



Replace switches

Cluster and storage switches

NetApp

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Replace switches

Replace a Cisco Nexus 9336C-FX2 cluster switch

Follow these steps to replace a defective Nexus 9336C-FX2 switch in a cluster network. This is a nondisruptive procedure (NDU).

Review requirements

Before performing the switch replacement, make sure that:

- On 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.
- On the Nexus 9336C-FX2 replacement switch:
 - Management network connectivity on the replacement switch is functional.
 - Console access to the replacement switch is in place.
 - The node connections are ports 1/1 through 1/34.
 - All Inter-Switch Link (ISL) ports is disabled on ports 1/35 and 1/36.
 - The desired reference configuration file (RCF) and NX-OS operating system image switch is loaded onto the switch.
 - Initial customization of the switch is complete, as detailed in [Configure the 9336C-FX2 cluster switch](#).

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

- You have executed the command for migrating a cluster LIF from the node where the cluster LIF is hosted.

Replace the switch

About the examples

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

- The names of the existing Nexus 9336C-FX2 switches are cs1 and cs2.
- The name of the new Nexus 9336C-FX2 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

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

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/ Protocol	Local Port	Discovered Device (LLDP: ChassisID)	Interface	Platform
node2	/cdp			
	e0a	cs1	Eth1/2	N9K-
C9336C				
	e0b	cs2	Eth1/2	N9K-
C9336C				
node1	/cdp			
	e0a	cs1	Eth1/1	N9K-
C9336C				
	e0b	cs2	Eth1/1	N9K-
C9336C				

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 ID	Local Intrfce	Hldtme	Capability	Platform	Port
node1	Eth1/1	144	H	FAS2980	e0a
node2	Eth1/2	145	H	FAS2980	e0a
cs2	Eth1/35	176	R S I s	N9K-C9336C	
Eth1/35					
cs2 (FD0220329V5)	Eth1/36	176	R S I s	N9K-C9336C	
Eth1/36					

Total entries displayed: 4

```
cs2# show cdp neighbors
```

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

Device-ID	Local Intrfce	Hldtme	Capability	Platform	Port
ID					
node1	Eth1/1	139	H	FAS2980	e0b
node2	Eth1/2	124	H	FAS2980	e0b
cs1	Eth1/35	178	R S I s	N9K-C9336C	
Eth1/35					
cs1	Eth1/36	178	R S I s	N9K-C9336C	
Eth1/36					

```
Total entries displayed: 4
```

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
```

where x is the duration of the maintenance window in hours.



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

2. 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.
3. 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 1/34).

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 e1/1-34
newcs2(config-if-range)# shutdown
```

4. 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
```

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

```
4 entries were displayed.
```

5. Verify that all the cluster LIFs can communicate:

```
cluster ping-cluster
```


Show example

```
cluster1::*> cluster ping-cluster node1

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 1/35 and 1/36 on the Nexus 9336C-FX2 switch cs1.

Show example

```
cs1# configure
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/35-36
cs1(config-if-range)# shutdown
cs1(config-if-range)#
```

2. Remove all of the cables from the Nexus 9336C-FX2 cs2 switch, and then connect them to the same ports on the Nexus C9336C-FX2 newcs2 switch.

3. Bring up the ISLs ports 1/35 and 1/36 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 Eth1/35(P) and Eth1/36(P).

Show example

This example enables ISL ports 1/35 and 1/36 and displays the port channel summary on switch cs1:

```
cs1# configure
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# int e1/35-36
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       Eth1/35 (P)  Eth1/36 (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

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

Node: node2

Ignore

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

Current Is	Logical	Status	Network	Current
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

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

Node: node2

Ignore

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

4 entries were displayed.
```

8. Verify that all the cluster LIFs can communicate:

```
cluster ping-cluster
```

Show example

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

9. 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/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
node2	/cdp			
	e0a	cs1	0/2	N9K-
C9336C				
	e0b	newcs2	0/2	N9K-
C9336C				
node1	/cdp			
	e0a	cs1	0/1	N9K-
C9336C				
	e0b	newcs2	0/1	N9K-
C9336C				

4 entries were displayed.

```
cs1# show cdp neighbors
```

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,
V - VoIP-Phone, D - Remotely-Managed-Device,
s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
node1	Eth1/1	144	H	FAS2980
e0a				
node2	Eth1/2	145	H	FAS2980
e0a				
newcs2	Eth1/35	176	R S I s	N9K-C9336C
Eth1/35				
newcs2	Eth1/36	176	R S I s	N9K-C9336C

Eth1/36

Total entries displayed: 4

cs2# show cdp neighbors

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,
V - VoIP-Phone, D - Remotely-Managed-Device,
s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
node1 e0b	Eth1/1	139	H	FAS2980
node2 e0b	Eth1/2	124	H	FAS2980
cs1 Eth1/35	Eth1/35	178	R S I s	N9K-C9336C
cs1 Eth1/36	Eth1/36	178	R S I s	N9K-C9336C

Total entries displayed: 4

Step 3: Verify the configuration

1. For ONTAP 9.8 and later, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands:

```
system switch ethernet log setup-password and system switch ethernet log enable-  
collection
```

Show example

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs1
RSA key fingerprint is
e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

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

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs2
RSA key fingerprint is
57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

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

cluster1::*> system switch ethernet log enable-collection

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

Enabling cluster switch log collection.

cluster1::*>
```



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

2. For ONTAP releases 9.5P16, 9.6P12, and 9.7P10 and later patch releases, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands:

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

collection

Show example

```
cluster1::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs1
RSA key fingerprint is
e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

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

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs2
RSA key fingerprint is
57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

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

cluster1::*> system cluster-switch log enable-collection

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

Enabling cluster switch log collection.

cluster1::*>
```



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
```

Replace Cisco Nexus 9336C-FX2 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.

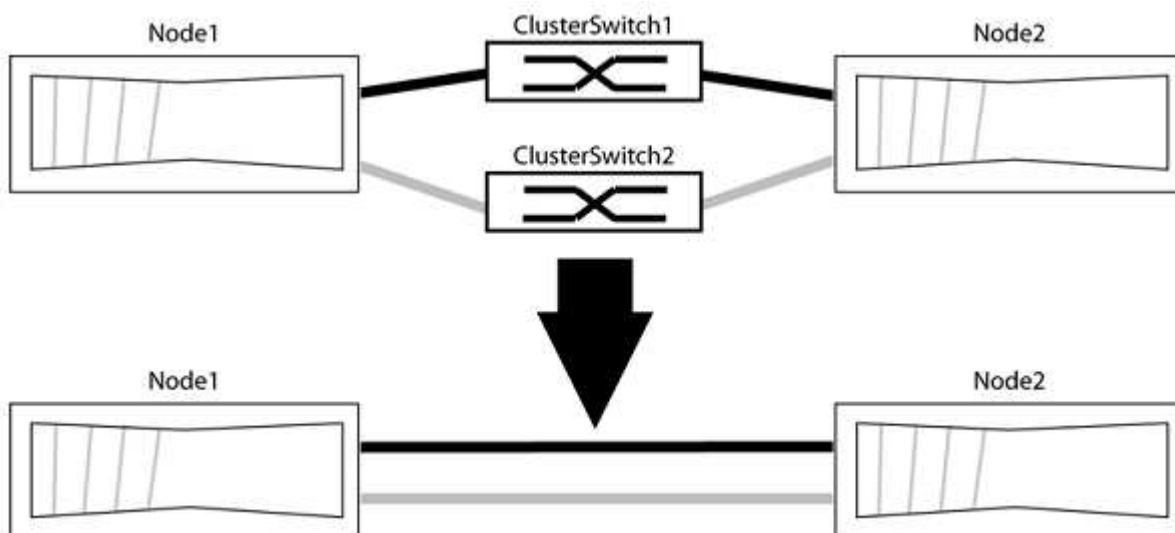
What you'll need

- 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

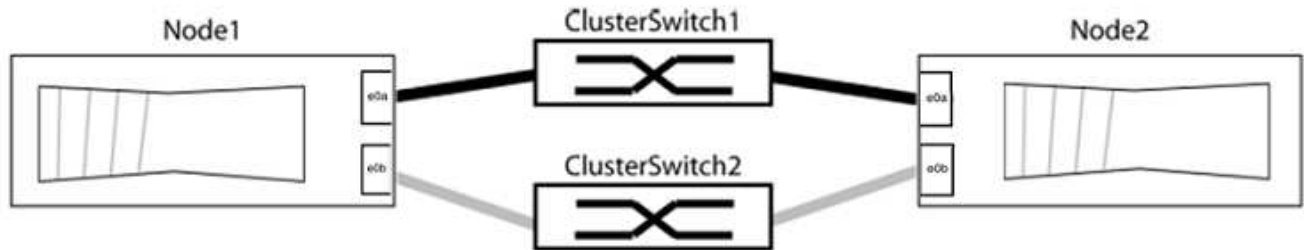
```
cluster::*> system node autosupport invoke -node * -type all
-message MAINT=2h
```

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 -ip space 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 cluster connectivity:


```
cluster ping-cluster -node local
```

7. Verify that the cluster is healthy:

```
cluster ring show
```

All units must be either master or secondary.

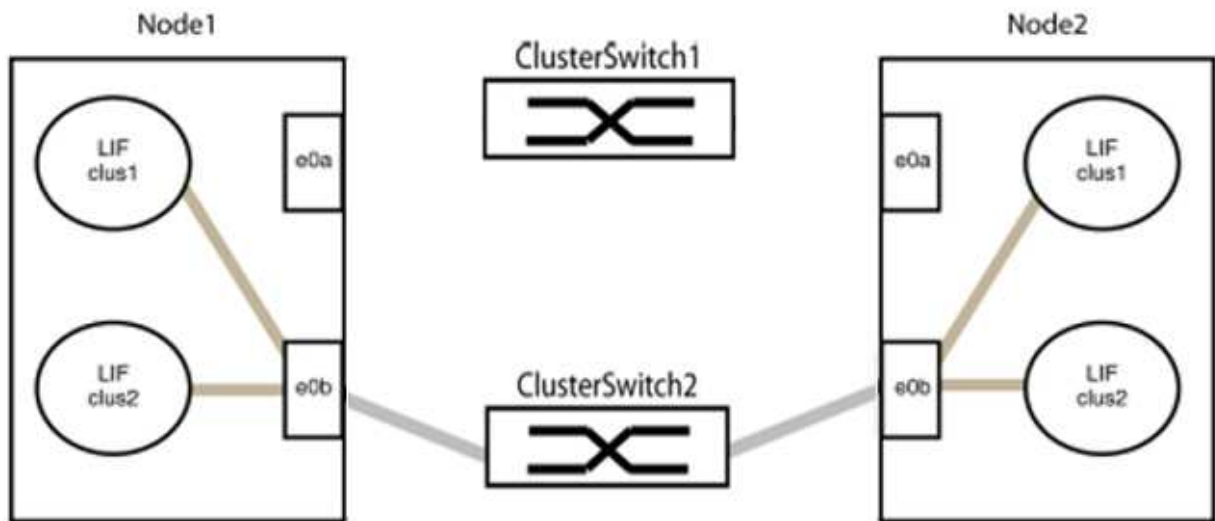
8. Set up the switchless configuration for the ports in group 1.



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**.

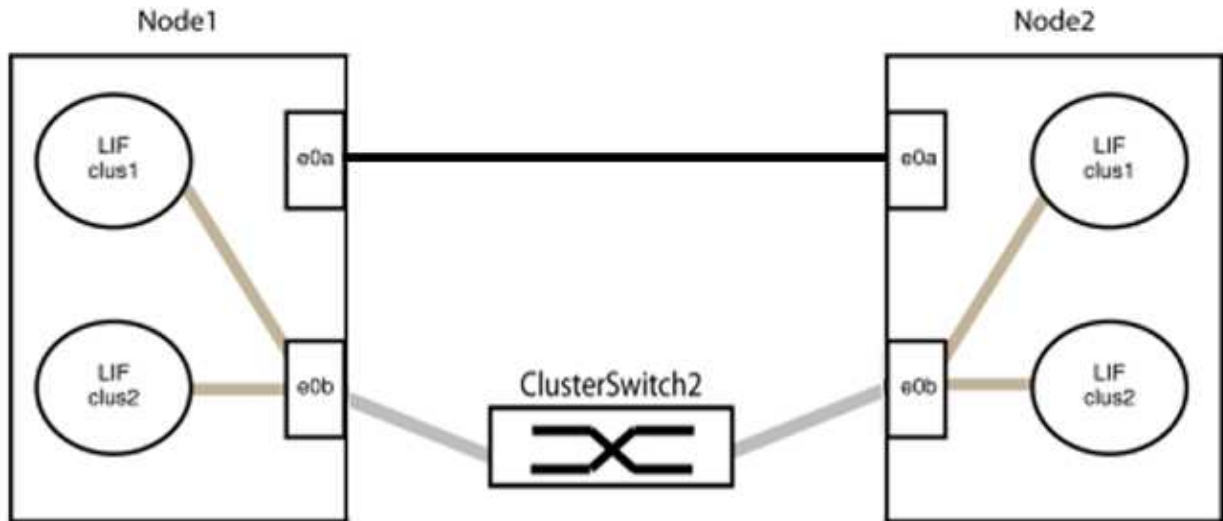
a. Disconnect all the cables from the ports in group1 at the same time.

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 that the cluster network is not disrupted:

```
cluster ping-cluster -node local
```



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

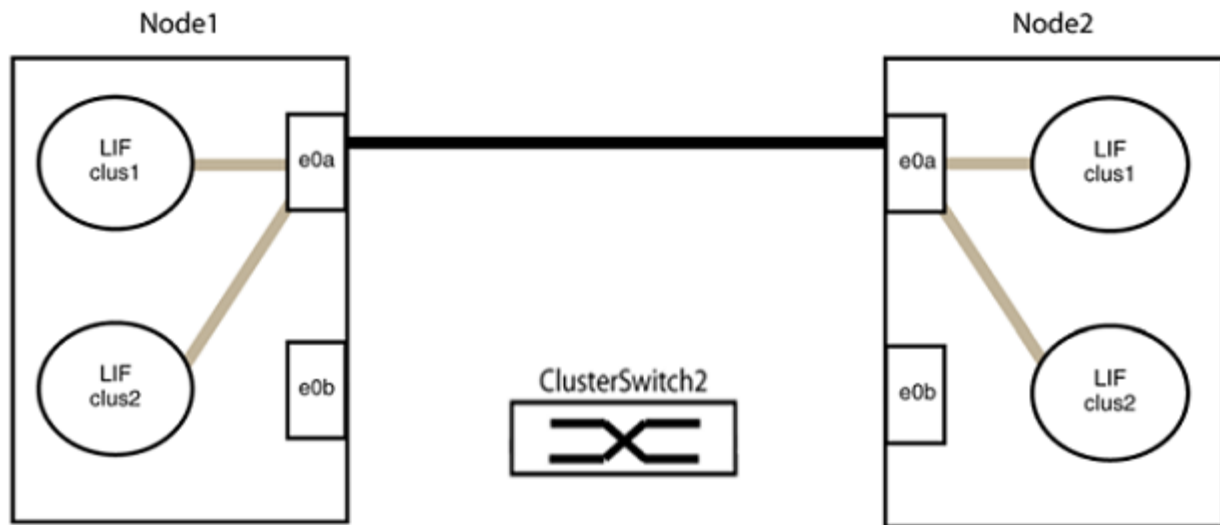
11. Set up the switchless configuration for the ports in group 2.



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**.

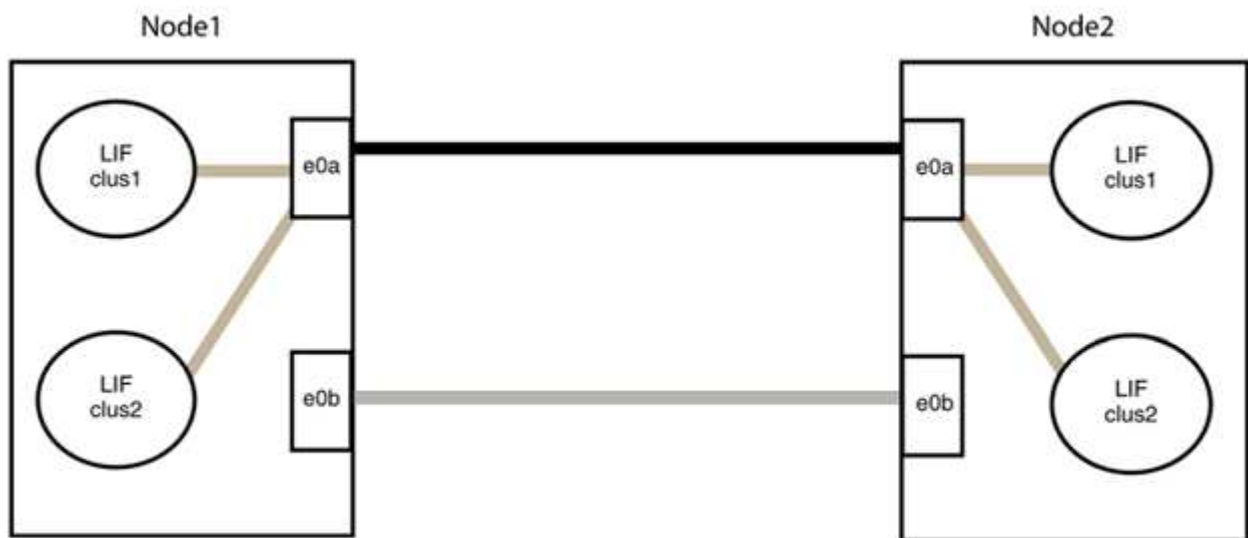
- a. Disconnect all the cables from the ports in group2 at the same time.

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:

```
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. Confirm connectivity between the cluster ports:

```
cluster ping-cluster local
```

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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