



Configure software

Cluster and storage switches

NetApp

January 19, 2024

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Configure software

Software install workflow for Cisco Nexus 9336C-FX2 shared switches

To install and configure software for a Cisco Nexus 9336C-FX2 switch, follow these steps:

1. [Prepare to install NX-OS and RCF.](#)
2. [Install the NX-OS software.](#)
3. [Install the RCF.](#)

Install the RCF after setting up the Nexus 9336C-FX2 switch for the first time. You can also use this procedure to upgrade your RCF version.

Prepare to install NX-OS software and RCF

Before you install the NX-OS software and the Reference Configuration File (RCF), follow this procedure.

About the examples

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

- The names of the two Cisco switches are cs1 and cs2.
- The node names are cluster1-01 and cluster1-02.
- The cluster LIF names are cluster1-01_clus1 and cluster1-01_clus2 for cluster1-01 and cluster1-02_clus1 and cluster1-02_clus2 for cluster1-02.
- The `cluster1::*>` prompt indicates the name of the cluster.

About this task

The procedure requires the use of both ONTAP commands and Cisco Nexus 9000 Series Switches commands; ONTAP commands are used unless otherwise indicated.

Steps

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message: `system node autosupport invoke -node * -type all -message MAINT=x h`

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.

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

```
set -privilege advanced
```

The advanced prompt (`*>`) appears.

3. Display how many cluster interconnect interfaces are configured in each node for each cluster interconnect switch:

```
network device-discovery show -protocol cdp
```

Show example

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

| Node/ Protocol Platform | Local Port | Discovered Device (LLDP: ChassisID) | Interface | |
|-------------------------------|---------------|--|-----------|------|
| cluster1-02/cdp | e0a | cs1 | Eth1/2 | N9K- |
| C9336C | e0b | cs2 | Eth1/2 | N9K- |
| C9336C | | | | |
| cluster1-01/cdp | e0a | cs1 | Eth1/1 | N9K- |
| C9336C | e0b | cs2 | Eth1/1 | N9K- |
| C9336C | | | | |

4 entries were displayed.

4. Check the administrative or operational status of each cluster interface.
- a. Display the network port attributes:

```
`network port show -ipSpace Cluster`
```

Show example

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

Node: cluster1-02

Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status
-----
e0a        Cluster      Cluster      up    9000  auto/10000
healthy
e0b        Cluster      Cluster      up    9000  auto/10000
healthy

Node: cluster1-01

Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status
-----
e0a        Cluster      Cluster      up    9000  auto/10000
healthy
e0b        Cluster      Cluster      up    9000  auto/10000
healthy

4 entries were displayed.
```

b. Display information about the LIFs:

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

Show example

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

| Current Vserver Port | Home | Logical Current Is Interface | Status Admin/Oper | Network Address/Mask | Node |
|----------------------------|------|------------------------------------|----------------------|-------------------------|------|
| ----- | | | | | |
| ----- | | | | | |
| Cluster | | | | | |
| | | cluster1-01_clus1 | up/up | 169.254.209.69/16 | |
| cluster1-01 | | e0a true | | | |
| | | cluster1-01_clus2 | up/up | 169.254.49.125/16 | |
| cluster1-01 | | e0b true | | | |
| | | cluster1-02_clus1 | up/up | 169.254.47.194/16 | |
| cluster1-02 | | e0a true | | | |
| | | cluster1-02_clus2 | up/up | 169.254.19.183/16 | |
| cluster1-02 | | e0b true | | | |

4 entries were displayed.

5. Ping the remote cluster LIFs:

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

Show example

```
cluster1::*> cluster ping-cluster -node cluster1-02
Host is cluster1-02
Getting addresses from network interface table...
Cluster cluster1-01_clus1 169.254.209.69 cluster1-01      e0a
Cluster cluster1-01_clus2 169.254.49.125 cluster1-01      e0b
Cluster cluster1-02_clus1 169.254.47.194 cluster1-02      e0a
Cluster cluster1-02_clus2 169.254.19.183 cluster1-02      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 169.254.19.183 to Remote 169.254.209.69
    Local 169.254.19.183 to Remote 169.254.49.125
    Local 169.254.47.194 to Remote 169.254.209.69
    Local 169.254.47.194 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)
```

6. Verify that the auto-revert command is enabled on all cluster LIFs:

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

Show example

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

| Vserver | Logical Interface | Auto-revert |
|---------|-------------------|-------------|
| Cluster | cluster1-01_clus1 | true |
| | cluster1-01_clus2 | true |
| | cluster1-02_clus1 | true |
| | cluster1-02_clus2 | true |

4 entries were displayed.

7. For ONTAP 9.8 and later, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands:

```
system switch ethernet log setup-password and system switch ethernet log enable-collection
```


Show example

```
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
RSA key fingerprint is
e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs2
RSA key fingerprint is
57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system switch ethernet log enable-collection

Do you want to enable cluster log collection for all nodes in the
cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*>
```



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

8. For ONTAP releases 9.5P16, 9.6P12, and 9.7P10 and later patch releases, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands:

`system cluster-switch log setup-password` and `system cluster-switch log enable-`

collection

Show example

```
cluster1::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs1
RSA key fingerprint is
e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs2
RSA key fingerprint is
57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system cluster-switch log enable-collection

Do you want to enable cluster log collection for all nodes in the
cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*>
```



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

What's next?

[Install the NX-OS software.](#)

Install the NX-OS software

Follow this procedure to install the NX-OS software on the Nexus 9336C-FX2 shared switch.

Before you begin, complete the procedure in [Prepare to install NX-OS and RCF](#).

Review requirements

What you'll need

- A current backup of the switch configuration.
- A fully functioning cluster (no errors in the logs or similar issues).
- [Cisco Ethernet switch page](#). Consult the switch compatibility table for the supported ONTAP and NX-OS versions.
- Appropriate software and upgrade guides available on the Cisco web site for the Cisco switch upgrade and downgrade procedures. See [Cisco Nexus 9000 Series Switches](#).

About the examples

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

- The names of the two Cisco switches are cs1 and cs2.
- The node names are cluster1-01, cluster1-02, cluster1-03, and cluster1-04.
- The cluster LIF names are cluster1-01_clus1, cluster1-01_clus2, cluster1-02_clus1, cluster1-02_clus2, cluster1-03_clus1, cluster1-03_clus2, cluster1-04_clus1, and cluster1-04_clus2.
- The `cluster1::*>` prompt indicates the name of the cluster.

Install the software

The procedure requires the use of both ONTAP commands and Cisco Nexus 9000 Series Switches commands; ONTAP commands are used unless otherwise indicated.

Steps

1. Connect the cluster switch to the management network.
2. Use the ping command to verify connectivity to the server hosting the NX-OS software and the RCF.

Show example

This example verifies that the switch can reach 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. Copy the NX-OS software and EPLD images to the Nexus 9336C-FX2 switch.

Show example

```
cs2# copy sftp: bootflash: vrf management
Enter source filename: /code/nxos.9.3.5.bin
Enter hostname for the sftp server: 172.19.2.1
Enter username: user1

Outbound-ReKey for 172.19.2.1:22
Inbound-ReKey for 172.19.2.1:22
user1@172.19.2.1's password:
sftp> progress
Progress meter enabled
sftp> get /code/nxos.9.3.5.bin /bootflash/nxos.9.3.5.bin
/code/nxos.9.3.5.bin 100% 1261MB 9.3MB/s 02:15
sftp> exit
Copy complete, now saving to disk (please wait)...
Copy complete.

cs2# copy sftp: bootflash: vrf management

Enter source filename: /code/n9000-epld.9.3.5.img
Enter hostname for the sftp server: 172.19.2.1
Enter username: user1

Outbound-ReKey for 172.19.2.1:22
Inbound-ReKey for 172.19.2.1:22
user1@172.19.2.1's password:
sftp> progress
Progress meter enabled
sftp> get /code/n9000-epld.9.3.5.img /bootflash/n9000-
epld.9.3.5.img
/code/n9000-epld.9.3.5.img 100% 161MB 9.5MB/s 00:16
sftp> exit
Copy complete, now saving to disk (please wait)...
Copy complete.
```

4. Verify the running version of the NX-OS software:

```
show version
```

Show example

```
cs2# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
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Lesser General Public License (LGPL) Version 2.1 or
Lesser General Public License (LGPL) Version 2.0.
A copy of each such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://opensource.org/licenses/gpl-3.0.html and
http://www.opensource.org/licenses/lgpl-2.1.php and
http://www.gnu.org/licenses/old-licenses/library.txt.

Software
  BIOS: version 08.38
  NXOS: version 9.3(4)
  BIOS compile time: 05/29/2020
  NXOS image file is: bootflash:///nxos.9.3.4.bin
  NXOS compile time: 4/28/2020 21:00:00 [04/29/2020 02:28:31]

Hardware
  cisco Nexus9000 C9336C-FX2 Chassis
  Intel(R) Xeon(R) CPU E5-2403 v2 @ 1.80GHz with 8154432 kB of
memory.
  Processor Board ID FOC20291J6K

  Device name: cs2
  bootflash: 53298520 kB
  Kernel uptime is 0 day(s), 0 hour(s), 3 minute(s), 42 second(s)
```

```
Last reset at 157524 usecs after Mon Nov  2 18:32:06 2020
```

```
Reason: Reset Requested by CLI command reload
```

```
System version: 9.3(4)
```

```
Service:
```

```
plugin
```

```
Core Plugin, Ethernet Plugin
```

```
Active Package(s):
```

```
cs2#
```

5. Install the NX-OS image.

Installing the image file causes it to be loaded every time the switch is rebooted.

Show example

```
cs2# install all nxos bootflash:nxos.9.3.5.bin
```

```
Installer will perform compatibility check first. Please wait.  
Installer is forced disruptive
```

```
Verifying image bootflash:/nxos.9.3.5.bin for boot variable "nxos".  
[#####] 100% -- SUCCESS
```

```
Verifying image type.  
[#####] 100% -- SUCCESS
```

```
Preparing "nxos" version info using image bootflash:/nxos.9.3.5.bin.  
[#####] 100% -- SUCCESS
```

```
Preparing "bios" version info using image bootflash:/nxos.9.3.5.bin.  
[#####] 100% -- SUCCESS
```

```
Performing module support checks.  
[#####] 100% -- SUCCESS
```

```
Notifying services about system upgrade.  
[#####] 100% -- SUCCESS
```

Compatibility check is done:

| Module | bootable | Impact | Install-type | Reason |
|--------|----------|------------|--------------|--------------------------------|
| 1 | yes | disruptive | reset | default upgrade is not hitless |

Images will be upgraded according to following table:

| Module | Image | Running-Version(pri:alt | New- |
|--------------------|-------|---------------------------------------|--------|
| Version | | Upg-Required | |
| 1 | nxos | 9.3(4) | 9.3(5) |
| yes | | | |
| 1 | bios | v08.37(01/28/2020):v08.23(09/23/2015) | |
| v08.38(05/29/2020) | | yes | |

```
Switch will be reloaded for disruptive upgrade.

Do you want to continue with the installation (y/n)? [n] y

Install is in progress, please wait.

Performing runtime checks.
[#####] 100% -- SUCCESS

Setting boot variables.
[#####] 100% -- SUCCESS

Performing configuration copy.
[#####] 100% -- SUCCESS

Module 1: Refreshing compact flash and upgrading
bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[#####] 100% -- SUCCESS

Finishing the upgrade, switch will reboot in 10 seconds.
```

6. Verify the new version of NX-OS software after the switch has rebooted:

```
show version
```


Show example

```
cs2# show version
```

```
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
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All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under their
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otherwise stated, there is no warranty, express or implied,
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limited to warranties of merchantability and fitness for a
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Certain components of this software are licensed under
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GNU General Public License (GPL) version 3.0  or the GNU
Lesser General Public License (LGPL) Version 2.1 or
Lesser General Public License (LGPL) Version 2.0.
A copy of each such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://opensource.org/licenses/gpl-3.0.html and
http://www.opensource.org/licenses/lgpl-2.1.php and
http://www.gnu.org/licenses/old-licenses/library.txt.
```

Software

```
  BIOS: version 05.33
  NXOS: version 9.3(5)
  BIOS compile time:  09/08/2018
  NXOS image file is: bootflash:///nxos.9.3.5.bin
  NXOS compile time:  11/4/2018 21:00:00 [11/05/2018 06:11:06]
```

Hardware

```
  cisco Nexus9000 C9336C-FX2 Chassis
  Intel(R) Xeon(R) CPU E5-2403 v2 @ 1.80GHz with 8154432 kB of
memory.
  Processor Board ID FOC20291J6K

  Device name: cs2
  bootflash:  53298520 kB
  Kernel uptime is 0 day(s), 0 hour(s), 3 minute(s), 42 second(s)
```

```
Last reset at 277524 usecs after Mon Nov  2 22:45:12 2020
```

```
Reason: Reset due to upgrade
```

```
System version: 9.3(4)
```

```
Service:
```

```
plugin
```

```
Core Plugin, Ethernet Plugin
```

```
Active Package(s):
```

7. Upgrade the EPLD image and reboot the switch.

Show example



```
cs2# show version module 1 epld
```

| EPLD Device | Version |
|-------------|---------|
| MI FPGA | 0x7 |
| IO FPGA | 0x17 |
| MI FPGA2 | 0x2 |
| GEM FPGA | 0x2 |
| GEM FPGA | 0x2 |
| GEM FPGA | 0x2 |
| GEM FPGA | 0x2 |

```
cs2# install epld bootflash:n9000-epld.9.3.5.img module 1
```

Compatibility check:

| Module | Type | Upgradable | Impact | Reason |
|--------|------|------------|------------|-------------------|
| 1 | SUP | Yes | disruptive | Module Upgradable |

Retrieving EPLD versions.... Please wait.

Images will be upgraded according to following table:

| Module | Type | EPLD | Running-Version | New-Version | Upg-Required |
|--------|------|----------|-----------------|-------------|--------------|
| 1 | SUP | MI FPGA | 0x07 | 0x07 | No |
| 1 | SUP | IO FPGA | 0x17 | 0x19 | Yes |
| 1 | SUP | MI FPGA2 | 0x02 | 0x02 | No |

The above modules require upgrade.

The switch will be reloaded at the end of the upgrade

Do you want to continue (y/n) ? [n] y

Proceeding to upgrade Modules.

Starting Module 1 EPLD Upgrade

Module 1 : IO FPGA [Programming] : 100.00% (64 of 64 sectors)

Module 1 EPLD upgrade is successful.

| Module | Type | Upgrade-Result |
|--------|------|----------------|
| 1 | SUP | Success |

EPLDs upgraded.

Module 1 EPLD upgrade is successful.

8. After the switch reboot, log in again and verify that the new version of EPLD loaded successfully.

Show example

```
cs2# show version module 1 epld
```

| EPLD Device | | Version |
|-------------|-------|---------|
| ----- | | |
| MI | FPGA | 0x7 |
| IO | FPGA | 0x19 |
| MI | FPGA2 | 0x2 |
| GEM | FPGA | 0x2 |
| GEM | FPGA | 0x2 |
| GEM | FPGA | 0x2 |
| GEM | FPGA | 0x2 |

9. Repeat steps 1 to 8 to install the NX-OS software on switch cs1.

What's next?

[Install RCF config file](#)

Install the Reference Configuration File (RCF)

You can install the RCF after setting up the Nexus 9336C-FX2 switch for the first time. You can also use this procedure to upgrade your RCF version.

Before you begin, complete the procedure in [Prepare to install NX-OS and RCF](#).

Review requirements

What you'll need

- A current backup of the switch configuration.
- A fully functioning cluster (no errors in the logs or similar issues).
- The current RCF file.
- A console connection to the switch, required when installing the RCF.

Suggested documentation

- [Cisco Ethernet switch page](#) Consult the switch compatibility table for the supported ONTAP and RCF versions. Note that there can be command dependencies between the command syntax in the RCF and that found in versions of NX-OS.
- [Cisco Nexus 3000 Series Switches](#). Refer to the appropriate software and upgrade guides available on the Cisco web site for complete documentation on the Cisco switch upgrade and downgrade procedures.

Install the RCF

About the examples

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

- The names of the two Cisco switches are cs1 and cs2.
- The node names are cluster1-01, cluster1-02, cluster1-03, and cluster1-04.
- The cluster LIF names are cluster1-01_clus1, cluster1-01_clus2, cluster1-02_clus1, cluster1-02_clus2 , cluster1-03_clus1, cluster1-03_clus2, cluster1-04_clus1, and cluster1-04_clus2.
- The `cluster1::*>` prompt indicates the name of the cluster.

The examples in this procedure use two nodes. These nodes use two 10GbE cluster interconnect ports e0a and e0b. See the [Hardware Universe](#) to verify the correct cluster ports on your platforms.



The command outputs might vary depending on different releases of ONTAP.

About this task

The procedure requires the use of both ONTAP commands and Cisco Nexus 9000 Series Switches commands; ONTAP commands are used unless otherwise indicated.

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.



Before installing a new switch software version and RCFs, you must erase the switch settings and perform basic configuration. You must be connected to the switch using the serial console. This task resets the configuration of the management network.

Step 1: Prepare for the installation

1. Display the cluster ports on each node that are connected to the cluster switches:

```
network device-discovery show
```

Show example

```
cluster1::*> network device-discovery show
Node/      Local  Discovered
Protocol   Port   Device (LLDP: ChassisID)  Interface
Platform
-----
-----
cluster1-01/cdp
           e0a    cs1                      Ethernet1/7      N9K-
C9336C
           e0d    cs2                      Ethernet1/7      N9K-
C9336C
cluster1-02/cdp
           e0a    cs1                      Ethernet1/8      N9K-
C9336C
           e0d    cs2                      Ethernet1/8      N9K-
C9336C
cluster1-03/cdp
           e0a    cs1                      Ethernet1/1/1    N9K-
C9336C
           e0b    cs2                      Ethernet1/1/1    N9K-
C9336C
cluster1-04/cdp
           e0a    cs1                      Ethernet1/1/2    N9K-
C9336C
           e0b    cs2                      Ethernet1/1/2    N9K-
C9336C
cluster1::*>
```

2. Check the administrative and operational status of each cluster port.

a. Verify that all the cluster ports are **up** with a healthy status:

```
network port show -role cluster
```

Show example

```
cluster1::*> network port show -role cluster
```

```
Node: cluster1-01
```

```
Ignore
```

| | | | | | | Speed (Mbps) |
|---------|---------|-----------|--------|------|------|--------------|
| Health | Health | | | | | |
| Port | IPspace | Broadcast | Domain | Link | MTU | Admin/Oper |
| Status | Status | | | | | |
| ----- | | | | | | |
| e0a | Cluster | Cluster | | up | 9000 | auto/100000 |
| healthy | false | | | | | |
| e0d | Cluster | Cluster | | up | 9000 | auto/100000 |
| healthy | false | | | | | |

```
Node: cluster1-02
```

```
Ignore
```

| | | | | | | Speed (Mbps) |
|---------|---------|-----------|--------|------|------|--------------|
| Health | Health | | | | | |
| Port | IPspace | Broadcast | Domain | Link | MTU | Admin/Oper |
| Status | Status | | | | | |
| ----- | | | | | | |
| e0a | Cluster | Cluster | | up | 9000 | auto/100000 |
| healthy | false | | | | | |
| e0d | Cluster | Cluster | | up | 9000 | auto/100000 |
| healthy | false | | | | | |

```
8 entries were displayed.
```

```
Node: cluster1-03
```

```
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: cluster1-04

Ignore

| Health | Health | | | | | Speed (Mbps) |
|---------|---------|-----------|--------|------|-------|--------------|
| 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 | | | | | |

cluster1::*>

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

```
network interface show -role cluster
```

Show example

```
cluster1::*> network interface show -role cluster
```

| | Logical | Status | Network | |
|---------------------------|-------------------|------------|----------------|------|
| Current | Current Is | | | |
| Vserver | Interface | Admin/Oper | Address/Mask | Node |
| Port | Home | | | |
| ----- | | | | |
| ----- | | | | |
| Cluster | | | | |
| | cluster1-01_clus1 | up/up | 169.254.3.4/23 | |
| cluster1-01 | e0a true | | | |
| | cluster1-01_clus2 | up/up | 169.254.3.5/23 | |
| cluster1-01 | e0d true | | | |
| | cluster1-02_clus1 | up/up | 169.254.3.8/23 | |
| cluster1-02 | e0a true | | | |
| | cluster1-02_clus2 | up/up | 169.254.3.9/23 | |
| cluster1-02 | e0d true | | | |
| | cluster1-03_clus1 | up/up | 169.254.1.3/23 | |
| cluster1-03 | e0a true | | | |
| | cluster1-03_clus2 | up/up | 169.254.1.1/23 | |
| cluster1-03 | e0b true | | | |
| | cluster1-04_clus1 | up/up | 169.254.1.6/23 | |
| cluster1-04 | e0a true | | | |
| | cluster1-04_clus2 | up/up | 169.254.1.7/23 | |
| cluster1-04 | e0b true | | | |
| 8 entries were displayed. | | | | |
| cluster1::*> | | | | |

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

```
system cluster-switch show -is-monitoring-enabled-operational true
```

Show example

```
cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
Switch                                     Type                Address
Model
-----
cs1                                     cluster-network     10.233.205.90
N9K-C9336C
    Serial Number: FOCXXXXXXGD
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
    9.3(5)
    Version Source: CDP

cs2                                     cluster-network     10.233.205.91
N9K-C9336C
    Serial Number: FOCXXXXXXGS
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
    9.3(5)
    Version Source: CDP
cluster1::*>
```

3. Disable auto-revert on the cluster LIFs.

Show example

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

Step 2: Configure ports

1. On cluster switch cs2, shut down the ports connected to the cluster ports of the nodes.

Show example

```
cs2(config)# interface eth1/1/1-2,eth1/7-8
cs2(config-if-range)# shutdown
```

2. Verify that the cluster LIFs have migrated to the ports hosted on cluster switch cs1. This might take a few seconds.

```
network interface show -role cluster
```

Show example

```
cluster1::*> network interface show -role cluster
```

| | Logical | Status | Network | Current |
|---------------------------|-------------------|------------|----------------|---------|
| Current Is | | | | |
| Vserver | Interface | Admin/Oper | Address/Mask | Node |
| Port | Home | | | |
| ----- | | | | |
| ----- | | | | |
| Cluster | | | | |
| | cluster1-01_clus1 | up/up | 169.254.3.4/23 | |
| cluster1-01 | e0a true | | | |
| | cluster1-01_clus2 | up/up | 169.254.3.5/23 | |
| cluster1-01 | e0a false | | | |
| | cluster1-02_clus1 | up/up | 169.254.3.8/23 | |
| cluster1-02 | e0a true | | | |
| | cluster1-02_clus2 | up/up | 169.254.3.9/23 | |
| cluster1-02 | e0a false | | | |
| | cluster1-03_clus1 | up/up | 169.254.1.3/23 | |
| cluster1-03 | e0a true | | | |
| | cluster1-03_clus2 | up/up | 169.254.1.1/23 | |
| cluster1-03 | e0a false | | | |
| | cluster1-04_clus1 | up/up | 169.254.1.6/23 | |
| cluster1-04 | e0a true | | | |
| | cluster1-04_clus2 | up/up | 169.254.1.7/23 | |
| cluster1-04 | e0a false | | | |
| 8 entries were displayed. | | | | |
| cluster1::*> | | | | |

3. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
Node           Health Eligibility  Epsilon
-----
cluster1-01    true   true        false
cluster1-02    true   true        false
cluster1-03    true   true         true
cluster1-04    true   true        false
4 entries were displayed.
cluster1::*>
```

4. If you have not already done so, save a copy of the current switch configuration by copying the output of the following command to a text file:

```
show running-config
```

5. Clean the configuration on switch cs2 and perform a basic setup.



When updating or applying a new RCF, you must erase the switch settings and perform basic configuration. You must be connected to the switch serial console port to set up the switch again.

- a. Clean the configuration:

Show example

```
(cs2)# write erase

Warning: This command will erase the startup-configuration.

Do you wish to proceed anyway? (y/n) [n] y
```

- b. Perform a reboot of the switch:

Show example

```
(cs2)# reload

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

6. Copy the RCF to the bootflash of switch cs2 using one of the following transfer protocols: FTP, TFTP, SFTP, or SCP. For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 9000 Series NX-OS Command Reference](#) guides.

Show example

This example shows TFTP being used to copy an RCF to the bootflash on switch cs2:

```
cs2# copy tftp: bootflash: vrf management
Enter source filename: Nexus_9336C_RCF_v1.6-Cluster-HA-Breakout.txt
Enter hostname for the tftp server: 172.22.201.50
Trying to connect to tftp server.....Connection to Server
Established.
TFTP get operation was successful
Copy complete, now saving to disk (please wait)...
```

7. Apply the RCF previously downloaded to the bootflash.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 9000 Series NX-OS Command Reference](#) guides.

Show example

This example shows the RCF file `Nexus_9336C_RCF_v1.6-Cluster-HA-Breakout.txt` being installed on switch cs2:

```
cs2# copy Nexus_9336C_RCF_v1.6-Cluster-HA-Breakout.txt running-
config echo-commands
```

8. Examine the banner output from the `show banner motd` command. You must read and follow these instructions to ensure the proper configuration and operation of the switch.

Show example

```
cs2# show banner motd

*****
*****
* NetApp Reference Configuration File (RCF)
*
* Switch      : Nexus N9K-C9336C-FX2
* Filename    : Nexus_9336C_RCF_v1.6-Cluster-HA-Breakout.txt
* Date       : 10-23-2020
* Version    : v1.6
*
* Port Usage:
* Ports 1- 3: Breakout mode (4x10G) Intra-Cluster Ports, int
e1/1/1-4, e1/2/1-4
, e1/3/1-4
* Ports 4- 6: Breakout mode (4x25G) Intra-Cluster/HA Ports, int
e1/4/1-4, e1/5/
1-4, e1/6/1-4
* Ports 7-34: 40/100GbE Intra-Cluster/HA Ports, int e1/7-34
* Ports 35-36: Intra-Cluster ISL Ports, int e1/35-36
*
* Dynamic breakout commands:
* 10G: interface breakout module 1 port <range> map 10g-4x
* 25G: interface breakout module 1 port <range> map 25g-4x
*
* Undo breakout commands and return interfaces to 40/100G
configuration in confi
g mode:
* no interface breakout module 1 port <range> map 10g-4x
* no interface breakout module 1 port <range> map 25g-4x
* interface Ethernet <interfaces taken out of breakout mode>
* inherit port-profile 40-100G
* priority-flow-control mode auto
* service-policy input HA
* exit
*
*****
*****
```

9. Verify that the RCF file is the correct newer version:

```
show running-config
```

When you check the output to verify you have the correct RCF, make sure that the following information is correct:

- The RCF banner
- The node and port settings
- Customizations

The output varies according to your site configuration. Check the port settings and refer to the release notes for any changes specific to the RCF that you have installed.

10. After you verify the RCF versions and switch settings are correct, copy the running-config file to the startup-config file.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 9000 Series NX-OS Command Reference](#) guides.

Show example

```
cs2# copy running-config startup-config
[#####] 100% Copy complete
```

11. Reboot switch cs2. You can ignore the “cluster ports down” events reported on the nodes while the switch reboots.

Show example

```
cs2# reload
This command will reboot the system. (y/n)? [n] y
```

12. Verify the health of cluster ports on the cluster.
 - a. Verify that e0d ports are up and healthy across all nodes in the cluster:

```
network port show -role cluster
```


Show example

```
cluster1::*> network port show -role cluster
```

```
Node: cluster1-01
```

```
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: cluster1-02
```

```
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: cluster1-03
```

```
Ignore
```

| | | | | | | Speed (Mbps) |
|---------|---------|-----------|--------|------|------|--------------|
| Health | Health | | | | | |
| Port | IPspace | Broadcast | Domain | Link | MTU | Admin/Oper |
| Status | Status | | | | | |
| ----- | ----- | ----- | ----- | ---- | ---- | ----- |
| e0a | Cluster | Cluster | | up | 9000 | auto/100000 |
| healthy | false | | | | | |
| e0d | Cluster | Cluster | | up | 9000 | auto/100000 |
| healthy | false | | | | | |

Node: cluster1-04

Ignore

| Health | Health | | | | Speed (Mbps) |
|---------|---------|-----------|--------|-------|--------------|
| Port | IPspace | Broadcast | Domain | Link | MTU |
| Status | Status | | | | Admin/Oper |
| ----- | ----- | ----- | ----- | ----- | ----- |
| e0a | Cluster | Cluster | | up | 9000 |
| healthy | false | | | | auto/100000 |
| e0d | Cluster | Cluster | | up | 9000 |
| healthy | false | | | | auto/100000 |

8 entries were displayed.

- b. Verify the switch health from the cluster (this might not show switch cs2, since LIFs are not homed on e0d).

Show example

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

| Node/ | Local | Discovered | |
|-----------------|-------|--------------------------|---------------|
| Protocol | Port | Device (LLDP: ChassisID) | Interface |
| Platform | | | |
| ----- | | | |
| ----- | | | |
| cluster1-01/cdp | | | |
| | e0a | cs1 | Ethernet1/7 |
| N9K-C9336C | | | |
| | e0d | cs2 | Ethernet1/7 |
| N9K-C9336C | | | |
| cluster01-2/cdp | | | |
| | e0a | cs1 | Ethernet1/8 |
| N9K-C9336C | | | |
| | e0d | cs2 | Ethernet1/8 |
| N9K-C9336C | | | |
| cluster01-3/cdp | | | |
| | e0a | cs1 | Ethernet1/1/1 |
| N9K-C9336C | | | |
| | e0b | cs2 | Ethernet1/1/1 |
| N9K-C9336C | | | |
| cluster1-04/cdp | | | |
| | e0a | cs1 | Ethernet1/1/2 |
| N9K-C9336C | | | |
| | e0b | cs2 | Ethernet1/1/2 |
| N9K-C9336C | | | |


```
cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
```

| Switch | Type | Address |
|--|-----------------|---------------|
| Model | | |
| ----- | | |
| ----- | | |
| cs1 | cluster-network | 10.233.205.90 |
| NX9-C9336C | | |
| Serial Number: FOCXXXXXXGD | | |
| Is Monitored: true | | |
| Reason: None | | |
| Software Version: Cisco Nexus Operating System (NX-OS) | | |
| Software, Version | | |
| 9.3(5) | | |
| Version Source: CDP | | |
| cs2 | cluster-network | 10.233.205.91 |

```

NX9-C9336C
  Serial Number: FOCXXXXXXGS
    Is Monitored: true
      Reason: None
  Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                  9.3(5)
  Version Source: CDP

2 entries were displayed.

```

You might observe the following output on the cs1 switch console depending on the RCF version previously loaded on the switch:

```

2020 Nov 17 16:07:18 cs1 %$ VDC-1 %$ %STP-2-UNBLOCK_CONSIST_PORT:
Unblocking port port-channel1 on VLAN0092. Port consistency
restored.
2020 Nov 17 16:07:23 cs1 %$ VDC-1 %$ %STP-2-BLOCK_PVID_PEER:
Blocking port-channel1 on VLAN0001. Inconsistent peer vlan.
2020 Nov 17 16:07:23 cs1 %$ VDC-1 %$ %STP-2-BLOCK_PVID_LOCAL:
Blocking port-channel1 on VLAN0092. Inconsistent local vlan.

```

13. On cluster switch cs1, shut down the ports connected to the cluster ports of the nodes.

Show example

The following example uses the interface example output:

```

cs1(config)# interface eth1/1/1-2,eth1/7-8
cs1(config-if-range)# shutdown

```

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

```

network interface show -role cluster

```

Show example

```
cluster1::*> network interface show -role cluster
```

| | Logical | Status | Network | Current |
|---------------------------|-------------------|------------|----------------|---------|
| Current Is | | | | |
| Vserver | Interface | Admin/Oper | Address/Mask | Node |
| Port | Home | | | |
| ----- | | | | |
| ----- | | | | |
| Cluster | | | | |
| | cluster1-01_clus1 | up/up | 169.254.3.4/23 | |
| cluster1-01 | e0d | false | | |
| | cluster1-01_clus2 | up/up | 169.254.3.5/23 | |
| cluster1-01 | e0d | true | | |
| | cluster1-02_clus1 | up/up | 169.254.3.8/23 | |
| cluster1-02 | e0d | false | | |
| | cluster1-02_clus2 | up/up | 169.254.3.9/23 | |
| cluster1-02 | e0d | true | | |
| | cluster1-03_clus1 | up/up | 169.254.1.3/23 | |
| cluster1-03 | e0b | false | | |
| | cluster1-03_clus2 | up/up | 169.254.1.1/23 | |
| cluster1-03 | e0b | true | | |
| | cluster1-04_clus1 | up/up | 169.254.1.6/23 | |
| cluster1-04 | e0b | false | | |
| | cluster1-04_clus2 | up/up | 169.254.1.7/23 | |
| cluster1-04 | e0b | true | | |
| 8 entries were displayed. | | | | |
| cluster1::*> | | | | |

15. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
Node           Health   Eligibility   Epsilon
-----
cluster1-01    true     true          false
cluster1-02    true     true          false
cluster1-03    true     true          true
cluster1-04    true     true          false
4 entries were displayed.
cluster1::*>
```

16. Repeat steps 4 to 11 on switch cs1.
17. Enable auto-revert on the cluster LIFs.

Show example

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

18. Reboot switch cs1. You do this to trigger the cluster LIFs to revert to their home ports. You can ignore the “cluster ports down” events reported on the nodes while the switch reboots.

Show example

```
cs1# reload
This command will reboot the system. (y/n)? [n] y
```

Step 3: Verify the configuration

1. Verify that the switch ports connected to the cluster ports are **up**.

```
show interface brief
```

Show example

```
cs1# show interface brief | grep up
.
.
Eth1/1/1      1      eth  access up      none
10G(D)  --
Eth1/1/2      1      eth  access up      none
10G(D)  --
Eth1/7        1      eth  trunk  up      none
100G(D)  --
Eth1/8        1      eth  trunk  up      none
100G(D)  --
.
.
```

2. Verify that the expected nodes are still connected:

```
show cdp neighbors
```

Show example

```
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        133    H                FAS2980
e0a
node2              Eth1/2        133    H                FAS2980
e0a
cs2                 Eth1/35       175    R S I s          N9K-C9336C
Eth1/35
cs2                 Eth1/36       175    R S I s          N9K-C9336C
Eth1/36

Total entries displayed: 4
```

3. Verify that the cluster nodes are in their correct cluster VLANs using the following commands:

```
show vlan brief
```

```
show interface trunk
```


Show example

```
cs1# show vlan brief
```

| VLAN | Name | Status | Ports |
|------|----------|--------|---|
| 1 | default | active | Pol, Eth1/1, Eth1/2, Eth1/3, Eth1/4, Eth1/5, Eth1/6, Eth1/7, Eth1/8, Eth1/35, Eth1/36, Eth1/9/1, Eth1/9/2, Eth1/9/3, Eth1/9/4, Eth1/10/1, Eth1/10/2, Eth1/10/3, Eth1/10/4 |
| 17 | VLAN0017 | active | Eth1/1, Eth1/2, Eth1/3, Eth1/4, Eth1/5, Eth1/6, Eth1/7, Eth1/8, Eth1/9/1, Eth1/9/2, Eth1/9/3, Eth1/9/4, Eth1/10/1, Eth1/10/2, Eth1/10/3, Eth1/10/4 |
| 18 | VLAN0018 | active | Eth1/1, Eth1/2, Eth1/3, Eth1/4, Eth1/5, Eth1/6, Eth1/7, Eth1/8, Eth1/9/1, Eth1/9/2, Eth1/9/3, Eth1/9/4, Eth1/10/1, Eth1/10/2, Eth1/10/3, Eth1/10/4 |
| 31 | VLAN0031 | active | Eth1/11, Eth1/12, Eth1/13, Eth1/14, Eth1/15, Eth1/16, Eth1/17, Eth1/18, Eth1/19, Eth1/20, Eth1/21, Eth1/22 |
| 32 | VLAN0032 | active | Eth1/23, Eth1/24, Eth1/25 |

```

Eth1/28
Eth1/31
Eth1/34
33    VLAN0033          active  Eth1/11, Eth1/12,
Eth1/13
Eth1/16
Eth1/19
Eth1/22
34    VLAN0034          active  Eth1/23, Eth1/24,
Eth1/25
Eth1/28
Eth1/31
Eth1/34

```

```
cs1# show interface trunk
```

```

-----
Port                Native  Status      Port
                   Vlan                  Channel
-----
Eth1/1              1      trunking    --
Eth1/2              1      trunking    --
Eth1/3              1      trunking    --
Eth1/4              1      trunking    --
Eth1/5              1      trunking    --
Eth1/6              1      trunking    --
Eth1/7              1      trunking    --
Eth1/8              1      trunking    --
Eth1/9/1            1      trunking    --
Eth1/9/2            1      trunking    --
Eth1/9/3            1      trunking    --
Eth1/9/4            1      trunking    --
Eth1/10/1           1      trunking    --
Eth1/10/2           1      trunking    --
Eth1/10/3           1      trunking    --
Eth1/10/4           1      trunking    --
Eth1/11             33     trunking    --

```

| | | | |
|---------|----|-----------|-----|
| Eth1/12 | 33 | trunking | -- |
| Eth1/13 | 33 | trunking | -- |
| Eth1/14 | 33 | trunking | -- |
| Eth1/15 | 33 | trunking | -- |
| Eth1/16 | 33 | trunking | -- |
| Eth1/17 | 33 | trunking | -- |
| Eth1/18 | 33 | trunking | -- |
| Eth1/19 | 33 | trunking | -- |
| Eth1/20 | 33 | trunking | -- |
| Eth1/21 | 33 | trunking | -- |
| Eth1/22 | 33 | trunking | -- |
| Eth1/23 | 34 | trunking | -- |
| Eth1/24 | 34 | trunking | -- |
| Eth1/25 | 34 | trunking | -- |
| Eth1/26 | 34 | trunking | -- |
| Eth1/27 | 34 | trunking | -- |
| Eth1/28 | 34 | trunking | -- |
| Eth1/29 | 34 | trunking | -- |
| Eth1/30 | 34 | trunking | -- |
| Eth1/31 | 34 | trunking | -- |
| Eth1/32 | 34 | trunking | -- |
| Eth1/33 | 34 | trunking | -- |
| Eth1/34 | 34 | trunking | -- |
| Eth1/35 | 1 | trnk-bndl | Pol |
| Eth1/36 | 1 | trnk-bndl | Pol |
| Pol | 1 | trunking | -- |

| Port | Vlans Allowed on Trunk |
|-----------|------------------------|
| Eth1/1 | 1,17-18 |
| Eth1/2 | 1,17-18 |
| Eth1/3 | 1,17-18 |
| Eth1/4 | 1,17-18 |
| Eth1/5 | 1,17-18 |
| Eth1/6 | 1,17-18 |
| Eth1/7 | 1,17-18 |
| Eth1/8 | 1,17-18 |
| Eth1/9/1 | 1,17-18 |
| Eth1/9/2 | 1,17-18 |
| Eth1/9/3 | 1,17-18 |
| Eth1/9/4 | 1,17-18 |
| Eth1/10/1 | 1,17-18 |
| Eth1/10/2 | 1,17-18 |
| Eth1/10/3 | 1,17-18 |
| Eth1/10/4 | 1,17-18 |

```

Eth1/11      31,33
Eth1/12      31,33
Eth1/13      31,33
Eth1/14      31,33
Eth1/15      31,33
Eth1/16      31,33
Eth1/17      31,33
Eth1/18      31,33
Eth1/19      31,33
Eth1/20      31,33
Eth1/21      31,33
Eth1/22      31,33
Eth1/23      32,34
Eth1/24      32,34
Eth1/25      32,34
Eth1/26      32,34
Eth1/27      32,34
Eth1/28      32,34
Eth1/29      32,34
Eth1/30      32,34
Eth1/31      32,34
Eth1/32      32,34
Eth1/33      32,34
Eth1/34      32,34
Eth1/35      1
Eth1/36      1
Po1          1
..
..
..
..
..

```



For specific port and VLAN usage details, refer to the banner and important notes section in your RCF.

4. Verify that the ISL between cs1 and cs2 is functional:

```
show port-channel summary
```

Show example

```
cs1# show port-channel summary
Flags:  D - Down          P - Up in port-channel (members)
        I - Individual    H - Hot-standby (LACP only)
        s - Suspended     r - Module-removed
        b - BFD Session Wait
        S - Switched      R - Routed
        U - Up (port-channel)
        p - Up in delay-lacp mode (member)
        M - Not in use. Min-links not met

-----
-----
Group Port-          Type      Protocol  Member Ports      Channel
-----
-----
1      Pol (SU)      Eth      LACP      Eth1/35 (P)      Eth1/36 (P)
cs1#
```

5. Verify that the cluster LIFs have reverted to their home port:

```
network interface show -role cluster
```

Show example

```
cluster1::*> network interface show -role cluster
```

| | Logical | Status | Network | Current |
|---------------------------|-------------------|------------|----------------|---------|
| Current Is | | | | |
| Vserver | Interface | Admin/Oper | Address/Mask | Node |
| Port | Home | | | |
| ----- | | | | |
| ----- | | | | |
| Cluster | | | | |
| | cluster1-01_clus1 | up/up | 169.254.3.4/23 | |
| cluster1-01 | e0d | true | | |
| | cluster1-01_clus2 | up/up | 169.254.3.5/23 | |
| cluster1-01 | e0d | true | | |
| | cluster1-02_clus1 | up/up | 169.254.3.8/23 | |
| cluster1-02 | e0d | true | | |
| | cluster1-02_clus2 | up/up | 169.254.3.9/23 | |
| cluster1-02 | e0d | true | | |
| | cluster1-03_clus1 | up/up | 169.254.1.3/23 | |
| cluster1-03 | e0b | true | | |
| | cluster1-03_clus2 | up/up | 169.254.1.1/23 | |
| cluster1-03 | e0b | true | | |
| | cluster1-04_clus1 | up/up | 169.254.1.6/23 | |
| cluster1-04 | e0b | true | | |
| | cluster1-04_clus2 | up/up | 169.254.1.7/23 | |
| cluster1-04 | e0b | true | | |
| 8 entries were displayed. | | | | |
| cluster1::*> | | | | |

6. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::~*> cluster show
Node           Health Eligibility Epsilon
-----
cluster1-01    true   true      false
cluster1-02    true   true      false
cluster1-03    true   true      true
cluster1-04    true   true      false
4 entries were displayed.
cluster1::~*>
```

7. Ping the remote cluster interfaces to verify connectivity:

```
cluster ping-cluster -node local
```

Show example

```
cluster1::~*> cluster ping-cluster -node local
Host is cluster1-03
Getting addresses from network interface table...
Cluster cluster1-03_clus1 169.254.1.3 cluster1-03 e0a
Cluster cluster1-03_clus2 169.254.1.1 cluster1-03 e0b
Cluster cluster1-04_clus1 169.254.1.6 cluster1-04 e0a
Cluster cluster1-04_clus2 169.254.1.7 cluster1-04 e0b
Cluster cluster1-01_clus1 169.254.3.4 cluster1-01 e0a
Cluster cluster1-01_clus2 169.254.3.5 cluster1-01 e0d
Cluster cluster1-02_clus1 169.254.3.8 cluster1-02 e0a
Cluster cluster1-02_clus2 169.254.3.9 cluster1-02 e0d
Local = 169.254.1.3 169.254.1.1
Remote = 169.254.1.6 169.254.1.7 169.254.3.4 169.254.3.5 169.254.3.8
169.254.3.9
Cluster Vserver Id = 4294967293
Ping status:
.....
Basic connectivity succeeds on 12 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 12 path(s):
    Local 169.254.1.3 to Remote 169.254.1.6
    Local 169.254.1.3 to Remote 169.254.1.7
    Local 169.254.1.3 to Remote 169.254.3.4
    Local 169.254.1.3 to Remote 169.254.3.5
    Local 169.254.1.3 to Remote 169.254.3.8
    Local 169.254.1.3 to Remote 169.254.3.9
    Local 169.254.1.1 to Remote 169.254.1.6
    Local 169.254.1.1 to Remote 169.254.1.7
    Local 169.254.1.1 to Remote 169.254.3.4
    Local 169.254.1.1 to Remote 169.254.3.5
    Local 169.254.1.1 to Remote 169.254.3.8
    Local 169.254.1.1 to Remote 169.254.3.9
Larger than PMTU communication succeeds on 12 path(s)
RPC status:
6 paths up, 0 paths down (tcp check)
6 paths up, 0 paths down (udp check)
```


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