Installing NX-OS software and RCFs on Cisco® Nexus 3132Q-V cluster switches

The NX-OS software and reference configuration files (RCFs) are required to be installed on Cisco Nexus 3132Q-V cluster switches in an ONTAP environment.

Before you begin

Check that the following conditions exist before installing the NX-OS software and RCFs on a Cisco Nexus cluster switch:

- The cluster must be fully functioning (there should be no errors in the logs or similar issues).
- You must have consulted the switch compatibility table on the Cisco Ethernet Switch page for the supported ONTAP, NX-OS, and RCF versions.
- You must have referred to the appropriate software and upgrade guides available on the Cisco web site for complete documentation on the Cisco switch upgrade and downgrade procedures.
- On the left side of Nexus 3132Q-V is a set of four SFP+ ports multiplexed to that QSFP port. By default, the RCF is structured to use the QSFP port.
  
  **Note:** You can make four SFP+ ports active instead of a QSFP port for Nexus 3132Q-V by using the `hardware profile front portmode sfp-plus` command. Similarly, you can reset Nexus 3132Q-V to use a QSFP port instead of four SFP+ ports by using the `hardware profile front portmode qsfp` command.
- You must have configured some of the ports on Nexus 3132Q-V to run at 10 GbE or 40 GbE.
  
  **Note:** You can break out the first six ports into 4x10 GbE mode by using the `interface breakout module 1 port 1-6 map 10g-4x` command. Similarly, you can regroup the first six QSFP+ ports from breakout configuration by using the `no interface breakout module 1 port 1-6 map 10g-4x` command.

About this task

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

- The command outputs might vary depending on different releases of ONTAP.
- The names of the two Cisco switches are C1 and C2.
- n1_clus1 is the first cluster logical interface (LIF) connected to cluster switch C1 for node n1.
- n1_clus2 is the first cluster LIF connected to cluster switch C2 for node n1.
- n1_clus3 is the second LIF connected to cluster switch C1 for node n1.
- n1_clus4 is the second LIF connected to cluster switch C2 for node n1.
- The nodes are node1, node2, node3, and node4.
- The `cluster::*>` prompt indicates the name of the cluster.
The examples in this procedure use four nodes: Two nodes use four 10 Gb cluster interconnect ports e0a, e0b, e0c, and e0d. The other two nodes use two 40 Gb cluster interconnect ports e4a and e4e. See the Hardware Universe for the actual cluster ports on your platforms.

If the same or different RCF is applied to a switch more than once, you might see syntax errors or other warnings. The warnings are informational messages only, and the syntax errors are a result of certain commands being applied more than once. Both syntax errors and warning messages are harmless.

**Steps**

1. Display information about the devices in your configuration:

   ```
   network device-discovery show
   ```

   **Example**

   This information describes how many cluster interconnect interfaces have been configured in each node for each cluster interconnect switch.

   ```
   cluster::> network device-discovery show
   
   Local  Discovered
   Node    Port   Device              Interface        Platform
      -------- ------ ------------------- ---------------- ----------------
      n1   /cdp  e0a    C1                 Ethernet1/1/1    N3K-C3132Q-V
            e0b    C2                 Ethernet1/1/1    N3K-C3132Q-V
            e0c    C2                 Ethernet1/1/2    N3K-C3132Q-V
            e0d    C1                 Ethernet1/1/2    N3K-C3132Q-V
      n2   /cdp  e0a    C1                 Ethernet1/1/3    N3K-C3132Q-V
            e0b    C2                 Ethernet1/1/3    N3K-C3132Q-V
            e0c    C2                 Ethernet1/1/4    N3K-C3132Q-V
            e0d    C1                 Ethernet1/1/4    N3K-C3132Q-V
      n3   /cdp  e4a    C1                 Ethernet1/7      N3K-C3132Q-V
            e4e    C2                 Ethernet1/7      N3K-C3132Q-V
      n4   /cdp  e4a    C1                 Ethernet1/8      N3K-C3132Q-V
            e4e    C2                 Ethernet1/8      N3K-C3132Q-V
   12 entries were displayed.
   ```

2. Determine the administrative or operational status for each cluster interface:

   a. Display the network port attributes:

   ```
   network port show
   ```

   **Example**

   ```
   cluster::*> network port show -role cluster
   (network port show)
   
   Node: n1
   
   Port  IPspace  Broadcast Domain  Link  MTU  Speed(Mbps)  Health Status  Ignore Health Status
       -------  ------------------  -----  ----  -----------  ------------  ---------------------
   e0a    Cluster  Cluster         up  9000  auto/10000  -          -
   e0b    Cluster  Cluster         up  9000  auto/10000  -          -
   e0c    Cluster  Cluster         up  9000  auto/10000  -          -
   e0d    Cluster  Cluster         up  9000  auto/10000  -          -

   Node: n2
   
   Port  IPspace  Broadcast Domain  Link  MTU  Speed(Mbps)  Health Status  Ignore Health Status
       -------  ------------------  -----  ----  -----------  ------------  ---------------------
   e0a    Cluster  Cluster         up  9000  auto/10000  -          -
   ```
b. Display information about the logical interfaces:

```
network interface show
```

```
cluster::*> network interface show -role cluster
(network interface show)
```

```
Logical Interface Status Network Current Current Is
Vserver Admin/Oper Address/Mask Node Port Home
---------- ---------- ---------- ------------- ------- ----
Cluster
n1_clus1 up/up 10.10.0.1/24 n1 e0a true
n1_clus2 up/up 10.10.0.2/24 n1 e0b true
n1_clus3 up/up 10.10.0.3/24 n1 e0c true
n1_clus4 up/up 10.10.0.4/24 n1 e0d true
n2_clus1 up/up 10.10.0.5/24 n2 e0a true
n2_clus2 up/up 10.10.0.6/24 n2 e0b true
n2_clus3 up/up 10.10.0.7/24 n2 e0c true
n2_clus4 up/up 10.10.0.8/24 n2 e0d true
n3_clus1 up/up 10.10.0.9/24 n3 e4a true
n3_clus2 up/up 10.10.0.10/24 n3 e4e true
n4_clus1 up/up 10.10.0.11/24 n4 e4a true
n4_clus2 up/up 10.10.0.12/24 n4 e4e true
```

12 entries were displayed.

c. Display the information on the discovered cluster switches:

```
system cluster-switch show
```

```
cluster::> system cluster-switch show
```

```
Switch Type Address Model
---------- ---------- -----------
C1 cluster-network 10.10.1.101 NX3132V
    Serial Number: FOX000001
    Is Monitored: true
    Version Source: CDP
C2 cluster-network 10.10.1.102 NX3132V
    Serial Number: FOX0000002
    Is Monitored: true
```

Installing NX-OS software and RCFs on Cisco® Nexus 3132Q-V cluster switches 3
3. Migrate the LIFs associated with the cluster ports connected to switch C2:

```
network interface migrate
```

```
cluster::*> network interface migrate -vserver Cluster -lif n1_clus2 -source-node n1 -destination-node n1 -destination-port e0a
cluster::*> network interface migrate -vserver Cluster -lif n1_clus3 -source-node n1 -destination-node n1 -destination-port e0d
cluster::*> network interface migrate -vserver Cluster -lif n2_clus2 -source-node n2 -destination-node n2 -destination-port e0a
cluster::*> network interface migrate -vserver Cluster -lif n2_clus3 -source-node n2 -destination-node n2 -destination-port e0d
cluster::*> network interface migrate -vserver Cluster -lif n3_clus2 -source-node n3 -destination-node n3 -destination-port e4a
cluster::*> network interface migrate -vserver Cluster -lif n4_clus2 -source-node n4 -destination-node n4 -destination-port e4a
```

4. Verify the cluster's health:

```
network interface show
```

```
cluster::*> network interface show -role cluster
(network interface show)

Logical    Status     Network            Current       Current Is
Vserver     Interface  Admin/Oper Address/Mask       Node          Port    Home
----------- ---------- ---------- ------------------ ------------- ------- ----
Cluster
n1_clus1   up/up      10.10.0.1/24       n1            e0a     true
n1_clus2   up/up      10.10.0.2/24       n1            e0a     false
n1_clus3   up/up      10.10.0.3/24       n1            e0d     false
n1_clus4   up/up      10.10.0.4/24       n1            e0d     true
n2_clus1   up/up      10.10.0.5/24       n2            e0a     true
n2_clus2   up/up      10.10.0.6/24       n2            e0a     false
n2_clus3   up/up      10.10.0.7/24       n2            e0d     false
n2_clus4   up/up      10.10.0.8/24       n2            e0d     true
n3_clus1   up/up      10.10.0.9/24       n3            e4a     true
n3_clus2   up/up      10.10.0.10/24      n3            e4a     false
n4_clus1   up/up      10.10.0.11/24      n4            e4a     true
n4_clus2   up/up      10.10.0.12/24      n4            e4a     false
```

5. Shut down the cluster interconnect ports that are physically connected to switch C2:

```
network port modify
```

```
cluster::*> network port modify -node n1 -port e0b -up-admin false
cluster::*> network port modify -node n1 -port e0c -up-admin false
cluster::*> network port modify -node n2 -port e0b -up-admin false
cluster::*> network port modify -node n2 -port e0c -up-admin false
cluster::*> network port modify -node n3 -port e4e -up-admin false
cluster::*> network port modify -node n4 -port e4e -up-admin false
```

6. Ping the remote cluster interfaces and perform an RPC server check:

```
cluster ping-cluster
```

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
```
<table>
<thead>
<tr>
<th>Cluster</th>
<th>n1_clus1</th>
<th>n1</th>
<th>e0a</th>
<th>10.10.0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster</td>
<td>n1_clus2</td>
<td>n1</td>
<td>e0b</td>
<td>10.10.0.2</td>
</tr>
<tr>
<td>Cluster</td>
<td>n1_clus3</td>
<td>n1</td>
<td>e0c</td>
<td>10.10.0.3</td>
</tr>
<tr>
<td>Cluster</td>
<td>n1_clus4</td>
<td>n1</td>
<td>e0d</td>
<td>10.10.0.4</td>
</tr>
<tr>
<td>Cluster</td>
<td>n2_clus1</td>
<td>n2</td>
<td>e0a</td>
<td>10.10.0.5</td>
</tr>
<tr>
<td>Cluster</td>
<td>n2_clus2</td>
<td>n2</td>
<td>e0b</td>
<td>10.10.0.6</td>
</tr>
<tr>
<td>Cluster</td>
<td>n2_clus3</td>
<td>n2</td>
<td>e0c</td>
<td>10.10.0.7</td>
</tr>
<tr>
<td>Cluster</td>
<td>n2_clus4</td>
<td>n2</td>
<td>e0d</td>
<td>10.10.0.8</td>
</tr>
<tr>
<td>Cluster</td>
<td>n3_clus1</td>
<td>n4</td>
<td>e0a</td>
<td>10.10.0.9</td>
</tr>
<tr>
<td>Cluster</td>
<td>n3_clus2</td>
<td>n3</td>
<td>e0b</td>
<td>10.10.0.10</td>
</tr>
<tr>
<td>Cluster</td>
<td>n4_clus1</td>
<td>n4</td>
<td>e0a</td>
<td>10.10.0.11</td>
</tr>
<tr>
<td>Cluster</td>
<td>n4_clus2</td>
<td>n4</td>
<td>e0b</td>
<td>10.10.0.12</td>
</tr>
</tbody>
</table>

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8 10.10.0.9 10.10.0.10 10.10.0.11 10.10.0.12
Cluster Vserver Id = 4294967293
Ping status:
....
Basic connectivity succeeds on 32 path(s)
Basic connectivity fails on 0 path(s)

Detected 1500 byte MTU on 32 path(s):
- Local 10.10.0.1 to Remote 10.10.0.5
- Local 10.10.0.1 to Remote 10.10.0.6
- Local 10.10.0.1 to Remote 10.10.0.7
- Local 10.10.0.1 to Remote 10.10.0.8
- Local 10.10.0.1 to Remote 10.10.0.9
- Local 10.10.0.1 to Remote 10.10.0.10
- Local 10.10.0.1 to Remote 10.10.0.11
- Local 10.10.0.1 to Remote 10.10.0.12
- Local 10.10.0.2 to Remote 10.10.0.5
- Local 10.10.0.2 to Remote 10.10.0.6
- Local 10.10.0.2 to Remote 10.10.0.7
- Local 10.10.0.2 to Remote 10.10.0.8
- Local 10.10.0.2 to Remote 10.10.0.9
- Local 10.10.0.2 to Remote 10.10.0.10
- Local 10.10.0.2 to Remote 10.10.0.11
- Local 10.10.0.2 to Remote 10.10.0.12
- Local 10.10.0.3 to Remote 10.10.0.5
- Local 10.10.0.3 to Remote 10.10.0.6
- Local 10.10.0.3 to Remote 10.10.0.7
- Local 10.10.0.3 to Remote 10.10.0.8
- Local 10.10.0.3 to Remote 10.10.0.9
- Local 10.10.0.3 to Remote 10.10.0.10
- Local 10.10.0.3 to Remote 10.10.0.11
- Local 10.10.0.3 to Remote 10.10.0.12
- Local 10.10.0.4 to Remote 10.10.0.5
- Local 10.10.0.4 to Remote 10.10.0.6
- Local 10.10.0.4 to Remote 10.10.0.7
- Local 10.10.0.4 to Remote 10.10.0.8
- Local 10.10.0.4 to Remote 10.10.0.9
- Local 10.10.0.4 to Remote 10.10.0.10
- Local 10.10.0.4 to Remote 10.10.0.11
- Local 10.10.0.4 to Remote 10.10.0.12

Larger than PMTU communication succeeds on 32 path(s)
RPC status:
8 paths up, 0 paths down (tcp check)
8 paths up, 0 paths down (udp check)

7. On switch C2, copy the RCF to the switch bootflash using a transfer protocol, such as FTP, TFTP, SFTP, or SCP.

**Example**

The following example shows TFTP being used to copy an RCF to the bootflash on switch C2:
Apply the RCF previously downloaded to the bootflash:

```
copy bootflash:
```

**Example**

The following example shows the NX3132_RCF_v1.1_24p10g_26p40g.txt RCF being installed on C2.

```
C2# copy bootflash:NX3132_RCF_v1.1_24p10g_26p40g.txt running-config
```

Verify that the RCF version is the new one by checking the RCF banner, that the node and port settings are correct, and that your site customizations are implemented:

```
show running-config
```

**Example**

```
C2# show running-config
```

Your output will vary depending on your site configuration. Check the port settings and then refer to the release notes as a reference for any changes specific to the RCF that you have installed.

Copy the `running-config` file to the `startup-config` file when you are satisfied with the software versions and switch settings.

```
copy running-config startup-config
```

**Example**

```
C2# copy running-config startup-config
[########################################] 100%
Copy complete.
```

Show the version of NX-OS running on C2.

```
show version
```

Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (C) 2002-2016, Cisco and/or its affiliates.
All rights reserved.
The copyrights to certain works contained in this software are owned by other third parties and used and distributed under their own licenses, such as open source. This software is provided "as is," and unless otherwise stated, there is no warranty, express or implied, including but not limited to warranties of merchantability and fitness for a particular purpose. Certain components of this software are licensed under the GNU General Public License (GPL) version 2.0 or 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
Verify the current contents of the bootflash:

```
dir bootflash:
```

An NX-OS image takes around 700 MB of storage space. If there is not enough space for the NX-OS image, you can use the `delete bootflash:filename` command to remove any unnecessary files. The *Cisco documentation* has more information about this command.

**Example**

The following example shows the contents of the bootflash file system, the amount of space used for the RCF, and the remaining space.

```
cs2# dir bootflash:
    4096 Apr 12 00:35:24 2016 .rpmstore/
    1124267 Apr 19 21:39:10 2016 20160419_163618_poap_13062_1.log
    1048586 Apr 19 19:00:25 2016 20160419_163618_poap_13062_init.log
    63971 Apr 19 22:32:49 2016 20160419_222824_poap_13059_init.log
    8179 Jul 29 19:09:18 2016 NX3132_RCF_v1.1.24p10g_26p40g.txt
    1890 May 16 23:46:02 2016 bios_daemon.dbg
    4096 Apr 19 22:48:41 2016 logflash/
    4096 Apr 12 00:36:18 2016 scripts/
    1024 Jul 29 19:33:12 2016 sprom_2_0_1
    1024 Jul 29 19:33:12 2016 sprom_3_0_0
    4096 Apr 12 00:36:36 2016 virt_strg_pool_bf_vdc_1/
    4096 Apr 12 00:36:03 2016 virtual-instance/
    59 Apr 12 00:35:53 2016 virtual-instance.conf
```

Example

C2# copy sftp: bootflash: vrf management
Enter source filename: /tftpboot/nxos.7.0.3.I4.1.bin
Enter hostname for the sftp server: xx.xx.xx.xx
Enter username: root
root@xx.xx.xx.xx's password:
sftp> progress
Progress meter enabled
sftp> get /tftpboot/nxos.7.0.3.I4.1.bin/bootflash/
xos.7.0.3.I4.1.bin
Fetching /tftpboot/nxos.7.0.3.I4.1.bin to /bootflash/nxos.7.0.3.I4.1.bin
/tftpboot/nxos.7.0.3.I4.1.bin 100%   36MB   5.2MB/s   00:07
sftp> exit Copy complete, now saving to disk (please wait)...

14. Install the kickstart and system image so that the new version will be loaded upon the next switch reboot.

During the image installation, the install procedure might determine that the switch has to be powered off. If so, power off the switch, wait for five seconds, and then power it up again before proceeding to the next step.

Example

cs2# install all nxos bootflash:nxos.7.0.3.I4.1.bin
Installer will perform compatibility check first. Please wait.
Installer is forced disruptive

Verifying image bootflash:/nxos.7.0.3.I4.1.bin for boot variable "nxos".
[####################] 100% -- SUCCESS
Verifying image type.
[####################] 100% -- SUCCESS
Preparing "nxos" version info using image bootflash:/nxos.7.0.3.I4.1.bin.
[####################] 100% -- SUCCESS
Preparing "bios" version info using image bootflash:/nxos.7.0.3.I4.1.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  non-disruptive          none
Images will be upgraded according to following table:
Module  Image           Running-Version(pri:alt)     New-Version  Upg-
Required
-------  ----------  ----------------------------------------  --------------------
-------------
1        nxos                               7.0(3)I4(1)
7.0(3)I4(1)  no
1        bios                        v04.23(03/19/2016)

Installing NX-OS software and RCFs on Cisco® Nexus 3132Q-V cluster switches
v04.24(04/21/2016) no

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

Install has been successful.

15. Save the configuration, and then reboot C2.

Example

C2# copy running-config startup-config
[########################################] 100%
Copy complete.
C2# reload
This command will reboot the system. (y/n)? [n] y

16. Confirm that the new NX-OS version number is on the switch.

Example

C2# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac Copyright (C) 2002-2016, Cisco and/or its affiliates.
All rights reserved.
The copyrights to certain works contained in this software are owned by other third parties and used and distributed under their own licenses, such as open source. This software is provided "as is," and unless otherwise stated, there is no warranty, express or implied, including but not limited to warranties of merchantability and fitness for a particular purpose. Certain components of this software are licensed under the GNU General Public License (GPL) version 2.0 or 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 04.24
  NXOS: version 7.0(3)I4(1)
  BIOS compile time: 04/21/2016
  NXOS image file is: bootflash:///nxos.7.0.3.I4.1.bin
  NXOS compile time:  5/15/2016 20:00:00 [05/16/2016 03:24:30]

Hardware
  cisco Nexus 3132QV Chassis
  Intel(R) Core(TM) i3- CPU @ 2.50GHz with 16401852 kB of memory.
17. On all nodes, bring up all of the cluster interconnect ports connected to switch C2:

```
network port modify
```

**Example**

```
cluster::*> network port modify -node n1 -port e0b -up-admin true
cluster::*> network port modify -node n1 -port e0c -up-admin true
cluster::*> network port modify -node n2 -port e0b -up-admin true
cluster::*> network port modify -node n3 -port e0c -up-admin true
cluster::*> network port modify -node n4 -port e4e -up-admin true
```

18. For all nodes, revert all of the migrated cluster interconnect LIFs:

```
network interface revert
```

**Example**

```
cluster::*> network interface revert -vserver Cluster -lif n1_clus2
cluster::*> network interface revert -vserver Cluster -lif n1_clus3
cluster::*> network interface revert -vserver Cluster -lif n2_clus2
cluster::*> network interface revert -vserver Cluster -lif n2_clus3
Cluster::*> network interface revert –vserver Cluster –lif n3_clus2
cluster::*> network interface revert –vserver Cluster –lif n4_clus2
```

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

```
network interface show
```

All of the LIFs are successfully reverted if the **Is Home** column value is **true** for the ports mentioned in the **Current Port** column. If the **Is Home** column value is **false**, the LIF has not been reverted.

**Example**

```
cluster::*> network interface show -role cluster
(network interface show)

<table>
<thead>
<tr>
<th>Logical Interface</th>
<th>Status</th>
<th>Network Address/Mask</th>
<th>Current Node</th>
<th>Current Port</th>
<th>Is Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n1_clus1</td>
<td>up/up</td>
<td>10.10.0.1/24</td>
<td>n1</td>
<td>e0a</td>
<td>true</td>
</tr>
<tr>
<td>n1_clus2</td>
<td>up/up</td>
<td>10.10.0.2/24</td>
<td>n1</td>
<td>e0b</td>
<td>true</td>
</tr>
<tr>
<td>n1_clus3</td>
<td>up/up</td>
<td>10.10.0.3/24</td>
<td>n1</td>
<td>e0c</td>
<td>true</td>
</tr>
<tr>
<td>n1_clus4</td>
<td>up/up</td>
<td>10.10.0.4/24</td>
<td>n1</td>
<td>e0d</td>
<td>true</td>
</tr>
</tbody>
</table>
```
20. Verify that all of the cluster ports are up:

```
network port show
```

**Example**

```
cluster::*> network port show -role cluster
(network port show)
Node: n1

<table>
<thead>
<tr>
<th>Port</th>
<th>IPspace</th>
<th>Broadcast Domain</th>
<th>Link</th>
<th>MTU</th>
<th>Speed (Mbps)</th>
<th>Health Status</th>
<th>Ignore Health Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>e0a</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e0b</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e0c</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e0d</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Node: n2

<table>
<thead>
<tr>
<th>Port</th>
<th>IPspace</th>
<th>Broadcast Domain</th>
<th>Link</th>
<th>MTU</th>
<th>Speed (Mbps)</th>
<th>Health Status</th>
<th>Ignore Health Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>e0a</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e0b</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e0c</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e0d</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/10000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Node: n3

<table>
<thead>
<tr>
<th>Port</th>
<th>IPspace</th>
<th>Broadcast Domain</th>
<th>Link</th>
<th>MTU</th>
<th>Speed (Mbps)</th>
<th>Health Status</th>
<th>Ignore Health Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>e4a</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/40000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e4e</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/40000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Node: n4

<table>
<thead>
<tr>
<th>Port</th>
<th>IPspace</th>
<th>Broadcast Domain</th>
<th>Link</th>
<th>MTU</th>
<th>Speed (Mbps)</th>
<th>Health Status</th>
<th>Ignore Health Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>e4a</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/40000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e4e</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>9000</td>
<td>auto/40000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

12 entries were displayed.

21. Ping the remote cluster interfaces and perform an RPC server check:

```
cluster ping-cluster
```

**Example**

```
cluster::*> cluster ping-cluster -node n1
Host is n1
Getting addresses from network interface table...
Cluster n1_clus1 n1 e0a 10.10.0.1
```
<table>
<thead>
<tr>
<th>Cluster</th>
<th>Vserver Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>n1_clus2 n1</td>
<td>1</td>
</tr>
<tr>
<td>n1_clus3 n1</td>
<td>1</td>
</tr>
<tr>
<td>n1_clus4 n1</td>
<td>1</td>
</tr>
<tr>
<td>n2_clus1 n2</td>
<td>1</td>
</tr>
<tr>
<td>n2_clus2 n2</td>
<td>1</td>
</tr>
<tr>
<td>n2_clus3 n2</td>
<td>1</td>
</tr>
<tr>
<td>n2_clus4 n2</td>
<td>1</td>
</tr>
<tr>
<td>n3_clus1 n4</td>
<td>1</td>
</tr>
<tr>
<td>n3_clus2 n3</td>
<td>1</td>
</tr>
<tr>
<td>n4_clus1 n4</td>
<td>1</td>
</tr>
<tr>
<td>n4_clus2 n4</td>
<td>1</td>
</tr>
</tbody>
</table>

Local = 10.10.0.1 10.10.0.2 10.10.0.3 10.10.0.4
Remote = 10.10.0.5 10.10.0.6 10.10.0.7 10.10.0.8 10.10.0.9 10.10.0.10 10.10.0.11 10.10.0.12
Cluster Vserver Id = 4294967293

Ping status:
Basic connectivity succeeds on 32 path(s)
Basic connectivity fails on 0 path(s)
 Detected 1500 byte MTU on 32 path(s):
   Local 10.10.0.1 to Remote 10.10.0.5
   Local 10.10.0.1 to Remote 10.10.0.6
   Local 10.10.0.1 to Remote 10.10.0.7
   Local 10.10.0.1 to Remote 10.10.0.8
   Local 10.10.0.1 to Remote 10.10.0.9
   Local 10.10.0.1 to Remote 10.10.0.10
   Local 10.10.0.1 to Remote 10.10.0.11
   Local 10.10.0.1 to Remote 10.10.0.12
   Local 10.10.0.2 to Remote 10.10.0.5
   Local 10.10.0.2 to Remote 10.10.0.6
   Local 10.10.0.2 to Remote 10.10.0.7
   Local 10.10.0.2 to Remote 10.10.0.8
   Local 10.10.0.2 to Remote 10.10.0.9
   Local 10.10.0.2 to Remote 10.10.0.10
   Local 10.10.0.2 to Remote 10.10.0.11
   Local 10.10.0.2 to Remote 10.10.0.12
   Local 10.10.0.3 to Remote 10.10.0.5
   Local 10.10.0.3 to Remote 10.10.0.6
   Local 10.10.0.3 to Remote 10.10.0.7
   Local 10.10.0.3 to Remote 10.10.0.8
   Local 10.10.0.3 to Remote 10.10.0.9
   Local 10.10.0.3 to Remote 10.10.0.10
   Local 10.10.0.3 to Remote 10.10.0.11
   Local 10.10.0.3 to Remote 10.10.0.12
   Local 10.10.0.4 to Remote 10.10.0.5
   Local 10.10.0.4 to Remote 10.10.0.6
   Local 10.10.0.4 to Remote 10.10.0.7
   Local 10.10.0.4 to Remote 10.10.0.8
   Local 10.10.0.4 to Remote 10.10.0.9
   Local 10.10.0.4 to Remote 10.10.0.10
   Local 10.10.0.4 to Remote 10.10.0.11
   Local 10.10.0.4 to Remote 10.10.0.12

Larger than PMTU communication succeeds on 32 path(s)
RPC status:
8 paths up, 0 paths down (tcp check)
8 paths up, 0 paths down (udp check)

22. Repeat this procedure to upgrade the NX-OS software and RCF on C1.
How to send comments about documentation and receive update notifications

You can help us to improve the quality of our documentation by sending us your feedback. You can receive automatic notification when production-level (GA/FCS) documentation is initially released or important changes are made to existing production-level documents.

If you have suggestions for improving this document, send us your comments by email.

doccomments@netapp.com

To help us direct your comments to the correct division, include in the subject line the product name, version, and operating system.

If you want to be notified automatically when production-level documentation is released or important changes are made to existing production-level documents, follow Twitter account @NetAppDoc.

You can also contact us in the following ways:

- NetApp, Inc., 495 East Java Drive, Sunnyvale, CA 94089 U.S.
- Telephone: +1 (408) 822-6000
- Fax: +1 (408) 822-4501
- Support telephone: +1 (888) 463-8277

Trademark information

Active IQ, AltaVault, Arch Design, ASUP, AutoSupport, Campaign Express, Clustered Data ONTAP, Customer Fitness, Data ONTAP, DataMotion, Element, Fitness, Flash Accel, Flash Cache, Flash Pool, FlexArray, FlexCache, FlexClone, FlexPod, FlexScale, FlexShare, FlexVol, FPolicy, Fueled by SolidFire, GetSuccessful, Helix Design, LockVault, Manage ONTAP, MetroCluster, MultiStore, NetApp, NetApp Insight, OnCommand, ONTAP, ONTAPI, RAID DP, RAID-TEC, SANscreen, SANshare, SANtricity, SecureShare, Simplicity, Simulate ONTAP, Snap Creator, SnapCopy, SnapDrive, SnapIntegrator, SnapLock, SnapManager, SnapMirror, SnapMover, SnapProtect, SnapRestore, Snapshot, SnapValidator, SnapVault, SolidFire, SolidFire Helix, StorageGRID, SyncMirror, Tech OnTap, Unbound Cloud, and WAFL and other names are trademarks or registered trademarks of NetApp, Inc., in the United States, and/or other countries. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such. A current list of NetApp trademarks is available on the web.