Broadcom-supported Switches

Replacing a Broadcom-supported BES-53248 switch

For Broadcom-supported BES-53248 switches

■ NetApp®

Contents

Configuring a new Broadcom-supported BES-53248 cluster switch

You can configure a new BES-53248 cluster switch by completing the steps detailed in this chapter.

About this task

Installing the Broadcom-supported BES-53248 cluster switch on systems running ONTAP 9.6 and later starts with setting up an IP address and configuration to allow the switch to communicate through the management interface. Then you can install the Ethernet Fabric OS (EFOS) software, reference configuration file (RCF), and other licenses as needed. This procedure is intended for preparing the BES-53248 switch before controllers are added.

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

- The NetApp switch names are *cs1* and *cs2*.

- The example used in this procedure starts the upgrade on the second switch, ***cs2***.

- The cluster LIF names are *node1_clus1* and *node1_clus2* for node1, and *node2_clus1* and *node2_clus2* for node2.

- The IPspace name is Cluster.

- The cluster1::> prompt indicates the name of the cluster.

- The cluster ports on each node are named e0a and e0b.
  See the *Hardware Universe* for the actual cluster ports supported on your platform.
  NetApp Hardware Universe

- The Inter-Switch Links (ISLs) supported for the NetApp switches are ports 0/55 and 0/56.

- The node connections supported for the NetApp switches are ports 0/1 through 0/16 with default licensing.

- The examples in this procedure use two nodes, but you can have up to 24 nodes in a cluster.

Initial installation of the Broadcom-supported BES-53248 cluster switch

You can use this procedure to perform the initial installation of the Broadcom-supported BES-53248 cluster switch.

About this task

You can download the applicable NetApp EFOS software for your cluster switches from the NetApp Support Site at mysupport.netapp.com:

mysupport.netapp.com

EFOS is a wide-ranging software set of advanced networking features and protocols necessary to develop a variety of Ethernet and IP infrastructure systems for data center applications. EFOS software is an architecture suitable for any network organizational device using leading-edge applications that require thorough packet inspection or separation.

This procedure provides a summary of the process to install your switches and get them running:

Steps

1. Connect the serial port to the host or serial port of your choice.

2. Connect the management port (the RJ-45 wrench port on the left side of the switch) to the same network where your TFTP server is located.

3. At the console, set the host side serial settings:

   - 115200 baud

   - 8 data bits

   - 1 stop bit

   - parity: none

   - flow control: none

4. Log in to the switch as `admin` and press enter when prompted for a password. The default switch name is routing. At the prompt, **enable**. This gives you access to Privileged EXEC mode for switch configuration.

   Example

   ```
   User:admin
   Password:
   (Routing)> enable
   Password:
   (Routing) #
   ```

5. Change the switch name to cs2:

   Example

   ```
   (Routing) # hostname cs2
   (cs2) #
   ```

6. To set a static IP address, use the `serviceport protocol`, `network protocol`, and `serviceport ip` commands as shown in the example.

   The serviceport is set to use DHCP by default. The IP address, subnet mask, and default gateway address are assigned automatically.

   Example

   ```
   (cs2) # serviceport protocol none
   (cs2) # network protocol none
   (cs2) # serviceport ip ipaddr netmask gateway
   ```

7. Verify the results using the command:

   show serviceport

   The following example shows IP information provided by DHCP server.

   Example

   ```
   (cs2) # show serviceport
   Interface Status.............................. Up
   IP Address.................................... 172.19.2.2
   Subnet Mask................................... 255.255.255.0
   Default Gateway............................... 172.19.2.254
   IPv6 Administrative Mode...................... Enabled
   IPv6 Prefix is ............................... fe80::dac4:97ff:fe71:123c/64
   IPv6 Default Router........................... fe80::20b:45ff:fea9:5dc0
   ```

```
Configured IPv4 Protocol....................... DHCP
Configured IPv6 Protocol....................... None
IPv6 AutoConfig Mode........................... Disabled
Burned In MAC Address.......................... D8:C4:97:71:12:3C
```

Installing the EFOS software

You can use this procedure to install the EFOS software on the Broadcom-supported BES-53248 cluster switch.

Steps

1. Connect the BES-53248 cluster switch to the management network.

2. Use the `ping` command to verify connectivity to the server hosting EFOS, licenses, and the RCF file.

   Example

   This example verifies that the switch is connected to the server at IP address 172.19.2.1:

   ```
   (cs2) # ping 172.19.2.1
   Pinging 172.19.2.1 with 0 bytes of data:

   Reply From 172.19.2.1: icmp_seq = 0. time= 5910 usec.
   ```

3. Back up the current active image on cs2:

   show bootvar

   Example

   ```
   (cs2) # show bootvar

    Image Descriptions

    active :
    backup :


    Images currently available on Flash


    --------------------------------------------------------------------
    unit      active       backup       current-active     next-active
    --------------------------------------------------------------------

       1      3.4.3.1      Q.10.22.1    3.4.3.1            3.4.3.1

   (cs2) # copy active backup
   Copying active to backup
   Management access will be blocked for the duration of the operation
   Copy operation successful

   (cs2) # show bootvar

   Image Descriptions

    active :
    backup :


    Images currently available on Flash


    --------------------------------------------------------------------
    unit      active       backup       current-active     next-active
    --------------------------------------------------------------------

       1      3.4.3.1      3.4.3.1      3.4.3.1            3.4.3.1

   (cs2) #
   ```

4. Verify the running version of the EFOS software:

```
show version
```

Example

```
(cs2) # show version

Switch: 1

System Description............................. Quanta IX8-B 48x25GB SFP 8x100GB QSFP,
3.4.3.1, Linux 4.4.117-ceeeb99d, 2016.05.00.04
Machine Type.................................. Quanta IX8-B 48x25GB SFP 8x100GB
QSFP
Machine Model................................. IX8-B
Serial Number................................. QTFCU38260014
Maintenance Level............................. A
Manufacturer.................................. 0xbc00
Burned In MAC Address......................... D8:C4:97:71:12:3D
Software Version.............................. 3.4.3.1
Operating System.............................. Linux 4.4.117-ceeeb99d
Network Processing Device..................... BCM56873_A0
CPLD Version.................................. 0xff040c03

Additional Packages........................... BGP-4
..............................................     QOS
..............................................     Multicast
.............................................. IPv6
.............................................. Routing
.............................................. Data Center
.............................................. OpEN API
.............................................. Prototype Open API
```

5. Download the image file to the switch.

Copying the image file to the active image means that when you reboot, that image establishes the running EFOS version. The previous image remains available as a backup.

Example

```
(cs2) # copy sftp://root@172.19.2.1//tmp/EOFS-3.4.3.2.stk active
Remote Password:********

Mode.......................................... SFTP
Set Server IP................................. 172.19.2.1
Path.......................................... //tmp/
Filename...................................... EFOS-3.4.3.2.stk
Data Type..................................... Code
Destination Filename.......................... active

Management access will be blocked for the duration of the transfer
Are you sure you want to start? (y/n) y
SFTP Code transfer starting...


File transfer operation completed successfully.
```

6. Display the boot images for the active and backup configuration:

```
show bootvar
```

Example

```
(cs2) # show bootvar

Image Descriptions

 active :
 backup :


 Images currently available on Flash

 -----------------------------------------------------------------
 unit     active      backup     current-active       next-active
 -----------------------------------------------------------------

    1     3.4.3.1     3.4.3.1        3.4.3.1              3.4.3.2
```

7. Reboot the switch:

```
reload
```

Example

```
(cs2) # reload

The system has unsaved changes.
Would you like to save them now? (y/n) y

Config file 'startup-config' created successfully .
Configuration Saved!
System will now restart!
```

8. Log in again and verify the new version of the EFOS software:

```
show version
```

Example

```
(cs2) # show version

Switch: 1

System Description............................ x86_64-quanta_common_rglbmc-r0, 3.4.3.2,
Linux 4.4.117-ceeeb99d, 2016.05.00.04
Machine Type.................................. x86_64-quanta_common_rglbmc-
r0
Machine Model................................. BES-53248
Serial Number................................. QTFCU38260014
Maintenance Level............................. A
Manufacturer.................................. 0xbc00
Burned In MAC Address......................... D8:C4:97:71:12:3D
Software Version.............................. 3.4.3.1
Operating System.............................. Linux 4.4.117-ceeeb99d
Network Processing Device..................... BCM56873_A0
CPLD Version.................................. 0xff040c03

Additional Packages........................... BGP-4
.............................................     QOS
.............................................     Multicast
............................................. IPv6
............................................. Routing
............................................. Data Center
............................................. OpEN API
............................................. Prototype Open API
```

Installing licenses for Broadcom-supported BES-53248 cluster switches

The Broadcom-supported BES-53248 cluster switch base model is licensed for 16 10G or 25G ports and two 100G ports. New ports can be added by purchasing more licenses. Each license provides an extra eight 10G or 25G ports and two 40G or 100G ports. New ports can be added by purchasing more licenses. Each license provides an extra eight 10G or 25G ports and two 40G or 100G ports.

Steps

1. Connect the cluster switch to the management network.

2. Use the `ping` command to verify connectivity to the server hosting EFOS, licenses, and the RCF file.

Example

This example verifies that the switch is connected to the server at IP address 172.19.2.1:

```
(cs2) # ping 172.19.2.1
Pinging 172.19.2.1 with 0 bytes of data:

Reply From 172.19.2.1: icmp_seq = 0. time= 5910 usec.
```

3. Check the current license usage on switch cs2:

show license

Example

```
(cs2) # show license
Reboot needed................................... No
Number of active licenses...................... 0

License Index  License Type     Status
-------------- ---------------- -----------

No license file found.
```

4. Install the license file. The following example uses HTTP to copy a license file to a key index 1. Repeat this step to load more licenses and to use different key index numbers.

Example

```
(cs2) # copy http://172.19.2.1/tmp/efos/license1.dat nvram:license-key 1

Mode........................................... HTTP
Set Server IP.................................. 172.19.2.1
Path........................................... tmp/efos/
Filename....................................... license1.dat
Data Type...................................... license

Management access will be blocked for the duration of the transfer
Are you sure you want to start? (y/n) y

File transfer in progress. Management access will be blocked for the duration of the
transfer. Please wait...

License Key transfer operation completed successfully. System reboot is required.
```

5. Display all current license information and note the license status before switch cs2 is rebooted:

show license

Example

```
(cs2) # show license

Reboot needed................................... Yes
Number of active licenses...................... 0


License Index  License Type     Status
-------------- ---------------- ------------------------------
1              Port             License valid but not applied
```

6. Display all licensed ports:

show port all

The ports from the additional license files are not displayed until after the switch is rebooted.

Example

```
(cs2) # show port all

               Admin      Physical    Physical    Link   Link    LACP    Actor
Intf     Type  Mode       Mode        Status      Status Trap    Mode    Timeout
-------- ----- ---------- ----------- ----------- ------ ------- ------ --------
0/1            Disable    Auto                            Down   Enable  Enable long
0/2            Disable    Auto                     Down   Enable Enable  long
0/3            Disable    Auto                     Down   Enable Enable  long
0/4            Disable    Auto                     Down   Enable Enable  long
0/5            Disable    Auto                     Down   Enable Enable  long
0/6            Disable    Auto                     Down   Enable Enable  long
0/7            Disable    Auto                     Down   Enable Enable  long
0/8            Disable    Auto                     Down   Enable Enable  long
0/9            Disable    Auto                     Down   Enable Enable  long
0/10           Disable    Auto                     Down   Enable Enable  long
0/11           Disable    Auto                     Down   Enable Enable  long
```

```
0/12              Disable   Auto                     Down   Enable   Enable long
0/13              Disable   Auto                     Down   Enable   Enable long
0/14              Disable   Auto                     Down   Enable   Enable long
0/15              Disable   Auto                     Down   Enable   Enable long
0/16              Disable   Auto                     Down   Enable   Enable long
0/55              Disable   Auto                     Down   Enable   Enable long
0/56              Disable   Auto                     Down   Enable   Enable long
```

7. Reboot the switch:

reload

Example

```
(cs2) # reload

Are you sure you would like to reset the system? (y/n) y
```

8. Check that the new license is active and note that the license has been applied:

show license

Example

```
(cs2) # show license

Reboot needed................................ No
Number of active licenses..................... 1
Total Downlink Ports enabled.................. 8
Total Uplink Ports enabled.................... 2


License Index  License Type     Status
-------------- ---------------- ------------------
1              Port             License applied
```

9. Check that all new ports are available:

show port all

Example

```
(cs2) # show port all

             Admin     Physical   Physical    Link    Link    LACP    Actor
Intf    Type Mode      Mode       Status      Status  Trap    Mode    Timeout
------- ---- --------- ---------- ---------- ------ ------- ------ --------
0/1          Disable   Auto                   Down   Enable  Enable long
0/2          Disable   Auto                   Down   Enable  Enable long
0/3          Disable   Auto                   Down   Enable  Enable long
0/4          Disable   Auto                   Down   Enable  Enable long
0/5          Disable   Auto                   Down   Enable  Enable long
0/6          Disable   Auto                   Down   Enable  Enable long
0/7          Disable   Auto                   Down   Enable  Enable long
0/8          Disable   Auto                   Down   Enable  Enable long
0/9          Disable   Auto                   Down   Enable  Enable long
0/10         Disable   Auto                   Down   Enable  Enable long
0/11         Disable   Auto                   Down   Enable  Enable long
0/12         Disable   Auto                   Down   Enable  Enable long
0/13         Disable   Auto                   Down   Enable  Enable long
0/14         Disable   Auto                   Down   Enable  Enable long
0/15         Disable   Auto                   Down   Enable  Enable long
0/16         Disable   Auto                   Down   Enable  Enable long
0/17         Disable   Auto                   Down   Enable  Enable long
0/18         Disable   Auto                   Down   Enable  Enable long
0/19         Disable   Auto                   Down   Enable  Enable long
0/20         Disable   Auto                   Down   Enable  Enable long
0/21         Disable   Auto                   Down   Enable  Enable long
0/22         Disable   Auto                   Down   Enable  Enable long
0/23         Disable   Auto                   Down   Enable  Enable long
0/24         Disable   Auto                   Down   Enable  Enable long
0/53         Disable   100G Full              Down   Enable  Enable long
0/54         Disable   100G Full              Down   Enable  Enable long
0/55         Disable   100G Full              Down   Enable  Enable long
0/56         Disable   100G Full              Down   Enable  Enable long
```

10. To apply configuration to additional licensed ports, see *Installing the Reference Configuration File (RCF)* on page 11.

Installing the Reference Configuration File (RCF)

You can install the RCF after setting up the Broadcom-supported BES-53248 cluster switch for the first time and after the new license or licenses have been applied.

Steps

1. Connect the cluster switch to the management network.

2. Use the `ping` command to verify connectivity to the server hosting EFOS, licenses, and the RCF.

   If connectivity is an issue, use an nonrouted network and configure the service port using IP address 192.168.x or 172.19.x. You can reconfigure the service port to the production management IP address later.

   Example

   This example verifies that the switch is connected to the server at IP address 172.19.2.1:

   ```
   (cs2) # ping 172.19.2.1
   Pinging 172.19.2.1 with 0 bytes of data:

   Reply From 172.19.2.1: icmp_seq = 0. time= 5910 usec.
   ```

3. Install the RCF on the BES-53248 switch using the `copy` command.

   Example

   ```
   (cs2) # copy sftp://root@172.19.2.1//tmp/BES-53248_RCFv1.0.4.txt
   Remote Password ********

   Mode........................................... SFTP
   Set Server IP.................................. 172.19.2.1
   Path........................................... //tmp/
   Filename....................................... BES-53248_RCFv1.0.4.txt
   Data Type...................................... Config Script
   Destination Filename........................... BES-53248_RCFv1.0.4.scr

   File with same name already exists.
   WARNING:Continuing with this command will overwrite the existing file.


   Management access will be blocked for the duration of the transfer
   Are you sure you want to start? (y/n) y


   Validating configuration script...
   [the script is now displayed line by line]

   Configuration script validated.
   File transfer operation completed successfully.
   ```

   Note: The `.scr` extension must be set as part of the file name before invoking the script. This extension is the extension for the EFOS operating system. The switch validates the script automatically when it is downloaded to the switch, and the output goes to the console.

4. Verify that the script was downloaded and saved to the file name you gave it:

   script list

Example

```
(cs2) # script list

Configuration Script Name     Size(Bytes)            Date of Modification
---------------------------- -------------- ---------------------
BES-53248_RCF_v1.0.4.scr      771            2019 02 28 06:48:29

1 configuration script(s) found.
2047 Kbytes free.
```

5. Apply the script to the switch.

   The file `BES-53248_RCD_v1.0.4.scr` contains configuration information for a fully-loaded switch with all licenses installed. If your BES-53248 switch does not have any or all licenses installed, an error message is returned. You can safely ignore this error message.

   Note: If your BES-53248 switch does not have any license installed, you see an error message starting with:

   ```
   interface 0/17-0/24

   Unrecognized command : interface 0/17-0/24
   ```

   The following example shows the error message that is returned for a BES-53248 switch with one license installed.

   Example

   ```
   (cs2) # script apply BES-53248_RCF_v1.0.4.scr

   Are you sure you want to apply the configuration script? (y/n) y


   The system has unsaved changes.
   Would you like to save them now? (y/n) y
   [

   Config file 'startup-config' created successfully .
   Configuration Saved!
   [The script is now displayed line by line]...

   interface 0/25-0/32

   Unrecognized command : interface 0/25-0/32

   Error! in configuration script file at line number 77.
   CLI Command :: interface 0/25-0/32.
   Aborting script.
   Execution of configuration script 'BES-53248_RCF_v1.0.4.scr' could not be completed.

   WARNING:
    The running configuration may not be the desired configuration. You might want to reload
   the saved configuration.
   ```

6. Verify the ports for an additional license after the RCF is applied:

   show port all

   Example

   ```
   (cs2) # show port all

                 Admin     Physical   Physical   Link    Link    LACP    Actor
   Intf     Type  Mode      Mode       Status     Status  Trap    Mode    Timeout
   -------- ------ --------- ---------- ---------- ------ ------- ------ --------
   0/1            Enable    Auto                  Down    Enable  Enable long
   0/2            Enable    Auto                  Down    Enable  Enable long
   0/3            Enable    Auto                  Down    Enable  Enable long
   0/4            Enable    Auto                  Down    Enable  Enable long
   0/5            Enable    Auto                  Down    Enable  Enable long
   0/6            Enable    Auto                  Down    Enable  Enable long
   0/7            Enable    Auto                  Down    Enable  Enable long
   0/8            Enable    Auto                  Down    Enable  Enable long
   0/9            Enable    Auto                  Down    Enable  Enable long
   0/10           Enable    Auto                  Down    Enable  Enable long
   ```

```
0/11              Enable    Auto                 Down   Enable  Enable long
0/12              Enable    Auto                 Down   Enable  Enable long
0/13              Enable    Auto                 Down   Enable  Enable long
0/14              Enable    Auto                 Down   Enable  Enable long
0/15              Enable    Auto                 Down   Enable  Enable long
0/16              Enable    Auto                 Down   Enable  Enable long
0/17              Enable    Auto                 Down   Enable  Enable long
0/18              Enable    Auto                 Down   Enable  Enable long
0/19              Enable    Auto                 Down   Enable  Enable long
0/20              Enable    Auto                 Down   Enable  Enable long
0/21              Enable    Auto                 Down   Enable  Enable long
0/22              Enable    Auto                 Down   Enable  Enable long
0/23              Enable    Auto                 Down   Enable  Enable long
0/24              Enable    Auto                 Down   Enable  Enable long
0/53              Enable    100G Full            Down   Enable  Enable long
0/54              Enable    100G Full            Down   Enable  Enable long
0/55              Enable    100G Full            Down   Enable  Enable long
0/56              Enable    100G Full            Down   Enable  Enable long
```

7. Verify on the switch that your changes have been made:

show running-config

Example

```
(cs2) # show running-config
```

8. Save the running configuration so that it becomes the startup configuration when you reboot the switch:

write memory

Example

```
(cs2) # 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.

Configuration Saved!
```

9. Reboot the switch and verify that the running configuration is correct:

reload

Example

```
(cs2) # reload

Are you sure you would like to reset the system? (y/n)y

System will now restart!
```

Replacing a Broadcom-supported BES-53248 cluster switch

Replacing a defective Broadcom-supported BES-53248 cluster switch in a cluster network is a nondisruptive procedure (NDU).

Before you begin

The following conditions must exist before performing the switch replacement in the current environment and on the replacement switch.

- Existing cluster and network infrastructure:

  ◦ The existing cluster must be verified as completely functional, with at least one fully connected cluster switch.

  ◦ All cluster ports must be up.

  ◦ All cluster logical interfaces (LIFs) must be administratively and operationally up and on their home ports.

  ◦ The ONTAP `cluster ping-cluster -node node1` command must indicate that `basic connectivity` and `larger than PMTU communication` are successful on all paths.

- BES-53248 replacement cluster switch:

  ◦ Management network connectivity on the replacement switch must be functional.

  ◦ Console access to the replacement switch must be in place.

  ◦ The node connections are ports 0/1 through 0/16 with default licensing.

  ◦ All Inter-Switch Link (ISL) ports must be disabled on ports 0/55 and 0/56.

  ◦ The desired reference configuration file (RCF) and `EFOS` operating system image switch must be loaded onto the switch.

  ◦ Initial customization of the switch must be complete, as detailed in *Configuring a new Broadcom-supported BES-53248 switch* on page 4.
  Any previous site customizations, such as STP, SNMP, and SSH, should be copied to the new switch.

About this task

You must execute the command for migrating a cluster LIF from the node where the cluster LIF is hosted.

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

- The names of the existing BES-53248 switches are *cs1* and *cs2*.

- The name of the new BES-53248 switch is *newcs2*.

- The node names are *node1* and *node2*.

- The cluster ports on each node are named *e0a* and *e0b*.

- The cluster LIF names are *node1_clus1* and *node1_clus2* for node1, and *node2_clus1* and *node2_clus2* for node2.

- The prompt for changes to all cluster nodes is `cluster1::>`

  Note: The following procedure is based on the following cluster network topology:

```
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.


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.



cluster1::> 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-53248

4 entries were displayed.


(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       H          FAS2750          e0a
node2                   0/2       152       H          FAS2750          e0a
cs2                     0/55      179       R          BES-53248        0/55
cs2                     0/56      179       R          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       129       H          FAS2750          e0b
node2                   0/2       165       H          FAS2750          e0b
cs1                     0/55      179       R          BES-53248        0/55
cs1                     0/56      179       R          BES-53248        0/56
```

Steps

1. Optional: Install the appropriate RCF and image on the switch, newcs2, and make any necessary site preparations.

If necessary, verify, download, and install the appropriate versions of the RCF and EFOS software for the new switch. If you have verified that the new switch is correctly set up and does not need updates to the RCF and EFOS software, continue to step 2.

    a. Go to the *NetApp Cluster and Management Network Switches Reference Configuration File Description Page* on the NetApp Support Site.

    b. Click the link for the *Cluster Network and Management Network Compatibility Matrix*, and then note the required switch software version.

    c. Click your browser's back arrow to return to the **Description** page, click **CONTINUE**, accept the license agreement, and then go to the **Download** page.

    d. Follow the steps on the **Download** page to download the correct RCF and EFOS files for the version of ONTAP software you are installing.

2. On the new switch, log in as admin and shut down all of the ports that will be connected to the node cluster interfaces (ports 1 to 16).

   If the switch that you are replacing is not functional and is powered down, go to Step 4. The LIFs on the cluster nodes should have already failed over to the other cluster port for each node.

   Note: No password is required to enter enable mode.

   Example

   ```
   User:admin
   Password:
   (newcs2) >enable
   (newcs2) #config
   (newcs2)(config)#interface 0/1-0/16
   (newcs2)(interface 0/1-0/16)#shutdown
   ```

3. Verify that all cluster LIFs have auto-revert enabled:

   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
   Cluster    node1_clus2  true
   Cluster    node2_clus1  true
   Cluster             node2_clus2        true

   4 entries were displayed.
   ```

4. Shut down the ISL ports 0/55 and 0/56 on the BES-53248 switch cs1:

   Example

   ```
   (cs1) #config
   (cs1)(config)#interface 0/55-0/56
   (cs1)(interface 0/55-0/56)#shutdown
   ```

5. Remove all cables from the BES-53248 csc2 switch, and then connect them to the same ports on the BES-53248 newcs2 switch.

6. Bring up the ISLs ports 0/55 and 0/56 between the cs1 and newcs2 switches, and then verify the port channel operation status.

The Link State for port-channel 1/1 should be **up** and all member ports should be **True** under the Port Active heading.

Example

This example enables ISL ports 0/55 and 0/56 and displays the Link State for port-channel 1/1 on switch cs1:

```
(cs1) # config
(cs1)(config)# interface 0/55-0/56
(cs1)(interface 0/55-0/56)# no shutdown
(cs1) # show port-channel 1/1


Local Interface............................... 1/1
Channel Name.................................. Cluster-ISL
Link State.................................... Up
Admin Mode.................................... Enabled
Type.......................................... Dynamic
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
```

7. Verify that port e0b is **up**:

   network port show -ipspace Cluster

   Example

   The output should be similar to the following:

```
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/auto   -        false

4 entries were displayed.
```

8. On the same node as you used in the previous step, wait for the cluster LIF node1_clus2 on node1 to auto-revert.

   In this example, LIF node1_clus2 on node1 is successfully reverted if Is Home is **true** and the port is e0b.

   Example

   The following command displays information about the LIFs on both nodes. Bringing up the first node is successful if Is Home is **true** for both cluster interfaces and they show the correct port assignments, in this example e0a and e0b on node1.

```
cluster::> 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     e0a     false

4 entries were displayed.
```

9. If bringing up the first node is successful, repeat Steps 10 through 13 to bring up the cluster port and revert the cluster interface on the other nodes.

10. Display information about the nodes in a cluster:

   cluster show

   Example

   This example shows that the node health for node1 and node2 in this cluster is **true**:

   ```
   cluster1::> cluster show
   Node                    Health Eligibility    Epsilon
   --------------------    ------- -----------    --------
   node1                   true    true           true
   node2                   true    true           true
   ```

11. Confirm the following cluster network configuration: **network port show**

   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.


   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.


   cs1# show cdp neighbors

   Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
                     S - Switch, H - Host, I - IGMP, r - Repeater,
                     V - VoIP-Phone, D - Remotely-Managed-Device,
                     s - Supports-STP-Dispute

   Device-ID           Local Intrfce Hldtme Capability  Platform     Port ID
   node1               Eth1/1         144    H           FAS2980      e0a
   node2               Eth1/2         145    H           FAS2980      e0a
   newcs2(FDO296348FU) Eth1/65        176    R S I s     N9K-C92300YC Eth1/65
   newcs2(FDO296348FU) Eth1/66        176    R S I s     N9K-C92300YC Eth1/66


   Total entries displayed: 4
   ```

```
cs2# show cdp neighbors

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater,
                  V - VoIP-Phone, D - Remotely-Managed-Device,
                  s - Supports-STP-Dispute

Device-ID          Local Intrfce  Hldtme Capability  Platform      Port ID
node1              Eth1/1         139    H           FAS2980       e0b
node2              Eth1/2         124    H           FAS2980       e0b
cs1(FDO220329KU)   Eth1/65        178    R S I s     N9K-C92300YC  Eth1/65
cs1(FDO220329KU)   Eth1/66        178    R S I s     N9K-C92300YC  Eth1/66

Total entries displayed: 4
```

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