



# Migrate switches

## Cluster and storage switches

NetApp

January 19, 2024

This PDF was generated from <https://docs.netapp.com/us-en/ontap-systems-switches/switch-cisco-9336c-fx2/migrate-cn1610-9336c-cluster.html> on January 19, 2024. Always check docs.netapp.com for the latest.

# Table of Contents

- Migrate switches. . . . . 1
  - Migrate from a NetApp CN1610 cluster switch to a Cisco 9336C-FX2 cluster switch . . . . . 1
  - Migrate from an older Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch . . . . . 17
  - Migrate to two-node switched cluster . . . . . 37

# Migrate switches

## Migrate from a NetApp CN1610 cluster switch to a Cisco 9336C-FX2 cluster switch

You can migrate NetApp CN1610 cluster switches for an ONTAP cluster to Cisco 9336C-FX2 cluster switches. This is a nondisruptive procedure.

### Review requirements

You must be aware of certain configuration information, port connections and cabling requirements when you are replacing NetApp CN1610 cluster switches with Cisco 9336C-FX2 cluster switches.

#### Supported switches

The following cluster switches are supported:

- NetApp CN1610
- Cisco 9336C-FX2

For details of supported ports and their configurations, see the [Hardware Universe](#).

#### What you'll need

Verify that your configuration meets the following requirements:

- The existing cluster is correctly set up and functioning.
- All cluster ports are in the **up** state to ensure nondisruptive operations.
- The Cisco 9336C-FX2 cluster switches are configured and operating under the correct version of NX-OS installed with the reference configuration file (RCF) applied.
- The existing cluster network configuration has the following:
  - A redundant and fully functional NetApp cluster using NetApp CN1610 switches.
  - Management connectivity and console access to both the NetApp CN1610 switches and the new switches.
  - All cluster LIFs in the up state with the cluster LIFs are on their home ports.
- Some of the ports are configured on Cisco 9336C-FX2 switches to run at 40GbE or 100GbE.
- You have planned, migrated, and documented 40GbE and 100GbE connectivity from nodes to Cisco 9336C-FX2 cluster switches.

### Migrate the switches

#### About the examples

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

- The existing CN1610 cluster switches are *C1* and *C2*.
- The new 9336C-FX2 cluster switches are *cs1* and *cs2*.
- The nodes are *node1* and *node2*.

- The cluster LIFs are *node1\_clus1* and *node1\_clus2* on node 1, and *node2\_clus1* and *node2\_clus2* on node 2 respectively.
- The `cluster1::*>` prompt indicates the name of the cluster.
- The cluster ports used in this procedure are *e3a* and *e3b*.
- Switch C2 is replaced by switch cs2 first and then switch C1 is replaced by switch cs1.
  - The cabling between the nodes and C2 is then disconnected from C2 and reconnected to cs2
  - The cabling between the nodes and C1 is then disconnected from C1 and reconnected to cs1.



No operational inter-switch link (ISL) is needed during this procedure. This is by design because RCF version changes can affect ISL connectivity temporarily. To ensure non-disruptive cluster operations, the following procedure migrates all of the cluster LIFs to the operational partner switch while performing the steps on the target switch.

### Step 1: Prepare for migration

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

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

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

2. Change the privilege level to advanced, entering **y** when prompted to continue:

```
set -privilege advanced
```

The advanced prompt (**\*>**) appears.

3. Disable auto-revert on the cluster LIFs:

```
network interface modify -vserver Cluster -lif * -auto-revert false
```

#### Show example

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

```
Warning: Disabling the auto-revert feature of the cluster logical  
interface may effect the availability of your cluster network. Are  
you sure you want to continue? {y|n}: y
```

### Step 2: Configure ports and cabling

1. Determine the administrative or operational status for each cluster interface.

Each port should display up for Link and healthy for Health Status.

a. Display the network port attributes:

```
network port show -ipspace Cluster
```

**Show example**

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

Node: node1

Ignore

Health      Health      Speed (Mbps)
Port        IPspace      Broadcast Domain Link MTU  Admin/Oper
Status      Status
-----
e3a         Cluster      Cluster      up    9000  auto/100000
healthy     false
e3b         Cluster      Cluster      up    9000  auto/100000
healthy     false

Node: node2

Ignore

Health      Health      Speed (Mbps)
Port        IPspace      Broadcast Domain Link MTU  Admin/Oper
Status      Status
-----
e3a         Cluster      Cluster      up    9000  auto/100000
healthy     false
e3b         Cluster      Cluster      up    9000  auto/100000
healthy     false
```

b. Display information about the LIFs and their designated home nodes:

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

Each LIF should display up/up for Status Admin/Oper and true for Is Home.

### Show example

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

	Logical	Status	Network	Current
Current Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
-----				
Cluster				
	node1_clus1	up/up	169.254.209.69/16	node1
e3a	true			
	node1_clus2	up/up	169.254.49.125/16	node1
e3b	true			
	node2_clus1	up/up	169.254.47.194/16	node2
e3a	true			
	node2_clus2	up/up	169.254.19.183/16	node2
e3b	true			

2. The cluster ports on each node are connected to existing cluster switches in the following way (from the nodes' perspective) using the command:

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

### Show example

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

Node/	Local	Discovered		
Protocol	Port	Device (LLDP: ChassisID)	Interface	
Platform				
-----				
-----				
node1	/cdp			
	e3a	C1 (6a:ad:4f:98:3b:3f)	0/1	-
	e3b	C2 (6a:ad:4f:98:4c:a4)	0/1	-
node2	/cdp			
	e3a	C1 (6a:ad:4f:98:3b:3f)	0/2	-
	e3b	C2 (6a:ad:4f:98:4c:a4)	0/2	-

3. The cluster ports and switches are connected in the following way (from the switches' perspective) using the command:

```
show cdp neighbors
```

Show example

C1# **show cdp neighbors**

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,  
V - VoIP-Phone, D - Remotely-Managed-Device,  
s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
node1 e3a	Eth1/1	124	H	AFF-A400
node2 e3a	Eth1/2	124	H	AFF-A400
C2 0/13	0/13	179	S I s	CN1610
C2 0/14	0/14	175	S I s	CN1610
C2 0/15	0/15	179	S I s	CN1610
C2 0/16	0/16	175	S I s	CN1610

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 Port ID	Local Intrfce	Hldtme	Capability	Platform
node1 e3b	Eth1/1	124	H	AFF-A400
node2 e3b	Eth1/2	124	H	AFF-A400
C1 0/13	0/13	175	S I s	CN1610
C1 0/14	0/14	175	S I s	CN1610
C1 0/15	0/15	175	S I s	CN1610
C1 0/16	0/16	175	S I s	CN1610



4. Verify that the cluster network has full connectivity using the command:

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

**Show example**

```
cluster1::*> cluster ping-cluster -node node2

Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1      e3a
Cluster node1_clus2 169.254.49.125 node1      e3b
Cluster node2_clus1 169.254.47.194 node2      e3a
Cluster node2_clus2 169.254.19.183 node2      e3b
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)
```

5. On switch C2, shut down the ports connected to the cluster ports of the nodes.

**Show example**

```
(C2)# configure
(C2) (Config)# interface 0/1-0/12
(C2) (Interface 0/1-0/12)# shutdown
(C2) (Interface 0/1-0/12)# exit
(C2) (Config)# exit
```

6. Move the node cluster ports from the old switch C2 to the new switch cs2, using appropriate cabling supported by Cisco 9336C-FX2.

7. Display the network port attributes:

```
network port show -ipspace Cluster
```

**Show example**

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

Node: node1

Ignore

						Speed (Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	-----	-----	-----	-----
e3a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e3b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node2

Ignore

						Speed (Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	-----	-----	-----	-----
e3a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e3b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

8. The cluster ports on each node are now connected to cluster switches in the following way, from the nodes' perspective:

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

### Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
node1	/cdp			
	e3a	C1 (6a:ad:4f:98:3b:3f)	0/1	
CN1610				
	e3b	cs2 (b8:ce:f6:19:1a:7e)	Ethernet1/1/1	N9K-
C9336C-FX2				
node2	/cdp			
	e3a	C1 (6a:ad:4f:98:3b:3f)	0/2	
CN1610				
	e3b	cs2 (b8:ce:f6:19:1b:96)	Ethernet1/1/2	N9K-
C9336C-FX2				

9. On switch cs2, verify that all node cluster ports are up:

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

### Show example

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

Current Is	Logical	Status	Network	Current
Vserver	Interfac	Admin/Oper	Address/Mask	Node
Port	Home			
Cluster				
	node1_clus1	up/up	169.254.3.4/16	node1
e0b	false			
	node1_clus2	up/up	169.254.3.5/16	node1
e0b	true			
	node2_clus1	up/up	169.254.3.8/16	node2
e0b	false			
	node2_clus2	up/up	169.254.3.9/16	node2
e0b	true			

10. On switch C1, shut down the ports connected to the cluster ports of the nodes.

**Show example**

```
(C1) # configure
(C1) (Config) # interface 0/1-0/12
(C1) (Interface 0/1-0/12) # shutdown
(C1) (Interface 0/1-0/12) # exit
(C1) (Config) # exit
```

11. Move the node cluster ports from the old switch C1 to the new switch cs1, using appropriate cabling supported by Cisco 9336C-FX2.
12. Verify the final configuration of the cluster:

```
network port show -ip space Cluster
```

Each port should display up for Link and healthy for Health Status.

## Show example

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

Node: node1

Ignore

						Speed (Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	-----	-----	-----	
-----	-----						
e3a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e3b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node2

Ignore

						Speed (Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	-----	-----	-----	
-----	-----						
e3a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e3b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

13. The cluster ports on each node are now connected to cluster switches in the following way, from the nodes' perspective:

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

## Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
-----				
node1	/cdp			
	e3a	cs1 (b8:ce:f6:19:1a:7e)	Ethernet1/1/1	N9K-
C9336C-FX2				
	e3b	cs2 (b8:ce:f6:19:1b:96)	Ethernet1/1/2	N9K-
C9336C-FX2				
node2	/cdp			
	e3a	cs1 (b8:ce:f6:19:1a:7e)	Ethernet1/1/1	N9K-
C9336C-FX2				
	e3b	cs2 (b8:ce:f6:19:1b:96)	Ethernet1/1/2	N9K-
C9336C-FX2				

14. On switches cs1 and cs2, verify that all node cluster ports are up:

```
network port show -ipSpace Cluster
```

## Show example

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

Node: node1

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: node2

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						

15. Verify that both nodes each have one connection to each switch:

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

### Show example

The following example shows the appropriate results for both switches:

```
cluster1::*> network device-discovery show -protocol cdp
Node/          Local  Discovered
Protocol      Port   Device (LLDP: ChassisID)  Interface
Platform
-----
node1         /cdp
              e0a    cs1 (b8:ce:f6:19:1b:42)  Ethernet1/1/1  N9K-
C9336C-FX2
              e0b    cs2 (b8:ce:f6:19:1b:96)  Ethernet1/1/2  N9K-
C9336C-FX2
node2         /cdp
              e0a    cs1 (b8:ce:f6:19:1b:42)  Ethernet1/1/1  N9K-
C9336C-FX2
              e0b    cs2 (b8:ce:f6:19:1b:96)  Ethernet1/1/2  N9K-
C9336C-FX2
```

### Step 3: Complete the procedure

1. Enable auto-revert on the cluster LIFs:

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

2. Verify that all cluster network LIFs are back on their home ports:

```
network interface show
```



### Show example

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

		Logical	Status	Network	Current
Current Is					
Vserver	Interface	Admin/Oper	Address/Mask		Node
Port	Home				
-----					
-----					
Cluster					
		node1_clus1	up/up	169.254.209.69/16	node1
e3a	true				
		node1_clus2	up/up	169.254.49.125/16	node1
e3b	true				
		node2_clus1	up/up	169.254.47.194/16	node2
e3a	true				
		node2_clus2	up/up	169.254.19.183/16	node2
e3b	true				

3. Enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the two commands:

```
system switch ethernet log setup-password and system switch ethernet log enable-collection
```

- a. Enter: system switch ethernet log setup-password

### Show example

```
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>
```

b. Followed by: `system switch ethernet log enable-collection`

### Show example

```
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.

4. Initiate the switch log collection feature:

```
system switch ethernet log collect -device *
```

Wait for 10 minutes and then check that the log collection was successful using the command:

```
system switch ethernet log show
```

**Show example**

```
cluster1::*> system switch ethernet log show
```

```
Log Collection Enabled: true
```

Index	Switch	Log Timestamp	Status
-----	-----	-----	-----
1	cs1 (b8:ce:f6:19:1b:42)	4/29/2022 03:05:25	complete
2	cs2 (b8:ce:f6:19:1b:96)	4/29/2022 03:07:42	complete

5. Change the privilege level back to admin:

```
set -privilege admin
```

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

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

## Migrate from an older Cisco switch to a Cisco Nexus 9336C-FX2 cluster switch

You can perform a nondisruptive migration from an older Cisco cluster switch to a Cisco Nexus 9336C-FX2 cluster network switch.

### Review requirements

Ensure that:

- Some of the ports on Nexus 9336C-FX2 switches are configured to run at 10GbE or 40GbE.
- The 10GbE and 40GbE connectivity from nodes to Nexus 9336C-FX2 cluster switches have been planned, migrated, and documented.
- The cluster is fully functioning (there should be no errors in the logs or similar issues).
- Initial customization of the Cisco Nexus 9336C-FX2 switches is complete, so that:
  - 9336C-FX2 switches are running the latest recommended version of software.

- Reference Configuration Files (RCFs) have been applied to the switches.
- Any site customization, such as DNS, NTP, SMTP, SNMP, and SSH, are configured on the new switches.
- You have access to the switch compatibility table on the [Cisco Ethernet Switches](#) page for the supported ONTAP, NX-OS, and RCF versions.
- You have reviewed the appropriate software and upgrade guides available on the Cisco web site for the Cisco switch upgrade and downgrade procedures at [Cisco Nexus 9000 Series Switches Support](#) page.



If you are changing the port speed of the e0a and e1a cluster ports on AFF A800 or AFF C800 systems, you might observe malformed packets being received after the speed conversion. See [Bug 1570339](#) and the Knowledge Base article [CRC errors on T6 ports after converting from 40GbE to 100GbE](#) for guidance.

## Migrate the switches

### About the examples

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.

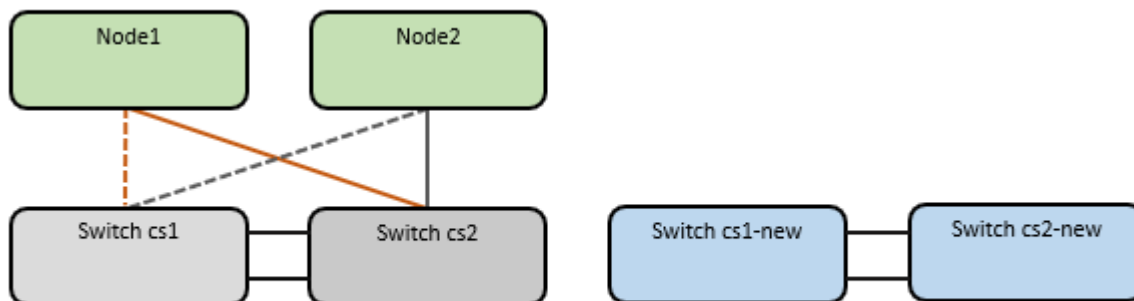


The command outputs might vary depending on the different releases of ONTAP.

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

- The names of the existing two Cisco switches are **cs1** and **cs2**
- The new Nexus 9336C-FX2 cluster switches are **cs1-new** and **cs2-new**.
- The node names are **node1** and **node2**.
- The cluster LIF names are **node1\_clus1** and **node1\_clus2** for node 1, and **node2\_clus1** and **node2\_clus2** for node 2.
- The **cluster1::>**\* prompt indicates the name of the cluster.

During this procedure, refer to the following example:



### About this task

The procedure requires the use of both ONTAP commands and [Nexus 9000 Series Switches](#) commands; ONTAP commands are used, unless otherwise indicated.

No operational inter-switch link (ISL) is needed during this procedure. This is by design because RCF version changes can affect ISL connectivity temporarily. To ensure non-disruptive cluster operations, the following procedure migrates all of the cluster LIFs to the operational partner switch while performing the steps on the target switch.

### Step 1: Prepare for migration

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

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.

### Step 2: Configure ports and cabling

1. On the new switches, confirm that the ISL is cabled and healthy between the switches cs1-new and cs2-new:

```
show port-channel summary
```

## Show example

```
cs1-new# 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      Eth1/35(P)  Eth1/36(P)

cs2-new# 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      Eth1/35(P)  Eth1/36(P)
```

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

```
network device-discovery show
```

### Show example

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

Node/	Local	Discovered	
Protocol	Port	Device (LLDP: ChassisID)	Interface
Platform			
-----			
node1	/cdp		
	e0a	cs1	Ethernet1/1
C5596UP			N5K-
	e0b	cs2	Ethernet1/2
C5596UP			N5K-
node2	/cdp		
	e0a	cs1	Ethernet1/1
C5596UP			N5K-
	e0b	cs2	Ethernet1/2
C5596UP			N5K-

3. Determine the administrative or operational status for each cluster port.

a. Verify that all the cluster ports are up with a healthy status:

```
network port show -ipspace Cluster
```

## Show example

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

Node: node1

Ignore

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

Node: node2

Ignore

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

- b. Verify that all the cluster interfaces (LIFs) are on their home ports:

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



### Show example

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

	Logical	Status	Network	Current
Current Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
-----				
Cluster				
	node1_clus1	up/up	169.254.209.69/16	node1
e0a	true			
	node1_clus2	up/up	169.254.49.125/16	node1
e0b	true			
	node2_clus1	up/up	169.254.47.194/16	node2
e0a	true			
	node2_clus2	up/up	169.254.19.183/16	node2
e0b	true			

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

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

#### Show example

```
cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
Switch                                     Type                Address
Model
-----
cs1                                     cluster-network      10.233.205.92
N5K-C5596UP
    Serial Number: FOXXXXXXXGS
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                        9.3(4)
    Version Source: CDP

cs2                                     cluster-network      10.233.205.93
N5K-C5596UP
    Serial Number: FOXXXXXXXGD
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                        9.3(4)
    Version Source: CDP
```

4. Disable auto-revert on the cluster LIFs.

#### Show example

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

5. On cluster switch cs2, shut down the ports connected to the cluster ports of the nodes:

#### Show example

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

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

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

**Show example**

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

	Logical	Status	Network	Current
Current Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
Cluster				
	node1_clus1	up/up	169.254.3.4/16	node1
e0a	true			
	node1_clus2	up/up	169.254.3.5/16	node1
e0a	false			
	node2_clus1	up/up	169.254.3.8/16	node2
e0a	true			
	node2_clus2	up/up	169.254.3.9/16	node2
e0a	false			

7. Verify that the cluster is healthy:

```
cluster show
```

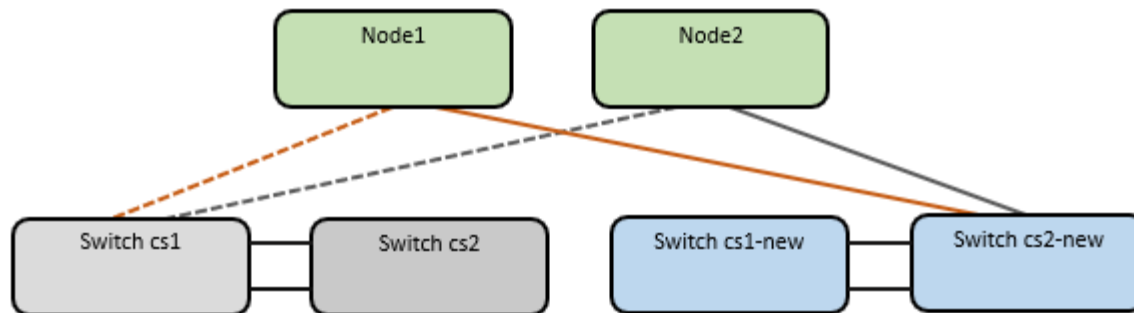
**Show example**

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
-----	-----	-----	-----
node1	true	true	false
node2	true	true	false

8. Move all cluster node connection cables from the old cs2 switch to the new cs2-new switch.

**Cluster node connection cables moved to the cs2-new switch**



9. Confirm the health of the network connections moved to cs2-new:

```
network port show -ipspace Cluster
```

#### Show example

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

Node: node1

Ignore

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

Node: node2

Ignore

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

All cluster ports that were moved should be up.

10. Check neighbor information on the cluster ports:

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

#### Show example

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

Node/ Protocol	Local Port	Discovered Device (LLDP: ChassisID)	Interface	Platform
node1	/cdp			
	e0a	cs1	Ethernet1/1	N5K-
C5596UP				
	e0b	cs2-new	Ethernet1/1/1	N9K-
C9336C-FX2				
node2	/cdp			
	e0a	cs1	Ethernet1/2	N5K-
C5596UP				
	e0b	cs2-new	Ethernet1/1/2	N9K-
C9336C-FX2				

Verify that the moved cluster ports see the cs2-new switch as the neighbor.

11. Confirm the switch port connections from switch cs2-new's perspective:

```
cs2-new# show interface brief
cs2-new# show cdp neighbors
```

12. 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 7.

```
cs1(config)# interface eth1/1-1/2
cs1(config-if-range)# shutdown
```

All cluster LIFs will move to the cs2-new switch.

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

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

### Show example

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

	Logical	Status	Network	Current
Current Is				
Vserver	Interfac	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
-----				
Cluster				
	node1_clus1	up/up	169.254.3.4/16	node1
e0b	false			
	node1_clus2	up/up	169.254.3.5/16	node1
e0b	true			
	node2_clus1	up/up	169.254.3.8/16	node2
e0b	false			
	node2_clus2	up/up	169.254.3.9/16	node2
e0b	true			

14. Verify that the cluster is healthy:

```
cluster show
```

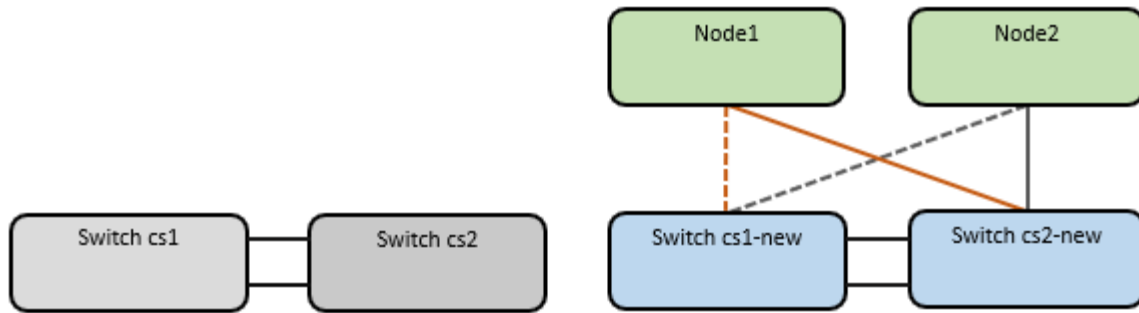
### Show example

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
-----	-----	-----	-----
node1	true	true	false
node2	true	true	false

15. Move the cluster node connection cables from cs1 to the new cs1-new switch.

### Cluster node connection cables moved to the cs1-new switch



16. Confirm the health of the network connections moved to cs1-new:

```
network port show -ipspace Cluster
```

#### Show example

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

Node: node1

Ignore

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

Node: node2

Ignore

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

All cluster ports that were moved should be up.

17. Check neighbor information on the cluster ports:

```
network device-discovery show
```

**Show example**

```
cluster1::*> network device-discovery show -protocol cdp
Node/      Local  Discovered
Protocol   Port   Device (LLDP: ChassisID)  Interface
Platform
-----
node1      /cdp
           e0a    cs1-new                  Ethernet1/1/1  N9K-
C9336C-FX2
           e0b    cs2-new                  Ethernet1/1/2  N9K-
C9336C-FX2

node2      /cdp
           e0a    cs1-new                  Ethernet1/1/1  N9K-
C9336C-FX2
           e0b    cs2-new                  Ethernet1/1/2  N9K-
C9336C-FX2
```

Verify that the moved cluster ports see the cs1-new switch as the neighbor.

18. Confirm the switch port connections from switch cs1-new's perspective:

**Show example**

```
cs1-new# show interface brief
cs1-new# show cdp neighbors
```

19. Verify that the ISL between cs1-new and cs2-new is still operational:

```
show port-channel summary
```



## Show example

```
cs1-new# 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      Eth1/35(P)  Eth1/36(P)
```

```
cs2-new# 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      Eth1/35(P)  Eth1/36(P)
```

## Step 3: Verify the configuration

1. Enable auto-revert on the cluster LIFs.

### Show example

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

2. Verify that the cluster LIFs have reverted to their home ports (this might take a minute):

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

If the cluster LIFs have not reverted to their home port, manually revert them:

```
network interface revert -vserver Cluster -lif *
```

3. Verify that the cluster is healthy:

```
cluster show
```

4. Verify the connectivity of the remote cluster interfaces:

## ONTAP 9.9.1 and later

You can use the `network interface check cluster-connectivity` command to start an accessibility check for cluster connectivity and then display the details:

```
network interface check cluster-connectivity start and network interface check cluster-connectivity show
```

```
cluster1::*> network interface check cluster-connectivity start
```

**NOTE:** Wait for a number of seconds before running the show command to display the details.

```
cluster1::*> network interface check cluster-connectivity show
```

Packet			Source	Destination
Node	Date		LIF	LIF
Loss				
-----				
-----				
node1				
	3/5/2022 19:21:18 -06:00		node1_clus2	node2_clus1
none				
	3/5/2022 19:21:20 -06:00		node1_clus2	node2_clus2
none				
node2				
	3/5/2022 19:21:18 -06:00		node2_clus2	node1_clus1
none				
	3/5/2022 19:21:20 -06:00		node2_clus2	node1_clus2
none				

## All ONTAP releases

For all ONTAP releases, you can also use the `cluster ping-cluster -node <name>` command to check the connectivity:

```
cluster ping-cluster -node <name>
```

```

cluster1::*> cluster ping-cluster -node node2
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1      e0a
Cluster node1_clus2 169.254.49.125 node1      e0b
Cluster node2_clus1 169.254.47.194 node2      e0a
Cluster node2_clus2 169.254.19.183 node2      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)

```

5. Enable the Ethernet switch health monitor log collection feature for collecting switch-related log files.

## ONTAP 9.8 and later

Enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the following two commands: `system switch ethernet log setup-password` and `system switch ethernet log enable-collection`

**NOTE:** You will need the password for the **admin** user on the switches.

Enter: `system switch ethernet log setup-password`

```
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-new
```

```
cs2-new
```

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

```
Enter the switch name: cs1-new
```

```
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: <password of switch's admin user>
```

```
Enter the password again: <password of switch's admin user>
```

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

```
Enter the switch name: cs2-new
```

```
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: <password of switch's admin user>
```

```
Enter the password again: <password of switch's admin user>
```

Followed by: `system switch ethernet log enable-collection`

```
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::*>
```

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

#### **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, using the commands: `system cluster-switch log setup-password` and `system cluster-switch log enable-collection`

**NOTE:** You will need the password for the **admin** user on the switches.

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

```
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-new

cs2-new

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

Enter the switch name: **cs1-new**

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: <password of switch's admin user>

Enter the password again: <password of switch's admin user>

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

Enter the switch name: **cs2-new**

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: <password of switch's admin user>

Enter the password again: <password of switch's admin user>

Followed by: `system cluster-switch log enable-collection`

```
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::*>
```

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

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

## Migrate to two-node switched cluster

If you have an existing two-node *switchless* cluster environment, you can migrate to a two-node *switched* cluster environment using Cisco Nexus 9336C-FX2 switches.

The migration process works for all nodes using optical or Twinax ports, but is not supported on this switch if nodes are using onboard 10Gb BASE-T RJ45 ports for the cluster-network ports.

### Review requirements

#### What you'll need

- For the two-node switchless configuration:
  - The two-node switchless configuration is properly set up and functioning.
  - All cluster ports are in the **up** state.
  - All cluster logical interfaces (LIFs) are in the **up** state and on their home ports.
  - See [Hardware Universe](#) for all supported ONTAP versions.
- For the Cisco Nexus 9336C-FX2 switch configuration:
  - Both switches have management network connectivity.
  - There is console access to the cluster switches.
  - Nexus 9336C-FX2 node-to-node switch and switch-to-switch connections use Twinax or fiber cables.

See [Hardware Universe](#) for more information about cabling.
- Inter-Switch Link (ISL) cables are connected to ports 1/35 and 1/36 on both 9336C-FX2 switches.
- Initial customization of both the 9336C-FX2 switches are completed, so that:
  - 9336C-FX2 switches are running the latest version of software.

- Reference Configuration Files (RCFs) are applied to the switches. Any site customization, such as SMTP, SNMP, and SSH, is configured on the new switches.

### About the examples

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

- The names of the 9336C-FX2 switches are cs1 and cs2.
- The names of the cluster SVMs are node1 and node2.
- The names of the LIFs are node1\_clus1 and node1\_clus2 on node 1, and node2\_clus1 and node2\_clus2 on node 2 respectively.
- The `cluster1::*>` prompt indicates the name of the cluster.
- The cluster ports used in this procedure are e0a and e0b.

See [Hardware Universe](#) for information about the cluster ports for your platforms.

## Migrate the switches

### Step 1: Prepare for migration

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

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

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.

### Step 2: Configure ports and cabling

1. Disable all node-facing ports (not ISL ports) on both the new cluster switches cs1 and cs2.

Do not disable the ISL ports.



### Show example

The following example shows that node-facing ports 1 through 34 are disabled on switch cs1:

```
cs1# config
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/1/1-4, e1/2/1-4, e1/3/1-4, e1/4/1-4,
e1/5/1-4, e1/6/1-4, e1/7-34
cs1(config-if-range)# shutdown
```

2. Verify that the ISL and the physical ports on the ISL between the two 9336C-FX2 switches cs1 and cs2 are up on ports 1/35 and 1/36:

```
show port-channel summary
```

## Show example

The following example shows that the ISL ports are up on switch cs1:

```
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      Eth1/35 (P)  Eth1/36 (P)
```

The following example shows that the ISL ports are up on switch cs2:

```
(cs2)# 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      Eth1/35 (P)  Eth1/36 (P)
```

3. Display the list of neighboring devices:

```
show cdp neighbors
```

This command provides information about the devices that are connected to the system.

### Show example

The following example lists the neighboring devices on switch cs1:

```
cs1# 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
cs2               Eth1/35       175    R S I s         N9K-C9336C
Eth1/35
cs2               Eth1/36       175    R S I s         N9K-C9336C
Eth1/36

Total entries displayed: 2
```

The following example lists the neighboring devices on switch cs2:

```
cs2# 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
cs1               Eth1/35       177    R S I s         N9K-C9336C
Eth1/35
cs1               Eth1/36       177    R S I s         N9K-C9336C
Eth1/36

Total entries displayed: 2
```

4. Verify that all cluster ports are up:

```
network port show -ipspace Cluster
```

Each port should display up for Link and healthy for Health Status.

**Show example**

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

```
Node: node1
```

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: node2
```

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.
```

5. Verify that all cluster LIFs are up and operational:

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

Each cluster LIF should display true for Is Home and have a Status Admin/Oper of up/up.

### Show example

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

	Logical	Status	Network	Current
Current Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----				
-----				
Cluster				
	node1_clus1	up/up	169.254.209.69/16	node1
e0a	true			
	node1_clus2	up/up	169.254.49.125/16	node1
e0b	true			
	node2_clus1	up/up	169.254.47.194/16	node2
e0a	true			
	node2_clus2	up/up	169.254.19.183/16	node2
e0b	true			

4 entries were displayed.

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

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

### Show example

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

	Logical	
Vserver	Interface	Auto-revert
-----		
Cluster		
	node1_clus1	true
	node1_clus2	true
	node2_clus1	true
	node2_clus2	true

4 entries were displayed.

### 7. Disconnect the cable from cluster port e0a on node1, and then connect e0a to port 1 on cluster switch cs1, using the appropriate cabling supported by the 9336C-FX2 switches.

The [Hardware Universe - Switches](#) contains more information about cabling.

#### [Hardware Universe - Switches](#)

8. Disconnect the cable from cluster port e0a on node2, and then connect e0a to port 2 on cluster switch cs1, using the appropriate cabling supported by the 9336C-FX2 switches.
9. Enable all node-facing ports on cluster switch cs1.

#### **Show example**

The following example shows that ports 1/1 through 1/34 are enabled on switch cs1:

```
cs1# config
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/1/1-4, e1/2/1-4, e1/3/1-4, e1/4/1-4,
e1/5/1-4, e1/6/1-4, e1/7-34
cs1(config-if-range)# no shutdown
```

10. Verify that all cluster LIFs are up, operational, and display as `true` for `Is Home`:

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

### Show example

The following example shows that all of the LIFs are up on node1 and node2 and that Is Home results are true:

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

Current Is Home	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Port
Cluster	node1_clus1	up/up	169.254.209.69/16	node1	e0a
true	node1_clus2	up/up	169.254.49.125/16	node1	e0b
true	node2_clus1	up/up	169.254.47.194/16	node2	e0a
true	node2_clus2	up/up	169.254.19.183/16	node2	e0b
true					

4 entries were displayed.

### 11. Display information about the status of the nodes in the cluster:

```
cluster show
```

### Show example

The following example displays information about the health and eligibility of the nodes in the cluster:

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
node1	true	true	false
node2	true	true	false

2 entries were displayed.

### 12. Disconnect the cable from cluster port e0b on node1, and then connect e0b to port 1 on cluster switch cs2, using the appropriate cabling supported by the 9336C-FX2 switches.

13. Disconnect the cable from cluster port e0b on node2, and then connect e0b to port 2 on cluster switch cs2, using the appropriate cabling supported by the 9336C-FX2 switches.
14. Enable all node-facing ports on cluster switch cs2.

**Show example**

The following example shows that ports 1/1 through 1/34 are enabled on switch cs2:

```
cs2# config
Enter configuration commands, one per line. End with CNTL/Z.
cs2(config)# interface e1/1/1-4, e1/2/1-4, e1/3/1-4, e1/4/1-4,
e1/5/1-4, e1/6/1-4, e1/7-34
cs2(config-if-range)# no shutdown
```

15. Verify that all cluster ports are up:

```
network port show -ipspace Cluster
```



### Show example

The following example shows that all of the cluster ports are up on node1 and node2:

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

Node: node1

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: node2

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						

4 entries were displayed.

### Step 3: Verify the configuration

1. Verify that all interfaces display true for Is Home:

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



This might take several minutes to complete.

## Show example

The following example shows that all LIFs are up on node1 and node2 and that Is Home results are true:

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

Current Is	Logical	Status	Network	Current	
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port
Home					
-----	-----	-----	-----	-----	
-----	----				
Cluster					
true	node1_clus1	up/up	169.254.209.69/16	node1	e0a
true	node1_clus2	up/up	169.254.49.125/16	node1	e0b
true	node2_clus1	up/up	169.254.47.194/16	node2	e0a
true	node2_clus2	up/up	169.254.19.183/16	node2	e0b
true					

4 entries were displayed.

2. Verify that both nodes each have one connection to each switch:

```
show cdp neighbors
```

## Show example

The following example shows the appropriate results for both switches:

```
(cs1)# 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 Port ID	Local Intrfce	Hldtme	Capability	Platform
node1 e0a	Eth1/1	133	H	FAS2980
node2 e0a	Eth1/2	133	H	FAS2980
cs2 Eth1/35	Eth1/35	175	R S I s	N9K-C9336C
cs2 Eth1/36	Eth1/36	175	R S I s	N9K-C9336C

Total entries displayed: 4

```
(cs2)# 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 Port ID	Local Intrfce	Hldtme	Capability	Platform
node1 e0b	Eth1/1	133	H	FAS2980
node2 e0b	Eth1/2	133	H	FAS2980
cs1 Eth1/35	Eth1/35	175	R S I s	N9K-C9336C
cs1 Eth1/36	Eth1/36	175	R S I s	N9K-C9336C

Total entries displayed: 4

3. Display information about the discovered network devices in your cluster:

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

**Show example**

```
cluster1::*> network device-discovery show -protocol cdp
Node/      Local   Discovered
Protocol   Port    Device (LLDP: ChassisID)  Interface
Platform
-----
node2      /cdp
           e0a    cs1                      0/2      N9K-
C9336C
           e0b    cs2                      0/2      N9K-
C9336C
node1      /cdp
           e0a    cs1                      0/1      N9K-
C9336C
           e0b    cs2                      0/1      N9K-
C9336C

4 entries were displayed.
```

4. Verify that the settings are disabled:

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



It might take several minutes for the command to complete. Wait for the '3 minute lifetime to expire' announcement.

**Show example**

The false output in the following example shows that the configuration settings are disabled:

```
cluster1::*> network options switchless-cluster show
Enable Switchless Cluster: false
```

5. Verify the status of the node members in the cluster:

```
cluster show
```

### Show example

The following example shows information about the health and eligibility of the nodes in the cluster:

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
node1	true	true	false
node2	true	true	false

### 6. Verify that the cluster network has full connectivity:

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

### Show example

```
cluster1::*> cluster ping-cluster -node node2
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 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 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 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)
```

### 7. Change the privilege level back to admin:

```
set -privilege admin
```

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

```
system switch ethernet log setup-password and system switch ethernet log enable-  
collection
```

## Show example

```
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.

9. 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, using the commands:

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

collection

### Show example

```
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.

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



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

## Copyright information

Copyright © 2024 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

## Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.