NetApp

Migrate switches

Cluster and storage switches

NetApp
April 25, 2024

Table of Contents

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*.

About this task

This procedure covers the following scenario:

- Switch C2 is replaced by switch cs2 first.

  - Shut down the ports to the cluster nodes. All ports must be shut down simultaneously to avoid cluster instability.

  - The cabling between the nodes and C2 is then disconnected from C2 and reconnected to cs2.

- Switch C1 is replaced by switch cs1.

  - Shut down the ports to the cluster nodes. All ports must be shut down simultaneously to avoid cluster instability.

  - The cabling between the nodes and C1 is then disconnected from C1 and reconnected to cs1.

> (i) 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
   ```

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
                                                  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
```

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

C2# show cdp neighbors

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


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

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 in order to fail over the cluster LIFs.

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

10. On switch C1, shut down the ports connected to the cluster ports of the nodes in order to fail over the cluster LIFs.

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

```
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. To set up log collection, run the following command for each switch. You are prompted to enter the switch name, username, and password for log collection.

```
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>
```

4. To start log collection, run the following command, replacing DEVICE with the switch used in the previous command. This starts both types of log collection: the detailed **Support** logs and an hourly collection of **Periodic** data.

```
system switch ethernet log modify -device <switch-name> -log-request true
```

Show example

```
cluster1::*> system switch ethernet log modify -device cs1 -log
-request true

Do you want to modify the cluster switch log collection
configuration? {y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*> system switch ethernet log modify -device cs2 -log
-request true

Do you want to modify the cluster switch log collection
configuration? {y|n}: [n] y

Enabling cluster switch log collection.
cluster1::*>
```

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

```
system switch ethernet log show
```

> (i) If any of these commands return an error, contact NetApp support.

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:
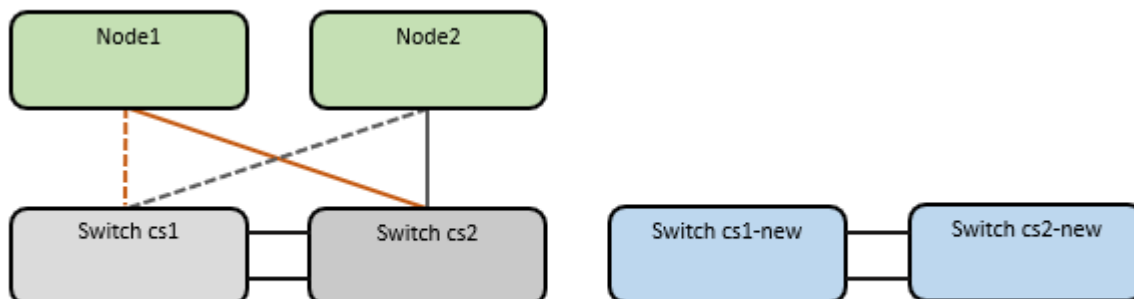
About this task

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

This procedure covers the following scenario:

- Switch cs2 is replaced by switch cs2-new first.
  - Shut down the ports to the cluster nodes. All ports must be shut down simultaneously to avoid cluster instability.
  - Cabling between the nodes and cs2 are then disconnected from cs2 and reconnected to cs2-new.
- Switch cs1 is replaced by switch cs1-new.
  - Shut down the ports to the cluster nodes. All ports must be shut down simultaneously to avoid cluster instability.
  - Cabling between the nodes and cs1 are then disconnected from cs1 and reconnected to cs1-new.

> (i) 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.

   > (i) 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       N5K-
C5596UP
             e0b    cs2                          Ethernet1/2       N5K-
C5596UP
node2        /cdp
             e0a    cs1                          Ethernet1/1       N5K-
C5596UP
             e0b    cs2                          Ethernet1/2       N5K-
C5596UP
```

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
                                          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
```

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

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

```
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.

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

> ⓘ   Disabling auto-revert ensures ONTAP only fails over the cluster LIFs when the switch ports
> are shutdown later.

5. On cluster switch cs2, shut down the ports connected to the cluster ports of **all** the nodes in order to fail
over the cluster LIFs:

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

6. Verify that the cluster LIFs have failed over 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
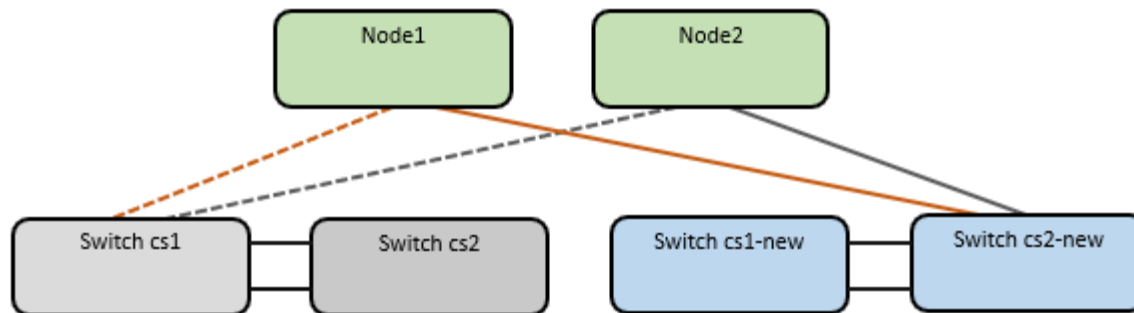
9. Confirm the health of the network connections moved to cs2-new:

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

Show example

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

Node: node1

Ignore
                                         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
```

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/        Local  Discovered
Protocol     Port   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 **all** the nodes in order to fail over the cluster LIFs.

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

All cluster LIFs fail over to the cs2-new switch.

13. Verify that the cluster LIFs have failed over 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
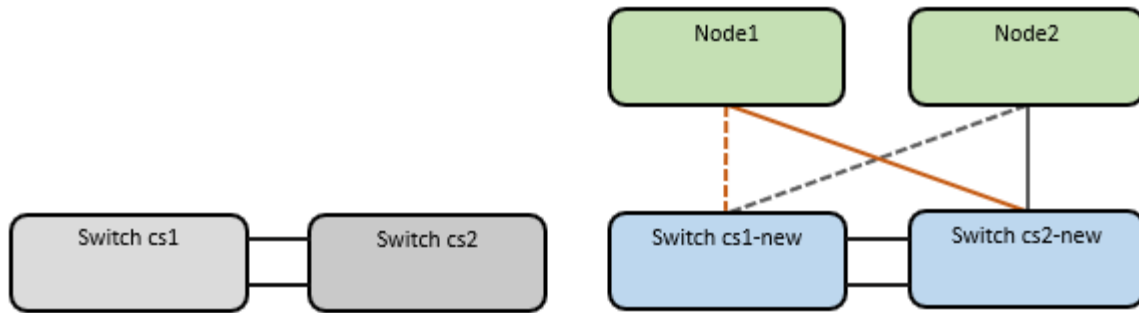
16. Confirm the health of the network connections moved to cs1-new:

`network port show -ipspace Cluster`

Show example

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

Node: node1

Ignore
                                            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
```

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:

```
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.

   ```
   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
                                    Source          Destination
Packet
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.

   > (i) 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

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

Node: node2

                                          Speed(Mbps) Health
Port      IPspace      Broadcast Domain Link MTU  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 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

        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 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`

   > ℹ️ 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

         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.
```

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          Local Intrfce  Hldtme Capability  Platform
Port ID
node1              Eth1/1          133    H           FAS2980
e0a
node2              Eth1/2          133    H           FAS2980
e0a
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: 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          Local Intrfce  Hldtme Capability  Platform
Port ID
node1              Eth1/1          133    H           FAS2980
e0b
node2              Eth1/2          133    H           FAS2980
e0b
cs1                Eth1/35         175    R S I s     N9K-C9336C
Eth1/35
cs1                Eth1/36         175    R S I s     N9K-C9336C
Eth1/36


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
```

(i) 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
```

> 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::*>
```

> (i) 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::*>
```

> (i) 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
```