

Migrate a CN1610 switch to a Cisco Nexus 3232C cluster switch

Cluster and storage switches

NetApp November 03, 2022

This PDF was generated from https://docs.netapp.com/us-en/ontap-systems-switches/switch-cisco-3232c/task-how-to-replace-cn1610-cluster-switches-with-cisco-nexus-3232c-cluster-switches.html on November 03, 2022. Always check docs.netapp.com for the latest.

Table of Contents

Migrate a CN1610 switch to a Cisco Nexus 3232C cluster switch	. 1
How to migrate a CN1610 cluster switch to a Cisco Nexus 3232C cluster switch	. 1

Migrate a CN1610 switch to a Cisco Nexus 3232C cluster switch

You must be aware of certain configuration information, port connections, and cabling requirements when you replace CN1610 cluster switches with Cisco Nexus 3232C cluster switches.

The cluster switches support the following node connections:

- NetApp CN1610: ports 0/1 through 0/12 (10 GbE)
- Cisco Nexus 3232C: ports e1/1-30 (40 or 100 or 4x10GbE)

The cluster switches use the following inter-switch link (ISL) ports.

- NetApp CN1610: ports 0/13 through 0/16 (10 GbE)
- Cisco Nexus 3232C: ports 1/31-32 (100GbE)



You must use 4x10G breakout cables on the Cisco Nexus 3232C cluster switch.

The following table shows the cabling connections that are required at each stage as you make the transition from NetApp CN1610 switches to Cisco Nexus 3232C cluster switches:

Stage	Description	Required cables		
Initial	CN1610 to CN1610 (SFP+ to SFP+)	4 SFP+ optical fiber or copper direct-attach cables		
Transition	CN1610 to 3232C (QSFP to SFP+)	1 QSFP and 4 SFP+ optical fiber of copper breakout cables		
Final	3232C to 3232C (QSFP to QSFP)	2 QSFP optical fiber or copper direct-attach cables		

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

The ONTAP and NX-OS versions that are supported in this procedure are listed on the Cisco Ethernet Switches page.

The ONTAP and FASTPATH versions that are supported in this procedure are listed on the NetApp CN1601 and CN1610 Switches page.

How to migrate a CN1610 cluster switch to a Cisco Nexus 3232C cluster switch

To replace the existing CN1610 cluster switches in a cluster with Cisco Nexus 3232C cluster switches, you must perform a specific sequence of tasks.

About this task

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

- The nodes are n1, n2, n3, and n4.
- The command outputs might vary depending on different releases of ONTAP software.
- The CN1610 switches to be replaced are CL1 and CL2.
- The Nexus 3232C switches to replace the CN1610 switches are C1 and C2.
- n1_clus1 is the first cluster logical interface (LIF) that is connected to cluster switch 1 (CL1 or C1) for node n1.
- n1 clus2 is the first cluster LIF that is connected to cluster switch 2 (CL2 or C2) for node n1.
- n1 clus3 is the second LIF that is connected to cluster switch 2 (CL2 or C2) for node n1.
- n1_clus4 is the second LIF that is connected to cluster switch 1 (CL1 or C1) for node n1.
- The 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.

Procedure summary

The following list describes the stages you must complete when changing the cluster switches:

- I. Replace cluster switch CL2 with C2 (Steps 1-22)
- II. Replace cluster switch CL1 with C1 (Steps 23-40)

The examples in this procedure use four nodes: Two nodes use four 10 GbE cluster interconnect ports: e0a, e0b, e0c, and e0d. The other two nodes use two 40 GbE cluster interconnect fiber cables: e4a and e4e. The *Hardware Universe* has information about the cluster fiber cables on your platforms.



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

Steps

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 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

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

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

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

	(network	c port show)					
Node:	n1						
		Broadcast			Speed (Mbps)	Health	Ignore
Port	IPspace	Domain	Link	MTU	Admin/Open	Status	Health
Statu	S						
e0a	cluster	cluster	up	9000	auto/10000	_	
e0b	cluster	cluster	up	9000	auto/10000	_	
e0c	cluster	cluster	up	9000	auto/10000	-	_
e0d	cluster	cluster	up	9000	auto/10000	-	-
Node:	n2						
		Broadcast			Speed (Mbps)	Health	Ignore
Port	IPspace	Domain	Link	MTU	Admin/Open	Status	Health
Statu	S						
e0a	cluster	cluster	up	9000	auto/10000	-	
e0b	cluster	cluster	up	9000	auto/10000	-	
e0c	cluster	cluster	up	9000	auto/10000	-	
e0d	cluster	cluster	up	9000	auto/10000	_	

b. Display information about the logical interfaces: network interface show -role cluster

	interface Logical		Network	Current	Current	Is
Vserver	-		Address/Mask	Node	Port	Home
Cluster						
	n1_clus1	up/up	10.10.0.1/24	n1	e0a	true
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2 clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2 clus4	up/up	10.10.0.8/24	n2	e0d	true

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

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

Switch 	Type	Address	Model
 CL1	cluster-network	10.10.1.101	CN1610
Serial Number: 01234	567		
Is Monitored: true			
Reason:			
Software Version: 1.2.0	.7		
Version Source: ISDP			
CL2	cluster-network	10.10.1.102	CN1610
Serial Number: 01234	568		
Is Monitored: true			
Reason:			
Software Version: 1.2.0	.7		
Version Source: ISDP			

4. Verify that the appropriate RCF and image are installed on the new 3232C switches as necessary for your requirements, and make any essential site customizations.

You should prepare both switches at this time. If you need to upgrade the RCF and image, you must

complete the following procedure:

- a. See the Cisco Ethernet Switch page on the NetApp Support Site.
- b. Note your switch and the required software versions in the table on that page.
- c. Download the appropriate version of the RCF.
- d. Click **CONTINUE** on the **Description** page, accept the license agreement, and then follow the instructions on the **Download** page to download the RCF.
- e. Download the appropriate version of the image software at Cisco® Cluster and Management Network Switch Reference Configuration File Download.
- 5. Migrate the LIFs associated with the second CN1610 switch that you plan to replace: network interface migrate -verser cluster -lif lif-name -source-node source-node-name destination-node destination-node-name -destination-port destination-port-name

You must migrate each LIF 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
```

6. Verify the cluster's health: network interface show -role cluster

•	interface Logical	Status	Network	Current	Current	Is
Vserver	-		Address/Mask	Node	Port	Home
 Cluster						
	n1_clus1	up/up	10.10.0.1/24	n1	e0a	true
	n1_clus2	up/up	10.10.0.2/24	n1	e0a	false
	n1_clus3	up/up	10.10.0.3/24	n1	e0d	false
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2_clus2	up/up	10.10.0.6/24	n2	e0a	false
	n2_clus3	up/up	10.10.0.7/24	n2	e0d	false
	n2 clus4	up/up	10.10.0.8/24	n2	e0d	true

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

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

The following example shows the four cluster interconnect ports being shut down for node n1 and node n2:

```
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
```

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

```
cluster ping-cluster -node node-name
```

The following example shows node n1 being pinged and the RPC status indicated afterward:

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1 clus1 n1 e0a 10.10.0.1
Cluster n1 clus2 n1
                        e0b
                               10.10.0.2
Cluster n1_clus3 n1
                        e0c 10.10.0.3
Cluster n1 clus4 n1
                        e0d
                               10.10.0.4
Cluster n2 clus1 n2
                         e0a 10.10.0.5
Cluster n2 clus2 n2
                         e0b
                               10.10.0.6
Cluster n2 clus3 n2
                         e0c
                                10.10.0.7
Cluster n2_clus4 n2
                         e0d
                                10.10.0.8
Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293 Ping status:
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
. . . . . . . . . . . . . . . .
Detected 9000 byte MTU on 16 path(s):
    Local 10.10.0.1 to Remote 10.10.0.5
    Local 10.10.0.1 to Remote 10.10.0.6
    Local 10.10.0.1 to Remote 10.10.0.7
    Local 10.10.0.1 to Remote 10.10.0.8
   Local 10.10.0.2 to Remote 10.10.0.5
    Local 10.10.0.2 to Remote 10.10.0.6
    Local 10.10.0.2 to Remote 10.10.0.7
    Local 10.10.0.2 to Remote 10.10.0.8
    Local 10.10.0.3 to Remote 10.10.0.5
    Local 10.10.0.3 to Remote 10.10.0.6
    Local 10.10.0.3 to Remote 10.10.0.7
    Local 10.10.0.3 to Remote 10.10.0.8
    Local 10.10.0.4 to Remote 10.10.0.5
    Local 10.10.0.4 to Remote 10.10.0.6
    Local 10.10.0.4 to Remote 10.10.0.7
    Local 10.10.0.4 to Remote 10.10.0.8
Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)
```

9. Shut down the ISL ports 13 through 16 on the active CN1610 switch CL1 using the appropriate command.

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

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

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

10. Build a temporary ISL between CL1 and C2:

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

The following example shows a temporary ISL being built between CL1 (ports 13-16) and C2 (ports e1/24/1-4) using the Cisco switchport mode trunk command:

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

11. Remove the cables that are attached to the CN1610 switch CL2 on all the nodes.

Using supported cabling, you must reconnect the disconnected ports on all the nodes to the Nexus 3232C switch C2.

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

You must attach the appropriate Cisco QSFP28 to SFP+ breakout cables connecting port 1/24 on the new Cisco 3232C switch C2 to ports 13 to 16 on the existing CN1610 switch CL1.



When reconnecting any cables to the new Cisco 3232C switch, the cables used must be either optical fiber or Cisco twinax cables.

13. Make the ISL dynamic by configuring the ISL interface 3/1 on the active CN1610 switch to disable the static mode.

This configuration matches with the ISL configuration on the 3232C switch C2 when the ISLs are brought up on both switches in Step 10.

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

The following example shows the ISL interface 3/1 being configured to make the ISL dynamic:

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

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

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

The following example shows ISL ports 13 through 16 being brought up on the port-channel interface 3/1:

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

15. Verify that the ISLs are up on the CN1610 switch CL1.

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

The following example shows the ISLs being verified as up on the CN1610 switch CL1:

```
(CL1) # show port-channel 3/1
Channel Name..... ISL-LAG
Link State..... Up
Admin Mode..... Enabled
Type..... Dynamic
Load Balance Option..... 7
(Enhanced hashing mode)
Mbr
    Device/
             Port
                     Port
Ports Timeout
             Speed
                     Active
0/13 actor/long
            10 Gb Full True
   partner/long
0/14 actor/long
            10 Gb Full True
   partner/long
0/15 actor/long
            10 Gb Full True
    partner/long
0/16
    actor/long
            10 Gb Full True
                            partner/long
```

16. Verify that the ISLs are up on the 3232C switch C2: show port-channel summary

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

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

The following example shows the ISLs being verified as up on the 3232C switch C2:

17. Bring up all of the cluster interconnect ports that are connected to the 3232C switch C2 on all of the nodes: network port modify -node node-name -port port-name -up-admin true

The following example shows how to bring up the cluster interconnect ports connected to the 3232C switch C2:

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

18. Revert all of the migrated cluster interconnect LIFs that are connected to C2 on all of the nodes: network interface revert -vserver cluster -lif lif-name

```
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
```

19. Verify that all of the cluster interconnect ports are reverted to their home ports: network interface show -role cluster

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

(network	interface	snow)				
	Logical	Status	Network	Current	Current	Is
Jserver	Interface	Admin/Oper	Address/Mask	Node	Port	Home
Cluster						
	n1_clus1	up/up	10.10.0.1/24	n1	e0a	true
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2_clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2 clus4	up/up	10.10.0.8/24	n2	e0d	true

20. Verify that all of the cluster ports are connected: network port show -role cluster

The following example shows the output verifying all of the cluster interconnects are up:

clust		work port show)	low -ro	le clu	ster		
Node:	n1						
		Broadcast			Speed (Mbps)		Ignore
Port Status	-	Domain	Link	MTU	Admin/Open	Status	Health
							-
e0a	cluster	cluster	up	9000	auto/10000	_	
e0b	cluster	cluster	up	9000	auto/10000	-	
e0c	cluster	cluster	up	9000	auto/10000	_	_
e0d	cluster	cluster	up	9000	auto/10000	_	_
Node:	n2						
		Broadcast			Speed (Mbps)	Health	Ignore
Port	IPspace	Domain	Link	MTU	Admin/Open	Status	Health
Status	3						
							-
e0a	cluster	cluster	up	9000	auto/10000	-	
e0b	cluster	cluster	up	9000	auto/10000	-	
	cluster		up	9000	auto/10000	-	
e0d	cluster	cluster	up	9000	auto/10000	-	
8 ent:	ries were	displayed.					

21. Ping the remote cluster interfaces and then perform a remote procedure call server check: cluster ping-cluster -node node-name

The following example shows node n1 being pinged and the RPC status indicated afterward:

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1 clus1 n1
                         e0a 10.10.0.1
Cluster n1 clus2 n1
                        e0b
                                10.10.0.2
Cluster n1 clus3 n1
                         e0c 10.10.0.3
                                10.10.0.4
Cluster n1 clus4 n1
                        e0d
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
                         e0d 10.10.0.8
Cluster n2 clus4 n2
Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
. . . .
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
. . . . . . . . . . . . . . . . . . .
Detected 1500 byte MTU on 16 path(s):
    Local 10.10.0.1 to Remote 10.10.0.5
    Local 10.10.0.1 to Remote 10.10.0.6
    Local 10.10.0.1 to Remote 10.10.0.7
   Local 10.10.0.1 to Remote 10.10.0.8
   Local 10.10.0.2 to Remote 10.10.0.5
   Local 10.10.0.2 to Remote 10.10.0.6
    Local 10.10.0.2 to Remote 10.10.0.7
    Local 10.10.0.2 to Remote 10.10.0.8
    Local 10.10.0.3 to Remote 10.10.0.5
    Local 10.10.0.3 to Remote 10.10.0.6
   Local 10.10.0.3 to Remote 10.10.0.7
    Local 10.10.0.3 to Remote 10.10.0.8
    Local 10.10.0.4 to Remote 10.10.0.5
    Local 10.10.0.4 to Remote 10.10.0.6
    Local 10.10.0.4 to Remote 10.10.0.7
    Local 10.10.0.4 to Remote 10.10.0.8
Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
4 paths up, 0 paths down (udp check)
```

22. Migrate the LIFs that are associated with the first CN1610 switch CL1: network interface migrate -vserver cluster -lif *lif-name* -source-node *node-name*

You must migrate each cluster LIF individually to the appropriate cluster ports hosted on cluster switch C2 as shown in the following example:

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

23. Verify the cluster's status: network interface show -role cluster

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

	Logical	Status	Network	Current	Current	Is
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port	Home
Cluster						
	n1_clus1	up/up	10.10.0.1/24	n1	e0b	false
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1 clus4	up/up	10.10.0.4/24	n1	e0c	false
	n2_clus1	up/up	10.10.0.5/24	n2	e0b	false
	n2 clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2 clus4	up/up	10.10.0.8/24	n2	e0c	false

24. Shut down the node ports that are connected to CL1 on all of the nodes: network port modify -node node-name -port port-name -up-admin false

The following example shows specific ports being shut down on nodes n1 and n2:

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

25. Shut down the ISL ports 24, 31, and 32 on the active 3232C switch C2.

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

The following example shows ISLs 24, 31, and 32 being shut down on the active 3232C switch C2:

```
C2# configure
C2(config)# interface ethernet 1/24/1-4
C2(config-if-range)# shutdown
C2(config-if-range)# exit
C2(config)# interface ethernet 1/31-32
C2(config-if-range)# shutdown
C2(config-if-range)# exit
C2(config-if-range)# exit
C2(config)# exit
```

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

Using the appropriate cabling, you must reconnect the disconnected ports on all the nodes to the Nexus 3232C switch C1.

27. Remove the QSFP28 cables from Nexus 3232C C2 port e1/24.

You must connect ports e1/31 and e1/32 on C1 to ports e1/31 and e1/32 on C2 using supported Cisco QSFP28 optical fiber or direct-attach cables.

28. Restore the configuration on port 24 and remove the temporary port-channel 2 on C2:

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

The following example shows the running-configuration file being copied to the startup-configuration file:

```
C2# configure
C2(config) # no interface breakout module 1 port 24 map 10g-4x
C2(config) # no interface port-channel 2
C2(config-if) # interface e1/24
C2(config-if) # description 100GbE/40GbE Node Port
C2(config-if) # spanning-tree port type edge
Edge port type (portfast) should only be enabled on ports connected to a
single
host. Connecting hubs, concentrators, switches, bridges, etc... to this
interface when edge port type (portfast) is enabled, can cause temporary
bridging loops.
Use with CAUTION
Edge Port Type (Portfast) has been configured on Ethernet 1/24 but will
only
have effect when the interface is in a non-trunking mode.
C2(config-if) # spanning-tree bpduguard enable
C2(config-if) # mtu 9216
C2(config-if-range) # exit
C2(config)# exit
C2# copy running-config startup-config
[############ 100%
Copy Complete.
```

29. Bring up ISL ports 31 and 32 on C2, the active 3232C switch.

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

The following example shows ISLs 31 and 32 being brought upon the 3232C switch C2:

30. Verify that the ISL connections are up on the 3232C switch C2.

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

The following example shows the ISL connections being verified. Ports Eth1/31 and Eth1/32 indicate (P), meaning that both the ISL ports are up in the port-channel:

```
C1# show port-channel summary
Flags: D - Down P - Up in port-channel (members)
       I - Individual H - Hot-standby (LACP only)
       s - Suspended r - Module-removed
       S - Switched R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
Group Port- Type Protocol Member Ports
    Channel
1 Po1(SU) Eth LACP Eth1/31(P) Eth1/32(P)
C2# show port-channel summary
Flags: D - Down P - Up in port-channel (members)
      I - Individual H - Hot-standby (LACP only)
       s - Suspended r - Module-removed
       S - Switched R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
_____
Group Port- Type Protocol Member Ports
    Channel
1 Po1(SU) Eth LACP Eth1/31(P) Eth1/32(P)
```

31. Bring up all of the cluster interconnect ports connected to the new 3232C switch C1 on all of the nodes: network port modify -node node-name -port port-name -up-admin true

The following example shows all of the cluster interconnect ports connected to the new 3232C switch C1 being brought up:

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

32. Verify the status of the cluster node port: network port show -role cluster

The following example shows output that verifies that the cluster interconnect ports on nodes n1 and n2 on the new 3232C switch C1 are up:

```
cluster::*> network port show -role cluster
     (network port show)
Node: n1
          Broadcast
                           Speed (Mbps) Health Ignore
Port IPspace Domain Link MTU Admin/Open Status Health
Status
_____
e0a cluster cluster up 9000 auto/10000
e0b cluster cluster up 9000 auto/10000 e0c cluster cluster up 9000 auto/10000
e0d cluster cluster up 9000 auto/10000 -
Node: n2
          Broadcast
                            Speed (Mbps) Health Ignore
Port IPspace Domain Link MTU Admin/Open Status Health
Status
_____
e0a cluster cluster up 9000 auto/10000
e0b cluster cluster up 9000 auto/10000
e0c cluster cluster up 9000 auto/10000
e0d cluster cluster up 9000 auto/10000
8 entries were displayed.
```

33. Revert all of the migrated cluster interconnect LIFs that were originally connected to C1 on all of the nodes: network interface revert -server cluster -lif *lif-name*

You must migrate each LIF individually as shown in the following example:

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

34. Verify that the interface is now home: network interface show -role cluster

The following example shows the status of cluster interconnect interfaces is up and "Is Home" for nodes n1 and n2:

(network	interface	snow)				
	Logical	Status	Network	Current	Current	Is
Jserver	Interface	Admin/Oper	Address/Mask	Node	Port	Home
Cluster						
	n1_clus1	up/up	10.10.0.1/24	n1	e0a	true
	n1_clus2	up/up	10.10.0.2/24	n1	e0b	true
	n1_clus3	up/up	10.10.0.3/24	n1	e0c	true
	n1_clus4	up/up	10.10.0.4/24	n1	e0d	true
	n2_clus1	up/up	10.10.0.5/24	n2	e0a	true
	n2_clus2	up/up	10.10.0.6/24	n2	e0b	true
	n2_clus3	up/up	10.10.0.7/24	n2	e0c	true
	n2 clus4	up/up	10.10.0.8/24	n2	e0d	true

35. Ping the remote cluster interfaces and then perform a remote procedure call server check: cluster ping-cluster -node host-name

The following example shows node n1 being pinged and the RPC status indicated afterward:

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1 e0a 10.10.0.1
Cluster n1 clus2 n1
                        e0b
                               10.10.0.2
Cluster n1_clus3 n1 e0c 10.10.0.3
Cluster n1 clus4 n1
                        e0d
                               10.10.0.4
Cluster n2 clus1 n2
                        e0a 10.10.0.5
                        e0b 10.10.0.6
Cluster n2 clus2 n2
Cluster n2 clus3 n2
                        e0c
                               10.10.0.7
Cluster n2 clus4 n2 e0d 10.10.0.8
Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8
Cluster Vserver Id = 4294967293
Ping status:
. . . .
Basic connectivity succeeds on 16 path(s)
Basic connectivity fails on 0 path(s)
. . . . . . . . . . . . . . . . . . .
Detected 9000 byte MTU on 16 path(s):
    Local 10.10.0.1 to Remote 10.10.0.5
    Local 10.10.0.1 to Remote 10.10.0.6
    Local 10.10.0.1 to Remote 10.10.0.7
   Local 10.10.0.1 to Remote 10.10.0.8
    Local 10.10.0.2 to Remote 10.10.0.5
    Local 10.10.0.2 to Remote 10.10.0.6
    Local 10.10.0.2 to Remote 10.10.0.7
    Local 10.10.0.2 to Remote 10.10.0.8
    Local 10.10.0.3 to Remote 10.10.0.5
    Local 10.10.0.3 to Remote 10.10.0.6
   Local 10.10.0.3 to Remote 10.10.0.7
    Local 10.10.0.3 to Remote 10.10.0.8
    Local 10.10.0.4 to Remote 10.10.0.5
    Local 10.10.0.4 to Remote 10.10.0.6
    Local 10.10.0.4 to Remote 10.10.0.7
    Local 10.10.0.4 to Remote 10.10.0.8
Larger than PMTU communication succeeds on 16 path(s)
RPC status:
4 paths up, 0 paths down (tcp check)
3 paths up, 0 paths down (udp check)
```

- 36. Expand the cluster by adding nodes to the Nexus 3232C cluster switches.
- 37. Display the information about the devices in your configuration:

The following examples show nodes n3 and n4 with 40 GbE cluster ports connected to ports e1/7 and e1/8, respectively, on both the Nexus 3232C cluster switches. Both nodes are joined to the cluster. The 40 GbE cluster interconnect ports used are e4a and e4e.

	Local	Discovered						
	Port	Device	Inter			Platform	L	
	/cdp							
	e0a	C1	Ether	net1/1	/1	N3K-C323	2C	
	e0b	C2	Ether	net1/1	/1	N3K-C323	2C	
	e0c	C2	Ether	net1/1	/2	N3K-C323	2C	
	e0d	C1	Ether	net1/1	/2	N3K-C323	2C	
n2	/cdp							
	e0a	C1	Ether	net1/1	/3	N3K-C323	2C	
	e0b	C2	Ether	net1/1	/3	N3K-C323	2C	
	e0c	C2	Ether	net1/1	/4	N3K-C323	2C	
	e0d	C1	Ether	net1/1	/4	N3K-C323	2C	
n3	/cdp							
	e4a	C1	Ether	net1/7		N3K-C323	2C	
	e4e	C2	Ether	net1/7		N3K-C323	2C	
n4	/cdp							
	e4a	C1	Ether	net1/8		N3K-C323	2C	
	e4e	C2	Ether	net1/8		N3K-C323	2C	
cluste	er::*> nork port	re displayed. etwork port s show)		role cli	ustei	c		
		Broadcast			Spee	ed (Mbps)	Health	Ignore
Port	IPspace	Domain	Link	MTU	Admi	in/Open	Status	Health
Status	5							
								_
e0a	cluster	cluster	up	9000	auto	/10000	-	
e0b	cluster	cluster	up	9000	auto	/10000	-	
	_	_		0000		/10000		
e0c	cluster	cluster	up	9000	auto)/10000	_	_

[°] network device-discovery show

[°] network port show -role cluster

[°] network interface show -role cluster

 $^{^{\}circ}$ system cluster-switch show

Node:	n2	Broadcast			Speed	(Mbna)	Шоо	1+h T	anoro
Port	IPspace	Domain	Link	MTU	Speed (Admin/C	_			gnore ealth
Statu	_	Domain	TITIK	MIO	Admilli/ C	ppen	Sta	cus II	earth
e0a	cluster	cluster	up	9000	auto/10	000	-		
e0b	cluster	cluster	up	9000	auto/10000		-		
e0c	cluster	cluster	up	9000	auto/10	0000	-		
e0d	cluster	cluster	up	9000	auto/10	0000	-		-
Node:	n3								
		Broadcast		Speed (Mbr		(Mbps)	Health Igr		gnore
Port	-	Domain	Link	MTU	Admin/C)pen	Sta	tus H	ealth
Statu	IS								
e4a	cluster	cluster	up	9000	auto/40	000	-		
e4e	cluster	cluster	up	9000	auto/40000				-
Node:	n4	.				(2.61			
D	T.D	Broadcast	T 2 1-	MODIT	Speed (_			gnore
Port	IPspace	Domain	Link	MTU	Admin/C	pen	Sta ⁻	tus H	ealth
Statu	IS 								
e4a	cluster	cluster	up	9000	auto/40000		_		
e4e	cluster	cluster	up	9000	auto/40000		_		
12 en	tries were	e displayed.	•						
clust	er::*> net	work interf	face sh	now -ro	le clust	er			
	ork interf								
	Logica	ıl Status	5	Networ	k	Curr	ent	Curren	t Is
Vserv	er Interf	ace Admin/	Oper/	Addres	s/Mask	Node		Port	Home
Clust		1 /		10 10	0 1/04	1		- 0	
	_	up/up						e0a	
	-	up/up						e0b	
	_	up/up						e0c	
	_	up/up us1 up/up						e0d e0a	
	-	up/up us2 up/up						e0a e0b	
	_	up/up us3 up/up						e0c	
				1 () - 1 () -	U . // 44	117.		-00	LIUE
	_	up/up						e0d	

10.10.0.9/24 n3 n3 clus1 up/up e4a true n3 clus2 up/up 10.10.0.10/24 n3 e4e true n4 clus1 up/up 10.10.0.11/24 n4 e4a true n4 clus2 up/up 10.10.0.12/24 n4 e4e true 12 entries were displayed. cluster::> system cluster-switch show Switch Address Model Type cluster-network 10.10.1.103 NX3232C C1 Serial Number: FOX000001 Is Monitored: true Reason: Software Version: Cisco Nexus Operating System (NX-OS) Software, Version 7.0(3)16(1)Version Source: CDP C2 cluster-network 10.10.1.104 NX3232C Serial Number: FOX000002 Is Monitored: true Reason: Software Version: Cisco Nexus Operating System (NX-OS) Software, Version 7.0(3)I6(1)Version Source: CDP CL1 cluster-network 10.10.1.101 CN1610 Serial Number: 01234567 Is Monitored: true Reason: Software Version: 1.2.0.7

Serial Number: 01234568

Is Monitored: true

Version Source: ISDP

CL2

Reason:

Software Version: 1.2.0.7

Version Source: ISDP 4 entries were displayed.

38. Remove the replaced CN1610 switches if they are not automatically removed: system cluster-switch

cluster-network 10.10.1.102 CN1610

delete -device switch-name

You must delete both devices individually as shown in the following example:

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

39. Verify that the proper cluster switches are monitored: system cluster-switch show

The following example shows cluster switches C1 and C2 are being monitored:

```
cluster::> system cluster-switch show
                         Type
                                         Address
                                                         Model
_____________
С1
                         cluster-network 10.10.1.103 NX3232C
    Serial Number: FOX000001
     Is Monitored: true
          Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software,
Version
                  7.0(3) I6(1)
   Version Source: CDP
C2
                         cluster-network 10.10.1.104 NX3232C
    Serial Number: FOX000002
     Is Monitored: true
        Reason:
  Software Version: Cisco Nexus Operating System (NX-OS) Software,
Version
                  7.0(3) I6(1)
   Version Source: CDP
2 entries were displayed.
```

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

system cluster-switch log setup-password

system cluster-switch log enable-collection

```
cluster::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
C1
C2
cluster::*> system cluster-switch log setup-password
Enter the switch name: C1
RSA key fingerprint is e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
cluster::*> system cluster-switch log setup-password
Enter the switch name: C2
RSA key fingerprint is 57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
cluster::*> system cluster-switch log enable-collection
Do you want to enable cluster log collection for all nodes in the
cluster?
\{y|n\}: [n] y
Enabling cluster switch log collection.
cluster::*>
```



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

41. If you suppressed automatic case creation, reenable it by invoking an AutoSupport message: system node autosupport invoke -node * -type all -message MAINT=END

Related information

NetApp CN1601 and CN1610 description page

Cisco Ethernet Switch description page

Hardware Universe

Copyright information

Copyright © 2022 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

Trademark information

NETAPP, the NETAPP logo, and the marks listed at http://www.netapp.com/TM are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.