



Migrate switches

Cluster and storage switches

NetApp
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Migrate switches

Migrate to a two-node switched cluster with a Cisco Nexus 92300YC switch

If you have an existing two-node *switchless* cluster environment, you can migrate to a two-node *switched* cluster environment using Cisco Nexus 92300YC switches to enable you to scale beyond two nodes in the cluster.

The procedure you use depends on whether you have two dedicated cluster-network ports on each controller or a single cluster port on each controller. The process documented 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.

Most systems require two dedicated cluster-network ports on each controller.



After your migration completes, you might need to install the required configuration file to support the Cluster Switch Health Monitor (CSHM) for 92300YC cluster switches. See [Install the Cluster Switch Health Monitor \(CSHM\)](#).

Review requirements

What you'll need

For a two-node switchless configuration, ensure that:

- The two-node switchless configuration is properly set up and functioning.
- The nodes are running ONTAP 9.6 and later.
- All cluster ports are in the **up** state.
- All cluster logical interfaces (LIFs) are in the **up** state and on their home ports.

For the Cisco Nexus 92300YC switch configuration:

- Both switches have management network connectivity.
- There is console access to the cluster switches.
- Nexus 92300YC node-to-node switch and switch-to-switch connections use twinax or fiber cables.

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

- Inter-Switch Link (ISL) cables are connected to ports 1/65 and 1/66 on both 92300YC switches.
- Initial customization of both the 92300YC switches are completed. So that the:
 - 92300YC 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.

Migrate the switch

About the examples

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

- The names of the 92300YC 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.

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

Step 1: Prepare for migration

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

```
set -privilege advanced
```

The advanced prompt (`*>`) appears.

2. 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.

Show example

The following command suppresses automatic case creation for two hours:

```
cluster1::*> system node autosupport invoke -node * -type all  
-message MAINT=2h
```

Step 2: Configure cables and ports

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

You must not disable the ISL ports.

Show example

The following example shows that node-facing ports 1 through 64 are disabled on switch cs1:

```
cs1# config  
Enter configuration commands, one per line. End with CNTL/Z.  
cs1(config)# interface e/1-64  
cs1(config-if-range)# shutdown
```

2. Verify that the ISL and the physical ports on the ISL between the two 92300YC switches cs1 and cs2 are up on ports 1/65 and 1/66:

```
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      Eth1/65 (P)  Eth1/66 (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      Eth1/65 (P)  Eth1/66 (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 (FDO220329V5)   Eth1/65       175      R S I s         N9K-C92300YC
Eth1/65
cs2 (FDO220329V5)   Eth1/66       175      R S I s         N9K-C92300YC
Eth1/66

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 (FDO220329KU)   Eth1/65       177      R S I s         N9K-C92300YC
Eth1/65
cs1 (FDO220329KU)   Eth1/66       177      R S I s         N9K-C92300YC
Eth1/66

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) Health
-----
Admin/Oper    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) Health
-----
Admin/Oper    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 92300YC switches.

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

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 92300YC switches.
9. Enable all node-facing ports on cluster switch cs1.

Show example

The following example shows that ports 1/1 through 1/64 are enabled on switch cs1:

```
cs1# config
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/1-64
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
```

	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.

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 92300YC 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 92300YC switches.
14. Enable all node-facing ports on cluster switch cs2.

Show example

The following example shows that ports 1/1 through 1/64 are enabled on switch cs2:

```
cs2# config  
Enter configuration commands, one per line. End with CNTL/Z.  
cs2(config)# interface e1/1-64  
cs2(config-if-range)# no shutdown
```

Step 3: Verify the configuration

1. 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.

2. 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.

3. 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 (FDO220329V5) Eth1/65	Eth1/65	175	R S I s	N9K-C92300YC
cs2 (FDO220329V5) Eth1/66	Eth1/66	175	R S I s	N9K-C92300YC

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 (FDO220329KU) Eth1/65	Eth1/65	175	R S I s	N9K-C92300YC
cs1 (FDO220329KU) Eth1/66	Eth1/66	175	R S I s	N9K-C92300YC

Total entries displayed: 4

4. 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-
C92300YC
           e0b    cs2                      0/2      N9K-
C92300YC
node1      /cdp
           e0a    cs1                      0/1      N9K-
C92300YC
           e0b    cs2                      0/1      N9K-
C92300YC

4 entries were displayed.
```

5. 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
```

6. 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

7. 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)

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

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

Show example

```
cluster1::*> system node autosupport invoke -node * -type all  
-message MAINT=END
```

9. Change the privilege level back to admin:

```
set -privilege admin
```

10. For ONTAP 9.4 and later, enable the cluster 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.

Migrate from a Cisco switch to a Cisco Nexus 92300YC switch

You can migrate nondisruptively older Cisco cluster switches for an ONTAP cluster to Cisco Nexus 92300YC cluster network switches.



After your migration completes, you might need to install the required configuration file to support the Cluster Switch Health Monitor (CSHM) for 92300YC cluster switches. See [Install the Cluster Switch Health Monitor \(CSHM\)](#).

Review requirements

What you'll need

- A fully functional existing cluster.
- 10 GbE and 40 GbE connectivity from nodes to Nexus 92300YC cluster switches.
- All cluster ports are in the up state to ensure nondisruptive operations.
- Proper version of NX-OS and reference configuration file (RCF) installed on the Nexus 92300YC cluster switches.
- A redundant and fully functional NetApp cluster using both older Cisco switches.
- Management connectivity and console access to both the older Cisco switches and the new switches.
- All cluster LIFs in the up state with the cluster LIFs are on their home ports.
- ISL ports enabled and cabled between the older Cisco switches and between the new switches.

Migrate the switch

About the examples

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

- The existing Cisco Nexus 5596UP cluster switches are c1 and c2.
- The new Nexus 92300YC 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.
- Switch c2 is replaced by switch cs2 first and then switch c1 is replaced by switch cs1.
 - A temporary ISL is built on cs1 connecting c1 to cs1.
 - Cabling between the nodes and c2 are then disconnected from c2 and reconnected to cs2.
 - Cabling between the nodes and c1 are then disconnected from c1 and reconnected to cs1.
 - The temporary ISL between c1 and cs1 is then removed.

Ports used for connections

- Some of the ports are configured on Nexus 92300YC switches to run at 10 GbE or 40 GbE.
- The cluster switches use the following ports for connections to nodes:
 - Ports e1/1-48 (10/25 GbE), e1/49-64 (40/100 GbE): Nexus 92300YC

- Ports e1/1-40 (10 GbE): Nexus 5596UP
- Ports e1/1-32 (10 GbE): Nexus 5020
- Ports e1/1-12, e2/1-6 (10 GbE): Nexus 5010 with expansion module
- The cluster switches use the following Inter-Switch Link (ISL) ports:
 - Ports e1/65-66 (100 GbE): Nexus 92300YC
 - Ports e1/41-48 (10 GbE): Nexus 5596UP
 - Ports e1/33-40 (10 GbE): Nexus 5020
 - Ports e1/13-20 (10 GbE): Nexus 5010
- [Hardware Universe - Switches](#) contains information about supported cabling for all cluster switches.
- The ONTAP and NX-OS versions supported in this procedure are on the [Cisco Ethernet Switches](#) page.

Step 1: Prepare for migration

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

```
set -privilege advanced
```

The advanced prompt (*>) appears.

2. 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.

Show example

The following command suppresses automatic case creation for two hours:

```
cluster1::*> system node autosupport invoke -node * -type all  
-message MAINT=2h
```

3. 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
```

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

4 entries were displayed.

4. 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					
-----	-----	-----	-----	----	----	-----
-----	-----					
e0a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e0b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node2

Ignore

Health	Health					Speed (Mbps)
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.

- b. Display information about the logical interfaces 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
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.

5. Verify that 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 cdp
```

Show example

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

Node/	Local	Discovered	
Protocol	Port	Device (LLDP: ChassisID)	Interface
Platform			

node2	/cdp		
	e0a	c1	0/2 N5K-
C5596UP			
	e0b	c2	0/2 N5K-
C5596UP			
node1	/cdp		
	e0a	c1	0/1 N5K-
C5596UP			
	e0b	c2	0/1 N5K-
C5596UP			

4 entries were displayed.

6. Verify that 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 e0a	Eth1/1	124	H	FAS2750
node2 e0a	Eth1/2	124	H	FAS2750
c2 (FOX2025GEFC) Eth1/41	Eth1/41	179	S I s	N5K-C5596UP
c2 (FOX2025GEFC) Eth1/42	Eth1/42	175	S I s	N5K-C5596UP
c2 (FOX2025GEFC) Eth1/43	Eth1/43	179	S I s	N5K-C5596UP
c2 (FOX2025GEFC) Eth1/44	Eth1/44	175	S I s	N5K-C5596UP
c2 (FOX2025GEFC) Eth1/45	Eth1/45	179	S I s	N5K-C5596UP
c2 (FOX2025GEFC) Eth1/46	Eth1/46	179	S I s	N5K-C5596UP
c2 (FOX2025GEFC) Eth1/47	Eth1/47	175	S I s	N5K-C5596UP
c2 (FOX2025GEFC) Eth1/48	Eth1/48	179	S I s	N5K-C5596UP

Total entries displayed: 10

```
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 e0b	Eth1/1	124	H	FAS2750
node2 e0b	Eth1/2	124	H	FAS2750
c1 (FOX2025GEEX) Eth1/41	Eth1/41	175	S I s	N5K-C5596UP
c1 (FOX2025GEEX) Eth1/42	Eth1/42	175	S I s	N5K-C5596UP
c1 (FOX2025GEEX) Eth1/43	Eth1/43	175	S I s	N5K-C5596UP
c1 (FOX2025GEEX) Eth1/44	Eth1/44	175	S I s	N5K-C5596UP
c1 (FOX2025GEEX) Eth1/45	Eth1/45	175	S I s	N5K-C5596UP
c1 (FOX2025GEEX) Eth1/46	Eth1/46	175	S I s	N5K-C5596UP
c1 (FOX2025GEEX) Eth1/47	Eth1/47	176	S I s	N5K-C5596UP
c1 (FOX2025GEEX) Eth1/48	Eth1/48	176	S I s	N5K-C5596UP

7. 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      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)
```

Step 2: Configure cables and ports

1. Configure a temporary ISL on cs1 on ports e1/41-48, between c1 and cs1.

Show example

The following example shows how the new ISL is configured on c1 and cs1:

```
cs1# configure
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/41-48
cs1(config-if-range)# description temporary ISL between Nexus 5596UP
and Nexus 92300YC
cs1(config-if-range)# no lldp transmit
cs1(config-if-range)# no lldp receive
cs1(config-if-range)# switchport mode trunk
cs1(config-if-range)# no spanning-tree bpduguard enable
cs1(config-if-range)# channel-group 101 mode active
cs1(config-if-range)# exit
cs1(config)# interface port-channel 101
cs1(config-if)# switchport mode trunk
cs1(config-if)# spanning-tree port type network
cs1(config-if)# exit
cs1(config)# exit
```

2. Remove ISL cables from ports e1/41-48 from c2 and connect the cables to ports e1/41-48 on cs1.
3. Verify that the ISL ports and port-channel are operational connecting c1 and cs1:

```
show port-channel summary
```

Show example

The following example shows the Cisco show port-channel summary command being used to verify the ISL ports are operational on c1 and cs1:

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
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      Pol(SU)    Eth       LACP      Eth1/41(P)  Eth1/42(P)  
Eth1/43(P)  
Eth1/44(P)  Eth1/45(P)  
Eth1/46(P)  
Eth1/47(P)  Eth1/48(P)
```

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      Pol(SU)    Eth       LACP      Eth1/65(P)  Eth1/66(P)  
101    Pol101(SU)  Eth       LACP      Eth1/41(P)  Eth1/42(P)  
Eth1/43(P)  
Eth1/44(P)  Eth1/45(P)  
Eth1/46(P)  
Eth1/47(P)  Eth1/48(P)
```


4. For node1, disconnect the cable from e1/1 on c2, and then connect the cable to e1/1 on cs2, using appropriate cabling supported by Nexus 92300YC.
5. For node2, disconnect the cable from e1/2 on c2, and then connect the cable to e1/2 on cs2, using appropriate cabling supported by Nexus 92300YC.
6. 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 cdp
```

Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
node2	/cdp			
	e0a	c1	0/2	N5K-
C5596UP				
	e0b	cs2	0/2	N9K-
C92300YC				
node1	/cdp			
	e0a	c1	0/1	N5K-
C5596UP				
	e0b	cs2	0/1	N9K-
C92300YC				

4 entries were displayed.

7. For node1, disconnect the cable from e1/1 on c1, and then connect the cable to e1/1 on cs1, using appropriate cabling supported by Nexus 92300YC.
8. For node2, disconnect the cable from e1/2 on c1, and then connect the cable to e1/2 on cs1, using appropriate cabling supported by Nexus 92300YC.
9. 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 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-
C92300YC
           e0b    cs2                      0/2          N9K-
C92300YC
node1      /cdp
           e0a    cs1                      0/1          N9K-
C92300YC
           e0b    cs2                      0/1          N9K-
C92300YC
4 entries were displayed.
```

10. Delete the temporary ISL between cs1 and c1.

Show example

```
cs1(config)# no interface port-channel 10
cs1(config)# interface e1/41-48
cs1(config-if-range)# lldp transmit
cs1(config-if-range)# lldp receive
cs1(config-if-range)# no switchport mode trunk
cs1(config-if-range)# no channel-group
cs1(config-if-range)# description 10GbE Node Port
cs1(config-if-range)# spanning-tree bpduguard enable
cs1(config-if-range)# exit
cs1(config)# exit
```

Step 3: Complete the migration

1. Verify the final configuration of the cluster:

```
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

Ignore

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

4 entries were displayed.

```
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.

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
node2	/cdp			
	e0a	cs1	0/2	N9K-
C92300YC				
	e0b	cs2	0/2	N9K-
C92300YC				
node1	/cdp			
	e0a	cs1	0/1	N9K-
C92300YC				
	e0b	cs2	0/1	N9K-
C92300YC				

4 entries were displayed.

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	Eth1/1	124	H	FAS2750
e0a				
node2	Eth1/2	124	H	FAS2750
e0a				
cs2 (FD0220329V5)	Eth1/65	179	R S I s	N9K-C92300YC
Eth1/65				

```
cs2(FDO220329V5)      Eth1/66      179      R S I s      N9K-C92300YC
Eth1/66
```

```
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	124	H	FAS2750
node2 e0b	Eth1/2	124	H	FAS2750
cs1(FDO220329KU) Eth1/65	Eth1/65	179	R S I s	N9K-C92300YC
cs1(FDO220329KU) Eth1/66	Eth1/66	179	R S I s	N9K-C92300YC

Total entries displayed: 4

2. Verify that the cluster network has full connectivity:

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

Show example

```
cluster1::*> set -priv advanced
```

Warning: These advanced commands are potentially dangerous; use them only when

directed to do so by NetApp personnel.

Do you want to continue? {y|n}: **y**

```
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)

```
cluster1::*> set -privilege admin
```

```
cluster1::*>
```

3. For ONTAP 9.4 and later, enable the cluster 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.

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