



# **Configure software**

## **Cluster and storage switches**

NetApp  
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# Configure software

## Software install workflow for Cisco Nexus 9336C-FX2 storage switches

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

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

### 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:  
`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 lldp
```

**Show example**

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

```
Node/          Local  Discovered
Protocol       Port   Device (LLDP: ChassisID)  Interface
Platform
-----
-----
cluster1-02/lldp
              e0a    cs1                      Eth1/2          N9K-
C9336C
              e0b    cs2                      Eth1/2          N9K-
C9336C
cluster1-01/lldp
              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 -ip-space Cluster
```

## Show example

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

Node: cluster1-02

Ignore

Health Health
Port IPspace Broadcast Domain Link MTU Admin/Oper Speed (Mbps)
Status Status
-----
e0a Cluster Cluster up 9000 auto/100000
healthy false
e0b Cluster Cluster up 9000 auto/100000
healthy false

Node: cluster1-01

Ignore

Health Health
Port IPspace Broadcast Domain Link MTU Admin/Oper Speed (Mbps)
Status Status
-----
e0a Cluster Cluster up 9000 auto/100000
healthy false
e0b Cluster Cluster up 9000 auto/100000
healthy false

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

4 entries were displayed.

5. Verify the connectivity of the remote cluster interfaces:

## ONTAP 9.9.1 and later

You can use the `network interface check cluster-connectivity` command to start an accessibility check for cluster connectivity and then display the details:

```
network interface check cluster-connectivity start and network interface check cluster-connectivity show
```

```
cluster1::*> network interface check cluster-connectivity start
```

**NOTE:** Wait for a number of seconds before running the `show` command to display the details.

```
cluster1::*> network interface check cluster-connectivity show
```

Packet	Source	Destination
Node	Date	LIF
Loss		
-----	-----	-----
-----	-----	-----
node1		
3/5/2024 19:21:18 -06:00	cluster1-01_clus2	cluster1-02-
clus1 none		
3/5/2024 19:21:20 -06:00	cluster1-01_clus2	cluster1-
02_clus2 none		
node2		
3/5/2024 19:21:18 -06:00	cluster1-02_clus2	cluster1-
01_clus1 none		
3/5/2024 19:21:20 -06:00	cluster1-02_clus2	cluster1-
01_clus2 none		

## All ONTAP releases

For all ONTAP releases, you can also use the `cluster ping-cluster -node <name>` command to check the connectivity:

```
cluster ping-cluster -node <name>
```

```
cluster1::*> cluster ping-cluster -node local
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.

## 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 cluster 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).

### Suggested documentation

- [Cisco Ethernet switch page](#)

Consult the switch compatibility table for the supported ONTAP and NX-OS versions.

- [Software Upgrade and downgrade guides](#)

Refer to the appropriate software and upgrade guides available on the Cisco website for complete documentation on the Cisco switch upgrade and downgrade procedures.

- [Cisco Nexus 9000 and 3000 Upgrade and ISSU Matrix](#)

Provides information on Disruptive Upgrade/Downgrade for Cisco NX-OS software on Nexus 9000 Series Switches based on your current and target releases.

On the page, select **Disruptive Upgrade** and select your current release and target release from the

dropdown list.

## 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. 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-FX2
              e0d    cs2                      Ethernet1/7      N9K-
C9336C-FX2
cluster1-02/cdp
              e0a    cs1                      Ethernet1/8      N9K-
C9336C-FX2
              e0d    cs2                      Ethernet1/8      N9K-
C9336C-FX2
cluster1-03/cdp
              e0a    cs1                      Ethernet1/1/1    N9K-
C9336C-FX2
              e0b    cs2                      Ethernet1/1/1    N9K-
C9336C-FX2
cluster1-04/cdp
              e0a    cs1                      Ethernet1/1/2    N9K-
C9336C-FX2
              e0b    cs2                      Ethernet1/1/2    N9K-
C9336C-FX2
cluster1::*>
```

#### 4. 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

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

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

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  cluster1-01_clus1  up/up      169.254.3.4/23
              e0a      true
cluster1-01  cluster1-01_clus2  up/up      169.254.3.5/23
              e0d      true
cluster1-02  cluster1-02_clus1  up/up      169.254.3.8/23
              e0a      true
cluster1-02  cluster1-02_clus2  up/up      169.254.3.9/23
              e0d      true
cluster1-03  cluster1-03_clus1  up/up      169.254.1.3/23
              e0a      true
cluster1-03  cluster1-03_clus2  up/up      169.254.1.1/23
              e0b      true
cluster1-04  cluster1-04_clus1  up/up      169.254.1.6/23
              e0a      true
cluster1-04  cluster1-04_clus2  up/up      169.254.1.7/23
              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-FX2
  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-FX2
  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::*>
```

5. Disable auto-revert on the cluster LIFs. The cluster LIFs fail over to the partner cluster switch and remain there as you perform the upgrade procedure on the targeted switch:

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

6. 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.
```

### 7. 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#
```

8. 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.
```

9. 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
Copyright (C) 2002-2020, 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
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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):
```

10. 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.
```



11. 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

12. Verify the health of cluster ports on the cluster.

a. Verify that cluster 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 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.
```

b. Verify the switch health from the cluster.

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

## 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-FX2
          e0d    cs2                      Ethernet1/7
N9K-C9336C-FX2
cluster01-2/cdp
          e0a    cs1                      Ethernet1/8
N9K-C9336C-FX2
          e0d    cs2                      Ethernet1/8
N9K-C9336C-FX2
cluster01-3/cdp
          e0a    cs1                      Ethernet1/1/1
N9K-C9336C-FX2
          e0b    cs2                      Ethernet1/1/1
N9K-C9336C-FX2
cluster1-04/cdp
          e0a    cs1                      Ethernet1/1/2
N9K-C9336C-FX2
          e0b    cs2                      Ethernet1/1/2
N9K-C9336C-FX2

cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
Switch                Type                Address
Model
-----
-----
cs1                    cluster-network    10.233.205.90
N9K-C9336C-FX2
  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-FX2
  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. 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::*>

```

### 14. Repeat steps 6 to 13 to install the NX-OS software on switch cs1.

### 15. Enable auto-revert on the cluster LIFs.

```
network interface modify -vserver Cluster -lif * -auto-revert true
```

16. 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
Port	Home		Node

```
-----  
-----  
Cluster  
cluster1-01 cluster1-01_clus1 up/up 169.254.3.4/23  
cluster1-01 e0d true  
cluster1-01 cluster1-01_clus2 up/up 169.254.3.5/23  
cluster1-01 e0d true  
cluster1-02 cluster1-02_clus1 up/up 169.254.3.8/23  
cluster1-02 e0d true  
cluster1-02 cluster1-02_clus2 up/up 169.254.3.9/23  
cluster1-02 e0d true  
cluster1-03 cluster1-03_clus1 up/up 169.254.1.3/23  
cluster1-03 e0b true  
cluster1-03 cluster1-03_clus2 up/up 169.254.1.1/23  
cluster1-03 e0b true  
cluster1-04 cluster1-04_clus1 up/up 169.254.1.6/23  
cluster1-04 e0b true  
cluster1-04 cluster1-04_clus2 up/up 169.254.1.7/23  
cluster1-04 e0b true  
8 entries were displayed.  
cluster1::*>
```

If any cluster LIFs have not returned to their home ports, revert them manually from the local node:

```
network interface revert -vserver Cluster -lif <lif_name>
```

**What's next?**

[Install RCF.](#)

## Install the Reference Configuration File

You install the Reference Configuration File (RCF) after setting up the Nexus 9336C-FX2 storage switch for the first time.

## Before you begin

Verify the following installations and connections:

- A console connection to the switch. The console connection is optional if you have remote access to the switch.
- Switch cs1 and switch cs2 are powered up and the initial switch setup is complete (the Management IP address and SSH is set up).
- The desired NX-OS version has been installed.
- ONTAP node cluster ports are not connected.

## Step 1: Install the RCF on the switches

1. Login to switch cs1 using SSH or by using a serial console.
2. Copy the RCF to the bootflash of switch cs1 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](#).

### Show example

This example shows TFTP being used to copy an RCF to the bootflash on switch cs1:

```
cs1# copy tftp: bootflash: vrf management
Enter source filename: Nexus_9336C_RCF_v1.6-Storage.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)...
```

3. 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](#).

### Show example

This example shows the RCF `Nexus_9336C_RCF_v1.6-Storage.txt` being installed on switch cs1:

```
cs1# copy NNexus_9336C_RCF_v1.6-Storage.txt running-config echo-
commands
```

4. Examine the banner output from the `show banner motd` command. You must read and follow these

instructions to ensure the correct configuration and operation of the switch.

### Show example

```
cs1# show banner motd

*****
*****
* NetApp Reference Configuration File (RCF)
*
* Switch      : Nexus N9K-C9336C-FX2
* Filename    : Nexus_9336C_RCF_v1.6-Storage.txt
* Date        : 10-23-2020
* Version     : v1.6
*
* Port Usage  : Storage configuration
* Ports 1-36: 100GbE Controller and Shelf Storage Ports
*****
*****
```

5. Verify that the RCF 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.

6. Reapply any previous customizations to the switch configuration. Refer to [Review cabling and configuration considerations](#) for details of any further changes required.
7. After you verify the RCF versions and switch settings are correct, copy the running-config file to the startup-config file:

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

### Show example

```
cs1# copy running-config startup-config
[#####] 100% Copy complete
```



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

8. Reboot switch cs1.

```
cs1# reload
```

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

9. Repeat steps 1 through 7 on switch cs2.
10. Connect the cluster ports of all nodes in the ONTAP cluster to switches cs1 and cs2.

## **Step 2: Verify the switch connections**

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

```
show interface brief
```

## Show example

```
cs1# show interface brief | grep up
mgmt0  --                up      <mgmt ip address>
1000   1500
Eth1/11      1          eth  trunk  up      none
100G(D)  --
Eth1/12      1          eth  trunk  up      none
100G(D)  --
Eth1/13      1          eth  trunk  up      none
100G(D)  --
Eth1/14      1          eth  trunk  up      none
100G(D)  --
Eth1/15      1          eth  trunk  up      none
100G(D)  --
Eth1/16      1          eth  trunk  up      none
100G(D)  --
Eth1/17      1          eth  trunk  up      none
100G(D)  --
Eth1/18      1          eth  trunk  up      none
100G(D)  --
Eth1/23      1          eth  trunk  up      none
100G(D)  --
Eth1/24      1          eth  trunk  up      none
100G(D)  --
Eth1/25      1          eth  trunk  up      none
100G(D)  --
Eth1/26      1          eth  trunk  up      none
100G(D)  --
Eth1/27      1          eth  trunk  up      none
100G(D)  --
Eth1/28      1          eth  trunk  up      none
100G(D)  --
Eth1/29      1          eth  trunk  up      none
100G(D)  --
Eth1/30      1          eth  trunk  up      none
100G(D)  --
```

2. 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	Po999
30	VLAN0030	active	Eth1/1, Eth1/2, Eth1/3, Eth1/4 Eth1/5, Eth1/6, Eth1/7, Eth1/8 Eth1/9, Eth1/10, Eth1/11 Eth1/12, Eth1/13, Eth1/14 Eth1/15, Eth1/16, Eth1/17 Eth1/18, Eth1/19, Eth1/20 Eth1/21, Eth1/22, Eth1/23 Eth1/24, Eth1/25, Eth1/26 Eth1/27, Eth1/28, Eth1/29 Eth1/30, Eth1/31, Eth1/32 Eth1/33, Eth1/34, Eth1/35 Eth1/36

```
cs1# show interface trunk
```

Port	Native Vlan	Status	Port 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	trunking	--
Eth1/10	1	trunking	--
Eth1/11	1	trunking	--
Eth1/12	1	trunking	--
Eth1/13	1	trunking	--
Eth1/14	1	trunking	--
Eth1/15	1	trunking	--
Eth1/16	1	trunking	--
Eth1/17	1	trunking	--
Eth1/18	1	trunking	--
Eth1/19	1	trunking	--
Eth1/20	1	trunking	--
Eth1/21	1	trunking	--
Eth1/22	1	trunking	--
Eth1/23	1	trunking	--
Eth1/24	1	trunking	--
Eth1/25	1	trunking	--
Eth1/26	1	trunking	--
Eth1/27	1	trunking	--
Eth1/28	1	trunking	--
Eth1/29	1	trunking	--
Eth1/30	1	trunking	--
Eth1/31	1	trunking	--
Eth1/32	1	trunking	--
Eth1/33	1	trunking	--
Eth1/34	1	trunking	--
Eth1/35	1	trunking	--
Eth1/36	1	trunking	--

-----  
-----

Port                    Vlans Allowed on Trunk

-----  
-----

Eth1/1	30
Eth1/2	30
Eth1/3	30
Eth1/4	30
Eth1/5	30
Eth1/6	30
Eth1/7	30
Eth1/8	30
Eth1/9	30
Eth1/10	30
Eth1/11	30
Eth1/12	30

```
Eth1/13      30
Eth1/14      30
Eth1/15      30
Eth1/16      30
Eth1/17      30
Eth1/18      30
Eth1/19      30
Eth1/20      30
Eth1/21      30
Eth1/22      30
Eth1/23      30
Eth1/24      30
Eth1/25      30
Eth1/26      30
Eth1/27      30
Eth1/28      30
Eth1/29      30
Eth1/30      30
Eth1/31      30
Eth1/32      30
Eth1/33      30
Eth1/34      30
Eth1/35      30
Eth1/36      30
```

```
-----
-----
Port          Vlans Err-disabled on Trunk
-----
```

```
-----
Eth1/1       none
Eth1/2       none
Eth1/3       none
Eth1/4       none
Eth1/5       none
Eth1/6       none
Eth1/7       none
Eth1/8       none
Eth1/9       none
Eth1/10      none
Eth1/11      none
Eth1/12      none
Eth1/13      none
Eth1/14      none
Eth1/15      none
Eth1/16      none
```

Eth1/17	none
Eth1/18	none
Eth1/19	none
Eth1/20	none
Eth1/21	none
Eth1/22	none
Eth1/23	none
Eth1/24	none
Eth1/25	none
Eth1/26	none
Eth1/27	none
Eth1/28	none
Eth1/29	none
Eth1/30	none
Eth1/31	none
Eth1/32	none
Eth1/33	none
Eth1/34	none
Eth1/35	none
Eth1/36	none

-----  
-----  
Port                    STP Forwarding  
-----

Eth1/1	none
Eth1/2	none
Eth1/3	none
Eth1/4	none
Eth1/5	none
Eth1/6	none
Eth1/7	none
Eth1/8	none
Eth1/9	none
Eth1/10	none
Eth1/11	30
Eth1/12	30
Eth1/13	30
Eth1/14	30
Eth1/15	30
Eth1/16	30
Eth1/17	30
Eth1/18	30
Eth1/19	none
Eth1/20	none

```
Eth1/21      none
Eth1/22      none
Eth1/23      30
Eth1/24      30
Eth1/25      30
Eth1/26      30
Eth1/27      30
Eth1/28      30
Eth1/29      30
Eth1/30      30
Eth1/31      none
Eth1/32      none
Eth1/33      none
Eth1/34      none
Eth1/35      none
Eth1/36      none
```

```
-----
-----
Port          Vlans in spanning tree forwarding state and not pruned
-----
-----
```

```
Eth1/1      Feature VTP is not enabled
none
Eth1/2      Feature VTP is not enabled
none
Eth1/3      Feature VTP is not enabled
none
Eth1/4      Feature VTP is not enabled
none
Eth1/5      Feature VTP is not enabled
none
Eth1/6      Feature VTP is not enabled
none
Eth1/7      Feature VTP is not enabled
none
Eth1/8      Feature VTP is not enabled
none
Eth1/9      Feature VTP is not enabled
none
Eth1/10     Feature VTP is not enabled
none
Eth1/11     Feature VTP is not enabled
30
Eth1/12     Feature VTP is not enabled
30
```

```
Eth1/13      Feature VTP is not enabled
30
Eth1/14      Feature VTP is not enabled
30
Eth1/15      Feature VTP is not enabled
30
Eth1/16      Feature VTP is not enabled
30
Eth1/17      Feature VTP is not enabled
30
Eth1/18      Feature VTP is not enabled
30
Eth1/19      Feature VTP is not enabled
none
Eth1/20      Feature VTP is not enabled
none
Eth1/21      Feature VTP is not enabled
none
Eth1/22      Feature VTP is not enabled
none
Eth1/23      Feature VTP is not enabled
30
Eth1/24      Feature VTP is not enabled
30
Eth1/25      Feature VTP is not enabled
30
Eth1/26      Feature VTP is not enabled
30
Eth1/27      Feature VTP is not enabled
30
Eth1/28      Feature VTP is not enabled
30
Eth1/29      Feature VTP is not enabled
30
Eth1/30      Feature VTP is not enabled
30
Eth1/31      Feature VTP is not enabled
none
Eth1/32      Feature VTP is not enabled
none
Eth1/33      Feature VTP is not enabled
none
Eth1/34      Feature VTP is not enabled
none
Eth1/35      Feature VTP is not enabled
none
```



```
Eth1/36      Feature VTP is not enabled
none
```



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

### Step 3: Set up your ONTAP cluster

NetApp recommends that you use System Manager to set up new clusters.

System Manager provides a simple and easy workflow for cluster setup and configuration including assigning a node management IP address, initializing the cluster, creating a local tier, configuring protocols and provisioning initial storage.

Go to [Configure ONTAP on a new cluster with System Manager](#) for setup instructions.

#### What's next?

[Configure switch health monitoring.](#)

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