

Replace switches

Cluster and storage switches

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Table of Contents

Replace switches	
Replace a Cisco Nexus 3232C cluster switch	
Replace Cisco Nexus 3232C cluster switches with switchle	ss connections

Replace switches

Replace a Cisco Nexus 3232C cluster switch

Follow these steps to replace a defective Cisco Nexus 3232C switch in a cluster. This is a non-disruptive procedure.

Review requirements

What you'll need

Make sure that the existing cluster and network configuration has the following characteristics:

• The Nexus 3232C cluster infrastructure are redundant and fully functional on both switches.

The Cisco Ethernet Switches page has the latest RCF and NX-OS versions on your switches.

- All cluster ports must be in the **up** state.
- · Management connectivity must exist on both switches.
- All cluster logical interfaces (LIFs) are in the **up** state and are not migrated.

The replacement Cisco Nexus 3232C switch has the following characteristics:

- · Management network connectivity is functional.
- Console access to the replacement switch is in place.
- The appropriate RCF and NX-OS operating system image is loaded onto the switch.
- Initial customization of the switch is complete.

For more information

See the following:

- · Cisco Ethernet Switch description page
- Hardware Universe

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 this task

This replacement procedure describes the following scenario:

- The cluster initially has four nodes connected to two Nexus 3232C cluster switches, CL1 and CL2.
- You plan to replace cluster switch CL2 with C2 (steps 1 to 21):
 - On each node, you migrate the cluster LIFs connected to cluster switch CL2 to cluster ports connected to cluster switch CL1.
 - You disconnect the cabling from all ports on cluster switch CL2 and reconnect the cabling to the same ports on the replacement cluster switch C2.
 - You revert the migrated cluster LIFs on each node.

About the examples

This replacement procedure replaces the second Nexus 3232C cluster switch CL2 with the new 3232C switch C2.

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

- The four nodes are n1, n2, n3, and n4.
- n1 clus1 is the first cluster logical interface (LIF) connected to cluster switch C1 for node n1.
- n1 clus2 is the first cluster LIF connected to cluster switch CL2 or C2 for node n1.
- n1_clus3 is the second LIF connected to cluster switch C2 for node n1.-
- n1_clus4 is the second LIF connected to cluster switch CL1, for node n1.

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 examples in this replacement procedure use four nodes. Two of the nodes use four 10 GB cluster interconnect ports: e0a, e0b, e0c, and e0d. The other two nodes use two 40 GB cluster interconnect ports: e4a and e4e. See the Hardware Universe to verify the correct cluster ports for your platform.

Step 1: Display and migrate the cluster ports to switch

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. Display information about the devices in your configuration:

```
network device-discovery show
```

cluster	::> network	device-discover	y show	
	Local	Discovered		
Node 	Port	Device	Interface	Platform
 n1	 /cdp			
11	e0a	CL1	Ethernet1/1/1	N3K-C3232C
	e0b		Ethernet1/1/1	
	e0c	CL2	Ethernet1/1/2	
	e0d	CL1	Ethernet1/1/2	N3K-C3232C
n2	/cdp			
	e0a	CL1	Ethernet1/1/3	N3K-C3232C
	e0b	CL2	Ethernet1/1/3	N3K-C3232C
	e0c	CL2	Ethernet1/1/4	N3K-C3232C
	e0d	CL1	Ethernet1/1/4	N3K-C3232C
n3	/cdp			
	e4a	CL1	Ethernet1/7	N3K-C3232C
	e4e	CL2	Ethernet1/7	N3K-C3232C
n4	/cdp			
	e4a	CL1	Ethernet1/8	N3K-C3232C
	e4e	CL2	Ethernet1/8	N3K-C3232C

- 3. Determine the administrative or operational status for each cluster interface.
 - a. Display the network port attributes:

network port show -role cluster

Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
Speed (Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Open Status Status Cluster up 9000 auto/10000 e00 Cluster Cluster up 9000 auto/1000 e00 e00 e00 e00 e00 e00 e00 e00 e00	
Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	. \
Status S)
### Cluster Cluster Up 9000 auto/10000 ### color Cluster Up 9000 auto/1000 ### color Cluster Up 9000 auto/10	
### 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 ### auto/10000 ### speed (Mbps ### Health Health ### Port IPspace Broadcast Domain Link MTU Admin/Oper ### Status ### e0a Cluster Cluster Up 9000 auto/1000 ### e0c Cluster Up 9000 auto/1000	_
e0b	
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/1000 e0b Cluster Cluster up 9000 auto/1000 e0c Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 e1c Status Status	
e0d Cluster Cluster up 9000 auto/10000 Node: n2 Ignore Speed(Mbps: Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
Tignore Speed (Mbps) Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status e0a Cluster Cluster up 9000 auto/1000 e0b Cluster Cluster up 9000 auto/1000 e0c Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 Node: n3 Ignore Speed (Mbps) Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
Ignore Speed (Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status) –
Speed (Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status e0a Cluster Cluster up 9000 auto/1000 e0b Cluster Cluster up 9000 auto/1000 e0c Cluster Cluster up 9000 auto/1000	;)
Status Status	
e0a Cluster Cluster up 9000 auto/1000 e0b Cluster Cluster up 9000 auto/1000 e0c Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 e0d Cluster Speed (Mbps Mealth Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
e0a Cluster Cluster up 9000 auto/1000 e0b Cluster Cluster up 9000 auto/1000 e0c Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 - Node: n3 Ignore Speed (Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	· _
e0b Cluster Cluster up 9000 auto/1000 e0c Cluster Cluster up 9000 auto/1000 e0d cluster up 9000 auto/1000 e0d cluster up 9000 auto/1000 e0d e0d cluster up 9000 auto/1000 e0d e0d e0d e0d e0d e0d e0d e0d e0d	
e0c Cluster Cluster up 9000 auto/1000 e0d Cluster Cluster up 9000 auto/1000 e0d cluster cluster up 9000 auto/1000 e0d cluster e0d cl	0 -
e0d Cluster Cluster up 9000 auto/1000 - Node: n3 Ignore Speed(Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	0 -
Node: n3 Ignore Speed(Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	0 -
Ignore Speed(Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	0 -
Ignore Speed(Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
Speed (Mbps Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
Health Health Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	
Port IPspace Broadcast Domain Link MTU Admin/Oper Status Status	;)
Status Status	
e4a Cluster Cluster up 9000 auto/40000	_
0140 0140 0140 0140 0140 0140 0140 0140	
_	_

b. Display information about the logical interfaces (LIFs):

network interface show -role cluster

			w -role cluster Network	Current
Curren Vserve Port	r Interface	Admin/Oper	Address/Mask	Node
 Cluste				
Cluste		מנו/מנו	10.10.0.1/24	n1
e0a	true	ω _P , ω _P		
	n1_clus2	up/up	10.10.0.2/24	n1
e0b	true			
	-	up/up	10.10.0.3/24	n1
e0c	true	,	10 10 0 4/04	1
e0d	nl_clus4 true	up/up	10.10.0.4/24	n1
euu		gu/gu	10.10.0.5/24	n2
e0a	true	~F, ~F		
	n2_clus2	up/up	10.10.0.6/24	n2
e0b	true			
	_	up/up	10.10.0.7/24	n2
e0c	true	/	10 10 0 0 /04	2
e0d	n2_clus4 true	up/up	10.10.0.8/24	n2
Coa		מנו/מנו	10.10.0.9/24	n3
e0a	true	~F, ~F		
	n3_clus2	up/up	10.10.0.10/24	n3
e0e	true			
	n4_clus1	up/up	10.10.0.11/24	n4
e0a	true	,	10 10 0 10 /0 /	4
e0e	n4_clus2 true	up/up	10.10.0.12/24	n4

c. Display the discovered cluster switches:

system cluster-switch show

The following output example displays the cluster switches:

```
cluster::> system cluster-switch show
Switch
                            Type
                                               Address
Model
                        cluster-network 10.10.1.101
CL1
NX3232C
        Serial Number: FOX000001
         Is Monitored: true
               Reason: None
     Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version 7.0(3)I6(1)
      Version Source: CDP
CL2
                            cluster-network 10.10.1.102
NX3232C
        Serial Number: FOX000002
         Is Monitored: true
               Reason: None
     Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version 7.0(3) I6(1)
      Version Source: CDP
```

- 4. Verify that the appropriate RCF and image are installed on the new Nexus 3232C switch and make any necessary site customizations.
 - a. Go to the NetApp Support Site.

mysupport.netapp.com

b. Go to the Cisco Ethernet Switches page and note the required software versions in the table.

Cisco Ethernet Switches

- c. Download the appropriate version of the RCF.
- d. Click **CONTINUE** on the **Description** page, accept the license agreement, and then navigate to the **Download** page.
- e. Download the correct version of the image software from the Cisco® Cluster and Management Network Switch Reference Configuration File Download page.
 - Cisco® Cluster and Management Network Switch Reference Configuration File Download

5. Migrate the cluster LIFs to the physical node ports connected to the replacement switch C2:

network interface migrate -vserver vserver-name -lif lif-name -source-node node-name -destination-node node-name -destination-port port-name

Show example

You must migrate all the cluster LIFs individually as shown in the following example:

```
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
cluster::*> network interface migrate -vserver Cluster -lif n3 clus2
-source-node n3 -destination-
node n3 -destination-port e4a
cluster::*> network interface migrate -vserver Cluster -lif n4_clus2
-source-node n4 -destination-
node n4 -destination-port e4a
```

6. Verify the status of the cluster ports and their home designations:

network interface show -role cluster

(networ			Status	Network	Current
Current	Is	1091041		1100110111	Carrenc
Vserver Port			Admin/Oper	Address/Mask	Node
		_			
Cluster					
•		-	up/up	10.10.0.1/24	n1
e0a	true		110/110	10.10.0.2/24	n1
e0a	fals	_	ар/ ар	10.10.0.2/24	111
		n1_clus3	up/up	10.10.0.3/24	n1
e0d					
0.1		_	up/up	10.10.0.4/24	n1
e0d	true		un/un	10.10.0.5/24	n2
e0a	true	-	ар, ар	10.10.0.3/21	112
		n2_clus2	up/up	10.10.0.6/24	n2
e0a	fals				
- 0 d	fals	_	up/up	10.10.0.7/24	n2
e0d			מנו/מנו	10.10.0.8/24	n2
e0d		_	F / ~ L		
		n3_clus1	up/up	10.10.0.9/24	n3
e4a	true		,	10 10 0 10 10	
e4a	fals	_	up/up	10.10.0.10/24	n3
Cia	тат		up/up	10.10.0.11/24	n4
e4a	true	-	1. 1	·	
		n4_clus2	up/up	10.10.0.12/24	n4

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

network port modify -node node-name -port port-name -up-admin false

The following example shows the cluster interconnect ports are 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 cluster::*> network port modify -node n3 -port e4e -up-admin false cluster::*> network port modify -node n4 -port e4e -up-admin false
```

8. 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:

 $\hbox{network interface check cluster-connectivity start} \ \textbf{and} \ \hbox{network interface check cluster-connectivity show}$

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

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

		Source	Destination
acket Iode Ioss	Date	LIF	LIF
.1	3/5/2022 19:21:18 -06:00	n1_clus2	n2-clus1
one	3/5/2022 19:21:20 -06:00	n1_clus2	n2_clus2
one			
.2			
one	3/5/2022 19:21:18 -06:00	n2_clus2	n1_clus1
one	3/5/2022 19:21:20 -06:00	n2_clus2	n1_clus2
.3			
n4			

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 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
                    e0a
e0b
Cluster n2 clus1 n2
                                10.10.0.5
Cluster n2 clus2 n2
                                10.10.0.6
                     e0c
e0d
Cluster n2 clus3 n2
                                10.10.0.7
Cluster n2 clus4 n2
                                10.10.0.8
                        e0a
                                10.10.0.9
Cluster n3 clus1 n4
Cluster n3_clus2 n3 e0e 10.10.0.10
Cluster n4 clus1 n4
                         e0a
                                10.10.0.11
Cluster n4 clus2 n4 e0e 10.10.0.12
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 10.10.0.9 10.10.0.10
10.10.0.11
10.10.0.12 Cluster Vserver Id = 4294967293 Ping status:
Basic connectivity succeeds on 32 path(s)
Basic connectivity fails on 0 path(s) ......
Detected 9000 byte MTU on 32 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 10.10.0.1 to Remote 10.10.0.9
    Local 10.10.0.1 to Remote 10.10.0.10
    Local 10.10.0.1 to Remote 10.10.0.11
   Local 10.10.0.1 to Remote 10.10.0.12
   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 10.10.0.2 to Remote 10.10.0.9
    Local 10.10.0.2 to Remote 10.10.0.10
    Local 10.10.0.2 to Remote 10.10.0.11
    Local 10.10.0.2 to Remote 10.10.0.12
    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 10.10.0.3 to Remote 10.10.0.9
    Local 10.10.0.3 to Remote 10.10.0.10
```

```
Local 10.10.0.3 to Remote 10.10.0.11
Local 10.10.0.3 to Remote 10.10.0.12
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
Local 10.10.0.4 to Remote 10.10.0.9
Local 10.10.0.4 to Remote 10.10.0.10
Local 10.10.0.4 to Remote 10.10.0.11
Local 10.10.0.4 to Remote 10.10.0.12
Larger than PMTU communication succeeds on 32 path(s) RPC status:
8 paths up, 0 paths down (tcp check)
8 paths up, 0 paths down (udp check)
```

Step 2: Migrate ISLs to switch CL1 and C2

1. Shut down the ports 1/31 and 1/32 on cluster switch CL1.

For more information on Cisco commands, see the guides listed in the Cisco Nexus 3000 Series NX-OS Command References.

Show example

```
(CL1) # configure
(CL1) (Config) # interface e1/31-32
(CL1) (config-if-range) # shutdown
(CL1) (config-if-range) # exit
(CL1) (Config) # exit
(CL1) #
```

- 2. Remove all the cables attached to the cluster switch CL2 and reconnect them to the replacement switch C2 for all the nodes.
- 3. Remove the inter-switch link (ISL) cables from ports e1/31 and e1/32 on cluster switch CL2 and reconnect them to the same ports on the replacement switch C2.
- 4. Bring up ISL ports 1/31 and 1/32 on the cluster switch CL1.

For more information on Cisco commands, see the guides listed in the Cisco Nexus 3000 Series NX-OS Command References.

```
(CL1) # configure
(CL1) (Config) # interface e1/31-32
(CL1) (config-if-range) # no shutdown
(CL1) (config-if-range) # exit
(CL1) (Config) # exit
(CL1) #
```

5. Verify that the ISLs are up on CL1.

For more information on Cisco commands, see the guides listed in the Cisco Nexus 3000 Series NX-OS Command References.

Ports Eth1/31 and Eth1/32 should indicate (P), which means that the ISL ports are up in the port-channel:

Show example

6. Verify that the ISLs are up on cluster switch C2.

For more information on Cisco commands, see the guides listed in the Cisco Nexus 3000 Series NX-OS Command References.

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

7. On all nodes, bring up all the cluster interconnect ports connected to the replacement switch C2:

```
network port modify -node node-name -port port-name -up-admin true
```

Show example

```
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 cluster::*> network port modify -node n2 -port e0c -up-admin true cluster::*> network port modify -node n3 -port e4e -up-admin true cluster::*> network port modify -node n4 -port e4e -up-admin true
```

Step 3: Revert all LIFs to originally assigned ports

1. Revert all the migrated cluster interconnect LIFs on all the nodes:

```
network interface revert -vserver cluster -lif lif-name
```

You must revert all the cluster interconnect LIFs individually as shown in the following example:

```
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
Cluster::*> network interface revert -vserver cluster -lif n2_clus3
Cluster::*> network interface revert -vserver cluster -lif n3_clus2
Cluster::*> network interface revert -vserver cluster -lif n4_clus2
```

2. Verify that the cluster interconnect ports are now reverted to their home:

network interface show

The following example shows that all the LIFs have been successfully reverted because the ports listed under the Current Port column have a status of true in the Is Home column. If a port has a value of false, the LIF has not been reverted.

		Logical	Status	Network	Current
Current	Is				
Vserver		Interface	Admin/Oper	Address/Mask	Node
Port	Home	9			
		 _			
Cluster					
		n1_clus1	up/up	10.10.0.1/24	n1
e0a	true				
01		_	up/up	10.10.0.2/24	n1
e0b	true		up/up	10.10.0.3/24	n1
e0c	true	_	αρ/ αρ	10.10.0.3/21	111
		n1_clus4	up/up	10.10.0.4/24	n1
e0d	true				
0		_	up/up	10.10.0.5/24	n2
e0a	true	n2 clus2	un/un	10.10.0.6/24	n2
e0b	true	_	αρ/ αρ	10.10.0.0,21	112
		n2_clus3	up/up	10.10.0.7/24	n2
e0c	true				
- 0 -1		n2_clus4	up/up	10.10.0.8/24	n2
e0d	true	n3 clus1	11n/11n	10.10.0.9/24	n3
e4a	true	_	αρ/ αρ	10.10.0.0,21	110
		n3_clus2	up/up	10.10.0.10/24	n3
e4e	true				
4		n4_clus1	up/up	10.10.0.11/24	n4
e4a	true	n4 clus2	up/up	10.10.0.12/24	n4
e4e	true	_	up/up	10.10.0.12/24	11.7

3. Verify that the cluster ports are connected:

network port show -role cluster

```
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
_____
      Cluster Cluster
                            up 9000 auto/10000 -
e0a
e0b
                            up 9000 auto/10000 -
      Cluster
                Cluster
      Cluster
               Cluster
                            up 9000 auto/10000 -
e0c
    Cluster
                            up 9000 auto/10000 -
e0d
               Cluster
Node: n2
Ignore
                                     Speed (Mbps) Health
Health
Port IPspace Broadcast Domain Link MTU Admin/Oper Status
Status
-----
      Cluster Cluster up 9000 auto/10000 -
e0a
                Cluster
                            up 9000 auto/10000 -
e0b
      Cluster
e0c
                            up 9000 auto/10000 -
                Cluster
      Cluster
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 -
                            up 9000 auto/40000 -
e4e
      Cluster
               Cluster
Node: n4
```

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:

 $\hbox{network interface check cluster-connectivity start} \ \textbf{and} \ \hbox{network interface check cluster-connectivity show}$

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

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

		Source	Destination
acket Iode Ioss	Date	LIF	LIF
.1	3/5/2022 19:21:18 -06:00	n1_clus2	n2-clus1
one	3/5/2022 19:21:20 -06:00	n1_clus2	n2_clus2
one			
.2			
one	3/5/2022 19:21:18 -06:00	n2_clus2	n1_clus1
one	3/5/2022 19:21:20 -06:00	n2_clus2	n1_clus2
.3			
n4			

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 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_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

Cluster n3_clus1 n4 e0a 10.10.0.9
Cluster n3_clus2 n3 e0e 10.10.0.10
                             e0a
Cluster n4 clus1 n4
                                     10.10.0.11
Cluster n4 clus2 n4 e0e 10.10.0.12
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 10.10.0.9 10.10.0.10
10.10.0.11
10.10.0.12 Cluster Vserver Id = 4294967293 Ping status:
Basic connectivity succeeds on 32 path(s)
Basic connectivity fails on 0 path(s) ......
Detected 9000 byte MTU on 32 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 10.10.0.1 to Remote 10.10.0.9
    Local 10.10.0.1 to Remote 10.10.0.10
    Local 10.10.0.1 to Remote 10.10.0.11
    Local 10.10.0.1 to Remote 10.10.0.12
    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 10.10.0.2 to Remote 10.10.0.9
    Local 10.10.0.2 to Remote 10.10.0.10
    Local 10.10.0.2 to Remote 10.10.0.11
    Local 10.10.0.2 to Remote 10.10.0.12
    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 10.10.0.3 to Remote 10.10.0.9
     Local 10.10.0.3 to Remote 10.10.0.10
```

```
Local 10.10.0.3 to Remote 10.10.0.11
Local 10.10.0.3 to Remote 10.10.0.12
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
Local 10.10.0.4 to Remote 10.10.0.9
Local 10.10.0.4 to Remote 10.10.0.10
Local 10.10.0.4 to Remote 10.10.0.11
Local 10.10.0.4 to Remote 10.10.0.12
Larger than PMTU communication succeeds on 32 path(s) RPC status:
8 paths up, 0 paths down (tcp check)
8 paths up, 0 paths down (udp check)
```

Step 4: Verify all ports and LIF are correctly migrated

1. Display the information about the devices in your configuration by entering the following commands:

You can execute the following commands in any order:

```
    network device-discovery show
    network port show -role cluster
    network interface show -role cluster
    system cluster-switch show
```

			i ce-discov covered	ery Sho	W				
NT1 -					T +	C		D1-+6	
Node 	Port		.ce					Platf	orm
n1	/cdp								
	e0a	C1		E	therne	et1/1,	/1	N3K-C3	232C
	e0b	C2		E	therne	et1/1,	/1	N3K-C3	232C
	e0c	C2		E	therne	et1/1,	/2	N3K-C3	232C
	e0d	C1		E	therne	et1/1,	/2	N3K-C3	232C
n2	/cdp								
	e0a	C1		E	therne	et1/1,	/3	N3K-C3	232C
	e0b	C2		E	therne	et1/1,	/3	N3K-C3	232C
	e0c	C2		E	therne	et1/1,	/4	N3K-C3	232C
	e0d	C1		E	therne	et1/1,	/4	N3K-C3	232C
n3	/cdp								
	e4a	C1		E	therne	et1/7		N3K-C3	232C
	e4e	C2		E	therne	et1/7		N3K-C3	232C
n4	/cdp								
	e4a	C1		E	therne	et1/8		N3K-C3	232C
		k po:	rt show -re					N3K-C3	
(networ) Node: n1		k po:	rt show -ro					N3K-C3	
(network Node: n1 Ignore	*> networ	k po:	rt show -re						232C
(network Node: n1 Ignore Health	*> networ ! k port sho	k po:		ole clu	ster	et1/8	Speed	l(Mbps)	232C Health
(network Node: n1 Ignore Health Port	*> networ ! k port sho	k po:	rt show -ro	ole clu	ster	et1/8	Speed	l(Mbps)	232C Health
(network Node: n1 Ignore Health Port	*> networ ! k port sho	k po:		ole clu	ster	et1/8	Speed	l(Mbps)	232C Health
(network Node: n1 Ignore Health Port	*> networ ! k port sho	k po:		ole clu	ster	et1/8	Speed	l(Mbps)	232C Health
(network Node: n1 Ignore Health Port Status	*> network k port sho	k po:	Broadcast	ole clu	ster Link	MTU	Speed Admin	(Mbps) /Oper	232C Health
(network Node: n1 Ignore Health Port Status	*> network * port sho	k po:	BroadcastCluster	ole clu	ster Link up	MTU 9000	Speed Admin	(Mbps) /Oper	232C Health
(network Node: n1 Ignore Health Port Status e0a e0b	*> network <pre> port sho IPspace Cluster Cluster</pre>	k po:	Broadcast Cluster Cluster	ole clu	Link up up	MTU 9000 9000	Speed Admin	(Mbps) /Oper 	232C Health
(network Node: n1 Ignore Health Port Status e0a e0b e0c	*> network * port show IPspace Cluster Cluster Cluster Cluster	k po:	Broadcast Cluster Cluster Cluster Cluster	ole clu	Link up up up	MTU 9000 9000 9000	Speed Admin auto/ auto/	(Mbps) /Oper 10000 10000	232C Health
(network Node: n1 Ignore Health Port Status e0a e0b e0c	*> network * port show IPspace Cluster Cluster Cluster Cluster	k po:	Broadcast Cluster Cluster	ole clu	Link up up	MTU 9000 9000 9000	Speed Admin auto/ auto/	(Mbps) /Oper 	232C Health
(network Node: n1 Ignore Health Port Status e0a e0b e0c e0d	*> network * port show IPspace Cluster Cluster Cluster Cluster	k po:	Broadcast Cluster Cluster Cluster Cluster	ole clu	Link up up up	MTU 9000 9000 9000	Speed Admin auto/ auto/	(Mbps) /Oper 10000 10000	232C Health
(network Node: n1 Ignore Health Port Status e0a e0b	*> network * port show IPspace Cluster Cluster Cluster Cluster	k po:	Broadcast Cluster Cluster Cluster Cluster	ole clu	Link up up up	MTU 9000 9000 9000	Speed Admin auto/ auto/ auto/	(Mbps) /Oper 10000 10000 10000	232C Health

Port Status	ΙF	Pspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e0a	Cl	luster	Cluster		up	9000		
e0b	Cl	luster	Cluster		up	9000		
e0c	Cl	luster	Cluster		up	9000	auto/10000	_
e0d	Cl	luster	Cluster		up	9000	auto/10000	-
Node: n3	3							
Ignore							Speed(Mbps)	Health
Health							speed (Mpps)	nearch
Port Status	IF	Space	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e4a	Cl	luster	Cluster		up	9000	auto/40000	_
e4e	Cl	luster	Cluster		up	9000	auto/40000	-
Node: n	4							
Ignore							Control (Miles a)	II 1 + l-
Health							Speed (Mbps)	Health
Port	IF	Space	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status		-						
e4a	Cl	luster	Cluster		up	9000	auto/40000	_
e4e	Cl	luster	Cluster		up	9000	auto/40000	-
cluster	::*>	network in	terface sho	w -role	e clus	ster		
		Logical	Status	Netwo	ck		Current	
Current Vserver		Interface	Admin/Oper	Addres	ss/Mas	sk	Node	
Port	Home	9						
Cluster								
		nm1_clus1	up/up	10.10	.0.1/2	24	n1	
e0a	true	2						
e0a			up/up	10.10	.0.2/2	24	n1	

	n1_clus3	up/up	10.10.0.3/24	n1
e0c t	rue			
e0d t	n1_clus4 crue	up/up	10.10.0.4/24	n1
coa	n2_clus1	up/up	10.10.0.5/24	n2
e0a t	rue	,	10 10 0 6/04	^
e0b t	n2_clus2 crue	up/up	10.10.0.6/24	n2
	n2_clus3	up/up	10.10.0.7/24	n2
e0c t	rue n2 clus4	ווח/ווח	10.10.0.8/24	n2
e0d t	rue	αρ/ αρ	10.10.0.0, 21	
- 1 -	n3_clus1	up/up	10.10.0.9/24	n3
e4a t	rue n3 clus2	up/up	10.10.0.10/24	n3
e4e t	rue	1 1		
e4a t	n4_clus1 rue	up/up	10.10.0.11/24	n4
e4a t		up/up	10.10.0.12/24	n4
e4e t	rue			
A / T = -1 7				
 		cli	uster-network 10	.10.1.101
		mber: FOX(000001	.10.1.101
	Is Monit	mber: FOX(000001 e	.10.1.101
	Is Monit Re	mber: FOX(ored: true	000001 e e	
CL1 NX3232C	Is Monit Re	mber: FOX(ored: true ason: None	000001 e	
CL1 NX3232C	Is Monit Re Software Ver	mber: FOX(ored: true ason: None sion: Cisc 3) 16(1) urce: CDP	000001 e e co Nexus Operating	System (NX-OS)
CL2	Is Monit Re Software Ver Version 7.0(mber: FOX(ored: true ason: None sion: Cisc 3) 16(1) urce: CDP	000001 e e	System (NX-OS)
CL2	Is Monit Re Software Ver Version 7.0(Version So	mber: FOX(ored: true ason: None sion: Cisc 3) 16(1) urce: CDP	000001 e e co Nexus Operating uster-network 10	System (NX-OS)
CL1 NX3232C Software,	Is Monit Re Software Ver Version 7.0(Version So	mber: FOX(ored: true ason: None sion: Cisc 3) 16(1) urce: CDP	000001 e c c o Nexus Operating uster-network 10	System (NX-OS)
CL1 NX3232C Software,	Is Monit Re Software Ver Version 7.0(Version So Serial Nu Is Monit Re	mber: FOX(ored: true ason: None sion: Cise 3) I6(1) urce: CDP clu mber: FOX(ored: true ason: None	000001 e co Nexus Operating uster-network 10	System (NX-OS) .10.1.102
CL1 NX3232C Software, CL2 NX3232C	Is Monit Re Software Ver Version 7.0(Version So Serial Nu Is Monit Re Software Ver	mber: FOX(ored: true ason: None sion: Cisc 3) 16(1) urce: CDP	000001 e co Nexus Operating uster-network 10	System (NX-OS) .10.1.102
CL1 NX3232C Software, CL2 NX3232C	Is Monit Re Software Ver Version 7.0(Version So Serial Nu Is Monit Re Software Ver Version 7.0(mber: FOX(ored: true ason: None sion: Cise 3) I6(1) urce: CDP	000001 e co Nexus Operating uster-network 10	System (NX-OS) .10.1.102
CL1 NX3232C Software, CL2 NX3232C	Is Monit Re Software Ver Version 7.0(Version So Serial Nu Is Monit Re Software Ver	mber: FOX(ored: true ason: None sion: Cise 3) I6(1) urce: CDP	000001 e co Nexus Operating uster-network 10	System (NX-OS) .10.1.102
CL1 NX3232C Software, CL2 NX3232C	Is Monit Re Software Ver Version 7.0(Version So Serial Nu Is Monit Re Software Ver Version 7.0(mber: FOX(ored: true ason: None sion: Cisc 3) I6(1) urce: CDP clu mber: FOX(ored: true ason: None sion: Cisc 3) I6(1) urce: CDP	000001 e co Nexus Operating uster-network 10	System (NX-OS) .10.1.102 System (NX-OS)
CL2 NX3232C	Is Monit Re Software Ver Version 7.0(Version So Serial Nu Is Monit Re Software Ver Version 7.0(Version So	mber: FOX(ored: true ason: None sion: Cisc 3) I6(1) urce: CDP clu mber: FOX(ored: true ason: None sion: Cisc 3) I6(1) urce: CDP	000001 e e co Nexus Operating uster-network 10 000002 e co Nexus Operating	System (NX-OS) .10.1.102 System (NX-OS)

Is Monitored: true Reason: None Software Version: Cisco Nexus Operating System (NX-OS)

Software, Version 7.0(3)I6(1)

Version Source: CDP 3 entries were displayed.

2. Delete the replaced cluster switch CL2 if it has not been removed automatically:

system cluster-switch delete -device cluster-switch-name

3. Verify that the proper cluster switches are monitored:

system cluster-switch show

Show example

The following example shows the cluster switches are monitored because the Is Monitored state is true.

cluster::> system cluster-switch show Switch Type Address Model CL1 cluster-network 10.10.1.101 NX3232C Serial Number: FOX00001 Is Monitored: true Reason: None Software Version: Cisco Nexus Operating System (NX-OS) Software, Version 7.0(3)I6(1) Version Source: CDP C2 cluster-network 10.10.1.103 NX3232C Serial Number: FOX000002 Is Monitored: true Reason: None Software Version: Cisco Nexus Operating System (NX-OS) Software, Version 7.0(3)I6(1) Version Source: CDP

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

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

Configure switch health monitoring.

Replace Cisco Nexus 3232C 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.

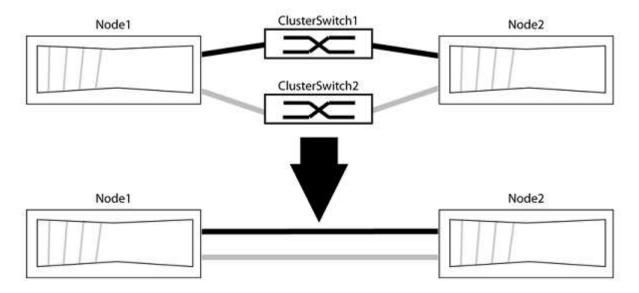
What you'll need

- 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.

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

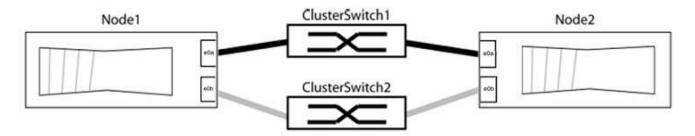
```
cluster::*> system node autosupport invoke -node * -type all
-message MAINT=2h
```

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.

```
cluster::> network port show -ipspace Cluster
Node: node1
Ignore
                               Speed (Mbps) Health
Health
Port IPspace Broadcast Domain Link MTU Admin/Oper 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

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
                                               BES-53248
        e0b
              cs2
                                       0/9
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:

 $\hbox{network interface check cluster-connectivity start} \ \textbf{and} \ \hbox{network interface check cluster-connectivity show}$

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

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

Packet Node Date LIF LIF Loss	cluste	r1::*> net	twork interface	check cluster-co	onnectivity show	
Node Date LIF LIF Loss				Source	Destination	
Loss	Packet					
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	Node	Date		LIF	LIF	
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	Loss					
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 19:21:18 -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						
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	node1					
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	19:21:18 -06:00	node1_clus2	node2-clus1	
none node2 3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none	none					
node2 3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none		3/5/2022	19:21:20 -06:00	node1_clus2	node2_clus2	
3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none						
none	node2	- /- /				
		3/5/2022	19:21:18 -06:00	node2_clus2	nodel_clus1	
	none	2/5/2222	10 01 00 06 00	1 0 1 0	1 1 1 0	
		3/5/2022	19:21:20 -06:00	node2_clus2	node1_clus2	
none	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.

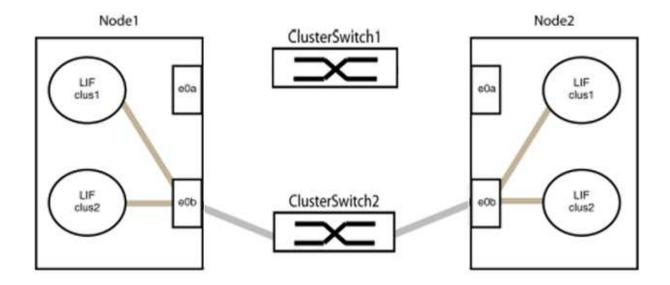
8. Set up the switchless configuration for the ports in group 1.



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**.

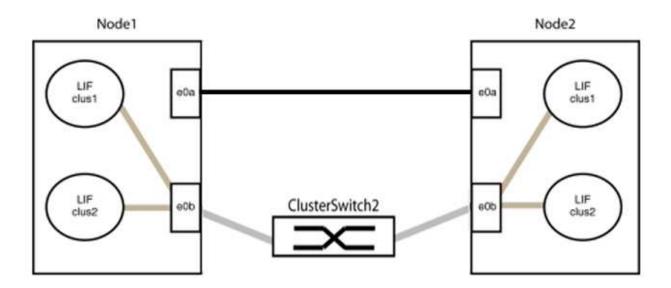
a. Disconnect all the cables from the ports in group1 at the same time.

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:

 $\hbox{network interface check cluster-connectivity start} \ \textbf{and} \ \hbox{network interface check cluster-connectivity show}$

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

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

Packet Node Date LIF LIF Loss	<pre>cluster1::*> network interface check cluster-connectivity show</pre>									
Node Date LIF LIF Loss				Source	Destination					
Loss	Packet									
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	Node	Date		LIF	LIF					
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	Loss									
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 19:21:18 -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										
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	node1									
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	19:21:18 -06:00	node1_clus2	node2-clus1					
none node2 3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none	none									
node2 3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none		3/5/2022	19:21:20 -06:00	node1_clus2	node2_clus2					
3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none										
none	node2	- /- /								
		3/5/2022	19:21:18 -06:00	node2_clus2	nodel_clus1					
	none	2/5/2222	10 01 00 06 00	1 0 1 0	1.1. 7. 0					
		3/5/2022	19:21:20 -06:00	node2_clus2	node1_clus2					
none	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.

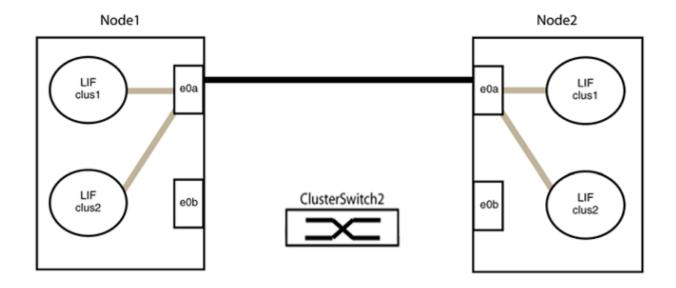
11. Set up the switchless configuration for the ports in group 2.



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**.

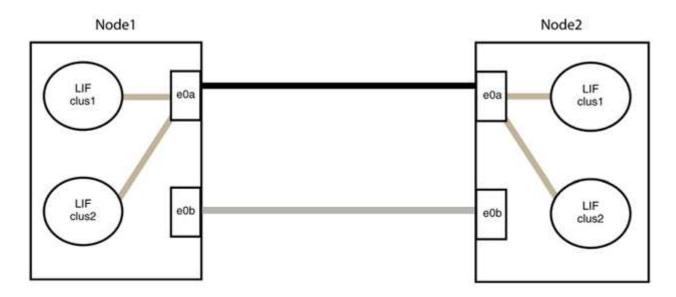
a. Disconnect all the cables from the ports in group2 at the same time.

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

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
               node2
                                        e0a
                                                  AFF-A300
          e0a
          e0b node2
                                        e0b
                                                  AFF-A300
node1/11dp
          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
node2/11dp
          e0a
               node1 (00:a0:98:da:87:49) e0a
                node1 (00:a0:98:da:87:49) e0b
          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
```

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

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:

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:

 $\hbox{network interface check cluster-connectivity start} \ \textbf{and} \ \hbox{network interface check cluster-connectivity show}$

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

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

Packet Node Date LIF LIF Loss	<pre>cluster1::*> network interface check cluster-connectivity show</pre>									
Node Date LIF LIF Loss				Source	Destination					
Loss	Packet									
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	Node	Date		LIF	LIF					
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	Loss									
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 19:21:18 -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										
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	node1									
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	19:21:18 -06:00	node1_clus2	node2-clus1					
none node2 3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none	none									
node2 3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none		3/5/2022	19:21:20 -06:00	node1_clus2	node2_clus2					
3/5/2022 19:21:18 -06:00 node2_clus2 node1_clus1 none										
none	node2	- /- /								
		3/5/2022	19:21:18 -06:00	node2_clus2	nodel_clus1					
	none	2/5/2222	10 01 00 06 00	1 0 1 0	1.1. 7. 0					
		3/5/2022	19:21:20 -06:00	node2_clus2	node1_clus2					
none	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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