



Installing NX-OS software and RCFs on Cisco[®] Nexus 3232C cluster switches running ONTAP 9.4 and later

The Cisco NX-OS software and reference configuration files (RCFs) must be installed on Cisco Nexus 3232C cluster switches.

Before you begin

The following conditions must exist before you install the NX-OS software and RCFs on the cluster switch:

- The cluster must be fully functioning (there should be no errors in the logs or similar issues).
- You must have checked or set your desired boot variables in the RCF to reflect the desired boot images if you are installing only NX-OS and keeping your current RCF version.
If you need to change the boot variables to reflect the current boot images, you must do so before reapplying the RCF so that the correct version is instantiated on future reboots.
- You must have consulted the switch compatibility table on the [Cisco Ethernet Switch](#) page for the supported ONTAP, NX-OS, and RCF versions.
There can be command dependencies between the command syntax in the RCF and that found in versions of NX-OS.
- 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.
[Cisco Nexus 3000 Series Switches](#)
- You must have the current RCFs:
 - NX3232_RCF_v1.0_72p10g_14p100g.txt
100G/40G ports 1/1 - 1/6 are configured as 4x10G ports 1/1-6/1-4.
 - NX3232_RCF_v1.0_24p10g_26p100g.txt
100G/40G ports 1/1 - 1/18 are configured as 4x10G ports 1/1-18/1-4.

About this task

Procedure summary:

- **I. Display and disable the cluster ports connected to Cisco switch 2** ([Steps 1-6 on page 2](#))
- **II. Copy the RCF to Cisco switch 2** ([Steps 7-12 on page 5](#))
- **III. Download the NX_OS image to Cisco switch 2 and reboot** ([Steps 13-16 on page 7](#))
- **IV. Bring up the cluster interfaces connected to Cisco switch 2** ([Steps 17-21 on page 9](#))
- **V. Repeat [Steps 1-21 on page 2](#) for Cisco switch 1.**

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 to verify the correct cluster ports on your platforms.

[Hardware Universe](#)

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

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

- 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 `cluster1::*>` prompt indicates the name of the cluster.

Note: The procedure requires the use of both ONTAP commands and Cisco Nexus 3000 Series Switches commands; ONTAP commands are used unless otherwise indicated.

Steps

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

```
network device-discovery show
```

Example

```
cluster::> network device-discovery show
```

Node	Local Port	Discovered Device	Interface	Platform
n1	e0a	C1	Ethernet1/1/1	N3K-3232C
	e0b	C2	Ethernet1/1/1	N3K-3232C
	e0c	C2	Ethernet1/1/2	N3K-3232C
	e0d	C1	Ethernet1/1/2	N3K-3232C
n2	e0a	C1	Ethernet1/1/3	N3K-3232C
	e0b	C2	Ethernet1/1/3	N3K-3232C
	e0c	C2	Ethernet1/1/4	N3K-3232C
	e0d	C1	Ethernet1/1/4	N3K-3232C
n3	e4a	C1	Ethernet1/7	N3K-3232C
	e4e	C2	Ethernet1/7	N3K-3232C
n4	e4a	C1	Ethernet1/8	N3K-3232C
	e4e	C2	Ethernet1/8	N3K-3232C

12 entries were displayed.

2. Check the administrative or operational status of each cluster interface.

- a. Display the network port attributes:

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

Example

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

Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	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
```

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: n3
e4a      Cluster      Cluster      up  9000 auto/40000 -
e4e      Cluster      Cluster      up  9000 auto/40000 -

Node: n4
e4a      Cluster      Cluster      up  9000 auto/40000 -
e4e      Cluster      Cluster      up  9000 auto/40000 -

12 entries were displayed.

```

b. Display information about the logical interfaces:

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

Example

```

cluster::*> network interface show -role cluster

Vserver      Logical      Status      Network      Current      Current      Is
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           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 about the discovered cluster switches:

```
system cluster-switch show
```

Example

```

cluster::> system cluster-switch show

Switch      Type          Address      Model
-----
C1 cluster-network 10.10.1.101 NX3232C      Serial Number: FOX000001

Is Monitored: true

Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version 7.0(3)I4(1)
Version Source: CDP

C2 cluster-network 10.10.1.102 NX3132V      Serial Number: FOX000002

Is Monitored: true

Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version 7.0(3)I4(1)
Version Source: CDP

2 entries were displayed.

```

3. Migrate the LIFs from the cluster ports on switch C2 to known cluster ports on switch C1:

```
network interface migrate -lif source-node source-node-name destination-node destination-node-name destination-port destination-port-name
```

Example

The LIFs must be migrated individually as shown in the following example:

```

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

```

- Verify that the cluster is healthy: **network interface show -role cluster**.

Example

```

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

```

Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is 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

12 entries were displayed.

- Shut down the cluster ports on C2:

```
network port modify -node node-name -port port-name -up-admin false
```

- Ping the remote cluster interfaces and perform a remote procedure call (RPC) server check: **cluster ping-cluster -node node-name**

Example

The following example shows node n1 being pinged and the RPC status indicated afterward:

```

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

```

- Copy the RCF on switch C2 to the switch bootflash 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 3000 Series NX-OS Command References](#).

Example

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

```

C2# copy tftp: bootflash: vrf management
Enter source filename: NX3232_RCF_v1.0_24p10g_24p100g.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)...

```

- Apply the RCF previously downloaded to the bootflash:

copy bootflash:

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

Example

The following example shows the RCF file `NX3232_RCF_v1.0_24p10g_26p100g.txt` being installed on switch C2:

```

C2# copy NX3232_RCF_v1.0_24p10g_26p100g.txt running-config

```

- 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 software versions and switch settings are correct, copy the

running-config
file to the `startup-config` file on switch C2.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

Example

The following example shows the

running-config
file successfully copied to the `startup-config` file:

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

11. Display the older version of NX-OS that is still running on switch C2.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

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
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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 04.24
  NXOS: version 7.0(3)I6.1 [7.0(3)I6.1(0.74)]
  BIOS compile time: 04/21/2016
  NXOS image file is: bootflash:///nxos.7.0.3.I4.0.74.bin   NXOS compile time: 4/11/2016
4:00:00 [04/11/2016 11:49:10]
Hardware
  cisco Nexus 3232C Chassis
  Intel(R) Core(TM) i3- CPU @ 2.50GHz with 16401848 kB of memory.   Processor Board ID
FOC20123GPZ
  Device name: cs2   bootflash: 14900224 kB
  usb1: 0 kB (expansion flash) Kernel uptime is 0 day(s), 0 hour(s), 4 minute(s),
20 second(s) Last reset at 246393 usecs after Fri Jul 29 19:29:22 2016
```

```
Reason: Reset Requested by CLI command reload
System version: 7.0(3)I6.1
Service:
plugin   Core Plugin, Ethernet Plugin      Active Package(s):
```

12. Verify the current contents of the bootflash:

dir bootflash:

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

An NX-OS image typically uses 700 MB of storage space.

Example

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

```
C2# 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   Jul 29 19:27:00 2016  lost+found/
 8179   Apr 19 22:41:49 2016  new24p.txt
 13133  Apr 19 22:42:06 2016  new72p.txt
688062464 Apr 12 00:30:39 2016  nxos.7.0.3.I4.0.61.bin
692911616 Apr 19 22:47:04 2016  nxos.7.0.3.I4.0.74.bin
 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

Usage for bootflash://sup-local
2423898112 bytes used
11894307072 bytes free
15018205184 bytes total
```

13. Download the NX-OS image to switch C2.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

Example

14. Install the system image so that the new version will be loaded the next time switch C2 is rebooted.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

Example

The switch will be reboot in 10 seconds with the new image as shown in the following output:

```
C2# install all nxos bootflash:nxos.7.0.3.I6.1.bin
Installer will perform compatibility check first. Please wait.
Installer is forced disruptive

Verifying image bootflash:/nxos.7.0.3.I6.1.bin for boot variable "nxos".
[#####] 100% -- SUCCESS

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

```

Preparing "nxos" version info using image bootflash:/nxos.7.0.3.I6.1.bin.
[#####] 100% -- SUCCESS

Preparing "bios" version info using image bootflash:/nxos.7.0.3.I6.1.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 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 7.0(3)I4(1) 7.0(3)I6(1) yes
1 bios v08.26(01/12/2016):v08.23(09/23/2015) v08.32(10/18/2016) 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.

```

15. Save the configuration.

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

Example

You are prompted to reboot the system as shown in the following 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:

For more information on Cisco commands, see the appropriate guide in the [Cisco Nexus 3000 Series NX-OS Command References](#).

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)I6.1
  BIOS compile time: 04/21/2016
  NXOS image file is: bootflash:///nxos.7.0(3)I6.1.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.
  Processor Board ID FOC20123GPZ
  Device name: cs2 bootflash: 14900224 kB
  usb1: 0 kB (expansion flash) Kernel uptime is 0 day(s), 0 hour(s), 7 minute(s),
  11 second(s) Last reset at 290657 usecs after Fri Jul 29 20:04:29 2016
  Reason: Reset Requested by CLI command reload
  System version: 7.0(3)I4(1)
  Service:
  plugin Core Plugin, Ethernet Plugin Active Package(s):

```

17. Display the cluster interconnect ports for all nodes that are connected to switch C2:

```
network port modify -node node-name -port port-name -up-admin true
```

Example

18. Revert all the migrated cluster interconnect LIFs for all the nodes:

```
network interface revert -veserver Cluster -lif lif-name
```

Example

You must individually revert all migrated cluster interconnect LIFs as shown in the following 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 all the cluster interconnect ports are reverted to their home ports:

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

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

Example

The following example shows the LIFs have been successfully reverted:

```

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

```

Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is 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.

```

20. Verify all the cluster ports are up:

network port show -role cluster

The following example shows all ports in the four nodes are in the “up” state:

Example

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

Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	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) Admin/Oper	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: n3
```

Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	Health Status	Ignore Health Status
e4a	Cluster	Cluster	up	9000	auto/40000	-	
e4e	Cluster	Cluster	up	9000	auto/40000	-	-

```
Node: n4
```

Port	IPspace	Broadcast Domain	Link	MTU	Speed(Mbps) Admin/Oper	Health Status	Ignore Health Status
e4a	Cluster	Cluster	up	9000	auto/40000	-	
e4e	Cluster	Cluster	up	9000	auto/40000	-	-

```
12 entries were displayed.
```

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

cluster ping-cluster -node node-name

Example

The following example shows node n1 being pinged and the RPC status indicated afterward:

```
cluster::*> cluster ping-cluster -node n1
Host is n1 Getting addresses from network interface table...
Cluster n1_clus1 n1 e0a 10.10.0.1
Cluster n1_clus2 n1 e0b 10.10.0.2
Cluster n1_clus3 n1 e0c 10.10.0.3
Cluster n1_clus4 n1 e0d 10.10.0.4
Cluster n2_clus1 n2 e0a 10.10.0.5
Cluster n2_clus2 n2 e0b 10.10.0.6
Cluster n2_clus3 n2 e0c 10.10.0.7
Cluster n2_clus4 n2 e0d 10.10.0.8
Cluster n3_clus1 n4 e0a 10.10.0.9
Cluster n3_clus2 n3 e0b 10.10.0.10
Cluster n4_clus1 n4 e0a 10.10.0.11
Cluster n4_clus2 n4 e0b 10.10.0.12
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 the procedure to upgrade the NX-OS software and RCF on switch C1.

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