Broadcom®-supported Switches

Migrating CN1610 Cluster Switches to Broadcom-supported BES-53248 Cluster Switches

For Broadcom-supported BES-53248 switches

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Migrating CN1610 cluster switches to Broadcom-supported BES-53248 cluster switches

You must be aware of certain configuration information, port connections, and cabling requirements when you migrate CN1610 cluster switches to Broadcom-supported BES-53248 cluster switches.

- The following cluster switches are supported:
  - CN1610
  - BES-53248
- The cluster switches support the following node connections:
  - NetApp CN1610: ports 0/1 through 0/12 (10 GbE)
  - BES-53248: ports 0/1-0/16 (10/25 GbE)

    Note: Additional ports can be activated by purchasing port licenses.
- The cluster switches use the following inter-switch link (ISL) ports:
  - NetApp CN1610: ports 0/13 through 0/16 (10 GbE)
  - BES-53248: ports 0/55-0/56 (100 GbE)
- The Hardware Universe contains information about supported cabling to BES-53248 switches.
- The appropriate ISL cabling is as follows:
  - Beginning: For CN1610 to CN1610 (SFP+ to SFP+), four SFP+ optical fiber or copper direct-attach cables.
  - Interim: For CN1610 to BES-53248 (SFP+ to SFP28), four 10G SFP+ optical transceiver/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.

Note: 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 *Setting up and configuring* guide.

How to migrate CN1610 cluster switches to BES-53248 cluster switches

To replace the existing CN1610 cluster switches in a cluster with Broadcom-supported BES-53248 cluster switches, you must perform a specific sequence of tasks.

About this task

The examples in this procedure use two nodes, each deploying two 10 GbE cluster interconnect ports: `e0a` and `e0b`.

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

- 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 CL1 is replaced by cs1 first, followed with CL2 by cs2.
- 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.

This procedure covers the following scenario:

- The cluster starts with two nodes connected to two CN1610 cluster switches.
- Cluster switch CL1 is replaced by switch cs1:
  - 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.
  - Disconnect the cables between ISL ports CL1 and CL2, and then use supported cables to reconnect the ISL ports from CL2 to cs1.
- Cluster switch CL2 is replaced by switch cs2:
  - 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.
  - Disconnect the cables between ISL ports 13 to 16 between cs1 and CL2.

Steps

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

   `set -privilege advanced`

   The advanced prompt (*>) appears.

2. 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=`*`x`***`h`**

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

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

   #### Example

   The following command suppresses automatic case creation for two hours:

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

3. Verify that `auto-revert` is enabled on all cluster LIFs:

   `network interface show -vserver Cluster -fields auto-revert`

Example

```
cluster1::*> network interface show -vserver Cluster -fields auto-revert

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

4 entries were displayed.
```

4. Display information about the devices in your configuration:

   `network device-discovery show -protocol cdp`

   Example

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

```
cluster1::*> network device-discovery show -protocol cdp
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

4 entries were displayed.
```

5. Determine the administrative or operational status for each cluster interface.

   a. Display the cluster network port attributes:

      `network port show -ipspace Cluster`

      Example

```
cluster1::*> network port show -ipspace Cluster

Node: node1
                                                                        Ignore
                                                  Speed(Mbps) Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status    Status
--------- ------------ ---------------- ---- ---- ----------- --------- ------
e0a       Cluster      Cluster          up   9000  auto/10000 healthy  false
e0b       Cluster      Cluster          up   9000  auto/10000 healthy  false

Node: node2
                                                                        Ignore
                                                  Speed(Mbps) Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status    Status
--------- ------------ ---------------- ---- ---- ----------- --------- ------
e0a       Cluster      Cluster          up   9000  auto/10000 healthy  false
e0b       Cluster      Cluster          up   9000  auto/10000 healthy  false

4 entries were displayed.
```

   b. Display information about the logical interfaces:

      `network port show -vserver Cluster`

      Example

```
cluster1::*> network interface show -vserver Cluster

            Logical    Status     Network            Current       Current Is
Vserver     Interface  Admin/Oper Address/Mask       Node          Port    Home
----------- ---------- ---------- ------------------ ------------- ------- ----
Cluster
```

```
            node1_clus1  up/up    169.254.209.69/16  node1         e0a     true
            node1_clus2  up/up    169.254.49.125/16  node1         e0b     true
            node2_clus1  up/up    169.254.47.194/16  node2         e0a     true
            node2_clus2  up/up    169.254.19.183/16  node2         e0b     true
4 entries were displayed.
```

6. Verify that the appropriate RCF and image are installed on the new BES-53248 switches as necessary for your requirements, and make any essential site customizations, such as users and passwords, network addresses, and so on.

7. Ping the remote cluster interfaces:

   `cluster ping-cluster -node node-name`

   Example

   The following example shows how to ping the remote cluster interfaces:

```
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)
```

8. Shut down the ISL ports 13 through 16 on the active CN1610 switch CL2:

   `shutdown`

   Example

   The following example shows how to shut down ISL ports 13 through 16 on the CN1610 switch CL2:

```
(CL2)# configure
(CL2)(Config)# interface 0/13-0/16
(CL2)(Interface 0/13-0/16)# shutdown
(CL2)(Interface 0/13-0/16)# exit
(CL2)(Config)# exit
(CL2)#
```

9. Build a temporary ISL between CN1610 CL2 and new BES-53248 cs1. The ISL will only be defined on cs1 as the existing ISL on CL2 can be reused.

   Example

   The following example builds a temporary ISL on cs1 (ports 13-16) to be connected to the existing ISL on CL2 (ports 13-16):

```
(cs1) # configure
(cs1) (Config)# port-channel name 1/2 temp-isl-cn1610
(cs1) (Config)# interface 0/13-0/16
(cs1) (Interface 0/13-0/16)# no spanning-tree edgeport
(cs1) (Interface 0/13-0/16)# addport 1/2
```

```
(cs1) (Interface 0/13-0/16)# exit
(cs1) (Config)# interface lag 2
(cs1) (Interface lag 2)# mtu 9216
(cs1) (Interface lag 2)# port-channel load-balance 7
(cs1) (Config)# exit

(cs1) # show port-channel 1/2
Local Interface................................ 1/2
Channel Name................................... temp-isl-cn1610
Link State..................................... Down
Admin Mode..................................... Enabled
Type........................................... Static
Port-channel Min-links......................... 1
Load Balance Option............................ 7
(Enhanced hashing mode)

Mbr     Device/        Port      Port
Ports   Timeout        Speed     Active
------- -------------- --------- -------
0/13    actor/long     10G Full  False
        partner/long
0/14    actor/long     10G Full  False
        partner/long
0/15    actor/long     10G Full  False
        partner/long
0/16    actor/long     10G Full  False
        partner/long
```

10. On all nodes, remove the cables that are attached to the CN1610 switch CL1.

You must then reconnect the disconnected ports on all nodes to the new BES-53248 switch cs1. Refer to the *Hardware Universe* for approved cabling options.

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

You must attach appropriate approved cabling connecting port 0/13 to 0/16 on the new BES-53248 switch cs1, to ports 13 to 16 on existing CN1610 switch CL2.

12. Bring up ISLs 13 through 16 on the active CN1610 switch CL2.

Example

The following example illustrates the process of bringing up ISL ports 13 through 16 on CL2:

```
(CL2)# configure
(CL2)(Config)# interface 0/13-0/16
(CL2)(Interface 0/13-0/16,3/1)# no shutdown
(CL2)(Interface 0/13-0/16,3/1)# exit
(CL2)(Config)# exit
(CL2)#
```

13. Verify that the ISLs are **up** on the CN1610 switch CL2:

`show port-channel`

Example

The `Link State` should be **`Up`**, `Type` should be **`Static`**, and `Port Active` should be **`True`** for ports 0/13 to 0/16:

```
(CL1)# show port-channel 3/1
Local Interface................................ 3/1
Channel Name................................... ISL-LAG
Link State..................................... Up
Admin Mode..................................... Enabled
Type........................................... Static
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
```

14. Verify that the ISL ports are up on the BES-53248 switch:

`show port-channel`

Example

```
(cs1) # show port-channel 1/2

Local Interface............................... 1/2
Channel Name.................................. temp-isl-cn1610
Link State.................................... Up
Admin Mode.................................... Enabled
Type.......................................... Static
Port-channel Min-links........................ 1
Load Balance Option........................... 7

(Src/Dest MAC, VLAN, EType, incoming port)

Mbr     Device/       Port      Port
Ports   Timeout       Speed     Active
------- ------------- --------- -------
0/13    actor/long    10G Full  True
        partner/long
0/14    actor/long    10G Full  True
        partner/long
0/15    actor/long    10G Full  True
        partner/long
0/16    actor/long    10G Full  True
        partner/long
```

15. Verify that all of the cluster interconnect ports are reverted to their home ports:

`network interface show -vserver Cluster`

Example

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

16. Verify that all of the cluster ports are connected:

`network port show -ipspace Cluster`

Example

The following example shows the result of the previous command, verifying that all of the cluster interconnects are up:

```
cluster1::*> network port show -ipspace Cluster

Node: node1
                                                                        Ignore
                                                  Speed(Mbps) Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status    Status
--------- ------------ ---------------- ---- ---- ----------- --------- ------
e0a       Cluster      Cluster          up   9000  auto/10000 healthy   false
e0b       Cluster      Cluster          up   9000  auto/10000 healthy   false

Node: node2
                                                                        Ignore
                                                  Speed(Mbps) Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status    Status
--------- ------------ ---------------- ---- ---- ----------- --------- ------
```

```
e0a       Cluster      Cluster          up   9000  auto/10000 healthy  false
e0b       Cluster      Cluster          up   9000  auto/10000 healthy  false

4 entries were displayed.
```

17. Ping the remote cluster interfaces:

`cluster ping-cluster -node node-name`

Example

The following example shows how to ping the remote cluster interfaces:

```
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     eob
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)
```

18. On all nodes, remove the cables that are attached to the CN1610 switch CL2.

You must then reconnect the disconnected ports on all nodes to the new BES-53248 switch cs2. Refer to the *Hardware Universe* for approved cabling options.

19. Remove four ISL cables from ports 13 to 16 on BES-53248 switch cs1.

20. Remove the temporary port-channel 2 on cs1.

Example

The following example removes port-channel 2 and copies the running-configuration file to the startup-configuration file:

```
(cs1) # configure
(cs1) (Config)# deleteport 1/2 all
(cs1) (Config)# exit
(cs1) # write memory

This operation may take a few minutes.
Management interfaces will not be available during this time.

Are you sure you want to save? (y/n) y

Config file 'startup-config' created successfully .
```

21. Verify the status of the cluster node port:

`network port show -ipspace Cluster`

Example

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

```
cluster1::*> network port show -ipspace Cluster

Node: node1
                                                                        Ignore
                                                  Speed(Mbps) Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status    Status
--------- ------------ ---------------- ---- ---- ----------- --------- ------
e0a       Cluster      Cluster          up   9000  auto/10000 healthy  false
e0b       Cluster      Cluster          up   9000  auto/10000 healthy  false

Node: node2
                                                                        Ignore
                                                  Speed(Mbps) Health    Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status    Status
--------- ------------ ---------------- ---- ---- ----------- --------- ------
e0a       Cluster      Cluster          up   9000  auto/10000 healthy  false
e0b       Cluster      Cluster          up   9000  auto/10000 healthy  false

4 entries were displayed.
```

22. Verify that the interface is now home:

`network interface show -vserver Cluster`

Example

The following example shows the status of cluster interconnect interfaces are **`up`** and `Is home` for node1 and node2:

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

4 entries were displayed.
```

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

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

Example

The following example shows how to ping the remote cluster interfaces:

```
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)
```

24. Display the information about the devices in your configuration:

`network device-discovery show -protocol cdp`

Example

The following examples show node1 and node2 have been migrated from CN1610 CL1 and CL2 to BES-53248 cs1 and cs2:

```
cluster1::*> network device-discovery show -protocol cdp
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

4 entries were displayed.
```

25. Remove the replaced CN1610 switches if they are not automatically removed:

    `system cluster-switch delete -device` *`device-name`*

Example

The following example shows how to remove the CN1610 switches:

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

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

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

Example

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

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