Replace switches

Cluster and storage switches

NetApp
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Replace switches

Replace a Cisco Nexus 92300YC switch

Replacing a defective Nexus 92300YC switch in a cluster network is a nondisruptive procedure (NDU).

Review requirements

What you'll need

Before performing the switch replacement, ensure that:

- In the existing cluster and network infrastructure:
  - The existing cluster is verified as completely functional, with at least one fully connected cluster switch.
  - All cluster ports are up.
  - All cluster logical interfaces (LIFs) are up and on their home ports.
  - The ONTAP cluster ping-cluster -node node1 command must indicate that basic connectivity and larger than PMTU communication are successful on all paths.
- For the Nexus 92300YC replacement switch:
  - Management network connectivity on the replacement switch are functional.
  - Console access to the replacement switch are in place.
  - The node connections are ports 1/1 through 1/64.
  - All Inter-Switch Link (ISL) ports are disabled on ports 1/65 and 1/66.
  - The desired reference configuration file (RCF) and NX-OS operating system image switch are loaded onto the switch.
  - Initial customization of the switch are complete, as detailed in: Configure the Cisco Nexus 92300YC switch.

    Any previous site customizations, such as STP, SNMP, and SSH, are copied to the new switch.

Enable console logging

NetApp strongly recommends that you enable console logging on the devices that you are using and take the following actions when replacing your switch:

- Leave AutoSupport enabled during maintenance.
- Trigger a maintenance AutoSupport before and after maintenance to disable case creation for the duration of the maintenance. See this Knowledge Base article SU92: How to suppress automatic case creation during scheduled maintenance windows for further details.
- Enable session logging for any CLI sessions. For instructions on how to enable session logging, review the "Logging Session Output" section in this Knowledge Base article How to configure PuTTY for optimal connectivity to ONTAP systems.

Replace the switch

About the examples

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

- The names of the existing Nexus 92300YC switches are cs1 and cs2.
- The name of the new Nexus 92300YC switch is newcs2.
- The node names are node1 and node2.
- The cluster ports on each node are named e0a and e0b.
- The cluster LIF names are node1_clus1 and node1_clus2 for node1, and node2_clus1 and node2_clus2 for node2.
- The prompt for changes to all cluster nodes is cluster1::*>

About this task

You must execute the command for migrating a cluster LIF from the node where the cluster LIF is hosted.

The following procedure is based on the following cluster network topology:

Show topology

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

Node: node1

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

Node: node2

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



cluster1::*> network interface show -vserver Cluster
            Logical    Status     Network            Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask       Node          Port
Home
----------- ---------- ---------- ------------------ -------------
------- ----
Cluster
            node1_clus1  up/up    169.254.209.69/16  node1         e0a
true
            node1_clus2  up/up    169.254.49.125/16  node1         e0b
```

```
true
            node2_clus1  up/up    169.254.47.194/16  node2         e0a
true
            node2_clus2  up/up    169.254.19.183/16  node2         e0b
true
4 entries were displayed.



cluster1::*> network device-discovery show -protocol cdp
Node/       Local  Discovered
Protocol    Port   Device (LLDP: ChassisID)  Interface         Platform
----------- ------ ------------------------- ----------------
----------------
node2      /cdp
            e0a    cs1                       Eth1/2            N9K-
C92300YC
            e0b    cs2                       Eth1/2            N9K-
C92300YC
node1      /cdp
            e0a    cs1                       Eth1/1            N9K-
C92300YC
            e0b    cs2                       Eth1/1            N9K-
C92300YC
4 entries were displayed.



cs1# show cdp neighbors

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

Device-ID          Local Intrfce  Hldtme Capability  Platform      Port
ID
node1              Eth1/1         144    H           FAS2980       e0a
node2              Eth1/2         145    H           FAS2980       e0a
cs2(FDO220329V5)   Eth1/65        176    R S I s     N9K-C92300YC
Eth1/65
cs2(FDO220329V5)   Eth1/66        176    R S I s     N9K-C92300YC
Eth1/66

Total entries displayed: 4
```

```
cs2# show cdp neighbors

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

Device-ID          Local Intrfce  Hldtme Capability  Platform      Port
ID
node1              Eth1/1         139    H           FAS2980       e0b
node2              Eth1/2         124    H           FAS2980       e0b
cs1(FDO220329KU)   Eth1/65        178    R S I s     N9K-C92300YC
Eth1/65
cs1(FDO220329KU)   Eth1/66        178    R S I s     N9K-C92300YC
Eth1/66

Total entries displayed: 4
```

Step 1: Prepare for replacement

1. Install the appropriate RCF and image on the switch, newcs2, and make any necessary site preparations.

   If necessary, verify, download, and install the appropriate versions of the RCF and NX-OS software for the new switch. If you have verified that the new switch is correctly set up and does not need updates to the RCF and NX-OS software, continue to step 2.

   a. Go to the *NetApp Cluster and Management Network Switches Reference Configuration File Description Page* on the NetApp Support Site.

   b. Click the link for the *Cluster Network and Management Network Compatibility Matrix*, and then note the required switch software version.

   c. Click your browser's back arrow to return to the **Description** page, click **CONTINUE**, accept the license agreement, and then go to the **Download** page.

   d. Follow the steps on the Download page to download the correct RCF and NX-OS files for the version of ONTAP software you are installing.

2. On the new switch, log in as admin and shut down all of the ports that will be connected to the node cluster interfaces (ports 1/1 to 1/64).

   If the switch that you are replacing is not functional and is powered down, go to Step 4. The LIFs on the cluster nodes should have already failed over to the other cluster port for each node.

Show example

```
newcs2# config
Enter configuration commands, one per line. End with CNTL/Z.
newcs2(config)# interface e1/1-64
newcs2(config-if-range)# shutdown
```

3. Verify that all cluster LIFs have auto-revert enabled:

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

   Show example

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

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

4 entries were displayed.
```

4. Verify the connectivity of the remote cluster interfaces:

ONTAP 9.9.1 and later

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

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

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

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

```
cluster1::*> network interface check cluster-connectivity show
                                  Source           Destination
Packet
Node   Date                       LIF              LIF
Loss
------ -------------------------- ---------------- ----------------
-----------
node1
       3/5/2022 19:21:18 -06:00   node1_clus2      node2-clus1
none
       3/5/2022 19:21:20 -06:00   node1_clus2      node2_clus2
none
node2
       3/5/2022 19:21:18 -06:00   node2_clus2      node1_clus1
none
       3/5/2022 19:21:20 -06:00   node2_clus2      node1_clus2
none
```

All ONTAP releases

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

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

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
................
Detected 9000 byte MTU on 4 path(s):
Local 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

Step 2: Configure cables and ports

1. Shut down the ISL ports 1/65 and 1/66 on the Nexus 92300YC switch cs1:

   Show example

   ```
   cs1# configure
   Enter configuration commands, one per line. End with CNTL/Z.
   cs1(config)# interface e1/65-66
   cs1(config-if-range)# shutdown
   cs1(config-if-range)#
   ```

2. Remove all of the cables from the Nexus 92300YC cs2 switch, and then connect them to the same ports on the Nexus 92300YC newcs2 switch.
3. Bring up the ISLs ports 1/65 and 1/66 between the cs1 and newcs2 switches, and then verify the port channel operation status.

   Port-Channel should indicate Po1(SU) and Member Ports should indicate Eth1/65(P) and Eth1/66(P).

Show example

This example enables ISL ports 1/65 and 1/66 and displays the port channel summary on switch cs1:

```
cs1# configure
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# int e1/65-66
cs1(config-if-range)# no shutdown

cs1(config-if-range)# show port-channel summary
Flags:  D - Down        P - Up in port-channel (members)
        I - Individual  H - Hot-standby (LACP only)
        s - Suspended   r - Module-removed
        b - BFD Session Wait
        S - Switched    R - Routed
        U - Up (port-channel)
        p - Up in delay-lacp mode (member)
        M - Not in use. Min-links not met
--------------------------------------------------------------------------
------------
Group Port-       Type     Protocol  Member Ports
      Channel
--------------------------------------------------------------------------
------------
1     Po1(SU)     Eth      LACP      Eth1/65(P)   Eth1/66(P)

cs1(config-if-range)#
```

4. Verify that port e0b is up on all nodes:

   `network port show ipspace Cluster`

Show example

The output should be similar to the following:

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

Node: node1

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

Node: node2

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

4 entries were displayed.
```

5. On the same node you used in the previous step, revert the cluster LIF associated with the port in the previous step by using the network interface revert command.

Show example

In this example, LIF node1_clus2 on node1 is successfully reverted if the Home value is true and the port is e0b.

The following commands return LIF `node1_clus2` on `node1` to home port `e0a` and displays information about the LIFs on both nodes. Bringing up the first node is successful if the Is Home column is true for both cluster interfaces and they show the correct port assignments, in this example `e0a` and `e0b` on node1.

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

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

4 entries were displayed.
```

6. Display information about the nodes in a cluster:

   `cluster show`

Show example

This example shows that the node health for node1 and node2 in this cluster is true:

```
cluster1::*> cluster show

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

7. Verify that all physical cluster ports are up:

   `network port show ipspace Cluster`

   Show example

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

Node: node1

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

Node: node2

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

4 entries were displayed.
```

Step 3: Complete the procedure

1. Verify the connectivity of the remote cluster interfaces:

ONTAP 9.9.1 and later

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

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

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

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

```
cluster1::*> network interface check cluster-connectivity show
                                  Source           Destination
Packet
Node   Date                       LIF              LIF
Loss
------ ------------------------- ---------------- ----------------
-----------
node1
       3/5/2022 19:21:18 -06:00   node1_clus2      node2-clus1
none
       3/5/2022 19:21:20 -06:00   node1_clus2      node2_clus2
none
node2
       3/5/2022 19:21:18 -06:00   node2_clus2      node1_clus1
none
       3/5/2022 19:21:20 -06:00   node2_clus2      node1_clus2
none
```

All ONTAP releases

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

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

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
................
Detected 9000 byte MTU on 4 path(s):
Local 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

2. Confirm the following cluster network configuration:

```
network port show
```

Show example

```
cluster1::*> network port show -ipspace Cluster
Node: node1

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

Node: node2

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

4 entries were displayed.


cluster1::*> network interface show -vserver Cluster

            Logical    Status     Network            Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask       Node
Port    Home
----------- ---------- ---------- ------------------ -------------
------- ----
Cluster
            node1_clus1  up/up    169.254.209.69/16  node1
e0a     true
            node1_clus2  up/up    169.254.49.125/16  node1
```

```
e0b     true
            node2_clus1  up/up    169.254.47.194/16  node2
e0a     true
            node2_clus2  up/up    169.254.19.183/16  node2
e0b     true

4 entries were displayed.

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

Node/       Local  Discovered
Protocol    Port   Device (LLDP: ChassisID)  Interface
Platform
----------- ------ ------------------------- ----------------
----------------
node2      /cdp
            e0a    cs1                       0/2               N9K-
C92300YC
            e0b    newcs2                    0/2               N9K-
C92300YC
node1      /cdp
            e0a    cs1                       0/1               N9K-
C92300YC
            e0b    newcs2                    0/1               N9K-
C92300YC

4 entries were displayed.


cs1# show cdp neighbors

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

Device-ID            Local Intrfce  Hldtme Capability  Platform
Port ID
node1                Eth1/1         144    H           FAS2980
e0a
node2                Eth1/2         145    H           FAS2980
e0a
newcs2(FDO296348FU)  Eth1/65        176    R S I s     N9K-C92300YC
Eth1/65
newcs2(FDO296348FU)  Eth1/66        176    R S I s     N9K-C92300YC
```

```
Eth1/66


Total entries displayed: 4


cs2# show cdp neighbors

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

Device-ID          Local Intrfce  Hldtme Capability  Platform
Port ID
node1              Eth1/1         139    H           FAS2980
e0b
node2              Eth1/2         124    H           FAS2980
e0b
cs1(FDO220329KU)   Eth1/65        178    R S I s     N9K-C92300YC
Eth1/65
cs1(FDO220329KU)   Eth1/66        178    R S I s     N9K-C92300YC
Eth1/66

Total entries displayed: 4
```

What's next?

Configure switch health monitoring.

Replace Cisco Nexus 92300YC cluster switches with switchless connections

You can migrate from a cluster with a switched cluster network to one where two nodes are directly connected for ONTAP 9.3 and later.

Review requirements

Guidelines

Review the following guidelines:

- Migrating to a two-node switchless cluster configuration is a nondisruptive operation. Most systems have two dedicated cluster interconnect ports on each node, but you can also use this procedure for systems with a larger number of dedicated cluster interconnect ports on each node, such as four, six or eight.
- You cannot use the switchless cluster interconnect feature with more than two nodes.

- If you have an existing two-node cluster that uses cluster interconnect switches and is running ONTAP 9.3 or later, you can replace the switches with direct, back-to-back connections between the nodes.

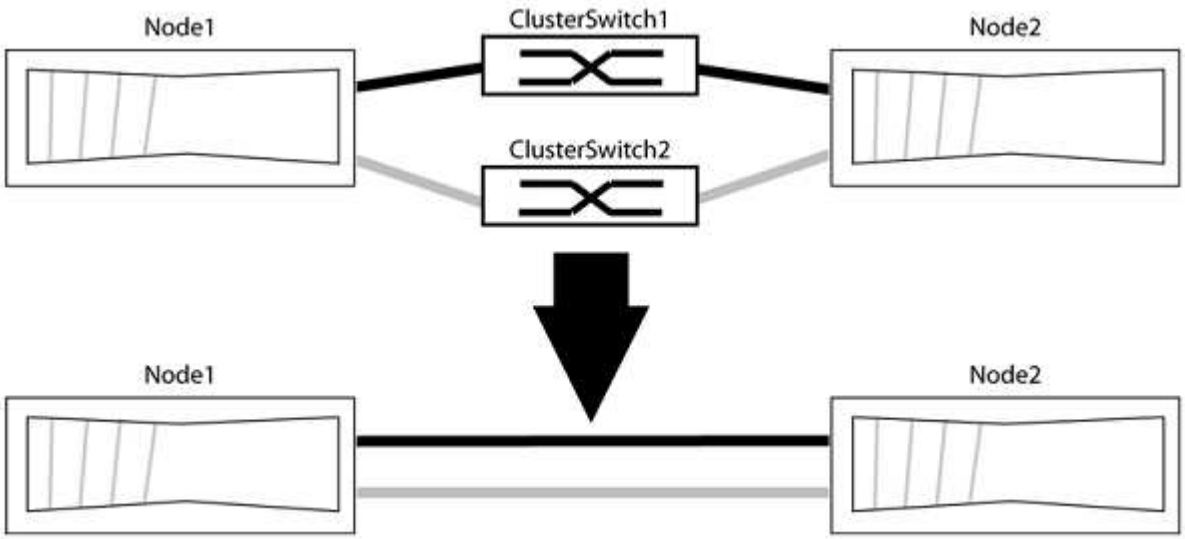
What you'll need

- A healthy cluster that consists of two nodes connected by cluster switches. The nodes must be running the same ONTAP release.
- Each node with the required number of dedicated cluster ports, which provide redundant cluster interconnect connections to support your system configuration. For example, there are two redundant ports for a system with two dedicated cluster interconnect ports on each node.

Migrate the switches

About this task

The following procedure removes the cluster switches in a two-node cluster and replaces each connection to the switch with a direct connection to the partner node.



About the examples

The examples in the following procedure show nodes that are using "e0a" and "e0b" as cluster ports. Your nodes might be using different cluster ports as they vary by system.

Step 1: Prepare for migration

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

   ```
   set -privilege advanced
   ```

   The advanced prompt `*>` appears.

2. ONTAP 9.3 and later supports automatic detection of switchless clusters, which is enabled by default.

   You can verify that detection of switchless clusters is enabled by running the advanced privilege command:

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

Show example

The following example output shows if the option is enabled.

```
cluster::*> network options detect-switchless-cluster show
   (network options detect-switchless-cluster show)
Enable Switchless Cluster Detection: true
```

If "Enable Switchless Cluster Detection" is `false`, contact NetApp support.

3. 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=<number_of_hours>h`

   where `h` is the duration of the maintenance window in hours. The message notifies technical support of this maintenance task so that they can suppress automatic case creation during the maintenance window.

   In the following example, the command suppresses automatic case creation for two hours:

   Show example

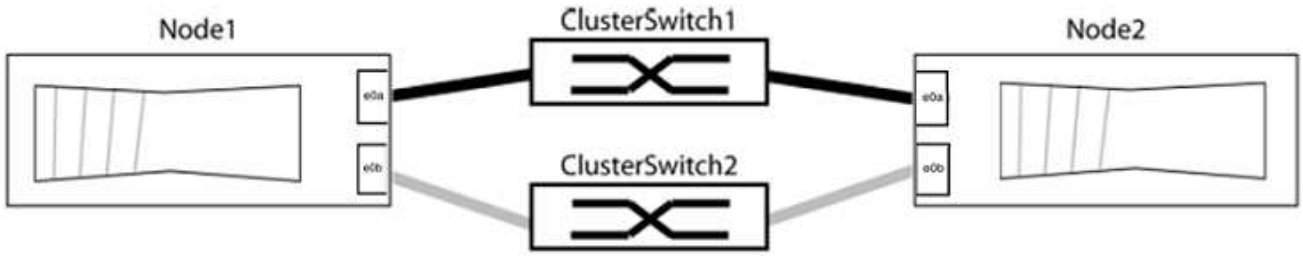
   ```
   cluster::*> system node autosupport invoke -node * -type all
   -message MAINT=2h
   ```

Step 2: Configure ports and cabling

1. Organize the cluster ports on each switch into groups so that the cluster ports in group1 go to cluster switch1 and the cluster ports in group2 go to cluster switch2. These groups are required later in the procedure.
2. Identify the cluster ports and verify link status and health:

   `network port show -ipspace Cluster`

   In the following example for nodes with cluster ports "e0a" and "e0b", one group is identified as “node1:e0a” and “node2:e0a” and the other group as “node1:e0b” and “node2:e0b”. Your nodes might be using different cluster ports because they vary by system.



Verify that the ports have a value of `up` for the “Link” column and a value of `healthy` for the “Health Status” column.

Show example

```
cluster::> network port show -ipspace Cluster
Node: node1

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

Node: node2

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

3. Confirm that all the cluster LIFs are on their home ports.

Verify that the “is-home” column is `true` for each of the cluster LIFs:

```
network interface show -vserver Cluster -fields is-home
```

Show example

```
cluster::*> net int show -vserver Cluster -fields is-home
(network interface show)
vserver  lif          is-home
-------- ------------ --------
Cluster  node1_clus1  true
Cluster  node1_clus2  true
Cluster  node2_clus1  true
Cluster  node2_clus2  true
4 entries were displayed.
```

If there are cluster LIFs that are not on their home ports, revert those LIFs to their home ports:

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

4. Disable auto-revert for the cluster LIFs:

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

5. Verify that all ports listed in the previous step are connected to a network switch:

   ```
   network device-discovery show -port cluster_port
   ```

   The “Discovered Device” column should be the name of the cluster switch that the port is connected to.

Show example

The following example shows that cluster ports "e0a" and "e0b" are correctly connected to cluster switches "cs1" and "cs2".

```
cluster::> network device-discovery show -port e0a|e0b
  (network device-discovery show)
Node/     Local  Discovered
Protocol  Port   Device (LLDP: ChassisID)  Interface  Platform
--------- ------ ------------------------- ---------- ----------
node1/cdp
          e0a    cs1                       0/11       BES-53248
          e0b    cs2                       0/12       BES-53248
node2/cdp
          e0a    cs1                       0/9        BES-53248
          e0b    cs2                       0/9        BES-53248
4 entries were displayed.
```

6. Verify the connectivity of the remote cluster interfaces:

ONTAP 9.9.1 and later

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

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

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

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

```
cluster1::*> network interface check cluster-connectivity show
                                  Source           Destination
Packet
Node   Date                       LIF              LIF
Loss
------ -------------------------- ---------------- ----------------
-----------
node1
       3/5/2022 19:21:18 -06:00   node1_clus2      node2-clus1
none
       3/5/2022 19:21:20 -06:00   node1_clus2      node2_clus2
none
node2
       3/5/2022 19:21:18 -06:00   node2_clus2      node1_clus1
none
       3/5/2022 19:21:20 -06:00   node2_clus2      node1_clus2
none
```

All ONTAP releases

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

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

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:

Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)

Detected 9000 byte MTU on 4 path(s):
Local 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

7. Verify that the cluster is healthy:

   ```
   cluster ring show
   ```

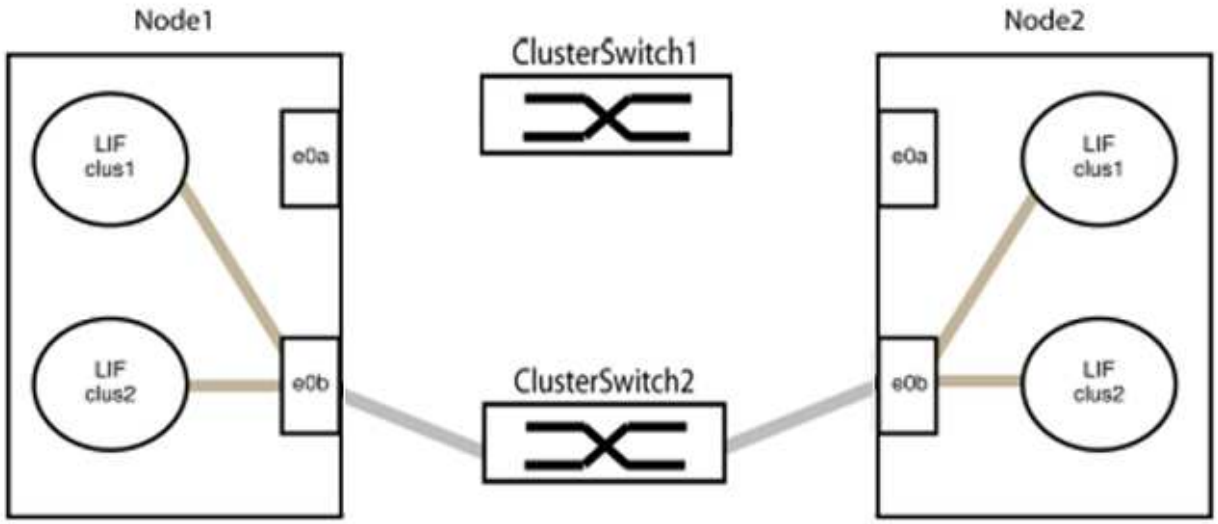
   All units must be either master or secondary.

8. Set up the switchless configuration for the ports in group 1.

   To avoid potential networking issues, you must disconnect the ports from group1 and reconnect them back-to-back as quickly as possible, for example, **in less than 20 seconds**.

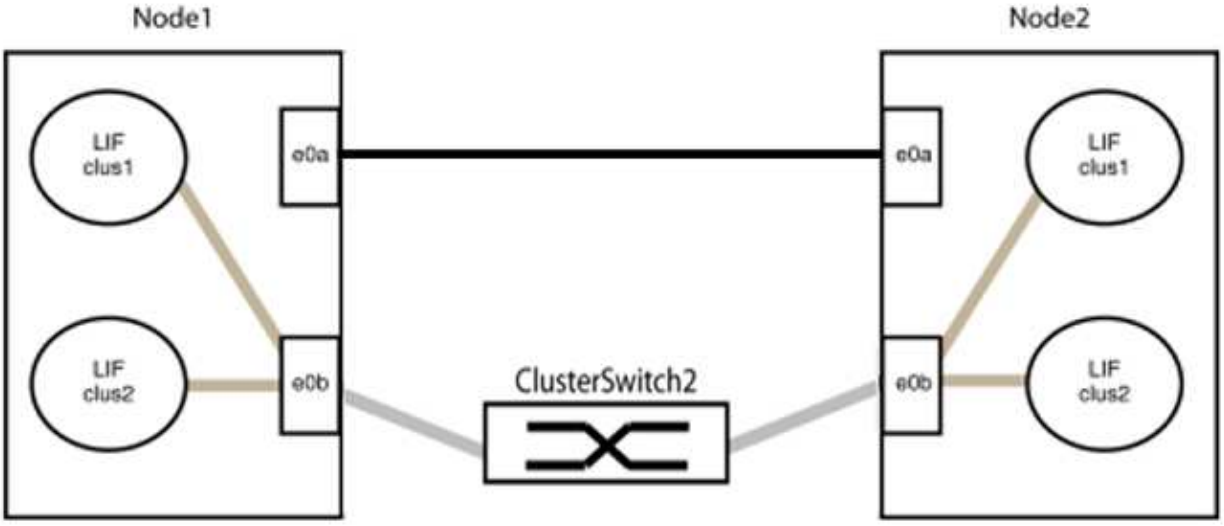
   a. Disconnect all the cables from the ports in group1 at the same time.

      In the following example, the cables are disconnected from port "e0a" on each node, and cluster traffic continues through the switch and port "e0b" on each node:



b. Cable the ports in group1 back-to-back.

In the following example, "e0a" on node1 is connected to "e0a" on node2:



9. The switchless cluster network option transitions from `false` to `true`. This might take up to 45 seconds. Confirm that the switchless option is set to `true`:

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

The following example shows that the switchless cluster is enabled:

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

10. Verify the connectivity of the remote cluster interfaces:

ONTAP 9.9.1 and later

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

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

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

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

```
cluster1::*> network interface check cluster-connectivity show
                                  Source           Destination
Packet
Node   Date                       LIF              LIF
Loss
------ ------------------------- ---------------- ----------------
-----------
node1
       3/5/2022 19:21:18 -06:00   node1_clus2      node2-clus1
none
       3/5/2022 19:21:20 -06:00   node1_clus2      node2_clus2
none
node2
       3/5/2022 19:21:18 -06:00   node2_clus2      node1_clus1
none
       3/5/2022 19:21:20 -06:00   node2_clus2      node1_clus2
none
```

All ONTAP releases

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

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

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:

Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)

Detected 9000 byte MTU on 4 path(s):
Local 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

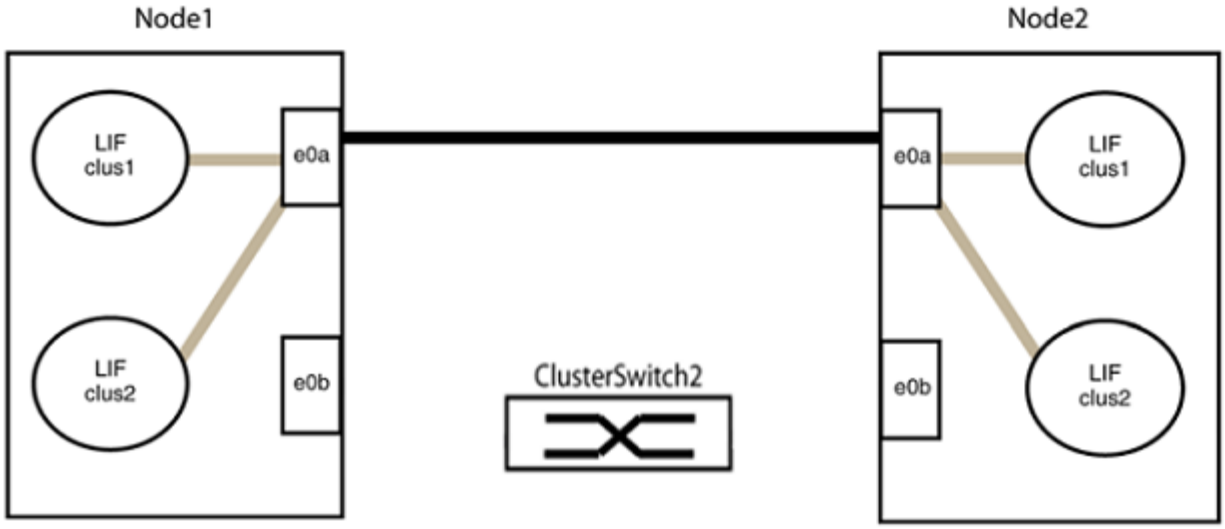
Before proceeding to the next step, you must wait at least two minutes to confirm a working back-to-back connection on group 1.

11. Set up the switchless configuration for the ports in group 2.

To avoid potential networking issues, you must disconnect the ports from group2 and reconnect them back-to-back as quickly as possible, for example, **in less than 20 seconds**.

a. Disconnect all the cables from the ports in group2 at the same time.

In the following example, the cables are disconnected from port "e0b" on each node, and cluster traffic continues through the direct connection between the "e0a" ports:



b. Cable the ports in group2 back-to-back.

   In the following example, "e0a" on node1 is connected to "e0a" on node2 and "e0b" on node1 is connected to "e0b" on node2:

Step 3: Verify the configuration

1. Verify that the ports on both nodes are correctly connected:

   `network device-discovery show -port` *`cluster_port`*

Show example

The following example shows that cluster ports "e0a" and "e0b" are correctly connected to the corresponding port on the cluster partner:

```
cluster::> net device-discovery show -port e0a|e0b
  (network device-discovery show)
Node/      Local  Discovered
Protocol   Port   Device (LLDP: ChassisID)  Interface  Platform
---------- ------ ------------------------- ---------- ----------
node1/cdp
           e0a    node2                     e0a        AFF-A300
           e0b    node2                     e0b        AFF-A300
node1/lldp
           e0a    node2 (00:a0:98:da:16:44) e0a        -
           e0b    node2 (00:a0:98:da:16:44) e0b        -
node2/cdp
           e0a    node1                     e0a        AFF-A300
           e0b    node1                     e0b        AFF-A300
node2/lldp
           e0a    node1 (00:a0:98:da:87:49) e0a        -
           e0b    node1 (00:a0:98:da:87:49) e0b        -
8 entries were displayed.
```

2. Re-enable auto-revert for the cluster LIFs:

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

3. Verify that all LIFs are home. This might take a few seconds.

   `network interface show -vserver Cluster -lif` *`lif_name`*

Show example

The LIFs have been reverted if the “Is Home” column is `true`, as shown for `node1_clus2` and `node2_clus2` in the following example:

```
cluster::> network interface show -vserver Cluster -fields curr-
port,is-home
vserver  lif           curr-port is-home
-------- ------------- --------- -------
Cluster  node1_clus1   e0a       true
Cluster  node1_clus2   e0b       true
Cluster  node2_clus1   e0a       true
Cluster  node2_clus2   e0b       true
4 entries were displayed.
```

If any cluster LIFS have not returned to their home ports, revert them manually from the local node:

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

4. Check the cluster status of the nodes from the system console of either node:

   `cluster show`

   Show example

   The following example shows epsilon on both nodes to be `false`:

   ```
   Node  Health  Eligibility Epsilon
   ----- ------- ----------- --------
   node1 true    true        false
   node2 true    true        false
   2 entries were displayed.
   ```

5. Verify the connectivity of the remote cluster interfaces:

ONTAP 9.9.1 and later

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

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

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

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

```
cluster1::*> network interface check cluster-connectivity show
                                  Source           Destination
Packet
Node   Date                       LIF              LIF
Loss
------ -------------------------- ---------------- ----------------
-----------
node1
       3/5/2022 19:21:18 -06:00   node1_clus2      node2-clus1
none
       3/5/2022 19:21:20 -06:00   node1_clus2      node2_clus2
none
node2
       3/5/2022 19:21:18 -06:00   node2_clus2      node1_clus1
none
       3/5/2022 19:21:20 -06:00   node2_clus2      node1_clus2
none
```

All ONTAP releases

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

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

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:

Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)

Detected 9000 byte MTU on 4 path(s):
Local 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

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

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

   For more information, see NetApp KB Article 1010449: How to suppress automatic case creation during scheduled maintenance windows.

7. Change the privilege level back to admin:

   ```
   set -privilege admin
   ```

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