden
Digital signature verification is successful
Compatibility check:
Module          Type          Upgradable          Impact          Reason
-----
1              SUP              Yes              disruptive      Module Upgradable

Retrieving EPLD versions.... Please wait.
The above modules require upgrade.
The switch will be reloaded at the end of the upgrade
Do you want to continue (y/n) ? [n] y

Proceeding to upgrade Modules.

Starting Module 1 EPLD Upgrade

Module 1 : MI FPGA [Programming] : 100.00% (      64 of      64 sect
Module 1 : IO FPGA [Programming] : 100.00% (      64 of      64 sect
Module 1 EPLD upgrade is successful.
Module          Type  Upgrade-Result
-----
1              SUP      Success

EPLDs upgraded.

Module 1 EPLD upgrade is successful.
cs2#

```

9. After the switch reboot, log in to verify that the new version of EPLD loaded successfully.

```

cs2# show version module 1 epld

EPLD Device          Version
-----
MI    FPGA           0x12
IO    FPGA           0x12

```

## Install the Reference Configuration File (RCF)

You can install the RCF after setting up the Nexus 3132Q-V switch for the first time. You can also use this procedure to upgrade your RCF version.

### About this task

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

- The names of the two Cisco switches are `cs1` and `cs2`.
- The node names are `cluster1-01`, `cluster1-02`, `cluster1-03`, and `cluster1-04`.
- The cluster LIF names are `cluster1-01_clus1`, `cluster1-01_clus2`, `cluster1-02_clus1`, `cluster1-02_clus2`, `cluster1-03_clus1`, `cluster1-03_clus2`, `cluster1-04_clus1`, and `cluster1-04_clus2`.
- The `cluster1::*>` prompt indicates the name of the cluster.



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

## Steps

1. Display the cluster ports on each node that are connected to the cluster switches:

```
network device-discovery show
```

```
cluster1::*> network device-discovery show
Node/      Local  Discovered
Protocol   Port    Device (LLDP: ChassisID)  Interface      Platform
-----
cluster1-01/cdp
              e0a     cs1                      Ethernet1/7     N3K-
C3132Q-V
              e0d     cs2                      Ethernet1/7     N3K-
C3132Q-V
cluster1-02/cdp
              e0a     cs1                      Ethernet1/8     N3K-
C3132Q-V
              e0d     cs2                      Ethernet1/8     N3K-
C3132Q-V
cluster1-03/cdp
              e0a     cs1                      Ethernet1/1/1   N3K-
C3132Q-V
              e0b     cs2                      Ethernet1/1/1   N3K-
C3132Q-V
cluster1-04/cdp
              e0a     cs1                      Ethernet1/1/2   N3K-
C3132Q-V
              e0b     cs2                      Ethernet1/1/2   N3K-
C3132Q-V
cluster1::*>
```

2. Check the administrative and operational status of each cluster port.
  - a. Verify that all the cluster ports are up with a healthy status:

network port show -role cluster

```
cluster1::*> network port show -role cluster
```

Node: cluster1-01

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	
-----	-----						
e0a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e0d	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: cluster1-02

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	
-----	-----						
e0a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e0d	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

8 entries were displayed.

Node: cluster1-03

Ignore

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

Node: cluster1-04

Ignore

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

cluster1::\*>

b. Verify that all the cluster interfaces (LIFs) are on the home port:

```
network interface show -role cluster
```

```

cluster1::*> network interface show -role cluster

```

Current Is		Logical	Status	Network	Current
Vserver	Port	Interface	Admin/Oper	Address/Mask	Node
		cluster1-01_clus1	up/up	169.254.3.4/23	cluster1-
01	e0a	true			
		cluster1-01_clus2	up/up	169.254.3.5/23	cluster1-
01	e0d	true			
		cluster1-02_clus1	up/up	169.254.3.8/23	cluster1-
02	e0a	true			
		cluster1-02_clus2	up/up	169.254.3.9/23	cluster1-
02	e0d	true			
		cluster1-03_clus1	up/up	169.254.1.3/23	cluster1-
03	e0a	true			
		cluster1-03_clus2	up/up	169.254.1.1/23	cluster1-
03	e0b	true			
		cluster1-04_clus1	up/up	169.254.1.6/23	cluster1-
04	e0a	true			
		cluster1-04_clus2	up/up	169.254.1.7/23	cluster1-
04	e0b	true			

```

8 entries were displayed.
cluster1::*>

```

c. Verify that the cluster displays information for both cluster switches:

```

system cluster-switch show -is-monitoring-enabled-operational true

```

```
cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
```

Switch	Type	Address	Model
cs1	cluster-network	10.0.0.1	NX3132QV
Serial Number: FOXXXXXXXXGS Is Monitored: true Reason: None Software Version: Cisco Nexus Operating System (NX-OS) Software, Version 9.3(4) Version Source: CDP			
cs2	cluster-network	10.0.0.2	NX3132QV
Serial Number: FOXXXXXXXXGD Is Monitored: true Reason: None Software Version: Cisco Nexus Operating System (NX-OS) Software, Version 9.3(4) Version Source: CDP			

2 entries were displayed.

### 3. Disable auto-revert on the cluster LIFs.

```
cluster1::*> network interface modify -vserver Cluster -lif \* -auto
-revert false
```

### 4. On cluster switch cs2, shut down the ports connected to the cluster ports of the nodes.

```
cs2(config)# interface eth1/1/1-2,eth1/7-8
cs2(config-if-range)# shutdown
```

### 5. Verify that the cluster ports have migrated to the ports hosted on cluster switch cs1. This might take a few seconds.

```
network interface show -role cluster
```

```

cluster1::*> network interface show -role cluster

```

Current Is	Logical	Status	Network	Current
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
Cluster				
e0a	true	cluster1-01_clus1 up/up	169.254.3.4/23	cluster1-01
e0a	false	cluster1-01_clus2 up/up	169.254.3.5/23	cluster1-01
e0a	true	cluster1-02_clus1 up/up	169.254.3.8/23	cluster1-02
e0a	false	cluster1-02_clus2 up/up	169.254.3.9/23	cluster1-02
e0a	true	cluster1-03_clus1 up/up	169.254.1.3/23	cluster1-03
e0a	false	cluster1-03_clus2 up/up	169.254.1.1/23	cluster1-03
e0a	true	cluster1-04_clus1 up/up	169.254.1.6/23	cluster1-04
e0a	false	cluster1-04_clus2 up/up	169.254.1.7/23	cluster1-04

```

8 entries were displayed.
cluster1::*>

```

## 6. Verify that the cluster is healthy:

```
cluster show
```

```

cluster1::*> cluster show

```

Node	Health	Eligibility	Epsilon
cluster1-01	true	true	false
cluster1-02	true	true	false
cluster1-03	true	true	true
cluster1-04	true	true	false

```

4 entries were displayed.
cluster1::*>

```

## 7. Clean the configuration on switch cs2 and perform a basic setup.

- Clean the configuration. This step requires a console connection to the switch.

```
cs2# write erase
Warning: This command will erase the startup-configuration.
Do you wish to proceed anyway? (y/n) [n] y
cs2# reload
This command will reboot the system. (y/n)? [n] y
cs2#
```

b. Perform a basic setup of the switch.

8. Copy the RCF to the bootflash of switch cs2 using one of the following transfer protocols: FTP, TFTP, SFTP, or SCP. For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command Reference](#) guides.

This example shows TFTP being used to copy an RCF to the bootflash on switch cs2:

```
cs2# copy tftp: bootflash: vrf management
Enter source filename: Nexus_3132QV_RCF_v1.6-Cluster-HA-Breakout.txt
Enter hostname for the tftp server: 172.22.201.50
Trying to connect to tftp server.....Connection to Server Established.
TFTP get operation was successful
Copy complete, now saving to disk (please wait)...
```

9. Apply the RCF previously downloaded to the bootflash.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command Reference](#) guides.

This example shows the RCF file `Nexus_3132QV_RCF_v1.6-Cluster-HA-Breakout.txt` being installed on switch cs2:

```
cs2# copy Nexus_3132QV_RCF_v1.6-Cluster-HA-Breakout.txt running-config
echo-commands
```

10. Examine the banner output from the `show banner motd` command. You must read and follow the instructions under **Important Notes** to ensure the proper configuration and operation of the switch.



```
cs2# show banner motd
```

```
*****
*****
* NetApp Reference Configuration File (RCF)
*
* Switch    : Cisco Nexus 3132Q-V
* Filename  : Nexus_3132QV_RCF_v1.6-Cluster-HA-Breakout.txt
* Date      : Nov-02-2020
* Version   : v1.6
*
* Port Usage : Breakout configuration
* Ports 1- 6: Breakout mode (4x10GbE) Intra-Cluster Ports, int e1/1/1-
4,
* e1/2/1-4, e1/3/1-4,int e1/4/1-4, e1/5/1-4, e1/6/1-4
* Ports 7-30: 40GbE Intra-Cluster/HA Ports, int e1/7-30
* Ports 31-32: Intra-Cluster ISL Ports, int e1/31-32
*
* IMPORTANT NOTES
* - Load Nexus_3132QV_RCF_v1.6-Cluster-HA.txt for non breakout config
*
* - This RCF utilizes QoS and requires specific TCAM configuration,
requiring
*   cluster switch to be rebooted before the cluster becomes
operational.
*
* - Perform the following steps to ensure proper RCF installation:
*
*   (1) Apply RCF, expect following messages:
*       - Please save config and reload the system...
*       - Edge port type (portfast) should only be enabled on ports...
*       - TCAM region is not configured for feature QoS class IPv4...
*
*   (2) Save running-configuration and reboot Cluster Switch
*
*****
*****
```

#### 11. Verify that the RCF file is the correct newer version:

```
show running-config
```

When you check the output to verify you have the correct RCF, make sure that the following information is correct:

- The RCF banner
- The node and port settings
- Customizations The output varies according to your site configuration. Check the port settings and refer to the release notes for any changes specific to the RCF that you have installed.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command Reference](#) guides.

[illegible]

13. Reboot switch cs2. You can ignore the "cluster ports down" events reported on the nodes while the switch reboots.

```
cs2# reload
This command will reboot the system. (y/n)? [n] y
```

14. Apply the same RCF and save the running configuration for a second time.

```
cs2# copy Nexus_3l32QV_RCF_v1.6-Cluster-HA-Breakout.txt running-config
echo-commands
cs2# copy running-config startup-config
[#####] 100% Copy complete
```

15. Verify the health of cluster ports on the cluster.

- a. Verify that e0d ports are up and healthy across all nodes in the cluster:

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

```
cluster1::*> network port show -role cluster

Node: cluster1-01

Ignore

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

```

e0a      Cluster      Cluster      up    9000  auto/10000 healthy
false
e0b      Cluster      Cluster      up    9000  auto/10000 healthy
false

```

Node: cluster1-02

Ignore

```

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

```

Node: cluster1-03

Ignore

```

                                     Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
-----
-----
e0a      Cluster      Cluster      up    9000  auto/100000
healthy false
e0d      Cluster      Cluster      up    9000  auto/100000
healthy false

```

Node: cluster1-04

Ignore

```

                                     Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
-----
-----
e0a      Cluster      Cluster      up    9000  auto/100000
healthy false
e0d      Cluster      Cluster      up    9000  auto/100000
healthy false

```

8 entries were displayed.

- b. Verify the switch health from the cluster (this might not show switch cs2, since LIFs are not homed on e0d).

```
cluster1::*> network device-discovery show -protocol cdp
```

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
cluster1-01/cdp				
	e0a	cs1	Ethernet1/7	N3K-
C3132Q-V				
	e0d	cs2	Ethernet1/7	N3K-
C3132Q-V				
cluster01-2/cdp				
	e0a	cs1	Ethernet1/8	N3K-
C3132Q-V				
	e0d	cs2	Ethernet1/8	N3K-
C3132Q-V				
cluster01-3/cdp				
	e0a	cs1	Ethernet1/1/1	N3K-
C3132Q-V				
	e0b	cs2	Ethernet1/1/1	N3K-
C3132Q-V				
cluster1-04/cdp				
	e0a	cs1	Ethernet1/1/2	N3K-
C3132Q-V				
	e0b	cs2	Ethernet1/1/2	N3K-
C3132Q-V				

```
cluster1::*> system cluster-switch show -is-monitoring-enabled  
-operational true
```

Switch	Type	Address	Model
cs1	cluster-network	10.233.205.90	N3K-
C3132Q-V			
Serial Number: FOXXXXXXXXGD			
Is Monitored: true			
Reason: None			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
9.3(4)			
Version Source: CDP			

```

cs2                                cluster-network    10.233.205.91    N3K-
C3132Q-V
  Serial Number: FOXXXXXXXGS
    Is Monitored: true
      Reason: None
  Software Version: Cisco Nexus Operating System (NX-OS) Software,
Version
                        9.3(4)
  Version Source: CDP

2 entries were displayed.

```

You might observe the following output on the cs1 switch console depending on the RCF version previously loaded on the switch:



```

2020 Nov 17 16:07:18 cs1 %$ VDC-1 %$ %STP-2-
UNBLOCK_CONSIST_PORT: Unblocking port port-channel1 on
VLAN0092. Port consistency restored.
2020 Nov 17 16:07:23 cs1 %$ VDC-1 %$ %STP-2-BLOCK_PVID_PEER:
Blocking port-channel1 on VLAN0001. Inconsistent peer vlan.
2020 Nov 17 16:07:23 cs1 %$ VDC-1 %$ %STP-2-BLOCK_PVID_LOCAL:
Blocking port-channel1 on VLAN0092. Inconsistent local vlan.

```

16. On cluster switch cs1, shut down the ports connected to the cluster ports of the nodes.

The following example uses the interface example output from step 1:

```

cs1(config)# interface eth1/1/1-2,eth1/7-8
cs1(config-if-range)# shutdown

```

17. Verify that the cluster LIFs have migrated to the ports hosted on switch cs2. This might take a few seconds.

```

network interface show -role cluster

```

```

cluster1::*> network interface show -role cluster

```

Current Is	Logical	Status	Network	Current
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
Cluster				
e0d	cluster1-01_clus1	up/up	169.254.3.4/23	cluster1-01
e0d	cluster1-01_clus2	up/up	169.254.3.5/23	cluster1-01
e0d	cluster1-02_clus1	up/up	169.254.3.8/23	cluster1-02
e0d	cluster1-02_clus2	up/up	169.254.3.9/23	cluster1-02
e0d	cluster1-03_clus1	up/up	169.254.1.3/23	cluster1-03
e0b	cluster1-03_clus2	up/up	169.254.1.1/23	cluster1-03
e0b	cluster1-04_clus1	up/up	169.254.1.6/23	cluster1-04
e0b	cluster1-04_clus2	up/up	169.254.1.7/23	cluster1-04
e0b	cluster1-04_clus2	up/up	169.254.1.7/23	cluster1-04

```

8 entries were displayed.
cluster1::*>

```

18. Verify that the cluster is healthy:

```
cluster show
```

```

cluster1::*> cluster show

```

Node	Health	Eligibility	Epsilon
cluster1-01	true	true	false
cluster1-02	true	true	false
cluster1-03	true	true	true
cluster1-04	true	true	false

```

4 entries were displayed.
cluster1::*>

```

19. Repeat Steps 7 to 14 on switch cs1.

20. Enable auto-revert on the cluster LIFs.

```
cluster1::*> network interface modify -vserver Cluster -lif \* -auto  
-revert True
```

21. Reboot switch cs1. You do this to trigger the cluster LIFs to revert to their home ports. You can ignore the "cluster ports down" events reported on the nodes while the switch reboots.

```
cs1# reload  
This command will reboot the system. (y/n)? [n] y
```

22. Verify that the switch ports connected to the cluster ports are up.

```
cs1# show interface brief \| grep up  
.  
.  
Eth1/1/1      1      eth  access up      none      10G(D)  
--  
Eth1/1/2      1      eth  access up      none      10G(D)  
--  
Eth1/7        1      eth  trunk  up      none      100G(D)  
--  
Eth1/8        1      eth  trunk  up      none      100G(D)  
--  
.  
.
```

23. Verify that the ISL between cs1 and cs2 is functional:

```
show port-channel summary
```

```

cs1# 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
        b - BFD Session Wait
        S - Switched      R - Routed
        U - Up (port-channel)
        p - Up in delay-lacp mode (member)
        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)
cs1#

```

24. Verify that the cluster LIFs have reverted to their home port:

```

network interface show -role cluster

```



```

cluster1::*> network interface show -role cluster

```

Current Is	Logical	Status	Network	Current
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
Cluster				
e0d	cluster1-01_clus1	up/up	169.254.3.4/23	cluster1-01
e0d	cluster1-01_clus2	up/up	169.254.3.5/23	cluster1-01
e0d	cluster1-02_clus1	up/up	169.254.3.8/23	cluster1-02
e0d	cluster1-02_clus2	up/up	169.254.3.9/23	cluster1-02
e0d	cluster1-03_clus1	up/up	169.254.1.3/23	cluster1-03
e0b	cluster1-03_clus2	up/up	169.254.1.1/23	cluster1-03
e0b	cluster1-04_clus1	up/up	169.254.1.6/23	cluster1-04
e0b	cluster1-04_clus2	up/up	169.254.1.7/23	cluster1-04
e0b	true			

```

8 entries were displayed.
cluster1::*>

```

## 25. Verify that the cluster is healthy:

```
cluster show
```

```

cluster1::*> cluster show

```

Node	Health	Eligibility	Epsilon
cluster1-01	true	true	false
cluster1-02	true	true	false
cluster1-03	true	true	true
cluster1-04	true	true	false

```

4 entries were displayed.
cluster1::*>

```

## 26. Ping the remote cluster interfaces to verify connectivity:

```
cluster ping-cluster -node local
```

```

cluster1::*> cluster ping-cluster -node local
Host is cluster1-03
Getting addresses from network interface table...
Cluster cluster1-03_clus1 169.254.1.3 cluster1-03 e0a
Cluster cluster1-03_clus2 169.254.1.1 cluster1-03 e0b
Cluster cluster1-04_clus1 169.254.1.6 cluster1-04 e0a
Cluster cluster1-04_clus2 169.254.1.7 cluster1-04 e0b
Cluster cluster1-01_clus1 169.254.3.4 cluster1-01 e0a
Cluster cluster1-01_clus2 169.254.3.5 cluster1-01 e0d
Cluster cluster1-02_clus1 169.254.3.8 cluster1-02 e0a
Cluster cluster1-02_clus2 169.254.3.9 cluster1-02 e0d
Local = 169.254.1.3 169.254.1.1
Remote = 169.254.1.6 169.254.1.7 169.254.3.4 169.254.3.5 169.254.3.8
169.254.3.9
Cluster Vserver Id = 4294967293
Ping status:
.....
Basic connectivity succeeds on 12 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 12 path(s):
    Local 169.254.1.3 to Remote 169.254.1.6
    Local 169.254.1.3 to Remote 169.254.1.7
    Local 169.254.1.3 to Remote 169.254.3.4
    Local 169.254.1.3 to Remote 169.254.3.5
    Local 169.254.1.3 to Remote 169.254.3.8
    Local 169.254.1.3 to Remote 169.254.3.9
    Local 169.254.1.1 to Remote 169.254.1.6
    Local 169.254.1.1 to Remote 169.254.1.7
    Local 169.254.1.1 to Remote 169.254.3.4
    Local 169.254.1.1 to Remote 169.254.3.5
    Local 169.254.1.1 to Remote 169.254.3.8
    Local 169.254.1.1 to Remote 169.254.3.9
Larger than PMTU communication succeeds on 12 path(s)
RPC status:
6 paths up, 0 paths down (tcp check)
6 paths up, 0 paths down (udp check)

```

## Replace Cisco Nexus 3132Q-V cluster switches

You must be aware of certain configuration information, port connections and cabling requirements when you replace Cisco Nexus 3132Q-V cluster switches.

- The Cisco Nexus 3132Q-V cluster switch is supported.

- The number of 10 GbE and 40/100 GbE ports are defined in the reference configuration files (RCFs) available on the [Cisco® Cluster Network Switch Reference Configuration File Download](#) page.
- The cluster switches use the 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.

- You must have 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.

- You must have done the planning, migration, and read the required documentation on 10 GbE and 40/100 GbE connectivity from nodes to Nexus 3132Q-V cluster switches.

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

## How to replace Cisco Nexus 3132Q-V cluster switches

Replacing a defective Cisco Nexus 3132Q-V switch in a cluster network is a nondisruptive procedure (NDO), and you must perform a specific sequence of tasks.

### Before you begin

- The existing cluster and network configuration must have:
  - The Nexus 3132Q-V cluster infrastructure must be redundant and fully functional on both switches.

The [Cisco Ethernet Switch](#) page has the latest RCF and NX-OS versions on your switches.

- All cluster ports must be in the `up` state.
- Management connectivity must exist on both switches.
- All cluster logical interfaces (LIFs) must be in the `up` state and must not have been migrated.
- The Nexus 3132Q-V replacement switch:
  - Management network connectivity on the replacement switch must be functional.
  - Console access to the replacement switch must be in place.
  - The desired RCF and NX-OS operating system image switch must be loaded onto the switch.
  - Initial customization of the switch must be complete.

### About this task

This procedure replaces the second Nexus 3132Q-V cluster switch CL2 with new 3132Q-V switch C2. The examples in this procedure use the following switch and node nomenclature:

- `n1_clus1` is the first cluster logical interface (LIF) connected to cluster switch C1 for node `n1`.
- `n1_clus2` is the first cluster LIF connected to cluster switch CL2 or C2, for node `n1`.
- `n1_clus3` is the second LIF connected to cluster switch C2, for node `n1`.
- `n1_clus4` is the second LIF connected to cluster switch CL1, for node `n1`.
- 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 nodes are `n1`, `n2`, `n3`, and `n4`. - The examples in this procedure use four nodes: Two nodes use four 10 GB cluster interconnect ports: `e0a`, `e0b`, `e0c`, and `e0d`. The other two nodes use two 40 GB cluster interconnect ports: `e4a` and `e4e`. See the [Hardware Universe](#) for the actual cluster ports on your platforms.

This procedure covers the following scenario:

- The cluster starts with four nodes connected to two Nexus 3132Q-V cluster switches, CL1 and CL2.
- Cluster switch CL2 is to be replaced by C2 ([Steps 1 -21](#))
  - On each node, cluster LIFs connected to CL2 are migrated onto cluster ports connected to CL1.
  - Disconnect cabling from all ports on CL2 and reconnect cabling to the same ports on the replacement switch C2.
  - On each node, its migrated cluster LIFs are reverted.

### Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

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

`x` is the duration of the maintenance window in hours.



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
```

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

Node	Local Port	Discovered Device	Interface	Platform
n1	/cdp			
	e0a	CL1	Ethernet1/1/1	N3K-C3132Q-V
	e0b	CL2	Ethernet1/1/1	N3K-C3132Q-V
	e0c	CL2	Ethernet1/1/2	N3K-C3132Q-V
	e0d	CL1	Ethernet1/1/2	N3K-C3132Q-V
n2	/cdp			
	e0a	CL1	Ethernet1/1/3	N3K-C3132Q-V
	e0b	CL2	Ethernet1/1/3	N3K-C3132Q-V
	e0c	CL2	Ethernet1/1/4	N3K-C3132Q-V
	e0d	CL1	Ethernet1/1/4	N3K-C3132Q-V
n3	/cdp			
	e4a	CL1	Ethernet1/7	N3K-C3132Q-V
	e4e	CL2	Ethernet1/7	N3K-C3132Q-V
n4	/cdp			
	e4a	CL1	Ethernet1/8	N3K-C3132Q-V
	e4e	CL2	Ethernet1/8	N3K-C3132Q-V

```
12 entries were displayed
```

### 3. Determine the administrative or operational status for each cluster interface:

#### a. Display the network port attributes:

```
network port show
```

```
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
------	---------	------------------	----------	------------	--------

```
-----
```

```
-----
```

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

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 -  
-  
12 entries were displayed.
```

b. Display information about the logical interfaces:

```
network interface show
```

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

	Current	Is	Logical	Status	Network	Current
Vserver	Port	Home	Interface	Admin/Oper	Address/Mask	Node
-----						
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
e0a		true	n3_clus1	up/up	10.10.0.9/24	n3
e0e		true	n3_clus2	up/up	10.10.0.10/24	n3
e0a		true	n4_clus1	up/up	10.10.0.11/24	n4
e0e		true	n4_clus2	up/up	10.10.0.12/24	n4

12 entries were displayed.

c. Display the information on the discovered cluster switches:

```
system cluster-switch show
```



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

Switch	Type	Address	Model
CL1	cluster-network	10.10.1.101	
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			
CL2	cluster-network	10.10.1.102	
NX3132V			
Serial Number: FOX000002			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.0(3)I4(1)			
Version Source: CDP			

2 entries were displayed.

4. Verify that the appropriate RCF and image are installed on the new Nexus 3132Q-V switch as necessary for your requirements, and make any essential site customizations.

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

- a. On the NetApp Support Site, go to the [Cisco Ethernet Switch](#) page.
  - 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.
5. Migrate the LIFs associated to the cluster ports connected to switch C2:

```
network interface migrate
```

This example shows that the LIF migration is done on all 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
cluster::*> network interface migrate -vserver Cluster -lif n3_clus2
-source-node n3 -destination-node n3 -destination-port e4a
cluster::*> network interface migrate -vserver Cluster -lif n4_clus2
-source-node n4 -destination-node n4 -destination-port e4a
```

#### 6. Verify cluster's health:

```
network interface show
```

```
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					
	n1_clus1	up/up	10.10.0.1/24	n1	e0a
true					
	n1_clus2	up/up	10.10.0.2/24	n1	e0a
false					
	n1_clus3	up/up	10.10.0.3/24	n1	e0d
false					
	n1_clus4	up/up	10.10.0.4/24	n1	e0d
true					
	n2_clus1	up/up	10.10.0.5/24	n2	e0a
true					
	n2_clus2	up/up	10.10.0.6/24	n2	e0a
false					
	n2_clus3	up/up	10.10.0.7/24	n2	e0d
false					
	n2_clus4	up/up	10.10.0.8/24	n2	e0d
true					
	n3_clus1	up/up	10.10.0.9/24	n3	e4a
true					
	n3_clus2	up/up	10.10.0.10/24	n3	e4a
false					
	n4_clus1	up/up	10.10.0.11/24	n4	e4a
true					
	n4_clus2	up/up	10.10.0.12/24	n4	e4a
false					

12 entries were displayed.

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

```
network port modify
```

This example shows the specified ports being 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
cluster::*> network port modify -node n3 -port e4e -up-admin false
cluster::*> network port modify -node n4 -port e4e -up-admin false

```

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

```
cluster ping-cluster
```

```

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
Cluster n3_clus1 n4      e0a 10.10.0.9
Cluster n3_clus2 n3      e0e 10.10.0.10
Cluster n4_clus1 n4      e0a 10.10.0.11
Cluster n4_clus2 n4      e0e 10.10.0.12

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 10.10.0.9 10.10.0.10
10.10.0.11 10.10.0.12
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 32 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 32 path(s):
    Local 10.10.0.1 to Remote 10.10.0.5
    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 10.10.0.1 to Remote 10.10.0.9
    Local 10.10.0.1 to Remote 10.10.0.10
    Local 10.10.0.1 to Remote 10.10.0.11
    Local 10.10.0.1 to Remote 10.10.0.12

```

```
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 10.10.0.2 to Remote 10.10.0.9
Local 10.10.0.2 to Remote 10.10.0.10
Local 10.10.0.2 to Remote 10.10.0.11
Local 10.10.0.2 to Remote 10.10.0.12
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 10.10.0.3 to Remote 10.10.0.9
Local 10.10.0.3 to Remote 10.10.0.10
Local 10.10.0.3 to Remote 10.10.0.11
Local 10.10.0.3 to Remote 10.10.0.12
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
Local 10.10.0.4 to Remote 10.10.0.9
Local 10.10.0.4 to Remote 10.10.0.10
Local 10.10.0.4 to Remote 10.10.0.11
Local 10.10.0.4 to Remote 10.10.0.12
```

Larger than PMTU communication succeeds on 32 path(s)

RPC status:

8 paths up, 0 paths down (tcp check)

8 paths up, 0 paths down (udp check)

9. Shut down the ports 1/31 and 1/32 on CL1, and the active Nexus 3132Q-V switch:

```
shutdown
```

This example shows the ISL ports 1/31 and 1/32 being shut down on switch CL1:

```
(CL1)# configure
(CL1)(Config)# interface e1/31-32
(CL1(config-if-range)# shutdown
(CL1(config-if-range)# exit
(CL1)(Config)# exit
(CL1)#
```

10. Remove all the cables attached to the Nexus 3132Q-V switch CL2 and reconnect them to the replacement switch C2 on all nodes.

11. Remove the ISL cables from ports e1/31 and e1/32 on CL2 and reconnect them to the same ports on the replacement switch C2.
12. Bring up ISLs ports 1/31 and 1/32 on the Nexus 3132Q-V switch CL1.

```
(CL1)# configure
(CL1) (Config)# interface e1/31-32
(CL1(config-if-range)# no shutdown
(CL1(config-if-range)# exit
(CL1) (Config)# exit
(CL1)#
```

13. Verify that the ISLs are up on CL1:

```
show port-channel
```

Ports Eth1/31 and Eth1/32 should indicate (P) , which means that the ISL ports are up in the port-channel.

```
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      Eth1/31 (P)  Eth1/32 (P)
```

14. Verify that the ISLs are up on C2:

```
show port-channel summary
```

Ports Eth1/31 and Eth1/32 should indicate (P) , which means that both 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 (P)  Eth1/32 (P)
```

15. On all nodes, bring up all the cluster interconnect ports connected to the Nexus 3132Q-V switch C2:  
network port modify

```
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
cluster::*> network port modify -node n3 -port e4e -up-admin true
cluster::*> network port modify -node n4 -port e4e -up-admin true
```

16. For all nodes, revert all of the migrated cluster interconnect LIFs:

```
network interface revert
```

```
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
Cluster::*> network interface revert -vserver Cluster -lif n3_clus2
Cluster::*> network interface revert -vserver Cluster -lif n4_clus2
```

17. Verify that the cluster interconnect ports are now reverted to their home:

```
network interface show
```

This example shows that all the LIFs are successfully reverted because the ports listed under the Current Port column have a status of true in the Is Home column. If the Is Home column value is false, the LIF has not been reverted.

```

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					
	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.

#### 18. Verify that the cluster ports are connected:

```
network port show
```

```

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

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 -      -  
12 entries were displayed.
```

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

```
cluster ping-cluster
```

```
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  
Cluster n3_clus1 n3      e0a 10.10.0.9  
Cluster n3_clus2 n3      e0e 10.10.0.10  
Cluster n4_clus1 n4      e0a 10.10.0.11  
Cluster n4_clus2 n4      e0e 10.10.0.12  
  
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 10.10.0.9 10.10.0.10  
10.10.0.11 10.10.0.12  
Cluster Vserver Id = 4294967293  
Ping status:  
....  
Basic connectivity succeeds on 32 path(s)  
Basic connectivity fails on 0 path(s)  
.....  
Detected 1500 byte MTU on 32 path(s):  
    Local 10.10.0.1 to Remote 10.10.0.5  
    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 10.10.0.1 to Remote 10.10.0.9  
    Local 10.10.0.1 to Remote 10.10.0.10  
    Local 10.10.0.1 to Remote 10.10.0.11  
    Local 10.10.0.1 to Remote 10.10.0.12  
    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 10.10.0.2 to Remote 10.10.0.9
```

```
Local 10.10.0.2 to Remote 10.10.0.10
Local 10.10.0.2 to Remote 10.10.0.11
Local 10.10.0.2 to Remote 10.10.0.12
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 10.10.0.3 to Remote 10.10.0.9
Local 10.10.0.3 to Remote 10.10.0.10
Local 10.10.0.3 to Remote 10.10.0.11
Local 10.10.0.3 to Remote 10.10.0.12
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
Local 10.10.0.4 to Remote 10.10.0.9
Local 10.10.0.4 to Remote 10.10.0.10
Local 10.10.0.4 to Remote 10.10.0.11
Local 10.10.0.4 to Remote 10.10.0.12
```

Larger than PMTU communication succeeds on 32 path(s)

RPC status:

8 paths up, 0 paths down (tcp check)

8 paths up, 0 paths down (udp check)

## 20. 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

```
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
```

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

						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	-
-							

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	Type	Address	Model
CL1	cluster-network	10.10.1.101	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			
CL2	cluster-network	10.10.1.102	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			
C2	cluster-network	10.10.1.103	NX3132V
Serial Number: FOX000003			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.0(3)I4(1)			
Version Source: CDP			

3 entries were displayed.

21. Remove the replaced Nexus 3132Q-V switch, if it is not already removed automatically:

```
system cluster-switch delete
```

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

22. Verify that the proper cluster switches are monitored:

```
system cluster-switch show
```

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

Switch	Type	Address	Model
CL1	cluster-network	10.10.1.101	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	10.10.1.103	NX3132V
Serial Number: FOX000002			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.0(3)I4(1)			
Version Source: CDP			

2 entries were displayed.

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

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

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



```

cluster::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
C1
C2

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

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

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

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

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

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

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

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

Enabling cluster switch log collection.

cluster::*>

```



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

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

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

## Related information

[Cisco Ethernet Switch description page](#)

[Hardware Universe](#)

# Replace a Cisco Nexus 5596 cluster switch with a Cisco Nexus 3132Q-V cluster switch

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

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

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

- On the left side of Nexus 3132Q-V switches is a set of 4 SFP+ ports multiplexed to that QSFP28 port.

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



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

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



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

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

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

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

### About this task

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

- The command outputs might vary depending on different releases of ONTAP.
- The Nexus 5596 switches to be replaced are CL1 and CL2.
- The Nexus 3132Q-V switches to replace the Nexus 5596 switches are C1 and C2.
- n1\_clus1 is the first cluster logical interface (LIF) connected to cluster switch 1 (CL1 or C1) for node n1.
- n1\_clus2 is the first cluster LIF connected to cluster switch 2 (CL2 or C2) for node n1.
- n1\_clus3 is the second LIF connected to cluster switch 2 (CL2 or C2) for node n1.
- n1\_clus4 is the second LIF connected to cluster switch 1 (CL1 or C1) for node n1.
- The nodes are n1, n2, n3, and n4.
- The 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.

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

## Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message: `system node autosupport invoke -node * -type all -message MAINT=xh`

x is the duration of the maintenance window in hours.



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

2. Display information about the devices in your configuration:

```
network device-discovery show
```

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

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

Node	Local Port	Discovered Device	Interface	Platform
n1	/cdp			
	e0a	CL1	Ethernet1/1	N5K-C5596UP
	e0b	CL2	Ethernet1/1	N5K-C5596UP
	e0c	CL2	Ethernet1/2	N5K-C5596UP
	e0d	CL1	Ethernet1/2	N5K-C5596UP
n2	/cdp			
	e0a	CL1	Ethernet1/3	N5K-C5596UP
	e0b	CL2	Ethernet1/3	N5K-C5596UP
	e0c	CL2	Ethernet1/4	N5K-C5596UP
	e0d	CL1	Ethernet1/4	N5K-C5596UP

```
8 entries were displayed.
```

3. Determine the administrative or operational status for each cluster interface:

a. Display the network port attributes:

```
network port show
```

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

```

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

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.

```

b. Display information about the logical interfaces:

```
network interface show
```

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

```

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

```

Current Is	Logical	Status	Network	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			

8 entries were displayed.

c. Display information about the discovered cluster switches:

```
system cluster-switch show
```

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

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

Switch Model	Type	Address
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		

2 entries were displayed.

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

```
network interface modify
```

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

- 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
```

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

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

7. Verify the cluster's health:

```
network interface show
```

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

```

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

```

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

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

```

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

```

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

```
cluster ping-cluster
```

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

```

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

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

```

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

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

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

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

11. Build a temporary ISL between CL1 and C2.

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

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

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

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

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

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

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

15. Bring up ISLs ports 45 through 48 on the active Nexus 5596 switch CL1.

The following example shows ISLs ports 45 through 48 being brought up:

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

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

```
show port-channel summary
```

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

Example

```
CL1# show port-channel summary
```

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

```
-----
-----
Group Port-          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)
```

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

```
show port-channel summary
```

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

```
C2# show port-channel summary
```

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

```
-----
-----
Group Port-          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)
```

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

```
network port modify
```

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

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

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

```
network interface revert
```

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

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

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

```
network interface show
```

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

```
cluster::*> network interface show -role cluster
(network interface show)
Current Is
Vserver   Logical   Status    Network    Current
Home      Interface Admin/Oper Address/Mask Node        Port
-----
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
true
8 entries were displayed.
```

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

```
network port show
```

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

```

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

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.

```

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

```
cluster ping-cluster
```

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



```

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

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

```

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

```
network interface migrate
```

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

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

#### 24. Verify the cluster status:

```
network interface show
```

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

```

(network interface show)
Current Is Logical Status Network Current
Vserver Interface Admin/Oper Address/Mask Node Port
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.
-----

```

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

```
network port modify
```

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

```

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

```

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

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

```

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

```

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

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

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

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

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

```

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

```

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

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

```

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

```

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

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

```

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

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

```

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

network port modify

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

```

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

```

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

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

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

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.
```

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

```
network interface revert
```

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

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

35. Verify that the interface is home:

```
network interface show
```

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

```
cluster::*> network interface show -role cluster
(network interface show)
      Logical      Status      Network      Current
Current Is
Vserver      Interface  Admin/Oper  Address/Mask      Node      Port
Home
-----
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
true
8 entries were displayed.
```

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

```
cluster ping-cluster
```

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

```

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

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

```

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



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

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

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

Node	Local Port	Discovered Device	Interface	Platform
n1	/cdp			
	e0a	C1	Ethernet1/1/1	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
```

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

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

```

                                          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 -
-

```

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	Type	Address	Model
-----			
C1	cluster-network	10.10.1.103	NX3132V
Serial Number: FOX000001			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.0(3)I4(1)			
Version Source: CDP			
C2	cluster-network	10.10.1.104	NX3132V
Serial Number: FOX000002			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.0(3)I4(1)			
Version Source: CDP			
CL1	cluster-network	10.10.1.101	NX5596
Serial Number: 01234567			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.1(1)N1(1)			
Version Source: CDP			
CL2	cluster-network	10.10.1.102	NX5596
Serial Number: 01234568			
Is Monitored: true			
Reason:			
Software Version: Cisco Nexus Operating System (NX-OS) Software,			
Version			
7.1(1)N1(1)			
Version Source: CDP			

4 entries were displayed.

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

The following example shows how to remove the Nexus 5596:

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

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

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

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

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

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

2 entries were displayed.

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

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

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

```
cluster::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
C1
C2

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

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

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

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

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

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

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

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

Enabling cluster switch log collection.

cluster::*>
```



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

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

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

## Related information

[Cisco Ethernet Switch description page](#)

[Hardware Universe](#)

# Replace CN1610 cluster switches with Cisco Nexus 3132Q-V cluster switches

You must be aware of certain configuration information, port connections, and cabling requirements when you replace CN1610 cluster switches with Cisco Nexus 3132Q-V cluster switches.

- The following cluster switches are supported:
  - NetApp CN1610
  - Cisco Nexus 3132Q-V
- The cluster switches support the following node connections:
  - NetApp CN1610: ports 0/1 through 0/12 (10 GbE)
  - Cisco Nexus 3132Q-V: ports e1/1-30 (40/100 GbE)
- The cluster switches use the following inter-switch link (ISL) ports:
  - NetApp CN1610: ports 0/13 through 0/16 (10 GbE)
  - Cisco Nexus 3132Q-V: ports e1/31-32 (40/100 GbE)
- The [Hardware Universe](#) contains information about supported cabling to Nexus 3132Q-V switches:
  - Nodes with 10 GbE cluster connections require QSFP to SFP+ optical fiber breakout cables or QSFP to SFP+ copper breakout cables
  - Nodes with 40/100 GbE cluster connections require supported QSFP/QSFP28 optical modules with optical fiber cables or QSFP/QSFP28 copper direct-attach cables
- The appropriate ISL cabling is as follows:
  - Beginning: For CN1610 to CN1610 (SFP+ to SFP+), four SFP+ optical fiber or copper direct-attach cables
  - Interim: For CN1610 to Nexus 3132Q-V (QSFP to four SFP+ breakout), one QSFP to SFP+ optical fiber or copper breakout cable
  - Final: For Nexus 3132Q-V to Nexus 3132Q-V (QSFP28 to QSFP28), two QSFP28 optical fiber or copper direct-attach cables
- NetApp twinax cables are not compatible with Cisco Nexus 3132Q-V switches.

If your current CN1610 configuration uses NetApp twinax cables for cluster-node-to-switch connections or ISL connections and you want to continue using twinax in your environment, you need to procure Cisco twinax cables. Alternatively, you can use optical fiber cables for both the ISL connections and the cluster-node-to-switch connections.

- On Nexus 3132Q-V switches, you can operate QSFP/QSFP28 ports as either 40/100 Gb Ethernet or 4x 10 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 Gb Ethernet port are numbered as 1/2/1, 1/2/2, 1/2/3, and 1/2/4.

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

By default, the reference configuration file (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 switches by using the `hardware profile front portmode sfp-plus` command. Similarly, you can reset Nexus 3132Q-V switches to use a QSFP port instead of four SFP+ ports by using the `hardware profile front portmode qsfp` command.



When you use the first four SFP+ ports, it will disable the first 40GbE QSFP port.

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

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

- You must have done the planning, migration, and read the required documentation on 10 GbE and 40/100 GbE connectivity from nodes to Nexus 3132Q-V cluster switches.
- The ONTAP and NX-OS versions that are supported in this procedure are listed on the [Cisco Ethernet Switches](#) page.
- The ONTAP and FASTPATH versions that are supported in this procedure are listed on the [NetApp CN1601 and CN1610 Switches](#) page.

## How to replace CN1610 cluster switches with Cisco Nexus 3132Q-V cluster switches

To replace the existing CN1610 cluster switches in a cluster with Cisco Nexus 3132Q-V cluster switches, you must perform a specific sequence of tasks.

### About this task

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.

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.

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 ([Steps 2 - 22](#))
  - 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 ([Steps 23 - 43](#))
  - 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.

## Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

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

x is the duration of the maintenance window in hours.



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`

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`

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

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

Node: n1

Port	IPspace	Broadcast Domain	Link	MTU	Speed (Mbps) 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.

b. Display information about the logical interfaces: `network interface show`

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

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

Vserver	Logical 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
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2_clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2_clus4	up/up	10.10.0.8/24	n2	e0d	true

8 entries were displayed.

### c. Display information about the discovered cluster switches: `system cluster-switch show`

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

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

Switch	Type	Address	Model
CL1	cluster-network	10.10.1.101	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`

```
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:

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

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`

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	n1_clus1	up/up	10.10.0.1/24	n1	e0a	true
	n1_clus2	up/up	10.10.0.2/24	n1	e0a	false
	n1_clus3	up/up	10.10.0.3/24	n1	e0d	false
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2_clus2	up/up	10.10.0.6/24	n2	e0a	false
	n2_clus3	up/up	10.10.0.7/24	n2	e0d	false
	n2_clus4	up/up	10.10.0.8/24	n2	e0d	true

8 entries were displayed.

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

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

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

9. Ping the remote cluster interfaces, and then perform a remote procedure call server check: `cluster ping-cluster`

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

```

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

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 16 path(s):
  Local 10.10.0.1 to Remote 10.10.0.5
  Local 10.10.0.1 to Remote 10.10.0.6
  Local 10.10.0.1 to Remote 10.10.0.7
  Local 10.10.0.1 to Remote 10.10.0.8
  Local 10.10.0.2 to Remote 10.10.0.5
  Local 10.10.0.2 to Remote 10.10.0.6
  Local 10.10.0.2 to Remote 10.10.0.7
  Local 10.10.0.2 to Remote 10.10.0.8
  Local 10.10.0.3 to Remote 10.10.0.5
  Local 10.10.0.3 to Remote 10.10.0.6
  Local 10.10.0.3 to Remote 10.10.0.7
  Local 10.10.0.3 to Remote 10.10.0.8
  Local 10.10.0.4 to Remote 10.10.0.5
  Local 10.10.0.4 to Remote 10.10.0.6
  Local 10.10.0.4 to Remote 10.10.0.7
  Local 10.10.0.4 to Remote 10.10.0.8

Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)

```

10. Shut down the ISL ports 13 through 16 on the active CN1610 switch CL1: shutdown

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:

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
```

#### 12. 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.

#### 13. 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.

#### 14. 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

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)#

```

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

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)#

```

16. 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:

```

(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	10 Gb Full	True
	partner/long		
0/14	actor/long	10 Gb Full	True
	partner/long		
0/15	actor/long	10 Gb Full	True
	partner/long		
0/16	actor/long	10 Gb Full	True
	partner/long		

17. Verify that the ISLs are up on the 3132Q-V switch C2: `show port-channel summary`

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)
```

18. 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`

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
```

19. Revert all of the migrated cluster interconnect LIFs that are connected to C2 on all of the nodes: `network interface revert`

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

20. Verify that all of the cluster interconnect ports are reverted to their home ports: `network interface`

show

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
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2_clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2_clus4	up/up	10.10.0.8/24	n2	e0d	true

8 entries were displayed.

## 21. Verify that all of the cluster ports are connected: `network port show`

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.
```

22. Ping the remote cluster interfaces and then perform a remote procedure call server check: `cluster ping-cluster`

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

```

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

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 16 path(s):
  Local 10.10.0.1 to Remote 10.10.0.5
  Local 10.10.0.1 to Remote 10.10.0.6
  Local 10.10.0.1 to Remote 10.10.0.7
  Local 10.10.0.1 to Remote 10.10.0.8
  Local 10.10.0.2 to Remote 10.10.0.5
  Local 10.10.0.2 to Remote 10.10.0.6
  Local 10.10.0.2 to Remote 10.10.0.7
  Local 10.10.0.2 to Remote 10.10.0.8
  Local 10.10.0.3 to Remote 10.10.0.5
  Local 10.10.0.3 to Remote 10.10.0.6
  Local 10.10.0.3 to Remote 10.10.0.7
  Local 10.10.0.3 to Remote 10.10.0.8
  Local 10.10.0.4 to Remote 10.10.0.5
  Local 10.10.0.4 to Remote 10.10.0.6
  Local 10.10.0.4 to Remote 10.10.0.7
  Local 10.10.0.4 to Remote 10.10.0.8

Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)

```

23. On each node in the cluster, migrate the interfaces that are associated with the first CN1610 switch CL1, to be replaced: network interface migrate

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

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

#### 24. Verify the cluster status: network interface show

The following example shows that the required cluster LIFs have been migrated to 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	n1_clus1	up/up	10.10.0.1/24	n1	e0b	false
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1_clus4	up/up	10.10.0.4/24	n1	e0c	false
	n2_clus1	up/up	10.10.0.5/24	n2	e0b	false
	n2_clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2_clus4	up/up	10.10.0.8/24	n2	e0c	false

8 entries were displayed.

#### 25. Shut down the node ports that are connected to CL1 on all of the nodes: network port modify

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
```

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

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

27. 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.

28. 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.

29. Restore the configuration on port 24 and remove the temporary port-channel 2 on C2:

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.

```

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

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

```

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

```

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

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



```
C1# show port-channel summary
```

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

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

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

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
```

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

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 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.

34. Revert all of the migrated cluster interconnect LIFs that were originally connected to C1 on all of the nodes:  
network interface revert

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
```

35. Verify that the interface is now home: network interface show

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

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

Vserver	Logical 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
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2_clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2_clus4	up/up	10.10.0.8/24	n2	e0d	true

8 entries were displayed.

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

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

```

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

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 1500 byte MTU on 16 path(s):
  Local 10.10.0.1 to Remote 10.10.0.5
  Local 10.10.0.1 to Remote 10.10.0.6
  Local 10.10.0.1 to Remote 10.10.0.7
  Local 10.10.0.1 to Remote 10.10.0.8
  Local 10.10.0.2 to Remote 10.10.0.5
  Local 10.10.0.2 to Remote 10.10.0.6
  Local 10.10.0.2 to Remote 10.10.0.7
  Local 10.10.0.2 to Remote 10.10.0.8
  Local 10.10.0.3 to Remote 10.10.0.5
  Local 10.10.0.3 to Remote 10.10.0.6
  Local 10.10.0.3 to Remote 10.10.0.7
  Local 10.10.0.3 to Remote 10.10.0.8
  Local 10.10.0.4 to Remote 10.10.0.5
  Local 10.10.0.4 to Remote 10.10.0.6
  Local 10.10.0.4 to Remote 10.10.0.7
  Local 10.10.0.4 to Remote 10.10.0.8

Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)

```

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

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

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

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

Node	Local Port	Discovered Device	Interface	Platform
n1	/cdp			
	e0a	C1	Ethernet1/1/1	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

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	-	-

Node: n3

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

Node: n4

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

12 entries were displayed.

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

Vserver	Logical 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
	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.

39. Remove the replaced CN1610 switches if they are not automatically removed: `system cluster-switch delete`

The following example shows how to remove the CN1610 switches:



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

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

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

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

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

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

2 entries were displayed.

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

```
system cluster-switch log setup-password

system cluster-switch log enable-collection
```

```
cluster::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
C1
C2

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

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

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

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

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

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

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

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

Enabling cluster switch log collection.

cluster::*>
```



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

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

## Related information

[NetApp CN1601 and CN1610 description page](#)

[Cisco Ethernet Switch description page](#)

[Hardware Universe](#)

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