

Migrate to a two-node switched cluster

ONTAP Systems Switches

NetApp July 19, 2022

This PDF was generated from https://docs.netapp.com/us-en/ontap-systems-switches/switch-bes-53248/migrate-to-2n-switched.html on July 19, 2022. Always check docs.netapp.com for the latest.

Table of Contents

VI	igrate to a two-node switched cluster	1
	Migrate to a two-node switched cluster with Broadcom-supported BES-53248 cluster switches	1
	Migrate to a switched NetApp cluster environment using Broadcom-supported BES-53248 cluster	
	switches	1

Migrate to a two-node switched cluster

Migrate to a two-node switched cluster with Broadcomsupported BES-53248 cluster switches

If you have a two-node switchless cluster, you can migrate, non-disruptively, to a two-node switched cluster that includes Broadcom-supported BES-53248 cluster switches. The documented process works for all cluster node ports using optical or Twinax ports but is not supported on this switch if nodes are using onboard 10GBASE-T RJ45 ports for the cluster network ports.

About this task

Most systems require two dedicated cluster-network ports on each controller.

Ensure that the BES-53248 cluster switch is set up as described in Broadcom-supported BES-53248 switches setup and configuration before starting this migration process.



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

See Installing the Cluster Switch Health Monitor (CSHM) configuration file in the Switch Setup and Configuration Guide for Broadcom-supported BES-53248 switches guide.

Also, see See Install the Cluster Switch Health Monitor (CSHM) configuration file and Configure the cluster switch log collection feature for the steps required to enable cluster health switch log collection used for collecting switch-related log files.

Migrate to a switched NetApp cluster environment using Broadcom-supported BES-53248 cluster switches

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 to enable you to scale beyond two nodes in the cluster.

What you'll need

Two-node switchless configuration:

- The two-node switchless configuration must be properly set up and functioning.
- The nodes must be 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 must be in the up state.
- All cluster logical interfaces (LIFs) must be in the up state and on their home ports.

Broadcom-supported BES-53248 cluster switch configuration:

- The BES-53248 cluster switch must be fully functional on both switches.
- · Both switches must have management network connectivity.

- There must be console access to the cluster switches.
- BES-53248 node-to-node switch and switch-to-switch connections must use 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 must be connected to ports 0/55 and 0/56 on both BES-53248 switches.
- Initial customization of both the BES-53248 switches must be completed. So that the:
 - BES-53248 switches are running the latest version of software
 - BES-53248 switches have optional port licenses installed, if purchased
 - Reference Configuration Files (RCFs) have been applied to the switches

Any site customization, such as SMTP, SNMP, and SSH must be configured on the new switches.

About this task

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.

Steps

 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.

3. 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
```

4. 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
actor/long
          100G Full True
0/55
   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
Type..... Dynamic
Port channel Min-links...... 1
(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
```

5. Display the list of neighboring devices:

```
show isdp neighbors
```

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

The following example lists the neighboring devices on switch cs1:

```
(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
cs2
              0/55
                       176
                                R
                                             BES-53248
                                                         0/55
cs2
              0/56
                       176
                                R
                                             BES-53248
                                                         0/56
```

The following example lists the neighboring devices on switch cs2:

6. Verify that all cluster ports are up:

network port show -ipspace Cluster

Each port should display up for Link and healthy for Health Status.

<pre>cluster1::*> network port show -ipspace Cluster</pre>								
Node: nod	Node: node1							
Port	IPspace	Broadcast	Domain	Link	MTU	Speed(Mbps) Admin/Oper		
e0a e0b Node: nod	Cluster	Cluster Cluster		up up	9000		-	
Port	IPspace	Broadcast	Domain	Link		Speed(Mbps) Admin/Oper	Status	
e0a e0b	Cluster Cluster	Cluster Cluster		up up	9000		_	

7. Verify that all cluster LIFs are up and operational: network interface show -vserver Cluster Each cluster LIF should display true for Is Home and have a Status Admin/Oper of up/up

<pre>cluster1::*> network interface show -vserver Cluster</pre>							
	Logical	Status	Network	Current			
Current Is							
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port		
Home							
Cluster							
	node1_clus	1 up/up	169.254.209.69/16	node1	e0a		
true							
	node1_clus	2 up/up	169.254.49.125/16	node1	e0b		
true					_		
	node2_clus	l up/up	169.254.47.194/16	node2	e0a		
true	1 0 3	2	100 054 10 100 /10	1 0	0.1		
	node2_clus	2 up/up	169.254.19.183/16	node2	e0b		
true							

8. Verify that auto-revert is enabled on all cluster LIFs: network interface show -vserver Cluster -fields auto-revert

9. 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.

- 10. 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.
- 11. 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
```

12. Verify that all cluster LIFs are up, operational, and display as true for Is Home:

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

The following example shows that all of the LIFs are up on node1 and node2 and that Is Home results are true:

cluster1	<pre>cluster1::*> network interface show -vserver Cluster</pre>							
Is	Logical	Status	Network	Current	Current			
Vserver Home	Interface	Admin/Oper	Address/Mask	Node	Port			
Cluster								
true	node1_clus1	up/up	169.254.209.69/16	node1	e0a			
	node1_clus2	up/up	169.254.49.125/16	node1	e0b			
true	node2_clus1	up/up	169.254.47.194/16	node2	e0a			
true	node2_clus2	up/up	169.254.19.183/16	node2	e0b			
true								

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

```
cluster show
```

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

cluster1::*> cluster	show		
Node	Health	Eligibility	Epsilon
node1 node2	true true	true true	false false

- 14. 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.
- 15. 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.
- 16. 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
```

17. Verify that all cluster ports are up:

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

The following example shows that all of the cluster ports are up on node1 and node2:

<pre>cluster1::*> network port show -ipspace Cluster</pre>								
Node: nod	Node: node1							
Ignore								
Health						Speed(Mbps)	Health	
	IPspace	Broadcast I	Domain	Link	MTU	Admin/Oper	Status	
e0a false	Cluster	Cluster		up	9000	auto/10000	healthy	
e0b false	Cluster	Cluster		up	9000	auto/10000	healthy	
Node: nod	e2							
Ignore						Speed(Mbps)	Health	
Health Port	IPspace	Broadcast I	Domain	T.ink	мтп	Admin/Oner	Status	
Status	11 Space	Dioadcast i	Johlath	штик	1110	namin, open	beacus	
	Cluster	Cluster		up	9000	auto/10000	healthy	
e0b false	Cluster	Cluster		up	9000	auto/10000	healthy	

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

network interface show -vserver Cluster



This might take several minutes to complete.

The following example shows that all LIFs are up on node1 and node2 and that Is Home results are true:

cluster1::*> network interface show -vserver Cluster						
	Logical	Status	Network	Current	Current	
Is						
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port	
Home						
Cluster						
	node1_clus1	up/up	169.254.209.69/16	node1	e0a	
true						
	node1_clus2	up/up	169.254.49.125/16	node1	e0b	
true		,				
	node2_clus1	up/up	169.254.47.194/16	node2	e0a	
true	1 0 1 0	,	160 054 10 100/16	1 0	0.1	
.	node2_clus2	up/up	169.254.19.183/16	noae2	e0b	
true						

19. 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 Intf Holdtime Capability Platform -- Port ID Device ID 0/1 node1 175 Η FAS2750 e0a node2 0/2 157 Н FAS2750 e0a cs2 0/55 178 R BES-53248 0/55 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 Intf Holdtime Capability Platform Port ID _____ node1 0/1 137 Н FAS2750 e0b node2 0/2 179 Н FAS2750 e0b cs1 0/55 175 R BES-53248 0/55 cs1 0/56 175 R BES-53248 0/56

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

network device-discovery show -protocol cdp

<pre>cluster1::*> network device-discovery show -protocol cdp</pre>							
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-53248			

21. 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
```

22. 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:

cluster1::*> cluster	show		
Node	Health	Eligibility	Epsilon
node1 node2	true true	true true	false

23. Ensure that the cluster network has full connectivity using the command:

cluster ping-cluster -node node-name

```
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 node1 clus2 192.168.168.27 node1 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)
```

24. Change the privilege level back to admin:

```
set -privilege admin
```

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

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

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

After you finish

See Install the Cluster Switch Health Monitor (CSHM) configuration file and Configure the cluster switch log collection feature for the steps required to enable cluster health switch log collection used for collecting switch-related log files.

Related information

NetApp Hardware Universe

Broadcom-supported BES-53248 switches setup and configuration NetApp KB Article: How to suppress automatic case creation during scheduled maintenance windows

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