



# **Migrate switches**

## **Cluster and storage switches**

NetApp

March 29, 2024

# Table of Contents

- Migrate switches. . . . . 1
  - Migrate to a two-node switched cluster with a Cisco Nexus 92300YC switch . . . . . 1
  - Migrate from a Cisco switch to a Cisco Nexus 92300YC switch . . . . . 19

# 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
-----
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
-----
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<br>Port ID        | Local Intrfce | Hldtme | Capability | Platform     |
|-----------------------------|---------------|--------|------------|--------------|
| node1<br>e0a                | Eth1/1        | 133    | H          | FAS2980      |
| node2<br>e0a                | Eth1/2        | 133    | H          | FAS2980      |
| cs2(FDO220329V5)<br>Eth1/65 | Eth1/65       | 175    | R S I s    | N9K-C92300YC |
| cs2(FDO220329V5)<br>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<br>Port ID        | Local Intrfce | Hldtme | Capability | Platform     |
|-----------------------------|---------------|--------|------------|--------------|
| node1<br>e0b                | Eth1/1        | 133    | H          | FAS2980      |
| node2<br>e0b                | Eth1/2        | 133    | H          | FAS2980      |
| cs1(FDO220329KU)<br>Eth1/65 | Eth1/65       | 175    | R S I s    | N9K-C92300YC |
| cs1(FDO220329KU)<br>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    |             |            |                   |         |
| e0a        | node1_clus1 | up/up      | 169.254.209.69/16 | node1   |
| e0b        | true        |            |                   |         |
| e0a        | node1_clus2 | up/up      | 169.254.49.125/16 | node1   |
| e0b        | true        |            |                   |         |
| e0a        | node2_clus1 | up/up      | 169.254.47.194/16 | node2   |
| e0b        | true        |            |                   |         |
| e0a        | 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<br>Port ID        | Local Intrfce | Hldtme | Capability | Platform    |
|-----------------------------|---------------|--------|------------|-------------|
| node1<br>e0a                | Eth1/1        | 124    | H          | FAS2750     |
| node2<br>e0a                | Eth1/2        | 124    | H          | FAS2750     |
| c2 (FOX2025GEFC)<br>Eth1/41 | Eth1/41       | 179    | S I s      | N5K-C5596UP |
| c2 (FOX2025GEFC)<br>Eth1/42 | Eth1/42       | 175    | S I s      | N5K-C5596UP |
| c2 (FOX2025GEFC)<br>Eth1/43 | Eth1/43       | 179    | S I s      | N5K-C5596UP |
| c2 (FOX2025GEFC)<br>Eth1/44 | Eth1/44       | 175    | S I s      | N5K-C5596UP |
| c2 (FOX2025GEFC)<br>Eth1/45 | Eth1/45       | 179    | S I s      | N5K-C5596UP |
| c2 (FOX2025GEFC)<br>Eth1/46 | Eth1/46       | 179    | S I s      | N5K-C5596UP |
| c2 (FOX2025GEFC)<br>Eth1/47 | Eth1/47       | 175    | S I s      | N5K-C5596UP |
| c2 (FOX2025GEFC)<br>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<br>Port ID        | Local Intrfce | Hldtme | Capability | Platform    |
|-----------------------------|---------------|--------|------------|-------------|
| node1<br>e0b                | Eth1/1        | 124    | H          | FAS2750     |
| node2<br>e0b                | Eth1/2        | 124    | H          | FAS2750     |
| c1 (FOX2025GEEX)<br>Eth1/41 | Eth1/41       | 175    | S I s      | N5K-C5596UP |
| c1 (FOX2025GEEX)<br>Eth1/42 | Eth1/42       | 175    | S I s      | N5K-C5596UP |
| c1 (FOX2025GEEX)<br>Eth1/43 | Eth1/43       | 175    | S I s      | N5K-C5596UP |
| c1 (FOX2025GEEX)<br>Eth1/44 | Eth1/44       | 175    | S I s      | N5K-C5596UP |
| c1 (FOX2025GEEX)<br>Eth1/45 | Eth1/45       | 175    | S I s      | N5K-C5596UP |
| c1 (FOX2025GEEX)<br>Eth1/46 | Eth1/46       | 175    | S I s      | N5K-C5596UP |
| c1 (FOX2025GEEX)<br>Eth1/47 | Eth1/47       | 176    | S I s      | N5K-C5596UP |
| c1 (FOX2025GEEX)<br>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      Po1(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      Po1(SU)    Eth       LACP      Eth1/65(P)  Eth1/66(P)  
101    Po101(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/<br>Protocol<br>Platform | Local<br>Port | Discovered<br>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 |
|---------|---------|-----------|--------|------|-------|-------------|--------|
| 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.

```
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/<br>Protocol<br>Platform | Local<br>Port | Discovered<br>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<br>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<br>Port ID        | Local Intrfce | Hldtme | Capability | Platform     |
|-----------------------------|---------------|--------|------------|--------------|
| node1<br>e0b                | Eth1/1        | 124    | H          | FAS2750      |
| node2<br>e0b                | Eth1/2        | 124    | H          | FAS2750      |
| cs1(FDO220329KU)<br>Eth1/65 | Eth1/65       | 179    | R S I s    | N9K-C92300YC |
| cs1(FDO220329KU)<br>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.

## 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.