

# Migrate switches

Cluster and storage switches

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## Migrate switches

# Migrate CN1610 cluster switches to BES-53248 cluster switches

To migrate the CN1610 cluster switches in a cluster to Broadcom-supported BES-53248 cluster switches, review the migration requirements and then follow the migration procedure.

The following cluster switches are supported:

- CN1610
- BES-53248

## **Review requirements**

Verify that your configuration meets the following requirements:

- Some of the ports on BES-53248 switches are configured to run at 10GbE.
- The 10GbE connectivity from nodes to BES-53248 cluster switches have been planned, migrated, and documented.
- The cluster is fully functioning (there should be no errors in the logs or similar issues).
- Initial customization of the BES-53248 switches is complete, so that:
  - BES-53248 switches are running the latest recommended version of EFOS software.
  - Reference Configuration Files (RCFs) have been applied to the switches.
  - Any site customization, such as DNS, NTP, SMTP, SNMP, and SSH, are configured on the new switches.

#### **Node connections**

The cluster switches support the following node connections:

- NetApp CN1610: ports 0/1 through 0/12 (10GbE)
- BES-53248: ports 0/1-0/16 (10GbE/25GbE)



Additional ports can be activated by purchasing port licenses.

#### ISL ports

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

- NetApp CN1610: ports 0/13 through 0/16 (10GbE)
- BES-53248: ports 0/55-0/56 (100GbE)

The *NetApp Hardware Universe* contains information about ONTAP compatibility, supported EFOS firmware, and cabling to BES-53248 cluster switches.

#### ISL cabling

The appropriate ISL cabling is as follows:

- **Beginning:** For CN1610 to CN1610 (SFP+ to SFP+), four SFP+ optical fiber or copper direct-attach cables.
- **Final:** For BES-53248 to BES-53248 (QSFP28 to QSFP28), two QSFP28 optical transceivers/fiber or copper direct-attach cables.

## Migrate the switches

Follow this procedure to migrate CN1610 cluster switches to BES-53248 cluster switches.

#### About the examples

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

- The examples use two nodes, each deploying two 10 GbE cluster interconnect ports: e0a and e0b.
- The command outputs might vary depending on different releases of ONTAP software.
- The CN1610 switches to be replaced are CL1 and CL2.
- The BES-53248 switches to replace the CN1610 switches are cs1 and cs2.
- The nodes are node1 and node2.
- The switch CL2 is replaced by cs2 first, followed with CL1 by cs1.
- The BES-53248 switches are pre-loaded with the supported versions of Reference Configuration File (RCF) and Ethernet Fabric OS (EFOS) with ISL cables connected on ports 55 and 56.
- The cluster LIF names are node1\_clus1 and node1\_clus2 for node1, and node2\_clus1 and node2\_clus2 for node2.

#### About this task

This procedure covers the following scenario:

- The cluster starts with two nodes connected to two CN1610 cluster switches.
- CN1610 switch CL2 is replaced by BES-53248 switch cs2:
  - Shut down the ports to the cluster nodes. All ports must be shut down simultaneously to avoid cluster instability.
  - Disconnect the cables from all cluster ports on all nodes connected to CL2, and then use supported cables to reconnect the ports to the new cluster switch cs2.
- CN1610 switch CL1 is replaced by BES-53248 switch cs1:
  - Shut down the ports to the cluster nodes. All ports must be shut down simultaneously to avoid cluster instability.
  - Disconnect the cables from all cluster ports on all nodes connected to CL1, and then use supported cables to reconnect the ports to the new cluster switch cs1.



No operational inter-switch link (ISL) is needed during this procedure. This is by design because RCF version changes can affect ISL connectivity temporarily. To ensure non-disruptive cluster operations, the following procedure migrates all of the cluster LIFs to the operational partner switch while performing the steps on the target switch.

#### **Step 1: Prepare for migration**

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

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

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



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

The following command suppresses automatic case creation for two hours:

```
cluster1::*> system node autosupport invoke -node * -type all -message
MAINT=2h
```

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

```
set -privilege advanced
```

The advanced prompt (\*>) appears.

#### Step 2: Configure ports and cabling

1. On the new switches, confirm that the ISL is cabled and healthy between switches cs1 and cs2:

```
show port-channel
```

The following example shows that the ISL ports are **up** on switch cs1:

```
(cs1) # show port-channel 1/1
Link State..... Up
Admin Mode..... Enabled
Port channel Min-links..... 1
Load Balance Option..... 7
(Enhanced hashing mode)
Mbr Device/ Port Port
Ports Timeout
         Speed
              Active
_____ ____
0/55 actor/long 100G Full True
  partner/long
0/56 actor/long 100G Full True
  partner/long
(cs1) #
```

The following example shows that the ISL ports are **up** on switch cs2:

```
(cs2) # show port-channel 1/1
Channel Name..... Cluster-ISL
Link State..... Up
Admin Mode..... Enabled
Load Balance Option..... 7
(Enhanced hashing mode)
Mbr
   Device/
          Port
               Port
Ports Timeout
          Speed
              Active
----- ------
0/55 actor/long 100G Full True
  partner/long
0/56 actor/long 100G Full True
   partner/long
```

2. Display the cluster ports on each node that is connected to the existing cluster switches:

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

Node/	Local	Discovered	
Protocol	Port	Device (LLDP: ChassisID)	Interface
Platform			
node2	/cdp		
	e0a	CL1	0/2
CN1610			
	e0b	CL2	0/2
CN1610			
node1	/cdp		
	e0a	CL1	0/1
CN1610			
	e0b	CL2	0/1
CN1610			

- 3. Determine the administrative or operational status for each cluster interface.
  - a. Verify that all the cluster ports are up with a healthy status:

network port show -ipspace Cluster

cluster1	::*> network ]	port show -:	ipspace	Clust	ter		
Node: no	de1						
Ignore							
Health	IIool+b					Speed (Mbps)	
	IPspace	Broadcast	Domain	Link	мтт	Admin/Oner	
Status		DIOACCASC	DOMATH	ПТПК	MIO	Admini/Oper	
e0a	Cluster	Cluster		up	9000	auto/10000	
healthy	false						
e0b	Cluster	Cluster		up	9000	auto/10000	
healthy	false						
Node: no	de2						
T							
Ignore						Speed (Mbps)	
Health	Health					speed (Msps)	
	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	
Status						1	
	Cluster	Cluster		up	9000	auto/10000	
healthy							
	Cluster	Cluster		up	9000	auto/10000	
healthy	false						

b. Verify that all the cluster interfaces (LIFs) are on their home ports:

network interface show -vserver Cluster

		Logical	Status	Network	Current
Current					
Vserver		Interface	Admin/Oper	Address/Mask	Node
Port	Home	9			
Cluster					
		nodel_clus1	l up/up	169.254.209.69/16	node1
e0a	true	_	L up/up	169.254.209.69/16	node1
e0a	true	=		169.254.209.69/16 169.254.49.125/16	
	true	- node1_clus2			
		_ node1_clus2 e	2 up/up		node1
e0b		- node1_clus2 e node2_clus1	2 up/up	169.254.49.125/16	node1

4. Verify that the cluster displays information for both cluster switches:

#### **ONTAP 9.8 and later**

Beginning with ONTAP 9.8, use the command: system switch ethernet show -is-monitoring -enabled-operational true

cluster1::\*> system switch ethernet show -is-monitoring-enabled
-operational true

Serial Number: 01234567
Is Monitored: true

Reason:

Software Version: 1.3.0.3 Version Source: ISDP

CL2 cluster-network 10.10.1.102 CN1610

Serial Number: 01234568
Is Monitored: true

Reason:

Software Version: 1.3.0.3

Version Source: ISDP

cluster1::\*>

#### **ONTAP 9.7 and earlier**

For ONTAP 9.7 and earlier, use the command: system cluster-switch show -is-monitoring -enabled-operational true

cluster1::\*> system cluster-switch show -is-monitoring-enabled -operational true Switch Type Address Model \_\_\_\_\_\_\_ CL1 cluster-network 10.10.1.101 CN1610 Serial Number: 01234567 Is Monitored: true Reason: Software Version: 1.3.0.3 Version Source: ISDP CL2 cluster-network 10.10.1.102 CN1610 Serial Number: 01234568 Is Monitored: true Reason: Software Version: 1.3.0.3 Version Source: ISDP cluster1::\*>

5. Disable auto-revert on the cluster LIFs.

```
cluster1::*> network interface modify -vserver Cluster -lif * -auto
-revert false
```

6. On cluster switch CL2, shut down the ports connected to the cluster ports of the nodes in order to fail over the cluster LIFs:

```
(CL2) # configure
(CL2) (Config) # interface 0/1-0/16
(CL2) (Interface 0/1-0/16) # shutdown
(CL2) (Interface 0/1-0/16) # exit
(CL2) (Config) # exit
(CL2) #
```

7. Verify that the cluster LIFs have failed over to the ports hosted on cluster switch CL1. This might take a few seconds.

network interface show -vserver Cluster

```
cluster1::*> network interface show -vserver Cluster
        Logical Status Network
                                   Current
Current Is
Vserver Interface Admin/Oper Address/Mask Node
Port Home
______
_____
Cluster
     nodel clus1 up/up 169.254.209.69/16 node1
e0a true
        node1_clus2 up/up 169.254.49.125/16 node1
e0a false
       node2 clus1 up/up 169.254.47.194/16 node2
e0a true
       node2_clus2 up/up 169.254.19.183/16 node2
e0a false
```

8. Verify that the cluster is healthy:

cluster show

#### Show example

- 9. Move all cluster node connection cables from the old CL2 switch to the new cs2 switch.
- 10. Confirm the health of the network connections moved to cs2:

```
network port show -ipspace Cluster
```

cluster1	::*> network	port show -	ipspace	Clust	ter		
Node: no	de1						
Ignore							
						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
 ena	Cluster	Cluster		1110	9000	auto/10000	
healthy		CIUSCCI		αр	2000	auco/10000	
	Cluster	Cluster		up	9000	auto/10000	
healthy				-			
Node: no	de2						
Tanama							
Ignore						Speed (Mbps)	Health
Health						Speed (Imps)	iicai cii
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
	Cluster	Cluster		up	9000	auto/10000	
healthy	false Cluster	Cluston		1110	0000	auto/10000	
$\circ$ $\cap$ $b$		1115126		[][)	9000	aul0/10000	

All cluster ports that were moved should be up.

## 11. Check neighbor information on the cluster ports:

network device-discovery show -protocol cdp

```
cluster1::*> network device-discovery show -protocol cdp
          Local Discovered
Protocol
          Port Device (LLDP: ChassisID) Interface
Platform
node2 /cdp
                                            0/2
           e0a
                  CL1
CN1610
           e0b
                  cs2
                                            0/2
                                                              BES-
53248
node1
          /cdp
                                            0/1
           e0a
                  CL1
CN1610
           e0b
                  cs2
                                            0/1
                                                              BES-
53248
```

12. Confirm the switch port connections are healthy from switch cs2's perspective:

```
cs2# show port all
cs2# show isdp neighbors
```

13. On cluster switch CL1, shut down the ports connected to the cluster ports of the nodes in order to fail over the cluster LIFs:

```
(CL1) # configure
(CL1) (Config) # interface 0/1-0/16
(CL1) (Interface 0/1-0/16) # shutdown
(CL1) (Interface 0/13-0/16) # exit
(CL1) (Config) # exit
(CL1) #
```

All cluster LIFs failover to the cs2 switch.

14. Verify that the cluster LIFs have failed over to the ports hosted on switch cs2. This might take a few seconds:

```
network interface show -vserver Cluster
```

```
cluster1::*> network interface show -vserver Cluster
        Logical Status Network
                                    Current
Current Is
Vserver Interface Admin/Oper Address/Mask Node
Port Home
______
_____
Cluster
      node1 clus1 up/up 169.254.209.69/16 node1
e0b
     false
        node1_clus2 up/up 169.254.49.125/16 node1
e0b
    true
        node2 clus1 up/up 169.254.47.194/16 node2
e0b false
        node2_clus2 up/up 169.254.19.183/16 node2
e0b
     true
```

#### 15. Verify that the cluster is healthy:

cluster show

#### Show example

- 16. Move the cluster node connection cables from CL1 to the new cs1 switch.
- 17. Confirm the health of the network connections moved to cs1:

network port show -ipspace Cluster

cluster1	::*> network	port show -	ipspace	Clust	ter		
Node: no	de1						
Ignore							
						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
 ena	Cluster	Cluster		1110	9000	auto/10000	
healthy		CIUSCCI		αр	2000	auco/10000	
	Cluster	Cluster		up	9000	auto/10000	
healthy				-			
Node: no	de2						
Tanama							
Ignore						Speed (Mbps)	Health
Health						Speed (Imps)	iicai cii
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
	Cluster	Cluster		up	9000	auto/10000	
healthy	false Cluster	Cluston		1110	0000	auto/10000	
$\circ$ $\cap$ $b$		1115126		[][)	9000	aul0/10000	

All cluster ports that were moved should be up.

## 18. Check neighbor information on the cluster ports:

network device-discovery show

Node/	Local	Discovered		
Protocol	Port	Device (LLDP: ChassisID)	Interface	
Platform				
node1	/cdp			
	e0a	cs1	0/1	BES-
53248				
	e0b	cs2	0/1	BES-
53248				
node2	/cdp			
	e0a	cs1	0/2	BES-
53248				
	e0b	cs2	0/2	BES-
53248			- ,	

19. Confirm the switch port connections are healthy from switch cs1's perspective:

```
cs1# show port all
cs1# show isdp neighbors
```

20. Verify that the ISL between cs1 and cs2 is still operational:

show port-channel

The following example shows that the ISL ports are **up** on switch cs1:

```
(cs1) # show port-channel 1/1
Link State..... Up
Admin Mode..... Enabled
Port channel Min-links..... 1
Load Balance Option..... 7
(Enhanced hashing mode)
Mbr Device/ Port Port
              Active
Ports Timeout
         Speed
_____ ____
0/55 actor/long 100G Full True
  partner/long
0/56 actor/long 100G Full True
  partner/long
(cs1) #
```

The following example shows that the ISL ports are **up** on switch cs2:

```
(cs2) # show port-channel 1/1
Channel Name..... Cluster-ISL
Link State..... Up
Admin Mode..... Enabled
Load Balance Option..... 7
(Enhanced hashing mode)
Mbr
  Device/
          Port
               Port
          Speed
Ports Timeout
              Active
----- ------
0/55 actor/long 100G Full True
  partner/long
0/56 actor/long 100G Full True
   partner/long
```

21. Delete the replaced CN1610 switches from the cluster's switch table, if they are not automatically removed:

#### **ONTAP 9.8 and later**

Beginning with ONTAP 9.8, use the command: system switch ethernet delete -device device-name

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

#### **ONTAP 9.7 and earlier**

For ONTAP 9.7 and earlier, use the command: system cluster-switch delete -device device-name

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

## Step 3: Verify the configuration

1. Enable auto-revert on the cluster LIFs.

```
cluster1::*> network interface modify -vserver Cluster -lif * -auto
-revert true
```

2. Verify that the cluster LIFs have reverted to their home ports (this might take a minute):

```
network interface show -vserver Cluster
```

If the cluster LIFs have not reverted to their home port, manually revert them:

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

3. Verify that the cluster is healthy:

```
cluster show
```

4. Ping the remote cluster interfaces to verify connectivity:

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

```
cluster1::*> cluster ping-cluster -node node2
Host is node2
Getting addresses from network interface table...
Cluster node1 clus1 169.254.209.69 node1
                                               e0a
Cluster node1 clus2 169.254.49.125 node1
                                               e0b
Cluster node2 clus1 169.254.47.194 node2
                                               e0a
Cluster node2 clus2 169.254.19.183 node2
                                               e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
. . . . . . . . . . . . . . . . . . .
Detected 9000 byte MTU on 4 path(s):
    Local 169.254.47.194 to Remote 169.254.209.69
    Local 169.254.47.194 to Remote 169.254.49.125
    Local 169.254.19.183 to Remote 169.254.209.69
    Local 169.254.19.183 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

5. To set up log collection, run the following command for each switch. You are prompted to enter the switch name, username, and password for log collection.

```
system switch ethernet log setup-password
```

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2
cluster1::*> system switch ethernet log setup-password
Enter the switch name: cs1
Would you like to specify a user other than admin for log
collection? {y|n}: n
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
cluster1::*> system switch ethernet log setup-password
Enter the switch name: cs2
Would you like to specify a user other than admin for log
collection? {y|n}: n
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
```

6. To start log collection, run the following command, replacing DEVICE with the switch used in the previous command. This starts both types of log collection: the detailed **Support** logs and an hourly collection of **Periodic** data.

system switch ethernet log modify -device <switch-name> -log-request true

```
cluster1::*> system switch ethernet log modify -device cs1 -log
    request true

Do you want to modify the cluster switch log collection
    configuration?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*> system switch ethernet log modify -device cs2 -log
    request true

Do you want to modify the cluster switch log collection
    configuration?
{y|n}: [n] y

Enabling cluster switch log collection.
```

Wait for 10 minutes and then check that the log collection completes:

system switch ethernet log show



If any of these commands return an error or if the log collection does not complete, contact NetApp support.

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

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

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

## Migrate to a switched NetApp cluster environment

If you have an existing two-node *switchless* cluster environment, you can migrate to a two-node *switched* cluster environment using Broadcom-supported BES-53248 cluster switches, which enables you to scale beyond two nodes in the cluster.

The migration process works for all cluster node ports using optical or Twinax ports, but it is not supported on this switch if nodes are using onboard 10GBASE-T RJ45 ports for the cluster network ports.

## **Review requirements**

Review the following requirements for the cluster environment.

- Be aware that most systems require two dedicated cluster-network ports on each controller.
- Make sure that the BES-53248 cluster switch is set up as described in Replace requirements before starting this migration process.
- For the two-node switchless configuration, ensure that:
  - The two-node switchless configuration is properly set up and functioning.
  - The nodes are running ONTAP 9.5P8 and later. Support for 40/100 GbE cluster ports starts with EFOS firmware version 3.4.4.6 and later.
  - All cluster ports are in the up state.
  - All cluster logical interfaces (LIFs) are in the up state and on their home ports.
- For the Broadcom-supported BES-53248 cluster switch configuration, ensure that:
  - The BES-53248 cluster switch is fully functional on both switches.
  - Both switches have management network connectivity.
  - There is console access to the cluster switches.
  - BES-53248 node-to-node switch and switch-to-switch connections are using Twinax or fiber cables.

The *NetApp Hardware Universe* contains information about ONTAP compatibility, supported EFOS firmware, and cabling to BES-53248 switches.

- Inter-Switch Link (ISL) cables are connected to ports 0/55 and 0/56 on both BES-53248 switches.
- Initial customization of both the BES-53248 switches is complete, so that:
  - BES-53248 switches are running the latest version of software.
  - BES-53248 switches have optional port licenses installed, if purchased.
  - Reference Configuration Files (RCFs) are applied to the switches.
- Any site customization (SMTP, SNMP, and SSH) are configured on the new switches.

#### Port group speed constraints

- The 48 10/25GbE (SFP28/SFP+) ports are combined into 12 x 4-port groups as follows: Ports 1-4, 5-8, 9-12, 13-16, 17-20, 21-24, 25-28, 29-32, 33-36, 37-40, 41-44, and 45-48.
- The SFP28/SFP+ port speed must be the same (10GbE or 25GbE) across all ports in the 4-port group.
- If speeds in a 4-port group are different, the switch ports will not operate correctly.

## Migrate to the cluster environment

#### About the examples

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

- The names of the BES-53248 switches are cs1 and cs2.
- The names of the cluster SVMs are node1 and node2.
- The names of the LIFs are node1\_clus1 and node1\_clus2 on node 1, and node2\_clus1 and node2\_clus2 on node 2 respectively.

- The cluster1::\*> prompt indicates the name of the cluster.
- The cluster ports used in this procedure are e0a and e0b.

The *NetApp Hardware Universe* contains the latest information about the actual cluster ports for your platforms.

#### **Step 1: Prepare for migration**

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

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

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



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

The following command suppresses automatic case creation for two hours:

```
cluster1::*> system node autosupport invoke -node \* -type all -message
MAINT=2h
```

2. Change the privilege level to advanced, entering **y** when prompted to continue:

```
set -privilege advanced
```

The advanced prompt (\*>) appears.

#### Step 2: Configure ports and cabling

1. Disable all activated node-facing ports (not ISL ports) on both the new cluster switches cs1 and cs2.



You must not disable the ISL ports.

The following example shows that node-facing ports 1 through 16 are disabled on switch cs1:

```
(cs1) # configure
(cs1) (Config) # interface 0/1-0/16
(cs1) (Interface 0/1-0/16) # shutdown
(cs1) (Interface 0/1-0/16) # exit
(cs1) (Config) # exit
```

Verify that the ISL and the physical ports on the ISL between the two BES-53248 switches cs1 and cs2 are up:

```
show port-channel
```

The following example shows that the ISL ports are up on switch cs1:

```
(cs1) # show port-channel 1/1
Link State..... Up
Admin Mode..... Enabled
Port channel Min-links..... 1
Load Balance Option..... 7
(Enhanced hashing mode)
Mbr Device/ Port
               Port
Ports Timeout
          Speed
              Active
_____ ____
0/55 actor/long
          100G Full True
   partner/long
0/56 actor/long 100G Full True
   partner/long
(cs1) #
```

The following example shows that the ISL ports are up on switch cs2:

```
(cs2) # show port-channel 1/1
Channel Name..... Cluster-ISL
Link State..... Up
Admin Mode..... Enabled
Load Balance Option..... 7
(Enhanced hashing mode)
Mbr
   Device/
          Port
               Port
Ports Timeout
          Speed
               Active
----- ------
0/55 actor/long
          100G Full True
  partner/long
0/56 actor/long 100G Full True
   partner/long
```

3. Display the list of neighboring devices:

This command provides information about the devices that are connected to the system.

#### Show example

The following example lists the neighboring devices on switch cs1:

The following example lists the neighboring devices on switch cs2:

#### 4. Verify that all cluster ports are up:

network port show -ipspace Cluster

cluster1:	:*> network p	oort show -ipspace	Clus	ter		
Node: nod	e1					
Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	
e0a healthy	Cluster	Cluster	up	9000	auto/10000	
_	Cluster	Cluster	up	9000	auto/10000	
Node: nod	e2					
Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	
e0a healthy	Cluster	Cluster	up	9000	auto/10000	
_	Cluster	Cluster	up	9000	auto/10000	

## 5. Verify that all cluster LIFs are up and operational:

network interface show -vserver Cluster

```
cluster1::*> network interface show -vserver Cluster
         Logical Status
                           Network
                                         Current
Current Is
        Interface Admin/Oper Address/Mask
Vserver
                                     Node
Port
     Home
_____
Cluster
         node1 clus1 up/up
                          169.254.209.69/16 node1
e0a
      true
                           169.254.49.125/16 node1
         node1 clus2 up/up
e0b
      true
         node2 clus1 up/up
                           169.254.47.194/16 node2
e0a
      true
         node2 clus2 up/up
                           169.254.19.183/16 node2
e0b
      true
```

6. Disable auto-revert on the cluster LIFs.

```
cluster1::*> network interface modify -vserver Cluster -lif * -auto
-revert false
```

7. Disconnect the cable from cluster port e0a on node1, and then connect e0a to port 1 on cluster switch cs1, using the appropriate cabling supported by the BES-53248 switches.

The NetApp Hardware Universe contains more information about cabling.

- 8. Disconnect the cable from cluster port e0a on node2, and then connect e0a to port 2 on cluster switch cs1, using the appropriate cabling supported by the BES-53248 switches.
- 9. Enable all node-facing ports on cluster switch cs1.

The following example shows that ports 1 through 16 are enabled on switch cs1:

```
(cs1)# configure
(cs1) (Config)# interface 0/1-0/16
(cs1) (Interface 0/1-0/16)# no shutdown
(cs1) (Interface 0/1-0/16)# exit
(cs1) (Config)# exit
```

10. Verify that all cluster ports are up:

CIUSCEII	::*> network	POIC SHOW	rpspace	CIUS	CET		
Node: no	de1						
Ignore							
Health						Speed (Mbps)	Health
	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e0a healthy	Cluster	Cluster		up	9000	auto/10000	
_	Cluster	Cluster		up	9000	auto/10000	
Node: no	de2						
Ignore						Speed (Mbps)	uoal+h
Health						speed (Mbps)	пеатсп
Port Status	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e0a healthy	Cluster false	Cluster		up	9000	auto/10000	
	Cluster	Cluster		up	9000	auto/10000	

## 11. Verify that all cluster LIFs are up and operational:

network interface show -vserver Cluster

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

12. Display information about the status of the nodes in the cluster:

cluster show

#### Show example

The following example displays information about the health and eligibility of the nodes in the cluster:

```
Node Health Eligibility Epsilon
-----
nodel true true false
node2 true true false
```

- 13. Disconnect the cable from cluster port e0b on node1, and then connect e0b to port 1 on cluster switch cs2, using the appropriate cabling supported by the BES-53248 switches.
- 14. Disconnect the cable from cluster port e0b on node2, and then connect e0b to port 2 on cluster switch cs2, using the appropriate cabling supported by the BES-53248 switches.
- 15. Enable all node-facing ports on cluster switch cs2.

The following example shows that ports 1 through 16 are enabled on switch cs2:

```
(cs2)# configure
(cs2) (Config)# interface 0/1-0/16
(cs2) (Interface 0/1-0/16)# no shutdown
(cs2) (Interface 0/1-0/16)# exit
(cs2) (Config)# exit
```

## 16. Verify that all cluster ports are up:

network port show -ipspace Cluster

## Show example

clusterl	::*> network	port snow -:	rpspace	Clust	cer		
Node: no	de1						
Ignore						0 1/261	
Health						Speed (Mbps)	неатти
	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e0a healthy	Cluster	Cluster		up	9000	auto/10000	
	Cluster	Cluster		up	9000	auto/10000	
Node: no	de2						
Ignore						Speed(Mbps)	Hoalth
Health						speed (Hsps)	nearen
Port Status	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
	Cluster	Cluster		up	9000	auto/10000	
	Cluster	Cluster		up	9000	auto/10000	

## Step 3: Verify the configuration

1. Enable auto-revert on the cluster LIFs.

```
cluster1::*> network interface modify -vserver Cluster -lif * -auto
-revert true
```

2. Verify that the cluster LIFs have reverted to their home ports (this might take a minute):

```
network interface show -vserver Cluster
```

If the cluster LIFs have not reverted to their home port, manually revert them:

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

3. Verify that all interfaces display true for Is Home:

```
network interface show -vserver Cluster
```



This might take several minutes to complete.

#### Show example

	Logical	Status	Network	Current	
Current 3	Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port
Home					
					-
Cluster					
	node1_clus1	up/up	169.254.209.69/16	node1	e0a
true					
	node1_clus2	up/up	169.254.49.125/16	node1	e0b
true					
	node2_clus1	up/up	169.254.47.194/16	node2	e0a
true					
	node2 clus2	up/up	169.254.19.183/16	node2	e0b

4. Verify that both nodes each have one connection to each switch:

```
show isdp neighbors
```

The following example shows the appropriate results for both switches:

```
(cs1) # show isdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route
Bridge,
             S - Switch, H - Host, I - IGMP, r - Repeater
Device ID
          Intf
                   Holdtime Capability Platform -- Port
ID
______ ____
node1
          0/1
                   175
                           Н
                                              e0a
                                     FAS2750
node2
          0/2
                   157
                           Н
                                     FAS2750
                                              e0a
          0/55
                          R
                                              0/55
cs2
                   178
                                     BES-53248
          0/56 178 R
cs2
                                     BES-53248
                                              0/56
(cs2) # show isdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route
Bridge,
             S - Switch, H - Host, I - IGMP, r - Repeater
Device ID
          Intf Holdtime Capability Platform Port
ID
node1
         0/1
                    137
                            Η
                                     FAS2750
                                              e0b
          0/2
node2
                    179
                           Н
                                     FAS2750
                                              e0b
          0/55
cs1
                    175
                            R
                                     BES-53248
                                              0/55
          0/56
                    175
                           R
                                     BES-53248
                                              0/56
cs1
```

5. Display information about the discovered network devices in your cluster:

network device-discovery show -protocol cdp

Node/	Local	Discovered		
Protocol	Port	Device (LLDP: ChassisID)	Interface	
Platform				
node2	/cdp			
	e0a	cs1	0/2	BES-
53248				
	e0b	cs2	0/2	BES-
53248				
node1	/cdp			
	e0a	cs1	0/1	BES-
53248				
	e0b	cs2	0/1	BES-

6. Verify that the settings are disabled:

network options switchless-cluster show



It might take several minutes for the command to complete. Wait for the '3 minute lifetime to expire' announcement.

The false output in the following example shows that the configuration settings are disabled:

```
cluster1::*> network options switchless-cluster show
Enable Switchless Cluster: false
```

7. Verify the status of the node members in the cluster:

cluster show

The following example shows information about the health and eligibility of the nodes in the cluster:

```
Node Health Eligibility Epsilon
-----
nodel true true false
node2 true true false
```

8. Verify that the cluster network has full connectivity using the command:

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

#### Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1 clus1 192.168.168.26 node1 e0a
Cluster nodel clus2 192.168.168.27 nodel e0b
Cluster node2 clus1 192.168.168.28 node2 e0a
Cluster node2 clus2 192.168.168.29 node2 e0b
Local = 192.168.168.28 192.168.168.29
Remote = 192.168.168.26 192.168.168.27
Cluster Vserver Id = 4294967293
Ping status:
Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)
. . . . . . . . . . . . . . . .
Detected 1500 byte MTU on 4 path(s):
   Local 192.168.168.28 to Remote 192.168.168.26
   Local 192.168.168.28 to Remote 192.168.168.27
    Local 192.168.168.29 to Remote 192.168.168.26
    Local 192.168.168.29 to Remote 192.168.168.27
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

9. Change the privilege level back to admin:

```
set -privilege admin
```

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

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

#### Show example

```
cluster1::*> system node autosupport invoke -node \* -type all
-message MAINT=END
```

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

#### What's next?

After your migration completes, you might need to install the required configuration file to support the Ethernet Switch Health Monitor (CSHM) for BES-53248 cluster switches. See Enable log collection.

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