NetApp

Migrate switches

Cluster and storage switches

NetApp
April 05, 2024

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Migrate switches

Migrate a Cisco Nexus 5596 cluster switch to a Cisco Nexus 3132Q-V cluster switch

Follow this procedure to replace an existing Nexus 5596 cluster switch with a Nexus 3132Q-V cluster switch.

Review requirements

Review the Cisco Nexus 5596 requirements in Requirements for replacing Cisco Nexus 3132Q-V cluster switches.

For more information, see:

- Cisco Ethernet Switch description page
- Hardware Universe

Replace the switch

About the examples

The examples in this procedure describe replacing Nexus 5596 switches with Nexus 3132Q-V switches. You can use these steps (with modifications) to replace other older Cisco switches.

The procedure uses the following switch and node nomenclature:

- The command outputs might vary depending on different releases of ONTAP.
- The Nexus 5596 switches to be replaced are CL1 and CL2.
- The Nexus 3132Q-V switches to replace the Nexus 5596 switches are C1 and C2.
- n1_clus1 is the first cluster logical interface (LIF) connected to cluster switch 1 (CL1 or C1) for node n1.
- n1_clus2 is the first cluster LIF connected to cluster switch 2 (CL2 or C2) for node n1.
- n1_clus3 is the second LIF connected to cluster switch 2 (CL2 or C2) for node n1.
- n1_clus4 is the second LIF connected to cluster switch 1 (CL1 or C1) for node n1.
- The nodes are n1, n2, n3, and n4.
- The examples in this procedure use four nodes: Two nodes use four 10 GbE cluster interconnect ports: e0a, e0b, e0c, and e0d. The other two nodes use two 40/100 GbE cluster interconnect ports: e4a, e4e. The Hardware Universe lists the actual cluster ports on your platforms.
- The number of 10 GbE and 40/100 GbE ports are defined in the reference configuration files (RCFs) available on the Cisco® Cluster Network Switch Reference Configuration File Download page.

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

About this task

This procedure covers the following scenarios:

- The cluster starts with two nodes connected and functioning in a 2 Nexus 5596 cluster switches.
- The cluster switch CL2 to be replaced by C2 (Steps 1 - 19)
  - Traffic on all cluster ports and LIFs on all nodes connected to CL2 are migrated onto the first cluster ports and LIFs connected to CL1.
  - Disconnect cabling from all cluster ports on all nodes connected to CL2, and then use supported break-out cabling to reconnect the ports to new cluster switch C2.
  - Disconnect cabling between ISL ports between CL1 and CL2, and then use supported break-out cabling to reconnect the ports from CL1 to C2.
  - Traffic on all cluster ports and LIFs connected to C2 on all nodes is reverted.
- The cluster switch CL2 to be replaced by C2
  - Traffic on all cluster ports or LIFs on all nodes connected to CL1 are migrated onto the second cluster ports or LIFs connected to C2.
  - Disconnect cabling from all cluster port on all nodes connected to CL1 and reconnect, using supported break-out cabling, to new cluster switch C1.
  - Disconnect cabling between ISL ports between CL1 and C2, and reconnect using supported cabling, from C1 to C2.
  - Traffic on all cluster ports or LIFs connected to C1 on all nodes is reverted.
- Two FAS9000 nodes have been added to cluster with examples showing cluster details.

Step 1: Prepare for replacement

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

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

   x is the duration of the maintenance window in hours.

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

2. Display information about the devices in your configuration:

   `network device-discovery show`

Show example

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

```
cluster::> network device-discovery show
            Local  Discovered
Node        Port   Device                  Interface        Platform
----------- ------ ------------------- ----------------
----------------
n1          /cdp
            e0a    CL1                     Ethernet1/1      N5K-C5596UP
            e0b    CL2                     Ethernet1/1      N5K-C5596UP
            e0c    CL2                     Ethernet1/2      N5K-C5596UP
            e0d    CL1                     Ethernet1/2      N5K-C5596UP
n2          /cdp
            e0a    CL1                     Ethernet1/3      N5K-C5596UP
            e0b    CL2                     Ethernet1/3      N5K-C5596UP
            e0c    CL2                     Ethernet1/4      N5K-C5596UP
            e0d    CL1                     Ethernet1/4      N5K-C5596UP
8 entries were displayed.
```

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

   a. Display the network port attributes:

   ```
   network port show
   ```

Show example

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

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

Ignore
                                          Speed(Mbps)
Health    Health
Port      IPspace       Broadcast Domain Link MTU  Admin/Oper
Status    Status
--------- ------------- ---------------- ---- ---- -----------
-------- ------
e0a       Cluster       Cluster          up   9000 auto/10000  -
-
e0b       Cluster       Cluster          up   9000 auto/10000  -
-
e0c       Cluster       Cluster          up   9000 auto/10000  -
-
e0d       Cluster       Cluster          up   9000 auto/10000  -
-


Node: n2

Ignore
                                          Speed(Mbps)
Health    Health
Port      IPspace       Broadcast Domain Link MTU  Admin/Oper
Status    Status
--------- ------------- ---------------- ---- ---- -----------
-------- ------
e0a       Cluster       Cluster          up   9000  auto/10000 -
-
e0b       Cluster       Cluster          up   9000  auto/10000 -
-
e0c       Cluster       Cluster          up   9000  auto/10000 -
-
e0d       Cluster       Cluster          up   9000  auto/10000 -
-
8 entries were displayed.
```

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

Show example

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

```
cluster::*> network interface show -role cluster
  (network interface show)
          Logical    Status      Network                Current
Current Is
Vserver    Interface  Admin/Oper Address/Mask        Node
Port    Home
---------- ---------- ---------- ------------------
------------- ------- ----
Cluster
          n1_clus1   up/up      10.10.0.1/24          n1
e0a     true
          n1_clus2   up/up      10.10.0.2/24          n1
e0b     true
          n1_clus3   up/up      10.10.0.3/24          n1
e0c     true
          n1_clus4   up/up      10.10.0.4/24          n1
e0d     true
          n2_clus1   up/up      10.10.0.5/24          n2
e0a     true
          n2_clus2   up/up      10.10.0.6/24          n2
e0b     true
          n2_clus3   up/up      10.10.0.7/24          n2
e0c     true
          n2_clus4   up/up      10.10.0.8/24          n2
e0d     true
8 entries were displayed.
```

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

Show example

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

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

Switch                           Type              Address
Model
---------------------------- ----------------- ---------------
---------------
CL1                              cluster-network   10.10.1.101
NX5596
        Serial Number: 01234567
         Is Monitored: true
               Reason:
     Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                       7.1(1)N1(1)
       Version Source: CDP
CL2                              cluster-network   10.10.1.102
NX5596
        Serial Number: 01234568
         Is Monitored: true
               Reason:
     Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                       7.1(1)N1(1)
       Version Source: CDP

2 entries were displayed.
```

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

   `network interface modify`

Show example

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

5. Verify that the appropriate RCF and image are installed on the new 3132Q-V switches as necessary for your requirements, and make the essential site customizations, such as users and passwords, network addresses, and so on.

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

   a. Go to the Cisco Ethernet Switches page on the NetApp Support Site.

   b. Note your switch and the required software versions in the table on that page.

   c. Download the appropriate version of the RCF.

   d. Click **CONTINUE** on the **Description** page, accept the license agreement, and then follow the instructions on the **Download** page to download the RCF.

   e. Download the appropriate version of the image software.

   See the *ONTAP 8.x or later Cluster and Management Network Switch Reference Configuration Files*Download page, and then click the appropriate version.

   To find the correct version, see the *ONTAP 8.x or later Cluster Network Switch Download page*.

6. Migrate the LIFs associated with the second Nexus 5596 switch to be replaced:

   `network interface migrate`

Show example

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

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

7. Verify the cluster's health:

```
network interface show
```

Show example

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

```
cluster::*> network interface show -role cluster
  (network interface show)
            Logical    Status     Network              Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask         Node
Port    Home
----------- ---------- ---------- ------------------ -------------
------- ----
Cluster
            n1_clus1   up/up      10.10.0.1/24         n1
e0a     true
            n1_clus2   up/up      10.10.0.2/24         n1
e0a     false
            n1_clus3   up/up      10.10.0.3/24         n1
e0d     false
            n1_clus4   up/up      10.10.0.4/24         n1
e0d     true
            n2_clus1   up/up      10.10.0.5/24         n2
e0a     true
            n2_clus2   up/up      10.10.0.6/24         n2
e0a     false
            n2_clus3   up/up      10.10.0.7/24         n2
e0d     false
            n2_clus4   up/up      10.10.0.8/24         n2
e0d     true
8 entries were displayed.
```

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

```
network port modify
```

Show example

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

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

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

```
cluster ping-cluster
```

Show example

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

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

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

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

Show example

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

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

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

11. Build a temporary ISL between CL1 and C2.

Show example

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

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

Step 2: Configure ports

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

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

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

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

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

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

Show example

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

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

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

`show port-channel summary`

Show example

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

```
Example
CL1# show port-channel summary
Flags: D - Down         P - Up in port-channel (members)
       I - Individual   H - Hot-standby (LACP only)
       s - Suspended    r - Module-removed
       S - Switched     R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
--------------------------------------------------------------------------
------------
Group Port-       Type   Protocol  Member Ports
      Channel
--------------------------------------------------------------------------
------------
1     Po1(SU)     Eth    LACP      Eth1/41(D)   Eth1/42(D)
Eth1/43(D)
                                   Eth1/44(D)   Eth1/45(P)
Eth1/46(P)
                                   Eth1/47(P)   Eth1/48(P)
```

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

```
show port-channel summary
```

Show example

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

```
C2# show port-channel summary
Flags: D - Down         P - Up in port-channel (members)
       I - Individual   H - Hot-standby (LACP only)
       s - Suspended    r - Module-removed
       S - Switched     R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
--------------------------------------------------------------------
------------
Group Port-         Type    Protocol  Member Ports
      Channel
--------------------------------------------------------------------
------------
1     Po1(SU)       Eth     LACP      Eth1/31(D)    Eth1/32(D)
2     Po2(SU)       Eth     LACP      Eth1/24/1(P)  Eth1/24/2(P)
Eth1/24/3(P)
                                      Eth1/24/4(P)
```

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

```
network port modify
```

Show example

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

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

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

```
network interface revert
```

Show example

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

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

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

```
network interface show
```

Show example

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

```
cluster::*> network interface show -role cluster
 (network interface show)
            Logical     Status      Network                 Current
 Current Is
 Vserver     Interface  Admin/Oper Address/Mask            Node
 Port    Home
 ----------- ---------- ---------- ------------------ -------------
 ------- ----
 Cluster
            n1_clus1    up/up       10.10.0.1/24            n1
 e0a      true
            n1_clus2    up/up       10.10.0.2/24            n1
 e0b      true
            n1_clus3    up/up       10.10.0.3/24            n1
 e0c      true
            n1_clus4    up/up       10.10.0.4/24            n1
 e0d      true
            n2_clus1    up/up       10.10.0.5/24            n2
 e0a      true
            n2_clus2    up/up       10.10.0.6/24            n2
 e0b      true
            n2_clus3    up/up       10.10.0.7/24            n2
 e0c      true
            n2_clus4    up/up       10.10.0.8/24            n2
 e0d      true
 8 entries were displayed.
```

10. Verify that the clustered ports are connected:

```
network port show
```

Show example

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

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

Ignore
                                            Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e0a       Cluster      Cluster          up   9000 auto/10000  -
-
e0b       Cluster      Cluster          up   9000 auto/10000  -
-
e0c       Cluster      Cluster          up   9000 auto/10000  -
-
e0d       Cluster      Cluster          up   9000 auto/10000  -
-

Node: n2

Ignore
                                            Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e0a       Cluster      Cluster          up   9000  auto/10000 -
-
e0b       Cluster      Cluster          up   9000  auto/10000 -
-
e0c       Cluster      Cluster          up   9000  auto/10000 -
-
e0d       Cluster      Cluster          up   9000  auto/10000 -
-
8 entries were displayed.
```

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

```
cluster ping-cluster
```

Show example

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

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

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

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

```
network interface migrate
```

Show example

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

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

13. Verify the cluster status:

```
network interface show
```

Show example

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

```
 (network interface show)
          Logical     Status      Network              Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask         Node
Port    Home
----------- ---------- ---------- ------------------- -------------
------- ----
Cluster
          n1_clus1   up/up      10.10.0.1/24          n1
e0b     false
          n1_clus2   up/up      10.10.0.2/24          n1
e0b     true
          n1_clus3   up/up      10.10.0.3/24          n1
e0c     true
          n1_clus4   up/up      10.10.0.4/24          n1
e0c     false
          n2_clus1   up/up      10.10.0.5/24          n2
e0b     false
          n2_clus2   up/up      10.10.0.6/24          n2
e0b     true
          n2_clus3   up/up      10.10.0.7/24          n2
e0c     true
          n2_clus4   up/up      10.10.0.8/24          n2
e0c     false
8 entries were displayed.

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

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

```
network port modify
```

Show example

> The following example shows the specified ports being shut down on nodes n1 and n2:
>
> ```
> cluster::*> network port modify -node n1 -port e0a -up-admin false
> cluster::*> network port modify -node n1 -port e0d -up-admin false
> cluster::*> network port modify -node n2 -port e0a -up-admin false
> cluster::*> network port modify -node n2 -port e0d -up-admin false
> ```

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

    ```
    shutdown
    ```

    Show example

    > The following example shows how to shut down ISLs 24, 31, and 32:
    >
    > ```
    > C2# configure
    > C2(Config)# interface e1/24/1-4
    > C2(config-if-range)# shutdown
    > C2(config-if-range)# exit
    > C2(config)# interface 1/31-32
    > C2(config-if-range)# shutdown
    > C2(config-if-range)# exit
    > C2(config-if)# exit
    > C2#
    > ```

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

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

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

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

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

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

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

Show example

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

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

Step 3: Verify the configuration

1. Verify that the ISL connections are `up` on the 3132Q-V switch C2:

```
show port-channel summary
```

Show example

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

```
C1# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
       I - Individual   H - Hot-standby (LACP only)
       s - Suspended    r - Module-removed
       S - Switched     R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
----------------------------------------------------------------
------------
Group Port-        Type   Protocol  Member Ports
      Channel
----------------------------------------------------------------
------------
1    Po1(SU)       Eth    LACP      Eth1/31(P)   Eth1/32(P)
```

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

   `network port modify`

   Show example

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

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

3. Verify the status of the cluster node port:

   `network port show`

Show example

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

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

Ignore
                                          Speed(Mbps) Health
Health
Port      IPspace       Broadcast Domain Link MTU  Admin/Oper  Status
Status
--------- ------------  ---------------- ---- ---- -----------
-------- ------
e0a       Cluster       Cluster           up   9000 auto/10000  -
-
e0b       Cluster       Cluster           up   9000 auto/10000  -
-
e0c       Cluster       Cluster           up   9000 auto/10000  -
-
e0d       Cluster       Cluster           up   9000 auto/10000  -
-


Node: n2

Ignore
                                          Speed(Mbps) Health
Health
Port      IPspace       Broadcast Domain Link MTU  Admin/Oper  Status
Status
--------- ------------  ---------------- ---- ---- -----------
-------- ------
e0a       Cluster       Cluster           up   9000  auto/10000 -
-
e0b       Cluster       Cluster           up   9000  auto/10000 -
-
e0c       Cluster       Cluster           up   9000  auto/10000 -
-
e0d       Cluster       Cluster           up   9000  auto/10000 -
-
8 entries were displayed.
```

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

```
network interface revert
```

Show example

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

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

5. Verify that the interface is home:

```
network interface show
```

Show example

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

```
cluster::*> network interface show -role cluster
  (network interface show)
            Logical     Status      Network                 Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask          Node
Port     Home
----------- ---------- ---------- ------------------ -------------
------- ----
Cluster
            n1_clus1   up/up       10.10.0.1/24          n1
e0a      true
            n1_clus2   up/up       10.10.0.2/24          n1
e0b      true
            n1_clus3   up/up       10.10.0.3/24          n1
e0c      true
            n1_clus4   up/up       10.10.0.4/24          n1
e0d      true
            n2_clus1   up/up       10.10.0.5/24          n2
e0a      true
            n2_clus2   up/up       10.10.0.6/24          n2
e0b      true
            n2_clus3   up/up       10.10.0.7/24          n2
e0c      true
            n2_clus4   up/up       10.10.0.8/24          n2
e0d      true
8 entries were displayed.
```

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

```
cluster ping-cluster
```

Show example

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

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

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

7. Expand the cluster by adding nodes to the Nexus 3132Q-V cluster switches.

8. Display the information about the devices in your configuration:

    ° `network device-discovery show`

    ° `network port show -role cluster`

    ° `network interface show -role cluster`

    ° `system cluster-switch show`

Show example

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

```
cluster::> network device-discovery show
            Local  Discovered
Node        Port   Device                Interface       Platform
----------- ------ ------------------- ---------------
----------------
n1          /cdp
            e0a    C1                    Ethernet1/1/1   N3K-
C3132Q-V
            e0b    C2                    Ethernet1/1/1   N3K-
C3132Q-V
            e0c    C2                    Ethernet1/1/2   N3K-
C3132Q-V
            e0d    C1                    Ethernet1/1/2   N3K-
C3132Q-V
n2          /cdp
            e0a    C1                    Ethernet1/1/3   N3K-
C3132Q-V
            e0b    C2                    Ethernet1/1/3   N3K-
C3132Q-V
            e0c    C2                    Ethernet1/1/4   N3K-
C3132Q-V
            e0d    C1                    Ethernet1/1/4   N3K-
C3132Q-V
n3          /cdp
            e4a    C1                    Ethernet1/7     N3K-
C3132Q-V
            e4e    C2                    Ethernet1/7     N3K-
C3132Q-V
n4          /cdp
            e4a    C1                    Ethernet1/8     N3K-
C3132Q-V
            e4e    C2                    Ethernet1/8     N3K-
C3132Q-V
12 entries were displayed.
```

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

```
Ignore
                                          Speed(Mbps)
Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status    Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e0a       Cluster      Cluster          up   9000 auto/10000  -
-
e0b       Cluster      Cluster          up   9000 auto/10000  -
-
e0c       Cluster      Cluster          up   9000 auto/10000  -
-
e0d       Cluster      Cluster          up   9000 auto/10000  -
-

Node: n2

Ignore
                                          Speed(Mbps)
Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status    Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e0a       Cluster      Cluster          up   9000  auto/10000 -
-
e0b       Cluster      Cluster          up   9000  auto/10000 -
-
e0c       Cluster      Cluster          up   9000  auto/10000 -
-
e0d       Cluster      Cluster          up   9000  auto/10000 -
-

Node: n3

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

```
-

Node: n4

Ignore
                                                  Speed(Mbps)
Health   Health
Port      IPspace       Broadcast Domain Link MTU  Admin/Oper
Status   Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e4a       Cluster      Cluster          up   9000 auto/40000  -
-
e4e       Cluster      Cluster          up   9000 auto/40000  -
-
12 entries were displayed.
```

```
cluster::*> network interface show -role cluster
  (network interface show)
          Logical      Status      Network                  Current
Current Is
Vserver     Interface  Admin/Oper  Address/Mask      Node
Port    Home
----------- ---------- ----------  -----------------
------------- ------- ----
Cluster
          n1_clus1   up/up       10.10.0.1/24       n1
e0a     true
          n1_clus2   up/up       10.10.0.2/24       n1
e0b     true
          n1_clus3   up/up       10.10.0.3/24       n1
e0c     true
          n1_clus4   up/up       10.10.0.4/24       n1
e0d     true
          n2_clus1   up/up       10.10.0.5/24       n2
e0a     true
          n2_clus2   up/up       10.10.0.6/24       n2
e0b     true
          n2_clus3   up/up       10.10.0.7/24       n2
e0c     true
          n2_clus4   up/up       10.10.0.8/24       n2
e0d     true
          n3_clus1   up/up       10.10.0.9/24       n3
e4a     true
          n3_clus2   up/up       10.10.0.10/24      n3
e4e     true
          n4_clus1   up/up       10.10.0.11/24      n4
e4a     true
          n4_clus2   up/up       10.10.0.12/24      n4
e4e     true
12 entries were displayed.
```

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

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

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

CL1                             cluster-network    10.10.1.101
NX5596
     Serial Number: 01234567
       Is Monitored: true
            Reason:
  Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                   7.1(1)N1(1)
    Version Source: CDP
CL2                             cluster-network    10.10.1.102
NX5596
     Serial Number: 01234568
       Is Monitored: true
            Reason:
  Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                   7.1(1)N1(1)
    Version Source: CDP

4 entries were displayed.
```

9. Remove the replaced Nexus 5596 if they are not automatically removed:

```
system cluster-switch delete
```

Show example

> The following example shows how to remove the Nexus 5596:
>
> ```
> cluster::> system cluster-switch delete –device CL1
> cluster::> system cluster-switch delete –device CL2
> ```

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

Show example

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

11. Verify that the proper cluster switches are monitored:

```
system cluster-switch show
```

Show example

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

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

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

2 entries were displayed.
```

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

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

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

Show example

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

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

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

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

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

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

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

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

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

Enabling cluster switch log collection.

cluster::*>
```

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

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

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

Migrate from CN1610 cluster switches to Cisco Nexus 3132Q-V cluster switches

Follow this procedure to replace the existing CN1610 cluster switches with Cisco Nexus 3132Q-V cluster switches.

Review requirements

Review the NetApp CN1610 requirements requirements in Requirements for replacing Cisco Nexus 3132Q-V cluster switches.

For more information, see:

- NetApp CN1601 and CN1610 description page
- Cisco Ethernet Switch description page
- Hardware Universe

Replace the switch

Switch and node nomenclature

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

- The command outputs might vary depending on different releases of ONTAP software.
- The CN1610 switches to be replaced are CL1 and CL2.
- The Nexus 3132Q-V switches to replace the CN1610 switches are C1 and C2.
- n1_clus1 is the first cluster logical interface (LIF) that is connected to cluster switch 1 (CL1 or C1) for node n1.
- n1_clus2 is the first cluster LIF that is connected to cluster switch 2 (CL2 or C2) for node n1.
- n1_clus3 is the second LIF that is connected to cluster switch 2 (CL2 or C2) for node n1.
- n1_clus4 is the second LIF that is connected to cluster switch 1 (CL1 or C1) for node n1.
- The nodes are n1, n2, n3, and n4.
- The number of 10 GbE and 40/100 GbE ports are defined in the reference configuration files (RCFs) available on the Cisco® Cluster Network Switch Reference Configuration File Download page.

About the examples

The examples in this procedure use four nodes:

- Two nodes use four 10 GbE cluster interconnect ports: e0a, e0b, e0c, and e0d.
- The other two nodes use two 40/100 GbE cluster interconnect fiber cables: e4a and e4e.

The Hardware Universe has information about the cluster fiber cables on your platforms.

About this task

This procedure covers the following scenario:

- The cluster starts with two nodes connected to two CN1610 cluster switches.

- Cluster switch CL2 to be replaced by C2

  ◦ Traffic on all cluster ports and LIFs on all nodes connected to CL2 are migrated onto the first cluster ports and LIFs connected to CL1.

  ◦ Disconnect cabling from all cluster ports on all nodes connected to CL2, and then use supported breakout cabling to reconnect the ports to new cluster switch C2.

  ◦ Disconnect cabling between ISL ports CL1 and CL2, and then use supported breakout cabling to reconnect the ports from CL1 to C2.

  ◦ Traffic on all cluster ports and LIFs connected to C2 on all nodes is reverted.

- Cluster switch CL1 to be replaced by C1

  ◦ Traffic on all cluster ports and LIFs on all nodes connected to CL1 are migrated onto the second cluster ports and LIFs connected to C2.

  ◦ Disconnect cabling from all cluster ports on all nodes connected to CL1, and then use supported breakout cabling to reconnect the ports to new cluster switch C1.

  ◦ Disconnect cabling between ISL ports CL1 and C2, and then use supported breakout cabling to reconnect the ports from C1 to C2.

  ◦ Traffic on all migrated cluster ports and LIFs connected to C1 on all nodes is reverted.

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

Step 1: Prepare for replacement

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

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

   x is the duration of the maintenance window in hours.

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

2. Display information about the devices in your configuration:

   ```
   network device-discovery show
   ```

Show example

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

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

        Local  Discovered
Node    Port   Device          Interface   Platform
------  ------ ------------    ----------- ----------
n1      /cdp
         e0a   CL1             0/1         CN1610
         e0b   CL2             0/1         CN1610
         e0c   CL2             0/2         CN1610
         e0d   CL1             0/2         CN1610
n2      /cdp
         e0a   CL1             0/3         CN1610
         e0b   CL2             0/3         CN1610
         e0c   CL2             0/4         CN1610
         e0d   CL1             0/4         CN1610

8 entries were displayed.
```

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

   a. Display the cluster network port attributes:

   ```
   network port show
   ```

Show example

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

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

Node: n1
                Broadcast                  Speed (Mbps) Health Ignore
Port  IPspace   Domain      Link  MTU    Admin/Open    Status Health
Status
----- --------- ---------- ----- ----- ------------ ------
-------------
e0a   cluster   cluster     up    9000   auto/10000      -        -
e0b   cluster   cluster     up    9000   auto/10000      -        -
e0c   cluster   cluster     up    9000   auto/10000      -        -
e0d   cluster   cluster     up    9000   auto/10000      -        -

Node: n2
                Broadcast                  Speed (Mbps) Health Ignore
Port  IPspace   Domain      Link  MTU    Admin/Open    Status Health
Status
----- --------- ---------- ----- ----- ------------ ------
-------------
e0a   cluster   cluster     up    9000   auto/10000      -        -
e0b   cluster   cluster     up    9000   auto/10000      -        -
e0c   cluster   cluster     up    9000   auto/10000      -        -
e0d   cluster   cluster     up    9000   auto/10000      -        -

8 entries were displayed.
```

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

Show example

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

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

          Logical     Status      Network         Current  Current
Is
Vserver   Interface   Admin/Oper  Address/Mask    Node     Port
Home
--------  ----------  ----------  --------------  -------- --------
-----
Cluster
          n1_clus1    up/up       10.10.0.1/24    n1       e0a
true
          n1_clus2    up/up       10.10.0.2/24    n1       e0b
true
          n1_clus3    up/up       10.10.0.3/24    n1       e0c
true
          n1_clus4    up/up       10.10.0.4/24    n1       e0d
true
          n2_clus1    up/up       10.10.0.5/24    n2       e0a
true
          n2_clus2    up/up       10.10.0.6/24    n2       e0b
true
          n2_clus3    up/up       10.10.0.7/24    n2       e0c
true
          n2_clus4    up/up       10.10.0.8/24    n2       e0d
true

8 entries were displayed.
```

c. Display information about the discovered cluster switches:

```
system cluster-switch show
```

Show example

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

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

Switch                          Type            Address
Model
---------------------------- --------------- -------------
--------
CL1                             cluster-network  10.10.1.101
CN1610
        Serial Number: 01234567
          Is Monitored: true
                Reason:
      Software Version: 1.2.0.7
        Version Source: ISDP

CL2                             cluster-network  10.10.1.102
CN1610
        Serial Number: 01234568
          Is Monitored: true
                Reason:
      Software Version: 1.2.0.7
        Version Source: ISDP

2 entries were displayed.
```

4. Set the `-auto-revert` parameter to false on cluster LIFs clus1 and clus4 on both nodes:

```
network interface modify
```

Show example

```
cluster::*> network interface modify -vserver node1 -lif clus1 -auto
-revert false
cluster::*> network interface modify -vserver node1 -lif clus4 -auto
-revert false
cluster::*> network interface modify -vserver node2 -lif clus1 -auto
-revert false
cluster::*> network interface modify -vserver node2 -lif clus4 -auto
-revert false
```

5. Verify that the appropriate RCF and image are installed on the new 3132Q-V switches as necessary for your requirements, and make any essential site customizations, such as users and passwords, network addresses, and so on.

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

   a. See the Cisco Ethernet Switches page on NetApp Support Site.

   b. Note your switch and the required software versions in the table on that page.

   c. Download the appropriate version of the RCF.

   d. Click **CONTINUE** on the **Description** page, accept the license agreement, and then follow the instructions on the **Download** page to download the RCF.

   e. Download the appropriate version of the image software.

   Cisco® Cluster and Management Network Switch Reference Configuration File Download

6. Migrate the LIFs associated with the second CN1610 switch to be replaced:

```
network interface migrate
```

   (i) You must migrate the cluster LIFs from a connection to the node, either through the service processor or node management interface, which owns the cluster LIF being migrated.

   Show example

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

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

7. Verify the cluster's health:

```
network interface show
```

Show example

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

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

        Logical    Status      Network          Current  Current  Is
Vserver Interface  Admin/Oper  Address/Mask     Node     Port
Home
-------- ---------- ----------- --------------- -------- --------
-----
Cluster
        n1_clus1   up/up       10.10.0.1/24     n1       e0a
true
        n1_clus2   up/up       10.10.0.2/24     n1       e0a
false
        n1_clus3   up/up       10.10.0.3/24     n1       e0d
false
        n1_clus4   up/up       10.10.0.4/24     n1       e0d
true
        n2_clus1   up/up       10.10.0.5/24     n2       e0a
true
        n2_clus2   up/up       10.10.0.6/24     n2       e0a
false
        n2_clus3   up/up       10.10.0.7/24     n2       e0d
false
        n2_clus4   up/up       10.10.0.8/24     n2       e0d
true

8 entries were displayed.
```

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

`network port modify`

Show example

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

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

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

```
cluster ping-cluster
```

Show example

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

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

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

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

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

```
shutdown
```

Show example

The following example shows how to shut down ISL ports 13 through 16 on the CN1610 switch CL1:

```
(CL1)# configure
(CL1)(Config)# interface 0/13-0/16
(CL1)(Interface 0/13-0/16)# shutdown
(CL1)(Interface 0/13-0/16)# exit
(CL1)(Config)# exit
(CL1)#
```

11. Build a temporary ISL between CL1 and C2:

Show example

The following example builds a temporary ISL between CL1 (ports 13-16) and C2 (ports e1/24/1-4):

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

Step 2: Configure ports

1. On all nodes, remove the cables that are attached to the CN1610 switch CL2.

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

2. Remove four ISL cables from ports 13 to 16 on the CN1610 switch CL1.

   You must attach appropriate Cisco QSFP to SFP+ breakout cables connecting port 1/24 on the new Cisco 3132Q-V switch C2, to ports 13 to 16 on existing CN1610 switch CL1.

> **ⓘ** When reconnecting any cables to the new Cisco 3132Q-V switch, you must use either optical fiber or Cisco twinax cables.

3. To make the ISL dynamic, configure the ISL interface 3/1 on the active CN1610 switch to disable the static mode: `no port-channel static`

   This configuration matches with the ISL configuration on the 3132Q-V switch C2 when the ISLs are brought up on both switches in step 11

   Show example

   The following example shows the configuration of the ISL interface 3/1 using the `no port-channel static` command to make the ISL dynamic:

   ```
   (CL1)# configure
   (CL1)(Config)# interface 3/1
   (CL1)(Interface 3/1)# no port-channel static
   (CL1)(Interface 3/1)# exit
   (CL1)(Config)# exit
   (CL1)#
   ```

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

   Show example

   The following example illustrates the process of bringing up ISL ports 13 through 16 on the port-channel interface 3/1:

   ```
   (CL1)# configure
   (CL1)(Config)# interface 0/13-0/16,3/1
   (CL1)(Interface 0/13-0/16,3/1)# no shutdown
   (CL1)(Interface 0/13-0/16,3/1)# exit
   (CL1)(Config)# exit
   (CL1)#
   ```

5. Verify that the ISLs are `up` on the CN1610 switch CL1:

   `show port-channel`

   The "Link State" should be `Up`, "Type" should be `Dynamic`, and the "Port Active" column should be `True` for ports 0/13 to 0/16:

Show example

```
(CL1)# show port-channel 3/1
Local Interface................................ 3/1
Channel Name................................... ISL-LAG
Link State..................................... Up
Admin Mode..................................... Enabled
Type........................................... Dynamic
Load Balance Option............................ 7
(Enhanced hashing mode)

Mbr     Device/          Port          Port
Ports   Timeout          Speed         Active
------  -------------    ----------    -------
0/13    actor/long       10 Gb Full    True
        partner/long
0/14    actor/long       10 Gb Full    True
        partner/long
0/15    actor/long       10 Gb Full    True
        partner/long
0/16    actor/long       10 Gb Full    True
        partner/long
```

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

```
show port-channel summary
```

Show example

Ports Eth1/24/1 through Eth1/24/4 should indicate (P), meaning that all four ISL ports are up in the port-channel. Eth1/31 and Eth1/32 should indicate (D) as they are not connected:

```
C2# show port-channel summary

Flags:  D - Down         P - Up in port-channel (members)
        I - Individual   H - Hot-standby (LACP only)
        s - Suspended    r - Module-removed
        S - Switched     R - Routed
        U - Up (port-channel)
        M - Not in use. Min-links not met
--------------------------------------------------------------------
----------
Group Port-        Type      Protocol  Member Ports
      Channel
--------------------------------------------------------------------
----------
1     Po1(SU)      Eth       LACP      Eth1/31(D)    Eth1/32(D)
2     Po2(SU)      Eth       LACP      Eth1/24/1(P) Eth1/24/2(P)
Eth1/24/3(P)
                                       Eth1/24/4(P)
```

7. Bring up all of the cluster interconnect ports that are connected to the 3132Q-V switch C2 on all of the nodes:

```
network port modify
```

Show example

The following example shows how to bring up the cluster interconnect ports connected to the 3132Q-V switch C2:

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

8. Revert all of the migrated cluster interconnect LIFs that are connected to C2 on all of the nodes:

```
network interface revert
```

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

9. Verify that all of the cluster interconnect ports are reverted to their home ports:

```
network interface show
```

Show example

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

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

         Logical    Status      Network         Current  Current  Is
 Vserver Interface  Admin/Oper  Address/Mask    Node     Port
 Home
 -------- ---------- ----------- -------------- -------- --------
 -----
 Cluster
         n1_clus1   up/up       10.10.0.1/24    n1       e0a
 true
         n1_clus2   up/up       10.10.0.2/24    n1       e0b
 true
         n1_clus3   up/up       10.10.0.3/24    n1       e0c
 true
         n1_clus4   up/up       10.10.0.4/24    n1       e0d
 true
         n2_clus1   up/up       10.10.0.5/24    n2       e0a
 true
         n2_clus2   up/up       10.10.0.6/24    n2       e0b
 true
         n2_clus3   up/up       10.10.0.7/24    n2       e0c
 true
         n2_clus4   up/up       10.10.0.8/24    n2       e0d
 true

 8 entries were displayed.
```

10. Verify that all of the cluster ports are connected:

`network port show`

Show example

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

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

Node: n1
                  Broadcast                     Speed (Mbps) Health   Ignore
Port   IPspace   Domain        Link  MTU   Admin/Open    Status   Health
Status
-----  ---------  -----------  -----  -----  ------------  --------
-------------
e0a    cluster    cluster       up    9000  auto/10000     -        -
e0b    cluster    cluster       up    9000  auto/10000     -        -
e0c    cluster    cluster       up    9000  auto/10000     -        -
e0d    cluster    cluster       up    9000  auto/10000     -        -

Node: n2
                  Broadcast                     Speed (Mbps) Health   Ignore
Port   IPspace   Domain        Link  MTU   Admin/Open    Status   Health
Status
-----  ---------  -----------  -----  -----  ------------  --------
-------------
e0a    cluster    cluster       up    9000  auto/10000     -        -
e0b    cluster    cluster       up    9000  auto/10000     -        -
e0c    cluster    cluster       up    9000  auto/10000     -        -
e0d    cluster    cluster       up    9000  auto/10000     -        -

8 entries were displayed.
```

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

```
cluster ping-cluster
```

Show example

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

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

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

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

12. On each node in the cluster, migrate the interfaces that are associated with the first CN1610 switch CL1, to

be replaced:

```
network interface migrate
```

Show example

> The following example shows the ports or LIFs being migrated on nodes n1 and n2:
>
> ```
> cluster::*> network interface migrate -vserver Cluster -lif n1_clus1
> -destination-node n1 -destination-port e0b
> cluster::*> network interface migrate -vserver Cluster -lif n1_clus4
> -destination-node n1 -destination-port e0c
> cluster::*> network interface migrate -vserver Cluster -lif n2_clus1
> -destination-node n2 -destination-port e0b
> cluster::*> network interface migrate -vserver Cluster -lif n2_clus4
> -destination-node n2 -destination-port e0c
> ```

13. Verify the cluster status:

```
network interface show
```

Show example

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

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

        Logical   Status       Network         Current  Current  Is
Vserver  Interface Admin/Oper  Address/Mask    Node     Port
Home
-------- ---------- ----------- -------------- -------- --------
-----
Cluster
        n1_clus1   up/up       10.10.0.1/24    n1       e0b
false
        n1_clus2   up/up       10.10.0.2/24    n1       e0b
true
        n1_clus3   up/up       10.10.0.3/24    n1       e0c
true
        n1_clus4   up/up       10.10.0.4/24    n1       e0c
false
        n2_clus1   up/up       10.10.0.5/24    n2       e0b
false
        n2_clus2   up/up       10.10.0.6/24    n2       e0b
true
        n2_clus3   up/up       10.10.0.7/24    n2       e0c
true
        n2_clus4   up/up       10.10.0.8/24    n2       e0c
false

8 entries were displayed.
```

14. Shut down the node ports that are connected to CL1 on all of the nodes:

```
network port modify
```

Show example

> The following example shows how to shut down the specified ports on nodes n1 and n2:
>
> ```
> cluster::*> network port modify -node n1 -port e0a -up-admin false
> cluster::*> network port modify -node n1 -port e0d -up-admin false
> cluster::*> network port modify -node n2 -port e0a -up-admin false
> cluster::*> network port modify -node n2 -port e0d -up-admin false
> ```

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

    `shutdown`

    Show example

    > The following example shows how to shut down ISLs 24, 31, and 32 on the active 3132Q-V switch C2:
    >
    > ```
    > C2# configure
    > C2(config)# interface ethernet 1/24/1-4
    > C2(config-if-range)# shutdown
    > C2(config-if-range)# exit
    > C2(config)# interface ethernet 1/31-32
    > C2(config-if-range)# shutdown
    > C2(config-if-range)# exit
    > C2(config)# exit
    > C2#
    > ```

16. Remove the cables that are attached to the CN1610 switch CL1 on all of the nodes.

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

17. Remove the QSFP cables from Nexus 3132Q-V C2 port e1/24.

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

18. Restore the configuration on port 24 and remove the temporary port-channel 2 on C2, by copying the `running-configuration` file to the `startup-configuration` file.

Show example

The following example copies the `running-configuration` file to the `startup-configuration` file:

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

19. Bring up ISL ports 31 and 32 on C2, the active 3132Q-V switch:

```
no shutdown
```

Show example

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

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

Step 3: Verify the configuration

1. Verify that the ISL connections are `up` on the 3132Q-V switch C2:

```
show port-channel summary
```

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

Show example

```
C1# show port-channel summary
Flags:  D - Down        P - Up in port-channel (members)
        I - Individual  H - Hot-standby (LACP only)
        s - Suspended   r - Module-removed
        S - Switched    R - Routed
        U - Up (port-channel)
        M - Not in use. Min-links not met
--------------------------------------------------------------------
----------
Group Port-        Type      Protocol   Member Ports
      Channel
--------------------------------------------------------------------
----------
1     Po1(SU)      Eth       LACP       Eth1/31(P)   Eth1/32(P)
```

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

`network port modify`

Show example

The following example shows how to bring up all of the cluster interconnect ports connected to the new 3132Q-V switch C1:

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

3. Verify the status of the cluster node port:

`network port show`

Show example

The following example verifies that all of the cluster interconnect ports on n1 and n2 on the new 3132Q-V switch C1 are `up`:

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

Node: n1
                  Broadcast                 Speed (Mbps) Health   Ignore
Port   IPspace    Domain      Link  MTU   Admin/Open     Status   Health
                                                                  Status
-----  ---------  ----------  ----- ----- ------------   --------
-------------
e0a    cluster    cluster     up    9000  auto/10000     -        -
e0b    cluster    cluster     up    9000  auto/10000     -        -
e0c    cluster    cluster     up    9000  auto/10000     -        -
e0d    cluster    cluster     up    9000  auto/10000     -        -

Node: n2
                  Broadcast                 Speed (Mbps) Health   Ignore
Port   IPspace    Domain      Link  MTU   Admin/Open     Status   Health
                                                                  Status
-----  ---------  ----------  ----- ----- ------------   --------
-------------
e0a    cluster    cluster     up    9000  auto/10000     -        -
e0b    cluster    cluster     up    9000  auto/10000     -        -
e0c    cluster    cluster     up    9000  auto/10000     -        -
e0d    cluster    cluster     up    9000  auto/10000     -        -

8 entries were displayed.
```

4. Revert all of the migrated cluster interconnect LIFs that were originally connected to C1 on all of the nodes:

```
network interface revert
```

The following example shows how to revert the migrated cluster LIFs to their home ports:

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

5. Verify that the interface is now home:

```
network interface show
```

Show example

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

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

        Logical    Status      Network         Current  Current  Is
Vserver Interface  Admin/Oper  Address/Mask    Node     Port
Home
------- ---------- ----------- --------------- -------- --------
-----
Cluster
        n1_clus1   up/up       10.10.0.1/24    n1       e0a
true
        n1_clus2   up/up       10.10.0.2/24    n1       e0b
true
        n1_clus3   up/up       10.10.0.3/24    n1       e0c
true
        n1_clus4   up/up       10.10.0.4/24    n1       e0d
true
        n2_clus1   up/up       10.10.0.5/24    n2       e0a
true
        n2_clus2   up/up       10.10.0.6/24    n2       e0b
true
        n2_clus3   up/up       10.10.0.7/24    n2       e0c
true
        n2_clus4   up/up       10.10.0.8/24    n2       e0d
true

8 entries were displayed.
```

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

```
cluster ping-cluster
```

Show example

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

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

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

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

7. Expand the cluster by adding nodes to the Nexus 3132Q-V cluster switches.

8. Display the information about the devices in your configuration:

   ° `network device-discovery show`

   ° `network port show -role cluster`

   ° `network interface show -role cluster`

   ° `system cluster-switch show`

Show example

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

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

        Local  Discovered
Node    Port   Device        Interface       Platform
------  ------ ------------ --------------- -------------
n1      /cdp
         e0a   C1           Ethernet1/1/1   N3K-C3132Q-V
         e0b   C2           Ethernet1/1/1   N3K-C3132Q-V
         e0c   C2           Ethernet1/1/2   N3K-C3132Q-V
         e0d   C1           Ethernet1/1/2   N3K-C3132Q-V
n2      /cdp
         e0a   C1           Ethernet1/1/3   N3K-C3132Q-V
         e0b   C2           Ethernet1/1/3   N3K-C3132Q-V
         e0c   C2           Ethernet1/1/4   N3K-C3132Q-V
         e0d   C1           Ethernet1/1/4   N3K-C3132Q-V
n3      /cdp
         e4a   C1           Ethernet1/7     N3K-C3132Q-V
         e4e   C2           Ethernet1/7     N3K-C3132Q-V
n4      /cdp
         e4a   C1           Ethernet1/8     N3K-C3132Q-V
         e4e   C2           Ethernet1/8     N3K-C3132Q-V

12 entries were displayed.
```

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

Node: n1
                Broadcast                 Speed (Mbps) Health
Ignore
Port  IPspace   Domain     Link  MTU   Admin/Open   Status
Health Status
----- --------- ---------- ----- ----- ----------- --------
-------------
e0a   cluster   cluster    up    9000  auto/10000    -       -
e0b   cluster   cluster    up    9000  auto/10000    -       -
e0c   cluster   cluster    up    9000  auto/10000    -       -
e0d   cluster   cluster    up    9000  auto/10000    -       -
```

```
Node: n2
                 Broadcast                 Speed (Mbps) Health
Ignore
Port  IPspace   Domain     Link  MTU   Admin/Open   Status
Health Status
----- --------- ---------- ----- ----- ------------ --------
------------
e0a   cluster   cluster    up    9000  auto/10000      -        -
e0b   cluster   cluster    up    9000  auto/10000      -        -
e0c   cluster   cluster    up    9000  auto/10000      -        -
e0d   cluster   cluster    up    9000  auto/10000      -        -

Node: n3
                 Broadcast                 Speed (Mbps) Health
Ignore
Port  IPspace   Domain     Link  MTU   Admin/Open   Status
Health Status
----- --------- ---------- ----- ----- ------------ --------
------------
e4a   cluster   cluster    up    9000  auto/40000      -        -
e4e   cluster   cluster    up    9000  auto/40000      -        -

Node: n4
                 Broadcast                 Speed (Mbps) Health
Ignore
Port  IPspace   Domain     Link  MTU   Admin/Open   Status
Health Status
----- --------- ---------- ----- ----- ------------ --------
------------
e4a   cluster   cluster    up    9000  auto/40000      -        -
e4e   cluster   cluster    up    9000  auto/40000      -        -

12 entries were displayed.
```

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

          Logical     Status      Network         Current   Current
Is
Vserver   Interface   Admin/Oper  Address/Mask    Node      Port
Home
--------  ----------  ----------- --------------  --------  --------
-----
Cluster
          n1_clus1    up/up       10.10.0.1/24    n1        e0a
true
          n1_clus2    up/up       10.10.0.2/24    n1        e0b
true
          n1_clus3    up/up       10.10.0.3/24    n1        e0c
true
          n1_clus4    up/up       10.10.0.4/24    n1        e0d
true
          n2_clus1    up/up       10.10.0.5/24    n2        e0a
true
          n2_clus2    up/up       10.10.0.6/24    n2        e0b
true
          n2_clus3    up/up       10.10.0.7/24    n2        e0c
true
          n2_clus4    up/up       10.10.0.8/24    n2        e0d
true
          n3_clus1    up/up       10.10.0.9/24    n3        e4a
true
          n3_clus2    up/up       10.10.0.10/24   n3        e4e
true
          n4_clus1    up/up       10.10.0.11/24   n4        e4a
true
          n4_clus2    up/up       10.10.0.12/24   n4        e4e
true

12 entries were displayed.
```

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

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

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

CL1                             cluster-network  10.10.1.101    CN1610
        Serial Number: 01234567
          Is Monitored: true
                Reason:
      Software Version: 1.2.0.7
        Version Source: ISDP

CL2                             cluster-network  10.10.1.102
CN1610
        Serial Number: 01234568
          Is Monitored: true
                Reason:
      Software Version: 1.2.0.7
        Version Source: ISDP

4 entries were displayed.
```

9. Remove the replaced CN1610 switches if they are not automatically removed:

```
system cluster-switch delete
```

Show example

The following example shows how to remove the CN1610 switches:

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

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

Show example

```
cluster::*> network interface modify -vserver node1 -lif clus1 -auto
-revert true
cluster::*> network interface modify -vserver node1 -lif clus4 -auto
-revert true
cluster::*> network interface modify -vserver node2 -lif clus1 -auto
-revert true
cluster::*> network interface modify -vserver node2 -lif clus4 -auto
-revert true
```

11. Verify that the proper cluster switches are monitored:

```
system cluster-switch show
```

Show example

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

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

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

2 entries were displayed.
```

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

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

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

Show example

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

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

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

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

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

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

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

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

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

Enabling cluster switch log collection.

cluster::*>
```

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

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

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

Migrate from a switchless cluster to a two-node switched cluster

If you have a two-node switchless cluster, you can follow this procedure to migrate to a two-node switched cluster that includes Cisco Nexus 3132Q-V cluster network switches. The replacement procedure is a nondisruptive procedure (NDO).

Review requirements

Ports and node connections

Make sure you understand the port and node connections and cabling requirements when you migrate to a two-node switched cluster with Cisco Nexus 3132Q-V cluster switches.

- The cluster switches use the Inter-Switch Link (ISL) ports e1/31-32.

- The Hardware Universe contains information about supported cabling to Nexus 3132Q-V switches:

  ◦ The nodes with 10 GbE cluster connections require QSFP optical modules with breakout fiber cables or QSFP to SFP+ copper break-out cables.

  ◦ The nodes with 40/100 GbE cluster connections require supported QSFP/QSFP28 optical modules with fiber cables or QSFP/QSFP28 copper direct-attach cables.

  ◦ The cluster switches use the appropriate ISL cabling: 2x QSFP28 fiber or copper direct-attach cables.

- On Nexus 3132Q-V, you can operate QSFP ports as either 40/100 Gb Ethernet or 4 x10 Gb Ethernet modes.

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

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

  By default, the RCF is structured to use the first QSFP port.

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

- Make sure you configured some of the ports on Nexus 3132Q-V to run at 10 GbE or 40/100 GbE.

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

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

What you'll need

- Configurations properly set up and functioning.

- Nodes running ONTAP 9.4 or later.

- All cluster ports in the `up` state.

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

- The existing cluster network configuration has:

  - The Nexus 3132 cluster infrastructure that is redundant and fully functional on both switches.

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

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

  - Management connectivity on both switches.

  - Console access to both switches.

  - All cluster logical interfaces (LIFs) in the `up` state without being migrated.

  - Initial customization of the switch.

  - All the ISL ports enabled and cabled.

In addition, you must plan, migrate, and read the required documentation on 10 GbE and 40/100 GbE connectivity from nodes to Nexus 3132Q-V cluster switches.

Migrate the switches

About the examples

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

- Nexus 3132Q-V cluster switches, C1 and C2.

- The nodes are n1 and n2.

> ⓘ The examples in this procedure use two nodes, each utilizing two 40/100 GbE cluster interconnect ports e4a and e4e. The Hardware Universe has details about the cluster ports on your platforms.

About this task

This procedure covers the following scenarios:

- n1_clus1 is the first cluster logical interface (LIF) to be connected to cluster switch C1 for node n1.

- n1_clus2 is the first cluster LIF to be connected to cluster switch C2 for node n1.

- n2_clus1 is the first cluster LIF to be connected to cluster switch C1 for node n2.

- n2_clus2 is the second cluster LIF to be connected to cluster switch C2 for node n2.

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

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

- The cluster starts with two nodes connected and functioning in a two-node switchless cluster setting.

- The first cluster port is moved to C1.

- The second cluster port is moved to C2.

- The two-node switchless cluster option is disabled.

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
   ```

   x is the duration of the maintenance window in hours.

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

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

   a. Display the network port attributes:

   ```
   network port show
   ```

Show example

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

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


Node: n2

Ignore
                                              Speed(Mbps)
Health    Health
Port       IPspace      Broadcast Domain Link MTU  Admin/Oper
Status    Status
--------- ------------ --------------- ---- ---- -----------
-------- ------
e4a       Cluster      Cluster          up   9000 auto/40000  -
-
e4e       Cluster      Cluster          up   9000 auto/40000  -
-
4 entries were displayed.
```

b. Display information about the logical interfaces:

```
network interface show
```

Show example

```
cluster::*> network interface show -role cluster
  (network interface show)
           Logical     Status      Network                 Current
Current Is
Vserver      Interface  Admin/Oper Address/Mask       Node
Port     Home
----------- ---------- ---------- ------------------
------------- ------- ----
Cluster
          n1_clus1   up/up      10.10.0.1/24       n1
e4a      true
          n1_clus2   up/up      10.10.0.2/24       n1
e4e      true
          n2_clus1   up/up      10.10.0.3/24       n2
e4a      true
          n2_clus2   up/up      10.10.0.4/24       n2
e4e      true
4 entries were displayed.
```

3. Verify that the appropriate RCFs and image are installed on the new 3132Q-V switches as necessary for your requirements, and make any essential site customizations, such as users and passwords, network addresses, and so on.

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

   a. Go to the Cisco Ethernet Switches page on the NetApp Support Site.

   b. Note your switch and the required software versions in the table on that page.

   c. Download the appropriate version of RCF.

   d. Click **CONTINUE** on the **Description** page, accept the license agreement, and then follow the instructions on the **Download** page to download the RCF.

   e. Download the appropriate version of the image software.

4. Click **CONTINUE** on the **Description** page, accept the license agreement, and then follow the instructions on the **Download** page to download the RCF.

Step 2: Move first cluster port to C1

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

Show example

The following example shows ports 1 through 30 being disabled on Nexus 3132Q-V cluster switches C1 and C2 using a configuration supported in RCF `NX3132_RCF_v1.1_24p10g_26p40g.txt`:

```
C1# copy running-config startup-config
[########################################] 100%
Copy complete.
C1# configure
C1(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-
4,e1/7-30
C1(config-if-range)# shutdown
C1(config-if-range)# exit
C1(config)# exit

C2# copy running-config startup-config
[########################################] 100%
Copy complete.
C2# configure
C2(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-
4,e1/7-30
C2(config-if-range)# shutdown
C2(config-if-range)# exit
C2(config)# exit
```

2. Connect ports 1/31 and 1/32 on C1 to the same ports on C2 using supported cabling.

3. Verify that the ISL ports are operational on C1 and C2:

```
show port-channel summary
```

```
C1# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
       I - Individual    H - Hot-standby (LACP only)
       s - Suspended     r - Module-removed
       S - Switched      R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
--------------------------------------------------------------------
------------
Group Port-        Type    Protocol  Member Ports
      Channel
--------------------------------------------------------------------
------------
1    Po1(SU)       Eth     LACP      Eth1/31(P)   Eth1/32(P)

C2# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
       I - Individual    H - Hot-standby (LACP only)
       s - Suspended     r - Module-removed
       S - Switched      R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
--------------------------------------------------------------------
------------
Group Port-        Type    Protocol  Member Ports
      Channel
--------------------------------------------------------------------
------------
1    Po1(SU)       Eth     LACP      Eth1/31(P)   Eth1/32(P)
```

4. Display the list of neighboring devices on the switch:

```
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
C2                 Eth1/31        174    R S I s     N3K-C3132Q-V
Eth1/31
C2                 Eth1/32        174    R S I s     N3K-C3132Q-V
Eth1/32


Total entries displayed: 2

C2# show cdp neighbors
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-
Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater,
                  V - VoIP-Phone, D - Remotely-Managed-Device,
                  s - Supports-STP-Dispute

Device-ID          Local Intrfce  Hldtme Capability  Platform
Port ID
C1                 Eth1/31        178    R S I s     N3K-C3132Q-V
Eth1/31
C1                 Eth1/32        178    R S I s     N3K-C3132Q-V
Eth1/32


Total entries displayed: 2
```

5. Display the cluster port connectivity on each node:

```
network device-discovery show
```

Show example

The following example shows a two-node switchless cluster configuration.

```
cluster::*> network device-discovery show
            Local  Discovered
Node        Port   Device                 Interface        Platform
----------- ------ -------------------- ---------------- 
----------------
n1          /cdp
            e4a    n2                     e4a              FAS9000
            e4e    n2                     e4e              FAS9000
n2          /cdp
            e4a    n1                     e4a              FAS9000
            e4e    n1                     e4e              FAS9000
```

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

`network interface migrate`

Execute this command from each local node.

Show example

```
cluster::*> network interface migrate -vserver Cluster -lif n1_clus1
-source-node n1
-destination-node n1 -destination-port e4e
cluster::*> network interface migrate -vserver Cluster -lif n2_clus1
-source-node n2
-destination-node n2 -destination-port e4e
```

7. Verify the cluster interfaces migration:

`network interface show`

Show example

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

8. Shut down cluster ports clus1 LIF on both nodes:

`network port modify`

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

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

`cluster ping-cluster`

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1      e4a 10.10.0.1
Cluster n1_clus2 n1      e4e 10.10.0.2
Cluster n2_clus1 n2      e4a 10.10.0.3
Cluster n2_clus2 n2      e4e 10.10.0.4

Local = 10.10.0.1 10.10.0.2
Remote = 10.10.0.3 10.10.0.4
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
...............
Detected 1500 byte MTU on 32 path(s):
    Local 10.10.0.1 to Remote 10.10.0.3
    Local 10.10.0.1 to Remote 10.10.0.4
    Local 10.10.0.2 to Remote 10.10.0.3
    Local 10.10.0.2 to Remote 10.10.0.4
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
1 paths up, 0 paths down (tcp check)
1 paths up, 0 paths down (ucp check)
```

10. Disconnect the cable from e4a on node n1.

   You can refer to the running configuration and connect the first 40 GbE port on the switch C1 (port 1/7 in this example) to e4a on n1 using supported cabling on Nexus 3132Q-V.

   ⓘ | When reconnecting any cables to a new Cisco cluster switch, the cables used must be either fiber or cabling supported by Cisco.

11. Disconnect the cable from e4a on node n2.

   You can refer to the running configuration and connect e4a to the next available 40 GbE port on C1, port 1/8, using supported cabling.

12. Enable all node-facing ports on C1.

Show example

The following example shows ports 1 through 30 being enabled on Nexus 3132Q-V cluster switches C1 and C2 using the configuration supported in RCF `NX3132_RCF_v1.1_24p10g_26p40g.txt`:

```
C1# configure
C1(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-
4,e1/7-30
C1(config-if-range)# no shutdown
C1(config-if-range)# exit
C1(config)# exit
```

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

`network port modify`

Show example

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

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

`network port show`

Show example

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

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


Node: n2

Ignore
                                              Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e4a       Cluster      Cluster          up   9000 auto/40000  -
-
e4e       Cluster      Cluster          up   9000 auto/40000  -
-
4 entries were displayed.
```

15. For each node, revert all of the migrated cluster interconnect LIFs:

`network interface revert`

Show example

The following example shows the migrated LIFs being reverted to their home ports.

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

16. Verify that all of the cluster interconnect ports are now reverted to their home ports:

`network interface show`

The `Is Home` column should display a value of `true` for all of the ports listed in the `Current Port` column. If the displayed value is `false`, the port has not been reverted.

Show example

```
cluster::*> network interface show -role cluster
  (network interface show)
            Logical     Status      Network                 Current
Current Is
Vserver     Interface   Admin/Oper  Address/Mask            Node
Port     Home
----------- ----------- ----------- ------------------- -------------
------- ----
Cluster
            n1_clus1    up/up       10.10.0.1/24            n1
e4a      true
            n1_clus2    up/up       10.10.0.2/24            n1
e4e      true
            n2_clus1    up/up       10.10.0.3/24            n2
e4a      true
            n2_clus2    up/up       10.10.0.4/24            n2
e4e      true
4 entries were displayed.
```

Step 3: Move second cluster port to C2

1. Display the cluster port connectivity on each node:

`network device-discovery show`

Show example

```
cluster::*> network device-discovery show
            Local   Discovered
Node        Port   Device                   Interface         Platform
----------- ------ ------------------ ----------------
----------------
n1          /cdp
            e4a    C1                       Ethernet1/7       N3K-C3132Q-V
            e4e    n2                       e4e               FAS9000
n2          /cdp
            e4a    C1                       Ethernet1/8       N3K-C3132Q-V
            e4e    n1                       e4e               FAS9000
```

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

```
network interface migrate
```

Show example

```
cluster::*> network interface migrate -vserver Cluster -lif n1_clus2
-source-node n1
-destination-node n1 -destination-port e4a
cluster::*> network interface migrate -vserver Cluster -lif n2_clus2
-source-node n2
-destination-node n2 -destination-port e4a
```

3. Shut down cluster ports clus2 LIF on both nodes:

```
network port modify
```

The following example shows the specified ports being shut down on both nodes:

```
cluster::*> network port modify -node n1 -port e4e -up-admin false
cluster::*> network port modify -node n2 -port e4e -up-admin false
```

4. Verify the cluster LIF status:

```
network interface show
```

Show example

```
cluster::*> network interface show -role cluster
  (network interface show)
          Logical     Status     Network                Current
Current Is
Vserver      Interface  Admin/Oper Address/Mask        Node
Port    Home
----------- ---------- ---------- ------------------ -------------
------- ----
Cluster
          n1_clus1   up/up      10.10.0.1/24       n1
e4a     true
          n1_clus2   up/up      10.10.0.2/24       n1
e4a     false
          n2_clus1   up/up      10.10.0.3/24       n2
e4a     true
          n2_clus2   up/up      10.10.0.4/24       n2
e4a     false
4 entries were displayed.
```

5. Disconnect the cable from e4e on node n1.

   You can refer to the running configuration and connect the first 40 GbE port on the switch C2 (port 1/7 in this example) to e4e on n1 using supported cabling on Nexus 3132Q-V.

6. Disconnect the cable from e4e on node n2.

   You can refer to the running configuration and connect e4e to the next available 40 GbE port on C2, port 1/8, using supported cabling.

7. Enable all node-facing ports on C2.

   Show example

   The following example shows ports 1 through 30 being enabled on Nexus 3132Q-V cluster switches C1 and C2 using a configuration supported in RCF NX3132_RCF_v1.1_24p10g_26p40g.txt:

   ```
   C2# configure
   C2(config)# int e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-
   4,e1/7-30
   C2(config-if-range)# no shutdown
   C2(config-if-range)# exit
   C2(config)# exit
   ```

8. Enable the second cluster port, e4e, on each node:

`network port modify`

The following example shows the specified ports being brought up:

```
cluster::*> network port modify -node n1 -port e4e -up-admin true
cluster::*> network port modify -node n2 -port e4e -up-admin true
```

9. For each node, revert all of the migrated cluster interconnect LIFs:

`network interface revert`

The following example shows the migrated LIFs being reverted to their home ports.

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

10. Verify that all of the cluster interconnect ports are now reverted to their home ports:

`network interface show`

The `Is Home` column should display a value of `true` for all of the ports listed in the `Current Port` column. If the displayed value is `false`, the port has not been reverted.

Show example

```
cluster::*> network interface show -role cluster
  (network interface show)
            Logical     Status      Network                 Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask        Node
Port    Home
----------- ---------- ---------- ------------------ -------------
------- ----
Cluster
            n1_clus1   up/up       10.10.0.1/24        n1
e4a     true
            n1_clus2   up/up       10.10.0.2/24        n1
e4e     true
            n2_clus1   up/up       10.10.0.3/24        n2
e4a     true
            n2_clus2   up/up       10.10.0.4/24        n2
e4e     true
4 entries were displayed.
```

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

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

Show example

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

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


Node: n2

Ignore
                                            Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e4a       Cluster      Cluster          up   9000 auto/40000  -
-
e4e       Cluster      Cluster          up   9000 auto/40000  -
-
4 entries were displayed.
```

Step 4: Disable the two-node switchless cluster option

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

```
network device-discovery show
```

Show example

```
cluster::*> network device-discovery show
            Local  Discovered
Node        Port   Device              Interface        Platform
----------- ------ ------------------- ----------------
----------------
n1          /cdp
            e4a    C1                  Ethernet1/7      N3K-C3132Q-V
            e4e    C2                  Ethernet1/7      N3K-C3132Q-V
n2          /cdp
            e4a    C1                  Ethernet1/8      N3K-C3132Q-V
            e4e    C2                  Ethernet1/8      N3K-C3132Q-V
```

2. Display discovered and monitored cluster switches:

```
system cluster-switch show
```

Show example

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

Switch                            Type              Address
Model
-------------------------- ----------------- ----------------
--------------
C1                                cluster-network     10.10.1.101
NX3132V
       Serial Number: FOX000001
         Is Monitored: true
               Reason:
    Software Version: Cisco Nexus Operating System (NX-OS) Software,
Version
                      7.0(3)I4(1)
      Version Source: CDP

C2                                cluster-network     10.10.1.102
NX3132V
       Serial Number: FOX000002
         Is Monitored: true
               Reason:
    Software Version: Cisco Nexus Operating System (NX-OS) Software,
Version
                      7.0(3)I4(1)
      Version Source: CDP

2 entries were displayed.
```

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

```
network options switchless-cluster
```

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

4. Verify that the `switchless-cluster` option has been disabled.

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

Step 5: Verify the configuration

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

   `cluster ping-cluster`

   Show example

   ```
   cluster::*> cluster ping-cluster -node n1
   Host is n1
   Getting addresses from network interface table...
   Cluster n1_clus1 n1      e4a 10.10.0.1
   Cluster n1_clus2 n1      e4e 10.10.0.2
   Cluster n2_clus1 n2      e4a 10.10.0.3
   Cluster n2_clus2 n2      e4e 10.10.0.4

   Local = 10.10.0.1 10.10.0.2
   Remote = 10.10.0.3 10.10.0.4
   Cluster Vserver Id = 4294967293
   Ping status:
   ....
   Basic connectivity succeeds on 4 path(s)
   Basic connectivity fails on 0 path(s)
   ................
   Detected 1500 byte MTU on 32 path(s):
       Local 10.10.0.1 to Remote 10.10.0.3
       Local 10.10.0.1 to Remote 10.10.0.4
       Local 10.10.0.2 to Remote 10.10.0.3
       Local 10.10.0.2 to Remote 10.10.0.4
   Larger than PMTU communication succeeds on 4 path(s)
   RPC status:
   1 paths up, 0 paths down (tcp check)
   1 paths up, 0 paths down (ucp check)
   ```

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

   `system cluster-switch log setup-password`

   `system cluster-switch log enable-collection`

Show example

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

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

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

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

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

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

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

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

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

Enabling cluster switch log collection.

cluster::*>
```

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

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

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