Installing NX-OS software and RCFs on Cisco® cluster switches running ONTAP 8.3 and later

The NX-OS software and reference configuration files (RCFs) are required to be installed on Cisco Nexus 5596UP and 5596T cluster switches running ONTAP 8.3 or later.

Before you begin

- 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 command syntax in the RCF and NX-OS 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.
  http://www.cisco.com/en/US/products/ps9670/prod_installation_guides_list.html

About this task

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

- The names of the two Cisco switches are cs1 and cs2.
- The cluster logical interface (LIF) names are node1_clus1 and node1_clus2 for node1 and node2_clus1 and node2_clus2 for node2.
- The nodes are node1 and node2.
- The `cluster1::*>` prompt indicates the name of the cluster.
- The cluster ports on each node are named as e0a and e0b.
  The *Hardware Universe* has information about the cluster ports supported on your platform.
- The supported Inter-Switch Links (ISLs) for the Cisco cluster switches are: Ports 1/41 through 1/48 on Nexus 5596UP/5596T
- The following node connections are supported for the Cisco cluster switches:
  - Ports e1/1 through e1/40 on Nexus 5596UP switches
  - Ports e1/1 through e1/40 and e3/1 through e3/16 on Nexus 5596UP switches with one expansion module
  - Ports e1/1 through e1/40, e2/1 through e2/16, and e3/1 through e3/16 on Nexus 5596UP switches with two expansion modules

Steps

1. Display and note the information about the network ports on the cluster because you might need it later:

   `network port show -role cluster`

   #### Example

```
cluster1::> network port show -role cluster
                                                             Speed (Mbps)
Node     Port       IPspace   Broadcast Domain Link   MTU    Admin/Oper
------ --------- ------------ ---------------- ----- ------- ------------
node1
         e0a       Cluster    Cluster          up       9000  auto/10000
         e0b       Cluster    Cluster          up       9000  auto/10000
node2
         e0a       Cluster    Cluster          up       9000  auto/10000
         e0b       Cluster    Cluster          up       9000  auto/10000

4 entries were displayed.
```

2. Display and note the information about the LIFs on the cluster because you might need it later:

   `network interface show -role cluster`

   #### Example

   The following example shows the LIFs on the cluster. In this example, the `-role` parameter displays information about the LIFs that are associated with cluster ports:

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

            Logical    Status        Network            Current     Current   Is
Vserver     Interface  Admin/Oper   Address/Mask        Node        Port      Home
----------- ---------- ----------  --------------- ----------- --------     -----
Cluster
            node1_clus1      up/up   10.254.66.82/16     node1       e0a      true
            node1_clus2      up/up   10.254.206.128/16   node1       e0b      true
            node2_clus1      up/up   10.254.48.152/16    node2       e0a      true
            node2_clus2      up/up   10.254.42.74/16     node2       e0b      true
4 entries were displayed
```

3. On the local node for each LIF, migrate node1_clus2 to e0a on node1 and node2_clus2 to e0a on node2: **`network interface migrate`**

   #### Example

```
cluster1::> network interface migrate -vserver Cluster -lif node1_clus2 -source-node node1
-destination-node node1 -destination-port e0a
cluster1::> network interface migrate -vserver Cluster -lif node2_clus2 -source-node node2
-destination-node node2 -destination-port e0a
```

4. Verify that the migration took place: **`network interface show`**.

   #### Example

   The following example shows that node1_clus2 and node2_clus2 have migrated to port e0a on nodes node1 and node2:

```
cluster::*> network interface show -role cluster
            Logical    Status       Network            Current     Current   Is
Vserver     Interface  Admin/Oper   Address/Mask       Node        Port      Home
----------- ---------- ----------  --------------- ----------- --------     -----
```

```
Cluster
            node1_clus1      up/up   10.254.66.82/16     node1       e0a      true
            node1_clus2      up/up   10.254.206.128/16   node1       e0a      false
            node2_clus1      up/up   10.254.48.152/16    node2       e0a      true
            node2_clus2      up/up   10.254.42.74/16     node2       e0a      false
4 entries were displayed
```

5. Shut down port e0b on all nodes: **`network port modify -node node_name -port port_name -up-admin false`**

   Example

```
cluster1::> network port modify -node node1 -port e0b -up-admin false
cluster1::> network port modify -node node2 -port e0b -up-admin false
```

6. Verify that port e0b is shut down on all nodes: **`network port show -role`**

```
cluster1::> network port show -role cluster
                                                                 Speed (Mbps)
Node     Port       IPspace   Broadcast Domain Link   MTU    Admin/Oper
------ --------- ------------ ---------------- ----- ------- ------------
node1
         e0a       Cluster    Cluster          up       9000  auto/10000
         e0b       Cluster    Cluster          down     9000  auto/10000
node2
         e0a       Cluster    Cluster          up       9000  auto/10000
         e0b       Cluster    Cluster          down     9000  auto/10000
4 entries were displayed.
```

7. Shut down the Inter-Switch Link (ISL) ports on cs1.

   Example

```
(cs1)#config
(cs1)(config)#interface e1/41-48
(cs1)(config-if-range)#shutdown
(cs1)(config-if-range)#exit
(cs1)(config)#exit
(cs1)Ctrl/Z
```

8. Verify the current contents of the bootflash: dir bootflash:

   If there is not enough space for the NX-OS and kickstart images, you can remove any unnecessary files by using the `delete bootflash:filename` command. 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. Look at the size of the RCF to verify that you have enough space for the new RCF that is about to be downloaded. If the desired RCF is already on the switch, go to step *14* on page 5.

```
cs2# dir bootflash:
          0       Nov 13 01:14:17 2012 20121113_011417_poap_3498_init.log
        248       Apr 10 02:26:16 2012 convert_pfm1.log
        581       Apr 10 02:26:16 2012 fcoe_mgr_cnv.log
        096       Nov 13 01:12:25 2012 lost+found/
       5027       Feb 28 18:50:37 2013 mts.log
   31646720       Jul 17 06:19:54 2012 n5000-uk9-kickstart.5.2.1.N1.8b.bin
  172662417       Apr 10 01:41:08 2012 n5000-uk9.5.1.3.N2.1.bin
   73087826       Jul 17 02:19:16 2012 n5000-uk9.5.2.1.N1.1.bin
       3779       Apr 10 02:25:38 2012 stp.log.1
```

```
        4096       Jan 01 01:21:25 2009 vdc_2/
        4096       Jan 01 01:21:25 2009 vdc_3/
        4096       Jan 01 01:21:25 2009 vdc_4/
         348       Apr 10 02:26:16 2012 vfc_cnv.log

Usage for bootflash://sup-local
667828224 bytes used
980795392 bytes free
1648623616 bytes total
```

9. On switch cs2, 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 the RCF to the switch bootflash on a 5596UP or 5596T switch:

```
cs2# copy tftp: bootflash: vrf management
Enter source filename: NX5596_RCF_v1.3.txt
Enter hostname for the tftp server: 10.10.10.120
Trying to connect to tftp server......
Connection to Server Established.

TFTP get operation was successful
Copy complete, now saving to disk (please wait)...
```

10. Apply the RCF previously downloaded to the bootflash: **`copy bootflash:`** c.

    Example

    The following example shows the RCF `NX5596_RCF_v1.3.txt` is installed on a 5596 switch:

```
cs2# copy bootflash:NX5596_RCF_v1.3.txt running-config
```

11. Verify that the RCF version is the new one, the node and port settings are correct, and your site customizations are implemented: **`show running-config`**

    The RCF version is shown in the RCF banner.

    Example

```
cs2# show running-config
```

    The output varies 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.

12. After you are satisfied with the software versions and switch settings, copy the `running-config` file to the `startup-config` file.

    Example

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

13. Show the version of NX-OS running and back up the current active kickstart and system images on cs2:

Example

```
(cs2)# show version

Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
Copyright (c) 2002-2014, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 3.6.0
  loader:    version N/A
  kickstart: version 5.2(1)N1(8b)
  system:    version 5.2(1)N1(8b)
  power-seq: Module 1: version v7.0
             Module 2: version v1.0
             Module 3: version v1.0
                   uC: version v1.0.0.2
               SFP uC: Module 1: v1.0.0.0
    BIOS compile time:       05/09/2012
    kickstart image file is: bootflash:///n5000-uk9-kickstart.5.2.1.N1.8b.bin
    kickstart compile time:  10/30/2014 6:00:00 [10/30/2014 07:01:51]
    system image file is:    bootflash:///n5000-uk9.5.2.1.N1.8b.bin
    system compile time:     10/30/2014 6:00:00 [10/30/2014 08:28:15]

Hardware
  cisco Nexus5596 Chassis ("O2 48X10GE/Modular Supervisor")
  Intel(R) Xeon(R) CPU with 8263848 kB of memory.
  Processor Board ID FOC16034PR6

  Device name: cs2
  bootflash:   2007040 kB
  Kernel uptime is 0 day(s), 2 hour(s), 11 minute(s), 24 second(s)

  Last reset at 453478 usecs after Tue May 26 13:47:20 2015

   Reason: Reset Requested by CLI command reload
   System version: 5.2(1)N1(8b)
   Service:

  plugin
   Core Plugin, Ethernet Plugin
```

14. Download the kickstart and system images of NX-OS to cs2:

Example

```
(cs2)# copy sftp: bootflash: vrf management
Enter source filename: /tftpboot/n5000-uk9-kickstart.7.1.1.N1.1.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/n5000-uk9-kickstart.7.1.1.N1.1.bin /bootflash/n5000-uk9-kickstart.
7.1.1.N1.1.bin
Fetching /tftpboot/n5000-uk9-kickstart.7.1.1.N1.1.bin to /bootflash/n5000-uk9-kickstart.
7.1.1.N1.1.bin
/tftpboot/n5000-uk9-kickstart.7.1.1.N1.1.bin 100% 36MB 5.2MB/s 00:07
sftp> exit
Copy complete, now saving to disk (please wait)...
```

```
cs2# copy sftp: bootflash: vrf management
Enter source filename: /tftpboot/n5000-uk9.7.1.1.N1.1.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/n5000-uk9.7.1.1.N1.1.bin /bootflash/n5000-uk9.7.1.1.N1.1.bin
Fetching /tftpboot/n5000-uk9.7.1.1.N1.1.bin to /bootflash/n5000-uk9.7.1.1.N1.1.bin
/tftpboot/n5000-uk9.7.1.1.N1.1.bin 100% 303MB 5.7MB/s 00:53
sftp> exit
Copy complete, now saving to disk (please wait)...
```

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

During the image installation, the installation procedure might determine that the switch has to be powered off. If that is the case, power off the switch, wait for five seconds, and then power it up again before proceeding to the next step. The switch automatically reboots after the upgrade.

Example

```
cs2# install all kickstart bootflash:n5000-uk9-kickstart.7.1.1.N1.1.bin system
bootflash:n5000-uk9.7.1.1.N1.1.bin
Verifying image bootflash:/n5000-uk9-kickstart.7.1.1.N1.1.bin for boot variable
"kickstart".
[####################] 100% -- SUCCESS

Verifying image bootflash:/n5000-uk9.7.1.1.N1.1.bin for boot variable "system".
[####################] 100% -- SUCCESS

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

Extracting "system" version from image bootflash:/n5000-uk9.7.1.1.N1.1.bin.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/n5000-uk9-kickstart.7.1.1.N1.1.bin.
[####################] 100% -- SUCCESS

Extracting "bios" version from image bootflash:/n5000-uk9.7.1.1.N1.1.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 Incompatible image


Images will be upgraded according to following table:

Module      Image        Running-Version            New-Version Upg-Required
------ ---------- --------------------- --------------------- ------------
     1     system           5.2(1)N1(8b)           7.1(1)N1(1)          yes
     1  kickstart           5.2(1)N1(8b)           7.1(1)N1(1)          yes
     1       bios     v3.6.0(05/09/2012)     v3.6.0(05/09/2012)           no
     1     SFP-uC                 v1.0.0.0               v1.0.0.0           no
     1  power-seq                  v7.0                   v7.0           no
     2  power-seq                  v1.0                   v1.0           no
     3  power-seq                  v1.0                   v1.0           no
     1         uC              v1.0.0.2               v1.0.0.2           no
```

```
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

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

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

Example

```
(cs2) #show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Documents: http://www.cisco.com/en/US/products/ps9372/tsd_products_support_serie
s_home.html
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other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 3.6.0
loader:      version N/A
kickstart:   version 7.1(1)N1(1)
system:      version 7.1(1)N1(1)
```

17. Bring up the ISL ports on cs1, the active switch:

Example

```
(cs1)#configure
(cs1)(config) #interface ethernet 1/41-48
(cs1)(config-if-range)#no shutdown
(cs1)(config-if-range) #exit
(cs1)(Config) #exit
```

18. Bring up cluster port e0b on all nodes: `network port modify`

Example

```
cluster1::> network port modify -node node1 -port e0b -up-admin true
cluster1::> network port modify -node node2 -port e0b -up-admin true
```

19. Verify that port e0b is in the **`up`** state on all nodes: **`network port show -role cluster`**

Example

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

Node   Port      IPspace      Broadcast Domain Link   MTU    Speed (Mbps)
                                                            Admin/Oper
------ --------- ------------ ---------------- ----- ------- -----------
node1
       e0a       Cluster      Cluster          up     9000  auto/10000

       e0b       Cluster      Cluster          up     9000  auto/10000
node2
       e0a       Cluster      Cluster          up     9000  auto/10000

       e0b       Cluster      Cluster          up     9000  auto/10000
4 entries were displayed.
```

20. Verify that the LIF is now home (**true**) on both nodes: **network interface show role cluster** .

    ONTAP 8.3.1 and later automatically revert when the port becomes active.

Example

```
cluster::*> network interface show -role cluster
            Logical    Status        Network            Current     Current   Is
Vserver     Interface  Admin/Oper   Address/Mask        Node        Port      Home
----------- ---------- ----------  ---------------     ----------- --------  -----
Cluster
            node1_clus1  up/up      10.254.66.82/16     node1       e0a       true
            node1_clus2  up/up      10.254.206.128/16   node1       e0b       true
            node2_clus1  up/up      10.254.48.152/16    node2       e0a       true
            node2_clus2  up/up      10.254.42.74/16     node2       e0b       true


4 entries were displayed
```

21. Repeat this procedure to upgrade the NX-OS software and RCFs on the other switch, cs1.

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