



AFX systems switches

Install and maintain

NetApp

February 13, 2026

This PDF was generated from <https://docs.netapp.com/us-en/ontap-systems-switches/switch-cisco-9332d-gx2b/configure-switch-overview-9332d-cluster.html> on February 13, 2026. Always check docs.netapp.com for the latest.

Table of Contents

- AFX systems switches 1
 - Cisco Nexus 9332D-GX2B 1
 - Get started 1
 - Install hardware 3
 - Configure software 4
 - Replace a Cisco Nexus 9332D-GX2B switch. 113
 - Cisco Nexus 9364D-GX2A 141
 - Get started 141
 - Install hardware 144
 - Configure software 144
 - Replace a Cisco Nexus 9364D-GX2A switch 271

AFX systems switches

Cisco Nexus 9332D-GX2B

Get started

Installation and setup workflow for Cisco 9332D-GX2B switches

The Cisco 9332D-GX2B switch is part of the Cisco Nexus 9000 platform. The AFX systems switches allow you to build ONTAP clusters with more than two nodes.

Follow these workflow steps to install and setup your to Cisco 9332D-GX2B switches.

1

Review the switch port details

Review the port details for the Cisco 9332D-GX2B switch.

2

Review the required documentation

Review specific switch and controller documentation to set up your 9332D-GX2B switches and the ONTAP cluster.

3

Review the Smart Call Home requirements

Review the requirements for the Cisco Smart Call Home feature, used to monitor the hardware and software components on your network.

4

Install the hardware

Install the switch hardware.

5

Configure the software

Configure the switch software.

Port details for Cisco Nexus 9332D-GX2B switches

The Cisco Nexus 9332D-GX2B switch is part of the Cisco Nexus 9000 platform. The AFX system switches allow you to build ONTAP clusters with more than two nodes.

Cisco Nexus 9332D-GX2B port details

Ports	Description
Ethernet1/1/1-4 to Ethernet1/30/1-4	4x100GbE mode for cluster, HA, and storage connections

Ports	Description
Ethernet1/31, Ethernet1/32	400GbE ISL

See the [Hardware Universe](#) for details of ports used by the platform. See [What additional information do I need to install my equipment that is not in HWU?](#) for more information about switch installation requirements.

Documentation requirements for Cisco Nexus 9332D-GX2B switches

For Cisco Nexus 9332D-GX2B switch installation and maintenance, be sure to review specific switch and controller documentation to set up your 9332D-GX2B switches and ONTAP cluster.

Switch documentation

To set up the Cisco Nexus 9332D-GX2B switches, you need the following documentation from the [Cisco Nexus 9000 Series Switches Support](#) page:

Document title	Description
Cisco Nexus 9332D-GX2B NX-OS Mode Switch Hardware Installation Guide	Provides detailed information about site requirements, switch hardware details, and installation options.
Cisco Nexus 9000 Series Switch Software Configuration Guides (choose the guide for the NX-OS release installed on your switches)	Provides initial switch configuration information that you need before you can configure the switch for ONTAP operation.
Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide (choose the guide for the NX-OS release installed on your switches)	Provides information on how to downgrade the switch to ONTAP supported switch software, if necessary.
Cisco Nexus 9000 Series NX-OS Command Reference	Provides links to the various command references provided by Cisco.
Cisco Nexus 9000 Series NX-OS System Message Reference	Describes the system messages for Cisco Nexus 9000 series switches, those that are informational, and others that might help diagnose problems with links, internal hardware, or the system software.
Cisco Nexus 9000 Series NX-OS Release Notes (choose the notes for the NX-OS release installed on your switches)	Describes the features, bugs, and limitations for the Cisco Nexus 9000 Series.

Document title	Description
Regulatory Compliance and Safety Information for Cisco Nexus 9000 Series	Provides international agency compliance, safety, and statutory information for the Nexus 9000 series switches.

ONTAP systems documentation

To set up an ONTAP system, you need the following documents for your version of the operating system from the [ONTAP 9 Documentation Center](#).

Name	Description
AFX systems documentation	Describes how to install NetApp hardware.
ONTAP documentation	Provides detailed information about all aspects of the ONTAP releases.
Hardware Universe	Provides NetApp hardware configuration and compatibility information.

Smart Call Home requirements

To use Smart Call Home, you must configure a cluster network switch to communicate using email with the Smart Call Home system. In addition, you can optionally set up your cluster network switch to take advantage of Cisco's embedded Smart Call Home support feature.

Smart Call Home monitors the hardware and software components on your network. When a critical system configuration occurs, it generates an email-based notification and raises an alert to all the recipients that are configured in your destination profile.

Smart Call Home monitors the hardware and software components on your network. When a critical system configuration occurs, it generates an email-based notification and raises an alert to all the recipients that are configured in your destination profile.

Before you can use Smart Call Home, be aware of the following requirements:

- An email server must be in place.
- The switch must have IP connectivity to the email server.
- The contact name (SNMP server contact), phone number, and street address information must be configured. This is required to determine the origin of messages received.
- A CCO ID must be associated with an appropriate Cisco SMARTnet Service contract for your company.
- Cisco SMARTnet Service must be in place for the device to be registered.

The [Cisco support site](#) contains information about the commands to configure Smart Call Home.

Install hardware

Go to the [AFX install and setup workflow](#) to learn how to install and setup the switch hardware and controller hardware for your system.

The AFX install and setup documentation includes information such as:

- Instructions for getting the site ready, unpacking the boxes and comparing the contents of the boxes to the packing slip, and registering the system to access support benefits.
- Instructions for installing the switches, controllers, and storage shelf in a NetApp cabinet or telco rack.
- Instructions for cabling your system, including cabling the controller storage to switch connections and cabling the shelf to switch connections.

Configure software

Configure software workflow for Cisco 9332D-GX2B switches

To install and configure the software for a Cisco 9332D-GX2B switch and to install or upgrade the Reference Configuration File (RCF), follow these steps:

1

Configure the 9332D-GX2B switch

Configure the Cisco 9332D-GX2B switch.

2

Prepare to install the NX-OS software and RCF

Install the Cisco NX-OS software and reference configuration files (RCFs) on the Cisco 9332D-GX2B switches.

3

Install or upgrade the NX-OS software

Download and install or upgrade the NX-OS software on the Cisco 9332D-GX2B switch.

4

Install or upgrade the RCF

Install or upgrade the RCF after setting up the Cisco 9332D-GX2B switch for the first time. You can also use this procedure to upgrade your RCF version.

5

Verify SSH is enabled on the Cisco 9332D-GX2B switches

Verify that SSH is enabled on the Cisco 9332D-GX2B switch for use with the Ethernet Switch Health Monitor (CSHM) and log collection features.

6

Reset the switch to factory defaults

Erase the Cisco 9332D-GX2B switch settings.

Once you have finished configuring your switches, go to [Power on your AFX 1K storage system](#).

Configure the 9332D-GX2B switch

Follow this procedure to configure the Cisco Nexus 9332D-GX2B switch.

Before you begin

Make sure you have:

- Powered on your switches.
 - Access to an HTTP, FTP, or TFTP server at the installation site to download the applicable NX-OS and Reference Configuration File (RCF) releases.
 - Applicable NX-OS version, downloaded from the [Cisco software download](#) page.
- 
 - NX-OS 10.4.2 is the only supported version for Cisco Nexus 9332D-GX2B switches in an ONTAP cluster.
 - Do not upgrade or downgrade your NX-OS version to an unsupported version; only 10.4.2 is currently supported.
- Applicable licenses, network and configuration information, and cables.
 - Applicable NetApp shared network and management network RCFs downloaded from the NetApp Support Site at mysupport.netapp.com. All Cisco shared network and management network switches arrive with the standard Cisco factory-default configuration. These switches also have the current version of the NX-OS software but do not have the RCFs loaded.
 - [Required switch and ONTAP documentation](#).

Steps

1. Perform an initial configuration of the shared network switches.

Provide applicable responses to the following initial setup questions when you first boot the switch. Your site's security policy defines the responses and services to enable.

Prompt	Response
Abort Auto Provisioning and continue with normal setup? (yes/no)	Respond with yes . The default is no.
Do you want to enforce secure password standard? (yes/no)	Respond with yes . The default is yes.
Enter the password for admin.	The default password is "admin"; you must create a new, strong password. A weak password can be rejected.
Would you like to enter the basic configuration dialog? (yes/no)	Respond with yes at the initial configuration of the switch.
Create another login account? (yes/no)	Your answer depends on your site's policies on alternate administrators. The default is no .
Configure read-only SNMP community string? (yes/no)	Respond with no . The default is no.

Prompt	Response
Configure read-write SNMP community string? (yes/no)	Respond with no . The default is no.
Enter the switch name.	Enter the switch name, which is limited to 63 alphanumeric characters.
Continue with Out-of-band (mgmt0) management configuration? (yes/no)	Respond with yes (the default) at that prompt. At the mgmt0 IPv4 address: prompt, enter your IP address: ip_address.
Configure the default-gateway? (yes/no)	Respond with yes . At the IPv4 address of the default-gateway: prompt, enter your default_gateway.
Configure advanced IP options? (yes/no)	Respond with no . The default is no.
Enable the telnet service? (yes/no)	Respond with no . The default is no.
Enabled SSH service? (yes/no)	Respond with yes . The default is yes.  SSH is recommended when using Ethernet Switch Health Monitor (CSHM) for its log collection features. SSHv2 is also recommended for enhanced security.
Enter the type of SSH key you want to generate (dsa/rsa/rsa1).	The default is rsa .
Enter the number of key bits (1024-2048).	Enter the number of key bits from 1024 to 2048.
Configure the NTP server? (yes/no)	Respond with no . The default is no.
Configure default interface layer (L3/L2)	Respond with L2 . The default is L2.
Configure default switch port interface state (shut/noshut)	Respond with noshut . The default is noshut.
Configure CoPP system profile (strict/moderate/lenient/dense)	Respond with strict . The default is strict.

Prompt	Response
Would you like to edit the configuration? (yes/no)	You should see the new configuration at this point. Review and make any necessary changes to the configuration you just entered. Respond with no at the prompt if you are satisfied with the configuration. Respond with yes if you want to edit your configuration settings.
Use this configuration and save it? (yes/no)	Respond with yes to save the configuration. This automatically updates the kickstart and system images.  If you do not save the configuration at this stage, none of the changes will be in effect the next time you reboot the switch.

2. Verify the configuration choices you made in the display that appears at the end of the setup, and make sure that you save the configuration.
3. Check the version on the shared network switches, and if necessary, download the NetApp-supported version of the software to the switches from the [Cisco software download](#) page.

What's next?

After you've configured your switches, you [prepare to install the NX-OS software and RCF](#).

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 node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are:
 - node1-01_clus1 and node1-01_clus2 for node1-01
 - node1-02_clus1 and node1-02_clus2 for node1-02
 - node1-03_clus1 and node1-03_clus2 for node1-03
 - node1-04_clus1 and node1-04_clus2 for node1-04
- The `cluster1::*>` prompt indicates the name of the cluster.

About this task

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

Steps

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

where x is the duration of the maintenance window in hours.



The AutoSupport message notifies technical support of this maintenance task so that automatic case creation is suppressed during the maintenance window.

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

```
set -privilege advanced
```

The advanced prompt (***>**) appears.

3. Check the administrative and operational status of each port.

- a. **Cluster ports**

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

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

Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface

node1-01/cdp			
e10a N9K-C9332D-GX2B	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	
e10b N9K-C9332D-GX2B	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3	
e11a N9K-C9332D-GX2B	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	
e11b N9K-C9332D-GX2B	cs2 (FDOXXXXXXXXX)	Ethernet1/16/4	
e1a N9K-C9332D-GX2B	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	
e1b N9K-C9332D-GX2B	cs2 (FDOXXXXXXXXX)	Ethernet1/16/1	
.			
.			
.			
e7a N9K-C9332D-GX2B	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2	
e7b N9K-C9332D-GX2B	cs2 (FDOXXXXXXXXX)	Ethernet1/16/2	
node1-02/cdp			
e10a N9K-C9332D-GX2B	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	
e10b N9K-C9332D-GX2B	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3	
e11a N9K-C9332D-GX2B	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	
e11b N9K-C9332D-GX2B	cs2 (FDOXXXXXXXXX)	Ethernet1/16/4	
e1a N9K-C9332D-GX2B	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	
e1b N9K-C9332D-GX2B	cs2 (FDOXXXXXXXXX)	Ethernet1/16/1	
.			
.			
.			
e7a	cs1 (FLM284504N6)	Ethernet1/16/2	

```
N9K-C9332D-GX2B
```

```
e7b
```

```
cs1 (FDO2846056X)
```

```
Ethernet1/16/2
```

```
N9K-C9332D-GX2B
```

```
.
```

```
.
```

```
.
```

ii. Display the network port attributes:

```
network port show -ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-02

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-03

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000

```
healthy false
```

```
Node: node1-04
```

```
Ignore
```

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/100000
healthy false						
e7b	Cluster	Cluster		up	9000	auto/100000
healthy false						

```
8 entries were displayed.
```

iii. Display information about the cluster LIFs:

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

Show example

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

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

Cluster					
01	e7a	node1-01_clus1 true	up/up	169.254.36.44/16	node1-
01	e7b	node1-01_clus2 true	up/up	169.254.7.5/16	node1-
02	e7a	node1-02_clus1 true	up/up	169.254.197.206/16	node1-
02	e7b	node1-02_clus2 true	up/up	169.254.195.186/16	node1-
03	e7a	node1-03_clus1 true	up/up	169.254.192.49/16	node1-
03	e7b	node1-03_clus2 true	up/up	169.254.182.76/16	node1-
04	e7a	node1-04_clus1 true	up/up	169.254.59.49/16	node1-
04	e7b	node1-04_clus2 true	up/up	169.254.62.244/16	node1-

```
8 entries were displayed.
```

b. HA ports

i. Display information about the HA ports:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01  
(system ha interconnect status show)
```

```
Node: node1-01  
Link 0 Status: up  
Link 1 Status: up  
Is Link 0 Active: true  
Is Link 1 Active: true  
IC RDMA Connection: up  
Slot: 0  
Debug Firmware: no
```

```
Interconnect Port 0 :  
Port Name: e1a-17  
MTU: 4096  
Link Information: ACTIVE
```

```
Interconnect Port 1 :  
Port Name: e1b-18  
MTU: 4096  
Link Information: ACTIVE
```

```
cluster1::*> ha interconnect status show -node node1-02  
(system ha interconnect status show)
```

```
Node: node1-02  
Link 0 Status: up  
Link 1 Status: up  
Is Link 0 Active: true  
Is Link 1 Active: true  
IC RDMA Connection: up  
Slot: 0  
Debug Firmware: no
```

```
Interconnect Port 0 :  
Port Name: e1a-17  
MTU: 4096  
Link Information: ACTIVE
```

```
Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

i. Display information about the storage ports:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. Storage shelf ports

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

16 entries were displayed.

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

4. Verify the connectivity of the remote cluster interfaces.

- You can use the `network interface check cluster-connectivity show` command to display the details of an accessibility check for cluster connectivity:

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

Show example

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

Packet		Source	Destination
Node	Date	LIF	LIF
Loss			

node1-01			
	6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-02_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-02_clus1
none			
node1-02			
	6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-01_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-01_clus2
none			
.			
.			
.			

- b. Alternatively, you can use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node1-04
Getting addresses from network interface table...
Cluster node1-01_clus1 169.254.36.44 node1-01 e7a
Cluster node1-01_clus2 169.254.7.5 node1-01 e7b
Cluster node1-02_clus1 169.254.197.206 node1-02 e7a
Cluster node1-02_clus2 169.254.195.186 node1-02 e7b
Cluster node1-03_clus1 169.254.192.49 node1-03 e7a
Cluster node1-03_clus2 169.254.182.76 node1-03 e7b
Cluster node1-04_clus1 169.254.59.49 node1-04 e7a
Cluster node1-04_clus2 169.254.62.244 node1-04 e7b
Local = 169.254.59.49 169.254.62.244
Remote = 169.254.36.44 169.254.7.5 169.254.197.206
169.254.195.186 169.254.192.49 169.254.182.76
Cluster Vserver Id = 4294967293
Ping status:
.....
Basic connectivity succeeds on 12 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 12 path(s):
    Local 169.254.59.49 to Remote 169.254.182.76
    Local 169.254.59.49 to Remote 169.254.192.49
    Local 169.254.59.49 to Remote 169.254.195.186
    Local 169.254.59.49 to Remote 169.254.197.206
    Local 169.254.59.49 to Remote 169.254.36.44
    Local 169.254.59.49 to Remote 169.254.7.5
    Local 169.254.62.244 to Remote 169.254.182.76
    Local 169.254.62.244 to Remote 169.254.192.49
    Local 169.254.62.244 to Remote 169.254.195.186
    Local 169.254.62.244 to Remote 169.254.197.206
    Local 169.254.62.244 to Remote 169.254.36.44
    Local 169.254.62.244 to Remote 169.254.7.5
Larger than PMTU communication succeeds on 12 path(s)
RPC status:
6 paths up, 0 paths down (tcp check)
6 paths up, 0 paths down (udp check)
```

5. 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
```

	Logical	
Vserver	Interface	Auto-revert
-----	-----	-----
Cluster	node1-01_clus1	true
Cluster	node1-01_clus2	true
Cluster	node1-02_clus1	true
Cluster	node1-02_clus2	true
Cluster	node1-03_clus1	true
Cluster	node1-03_clus2	true
Cluster	node1-04_clus1	true
Cluster	node1-04_clus2	true

8 entries were displayed.

What's next?

After you've prepared to install the NX-OS software and RCF, you [install or upgrade the NX-OS software](#).

Install or upgrade the NX-OS software

Follow this procedure to install or upgrade the NX-OS software on the Nexus 9332D-GX2B switch.

Review requirements

Before you begin

Verify the following:

- Complete the procedure in [Prepare to install NX-OS and RCF](#).
- 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 node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are node1-01_clus1, node1-01_clus2, node1-02_clus1, node1-02_clus2, node1-03_clus1, node1-03_clus2, node1-04_clus1, and node1-04_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.



- NX-OS 10.4.2 is the only supported version for Cisco Nexus 9332D-GX2B switches in an ONTAP cluster.
- Do not upgrade or downgrade your NX-OS version to an unsupported version; only 10.4.2 is currently supported.

Steps

1. Connect the 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/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	

node1-01/cdp				
	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	N9K-
C9332D-GX2B				
	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3	N9K-
C9332D-GX2B				
	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	N9K-
C9332D-GX2B				
	e11b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/4	N9K-
C9332D-GX2B				
	e1a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	N9K-
C9332D-GX2B				
	e1b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/1	N9K-
C9332D-GX2B				
	.			
	.			
	.			
	e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2	N9K-
C9332D-GX2B				
	e7b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/2	N9K-
C9332D-GX2B				
node1-01/lldp				
	e10a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/3	-
	e10b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/16/3	-
	e11a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/4	-
	e11b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/16/4	-
	e1a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/1	-
	e1b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/16/1	-
	.			
	.			
	.			
	e7a	cs1 (c8:60:8f:34:78:d3)	Ethernet1/16/2	-
	e7b	cs2 (04:e3:87:19:a2:59)	Ethernet1/16/2	-
	.			
	.			
	.			

4. Check the administrative and operational status of each port.

a. **Cluster ports**

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

```
network port show -ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-02

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-03

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-04

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

- ii. 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
```

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

Cluster					
	node1-01_clus1		up/up	169.254.36.44/16	
node1-01	e7a	true			
	node1-01_clus2		up/up	169.254.7.5/16	
node1-01	e7b	true			
	node1-02_clus1		up/up	169.254.197.206/16	
node1-02	e7a	true			
	node1-02_clus2		up/up	169.254.195.186/16	
node1-02	e7b	true			
	node1-03_clus1		up/up	169.254.192.49/16	
node1-03	e7a	true			
	node1-03_clus2		up/up	169.254.182.76/16	
node1-03	e7b	true			
	node1-04_clus1		up/up	169.254.59.49/16	
node1-04	e7a	true			
	node1-04_clus2		up/up	169.254.62.244/16	
node1-04	e7b	true			

8 entries were displayed.

iii. 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 Model	Type	Address

cs2 (FDOXXXXXXXXX) N9K-C9332D-GX2B	cluster-network	10.228.137.233
Serial Number: FDOXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		
10.4(2)		
Version Source: CDP/ISDP		
cs1 (FLMXXXXXXXXX) N9K-C9332D-GX2B	cluster-network	10.228.137.253
Serial Number: FLMXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		
10.4(2)		
Version Source: CDP/ISDP		
2 entries were displayed.		

b. HA ports

- Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```

Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

```

```

.
.
.

```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status
-----	----	-----	-----	-----	-----	-----

node1-01	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. **Storage shelf ports**

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

16 entries were displayed.

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

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 9332D-GX2B switch.

Show example

```
cs2# copy sftp: bootflash: vrf management
Enter source filename: /code/nxos.10.4.2.bin
Enter hostname for the sftp server: 172.19.2.1
Enter username: root

Outbound-ReKey for 172.19.2.1:22
Inbound-ReKey for 172.19.2.1:22
root@172.19.2.1's password:
sftp> progress
Progress meter enabled
sftp> get    /code/nxos.10.4.2.bin  /bootflash/nxos.10.4.2.bin
/code/nxos.10.4.2.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.10.4.2.F.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.10.4.2.F.img  /bootflash/n9000-
epld.10.4.2.F.img
/code/n9000-epld.10.4.2.F.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
Copyright (C) 2002-2025, 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 01.14
NXOS: version 10.4(1) [Feature Release]
Host NXOS: version 10.4(1)
BIOS compile time: 11/25/2024
NXOS image file is: bootflash:///nxos64-cs.10.4.1.F.bin
NXOS compile time: 11/30/2023 12:00:00 [12/14/2023 05:25:50]
NXOS boot mode: LXC
```

Hardware

```
cisco Nexus9000 C9332D-GX2B Chassis
Intel(R) Xeon(R) CPU D-1633N @ 2.50GHz with 32802156 kB of memory.
Processor Board ID FLMXXXXXXXXX
Device name: cs2
bootflash: 115802886 kB
```

```
Kernel uptime is 5 day(s), 2 hour(s), 13 minute(s), 21 second(s)
```

```
Last reset at 3580 usecs after Thu Jun  5 15:55:08 2025
```

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

```
System version: 10.4(1)
```

```
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.10.4.2.bin
```

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

```
Verifying image bootflash:/nxos.10.4.2.bin for boot variable "nxos".  
[] 100% -- SUCCESS
```

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

```
Preparing "nxos" version info using image  
bootflash:/nxos.10.4.2.bin.  
[] 100% -- SUCCESS
```

```
Preparing "bios" version info using image  
bootflash:/nxos.10.4.2.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	10.4 (1)	10.4 (2)
Yes			
1	bios	xx.xx.:xx.xx	xxx
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
```

```
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) 2002-2025, 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 01.14
NXOS: version 10.4(2) [Feature Release]
Host NXOS: version 10.4(2)
BIOS compile time: 11/25/2024
NXOS image file is: bootflash:///nxos64-cs.10.4.2.F.bin
NXOS compile time: 11/30/2023 12:00:00 [12/14/2023 05:25:50]
NXOS boot mode: LXC
```

Hardware

```
cisco Nexus9000 C9332D-GX2B Chassis
Intel(R) Xeon(R) CPU D-1633N @ 2.50GHz with 32802156 kB of memory.
Processor Board ID FLMXXXXXXXXX
Device name: cs2
bootflash: 115802886 kB
```

```
Kernel uptime is 5 day(s), 2 hour(s), 13 minute(s), 21 second(s)
```

```
Last reset at 3580 usecs after Thu Jun  5 15:55:08 2025
```

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

```
System version: 10.4(2)
```

```
Service:
```

```
plugin
```

```
Core Plugin, Ethernet Plugin
```

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

```
cs2#
```

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.10.4.2.F.img module all
```

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 all the ports on the cluster.

a. Cluster ports

i. Verify that cluster ports are up and healthy across all nodes in the cluster:

```
network port show -ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-02

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-03

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-04

Ignore

Health	Health					Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

ii. Verify the switch health from the cluster:

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

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

Show example

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

node1-02/cdp
      e10a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/3
N9K-C9332D-GX2B
      e10b  cs2 (FDOXXXXXXXXXX)      Ethernet1/16/3
N9K-C9332D-GX2B
      e11a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/4
N9K-C9332D-GX2B
      e11b  cs2 (FDOXXXXXXXXXX)      Ethernet1/16/4
N9K-C9332D-GX2B
      e1a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/1
N9K-C9332D-GX2B
      e1b   cs2 (FDOXXXXXXXXXX)      Ethernet1/16/1
N9K-C9332D-GX2B
      .
      .
      .
      e7a   cs1 (FLM284504N6)        Ethernet1/16/2
N9K-C9332D-GX2B
      e7b   cs2 (FDO2846056X)        Ethernet1/16/2
N9K-C9332D-GX2B

node1-01/cdp
      e10a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/3
N9K-C9332D-GX2B
      e10b  cs2 (FDOXXXXXXXXXX)      Ethernet1/16/3
N9K-C9332D-GX2B
      e11a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/4
N9K-C9332D-GX2B
      e11b  cs2 (FDOXXXXXXXXXX)      Ethernet1/16/4
N9K-C9332D-GX2B
      e1a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/1
N9K-C9332D-GX2B
      e1b   cs2 (FDOXXXXXXXXXX)      Ethernet1/16/1
N9K-C9332D-GX2B
      .
      .
      .
      e7a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/2
N9K-C9332D-GX2B
      e7b   cs2 (FDOXXXXXXXXXX)      Ethernet1/16/2
N9K-C9332D-GX2B
      .
```

```

.
.

cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
Switch                                Type                                Address
Model                                -----
-----
cs2 (FDOXXXXXXXXX)                   cluster-network                   10.228.137.233
N9K-C9332D-GX2B
    Serial Number: FDOXXXXXXXXX
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                                10.4(2)
    Version Source: CDP/ISDP

cs1 (FLMXXXXXXXXX)                   cluster-network                   10.228.137.253
N9K-C9332D-GX2B
    Serial Number: FLMXXXXXXXXX
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                                10.4(2)
    Version Source: CDP/ISDP

```

b. HA ports

- i. Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. **Storage shelf ports**

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

16 entries were displayed.

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

13. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
node1-01	true	true	false
node1-02	true	true	false
node1-03	true	true	false
node1-04	true	true	true

4 entries were displayed.

14. Repeat steps 6 to 13 to install the NX-OS software and EPLD images 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	Node
Port	Home			
-----	-----	-----	-----	
-----	-----	-----	-----	
Cluster				
	node1-01_clus1	up/up	169.254.36.44/16	node1-01
e7a	true			
	node1-01_clus2	up/up	169.254.7.5/16	node1-01
e7b	true			
	node1-02_clus1	up/up	169.254.197.206/16	node1-02
e7a	true			
	node1-02_clus2	up/up	169.254.195.186/16	node1-02
e7b	true			
	node1-03_clus1	up/up	169.254.192.49/16	node1-03
e7a	true			
	node1-03_clus2	up/up	169.254.182.76/16	node1-03
e7b	true			
	node1-04_clus1	up/up	169.254.59.49/16	node1-04
e7a	true			
	node1-04_clus2	up/up	169.254.62.244/16	node1-04
e7b	true			

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?

After you've installed or upgraded the NX-OS software, you [install or upgrade the Reference Configuration File \(RCF\)](#).

Install or upgrade the RCF

Install or upgrade the Reference Configuration File (RCF) overview

You install the Reference Configuration File (RCF) after setting up the Nexus 9332D-GX2B switch for the first time. You upgrade your RCF version when you have an existing version of the RCF file installed on your switch.

See the Knowledge Base article [How to clear configuration on a Cisco interconnect switch while retaining remote connectivity](#) for further information when installing or upgrading your RCF.

Available RCF configuration

- **Cluster-HA-Storage AFX** - All ports are configured in 4x100GbE breakout mode that universally supports AFX node clusters, HA, storage ports, and NX224 storage shelf ports. 400GbE ISL between switches. (*Cluster-HA-Storage AFX RCF_vxx.x*).

For specific port and VLAN usage details, refer to the banner and important notes section in your RCF. See [Cisco Ethernet Switches](#) for more information.

Suggested documentation

- [Cisco Ethernet Switches \(NSS\)](#)

Consult the switch compatibility table for the supported ONTAP and RCF versions on the NetApp Support Site. Note that there can be command dependencies between the command syntax in the RCF and the syntax found in specific versions of NX-OS.

- [Cisco Nexus 9000 Series Switches](#)

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

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 node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are node1-01_clus1, node1-01_clus2, node1-02_clus1, node1-02_clus2, node1-03_clus1, node1-03_clus2, node1-04_clus1, and node1-04_clus2.
- The `cluster1::*>` prompt indicates the name of the cluster.

See the [Hardware Universe](#) to verify the correct ports on your platform.



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

Commands used

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

What's next?

After you've reviewed the install RCF or upgrade RCF procedure, you [install the RCF](#) or [upgrade your RCF](#) as required.

Install the Reference Configuration File (RCF)

You install the Reference Configuration File (RCF) after setting up the Nexus 9332D-GX2B 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 setup).
- The desired NX-OS version has been installed.
- ISL connections between switches are 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](#) guides.

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: NX9332D-GX2B-RCF-v10.0-Shared.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](#) guides.

This example shows the RCF file NX9332D-GX2B-RCF-v10.0-Shared.txt being installed on switch cs1:

```
cs1# copy NX9332D-GX2B-RCF-v10.0-Shared.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 proper configuration and operation of the switch.

Show example

```
cs1# show banner motd

*****
*****
* NetApp Reference Configuration File (RCF)
*
* Switch      : NX9332D-GX2B
* Filename    : NX9332D-GX2B-RCF-v10.0-Shared.txt
* Date       : 05-09-2025
* Version    : v10.0
* Port Usage:
* Ports 1-30: 100GbE Intra-Cluster/HA/Storage Ports, int e1/{1-
30}/1-4
* Ports 31-32: Intra-Cluster ISL Ports, int e1/31-32
*
* IMPORTANT NOTES
* Interface port-channel999 is reserved to identify the version of
this file.
*****
*****
```

5. 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.

6. Save basic configuration details to the `write_erase.cfg` file on the bootflash.

Make sure to configure the following:



- Username and password
- Management IP address
- Default gateway
- Switch name

```
cs1# show run | i "username admin password" > bootflash:write_erase.cfg
```

```
cs1# show run | section "vrf context management" >> bootflash:write_erase.cfg
```

```
cs1# show run | section "interface mgmt0" >> bootflash:write_erase.cfg
```

```
cs1# show run | section "switchname" >> bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region ing-racl 1024" >>  
bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region egr-racl 1024" >>  
bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region ing-l2-qos 1536" >>  
bootflash:write_erase.cfg
```

See the Knowledge Base article [How to clear configuration on a Cisco interconnect switch while retaining remote connectivity](#) for further details.

7. Verify that the `write_erase.cfg` file is populated as expected:

```
show file bootflash:write_erase.cfg
```

8. Issue the `write erase` command to erase the current saved configuration:

```
cs1# write erase
```

Warning: This command will erase the startup-configuration.

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

9. Copy the previously saved basic configuration into the startup configuration.

```
cs1# copy bootflash:write_erase.cfg startup-config
```

10. Reboot the switch:

```
cs1# reload
```

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

11. Repeat steps 1 through 10 on switch cs2.

12. Connect the 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
.
.
Eth1/9/3          1          eth  trunk  up      none
100G(D) --
Eth1/9/4          1          eth  trunk  up      none
100G(D) --
Eth1/15/1         1          eth  trunk  up      none
100G(D) --
Eth1/15/2         1          eth  trunk  up      none
100G(D) --
Eth1/15/3         1          eth  trunk  up      none
100G(D) --
Eth1/15/4         1          eth  trunk  up      none
100G(D) --
Eth1/16/1         1          eth  trunk  up      none
100G(D) --
Eth1/16/2         1          eth  trunk  up      none
100G(D) --
Eth1/16/3         1          eth  trunk  up      none
100G(D) --
Eth1/16/4         1          eth  trunk  up      none
100G(D) --
Eth1/17/1         1          eth  trunk  up      none
100G(D) --
Eth1/17/2         1          eth  trunk  up      none
100G(D) --
Eth1/17/3         1          eth  trunk  up      none
100G(D) --
Eth1/17/4         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	Pol, Po999, Eth1/31, Eth1/32, Eth1/33, Eth1/34, Eth1/1/1, Eth1/1/2, Eth1/1/3, Eth1/1/4, Eth1/2/1, Eth1/2/2, Eth1/2/3, Eth1/2/4, Eth1/3/1, Eth1/3/2, Eth1/3/3, Eth1/3/4, Eth1/4/1, Eth1/4/2, Eth1/4/3, Eth1/4/4, Eth1/5/1, Eth1/5/2, Eth1/5/3, Eth1/5/4, Eth1/6/1, Eth1/6/2, Eth1/6/3, Eth1/6/4, Eth1/7/1, Eth1/7/2, Eth1/7/3, Eth1/7/4, Eth1/8/1, Eth1/8/2, Eth1/8/3, Eth1/8/4, Eth1/9/1, Eth1/9/2, Eth1/9/3, Eth1/9/4, Eth1/10/1, Eth1/10/2, Eth1/10/3, Eth1/10/4, Eth1/11/1, Eth1/11/2, Eth1/11/3, Eth1/11/4, Eth1/12/1, Eth1/12/2, Eth1/12/3, Eth1/12/4, Eth1/13/1, Eth1/13/2, Eth1/13/3, Eth1/13/4, Eth1/14/1, Eth1/14/2, Eth1/14/3

Eth1/15/1, Eth1/15/2		Eth1/14/4,
Eth1/15/4, Eth1/16/1		Eth1/15/3,
Eth1/16/3, Eth1/16/4		Eth1/16/2,
Eth1/17/2, Eth1/17/3		Eth1/17/1,
Eth1/18/1, Eth1/18/2		Eth1/17/4,
Eth1/18/4, Eth1/19/1		Eth1/18/3,
Eth1/19/3, Eth1/19/4		Eth1/19/2,
Eth1/20/2, Eth1/20/3		Eth1/20/1,
Eth1/21/1, Eth1/21/2		Eth1/20/4,
Eth1/21/4, Eth1/22/1		Eth1/21/3,
Eth1/22/3, Eth1/22/4		Eth1/22/2,
Eth1/23/2, Eth1/23/3		Eth1/23/1,
Eth1/24/1, Eth1/24/2		Eth1/23/4,
Eth1/24/4, Eth1/25/1		Eth1/24/3,
Eth1/25/3, Eth1/25/4		Eth1/25/2,
Eth1/26/2, Eth1/26/3		Eth1/26/1,
Eth1/27/1, Eth1/27/2		Eth1/26/4,
Eth1/27/4, Eth1/28/1		Eth1/27/3,
Eth1/28/3, Eth1/28/4		Eth1/28/2,
Eth1/29/2, Eth1/29/3		Eth1/29/1,
Eth1/30/1, Eth1/30/2		Eth1/29/4,
17 VLAN0017	active	Eth1/30/3, Eth1/30/4
Eth1/1/3		Eth1/1/1, Eth1/1/2,
		Eth1/1/4, Eth1/2/1,

Eth1/2/2	Eth1/2/3, Eth1/2/4,
Eth1/3/1	Eth1/3/2, Eth1/3/3,
Eth1/3/4	Eth1/4/1, Eth1/4/2,
Eth1/4/3	Eth1/4/4, Eth1/5/1,
Eth1/5/2	Eth1/5/3, Eth1/5/4,
Eth1/6/1	Eth1/6/2, Eth1/6/3,
Eth1/6/4	Eth1/7/1, Eth1/7/2,
Eth1/7/3	Eth1/7/4, Eth1/8/1,
Eth1/8/2	Eth1/8/3, Eth1/8/4,
Eth1/9/1	Eth1/9/2, Eth1/9/3,
Eth1/9/4	Eth1/10/1,
Eth1/10/2, Eth1/10/3	Eth1/10/4,
Eth1/11/1, Eth1/11/2	Eth1/11/3,
Eth1/11/4, Eth1/12/1	Eth1/12/2,
Eth1/12/3, Eth1/12/4	Eth1/13/1,
Eth1/13/2, Eth1/13/3	Eth1/13/4,
Eth1/14/1, Eth1/14/2	Eth1/14/3,
Eth1/14/4, Eth1/15/1	Eth1/15/2,
Eth1/15/3, Eth1/15/4	Eth1/16/1,
Eth1/16/2, Eth1/16/3	Eth1/16/4,
Eth1/17/1, Eth1/17/2	Eth1/17/3,
Eth1/17/4, Eth1/18/1	Eth1/18/2,
Eth1/18/3, Eth1/18/4	Eth1/19/1,

Eth1/19/2, Eth1/19/3		Eth1/19/4,
Eth1/20/1, Eth1/20/2		Eth1/20/3,
Eth1/20/4, Eth1/21/1		Eth1/21/2,
Eth1/21/3, Eth1/21/4		Eth1/22/1,
Eth1/22/2, Eth1/22/3		Eth1/22/4,
Eth1/23/1, Eth1/23/2		Eth1/23/3,
Eth1/23/4, Eth1/24/1		Eth1/24/2,
Eth1/24/3, Eth1/24/4		Eth1/25/1,
Eth1/25/2, Eth1/25/3		Eth1/25/4,
Eth1/26/1, Eth1/26/2		Eth1/26/3,
Eth1/26/4, Eth1/27/1		Eth1/27/2,
Eth1/27/3, Eth1/27/4		Eth1/28/1,
Eth1/28/2, Eth1/28/3		Eth1/28/4,
Eth1/29/1, Eth1/29/2		Eth1/29/3,
Eth1/29/4, Eth1/30/1		Eth1/30/2,
Eth1/30/3, Eth1/30/4		
18 VLAN0018	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		Eth1/4/1, Eth1/4/2,
Eth1/4/3		Eth1/4/4, Eth1/5/1,
Eth1/5/2		Eth1/5/3, Eth1/5/4,
Eth1/6/1		Eth1/6/2, Eth1/6/3,

Eth1/6/4	Eth1/7/1, Eth1/7/2,
Eth1/7/3	Eth1/7/4, Eth1/8/1,
Eth1/8/2	Eth1/8/3, Eth1/8/4,
Eth1/9/1	Eth1/9/2, Eth1/9/3,
Eth1/9/4	Eth1/10/1,
Eth1/10/2, Eth1/10/3	Eth1/10/4,
Eth1/11/1, Eth1/11/2	Eth1/11/3,
Eth1/11/4, Eth1/12/1	Eth1/12/2,
Eth1/12/3, Eth1/12/4	Eth1/13/1,
Eth1/13/2, Eth1/13/3	Eth1/13/4,
Eth1/14/1, Eth1/14/2	Eth1/14/3,
Eth1/14/4, Eth1/15/1	Eth1/15/2,
Eth1/15/3, Eth1/15/4	Eth1/16/1,
Eth1/16/2, Eth1/16/3	Eth1/16/4,
Eth1/17/1, Eth1/17/2	Eth1/17/3,
Eth1/17/4, Eth1/18/1	Eth1/18/2,
Eth1/18/3, Eth1/18/4	Eth1/19/1,
Eth1/19/2, Eth1/19/3	Eth1/19/4,
Eth1/20/1, Eth1/20/2	Eth1/20/3,
Eth1/20/4, Eth1/21/1	Eth1/21/2,
Eth1/21/3, Eth1/21/4	Eth1/22/1,
Eth1/22/2, Eth1/22/3	Eth1/22/4,
Eth1/23/1, Eth1/23/2	Eth1/23/3,

Eth1/23/4, Eth1/24/1		Eth1/24/2,
Eth1/24/3, Eth1/24/4		Eth1/25/1,
Eth1/25/2, Eth1/25/3		Eth1/25/4,
Eth1/26/1, Eth1/26/2		Eth1/26/3,
Eth1/26/4, Eth1/27/1		Eth1/27/2,
Eth1/27/3, Eth1/27/4		Eth1/28/1,
Eth1/28/2, Eth1/28/3		Eth1/28/4,
Eth1/29/1, Eth1/29/2		Eth1/29/3,
Eth1/29/4, Eth1/30/1		Eth1/30/2,
Eth1/30/3, Eth1/30/4		
30 VLAN0030	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		Eth1/4/1, Eth1/4/2,
Eth1/4/3		Eth1/4/4, Eth1/5/1,
Eth1/5/2		Eth1/5/3, Eth1/5/4,
Eth1/6/1		Eth1/6/2, Eth1/6/3,
Eth1/6/4		Eth1/7/1, Eth1/7/2,
Eth1/7/3		Eth1/7/4, Eth1/8/1,
Eth1/8/2		Eth1/8/3, Eth1/8/4,
Eth1/9/1		Eth1/9/2, Eth1/9/3,
Eth1/9/4		Eth1/10/1,
Eth1/10/2, Eth1/10/3		Eth1/10/4,

Eth1/11/1, Eth1/11/2

Eth1/11/4, Eth1/12/1

Eth1/12/3, Eth1/12/4

Eth1/13/2, Eth1/13/3

Eth1/14/1, Eth1/14/2

Eth1/14/4, Eth1/15/1

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/21/3, Eth1/21/4

Eth1/22/2, Eth1/22/3

Eth1/23/1, Eth1/23/2

Eth1/23/4, Eth1/24/1

Eth1/24/3, Eth1/24/4

Eth1/25/2, Eth1/25/3

Eth1/26/1, Eth1/26/2

Eth1/26/4, Eth1/27/1

Eth1/27/3, Eth1/27/4

Eth1/11/3,

Eth1/12/2,

Eth1/13/1,

Eth1/13/4,

Eth1/14/3,

Eth1/15/2,

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/2,

Eth1/22/1,

Eth1/22/4,

Eth1/23/3,

Eth1/24/2,

Eth1/25/1,

Eth1/25/4,

Eth1/26/3,

Eth1/27/2,

Eth1/28/1,

Eth1/28/2, Eth1/28/3		Eth1/28/4,
Eth1/29/1, Eth1/29/2		Eth1/29/3,
Eth1/29/4, Eth1/30/1		Eth1/30/2,
Eth1/30/3, Eth1/30/4		
40 VLAN0040	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		Eth1/4/1, Eth1/4/2,
Eth1/4/3		Eth1/4/4, Eth1/5/1,
Eth1/5/2		Eth1/5/3, Eth1/5/4,
Eth1/6/1		Eth1/6/2, Eth1/6/3,
Eth1/6/4		Eth1/7/1, Eth1/7/2,
Eth1/7/3		Eth1/7/4, Eth1/8/1,
Eth1/8/2		Eth1/8/3, Eth1/8/4,
Eth1/9/1		Eth1/9/2, Eth1/9/3,
Eth1/9/4		Eth1/10/1,
Eth1/10/2, Eth1/10/3		Eth1/10/4,
Eth1/11/1, Eth1/11/2		Eth1/11/3,
Eth1/11/4, Eth1/12/1		Eth1/12/2,
Eth1/12/3, Eth1/12/4		Eth1/13/1,
Eth1/13/2, Eth1/13/3		Eth1/13/4,
Eth1/14/1, Eth1/14/2		Eth1/14/3,
Eth1/14/4, Eth1/15/1		Eth1/15/2,

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/21/3, Eth1/21/4

Eth1/22/2, Eth1/22/3

Eth1/23/1, Eth1/23/2

Eth1/23/4, Eth1/24/1

Eth1/24/3, Eth1/24/4

Eth1/25/2, Eth1/25/3

Eth1/26/1, Eth1/26/2

Eth1/26/4, Eth1/27/1

Eth1/27/3, Eth1/27/4

Eth1/28/2, Eth1/28/3

Eth1/29/1, Eth1/29/2

Eth1/29/4, Eth1/30/1

Eth1/30/3, Eth1/30/4

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/2,

Eth1/22/1,

Eth1/22/4,

Eth1/23/3,

Eth1/24/2,

Eth1/25/1,

Eth1/25/4,

Eth1/26/3,

Eth1/27/2,

Eth1/28/1,

Eth1/28/4,

Eth1/29/3,

Eth1/30/2,

cs1# **show interface trunk**

```
-----  
-----  
Port          Native  Status          Port
```

	Vlan	Channel	

Eth1/1/1	1	trunking	--
Eth1/1/2	1	trunking	--
Eth1/1/3	1	trunking	--
Eth1/1/4	1	trunking	--
Eth1/2/1	1	trunking	--
Eth1/2/2	1	trunking	--
Eth1/2/3	1	trunking	--
Eth1/2/4	1	trunking	--
.			
.			
.			
Eth1/30/1	none		
Eth1/30/2	none		
Eth1/30/3	none		
Eth1/30/4	none		
Eth1/31	none		
Eth1/32	none		
Po1	1		



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

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

```
show port-channel summary
```

Show example

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

-----
-----
Group Port-          Type      Protocol  Member Ports
Channel
-----
-----
1      Po1 (SU)       Eth      LACP      Eth1/31 (P)  Eth1/32 (P)
999    Po999 (SD)     Eth      NONE      --
cs1#
```

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 set up 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?

After you've installed the RCF, you [verify the SSH configuration](#).

Upgrade your Reference Configuration File (RCF)

You upgrade your RCF version when you have an existing version of the RCF file installed on your operational switches.

Before you begin

Make sure you have the following:

- A current backup of the switch configuration.
- A fully functioning cluster (no errors in the logs or similar issues).
- The current RCF.
- If you are updating your RCF version, you need a boot configuration in the RCF that reflects the desired

boot images.

If you need to change the boot configuration to reflect the current boot images, you must do so before reapplying the RCF so that the correct version is instantiated on future reboots.



No operational inter-switch link (ISL) is needed during this procedure. This is by design because RCF version changes can affect ISL connectivity temporarily. To ensure non-disruptive cluster operations, the following procedure migrates all of the cluster LIFs to the operational partner switch while performing the steps on the target switch.



Before installing a new switch software version and RCFs, you must erase the switch settings and perform basic configuration. You must be connected to the switch using the serial console or have preserved basic configuration information prior to erasing the switch settings.

Step 1: Prepare for the upgrade

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=xh
```

where *x* is the duration of the maintenance window in hours.

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

```
set -privilege advanced
```

The advanced prompt (*>) appears.

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

```
network device-discovery show
```

Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
-----	-----	-----	-----	
node1-01/cdp				
C9332D-GX2B	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	N9K-
C9332D-GX2B	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3	N9K-
C9332D-GX2B	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	N9K-
C9332D-GX2B	e11b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/4	N9K-
C9332D-GX2B	e1a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	N9K-
C9332D-GX2B	e1b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/1	N9K-
	.			
	.			
	.			
C9332D-GX2B	e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2	N9K-
C9332D-GX2B	e7b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/2	N9K-
node1-01/lldp				
	e10a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/3	-
	e10b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/16/3	-
	e11a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/4	-
	e11b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/16/4	-
	e1a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/1	-
	e1b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/16/1	-
	.			
	.			
	.			
	e7a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/2	-
	e7b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/16/2	-

4. Check the administrative and operational status of each port.

a. **Cluster ports**

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

```
network port show -ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-02

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-03

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-04

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

- ii. 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			
	node1-01_clus1	up/up	169.254.3.4/23
node1-01	e7a true		
	node1-01_clus2	up/up	169.254.3.5/23
node1-01	e7b true		
	node1-02_clus1	up/up	169.254.3.8/23
node1-02	e7a true		
	node1-02_clus2	up/up	169.254.3.9/23
node1-02	e7b true		
	node1-03_clus1	up/up	169.254.1.3/23
node1-03	e7a true		
	node1-03_clus2	up/up	169.254.1.1/23
node1-03	e7b true		
	node1-04_clus1	up/up	169.254.1.6/23
node1-04	e7a true		
	node1-04_clus2	up/up	169.254.1.7/23
node1-04	e7b true		
8 entries were displayed.			

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

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

Show example

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

Switch Model	Type	Address

cs2 (FDOXXXXXXXXX) N9K-C9332D-GX2B	cluster-network	10.228.137.233
Serial Number: FDOXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		
10.4(2)		
Version Source: CDP/ISDP		
cs2 (FLMXXXXXXXXX) N9K-C9332D-GX2B	cluster-network	10.228.137.234
Serial Number: FLMXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		
10.4(2)		
Version Source: CDP/ISDP		
2 entries were displayed.		

b. HA ports

- Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. Storage shelf ports

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

```
16 entries were displayed.
```

- ii. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

5. Disable auto-revert on the cluster LIFs.

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

Step 2: Configure ports

1. On switch cs1, shut down the ports connected to all the ports of the nodes.

```

cs1# config
cs1(config)# interface e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-
4,e1/6/1-4,e1/7/1-4,e1/8/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/9/1-4,e1/10/1-4,e1/11/1-4,e1/12/1-4,e1/13/1-
4,e1/14/1-4,e1/15/1-4,e1/16/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/17/1-4,e1/18/1-4,e1/19/1-4,e1/20/1-4,e1/21/1-
4,e1/22/1-44,e1/23/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/24/1-,e1/25/1-4,e1/26/1-4,e1/27/1-4,e1/28/1-
4,e1/29/1-4,e1/30/1-44
cs1(config-if-range)# shutdown
cs1(config-if-range)# exit
cs1(config)# exit

```



Make sure to shutdown **all** connected ports to avoid any network connection issues. See the Knowledge Base article [Node out of quorum when migrating cluster LIF during switch OS upgrade](#) for further details.

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

```

network interface show -role cluster

```

Show example

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

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

Cluster					
e7a		node1-01_clus1	up/up	169.254.36.44/16	node1-01
	true				
e7b		node1-01_clus2	up/up	169.254.7.5/16	node1-01
	true				
e7a		node1-02_clus1	up/up	169.254.197.206/16	node1-02
	true				
e7b		node1-02_clus2	up/up	169.254.195.186/16	node1-02
	true				
e7a		node1-03_clus1	up/up	169.254.192.49/16	node1-03
	true				
e7b		node1-03_clus2	up/up	169.254.182.76/16	node1-03
	true				
e7a		node1-04_clus1	up/up	169.254.59.49/16	node1-04
	true				
e7b		node1-04_clus2	up/up	169.254.62.244/16	node1-04
	true				

8 entries were displayed.

3. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
Node           Health Eligibility  Epsilon
-----
node1-01       true   true       false
node1-02       true   true       false
node1-03       true   true       true
node1-04       true   true       false

4 entries were displayed.
```

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

```
show running-config
```

- Record any custom additions between the current `running-config` and the RCF file in use (such as an SNMP configuration for your organization).
 - For NX-OS 10.2 and later, use the `show diff running-config` command to compare with the saved RCF file in the bootflash. Otherwise, use a third part diff/compare tool.
5. Save basic configuration details to the `write_erase.cfg` file on the bootflash.



Make sure to configure the following:

- Username and password
- Management IP address
- Default gateway
- Switch name

```
cs1# show run | i "username admin password" > bootflash:write_erase.cfg
```

```
cs1# show run | section "vrf context management" >> bootflash:write_erase.cfg
```

```
cs1# show run | section "interface mgmt0" >> bootflash:write_erase.cfg
```

```
cs1# show run | section "switchname" >> bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region ing-racl 1024" >>
bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region egr-racl 1024" >>
bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region ing-l2-qos 1536" >>
bootflash:write_erase.cfg
```

See the Knowledge Base article [How to clear configuration on a Cisco interconnect switch while retaining remote connectivity](#) for further details.

6. Verify that the `write_erase.cfg` file is populated as expected:

```
show file bootflash:write_erase.cfg
```

7. Issue the `write erase` command to erase the current saved configuration:

```
cs1# write erase
```

Warning: This command will erase the startup-configuration.

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

8. Copy the previously saved basic configuration into the startup configuration.

```
cs1# copy bootflash:write_erase.cfg startup-config
```

9. Reboot the switch:

```
cs1# reload
```

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

10. After the management IP address is reachable again, log in to the switch through SSH.

You may need to update host file entries related to the SSH keys.

11. 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](#) guides.

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: NX9332D-GX2B-RCF-v10.0-Shared.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)...
```

12. 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-](#)

This example shows the RCF file `NX9332D-GX2B-RCF-v10.0-Shared.txt` being installed on switch `cs1`:

```
cs1# copy NX9332D-GX2B-RCF-v10.0-Shared.txt running-config echo-commands
```



Make sure to thoroughly read the **Installation notes**, **Important Notes**, and **banner** sections of your RCF. You must read and follow these instructions to ensure the proper configuration and operation of the switch.

13. 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.

14. Reapply any previous customizations to the switch configuration.
15. After you verify the RCF versions, custom additions, and switch settings are correct, copy the `running-config` file to the `startup-config` file.

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

```
cs1# copy running-config startup-config
```

```
[ ] 100% Copy complete
```

16. Reboot switch `cs1`. You can ignore the “cluster switch health monitor” alerts and “cluster ports down” events reported on the nodes while the switch reboots.

```
cs1# reload
```

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

17. Verify the health of all the ports on the cluster.

- a. **Cluster ports**

- i. Verify that cluster ports are up and healthy across all nodes in the cluster:

```
network port show -ipspace cluster
```

Show example

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

Node: node1

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-02

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-03

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-04

Ignore

Health	Health					Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

8 entries were displayed.

ii. Verify the switch health from the cluster.

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

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

Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface

node1-01/cdp			
	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3
N9K-C9332D-GX2B			
	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3
N9K-C9332D-GX2B			
	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4
N9K-C9332D-GX2B			
	e11b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/4
N9K-C9332D-GX2B			
	e1a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1
N9K-C9332D-GX2B			
	e1b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/1
N9K-C9332D-GX2B			
	.		
	.		
	.		
	e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2
N9K-C9332D-GX2B			
	e7b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/2
N9K-C9332D-GX2B			

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

Switch Model	Type	Address

cs2 (FDOXXXXXXXXX) N9K-C9332D-GX2B	cluster-network	10.228.137.233
Serial Number: FDOXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		
10.4 (2)		

```
Version Source: CDP/ISDP
```

```
cs1 (FLMXXXXXXXX)          cluster-network    10.228.137.234  
N9K-C9332D-GX2B
```

```
Serial Number: FLMXXXXXXXX
```

```
Is Monitored: true
```

```
Reason: None
```

```
Software Version: Cisco Nexus Operating System (NX-OS)
```

```
Software, Version
```

```
10.4(2)
```

```
Version Source: CDP/ISDP
```

```
2 entries were displayed.
```

b. HA ports

- i. Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. **Storage shelf ports**

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

```
16 entries were displayed.
```

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

18. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
node1-01	true	true	false
node1-02	true	true	false
node1-03	true	true	true
node1-04	true	true	false

4 entries were displayed.

19. Repeat steps 4 to 18 on switch cs2.

20. Enable auto-revert on the cluster LIFs.

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

Step 3: Verify the cluster network configuration and cluster health

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

```
show interface brief
```

Show example

```
cs1# show interface brief | grep up
.
.
Eth1/9/3          1          eth  trunk  up      none
100G(D)  --
Eth1/9/4          1          eth  trunk  up      none
100G(D)  --
Eth1/15/1         1          eth  trunk  up      none
100G(D)  --
Eth1/15/2         1          eth  trunk  up      none
100G(D)  --
Eth1/15/3         1          eth  trunk  up      none
100G(D)  --
Eth1/15/4         1          eth  trunk  up      none
100G(D)  --
Eth1/16/1         1          eth  trunk  up      none
100G(D)  --
Eth1/16/2         1          eth  trunk  up      none
100G(D)  --
Eth1/16/3         1          eth  trunk  up      none
100G(D)  --
Eth1/16/4         1          eth  trunk  up      none
100G(D)  --
Eth1/17/1         1          eth  trunk  up      none
100G(D)  --
Eth1/17/2         1          eth  trunk  up      none
100G(D)  --
Eth1/17/3         1          eth  trunk  up      none
100G(D)  --
Eth1/17/4         1          eth  trunk  up      none
100G(D)  --
.
.
.
```

2. Verify that the expected nodes are still connected:

```
show cdp neighbors
```

Show example

```
cs1# show cdp neighbors
```

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,
V - VoIP-Phone, D - Remotely-Managed-Device,
s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
cs2 (FDOXXXXXXXXX) Eth1/63	Eth1/31	179	R S I s	N9K-C9364D-GX2A
cs2 (FDOXXXXXXXXX) Eth1/64	Eth1/32	179	R S I s	N9K-C9364D-GX2A
node1-01 e1a	Eth1/4/1	123	H	AFX-1K
node1-01 e7a	Eth1/4/2	123	H	AFX-1K
node1-01 e10a	Eth1/4/3	123	H	AFX-1K
node1-01 e11a	Eth1/4/4	123	H	AFX-1K
node1-02 e1a	Eth1/9/1	138	H	AFX-1K
node1-02 e7a	Eth1/9/2	138	H	AFX-1K
node1-02 e10a	Eth1/9/3	138	H	AFX-1K
node1-02 e11a	Eth1/9/4	138	H	AFX-1K
node1-03 e1a	Eth1/15/1	138	H	AFX-1K
node1-03 e7a	Eth1/15/2	138	H	AFX-1K
node1-03 e10a	Eth1/15/3	138	H	AFX-1K
node1-03 e11a	Eth1/15/4	138	H	AFX-1K
node1-04 e1a	Eth1/16/1	173	H	AFX-1K
node1-04 e7a	Eth1/16/2	173	H	AFX-1K
node1-04 e10a	Eth1/16/3	173	H	AFX-1K
node1-04	Eth1/16/4	173	H	AFX-1K

```
e11a
```

```
Total entries displayed: 18
```

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

```
show vlan brief
```

```
show interface trunk
```

Show example

```
cs1# show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Pol, Po999, Eth1/31, Eth1/32 Eth1/33, Eth1/34, Eth1/1/1 Eth1/1/2, Eth1/1/3, Eth1/1/4 Eth1/2/1, Eth1/2/2, Eth1/2/3 Eth1/2/4, Eth1/3/1, Eth1/3/2 Eth1/3/3, Eth1/3/4, Eth1/4/1 Eth1/4/2, Eth1/4/3, Eth1/4/4 Eth1/5/1, Eth1/5/2, Eth1/5/3 Eth1/5/4, Eth1/6/1, Eth1/6/2 Eth1/6/3, Eth1/6/4, Eth1/7/1 Eth1/7/2, Eth1/7/3, Eth1/7/4 Eth1/8/1, Eth1/8/2, Eth1/8/3 Eth1/8/4, Eth1/9/1, Eth1/9/2 Eth1/9/3, Eth1/9/4, Eth1/10/1 Eth1/10/2, Eth1/10/3, Eth1/10/4 Eth1/11/1, Eth1/11/2, Eth1/11/3 Eth1/11/4, Eth1/12/1, Eth1/12/2 Eth1/12/3, Eth1/12/4, Eth1/13/1 Eth1/13/2, Eth1/13/3, Eth1/13/4 Eth1/14/1,

Eth1/14/2, Eth1/14/3		Eth1/14/4,
Eth1/15/1, Eth1/15/2		Eth1/15/3,
Eth1/15/4, Eth1/16/1		Eth1/16/2,
Eth1/16/3, Eth1/16/4		Eth1/17/1,
Eth1/17/2, Eth1/17/3		Eth1/17/4,
Eth1/18/1, Eth1/18/2		Eth1/18/3,
Eth1/18/4, Eth1/19/1		Eth1/19/2,
Eth1/19/3, Eth1/19/4		Eth1/20/1,
Eth1/20/2, Eth1/20/3		Eth1/20/4,
Eth1/21/1, Eth1/21/2		Eth1/21/3,
Eth1/21/4, Eth1/22/1		Eth1/22/2,
Eth1/22/3, Eth1/22/4		Eth1/23/1,
Eth1/23/2, Eth1/23/3		Eth1/23/4,
Eth1/24/1, Eth1/24/2		Eth1/24/3,
Eth1/24/4, Eth1/25/1		Eth1/25/2,
Eth1/25/3, Eth1/25/4		Eth1/26/1,
Eth1/26/2, Eth1/26/3		Eth1/26/4,
Eth1/27/1, Eth1/27/2		Eth1/27/3,
Eth1/27/4, Eth1/28/1		Eth1/28/2,
Eth1/28/3, Eth1/28/4		Eth1/29/1,
Eth1/29/2, Eth1/29/3		Eth1/29/4,
Eth1/30/1, Eth1/30/2		Eth1/30/3, Eth1/30/4
17 VLAN0017	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		

Eth1/2/2	Eth1/1/4, Eth1/2/1,
Eth1/3/1	Eth1/2/3, Eth1/2/4,
Eth1/3/4	Eth1/3/2, Eth1/3/3,
Eth1/4/3	Eth1/4/1, Eth1/4/2,
Eth1/5/2	Eth1/4/4, Eth1/5/1,
Eth1/6/1	Eth1/5/3, Eth1/5/4,
Eth1/6/4	Eth1/6/2, Eth1/6/3,
Eth1/7/3	Eth1/7/1, Eth1/7/2,
Eth1/8/2	Eth1/7/4, Eth1/8/1,
Eth1/9/1	Eth1/8/3, Eth1/8/4,
Eth1/9/4	Eth1/9/2, Eth1/9/3,
Eth1/10/2, Eth1/10/3	Eth1/10/1,
Eth1/11/1, Eth1/11/2	Eth1/10/4,
Eth1/11/4, Eth1/12/1	Eth1/11/3,
Eth1/12/3, Eth1/12/4	Eth1/12/2,
Eth1/13/2, Eth1/13/3	Eth1/13/1,
Eth1/14/1, Eth1/14/2	Eth1/13/4,
Eth1/14/4, Eth1/15/1	Eth1/14/3,
Eth1/15/3, Eth1/15/4	Eth1/15/2,
Eth1/16/2, Eth1/16/3	Eth1/16/1,
Eth1/17/1, Eth1/17/2	Eth1/16/4,
Eth1/17/4, Eth1/18/1	Eth1/17/3,
Eth1/18/3, Eth1/18/4	Eth1/18/2,

Eth1/19/2, Eth1/19/3		Eth1/19/1,
Eth1/20/1, Eth1/20/2		Eth1/19/4,
Eth1/20/4, Eth1/21/1		Eth1/20/3,
Eth1/21/3, Eth1/21/4		Eth1/21/2,
Eth1/22/2, Eth1/22/3		Eth1/22/1,
Eth1/23/1, Eth1/23/2		Eth1/22/4,
Eth1/23/4, Eth1/24/1		Eth1/23/3,
Eth1/24/3, Eth1/24/4		Eth1/24/2,
Eth1/25/2, Eth1/25/3		Eth1/25/1,
Eth1/26/1, Eth1/26/2		Eth1/25/4,
Eth1/26/4, Eth1/27/1		Eth1/26/3,
Eth1/27/3, Eth1/27/4		Eth1/27/2,
Eth1/28/2, Eth1/28/3		Eth1/28/1,
Eth1/29/1, Eth1/29/2		Eth1/28/4,
Eth1/29/4, Eth1/30/1		Eth1/29/3,
Eth1/30/3, Eth1/30/4		Eth1/30/2,
18 VLAN0018	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		Eth1/4/1, Eth1/4/2,
Eth1/4/3		Eth1/4/4, Eth1/5/1,
Eth1/5/2		Eth1/5/3, Eth1/5/4,
Eth1/6/1		

Eth1/6/4

Eth1/7/3

Eth1/8/2

Eth1/9/1

Eth1/9/4

Eth1/10/2, Eth1/10/3

Eth1/11/1, Eth1/11/2

Eth1/11/4, Eth1/12/1

Eth1/12/3, Eth1/12/4

Eth1/13/2, Eth1/13/3

Eth1/14/1, Eth1/14/2

Eth1/14/4, Eth1/15/1

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/21/3, Eth1/21/4

Eth1/22/2, Eth1/22/3

Eth1/23/1, Eth1/23/2

Eth1/6/2, Eth1/6/3,

Eth1/7/1, Eth1/7/2,

Eth1/7/4, Eth1/8/1,

Eth1/8/3, Eth1/8/4,

Eth1/9/2, Eth1/9/3,

Eth1/10/1,

Eth1/10/4,

Eth1/11/3,

Eth1/12/2,

Eth1/13/1,

Eth1/13/4,

Eth1/14/3,

Eth1/15/2,

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/2,

Eth1/22/1,

Eth1/22/4,

Eth1/23/4, Eth1/24/1		Eth1/23/3,
Eth1/24/3, Eth1/24/4		Eth1/24/2,
Eth1/25/2, Eth1/25/3		Eth1/25/1,
Eth1/26/1, Eth1/26/2		Eth1/25/4,
Eth1/26/4, Eth1/27/1		Eth1/26/3,
Eth1/27/3, Eth1/27/4		Eth1/27/2,
Eth1/28/2, Eth1/28/3		Eth1/28/1,
Eth1/29/1, Eth1/29/2		Eth1/28/4,
Eth1/29/4, Eth1/30/1		Eth1/29/3,
Eth1/30/3, Eth1/30/4		Eth1/30/2,
30 VLAN0030	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		Eth1/4/1, Eth1/4/2,
Eth1/4/3		Eth1/4/4, Eth1/5/1,
Eth1/5/2		Eth1/5/3, Eth1/5/4,
Eth1/6/1		Eth1/6/2, Eth1/6/3,
Eth1/6/4		Eth1/7/1, Eth1/7/2,
Eth1/7/3		Eth1/7/4, Eth1/8/1,
Eth1/8/2		Eth1/8/3, Eth1/8/4,
Eth1/9/1		Eth1/9/2, Eth1/9/3,
Eth1/9/4		Eth1/10/1,
Eth1/10/2, Eth1/10/3		

Eth1/11/1, Eth1/11/2
Eth1/11/4, Eth1/12/1
Eth1/12/3, Eth1/12/4
Eth1/13/2, Eth1/13/3
Eth1/14/1, Eth1/14/2
Eth1/14/4, Eth1/15/1
Eth1/15/3, Eth1/15/4
Eth1/16/2, Eth1/16/3
Eth1/17/1, Eth1/17/2
Eth1/17/4, Eth1/18/1
Eth1/18/3, Eth1/18/4
Eth1/19/2, Eth1/19/3
Eth1/20/1, Eth1/20/2
Eth1/20/4, Eth1/21/1
Eth1/21/3, Eth1/21/4
Eth1/22/2, Eth1/22/3
Eth1/23/1, Eth1/23/2
Eth1/23/4, Eth1/24/1
Eth1/24/3, Eth1/24/4
Eth1/25/2, Eth1/25/3
Eth1/26/1, Eth1/26/2
Eth1/26/4, Eth1/27/1
Eth1/27/3, Eth1/27/4

Eth1/10/4,
Eth1/11/3,
Eth1/12/2,
Eth1/13/1,
Eth1/13/4,
Eth1/14/3,
Eth1/15/2,
Eth1/16/1,
Eth1/16/4,
Eth1/17/3,
Eth1/18/2,
Eth1/19/1,
Eth1/19/4,
Eth1/20/3,
Eth1/21/2,
Eth1/22/1,
Eth1/22/4,
Eth1/23/3,
Eth1/24/2,
Eth1/25/1,
Eth1/25/4,
Eth1/26/3,
Eth1/27/2,

Eth1/28/2, Eth1/28/3		Eth1/28/1,
Eth1/29/1, Eth1/29/2		Eth1/28/4,
Eth1/29/4, Eth1/30/1		Eth1/29/3,
Eth1/30/3, Eth1/30/4		Eth1/30/2,
40 VLAN0040	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		Eth1/4/1, Eth1/4/2,
Eth1/4/3		Eth1/4/4, Eth1/5/1,
Eth1/5/2		Eth1/5/3, Eth1/5/4,
Eth1/6/1		Eth1/6/2, Eth1/6/3,
Eth1/6/4		Eth1/7/1, Eth1/7/2,
Eth1/7/3		Eth1/7/4, Eth1/8/1,
Eth1/8/2		Eth1/8/3, Eth1/8/4,
Eth1/9/1		Eth1/9/2, Eth1/9/3,
Eth1/9/4		Eth1/10/1,
Eth1/10/2, Eth1/10/3		Eth1/10/4,
Eth1/11/1, Eth1/11/2		Eth1/11/3,
Eth1/11/4, Eth1/12/1		Eth1/12/2,
Eth1/12/3, Eth1/12/4		Eth1/13/1,
Eth1/13/2, Eth1/13/3		Eth1/13/4,
Eth1/14/1, Eth1/14/2		Eth1/14/3,
Eth1/14/4, Eth1/15/1		

Eth1/15/3, Eth1/15/4
Eth1/16/2, Eth1/16/3
Eth1/17/1, Eth1/17/2
Eth1/17/4, Eth1/18/1
Eth1/18/3, Eth1/18/4
Eth1/19/2, Eth1/19/3
Eth1/20/1, Eth1/20/2
Eth1/20/4, Eth1/21/1
Eth1/21/3, Eth1/21/4
Eth1/22/2, Eth1/22/3
Eth1/23/1, Eth1/23/2
Eth1/23/4, Eth1/24/1
Eth1/24/3, Eth1/24/4
Eth1/25/2, Eth1/25/3
Eth1/26/1, Eth1/26/2
Eth1/26/4, Eth1/27/1
Eth1/27/3, Eth1/27/4
Eth1/28/2, Eth1/28/3
Eth1/29/1, Eth1/29/2
Eth1/29/4, Eth1/30/1
Eth1/30/3, Eth1/30/4

Eth1/15/2,
Eth1/16/1,
Eth1/16/4,
Eth1/17/3,
Eth1/18/2,
Eth1/19/1,
Eth1/19/4,
Eth1/20/3,
Eth1/21/2,
Eth1/22/1,
Eth1/22/4,
Eth1/23/3,
Eth1/24/2,
Eth1/25/1,
Eth1/25/4,
Eth1/26/3,
Eth1/27/2,
Eth1/28/1,
Eth1/28/4,
Eth1/29/3,
Eth1/30/2,

cs1# **show interface trunk**

Port	Native Vlan	Status	Port Channel

Eth1/1/1	1	trunking	--
Eth1/1/2	1	trunking	--
Eth1/1/3	1	trunking	--
Eth1/1/4	1	trunking	--
Eth1/2/1	1	trunking	--
Eth1/2/2	1	trunking	--
Eth1/2/3	1	trunking	--
Eth1/2/4	1	trunking	--
.			
.			
.			
Eth1/30/1	none		
Eth1/30/2	none		
Eth1/30/3	none		
Eth1/30/4	none		
Eth1/31	none		
Eth1/32	none		
Po1	1		



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

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

```
show port-channel summary
```

Show example

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

-----
-----
Group Port-          Type      Protocol  Member Ports
Channel
-----
-----
1      Po1 (SU)       Eth      LACP      Eth1/31 (P)  Eth1/32 (P)
999    Po999 (SD)    Eth      NONE      --
cs1#
```

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

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

Show example

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

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

Cluster				
e7a	node1-01_clus1	up/up	169.254.36.44/16	node1-01
	true			
e7b	node1-01_clus2	up/up	169.254.7.5/16	node1-01
	true			
e7a	node1-02_clus1	up/up	169.254.197.206/16	node1-02
	true			
e7b	node1-02_clus2	up/up	169.254.195.186/16	node1-02
	true			
e7a	node1-03_clus1	up/up	169.254.192.49/16	node1-03
	true			
e7b	node1-03_clus2	up/up	169.254.182.76/16	node1-03
	true			
e7a	node1-04_clus1	up/up	169.254.59.49/16	node1-04
	true			
e7b	node1-04_clus2	up/up	169.254.62.244/16	node1-04
	true			

```
8 entries were displayed.
```

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

```
network interface revert -vserver vservers_name -lif <lif-name>
```

6. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
Node           Health Eligibility  Epsilon
-----
node1-01       true   true        false
node1-02       true   true        false
node1-03       true   true         true
node1-04       true   true        false

4 entries were displayed.
```

7. Verify the connectivity of the remote cluster interfaces:

- a. You can use the `network interface check cluster-connectivity show` command to display the details of an accessibility check for cluster connectivity:

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

Show example

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

Packet		Source	Destination
Node	Date	LIF	LIF
Loss			

node1-01			
	6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-02_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-02_clus1
none			
node1-02			
	6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-01_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-01_clus2
none			
.			
.			
.			

- b. Alternatively, you can use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::~*> cluster ping-cluster -node local
Host is node1-04
Getting addresses from network interface table...
Cluster node1-01_clus1 169.254.36.44 node1-01 e7a
Cluster node1-01_clus2 169.254.7.5 node1-01 e7b
Cluster node1-02_clus1 169.254.197.206 node1-02 e7a
Cluster node1-02_clus2 169.254.195.186 node1-02 e7b
Cluster node1-03_clus1 169.254.192.49 node1-03 e7a
Cluster node1-03_clus2 169.254.182.76 node1-03 e7b
Cluster node1-04_clus1 169.254.59.49 node1-04 e7a
Cluster node1-04_clus2 169.254.62.244 node1-04 e7b
Local = 169.254.59.49 169.254.62.244
Remote = 169.254.36.44 169.254.7.5 169.254.197.206
169.254.195.186 169.254.192.49 169.254.182.76
Cluster Vserver Id = 4294967293
Ping status:
.....
Basic connectivity succeeds on 12 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 12 path(s):
    Local 169.254.59.49 to Remote 169.254.182.76
    Local 169.254.59.49 to Remote 169.254.192.49
    Local 169.254.59.49 to Remote 169.254.195.186
    Local 169.254.59.49 to Remote 169.254.197.206
    Local 169.254.59.49 to Remote 169.254.36.44
    Local 169.254.59.49 to Remote 169.254.7.5
    Local 169.254.62.244 to Remote 169.254.182.76
    Local 169.254.62.244 to Remote 169.254.192.49
    Local 169.254.62.244 to Remote 169.254.195.186
    Local 169.254.62.244 to Remote 169.254.197.206
    Local 169.254.62.244 to Remote 169.254.36.44
    Local 169.254.62.244 to Remote 169.254.7.5
Larger than PMTU communication succeeds on 12 path(s)
RPC status:
6 paths up, 0 paths down (tcp check)
6 paths up, 0 paths down (udp check)
```

What's next?

After you've upgraded your RCF, you [verify the SSH configuration](#).

Verify your SSH configuration

If you are using the Ethernet Switch Health Monitor (CSHM) and log collection features, verify that SSH and SSH keys are enabled on the switches.

Steps

1. Verify that SSH is enabled:

```
(switch) show ssh server  
ssh version 2 is enabled
```

2. Verify that the SSH keys are enabled:

```
show ssh key
```

Show example

```
(switch)# show ssh key
```

```
rsa Keys generated:Wed May 14 18:49:37 2025
```

```
ssh-rsa
```

```
AAAAB3NzaC1yc2EAAAADAQABAAQGCndfdJesautdCwk5Mk/7pKOF10IeShc9uBtj74  
F52vbjyf1FHOCXX7Xf3Vopxs6L1hbgzCpFLo9E7pZBd3I+1AoLyQUltR3svzNieGY8ml  
WZGLtpKf/P2fDCd8JVJaejrwQhm49WUPiC6ziEqBDMOGhJpD2e9++umyDdr6  
NbmK8Q==
```

```
bitcount:1024
```

```
fingerprint:
```

```
SHA256:QtNU+Qq2I4ZfYwEfMEB1+z8w7xaKTlantTdsjLBx+OU
```

```
could not retrieve dsa key information
```

```
ecdsa Keys generated:Wed May 14 18:50:56 2025
```

```
ecdsa-sha2-nistp521
```

```
AAAAE2VjZHNhLXNoYTItbmlzdHA1MjEAAAABmlzdHA1MjEAAACFBAAynv17T+JlGmH8  
rg81xiOow0mPmkbkIG0o7h9EchixO3i3KjgQr8AwqkRHNTcQC3lRnizhJFUeMGCwuQTu  
rziRCwE6fAOkWa2MRyXA1DYRKKXjVEOnW9+MvinMipHQ0cCc  
YSExhh7j4HvWHIuYv8RmD7e3rmDQFlyyiLwdmpGfas2yaw==
```

```
bitcount:521
```

```
fingerprint:
```

```
SHA256:7cpZ5NGnIq5Iamw67ke+9o4qG9D3xxmGPauV14X5934
```

```
(switch)# show feature | include scpServer  
scpServer          1          enabled  
(switch)# show feature | include ssh  
sshServer          1          enabled  
(switch)#
```

What's next?

After you've verified your SSH configuration, you [configure switch health monitoring](#).

Reset the 9332D-GX2B switch to factory defaults

To reset the 9332D-GX2B switch to factory defaults, you must erase the 9332D-GX2B switch settings.

About this task

- You must be connected to the switch using the serial console.
- This task resets the configuration of the management network.

Steps

1. Erase the existing configuration:

```
write erase
```

```
(cs2)# write erase
```

```
Warning: This command will erase the startup-configuration.  
Do you wish to proceed anyway? (y/n) [n] y
```

2. Reload the switch software:

```
reload
```

```
(cs2)# reload
```

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

The system reboots and enters the configuration wizard. During the boot, if you receive the prompt “Abort Auto Provisioning and continue with normal setup? (yes/no)[n]”, you should respond **yes** to proceed.

Replace a Cisco Nexus 9332D-GX2B switch

Follow these steps to replace a defective Nexus 9332D-GX2B switch in a shared network. This is a nondisruptive procedure (NDU).

Review requirements

Before performing the switch replacement, make sure that:

- You have verified the switch serial number to ensure that the correct switch is replaced.
- On the existing cluster and network infrastructure:
 - The existing cluster is verified as completely functional, with at least one fully connected cluster switch.
 - All cluster ports are up.
 - All cluster logical interfaces (LIFs) are up and on their home ports.
 - The ONTAP `cluster ping-cluster -node <node-name>` command must indicate that basic

connectivity and larger than PMTU communication are successful on all paths.

- On the Nexus 9332D-GX2B replacement switch:
 - Management network connectivity on the replacement switch is functional.
 - Console access to the replacement switch is in place.
 - The node connections are ports 1/1 through 1/30.
 - All Inter-Switch Link (ISL) ports is disabled on ports 1/31 and 1/32.
 - The desired reference configuration file (RCF) and NX-OS operating system image switch is loaded onto the switch.
 - Initial customization of the switch is complete, as detailed in [Configure the 9332D-GX2B cluster switch](#).

Any previous site customizations, such as STP, SNMP, and SSH, are copied to the new switch.

- You have executed the command for migrating a cluster LIF from the node where the cluster LIF is hosted.

Enable console logging

NetApp strongly recommends that you enable console logging on the devices that you are using and take the following actions when replacing your switch:

- Leave AutoSupport enabled during maintenance.
- Trigger a maintenance AutoSupport before and after maintenance to disable case creation for the duration of the maintenance. See this Knowledge Base article [SU92: How to suppress automatic case creation during scheduled maintenance windows](#) for further details.
- Enable session logging for any CLI sessions. For instructions on how to enable session logging, review the "Logging Session Output" section in this Knowledge Base article [How to configure PuTTY for optimal connectivity to ONTAP systems](#).

Replace the switch

About the examples

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

- The names of the existing Nexus 9332D-GX2B switches are cs1 and cs2.
- The name of the new Nexus 9332D-GX2B switch is newcs2.
- The node names are node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are node1-01_clus1 and node1-01_clus2 for node1-01, node1-02_clus1 and node1-02_clus2 for node1-02, node1-03_clus1 and node1-03_clus2 for node1-03, and node1-04_clus1 and node1-04_clus2 for node1-04.
- The prompt for changes to all cluster nodes is cluster1::*>

About this task

The following procedure is based on the following cluster network topology:

Show example

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

Node: nodel-01

Ignore

						Speed(Mbps)	Health
Health	Port	IPspace	Broadcast Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	-----

e7a	Cluster	Cluster		up	9000	auto/100000	healthy
false							
e7b	Cluster	Cluster		up	9000	auto/100000	healthy
false							

Node: nodel-02

Ignore

						Speed(Mbps)	Health
Health	Port	IPspace	Broadcast Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	-----

e7a	Cluster	Cluster		up	9000	auto/100000	healthy
false							
e7b	Cluster	Cluster		up	9000	auto/100000	healthy
false							

Node: nodel-03

Ignore

						Speed(Mbps)	Health
Health	Port	IPspace	Broadcast Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	-----

e7a	Cluster	Cluster		up	9000	auto/100000	healthy
false							
e7b	Cluster	Cluster		up	9000	auto/100000	healthy

false

Node: node1-04

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	-----	-----	-----

e7a	Cluster	Cluster		up	9000	auto/100000	healthy
false							
e7b	Cluster	Cluster		up	9000	auto/100000	healthy
false							

8 entries were displayed.

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

	Logical	Status	Network		Current
Current	Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port
Home					
-----	-----	-----	-----	-----	-----
-----	----				
Cluster					
	node1-01_clus1	up/up	169.254.36.44/16	node1-01	e7a
true					
	node1-01_clus2	up/up	169.254.7.5/16	node1-01	e7b
true					
	node1-02_clus1	up/up	169.254.197.206/16	node1-02	e7a
true					
	node1-02_clus2	up/up	169.254.195.186/16	node1-02	e7b
true					
	node1-03_clus1	up/up	169.254.192.49/16	node1-03	e7a
true					
	node1-03_clus2	up/up	169.254.182.76/16	node1-03	e7b
true					
	node1-04_clus1	up/up	169.254.59.49/16	node1-04	e7a
true					
	node1-04_clus2	up/up	169.254.62.244/16	node1-04	e7b
true					

8 entries were displayed.

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

Node/ Protocol	Local Port	Discovered Device (LLDP: ChassisID)	Interface	Platform

node1-01/cdp				
	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	N9K-
C9332D-GX2B				
	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3	N9K-
C9332D-GX2B				
	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	N9K-
C9332D-GX2B				
	e11b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/4	N9K-
C9332D-GX2B				
	e1a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	N9K-
C9332D-GX2B				
	e1b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/1	N9K-
C9332D-GX2B				
	.			
	.			
	.			
	e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2	N9K-
C9332D-GX2B				
	e7b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/2	N9K-
C9332D-GX2B				

```
cs1# show cdp neighbors
```

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
S - Switch, H - Host, I - IGMP, r - Repeater,
V - VoIP-Phone, D - Remotely-Managed-Device,
s - Supports-STP-Dispute

Device-ID ID	Local Intrfce	Hldtme	Capability	Platform	Port
Device-ID	Local Intrfce	Hldtme	Capability	Platform	
Port ID					
cs2 (FDOXXXXXXXXX)	Eth1/31	179	R S I s	N9K-C9364D-GX2A	
Eth1/63					
cs2 (FDOXXXXXXXXX)	Eth1/32	179	R S I s	N9K-C9364D-GX2A	
Eth1/64					
node1-01	Eth1/4/1	123	H	AFX-1K	
e1a					
node1-01	Eth1/4/2	123	H	AFX-1K	
e7a					

node1-01	Eth1/4/3	123	H	AFX-1K
e10a				
node1-01	Eth1/4/4	123	H	AFX-1K
e11a				
node1-02	Eth1/9/1	138	H	AFX-1K
e1a				
node1-02	Eth1/9/2	138	H	AFX-1K
e7a				
node1-02	Eth1/9/3	138	H	AFX-1K
e10a				
node1-02	Eth1/9/4	138	H	AFX-1K
e11a				
node1-03	Eth1/15/1	138	H	AFX-1K
e1a				
node1-03	Eth1/15/2	138	H	AFX-1K
e7a				
node1-03	Eth1/15/3	138	H	AFX-1K
e10a				
node1-03	Eth1/15/4	138	H	AFX-1K
e11a				
node1-04	Eth1/16/1	173	H	AFX-1K
e1a				
node1-04	Eth1/16/2	173	H	AFX-1K
e7a				
node1-04	Eth1/16/3	173	H	AFX-1K
e10a				
node1-04	Eth1/16/4	173	H	AFX-1K
e11a				

Total entries displayed: 18

cs2# **show cdp neighbors**

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
 S - Switch, H - Host, I - IGMP, r - Repeater,
 V - VoIP-Phone, D - Remotely-Managed-Device,
 s - Supports-STP-Dispute

Device-ID	Local Intrfce	Hldtme	Capability	Platform	Port
ID					
Device-ID	Local Intrfce	Hldtme	Capability	Platform	
Port ID					
cs1 (FLMXXXXXXXX)	Eth1/31	179	R S I s	N9K-C9364D-GX2A	
Eth1/63					
cs1 (FLMXXXXXXXX)	Eth1/32	179	R S I s	N9K-C9364D-GX2A	
Eth1/64					

node1-01	Eth1/4/1	123	H	AFX-1K
e1a				
node1-01	Eth1/4/2	123	H	AFX-1K
e7a				
node1-01	Eth1/4/3	123	H	AFX-1K
e10a				
node1-01	Eth1/4/4	123	H	AFX-1K
e11a				
node1-02	Eth1/9/1	138	H	AFX-1K
e1a				
node1-02	Eth1/9/2	138	H	AFX-1K
e7a				
node1-02	Eth1/9/3	138	H	AFX-1K
e10a				
node1-02	Eth1/9/4	138	H	AFX-1K
e11a				
node1-03	Eth1/15/1	138	H	AFX-1K
e1a				
node1-03	Eth1/15/2	138	H	AFX-1K
e7a				
node1-03	Eth1/15/3	138	H	AFX-1K
e10a				
node1-03	Eth1/15/4	138	H	AFX-1K
e11a				
node1-04	Eth1/16/1	173	H	AFX-1K
e1a				
node1-04	Eth1/16/2	173	H	AFX-1K
e7a				
node1-04	Eth1/16/3	173	H	AFX-1K
e10a				
node1-04	Eth1/16/4	173	H	AFX-1K
e11a				

Total entries displayed: 18

Step 1: Prepare for replacement

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=xh
```

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. Install the appropriate RCF and image on the switch, newcs2, and make any necessary site preparations.

If necessary, verify, download, and install the appropriate versions of the RCF and NX-OS software for the new switch. If you have verified that the new switch is correctly set up and does not need updates to the RCF and NX-OS software, continue to step 2.

- a. Go to the *NetApp Cluster and Management Network Switches Reference Configuration File Description Page* on the NetApp Support Site.
 - b. Click the link for the *Cluster Network and Management Network Compatibility Matrix*, and then note the required switch software version.
 - c. Click your browser's back arrow to return to the Description page, click **CONTINUE**, accept the license agreement, and then go to the Download page.
 - d. Follow the steps on the Download page to download the correct RCF and NX-OS files for the version of ONTAP software you are installing.
3. On the new switch, log in as admin and shut down all of the ports that will be connected to the node cluster interfaces (ports 1/1 to 1/30).

If the switch that you are replacing is not functional and is powered down, go to Step 4. The LIFs on the cluster nodes should have already failed over to the other cluster port for each node.

Show example

```
newcs2# config
newcs2(config)# interface e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-4,e1/7/1-4,e1/8/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/9/1-4,e1/10/1-4,e1/11/1-4,e1/12/1-4,e1/13/1-4,e1/14/1-4,e1/15/1-4,e1/16/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/17/1-4,e1/18/1-4,e1/19/1-4,e1/20/1-4,e1/21/1-4,e1/22/1-44,e1/23/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/24/1-,e1/25/1-4,e1/26/1-4,e1/27/1-4,e1/28/1-4,e1/29/1-4,e1/30/1-44
newcs2(config-if-range)# shutdown
newcs2(config-if-range)# exit
newcs2(config)# exit
```

4. Verify that all cluster LIFs have auto-revert enabled:

```
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	node1-01_clus1	true
Cluster	node1-02_clus2	true
Cluster	node1-03_clus1	true
Cluster	node1-04_clus2	true

4 entries were displayed.

5. Verify the connectivity of the remote cluster interfaces:

- You can use the `network interface check cluster-connectivity show` command to display the details of an accessibility check for cluster connectivity:

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

Show example

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

Packet		Source	Destination
Node	Date	LIF	LIF
Loss			

node1-01			
	6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-
02_clus1	none		
	6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-
02_clus2	none		
node1-02			
	6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-
01_clus1	none		
	6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-
01_clus2	none		
.			
.			
.			

- b. Alternatively, you can also use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 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 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 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)
```

Step 2: Configure cables and ports

1. Shut down the ISL ports Eth1/31 and Eth1/32 on the Nexus 9332D-GX2B switch cs1.

```
cs1# config
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/31-32
cs1(config-if-range)# shutdown
cs1(config-if-range)# exit
cs1(config)# exit
```

2. Remove all of the cables from the Nexus 9332D-GX2B cs2 switch, and then connect them to the same ports on the 9332D-GX2B newcs2 switch.
3. Bring up the ISLs ports Eth1/31 and Eth1/32 between the cs1 and newcs2 switches, and then verify the port channel operation status.

Port-Channel should indicate Po1(SU) and Member Ports should indicate Eth1/31(P) and Eth1/32(P).

Show example

This example enables ISL ports Eth1/31 and Eth1/32 and displays the port channel summary on switch cs1:

```
cs1# config
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# int e1/31-32
cs1(config-if-range)# no shutdown
cs1(config-if-range)# exit
cs1(config)# exit
cs1#
cs1# show port-channel summary
Flags:  D - Down          P - Up in port-channel (members)
        I - Individual    H - Hot-standby (LACP only)
        s - Suspended     r - Module-removed
        b - BFD Session Wait
        S - Switched      R - Routed
        U - Up (port-channel)
        p - Up in delay-lacp mode (member)
        M - Not in use. Min-links not met

-----
-----
Group Port-          Type      Protocol  Member Ports
      Channel
-----
-----
1      Po1 (SU)       Eth      LACP      Eth1/31 (P)  Eth1/32 (P)
999    Po999 (SD)    Eth      NONE      --
```

4. Verify that port e7b is up on all nodes:

```
network port show ipspace Cluster
```

Show example

The output should be similar to the following:

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

Node: node1-01

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----		----	----	-----	
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node1-02

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----		----	----	-----	
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node1-03

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----		----	----	-----	
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	

```

healthy false
e7b          Cluster      Cluster      up    9000  auto/100000
healthy false

Node: node1-04

Ignore

Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
-----
-----
e7a        Cluster      Cluster      up    9000  auto/100000
healthy false
e7b        Cluster      Cluster      up    9000  auto/100000
healthy false

8 entries were displayed.

```

5. On the same node you used in the previous step, revert the cluster LIF associated with the port in the previous step by using the network interface revert command.

Show example

In this example, LIF node1-01_clus2 on node1-01 is successfully reverted if the Home value is true and the port is e7b.

The following commands return LIF node1-01_clus2 on node1-01 to home port e7a and displays information about the LIFs on both nodes. Bringing up the first node is successful if the Is Home column is true for both cluster interfaces and they show the correct port assignments, in this example e7a and e7b on node1-01.

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

	Logical	Status	Network	Current
Current Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----	-----	-----	-----	-----
-----	-----			
Cluster				
	node1-01_clus1	up/up	169.254.209.69/16	node1-01
e7a	true			
	node1-01_clus2	up/up	169.254.49.125/16	node1-01
e7b	true			
	node1-02_clus1	up/up	169.254.47.194/16	node1-02
e7b	true			
	node1-02_clus2	up/up	169.254.19.183/16	node1-02
e7a	false			
	.			
	.			
	.			

6. Display information about the nodes in a cluster:

```
cluster show
```

Show example

This example shows that the node health for node1 and node2 in this cluster is true:

```
cluster1::*> cluster show
```

Node	Health	Eligibility
-----	-----	-----
node1-01	false	true
node1-02	true	true
node1-03	true	true
node1-04	true	true

7. Verify that all physical cluster ports are up:

```
network port show ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed(Mbps)	Health
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	----	----	-----		
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node1-02

Ignore

						Speed(Mbps)	Health
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	----	----	-----		
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

.
. .
.

8. Verify the connectivity of the remote cluster interfaces:

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

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

Show example

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

Packet		Source	Destination
Node	Date	LIF	LIF
Loss			

node1-01	6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-
02_clus1	none		
	6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-
02_clus2	none		
node1-02	6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-
01_clus1	none		
	6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-
01_clus2	none		
.			
.			
.			

- b. Alternatively, you can also use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 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 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 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)
```

Step 3: Verify the configuration

1. Verify the health of all the ports on the cluster.

a. Cluster ports

- i. Verify that cluster ports are up and healthy across all nodes in the cluster:

```
network port show ipspace Cluster
```

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

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

```
show cdp neighbors
```

Show example

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

```
Node: node1-01
```

```
Ignore
```

Health	Health				Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU
Status	Status				Admin/Oper
-----	-----	-----	-----	----	-----
-----	-----				
e7a	Cluster	Cluster		up	9000
healthy	false				auto/100000
e7b	Cluster	Cluster		up	9000
healthy	false				auto/100000

```
Node: node1-02
```

```
Ignore
```

Health	Health				Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU
Status	Status				Admin/Oper
-----	-----	-----	-----	----	-----
-----	-----				
e7a	Cluster	Cluster		up	9000
healthy	false				auto/100000
e7b	Cluster	Cluster		up	9000
healthy	false				auto/100000

```
Node: node1-03
```

```
Ignore
```

Health	Health				Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU
Status	Status				Admin/Oper
-----	-----	-----	-----	----	-----
-----	-----				
e7a	Cluster	Cluster		up	9000
healthy	false				auto/100000
e7b	Cluster	Cluster		up	9000
healthy	false				auto/100000

Node: node1-04

Ignore

Health	Health				Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU
Status	Status				Admin/Oper
-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000
healthy	false				auto/100000
e7b	Cluster	Cluster		up	9000
healthy	false				auto/100000

8 entries were displayed.

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

	Logical	Status	Network	Current
Current Is				
Vserver	Interface	Admin/Oper	Address/Mask	Node
Port	Home			
-----	-----	-----	-----	-----
Cluster				
	node1-01_clus1	up/up	169.254.209.69/16	node1-01
e7a	true			
	node1-01_clus2	up/up	169.254.49.125/16	node1-01
e7b	true			
	node1-02_clus1	up/up	169.254.47.194/16	node1-02
e7b	true			
	node1-02_clus2	up/up	169.254.19.183/16	node1-02
e7a	true			
	node1-03_clus1	up/up	169.254.209.69/16	node1-03
e7a	true			
	node1-03_clus2	up/up	169.254.49.125/16	node1-03
e7b	true			
	node1-04_clus1	up/up	169.254.47.194/16	node1-04
e7b	true			
	node1-04_clus2	up/up	169.254.19.183/16	node1-04
e7a	false			

8 entries were displayed.

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface

node1-01/cdp			
	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3
N9K-C9332D-GX2B			
	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3
N9K-C9332D-GX2B			
	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4
N9K-C9332D-GX2B			
	e11b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/4
N9K-C9332D-GX2B			
	e1a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1
N9K-C9332D-GX2B			
	e1b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/1
N9K-C9332D-GX2B			
	.		
	.		
	.		
	e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2
N9K-C9332D-GX2B			
	e7b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/2
N9K-C9332D-GX2B			
	.		
	.		
	.		

```
cs1# show cdp neighbors
```

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,

V - VoIP-Phone, D - Remotely-Managed-Device, s - Supports-STP-Dispute

Device-ID Platform	Local Port	Intrfce ID	Hldtme	Capability	
newcs2 (FDOXXXXXXXXX)	Eth1/31		179	R S I s	N9K-
C9364D-GX2A	Eth1/63				
newcs2 (FDOXXXXXXXXX)	Eth1/32		179	R S I s	N9K-
C9364D-GX2A	Eth1/64				

node1-01	Eth1/4/1	123	H	AFX-1K
e1a				
node1-01	Eth1/4/2	123	H	AFX-1K
e7a				
node1-01	Eth1/4/3	123	H	AFX-1K
e10a				
node1-01	Eth1/4/4	123	H	AFX-1K
e11a				
node1-02	Eth1/9/1	138	H	AFX-1K
e1a				
node1-02	Eth1/9/2	138	H	AFX-1K
e7a				
node1-02	Eth1/9/3	138	H	AFX-1K
e10a				
node1-02	Eth1/9/4	138	H	AFX-1K
e11a				
node1-03	Eth1/15/1	138	H	AFX-1K
e1a				
node1-03	Eth1/15/2	138	H	AFX-1K
e7a				
node1-03	Eth1/15/3	138	H	AFX-1K
e10a				
node1-03	Eth1/15/4	138	H	AFX-1K
e11a				
node1-04	Eth1/16/1	173	H	AFX-1K
e1a				
node1-04	Eth1/16/2	173	H	AFX-1K
e7a				
node1-04	Eth1/16/3	173	H	AFX-1K
e10a				
node1-04	Eth1/16/4	173	H	AFX-1K
e11a				

Total entries displayed: 18

newcs2# **show cdp neighbors**

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,

V - VoIP-Phone, D - Remotely-Managed-Device, s - Supports-STP-Dispute

Device-ID	Local Intrfce	Hldtme	Capability	Platform
-----------	---------------	--------	------------	----------

```

Port ID
cs1 (FDOXXXXXXXXX)  Eth1/31      179    R S I s    N9K-
C9364D-GX2A  Eth1/63
cs1 (FDOXXXXXXXXX)  Eth1/32      179    R S I s    N9K-
C9364D-GX2A  Eth1/64
node1-01      Eth1/4/1     123    H          AFX-1K
e1a
node1-01      Eth1/4/2     123    H          AFX-1K
e7a
node1-01      Eth1/4/3     123    H          AFX-1K
e10a
node1-01      Eth1/4/4     123    H          AFX-1K
e11a
node1-02      Eth1/9/1     138    H          AFX-1K
e1a
node1-02      Eth1/9/2     138    H          AFX-1K
e7a
node1-02      Eth1/9/3     138    H          AFX-1K
e10a
node1-02      Eth1/9/4     138    H          AFX-1K
e11a
node1-03      Eth1/15/1    138    H          AFX-1K
e1a
node1-03      Eth1/15/2    138    H          AFX-1K
e7a
node1-03      Eth1/15/3    138    H          AFX-1K
e10a
node1-03      Eth1/15/4    138    H          AFX-1K
e11a
node1-04      Eth1/16/1    173    H          AFX-1K
e1a
node1-04      Eth1/16/2    173    H          AFX-1K
e7a
node1-04      Eth1/16/3    173    H          AFX-1K
e10a
node1-04      Eth1/16/4    173    H          AFX-1K
e11a

```

Total entries displayed: 18

b. HA ports

- i. Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. **Storage shelf ports**

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

```
16 entries were displayed.
```

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

2. If you suppressed automatic case creation, re-enable it by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=END
```

What's next?

After you've replaced your switches, you [configure switch health monitoring](#).

Cisco Nexus 9364D-GX2A

Get started

Installation and setup workflow for Cisco 9364D-GX2A switches

The Cisco 9364D-GX2A switch is part of the Cisco Nexus 9000 platform. AFX systems switches allow you to build ONTAP clusters with more than two nodes.

Follow these workflow steps to install and setup your to Cisco 9364D-GX2A switches.

1**Review the switch port details**

Review the port details for the Cisco 9364D-GX2A switch.

2**Review the required documentation**

Review specific switch and controller documentation to set up your 9364D-GX2A switches and the ONTAP cluster.

3**Review the Smart Call Home requirements**

Review the requirements for the Cisco Smart Call Home feature, used to monitor the hardware and software components on your network.

4**Install the hardware**

Install the switch hardware.

5**Configure the software**

Configure the switch software.

Port details for Cisco Nexus 9364D-GX2A switches

The Cisco Nexus 9364D-GX2A switch is part of the Cisco Nexus 9000 platform and can be installed in a NetApp system cabinet. 9364D-GX2A switches allow you to build ONTAP clusters with more than two nodes.

Cisco Nexus 9364D-GX2A port details

Ports	Description
Ethernet1/1/1-4 to Ethernet1/62/1-4	4x100GbE mode for cluster, HA, and storage connections
Ethernet1/63, Ethernet1/64	400GbE ISL

See the [Hardware Universe](#) for details of ports used by the platform.

Documentation requirements for Cisco Nexus 9364D-GX2A switches

For Cisco Nexus 9364D-GX2A switch installation and maintenance, be sure to review specific switch and controller documentation to set up your Cisco 9364D-GX2A switches and ONTAP cluster.

Switch documentation

To set up the Cisco Nexus 9364D-GX2A switches, you need the following documentation from the [Cisco](#)

Document title	Description
Cisco Nexus 9364D-GX2A NX-OS Mode Switch Hardware Installation Guide	Provides detailed information about site requirements, switch hardware details, and installation options.
Cisco Nexus 9000 Series Switch Software Configuration Guides (choose the guide for the NX-OS release installed on your switches)	Provides initial switch configuration information that you need before you can configure the switch for ONTAP operation.
Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide (choose the guide for the NX-OS release installed on your switches)	Provides information on how to downgrade the switch to ONTAP supported switch software, if necessary.
Cisco Nexus 9000 Series NX-OS Command Reference	Provides links to the various command references provided by Cisco.
Cisco Nexus 9000 Series NX-OS System Message Reference	Describes the system messages for Cisco Nexus 9000 series switches, those that are informational, and others that might help diagnose problems with links, internal hardware, or the system software.
Cisco Nexus 9000 Series NX-OS Release Notes (choose the notes for the NX-OS release installed on your switches)	Describes the features, bugs, and limitations for the Cisco Nexus 9000 Series.
Regulatory Compliance and Safety Information for Cisco Nexus 9000 Series	Provides international agency compliance, safety, and statutory information for the Nexus 9000 series switches.

ONTAP systems documentation

To set up an ONTAP system, you need the following documents for your version of the operating system from the [ONTAP 9 Documentation Center](#).

Name	Description
AFX systems documentation	Describes how to install NetApp hardware.
ONTAP documentation	Provides detailed information about all aspects of the ONTAP releases.
Hardware Universe	Provides NetApp hardware configuration and compatibility information.

Smart Call Home requirements

To use Smart Call Home, you must configure a cluster network switch to communicate using email with the Smart Call Home system. In addition, you can optionally set up your cluster network switch to take advantage of Cisco's embedded Smart Call Home support feature.

Smart Call Home monitors the hardware and software components on your network. When a critical system configuration occurs, it generates an email-based notification and raises an alert to all the recipients that are configured in your destination profile.

Smart Call Home monitors the hardware and software components on your network. When a critical system configuration occurs, it generates an email-based notification and raises an alert to all the recipients that are configured in your destination profile.

Before you can use Smart Call Home, be aware of the following requirements:

- An email server must be in place.
- The switch must have IP connectivity to the email server.
- The contact name (SNMP server contact), phone number, and street address information must be configured. This is required to determine the origin of messages received.
- A CCO ID must be associated with an appropriate Cisco SMARTnet Service contract for your company.
- Cisco SMARTnet Service must be in place for the device to be registered.

The [Cisco support site](#) contains information about the commands to configure Smart Call Home.

Install hardware

Go to the [AFX install and setup workflow](#) to learn how to install and setup the switch hardware and controller hardware for your system.

The AFX install and setup documentation includes information such as:

- Instructions for getting the site ready, unpacking the boxes and comparing the contents of the boxes to the packing slip, and registering the system to access support benefits.
- Instructions for installing the switches, controllers, and storage shelf in a NetApp cabinet or telco rack.
- Instructions for cabling your system, including cabling the controller storage to switch connections and cabling the shelf to switch connections.

Configure software

Configure software workflow for Cisco 9364D-GX2A switches

To install and configure the software for a Cisco 9364D-GX2A switch and to install or upgrade the Reference Configuration File (RCF), follow these steps:



Configure the 9364D-GX2A switch

Configure the Cisco 9364D-GX2A switch.

2

Prepare to install the NX-OS software and RCF

Install the Cisco NX-OS software and reference configuration files (RCFs) on the Cisco 9364D-GX2A switches.

3

Install or upgrade the NX-OS software

Download and install or upgrade the NX-OS software on the Cisco 9364D-GX2A switch.

4

Install or upgrade the RCF

Install or upgrade the RCF after setting up the Cisco 9364D-GX2A switch for the first time. You can also use this procedure to upgrade your RCF version.

5

Verify SSH is enabled on the Nexus 9364D-GX2A switches

Verify that SSH is enabled on the Cisco 9364D-GX2A switch for use with the Ethernet Switch Health Monitor (CSHM) and log collection features.

6

Reset the switch to factory defaults

Erase the Cisco 9364D-GX2A switch settings.

Once you have finished configuring your switches, go to [Power on your AFX 1K storage system](#).

Configure the 9364D-GX2A switch

Follow this procedure to configure the Cisco Nexus 9364D-GX2A switch.

Before you begin

Make sure you have:

- Powered on your switches.
- Access to an HTTP, FTP, or TFTP server at the installation site to download the applicable NX-OS and Reference Configuration File (RCF) releases.
- Applicable NX-OS version, downloaded from the [Cisco software download](#) page.



- NX-OS 10.4.2 is the only supported version for Cisco Nexus 9364D-GX2A switches in an ONTAP cluster.
- Do not upgrade or downgrade your NX-OS version to an unsupported version; only 10.4.2 is currently supported.

- Applicable licenses, network and configuration information, and cables.
- Applicable NetApp cluster network and management network RCFs downloaded from the NetApp Support Site at mysupport.netapp.com. All Cisco cluster network and management network switches arrive with the standard Cisco factory-default configuration. These switches also have the current version of the NX-OS software but do not have the RCFs loaded.

- [Required switch and ONTAP documentation.](#)

Steps

1. Perform an initial configuration of the cluster network switches.

Provide applicable responses to the following initial setup questions when you first boot the switch. Your site's security policy defines the responses and services to enable.

Prompt	Response
Abort Auto Provisioning and continue with normal setup? (yes/no)	Respond with yes . The default is no.
Do you want to enforce secure password standard? (yes/no)	Respond with yes . The default is yes.
Enter the password for admin.	The default password is "admin"; you must create a new, strong password. A weak password can be rejected.
Would you like to enter the basic configuration dialog? (yes/no)	Respond with yes at the initial configuration of the switch.
Create another login account? (yes/no)	Your answer depends on your site's policies on alternate administrators. The default is no .
Configure read-only SNMP community string? (yes/no)	Respond with no . The default is no.
Configure read-write SNMP community string? (yes/no)	Respond with no . The default is no.
Enter the switch name.	Enter the switch name, which is limited to 63 alphanumeric characters.
Continue with Out-of-band (mgmt0) management configuration? (yes/no)	Respond with yes (the default) at that prompt. At the mgmt0 IPv4 address: prompt, enter your IP address: ip_address.
Configure the default-gateway? (yes/no)	Respond with yes . At the IPv4 address of the default-gateway: prompt, enter your default_gateway.
Configure advanced IP options? (yes/no)	Respond with no . The default is no.
Enable the telnet service? (yes/no)	Respond with no . The default is no.

Prompt	Response
Enabled SSH service? (yes/no)	Respond with yes . The default is yes.  SSH is recommended when using Ethernet Switch Health Monitor (CSHM) for its log collection features. SSHv2 is also recommended for enhanced security.
Enter the type of SSH key you want to generate (dsa/rsa/rsa1).	The default is rsa .
Enter the number of key bits (1024-2048).	Enter the number of key bits from 1024 to 2048.
Configure the NTP server? (yes/no)	Respond with no . The default is no.
Configure default interface layer (L3/L2)	Respond with L2 . The default is L2.
Configure default switch port interface state (shut/noshut)	Respond with noshut . The default is noshut.
Configure CoPP system profile (strict/moderate/lenient/dense)	Respond with strict . The default is strict.
Would you like to edit the configuration? (yes/no)	You should see the new configuration at this point. Review and make any necessary changes to the configuration you just entered. Respond with no at the prompt if you are satisfied with the configuration. Respond with yes if you want to edit your configuration settings.
Use this configuration and save it? (yes/no)	Respond with yes to save the configuration. This automatically updates the kickstart and system images.  If you do not save the configuration at this stage, none of the changes will be in effect the next time you reboot the switch.

2. Verify the configuration choices you made in the display that appears at the end of the setup, and make sure that you save the configuration.
3. Check the version on the cluster network switches, and if necessary, download the NetApp-supported version of the software to the switches from the [Cisco software download](#) page.

What's next?

After you've configured your switches, you [prepare to install NX-OS and RCF](#).

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 node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are:
 - node1-01_clus1 and node1-01_clus2 for node1-01
 - node1-02_clus1 and node1-02_clus2 for node1-02
 - node1-03_clus1 and node1-03_clus2 for node1-03
 - node1-04_clus1 and node1-04_clus2 for node1-04
- The `cluster1::*>` prompt indicates the name of the cluster.

About this task

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

Steps

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

where x is the duration of the maintenance window in hours.



The AutoSupport message notifies technical support of this maintenance task so that automatic case creation is suppressed during the maintenance window.

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

```
set -privilege advanced
```

The advanced prompt (`*>`) appears.

3. Check the administrative and operational status of each port.

a. Cluster ports

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

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

Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface

node1-02/cdp			
e10a N9K-C9364D-GX2A	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	
e10b N9K-C9364D-GX2A	cs2 (FDOXXXXXXXXX)	Ethernet1/13/3	
e11a N9K-C9364D-GX2A	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	
e11b N9K-C9364D-GX2A	cs2 (FDOXXXXXXXXX)	Ethernet1/13/4	
e1a N9K-C9364D-GX2A	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	
e1b N9K-C9364D-GX2A	cs2 (FDOXXXXXXXXX)	Ethernet1/13/1	
.			
.			
.			
e7a N9K-C9364D-GX2A	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2	
e7b N9K-C9364D-GX2A	cs2 (FDOXXXXXXXXX)	Ethernet1/13/2	
node1-01/cdp			
e10a N9K-C9364D-GX2A	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	
e10b N9K-C9364D-GX2A	cs2 (FDOXXXXXXXXX)	Ethernet1/13/3	
e11a N9K-C9364D-GX2A	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	
e11b N9K-C9364D-GX2A	cs2 (FDOXXXXXXXXX)	Ethernet1/13/4	
e1a N9K-C9364D-GX2A	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	
e1b N9K-C9364D-GX2A	cs2 (FDOXXXXXXXXX)	Ethernet1/13/1	
.			
.			
.			
e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2	

```
N9K-C9364D-GX2A
```

```
e7b
```

```
cs2 (FDOXXXXXXXX)
```

```
Ethernet1/13/2
```

```
N9K-C9364D-GX2A
```

```
.
```

```
.
```

```
.
```

ii. Display the network port attributes:

```
network port show -ip space Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-02

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-03

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000

```
healthy false
```

```
Node: node1-04
```

```
Ignore
```

Health	Health				Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU
Status	Status				Admin/Oper
-----	-----	-----	-----	-----	-----
-----	-----				
e7a	Cluster	Cluster		up	9000
healthy false					auto/100000
e7b	Cluster	Cluster		up	9000
healthy false					auto/100000

```
8 entries were displayed.
```

iii. Display information about the cluster LIFs:

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

Show example

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

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

Cluster				
01	e7a	node1-01_clus1 true	up/up 169.254.36.44/16	node1-
01	e7b	node1-01_clus2 true	up/up 169.254.7.5/16	node1-
02	e7a	node1-02_clus1 true	up/up 169.254.197.206/16	node1-
02	e7b	node1-02_clus2 true	up/up 169.254.195.186/16	node1-
03	e7a	node1-03_clus1 true	up/up 169.254.192.49/16	node1-
03	e7b	node1-03_clus2 true	up/up 169.254.182.76/16	node1-
04	e7a	node1-04_clus1 true	up/up 169.254.59.49/16	node1-
04	e7b	node1-04_clus2 true	up/up 169.254.62.244/16	node1-

8 entries were displayed.

b. HA ports

i. Display information about the HA ports:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Display information about the storage ports:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. Storage shelf ports

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf ID	Module	State	Internal?
1.1			
0	A	connected	false
1	A	connected	false
2	A	connected	false
3	A	connected	false
4	A	connected	false
5	A	connected	false
6	A	connected	false
7	A	connected	false
8	B	connected	false
9	B	connected	false
10	B	connected	false
11	B	connected	false
12	B	connected	false
13	B	connected	false
14	B	connected	false
15	B	connected	false

```
16 entries were displayed.
```

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

4. Verify the connectivity of the remote cluster interfaces.

- You can use the `network interface check cluster-connectivity show` command to display the details of an accessibility check for cluster connectivity:

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

Show example

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

Packet		Source	Destination
Node	Date	LIF	LIF
Loss			

node1-01			
	6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-02_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-02_clus1
none			
node1-02			
	6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-01_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-01_clus2
none			
.			
.			
.			

- b. Alternatively, you can use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node1-04
Getting addresses from network interface table...
Cluster node1-01_clus1 169.254.36.44 node1-01 e7a
Cluster node1-01_clus2 169.254.7.5 node1-01 e7b
Cluster node1-02_clus1 169.254.197.206 node1-02 e7a
Cluster node1-02_clus2 169.254.195.186 node1-02 e7b
Cluster node1-03_clus1 169.254.192.49 node1-03 e7a
Cluster node1-03_clus2 169.254.182.76 node1-03 e7b
Cluster node1-04_clus1 169.254.59.49 node1-04 e7a
Cluster node1-04_clus2 169.254.62.244 node1-04 e7b
Local = 169.254.59.49 169.254.62.244
Remote = 169.254.36.44 169.254.7.5 169.254.197.206
169.254.195.186 169.254.192.49 169.254.182.76
Cluster Vserver Id = 4294967293
Ping status:
.....
Basic connectivity succeeds on 12 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 12 path(s):
    Local 169.254.59.49 to Remote 169.254.182.76
    Local 169.254.59.49 to Remote 169.254.192.49
    Local 169.254.59.49 to Remote 169.254.195.186
    Local 169.254.59.49 to Remote 169.254.197.206
    Local 169.254.59.49 to Remote 169.254.36.44
    Local 169.254.59.49 to Remote 169.254.7.5
    Local 169.254.62.244 to Remote 169.254.182.76
    Local 169.254.62.244 to Remote 169.254.192.49
    Local 169.254.62.244 to Remote 169.254.195.186
    Local 169.254.62.244 to Remote 169.254.197.206
    Local 169.254.62.244 to Remote 169.254.36.44
    Local 169.254.62.244 to Remote 169.254.7.5
Larger than PMTU communication succeeds on 12 path(s)
RPC status:
6 paths up, 0 paths down (tcp check)
6 paths up, 0 paths down (udp check)
```

5. 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
```

	Logical	
Vserver	Interface	Auto-revert
-----	-----	-----
Cluster	node1-01_clus1	true
Cluster	node1-01_clus2	true
Cluster	node1-02_clus1	true
Cluster	node1-02_clus2	true
Cluster	node1-03_clus1	true
Cluster	node1-03_clus2	true
Cluster	node1-04_clus1	true
Cluster	node1-04_clus2	true

8 entries were displayed.

What's next?

After you've prepared to install the NX-OS software and RCF, you [install or upgrade the NX-OS software](#).

Install or upgrade the NX-OS software

Follow this procedure to install or upgrade the NX-OS software on the Nexus 9364D-GX2A switch.

Review requirements

Before you begin

Verify the following:

- Complete the procedure in [Prepare to install NX-OS and RCF](#).
- A current backup of the switch configuration is available.
- A fully functioning cluster (no errors in the logs or similar issues) is in place.

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 node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are node1-01_clus1, node1-01_clus2, node1-02_clus1, node1-02_clus2, node1-03_clus1, node1-03_clus2, node1-04_clus1, and node1-04_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.



- NX-OS 10.4.2 is the only supported version for Cisco Nexus 9364D-GX2A switches in an ONTAP cluster.
- Do not upgrade or downgrade your NX-OS version to an unsupported version; only 10.4.2 is currently supported.

Steps

1. Connect the 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/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	

node1-01/cdp				
C9364D-GX2A	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	N9K-
C9364D-GX2A	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/13/3	N9K-
C9364D-GX2A	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	N9K-
C9364D-GX2A	e11b	cs2 (FDOXXXXXXXXX)	Ethernet1/13/4	N9K-
C9364D-GX2A	e1a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1	N9K-
C9364D-GX2A	e1b	cs2 (FDOXXXXXXXXX)	Ethernet1/13/1	N9K-
	.			
	.			
	.			
C9364D-GX2A	e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2	N9K-
C9364D-GX2A	e7b	cs2 (FDOXXXXXXXXX)	Ethernet1/13/2	N9K-
node1-01/lldp				
	e10a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/3	-
	e10b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/13/3	-
	e11a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/4	-
	e11b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/13/4	-
	e1a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/1	-
	e1b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/13/1	-
	.			
	.			
	.			
	e7a	cs1 (c8:60:8f:xx:xx:xx)	Ethernet1/16/2	-
	e7b	cs2 (04:e3:87:xx:xx:xx)	Ethernet1/13/2	-
	.			
	.			
	.			

4. Check the administrative and operational status of each port.

a. **Cluster ports**

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

```
network port show -ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-02

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-03

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-04

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

- ii. 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
```

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

Cluster					
node1-01	node1-01_clus1	up/up		169.254.36.44/16	
e7a	true				
node1-01	node1-01_clus2	up/up		169.254.7.5/16	
e7b	true				
node1-02	node1-02_clus1	up/up		169.254.197.206/16	
e7a	true				
node1-02	node1-02_clus2	up/up		169.254.195.186/16	
e7b	true				
node1-03	node1-03_clus1	up/up		169.254.192.49/16	
e7a	true				
node1-03	node1-03_clus2	up/up		169.254.182.76/16	
e7b	true				
node1-04	node1-04_clus1	up/up		169.254.59.49/16	
e7a	true				
node1-04	node1-04_clus2	up/up		169.254.62.244/16	
e7b	true				

8 entries were displayed.

iii. 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 Model	Type	Address

cs2 (FDOXXXXXXXXX) N9K-C9364D-GX2A	cluster-network	10.228.137.233
Serial Number: FDOXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		
10.4(2)		
Version Source: CDP/ISDP		
cs1 (FLMXXXXXXXXX) N9K-C9364D-GX2A	cluster-network	10.228.137.253
Serial Number: FLMXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		
10.4(2)		
Version Source: CDP/ISDP		
2 entries were displayed.		

b. HA ports

- Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. Storage shelf ports

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

16 entries were displayed.

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

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 9364D-GX2A switch.

Show example

```
cs2# copy sftp: bootflash: vrf management
Enter source filename: /code/nxos.10.4.2.bin
Enter hostname for the sftp server: 172.19.2.1
Enter username: root

Outbound-ReKey for 172.19.2.1:22
Inbound-ReKey for 172.19.2.1:22
root@172.19.2.1's password:
sftp> progress
Progress meter enabled
sftp> get    /code/nxos.10.4.2.bin  /bootflash/nxos.10.4.2.bin
/code/nxos.10.4.2.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.10.4.2.F.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.10.4.2.F.img  /bootflash/n9000-
epld.10.4.2.F.img
/code/n9000-epld.10.4.2.F.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
Copyright (C) 2002-2025, 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 01.14
NXOS: version 10.4(1) [Feature Release]
Host NXOS: version 10.4(1)
BIOS compile time: 11/25/2024
NXOS image file is: bootflash:///nxos64-cs.10.4.1.F.bin
NXOS compile time: 11/30/2023 12:00:00 [12/14/2023 05:25:50]
NXOS boot mode: LXC
```

Hardware

```
cisco Nexus9000 C9332D-GX2B Chassis
Intel(R) Xeon(R) CPU D-1633N @ 2.50GHz with 32802156 kB of memory.
Processor Board ID FLMXXXXXXXXX
Device name: cs2
bootflash: 115802886 kB
```

```
Kernel uptime is 5 day(s), 2 hour(s), 13 minute(s), 21 second(s)
```

```
Last reset at 3580 usecs after Thu Jun 5 15:55:08 2025
```

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

```
System version: 10.4(1)
```

```
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.10.4.2.bin
```

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

```
Verifying image bootflash:/nxos.10.4.2.bin for boot variable "nxos".  
[] 100% -- SUCCESS
```

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

```
Preparing "nxos" version info using image  
bootflash:/nxos.10.4.2.bin.  
[] 100% -- SUCCESS
```

```
Preparing "bios" version info using image  
bootflash:/nxos.10.4.2.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	10.4 (1)	10.4 (2)
Yes			
1	bios	xx.xx.:xx.xx	xxx
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

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) 2002-2025, 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 01.14
NXOS: version 10.4(2) [Feature Release]
Host NXOS: version 10.4(2)
BIOS compile time: 11/25/2024
NXOS image file is: bootflash:///nxos64-cs.10.4.2.F.bin
NXOS compile time: 11/30/2023 12:00:00 [12/14/2023 05:25:50]
NXOS boot mode: LXC
```

Hardware

```
cisco Nexus9000 C9332D-GX2B Chassis
Intel(R) Xeon(R) CPU D-1633N @ 2.50GHz with 32802156 kB of memory.
Processor Board ID FLMXXXXXXXXX
Device name: cs2
bootflash: 115802886 kB
```

```
Kernel uptime is 5 day(s), 2 hour(s), 13 minute(s), 21 second(s)
```

```
Last reset at 3580 usecs after Thu Jun 5 15:55:08 2025
```

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

```
System version: 10.4(2)
```

```
Service:
```

```
plugin
```

```
Core Plugin, Ethernet Plugin
```

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

```
cs2#
```

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.10.4.2.F.img module all**

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 all of the ports on the cluster.

a. Cluster ports

i. Verify that cluster ports are up and healthy across all nodes in the cluster:

```
network port show -ip space Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-02

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-03

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-04

Ignore

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

ii. Verify the switch health from the cluster:

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

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

Show example

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

node1-01/cdp
      e10a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/3
N9K-C9364D-GX2A
      e10b  cs2 (FDOXXXXXXXXXX)      Ethernet1/13/3
N9K-C9364D-GX2A
      e11a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/4
N9K-C9364D-GX2A
      e11b  cs2 (FDOXXXXXXXXXX)      Ethernet1/13/4
N9K-C9364D-GX2A
      e1a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/1
N9K-C9364D-GX2A
      e1b   cs2 (FDOXXXXXXXXXX)      Ethernet1/13/1
N9K-C9364D-GX2A
      .
      .
      .
      e7a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/2
N9K-C9364D-GX2A
      e7b   cs2 (FDOXXXXXXXXXX)      Ethernet1/13/2
N9K-C9364D-GX2A

node1-02/cdp
      e10a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/3
N9K-C9364D-GX2A
      e10b  cs2 (FDOXXXXXXXXXX)      Ethernet1/13/3
N9K-C9364D-GX2A
      e11a  cs1 (FLMXXXXXXXXXX)      Ethernet1/16/4
N9K-C9364D-GX2A
      e11b  cs2 (FDOXXXXXXXXXX)      Ethernet1/13/4
N9K-C9364D-GX2A
      e1a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/1
N9K-C9364D-GX2A
      e1b   cs2 (FDOXXXXXXXXXX)      Ethernet1/13/1
N9K-C9364D-GX2A
      .
      .
      .
      e7a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/2
N9K-C9364D-GX2A
      e7b   cs2 (FDOXXXXXXXXXX)      Ethernet1/13/2
N9K-C9364D-GX2A
      .
```

```

.
.

cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
Switch                                Type                                Address
Model                                -----
-----
cs2 (FDOXXXXXXXXX)                   cluster-network                   10.228.137.233
N9K-C9364D-GX2A
    Serial Number: FDOXXXXXXXXX
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                                10.4(2)
    Version Source: CDP/ISDP

cs1 (FLMXXXXXXXXX)                   cluster-network                   10.228.137.253
N9K-C9364D-GX2A
    Serial Number: FLMXXXXXXXXX
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                                10.4(2)
    Version Source: CDP/ISDP

```

b. HA ports

- i. Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. Storage shelf ports

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

16 entries were displayed.

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

13. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
node1-01	true	true	false
node1-02	true	true	false
node1-03	true	true	false
node1-04	true	true	true

4 entries were displayed.

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	Node
Port	Home			
-----	-----	-----	-----	
-----	-----	-----	-----	
Cluster				
	node1-01_clus1	up/up	169.254.36.44/16	node1-01
e7a	true			
	node1-01_clus2	up/up	169.254.7.5/16	node1-01
e7b	true			
	node1-02_clus1	up/up	169.254.197.206/16	node1-02
e7a	true			
	node1-02_clus2	up/up	169.254.195.186/16	node1-02
e7b	true			
	node1-03_clus1	up/up	169.254.192.49/16	node1-03
e7a	true			
	node1-03_clus2	up/up	169.254.182.76/16	node1-03
e7b	true			
	node1-04_clus1	up/up	169.254.59.49/16	node1-04
e7a	true			
	node1-04_clus2	up/up	169.254.62.244/16	node1-04
e7b	true			

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?

After you've installed or upgraded the NX-OS software, you [install or upgrade the Reference Configuration File \(RCF\)](#).

Install or upgrade the RCF

Install or upgrade the Reference Configuration File (RCF) overview

You install the Reference Configuration File (RCF) after setting up the Nexus 9364D-GX2A switch for the first time. You upgrade your RCF version when you have an existing version of the RCF file installed on your switch.

See the Knowledge Base article [How to clear configuration on a Cisco interconnect switch while retaining remote connectivity](#) for further information when installing or upgrading your RCF.

Available RCF configuration

- **Cluster-HA-Storage AFX** - All ports are configured in 4x100GbE breakout mode that universally supports AFX node clusters, HA, storage ports, and NX224 storage shelf ports. 400GbE ISL between switches. (*Cluster-HA-Storage AFX RCF_vxx.x*).

For specific port and VLAN usage details, refer to the banner and important notes section in your RCF. See [Cisco Ethernet Switches](#) for more information.

Suggested documentation

- [Cisco Ethernet Switches \(NSS\)](#)

Consult the switch compatibility table for the supported ONTAP and RCF versions on the NetApp Support Site. Note that there can be command dependencies between the command syntax in the RCF and the syntax found in specific versions of NX-OS.

- [Cisco Nexus 3=9000 Series Switches](#)

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

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 node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are node1-01_clus1, node1-01_clus2, node1-02_clus1, node1-02_clus2, node1-03_clus1, node1-03_clus2, node1-04_clus1, and node1-04_clus2.
- The `cluster1::*>` prompt indicates the name of the cluster.

See the [Hardware Universe](#) to verify the correct cluster ports on your platforms.



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

Commands used

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

What's next?

After you've reviewed the install RCF or upgrade RCF procedure, you [install the RCF](#) or [upgrade your RCF](#) as required.

Install the Reference Configuration File (RCF)

You install the Reference Configuration File (RCF) after setting up the Nexus 9364D-GX2A 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 setup).
- The desired NX-OS version has been installed.
- ISL connections between switches are connected.
- 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](#) guides.

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: NX9364D-GX2A-RCF-v10.0-Shared.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](#) guides.

Show example

This example shows the RCF file NX9364D-GX2A-RCF-v10.0-Shared.txt being installed on switch cs1:

```
cs1# copy NX9364D-GX2A-RCF-v10.0-Shared.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 proper configuration and operation of the switch.

Show example

```
cs1# show banner motd  
  
*****  
*****  
* NetApp Reference Configuration File (RCF)  
*  
* Switch    : NX9364D-GX2A  
* Filename  : NX9364D-GX2A-RCF-v10.0-Shared.txt  
* Date      : 05-09-2025  
* Version   : v10.0  
* Port Usage:  
* Ports 1-62: 100GbE Intra-Cluster/HA/Storage Ports, int e1/{1-  
62}/1-4  
* Ports 63-64: Intra-Cluster ISL Ports, int e1/63-64  
*  
* IMPORTANT NOTES  
* Interface port-channel999 is reserved to identify the version of  
this file.  
*  
*****  
*****
```

5. 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.

6. Save basic configuration details to the `write_erase.cfg` file on the bootflash.



Make sure to configure the following:

- Username and password
- Management IP address
- Default gateway
- Switch name

```
cs1# show run | i "username admin password" > bootflash:write_erase.cfg

cs1# show run | section "vrf context management" >> bootflash:write_erase.cfg

cs1# show run | section "interface mgmt0" >> bootflash:write_erase.cfg

cs1# show run | section "switchname" >> bootflash:write_erase.cfg

cs1# echo "hardware access-list tcam region ing-racl 1024" >>
bootflash:write_erase.cfg

cs1# echo "hardware access-list tcam region egr-racl 1024" >>
bootflash:write_erase.cfg

cs1# echo "hardware access-list tcam region ing-l2-qos 1536" >>
bootflash:write_erase.cfg
```

See the Knowledge Base article [How to clear configuration on a Cisco interconnect switch while retaining remote connectivity](#) for further details.

7. Verify that the `write_erase.cfg` file is populated as expected:

```
show file bootflash:write_erase.cfg
```

8. Issue the `write erase` command to erase the current saved configuration:

```
cs1# write erase
```

Warning: This command will erase the startup-configuration.

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

9. Copy the previously saved basic configuration into the startup configuration.

```
cs1# copy bootflash:write_erase.cfg startup-config
```

10. Reboot the switch:

```
cs1# reload
```

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

11. Repeat steps 1 through 10 on switch cs2.
12. Connect the 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
.
.
Eth1/9/3          1          eth  trunk  up      none
100G(D) --
Eth1/9/4          1          eth  trunk  up      none
100G(D) --
Eth1/15/1         1          eth  trunk  up      none
100G(D) --
Eth1/15/2         1          eth  trunk  up      none
100G(D) --
Eth1/15/3         1          eth  trunk  up      none
100G(D) --
Eth1/15/4         1          eth  trunk  up      none
100G(D) --
Eth1/16/1         1          eth  trunk  up      none
100G(D) --
Eth1/16/2         1          eth  trunk  up      none
100G(D) --
Eth1/16/3         1          eth  trunk  up      none
100G(D) --
Eth1/16/4         1          eth  trunk  up      none
100G(D) --
Eth1/17/1         1          eth  trunk  up      none
100G(D) --
Eth1/17/2         1          eth  trunk  up      none
100G(D) --
Eth1/17/3         1          eth  trunk  up      none
100G(D) --
Eth1/17/4         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	Pol, Po999, Eth1/63, Eth1/64 Eth1/65, Eth1/66, Eth1/1/1 Eth1/1/2, Eth1/1/3, Eth1/1/4 Eth1/2/1, Eth1/2/2, Eth1/2/3 Eth1/2/4, Eth1/3/1, Eth1/3/2 Eth1/3/3, Eth1/3/4, Eth1/4/1 Eth1/4/2, Eth1/4/3, Eth1/4/4 Eth1/5/1, Eth1/5/2, Eth1/5/3 Eth1/5/4, Eth1/6/1, Eth1/6/2 Eth1/6/3, Eth1/6/4, Eth1/7/1 Eth1/7/2, Eth1/7/3, Eth1/7/4 Eth1/8/1, Eth1/8/2, Eth1/8/3 Eth1/8/4, Eth1/9/1, Eth1/9/2 Eth1/9/3, Eth1/9/4, Eth1/10/1 Eth1/10/2, Eth1/10/3, Eth1/10/4 Eth1/11/1, Eth1/11/2, Eth1/11/3 Eth1/11/4, Eth1/12/1, Eth1/12/2 Eth1/12/3, Eth1/12/4, Eth1/13/1 Eth1/13/2, Eth1/13/3, Eth1/13/4 Eth1/14/1,

Eth1/14/2, Eth1/14/3

Eth1/15/1, Eth1/15/2

Eth1/15/4, Eth1/16/1

Eth1/16/3, Eth1/16/4

Eth1/17/2, Eth1/17/3

Eth1/18/1, Eth1/18/2

Eth1/18/4, Eth1/19/1

Eth1/19/3, Eth1/19/4

Eth1/20/2, Eth1/20/3

Eth1/21/1, Eth1/21/2

Eth1/21/4, Eth1/22/1

Eth1/22/3, Eth1/22/4

Eth1/23/2, Eth1/23/3

Eth1/24/1, Eth1/24/2

Eth1/24/4, Eth1/25/1

Eth1/25/3, Eth1/25/4

Eth1/26/2, Eth1/26/3

Eth1/27/1, Eth1/27/2

Eth1/27/4, Eth1/28/1

Eth1/28/3, Eth1/28/4

Eth1/29/2, Eth1/29/3

Eth1/30/1, Eth1/30/2

Eth1/30/4, Eth1/31/1

Eth1/14/4,

Eth1/15/3,

Eth1/16/2,

Eth1/17/1,

Eth1/17/4,

Eth1/18/3,

Eth1/19/2,

Eth1/20/1,

Eth1/20/4,

Eth1/21/3,

Eth1/22/2,

Eth1/23/1,

Eth1/23/4,

Eth1/24/3,

Eth1/25/2,

Eth1/26/1,

Eth1/26/4,

Eth1/27/3,

Eth1/28/2,

Eth1/29/1,

Eth1/29/4,

Eth1/30/3,

Eth1/31/2,

Eth1/31/3, Eth1/31/4

Eth1/32/2, Eth1/32/3

Eth1/33/1, Eth1/33/2

Eth1/33/4, Eth1/34/1

Eth1/34/3, Eth1/34/4

Eth1/35/2, Eth1/35/3

Eth1/36/1, Eth1/36/2

Eth1/36/4, Eth1/37/1

Eth1/37/3, Eth1/37/4

Eth1/38/2, Eth1/38/3

Eth1/39/1, Eth1/39/2

Eth1/39/4, Eth1/40/1

Eth1/40/3, Eth1/40/4

Eth1/41/2, Eth1/41/3

Eth1/42/1, Eth1/42/2

Eth1/42/4, Eth1/43/1

Eth1/43/3, Eth1/43/4

Eth1/44/2, Eth1/44/3

Eth1/45/1, Eth1/45/2

Eth1/45/4, Eth1/46/1

Eth1/46/3, Eth1/46/4

Eth1/47/2, Eth1/47/3

Eth1/48/1, Eth1/48/2

Eth1/32/1,

Eth1/32/4,

Eth1/33/3,

Eth1/34/2,

Eth1/35/1,

Eth1/35/4,

Eth1/36/3,

Eth1/37/2,

Eth1/38/1,

Eth1/38/4,

Eth1/39/3,

Eth1/40/2,

Eth1/41/1,

Eth1/41/4,

Eth1/42/3,

Eth1/43/2,

Eth1/44/1,

Eth1/44/4,

Eth1/45/3,

Eth1/46/2,

Eth1/47/1,

Eth1/47/4,

Eth1/48/3,

Eth1/48/4, Eth1/49/1		Eth1/49/2,
Eth1/49/3, Eth1/49/4		Eth1/50/1,
Eth1/50/2, Eth1/50/3		Eth1/50/4,
Eth1/51/1, Eth1/51/2		Eth1/51/3,
Eth1/51/4, Eth1/52/1		Eth1/52/2,
Eth1/52/3, Eth1/52/4		Eth1/53/1,
Eth1/53/2, Eth1/53/3		Eth1/53/4,
Eth1/54/1, Eth1/54/2		Eth1/54/3,
Eth1/54/4, Eth1/55/1		Eth1/55/2,
Eth1/55/3, Eth1/55/4		Eth1/56/1,
Eth1/56/2, Eth1/56/3		Eth1/56/4,
Eth1/57/1, Eth1/57/2		Eth1/57/3,
Eth1/57/4, Eth1/58/1		Eth1/58/2,
Eth1/58/3, Eth1/58/4		Eth1/59/1,
Eth1/59/2, Eth1/59/3		Eth1/59/4,
Eth1/60/1, Eth1/60/2		Eth1/60/3,
Eth1/60/4, Eth1/61/1		Eth1/61/2,
Eth1/61/3, Eth1/61/4		Eth1/62/1,
Eth1/62/2, Eth1/62/3		Eth1/62/4
17 VLAN0017	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		

Eth1/4/3	Eth1/4/1, Eth1/4/2,
Eth1/5/2	Eth1/4/4, Eth1/5/1,
Eth1/6/1	Eth1/5/3, Eth1/5/4,
Eth1/6/4	Eth1/6/2, Eth1/6/3,
Eth1/7/3	Eth1/7/1, Eth1/7/2,
Eth1/8/2	Eth1/7/4, Eth1/8/1,
Eth1/9/1	Eth1/8/3, Eth1/8/4,
Eth1/9/4	Eth1/9/2, Eth1/9/3,
Eth1/10/2, Eth1/10/3	Eth1/10/1,
Eth1/11/1, Eth1/11/2	Eth1/10/4,
Eth1/11/4, Eth1/12/1	Eth1/11/3,
Eth1/12/3, Eth1/12/4	Eth1/12/2,
Eth1/13/2, Eth1/13/3	Eth1/13/1,
Eth1/14/1, Eth1/14/2	Eth1/13/4,
Eth1/14/4, Eth1/15/1	Eth1/14/3,
Eth1/15/3, Eth1/15/4	Eth1/15/2,
Eth1/16/2, Eth1/16/3	Eth1/16/1,
Eth1/17/1, Eth1/17/2	Eth1/16/4,
Eth1/17/4, Eth1/18/1	Eth1/17/3,
Eth1/18/3, Eth1/18/4	Eth1/18/2,
Eth1/19/2, Eth1/19/3	Eth1/19/1,
Eth1/20/1, Eth1/20/2	Eth1/19/4,
Eth1/20/4, Eth1/21/1	Eth1/20/3,

Eth1/21/3, Eth1/21/4
Eth1/22/2, Eth1/22/3
Eth1/23/1, Eth1/23/2
Eth1/23/4, Eth1/24/1
Eth1/24/3, Eth1/24/4
Eth1/25/2, Eth1/25/3
Eth1/26/1, Eth1/26/2
Eth1/26/4, Eth1/27/1
Eth1/27/3, Eth1/27/4
Eth1/28/2, Eth1/28/3
Eth1/29/1, Eth1/29/2
Eth1/29/4, Eth1/30/1
Eth1/30/3, Eth1/30/4
Eth1/31/2, Eth1/31/3
Eth1/32/1, Eth1/32/2
Eth1/32/4, Eth1/33/1
Eth1/33/3, Eth1/33/4
Eth1/34/2, Eth1/34/3
Eth1/35/1, Eth1/35/2
Eth1/35/4, Eth1/36/1
Eth1/36/3, Eth1/36/4
Eth1/37/2, Eth1/37/3
Eth1/38/1, Eth1/38/2

Eth1/21/2,
Eth1/22/1,
Eth1/22/4,
Eth1/23/3,
Eth1/24/2,
Eth1/25/1,
Eth1/25/4,
Eth1/26/3,
Eth1/27/2,
Eth1/28/1,
Eth1/28/4,
Eth1/29/3,
Eth1/30/2,
Eth1/31/1,
Eth1/31/4,
Eth1/32/3,
Eth1/33/2,
Eth1/34/1,
Eth1/34/4,
Eth1/35/3,
Eth1/36/2,
Eth1/37/1,
Eth1/37/4,

Eth1/38/4, Eth1/39/1
Eth1/39/3, Eth1/39/4
Eth1/40/2, Eth1/40/3
Eth1/41/1, Eth1/41/2
Eth1/41/4, Eth1/42/1
Eth1/42/3, Eth1/42/4
Eth1/43/2, Eth1/43/3
Eth1/44/1, Eth1/44/2
Eth1/44/4, Eth1/45/1
Eth1/45/3, Eth1/45/4
Eth1/46/2, Eth1/46/3
Eth1/47/1, Eth1/47/2
Eth1/47/4, Eth1/48/1
Eth1/48/3, Eth1/48/4
Eth1/49/2, Eth1/49/3
Eth1/50/1, Eth1/50/2
Eth1/50/4, Eth1/51/1
Eth1/51/3, Eth1/51/4
Eth1/52/2, Eth1/52/3
Eth1/53/1, Eth1/53/2
Eth1/53/4, Eth1/54/1
Eth1/54/3, Eth1/54/4
Eth1/55/2, Eth1/55/3

Eth1/38/3,
Eth1/39/2,
Eth1/40/1,
Eth1/40/4,
Eth1/41/3,
Eth1/42/2,
Eth1/43/1,
Eth1/43/4,
Eth1/44/3,
Eth1/45/2,
Eth1/46/1,
Eth1/46/4,
Eth1/47/3,
Eth1/48/2,
Eth1/49/1,
Eth1/49/4,
Eth1/50/3,
Eth1/51/2,
Eth1/52/1,
Eth1/52/4,
Eth1/53/3,
Eth1/54/2,
Eth1/55/1,

Eth1/56/1, Eth1/56/2		Eth1/55/4,
Eth1/56/4, Eth1/57/1		Eth1/56/3,
Eth1/57/3, Eth1/57/4		Eth1/57/2,
Eth1/58/2, Eth1/58/3		Eth1/58/1,
Eth1/59/1, Eth1/59/2		Eth1/58/4,
Eth1/59/4, Eth1/60/1		Eth1/59/3,
Eth1/60/3, Eth1/60/4		Eth1/60/2,
Eth1/61/2, Eth1/61/3		Eth1/61/1,
Eth1/62/1, Eth1/62/2		Eth1/61/4,
18 VLAN0018	active	Eth1/62/3, Eth1/62/4
Eth1/1/3		Eth1/1/1, Eth1/1/2,
Eth1/2/2		Eth1/1/4, Eth1/2/1,
Eth1/3/1		Eth1/2/3, Eth1/2/4,
Eth1/3/4		Eth1/3/2, Eth1/3/3,
Eth1/4/3		Eth1/4/1, Eth1/4/2,
Eth1/5/2		Eth1/4/4, Eth1/5/1,
Eth1/6/1		Eth1/5/3, Eth1/5/4,
Eth1/6/4		Eth1/6/2, Eth1/6/3,
Eth1/7/3		Eth1/7/1, Eth1/7/2,
Eth1/8/2		Eth1/7/4, Eth1/8/1,
Eth1/9/1		Eth1/8/3, Eth1/8/4,
Eth1/9/4		Eth1/9/2, Eth1/9/3,
Eth1/10/2, Eth1/10/3		Eth1/10/1,
		Eth1/10/4,

Eth1/11/1, Eth1/11/2

Eth1/11/4, Eth1/12/1

Eth1/12/3, Eth1/12/4

Eth1/13/2, Eth1/13/3

Eth1/14/1, Eth1/14/2

Eth1/14/4, Eth1/15/1

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/21/3, Eth1/21/4

Eth1/22/2, Eth1/22/3

Eth1/23/1, Eth1/23/2

Eth1/23/4, Eth1/24/1

Eth1/24/3, Eth1/24/4

Eth1/25/2, Eth1/25/3

Eth1/26/1, Eth1/26/2

Eth1/26/4, Eth1/27/1

Eth1/27/3, Eth1/27/4

Eth1/11/3,

Eth1/12/2,

Eth1/13/1,

Eth1/13/4,

Eth1/14/3,

Eth1/15/2,

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/2,

Eth1/22/1,

Eth1/22/4,

Eth1/23/3,

Eth1/24/2,

Eth1/25/1,

Eth1/25/4,

Eth1/26/3,

Eth1/27/2,

Eth1/28/1,

Eth1/28/2, Eth1/28/3

Eth1/29/1, Eth1/29/2

Eth1/29/4, Eth1/30/1

Eth1/30/3, Eth1/30/4

Eth1/31/2, Eth1/31/3

Eth1/32/1, Eth1/32/2

Eth1/32/4, Eth1/33/1

Eth1/33/3, Eth1/33/4

Eth1/34/2, Eth1/34/3

Eth1/35/1, Eth1/35/2

Eth1/35/4, Eth1/36/1

Eth1/36/3, Eth1/36/4

Eth1/37/2, Eth1/37/3

Eth1/38/1, Eth1/38/2

Eth1/38/4, Eth1/39/1

Eth1/39/3, Eth1/39/4

Eth1/40/2, Eth1/40/3

Eth1/41/1, Eth1/41/2

Eth1/41/4, Eth1/42/1

Eth1/42/3, Eth1/42/4

Eth1/43/2, Eth1/43/3

Eth1/44/1, Eth1/44/2

Eth1/44/4, Eth1/45/1

Eth1/28/4,

Eth1/29/3,

Eth1/30/2,

Eth1/31/1,

Eth1/31/4,

Eth1/32/3,

Eth1/33/2,

Eth1/34/1,

Eth1/34/4,

Eth1/35/3,

Eth1/36/2,

Eth1/37/1,

Eth1/37/4,

Eth1/38/3,

Eth1/39/2,

Eth1/40/1,

Eth1/40/4,

Eth1/41/3,

Eth1/42/2,

Eth1/43/1,

Eth1/43/4,

Eth1/44/3,

Eth1/45/2,

Eth1/45/3, Eth1/45/4

Eth1/46/2, Eth1/46/3

Eth1/47/1, Eth1/47/2

Eth1/47/4, Eth1/48/1

Eth1/48/3, Eth1/48/4

Eth1/49/2, Eth1/49/3

Eth1/50/1, Eth1/50/2

Eth1/50/4, Eth1/51/1

Eth1/51/3, Eth1/51/4

Eth1/52/2, Eth1/52/3

Eth1/53/1, Eth1/53/2

Eth1/53/4, Eth1/54/1

Eth1/54/3, Eth1/54/4

Eth1/55/2, Eth1/55/3

Eth1/56/1, Eth1/56/2

Eth1/56/4, Eth1/57/1

Eth1/57/3, Eth1/57/4

Eth1/58/2, Eth1/58/3

Eth1/59/1, Eth1/59/2

Eth1/59/4, Eth1/60/1

Eth1/60/3, Eth1/60/4

Eth1/61/2, Eth1/61/3

Eth1/62/1, Eth1/62/2

Eth1/46/1,

Eth1/46/4,

Eth1/47/3,

Eth1/48/2,

Eth1/49/1,

Eth1/49/4,

Eth1/50/3,

Eth1/51/2,

Eth1/52/1,

Eth1/52/4,

Eth1/53/3,

Eth1/54/2,

Eth1/55/1,

Eth1/55/4,

Eth1/56/3,

Eth1/57/2,

Eth1/58/1,

Eth1/58/4,

Eth1/59/3,

Eth1/60/2,

Eth1/61/1,

Eth1/61/4,

Eth1/62/3, Eth1/62/4

30	VLAN0030	active	Eth1/1/1, Eth1/1/2,
	Eth1/1/3		Eth1/1/4, Eth1/2/1,
	Eth1/2/2		Eth1/2/3, Eth1/2/4,
	Eth1/3/1		Eth1/3/2, Eth1/3/3,
	Eth1/3/4		Eth1/4/1, Eth1/4/2,
	Eth1/4/3		Eth1/4/4, Eth1/5/1,
	Eth1/5/2		Eth1/5/3, Eth1/5/4,
	Eth1/6/1		Eth1/6/2, Eth1/6/3,
	Eth1/6/4		Eth1/7/1, Eth1/7/2,
	Eth1/7/3		Eth1/7/4, Eth1/8/1,
	Eth1/8/2		Eth1/8/3, Eth1/8/4,
	Eth1/9/1		Eth1/9/2, Eth1/9/3,
	Eth1/9/4		Eth1/10/1,
	Eth1/10/2, Eth1/10/3		Eth1/10/4,
	Eth1/11/1, Eth1/11/2		Eth1/11/3,
	Eth1/11/4, Eth1/12/1		Eth1/12/2,
	Eth1/12/3, Eth1/12/4		Eth1/13/1,
	Eth1/13/2, Eth1/13/3		Eth1/13/4,
	Eth1/14/1, Eth1/14/2		Eth1/14/3,
	Eth1/14/4, Eth1/15/1		Eth1/15/2,
	Eth1/15/3, Eth1/15/4		Eth1/16/1,
	Eth1/16/2, Eth1/16/3		Eth1/16/4,
	Eth1/17/1, Eth1/17/2		Eth1/17/3,
	Eth1/17/4, Eth1/18/1		

Eth1/18/3, Eth1/18/4
Eth1/19/2, Eth1/19/3
Eth1/20/1, Eth1/20/2
Eth1/20/4, Eth1/21/1
Eth1/21/3, Eth1/21/4
Eth1/22/2, Eth1/22/3
Eth1/23/1, Eth1/23/2
Eth1/23/4, Eth1/24/1
Eth1/24/3, Eth1/24/4
Eth1/25/2, Eth1/25/3
Eth1/26/1, Eth1/26/2
Eth1/26/4, Eth1/27/1
Eth1/27/3, Eth1/27/4
Eth1/28/2, Eth1/28/3
Eth1/29/1, Eth1/29/2
Eth1/29/4, Eth1/30/1
Eth1/30/3, Eth1/30/4
Eth1/31/2, Eth1/31/3
Eth1/32/1, Eth1/32/2
Eth1/32/4, Eth1/33/1
Eth1/33/3, Eth1/33/4
Eth1/34/2, Eth1/34/3
Eth1/35/1, Eth1/35/2

Eth1/18/2,
Eth1/19/1,
Eth1/19/4,
Eth1/20/3,
Eth1/21/2,
Eth1/22/1,
Eth1/22/4,
Eth1/23/3,
Eth1/24/2,
Eth1/25/1,
Eth1/25/4,
Eth1/26/3,
Eth1/27/2,
Eth1/28/1,
Eth1/28/4,
Eth1/29/3,
Eth1/30/2,
Eth1/31/1,
Eth1/31/4,
Eth1/32/3,
Eth1/33/2,
Eth1/34/1,
Eth1/34/4,

Eth1/35/4, Eth1/36/1
Eth1/36/3, Eth1/36/4
Eth1/37/2, Eth1/37/3
Eth1/38/1, Eth1/38/2
Eth1/38/4, Eth1/39/1
Eth1/39/3, Eth1/39/4
Eth1/40/2, Eth1/40/3
Eth1/41/1, Eth1/41/2
Eth1/41/4, Eth1/42/1
Eth1/42/3, Eth1/42/4
Eth1/43/2, Eth1/43/3
Eth1/44/1, Eth1/44/2
Eth1/44/4, Eth1/45/1
Eth1/45/3, Eth1/45/4
Eth1/46/2, Eth1/46/3
Eth1/47/1, Eth1/47/2
Eth1/47/4, Eth1/48/1
Eth1/48/3, Eth1/48/4
Eth1/49/2, Eth1/49/3
Eth1/50/1, Eth1/50/2
Eth1/50/4, Eth1/51/1
Eth1/51/3, Eth1/51/4
Eth1/52/2, Eth1/52/3

Eth1/35/3,
Eth1/36/2,
Eth1/37/1,
Eth1/37/4,
Eth1/38/3,
Eth1/39/2,
Eth1/40/1,
Eth1/40/4,
Eth1/41/3,
Eth1/42/2,
Eth1/43/1,
Eth1/43/4,
Eth1/44/3,
Eth1/45/2,
Eth1/46/1,
Eth1/46/4,
Eth1/47/3,
Eth1/48/2,
Eth1/49/1,
Eth1/49/4,
Eth1/50/3,
Eth1/51/2,
Eth1/52/1,

Eth1/53/1, Eth1/53/2		Eth1/52/4,
Eth1/53/4, Eth1/54/1		Eth1/53/3,
Eth1/54/3, Eth1/54/4		Eth1/54/2,
Eth1/55/2, Eth1/55/3		Eth1/55/1,
Eth1/56/1, Eth1/56/2		Eth1/55/4,
Eth1/56/4, Eth1/57/1		Eth1/56/3,
Eth1/57/3, Eth1/57/4		Eth1/57/2,
Eth1/58/2, Eth1/58/3		Eth1/58/1,
Eth1/59/1, Eth1/59/2		Eth1/58/4,
Eth1/59/4, Eth1/60/1		Eth1/59/3,
Eth1/60/3, Eth1/60/4		Eth1/60/2,
Eth1/61/2, Eth1/61/3		Eth1/61/1,
Eth1/62/1, Eth1/62/2		Eth1/61/4,
40 VLAN0040	active	Eth1/62/3, Eth1/62/4
Eth1/1/3		Eth1/1/1, Eth1/1/2,
Eth1/2/2		Eth1/1/4, Eth1/2/1,
Eth1/3/1		Eth1/2/3, Eth1/2/4,
Eth1/3/4		Eth1/3/2, Eth1/3/3,
Eth1/4/3		Eth1/4/1, Eth1/4/2,
Eth1/5/2		Eth1/4/4, Eth1/5/1,
Eth1/6/1		Eth1/5/3, Eth1/5/4,
Eth1/6/4		Eth1/6/2, Eth1/6/3,
Eth1/7/3		Eth1/7/1, Eth1/7/2,
		Eth1/7/4, Eth1/8/1,

Eth1/8/2

Eth1/9/1

Eth1/9/4

Eth1/10/2, Eth1/10/3

Eth1/11/1, Eth1/11/2

Eth1/11/4, Eth1/12/1

Eth1/12/3, Eth1/12/4

Eth1/13/2, Eth1/13/3

Eth1/14/1, Eth1/14/2

Eth1/14/4, Eth1/15/1

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/21/3, Eth1/21/4

Eth1/22/2, Eth1/22/3

Eth1/23/1, Eth1/23/2

Eth1/23/4, Eth1/24/1

Eth1/24/3, Eth1/24/4

Eth1/8/3, Eth1/8/4,

Eth1/9/2, Eth1/9/3,

Eth1/10/1,

Eth1/10/4,

Eth1/11/3,

Eth1/12/2,

Eth1/13/1,

Eth1/13/4,

Eth1/14/3,

Eth1/15/2,

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/2,

Eth1/22/1,

Eth1/22/4,

Eth1/23/3,

Eth1/24/2,

Eth1/25/1,

Eth1/25/2, Eth1/25/3

Eth1/26/1, Eth1/26/2

Eth1/26/4, Eth1/27/1

Eth1/27/3, Eth1/27/4

Eth1/28/2, Eth1/28/3

Eth1/29/1, Eth1/29/2

Eth1/29/4, Eth1/30/1

Eth1/30/3, Eth1/30/4

Eth1/31/2, Eth1/31/3

Eth1/32/1, Eth1/32/2

Eth1/32/4, Eth1/33/1

Eth1/33/3, Eth1/33/4

Eth1/34/2, Eth1/34/3

Eth1/35/1, Eth1/35/2

Eth1/35/4, Eth1/36/1

Eth1/36/3, Eth1/36/4

Eth1/37/2, Eth1/37/3

Eth1/38/1, Eth1/38/2

Eth1/38/4, Eth1/39/1

Eth1/39/3, Eth1/39/4

Eth1/40/2, Eth1/40/3

Eth1/41/1, Eth1/41/2

Eth1/41/4, Eth1/42/1

Eth1/25/4,

Eth1/26/3,

Eth1/27/2,

Eth1/28/1,

Eth1/28/4,

Eth1/29/3,

Eth1/30/2,

Eth1/31/1,

Eth1/31/4,

Eth1/32/3,

Eth1/33/2,

Eth1/34/1,

Eth1/34/4,

Eth1/35/3,

Eth1/36/2,

Eth1/37/1,

Eth1/37/4,

Eth1/38/3,

Eth1/39/2,

Eth1/40/1,

Eth1/40/4,

Eth1/41/3,

Eth1/42/2,

Eth1/42/3, Eth1/42/4

Eth1/43/2, Eth1/43/3

Eth1/44/1, Eth1/44/2

Eth1/44/4, Eth1/45/1

Eth1/45/3, Eth1/45/4

Eth1/46/2, Eth1/46/3

Eth1/47/1, Eth1/47/2

Eth1/47/4, Eth1/48/1

Eth1/48/3, Eth1/48/4

Eth1/49/2, Eth1/49/3

Eth1/50/1, Eth1/50/2

Eth1/50/4, Eth1/51/1

Eth1/51/3, Eth1/51/4

Eth1/52/2, Eth1/52/3

Eth1/53/1, Eth1/53/2

Eth1/53/4, Eth1/54/1

Eth1/54/3, Eth1/54/4

Eth1/55/2, Eth1/55/3

Eth1/56/1, Eth1/56/2

Eth1/56/4, Eth1/57/1

Eth1/57/3, Eth1/57/4

Eth1/58/2, Eth1/58/3

Eth1/59/1, Eth1/59/2

Eth1/43/1,

Eth1/43/4,

Eth1/44/3,

Eth1/45/2,

Eth1/46/1,

Eth1/46/4,

Eth1/47/3,

Eth1/48/2,

Eth1/49/1,

Eth1/49/4,

Eth1/50/3,

Eth1/51/2,

Eth1/52/1,

Eth1/52/4,

Eth1/53/3,

Eth1/54/2,

Eth1/55/1,

Eth1/55/4,

Eth1/56/3,

Eth1/57/2,

Eth1/58/1,

Eth1/58/4,

Eth1/59/3,

Eth1/59/4, Eth1/60/1

Eth1/60/2,

Eth1/60/3, Eth1/60/4

Eth1/61/1,

Eth1/61/2, Eth1/61/3

Eth1/61/4,

Eth1/62/1, Eth1/62/2

Eth1/62/3, Eth1/62/4

cs1# **show interface trunk**

Port	Native Vlan	Status	Port Channel
Eth1/1/1	1	trunking	--
Eth1/1/2	1	trunking	--
Eth1/1/3	1	trunking	--
Eth1/1/4	1	trunking	--
Eth1/2/1	1	trunking	--
Eth1/2/2	1	trunking	--
Eth1/2/3	1	trunking	--
Eth1/2/4	1	trunking	--
.			
.			
.			
Eth1/62/2	none		
Eth1/62/3	none		
Eth1/62/4	none		
Eth1/63	none		
Eth1/64	none		
Pol	1		



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

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

show port-channel summary

Show example

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

-----
-----
Group Port-          Type      Protocol  Member Ports
Channel
-----
-----
1      Po1 (SU)       Eth      LACP      Eth1/63 (P)  Eth1/64 (P)
999    Po999 (SD)     Eth      NONE      --
cs1#
```

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 set up 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?

After you've installed the RCF, you [verify the SSH configuration](#).

Upgrade your Reference Configuration File (RCF)

You upgrade your RCF version when you have an existing version of the RCF file installed on your operational switches.

Before you begin

Make sure you have the following:

- A current backup of the switch configuration.
- A fully functioning cluster (no errors in the logs or similar issues).
- The current RCF.
- If you are updating your RCF version, you need a boot configuration in the RCF that reflects the desired

boot images.

If you need to change the boot configuration to reflect the current boot images, you must do so before reapplying the RCF so that the correct version is instantiated on future reboots.



No operational inter-switch link (ISL) is needed during this procedure. This is by design because RCF version changes can affect ISL connectivity temporarily. To ensure non-disruptive cluster operations, the following procedure migrates all of the cluster LIFs to the operational partner switch while performing the steps on the target switch.



Before installing a new switch software version and RCFs, you must erase the switch settings and perform basic configuration. You must be connected to the switch using the serial console or have preserved basic configuration information prior to erasing the switch settings.

Step 1: Prepare for the upgrade

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=xh
```

where *x* is the duration of the maintenance window in hours.

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

```
set -privilege advanced
```

The advanced prompt (***>**) appears.

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

```
network device-discovery show
```

Show example

```
cluster1::*> network device-discovery show
Node/      Local  Discovered
Protocol   Port   Device (LLDP: ChassisID)  Interface
Platform
-----
node1-01/cdp
          e10a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/3  N9K-
C9364D-GX2A
          e10b   cs1 (FDOXXXXXXXXXX)      Ethernet1/13/3  N9K-
C9364D-GX2A
          e11a   cs1 (FLMXXXXXXXXXX)      Ethernet1/16/4  N9K-
C9364D-GX2A
          e11b   cs1 (FDOXXXXXXXXXX)      Ethernet1/13/4  N9K-
C9364D-GX2A
          e1a    cs1 (FLMXXXXXXXXXX)      Ethernet1/16/1  N9K-
C9364D-GX2A
          e1b    cs1 (FDOXXXXXXXXXX)      Ethernet1/13/1  N9K-
C9364D-GX2A
          .
          .
          .
          e7a    cs1 (FLMXXXXXXXXXX)      Ethernet1/16/2  N9K-
C9364D-GX2A
          e7b    cs1 (FDOXXXXXXXXXX)      Ethernet1/13/2  N9K-
C9364D-GX2A
node1-01/lldp
          e10a   cs1 (c8:60:8f:xx:xx:xx)  Ethernet1/16/3  -
          e10b   cs2 (04:e3:87:xx:xx:xx)  Ethernet1/16/3  -
          e11a   cs1 (c8:60:8f:xx:xx:xx)  Ethernet1/16/4  -
          e11b   cs2 (04:e3:87:xx:xx:xx)  Ethernet1/16/4  -
          e1a    cs1 (c8:60:8f:xx:xx:xx)  Ethernet1/16/1  -
          e1b    cs2 (04:e3:87:xx:xx:xx)  Ethernet1/16/1  -
          .
          .
          .
          e7a    cs1 (c8:60:8f:xx:xx:xx)  Ethernet1/16/2  -
          e7b    cs2 (04:e3:87:xx:xx:xx)  Ethernet1/16/2  -
          .
          .
          .
```

4. Check the administrative and operational status of each port.

a. **Cluster ports**

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

```
network port show -ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-02

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-03

Ignore

Health	Health				Speed (Mbps)	
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-04

Ignore

Health	Health					Speed (Mbps)
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

cluster1::*>

- ii. 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			
	node1-01_clus1	up/up	169.254.3.4/23
node1-01	e7a true		
	node1-01_clus2	up/up	169.254.3.5/23
node1-01	e7b true		
	node1-02_clus1	up/up	169.254.3.8/23
node1-02	e7a true		
	node1-02_clus2	up/up	169.254.3.9/23
node1-02	e7b true		
	node1-03_clus1	up/up	169.254.1.3/23
node1-03	e7a true		
	node1-03_clus2	up/up	169.254.1.1/23
node1-03	e7b true		
	node1-04_clus1	up/up	169.254.1.6/23
node1-04	e7a true		
	node1-04_clus2	up/up	169.254.1.7/23
node1-04	e7b true		
8 entries were displayed.			

iii. Verify that the cluster displays information for both 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(FDOXXXXXXXXX)                        cluster-network      10.228.137.233
N9K-C9364D-GX2A
    Serial Number: FDOXXXXXXXXX
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                                10.4(2)
    Version Source: CDP/ISDP

cs2(FLMXXXXXXXXX)                        cluster-network      10.228.137.234
N9K-C9364D-GX2A
    Serial Number: FLMXXXXXXXXX
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                                10.4(2)
    Version Source: CDP/ISDP
```

b. HA ports

- i. Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: ela-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: elb-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: ela-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. **Storage shelf ports**

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

16 entries were displayed.

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

5. Disable auto-revert on the cluster LIFs:

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

Step 2: Configure ports

1. On switch cs1, shut down the ports connected to all the ports of the nodes.

```

cs1# config
cs1(config)# interface e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-
4,e1/6/1-4,e1/7/1-4,e1/8/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/9/1-4,e1/10/1-4,e1/11/1-4,e1/12/1-4,e1/13/1-
4,e1/14/1-4,e1/15/1-4,e1/16/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/17/1-4,e1/18/1-4,e1/19/1-4,e1/20/1-4,e1/21/1-
4,e1/22/1-4,e1/23/1-4,e1/24/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/25/1-4,e1/26/1-4,e1/27/1-4,e1/28/1-4,e1/29/1-
4,e1/30/1-4,e1/31/1-4,e1/32/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/33/1-4,e1/34/1-4,e1/35/1-4,e1/36/1-4,e1/37/1-
4,e1/38/1-4,e1/39/1-4,e1/40/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/41/1-4,e1/42/1-4,e1/43/1-4,e1/44/1-4,e1/35/1-
4,e1/46/1-4,e1/47/1-4,e1/48/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/49/1-4,e1/50/1-4,e1/51/1-4,e1/52/1-4,e1/53/1-
4,e1/54/1-4,e1/55/1-4,e1/56/1-4
cs1(config-if-range)# shutdown
cs1(config)# interface e1/57/1-4,e1/58/1-4,e1/59/1-4,e1/60/1-4,e1/61/1-
4,e1/62/1-4
cs1(config-if-range)# shutdown
cs1(config-if-range)# exit
cs1(config)# exit

```



Make sure to shutdown **all** connected ports to avoid any network connection issues. See the Knowledge Base article [Node out of quorum when migrating cluster LIF during switch OS upgrade](#) for further details.

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

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

Show example

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

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

Cluster				
	node1-01_clus1	up/up	169.254.36.44/16	node1-01
e7a	true			
	node1-01_clus2	up/up	169.254.7.5/16	node1-01
e7b	true			
	node1-02_clus1	up/up	169.254.197.206/16	node1-02
e7a	true			
	node1-02_clus2	up/up	169.254.195.186/16	node1-02
e7b	true			
	node1-03_clus1	up/up	169.254.192.49/16	node1-03
e7a	true			
	node1-03_clus2	up/up	169.254.182.76/16	node1-03
e7b	true			
	node1-04_clus1	up/up	169.254.59.49/16	node1-04
e7a	true			
	node1-04_clus2	up/up	169.254.62.244/16	node1-04
e7b	true			

8 entries were displayed.

3. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
-----	-----	-----	-----
node1-01	true	true	false
node1-02	true	true	false
node1-03	true	true	true
node1-04	true	true	false

4 entries were displayed.

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

```
show running-config
```

- a. Record any custom additions between the current `running-config` and the RCF file in use (such as an SNMP configuration for your organization).
 - b. For NX-OS 10.2 and newer use the `show diff running-config` command to compare with the saved RCF file in the bootflash. Otherwise, use a third part diff/compare tool.
5. Save basic configuration details to the `write_erase.cfg` file on the bootflash.



Make sure to configure the following:

- Username and password
- Management IP address
- Default gateway
- Switch name

```
cs1# show run | i "username admin password" > bootflash:write_erase.cfg
```

```
cs1# show run | section "vrf context management" >> bootflash:write_erase.cfg
```

```
cs1# show run | section "interface mgmt0" >> bootflash:write_erase.cfg
```

```
cs1# show run | section "switchname" >> bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region ing-racl 1024" >>  
bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region egr-racl 1024" >>  
bootflash:write_erase.cfg
```

```
cs1# echo "hardware access-list tcam region ing-l2-qos 1536" >>  
bootflash:write_erase.cfg
```

See the Knowledge Base article [How to clear configuration on a Cisco interconnect switch while retaining remote connectivity](#) for further details.

6. Verify that the `write_erase.cfg` file is populated as expected:

```
show file bootflash:write_erase.cfg
```

7. Issue the `write erase` command to erase the current saved configuration:

```
cs1# write erase
```

Warning: This command will erase the startup-configuration.

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

8. Copy the previously saved basic configuration into the startup configuration.

```
cs1# copy bootflash:write_erase.cfg startup-config
```

9. Reboot the switch:

```
cs1# reload
```

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

10. After the management IP address is reachable again, log in to the switch through SSH.

You may need to update host file entries related to the SSH keys.

11. 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](#) guides.

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: NX9364D-GX2A-RCF-v10.0-Shared.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)...
```

12. Apply the RCF previously downloaded to the bootflash.

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

This example shows the RCF file NX9364D-GX2A-RCF-v10.0-Shared.txt being installed on switch cs1:

```
cs1# copy NX9364D-GX2A-RCF-v10.0-Shared.txt running-config echo-commands
```



Make sure to read thoroughly the **Installation notes**, **Important Notes**, and **banner** sections of your RCF. You must read and follow these instructions to ensure the proper configuration and operation of the switch.

13. 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.

14. Reapply any previous customizations to the switch configuration.
15. After you verify the RCF versions, custom additions, and switch settings are correct, copy the running-config file to the startup-config file.

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

```
cs1# copy running-config startup-config
```

```
[ ] 100% Copy complete
```

16. Reboot switch cs1. You can ignore the “cluster switch health monitor” alerts and “cluster ports down” events reported on the nodes while the switch reboots.

```
cs1# reload
```

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

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

- a. **Cluster ports**

- i. Verify that cluster ports are up and healthy across all nodes in the cluster:

```
network port show -ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-02

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/10000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/10000
healthy	false					

Node: node1-03

Ignore

						Speed(Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

```
Node: node1-04
```

```
Ignore
```

```
Health      Health      Speed (Mbps)
Port        IPspace      Broadcast Domain Link MTU  Admin/Oper
Status      Status
-----
e7a         Cluster      Cluster      up    9000  auto/100000
healthy false
e7b         Cluster      Cluster      up    9000  auto/100000
healthy false
8 entries were displayed.
```

ii. Verify the switch health from the cluster.

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

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

Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface

node1-01/cdp			
	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3
N9K-C9364D-GX2A			
	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/13/3
N9K-C9364D-GX2A			
	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4
N9K-C9364D-GX2A			
	e11b	cs2 (FDOXXXXXXXXX)	Ethernet1/13/4
N9K-C9364D-GX2A			
	e1a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/1
N9K-C9364D-GX2A			
	e1b	cs2 (FLMXXXXXXXXX)	Ethernet1/13/1
N9K-C9364D-GX2A			
	.		
	.		
	.		
	e7a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/2
N9K-C9364D-GX2A			
	e7b	cs2 (FDOXXXXXXXXX)	Ethernet1/13/2
N9K-C9364D-GX2A			
node1-02/cdp			
	.		
	.		
	.		

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

Switch Model	Type	Address

cs2 (FDOXXXXXXXXX) N9K-C9364D-GX2A	cluster-network	10.228.137.233
Serial Number: FDOXXXXXXXXX		
Is Monitored: true		
Reason: None		
Software Version: Cisco Nexus Operating System (NX-OS)		
Software, Version		

```
10.4(2)
Version Source: CDP/ISDP

cs1 (FLMXXXXXXXXX)          cluster-network    10.228.137.234
N9K-C9364D-GX2A
  Serial Number: FLMXXXXXXXXX
  Is Monitored: true
  Reason: None
  Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
10.4(2)
Version Source: CDP/ISDP

2 entries were displayed.
```

b. HA ports

- i. Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. **Storage shelf ports**

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

```
16 entries were displayed.
```

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

18. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
node1-01	true	true	false
node1-02	true	true	false
node1-03	true	true	true
node1-04	true	true	false

4 entries were displayed.

19. Repeat steps 4 to 18 on switch cs2.

20. Enable auto-revert on the cluster LIFs:

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

Step 3: Verify the cluster network configuration and cluster health

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

```
show interface brief
```

Show example

```
cs1# show interface brief | grep up
.
.
Eth1/9/3          1          eth  trunk  up      none
100G(D) --
Eth1/9/4          1          eth  trunk  up      none
100G(D) --
Eth1/15/1         1          eth  trunk  up      none
100G(D) --
Eth1/15/2         1          eth  trunk  up      none
100G(D) --
Eth1/15/3         1          eth  trunk  up      none
100G(D) --
Eth1/15/4         1          eth  trunk  up      none
100G(D) --
Eth1/16/1         1          eth  trunk  up      none
100G(D) --
Eth1/16/2         1          eth  trunk  up      none
100G(D) --
Eth1/16/3         1          eth  trunk  up      none
100G(D) --
Eth1/16/4         1          eth  trunk  up      none
100G(D) --
Eth1/17/1         1          eth  trunk  up      none
100G(D) --
Eth1/17/2         1          eth  trunk  up      none
100G(D) --
Eth1/17/3         1          eth  trunk  up      none
100G(D) --
Eth1/17/4         1          eth  trunk  up      none
100G(D) --
.
.
.
```

2. Verify that the expected nodes are still connected:

```
show cdp neighbors
```

Show example

```
cs1# show cdp neighbors
```

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,
V - VoIP-Phone, D - Remotely-Managed-Device,
s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
cs2 (FDOXXXXXXXXX) Eth1/31	Eth1/63	179	R S I s	N9K-C9332D-GX2B
cs2 (FDOXXXXXXXXX) Eth1/32	Eth1/64	179	R S I s	N9K-C9332D-GX2B
node1-01 e1a	Eth1/4/1	123	H	AFX-1K
node1-01 e7a	Eth1/4/2	123	H	AFX-1K
node1-01 e10a	Eth1/4/3	123	H	AFX-1K
node1-01 e11a	Eth1/4/4	123	H	AFX-1K
node1-02 e1a	Eth1/9/1	138	H	AFX-1K
node1-02 e7a	Eth1/9/2	138	H	AFX-1K
node1-02 e10a	Eth1/9/3	138	H	AFX-1K
node1-02 e11a	Eth1/9/4	138	H	AFX-1K
node1-03 e1a	Eth1/15/1	138	H	AFX-1K
node1-03 e7a	Eth1/15/2	138	H	AFX-1K
node1-03 e10a	Eth1/15/3	138	H	AFX-1K
node1-03 e11a	Eth1/15/4	138	H	AFX-1K
node1-04 e1a	Eth1/16/1	173	H	AFX-1K
node1-04 e7a	Eth1/16/2	173	H	AFX-1K
node1-04 e10a	Eth1/16/3	173	H	AFX-1K

```
node1-04          Eth1/16/4      173    H      AFX-1K
e11a
```

```
Total entries displayed: 18
```

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

```
show vlan brief
```

```
show interface trunk
```

Show example

```
cs1# show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Pol, Po999, Eth1/63, Eth1/64 Eth1/65, Eth1/66, Eth1/1/1 Eth1/1/2, Eth1/1/3, Eth1/1/4 Eth1/2/1, Eth1/2/2, Eth1/2/3 Eth1/2/4, Eth1/3/1, Eth1/3/2 Eth1/3/3, Eth1/3/4, Eth1/4/1 Eth1/4/2, Eth1/4/3, Eth1/4/4 Eth1/5/1, Eth1/5/2, Eth1/5/3 Eth1/5/4, Eth1/6/1, Eth1/6/2 Eth1/6/3, Eth1/6/4, Eth1/7/1 Eth1/7/2, Eth1/7/3, Eth1/7/4 Eth1/8/1, Eth1/8/2, Eth1/8/3 Eth1/8/4, Eth1/9/1, Eth1/9/2 Eth1/9/3, Eth1/9/4, Eth1/10/1 Eth1/10/2, Eth1/10/3, Eth1/10/4 Eth1/11/1, Eth1/11/2, Eth1/11/3 Eth1/11/4, Eth1/12/1, Eth1/12/2 Eth1/12/3, Eth1/12/4, Eth1/13/1 Eth1/13/2, Eth1/13/3, Eth1/13/4 Eth1/14/1,

Eth1/14/2, Eth1/14/3

Eth1/15/1, Eth1/15/2

Eth1/15/4, Eth1/16/1

Eth1/16/3, Eth1/16/4

Eth1/17/2, Eth1/17/3

Eth1/18/1, Eth1/18/2

Eth1/18/4, Eth1/19/1

Eth1/19/3, Eth1/19/4

Eth1/20/2, Eth1/20/3

Eth1/21/1, Eth1/21/2

Eth1/21/4, Eth1/22/1

Eth1/22/3, Eth1/22/4

Eth1/23/2, Eth1/23/3

Eth1/24/1, Eth1/24/2

Eth1/24/4, Eth1/25/1

Eth1/25/3, Eth1/25/4

Eth1/26/2, Eth1/26/3

Eth1/27/1, Eth1/27/2

Eth1/27/4, Eth1/28/1

Eth1/28/3, Eth1/28/4

Eth1/29/2, Eth1/29/3

Eth1/30/1, Eth1/30/2

Eth1/30/4, Eth1/31/1

Eth1/14/4,

Eth1/15/3,

Eth1/16/2,

Eth1/17/1,

Eth1/17/4,

Eth1/18/3,

Eth1/19/2,

Eth1/20/1,

Eth1/20/4,

Eth1/21/3,

Eth1/22/2,

Eth1/23/1,

Eth1/23/4,

Eth1/24/3,

Eth1/25/2,

Eth1/26/1,

Eth1/26/4,

Eth1/27/3,

Eth1/28/2,

Eth1/29/1,

Eth1/29/4,

Eth1/30/3,

Eth1/31/2,

Eth1/31/3, Eth1/31/4

Eth1/32/2, Eth1/32/3

Eth1/33/1, Eth1/33/2

Eth1/33/4, Eth1/34/1

Eth1/34/3, Eth1/34/4

Eth1/35/2, Eth1/35/3

Eth1/36/1, Eth1/36/2

Eth1/36/4, Eth1/37/1

Eth1/37/3, Eth1/37/4

Eth1/38/2, Eth1/38/3

Eth1/39/1, Eth1/39/2

Eth1/39/4, Eth1/40/1

Eth1/40/3, Eth1/40/4

Eth1/41/2, Eth1/41/3

Eth1/42/1, Eth1/42/2

Eth1/42/4, Eth1/43/1

Eth1/43/3, Eth1/43/4

Eth1/44/2, Eth1/44/3

Eth1/45/1, Eth1/45/2

Eth1/45/4, Eth1/46/1

Eth1/46/3, Eth1/46/4

Eth1/47/2, Eth1/47/3

Eth1/48/1, Eth1/48/2

Eth1/32/1,

Eth1/32/4,

Eth1/33/3,

Eth1/34/2,

Eth1/35/1,

Eth1/35/4,

Eth1/36/3,

Eth1/37/2,

Eth1/38/1,

Eth1/38/4,

Eth1/39/3,

Eth1/40/2,

Eth1/41/1,

Eth1/41/4,

Eth1/42/3,

Eth1/43/2,

Eth1/44/1,

Eth1/44/4,

Eth1/45/3,

Eth1/46/2,

Eth1/47/1,

Eth1/47/4,

Eth1/48/3,

Eth1/48/4, Eth1/49/1		Eth1/49/2,
Eth1/49/3, Eth1/49/4		Eth1/50/1,
Eth1/50/2, Eth1/50/3		Eth1/50/4,
Eth1/51/1, Eth1/51/2		Eth1/51/3,
Eth1/51/4, Eth1/52/1		Eth1/52/2,
Eth1/52/3, Eth1/52/4		Eth1/53/1,
Eth1/53/2, Eth1/53/3		Eth1/53/4,
Eth1/54/1, Eth1/54/2		Eth1/54/3,
Eth1/54/4, Eth1/55/1		Eth1/55/2,
Eth1/55/3, Eth1/55/4		Eth1/56/1,
Eth1/56/2, Eth1/56/3		Eth1/56/4,
Eth1/57/1, Eth1/57/2		Eth1/57/3,
Eth1/57/4, Eth1/58/1		Eth1/58/2,
Eth1/58/3, Eth1/58/4		Eth1/59/1,
Eth1/59/2, Eth1/59/3		Eth1/59/4,
Eth1/60/1, Eth1/60/2		Eth1/60/3,
Eth1/60/4, Eth1/61/1		Eth1/61/2,
Eth1/61/3, Eth1/61/4		Eth1/62/1,
Eth1/62/2, Eth1/62/3		Eth1/62/4
17 VLAN0017	active	Eth1/1/1, Eth1/1/2,
Eth1/1/3		Eth1/1/4, Eth1/2/1,
Eth1/2/2		Eth1/2/3, Eth1/2/4,
Eth1/3/1		Eth1/3/2, Eth1/3/3,
Eth1/3/4		

Eth1/4/3

Eth1/5/2

Eth1/6/1

Eth1/6/4

Eth1/7/3

Eth1/8/2

Eth1/9/1

Eth1/9/4

Eth1/10/2, Eth1/10/3

Eth1/11/1, Eth1/11/2

Eth1/11/4, Eth1/12/1

Eth1/12/3, Eth1/12/4

Eth1/13/2, Eth1/13/3

Eth1/14/1, Eth1/14/2

Eth1/14/4, Eth1/15/1

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/4/1, Eth1/4/2,

Eth1/4/4, Eth1/5/1,

Eth1/5/3, Eth1/5/4,

Eth1/6/2, Eth1/6/3,

Eth1/7/1, Eth1/7/2,

Eth1/7/4, Eth1/8/1,

Eth1/8/3, Eth1/8/4,

Eth1/9/2, Eth1/9/3,

Eth1/10/1,

Eth1/10/4,

Eth1/11/3,

Eth1/12/2,

Eth1/13/1,

Eth1/13/4,

Eth1/14/3,

Eth1/15/2,

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/3, Eth1/21/4
Eth1/22/2, Eth1/22/3
Eth1/23/1, Eth1/23/2
Eth1/23/4, Eth1/24/1
Eth1/24/3, Eth1/24/4
Eth1/25/2, Eth1/25/3
Eth1/26/1, Eth1/26/2
Eth1/26/4, Eth1/27/1
Eth1/27/3, Eth1/27/4
Eth1/28/2, Eth1/28/3
Eth1/29/1, Eth1/29/2
Eth1/29/4, Eth1/30/1
Eth1/30/3, Eth1/30/4
Eth1/31/2, Eth1/31/3
Eth1/32/1, Eth1/32/2
Eth1/32/4, Eth1/33/1
Eth1/33/3, Eth1/33/4
Eth1/34/2, Eth1/34/3
Eth1/35/1, Eth1/35/2
Eth1/35/4, Eth1/36/1
Eth1/36/3, Eth1/36/4
Eth1/37/2, Eth1/37/3
Eth1/38/1, Eth1/38/2

Eth1/21/2,
Eth1/22/1,
Eth1/22/4,
Eth1/23/3,
Eth1/24/2,
Eth1/25/1,
Eth1/25/4,
Eth1/26/3,
Eth1/27/2,
Eth1/28/1,
Eth1/28/4,
Eth1/29/3,
Eth1/30/2,
Eth1/31/1,
Eth1/31/4,
Eth1/32/3,
Eth1/33/2,
Eth1/34/1,
Eth1/34/4,
Eth1/35/3,
Eth1/36/2,
Eth1/37/1,
Eth1/37/4,

Eth1/38/4, Eth1/39/1
Eth1/39/3, Eth1/39/4
Eth1/40/2, Eth1/40/3
Eth1/41/1, Eth1/41/2
Eth1/41/4, Eth1/42/1
Eth1/42/3, Eth1/42/4
Eth1/43/2, Eth1/43/3
Eth1/44/1, Eth1/44/2
Eth1/44/4, Eth1/45/1
Eth1/45/3, Eth1/45/4
Eth1/46/2, Eth1/46/3
Eth1/47/1, Eth1/47/2
Eth1/47/4, Eth1/48/1
Eth1/48/3, Eth1/48/4
Eth1/49/2, Eth1/49/3
Eth1/50/1, Eth1/50/2
Eth1/50/4, Eth1/51/1
Eth1/51/3, Eth1/51/4
Eth1/52/2, Eth1/52/3
Eth1/53/1, Eth1/53/2
Eth1/53/4, Eth1/54/1
Eth1/54/3, Eth1/54/4
Eth1/55/2, Eth1/55/3

Eth1/38/3,
Eth1/39/2,
Eth1/40/1,
Eth1/40/4,
Eth1/41/3,
Eth1/42/2,
Eth1/43/1,
Eth1/43/4,
Eth1/44/3,
Eth1/45/2,
Eth1/46/1,
Eth1/46/4,
Eth1/47/3,
Eth1/48/2,
Eth1/49/1,
Eth1/49/4,
Eth1/50/3,
Eth1/51/2,
Eth1/52/1,
Eth1/52/4,
Eth1/53/3,
Eth1/54/2,
Eth1/55/1,

Eth1/56/1, Eth1/56/2		Eth1/55/4,
Eth1/56/4, Eth1/57/1		Eth1/56/3,
Eth1/57/3, Eth1/57/4		Eth1/57/2,
Eth1/58/2, Eth1/58/3		Eth1/58/1,
Eth1/59/1, Eth1/59/2		Eth1/58/4,
Eth1/59/4, Eth1/60/1		Eth1/59/3,
Eth1/60/3, Eth1/60/4		Eth1/60/2,
Eth1/61/2, Eth1/61/3		Eth1/61/1,
Eth1/62/1, Eth1/62/2		Eth1/61/4,
18 VLAN0018	active	Eth1/62/3, Eth1/62/4
Eth1/1/3		Eth1/1/1, Eth1/1/2,
Eth1/2/2		Eth1/1/4, Eth1/2/1,
Eth1/3/1		Eth1/2/3, Eth1/2/4,
Eth1/3/4		Eth1/3/2, Eth1/3/3,
Eth1/4/3		Eth1/4/1, Eth1/4/2,
Eth1/5/2		Eth1/4/4, Eth1/5/1,
Eth1/6/1		Eth1/5/3, Eth1/5/4,
Eth1/6/4		Eth1/6/2, Eth1/6/3,
Eth1/7/3		Eth1/7/1, Eth1/7/2,
Eth1/8/2		Eth1/7/4, Eth1/8/1,
Eth1/9/1		Eth1/8/3, Eth1/8/4,
Eth1/9/4		Eth1/9/2, Eth1/9/3,
Eth1/10/2, Eth1/10/3		Eth1/10/1,
		Eth1/10/4,

Eth1/11/1, Eth1/11/2

Eth1/11/4, Eth1/12/1

Eth1/12/3, Eth1/12/4

Eth1/13/2, Eth1/13/3

Eth1/14/1, Eth1/14/2

Eth1/14/4, Eth1/15/1

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/21/3, Eth1/21/4

Eth1/22/2, Eth1/22/3

Eth1/23/1, Eth1/23/2

Eth1/23/4, Eth1/24/1

Eth1/24/3, Eth1/24/4

Eth1/25/2, Eth1/25/3

Eth1/26/1, Eth1/26/2

Eth1/26/4, Eth1/27/1

Eth1/27/3, Eth1/27/4

Eth1/11/3,

Eth1/12/2,

Eth1/13/1,

Eth1/13/4,

Eth1/14/3,

Eth1/15/2,

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/2,

Eth1/22/1,

Eth1/22/4,

Eth1/23/3,

Eth1/24/2,

Eth1/25/1,

Eth1/25/4,

Eth1/26/3,

Eth1/27/2,

Eth1/28/1,

Eth1/28/2, Eth1/28/3

Eth1/29/1, Eth1/29/2

Eth1/29/4, Eth1/30/1

Eth1/30/3, Eth1/30/4

Eth1/31/2, Eth1/31/3

Eth1/32/1, Eth1/32/2

Eth1/32/4, Eth1/33/1

Eth1/33/3, Eth1/33/4

Eth1/34/2, Eth1/34/3

Eth1/35/1, Eth1/35/2

Eth1/35/4, Eth1/36/1

Eth1/36/3, Eth1/36/4

Eth1/37/2, Eth1/37/3

Eth1/38/1, Eth1/38/2

Eth1/38/4, Eth1/39/1

Eth1/39/3, Eth1/39/4

Eth1/40/2, Eth1/40/3

Eth1/41/1, Eth1/41/2

Eth1/41/4, Eth1/42/1

Eth1/42/3, Eth1/42/4

Eth1/43/2, Eth1/43/3

Eth1/44/1, Eth1/44/2

Eth1/44/4, Eth1/45/1

Eth1/28/4,

Eth1/29/3,

Eth1/30/2,

Eth1/31/1,

Eth1/31/4,

Eth1/32/3,

Eth1/33/2,

Eth1/34/1,

Eth1/34/4,

Eth1/35/3,

Eth1/36/2,

Eth1/37/1,

Eth1/37/4,

Eth1/38/3,

Eth1/39/2,

Eth1/40/1,

Eth1/40/4,

Eth1/41/3,

Eth1/42/2,

Eth1/43/1,

Eth1/43/4,

Eth1/44/3,

Eth1/45/2,

Eth1/45/3, Eth1/45/4

Eth1/46/2, Eth1/46/3

Eth1/47/1, Eth1/47/2

Eth1/47/4, Eth1/48/1

Eth1/48/3, Eth1/48/4

Eth1/49/2, Eth1/49/3

Eth1/50/1, Eth1/50/2

Eth1/50/4, Eth1/51/1

Eth1/51/3, Eth1/51/4

Eth1/52/2, Eth1/52/3

Eth1/53/1, Eth1/53/2

Eth1/53/4, Eth1/54/1

Eth1/54/3, Eth1/54/4

Eth1/55/2, Eth1/55/3

Eth1/56/1, Eth1/56/2

Eth1/56/4, Eth1/57/1

Eth1/57/3, Eth1/57/4

Eth1/58/2, Eth1/58/3

Eth1/59/1, Eth1/59/2

Eth1/59/4, Eth1/60/1

Eth1/60/3, Eth1/60/4

Eth1/61/2, Eth1/61/3

Eth1/62/1, Eth1/62/2

Eth1/46/1,

Eth1/46/4,

Eth1/47/3,

Eth1/48/2,

Eth1/49/1,

Eth1/49/4,

Eth1/50/3,

Eth1/51/2,

Eth1/52/1,

Eth1/52/4,

Eth1/53/3,

Eth1/54/2,

Eth1/55/1,

Eth1/55/4,

Eth1/56/3,

Eth1/57/2,

Eth1/58/1,

Eth1/58/4,

Eth1/59/3,

Eth1/60/2,

Eth1/61/1,

Eth1/61/4,

Eth1/62/3, Eth1/62/4

30	VLAN0030	active	Eth1/1/1, Eth1/1/2,
	Eth1/1/3		Eth1/1/4, Eth1/2/1,
	Eth1/2/2		Eth1/2/3, Eth1/2/4,
	Eth1/3/1		Eth1/3/2, Eth1/3/3,
	Eth1/3/4		Eth1/4/1, Eth1/4/2,
	Eth1/4/3		Eth1/4/4, Eth1/5/1,
	Eth1/5/2		Eth1/5/3, Eth1/5/4,
	Eth1/6/1		Eth1/6/2, Eth1/6/3,
	Eth1/6/4		Eth1/7/1, Eth1/7/2,
	Eth1/7/3		Eth1/7/4, Eth1/8/1,
	Eth1/8/2		Eth1/8/3, Eth1/8/4,
	Eth1/9/1		Eth1/9/2, Eth1/9/3,
	Eth1/9/4		Eth1/10/1,
	Eth1/10/2, Eth1/10/3		Eth1/10/4,
	Eth1/11/1, Eth1/11/2		Eth1/11/3,
	Eth1/11/4, Eth1/12/1		Eth1/12/2,
	Eth1/12/3, Eth1/12/4		Eth1/13/1,
	Eth1/13/2, Eth1/13/3		Eth1/13/4,
	Eth1/14/1, Eth1/14/2		Eth1/14/3,
	Eth1/14/4, Eth1/15/1		Eth1/15/2,
	Eth1/15/3, Eth1/15/4		Eth1/16/1,
	Eth1/16/2, Eth1/16/3		Eth1/16/4,
	Eth1/17/1, Eth1/17/2		Eth1/17/3,
	Eth1/17/4, Eth1/18/1		

Eth1/18/3, Eth1/18/4
Eth1/19/2, Eth1/19/3
Eth1/20/1, Eth1/20/2
Eth1/20/4, Eth1/21/1
Eth1/21/3, Eth1/21/4
Eth1/22/2, Eth1/22/3
Eth1/23/1, Eth1/23/2
Eth1/23/4, Eth1/24/1
Eth1/24/3, Eth1/24/4
Eth1/25/2, Eth1/25/3
Eth1/26/1, Eth1/26/2
Eth1/26/4, Eth1/27/1
Eth1/27/3, Eth1/27/4
Eth1/28/2, Eth1/28/3
Eth1/29/1, Eth1/29/2
Eth1/29/4, Eth1/30/1
Eth1/30/3, Eth1/30/4
Eth1/31/2, Eth1/31/3
Eth1/32/1, Eth1/32/2
Eth1/32/4, Eth1/33/1
Eth1/33/3, Eth1/33/4
Eth1/34/2, Eth1/34/3
Eth1/35/1, Eth1/35/2

Eth1/18/2,
Eth1/19/1,
Eth1/19/4,
Eth1/20/3,
Eth1/21/2,
Eth1/22/1,
Eth1/22/4,
Eth1/23/3,
Eth1/24/2,
Eth1/25/1,
Eth1/25/4,
Eth1/26/3,
Eth1/27/2,
Eth1/28/1,
Eth1/28/4,
Eth1/29/3,
Eth1/30/2,
Eth1/31/1,
Eth1/31/4,
Eth1/32/3,
Eth1/33/2,
Eth1/34/1,
Eth1/34/4,

Eth1/35/4, Eth1/36/1
Eth1/36/3, Eth1/36/4
Eth1/37/2, Eth1/37/3
Eth1/38/1, Eth1/38/2
Eth1/38/4, Eth1/39/1
Eth1/39/3, Eth1/39/4
Eth1/40/2, Eth1/40/3
Eth1/41/1, Eth1/41/2
Eth1/41/4, Eth1/42/1
Eth1/42/3, Eth1/42/4
Eth1/43/2, Eth1/43/3
Eth1/44/1, Eth1/44/2
Eth1/44/4, Eth1/45/1
Eth1/45/3, Eth1/45/4
Eth1/46/2, Eth1/46/3
Eth1/47/1, Eth1/47/2
Eth1/47/4, Eth1/48/1
Eth1/48/3, Eth1/48/4
Eth1/49/2, Eth1/49/3
Eth1/50/1, Eth1/50/2
Eth1/50/4, Eth1/51/1
Eth1/51/3, Eth1/51/4
Eth1/52/2, Eth1/52/3

Eth1/35/3,
Eth1/36/2,
Eth1/37/1,
Eth1/37/4,
Eth1/38/3,
Eth1/39/2,
Eth1/40/1,
Eth1/40/4,
Eth1/41/3,
Eth1/42/2,
Eth1/43/1,
Eth1/43/4,
Eth1/44/3,
Eth1/45/2,
Eth1/46/1,
Eth1/46/4,
Eth1/47/3,
Eth1/48/2,
Eth1/49/1,
Eth1/49/4,
Eth1/50/3,
Eth1/51/2,
Eth1/52/1,

Eth1/53/1, Eth1/53/2		Eth1/52/4,
Eth1/53/4, Eth1/54/1		Eth1/53/3,
Eth1/54/3, Eth1/54/4		Eth1/54/2,
Eth1/55/2, Eth1/55/3		Eth1/55/1,
Eth1/56/1, Eth1/56/2		Eth1/55/4,
Eth1/56/4, Eth1/57/1		Eth1/56/3,
Eth1/57/3, Eth1/57/4		Eth1/57/2,
Eth1/58/2, Eth1/58/3		Eth1/58/1,
Eth1/59/1, Eth1/59/2		Eth1/58/4,
Eth1/59/4, Eth1/60/1		Eth1/59/3,
Eth1/60/3, Eth1/60/4		Eth1/60/2,
Eth1/61/2, Eth1/61/3		Eth1/61/1,
Eth1/62/1, Eth1/62/2		Eth1/61/4,
40 VLAN0040	active	Eth1/62/3, Eth1/62/4
Eth1/1/3		Eth1/1/1, Eth1/1/2,
Eth1/2/2		Eth1/1/4, Eth1/2/1,
Eth1/3/1		Eth1/2/3, Eth1/2/4,
Eth1/3/4		Eth1/3/2, Eth1/3/3,
Eth1/4/3		Eth1/4/1, Eth1/4/2,
Eth1/5/2		Eth1/4/4, Eth1/5/1,
Eth1/6/1		Eth1/5/3, Eth1/5/4,
Eth1/6/4		Eth1/6/2, Eth1/6/3,
Eth1/7/3		Eth1/7/1, Eth1/7/2,
		Eth1/7/4, Eth1/8/1,

Eth1/8/2

Eth1/9/1

Eth1/9/4

Eth1/10/2, Eth1/10/3

Eth1/11/1, Eth1/11/2

Eth1/11/4, Eth1/12/1

Eth1/12/3, Eth1/12/4

Eth1/13/2, Eth1/13/3

Eth1/14/1, Eth1/14/2

Eth1/14/4, Eth1/15/1

Eth1/15/3, Eth1/15/4

Eth1/16/2, Eth1/16/3

Eth1/17/1, Eth1/17/2

Eth1/17/4, Eth1/18/1

Eth1/18/3, Eth1/18/4

Eth1/19/2, Eth1/19/3

Eth1/20/1, Eth1/20/2

Eth1/20/4, Eth1/21/1

Eth1/21/3, Eth1/21/4

Eth1/22/2, Eth1/22/3

Eth1/23/1, Eth1/23/2

Eth1/23/4, Eth1/24/1

Eth1/24/3, Eth1/24/4

Eth1/8/3, Eth1/8/4,

Eth1/9/2, Eth1/9/3,

Eth1/10/1,

Eth1/10/4,

Eth1/11/3,

Eth1/12/2,

Eth1/13/1,

Eth1/13/4,

Eth1/14/3,

Eth1/15/2,

Eth1/16/1,

Eth1/16/4,

Eth1/17/3,

Eth1/18/2,

Eth1/19/1,

Eth1/19/4,

Eth1/20/3,

Eth1/21/2,

Eth1/22/1,

Eth1/22/4,

Eth1/23/3,

Eth1/24/2,

Eth1/25/1,

Eth1/25/2, Eth1/25/3

Eth1/26/1, Eth1/26/2

Eth1/26/4, Eth1/27/1

Eth1/27/3, Eth1/27/4

Eth1/28/2, Eth1/28/3

Eth1/29/1, Eth1/29/2

Eth1/29/4, Eth1/30/1

Eth1/30/3, Eth1/30/4

Eth1/31/2, Eth1/31/3

Eth1/32/1, Eth1/32/2

Eth1/32/4, Eth1/33/1

Eth1/33/3, Eth1/33/4

Eth1/34/2, Eth1/34/3

Eth1/35/1, Eth1/35/2

Eth1/35/4, Eth1/36/1

Eth1/36/3, Eth1/36/4

Eth1/37/2, Eth1/37/3

Eth1/38/1, Eth1/38/2

Eth1/38/4, Eth1/39/1

Eth1/39/3, Eth1/39/4

Eth1/40/2, Eth1/40/3

Eth1/41/1, Eth1/41/2

Eth1/41/4, Eth1/42/1

Eth1/25/4,

Eth1/26/3,

Eth1/27/2,

Eth1/28/1,

Eth1/28/4,

Eth1/29/3,

Eth1/30/2,

Eth1/31/1,

Eth1/31/4,

Eth1/32/3,

Eth1/33/2,

Eth1/34/1,

Eth1/34/4,

Eth1/35/3,

Eth1/36/2,

Eth1/37/1,

Eth1/37/4,

Eth1/38/3,

Eth1/39/2,

Eth1/40/1,

Eth1/40/4,

Eth1/41/3,

Eth1/42/2,

Eth1/42/3, Eth1/42/4

Eth1/43/2, Eth1/43/3

Eth1/44/1, Eth1/44/2

Eth1/44/4, Eth1/45/1

Eth1/45/3, Eth1/45/4

Eth1/46/2, Eth1/46/3

Eth1/47/1, Eth1/47/2

Eth1/47/4, Eth1/48/1

Eth1/48/3, Eth1/48/4

Eth1/49/2, Eth1/49/3

Eth1/50/1, Eth1/50/2

Eth1/50/4, Eth1/51/1

Eth1/51/3, Eth1/51/4

Eth1/52/2, Eth1/52/3

Eth1/53/1, Eth1/53/2

Eth1/53/4, Eth1/54/1

Eth1/54/3, Eth1/54/4

Eth1/55/2, Eth1/55/3

Eth1/56/1, Eth1/56/2

Eth1/56/4, Eth1/57/1

Eth1/57/3, Eth1/57/4

Eth1/58/2, Eth1/58/3

Eth1/59/1, Eth1/59/2

Eth1/43/1,

Eth1/43/4,

Eth1/44/3,

Eth1/45/2,

Eth1/46/1,

Eth1/46/4,

Eth1/47/3,

Eth1/48/2,

Eth1/49/1,

Eth1/49/4,

Eth1/50/3,

Eth1/51/2,

Eth1/52/1,

Eth1/52/4,

Eth1/53/3,

Eth1/54/2,

Eth1/55/1,

Eth1/55/4,

Eth1/56/3,

Eth1/57/2,

Eth1/58/1,

Eth1/58/4,

Eth1/59/3,

Eth1/59/4, Eth1/60/1

Eth1/60/2,

Eth1/60/3, Eth1/60/4

Eth1/61/1,

Eth1/61/2, Eth1/61/3

Eth1/61/4,

Eth1/62/1, Eth1/62/2

Eth1/62/3, Eth1/62/4

cs1# **show interface trunk**

Port	Native Vlan	Status	Port Channel
Eth1/1/1	1	trunking	--
Eth1/1/2	1	trunking	--
Eth1/1/3	1	trunking	--
Eth1/1/4	1	trunking	--
Eth1/2/1	1	trunking	--
Eth1/2/2	1	trunking	--
Eth1/2/3	1	trunking	--
Eth1/2/4	1	trunking	--
.			
.			
.			
Eth1/62/2	none		
Eth1/62/3	none		
Eth1/62/4	none		
Eth1/63	none		
Eth1/64	none		
Pol	1		



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

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

show port-channel summary

Show example

```
cs1# show port-channel summary
```

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

```
-----
-----
Group Port-          Type      Protocol  Member Ports      Channel
-----
-----
1      Po1 (SU)       Eth       LACP       Eth1/63 (P)      Eth1/64 (P)
999    Po999 (SD)    Eth       NONE       --
```

```
cs1#
```

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

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

Show example

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

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

Cluster					
01	e7a	node1-01_clus1	up/up	169.254.36.44/16	node1-
		true			
		node1-01_clus2	up/up	169.254.7.5/16	node1-
01	e7b	true			
		node1-02_clus1	up/up	169.254.197.206/16	node1-
02	e7a	true			
		node1-02_clus2	up/up	169.254.195.186/16	node1-
02	e7b	true			
		node1-03_clus1	up/up	169.254.192.49/16	node1-
03	e7a	true			
		node1-03_clus2	up/up	169.254.182.76/16	node1-
03	e7b	true			
		node1-04_clus1	up/up	169.254.59.49/16	node1-
04	e7a	true			
		node1-04_clus2	up/up	169.254.62.244/16	node1-
04	e7b	true			

8 entries were displayed.

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

```
network interface revert -vserver vservice_name -lif <lif-name>
```

6. Verify that the cluster is healthy:

```
cluster show
```

Show example

```
cluster1::*> cluster show
```

Node	Health	Eligibility	Epsilon
node1-01	true	true	false
node1-02	true	true	false
node1-03	true	true	true
node1-04	true	true	false

7. Verify the connectivity of the remote cluster interfaces:
- a. You can use the network interface check cluster-connectivity show command to display the details of an accessibility check for cluster connectivity:

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

Show example

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

Packet	Source	Destination
Node Date	LIF	LIF
Loss		

node1-01		
6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-02_clus1
none		
6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-02_clus1
none		
node1-02		
6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-01_clus1
none		
6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-01_clus2
none		
.		
.		
.		

- b. Alternatively, you can use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node1-04
Getting addresses from network interface table...
Cluster node1-01_clus1 169.254.36.44 node1-01 e7a
Cluster node1-01_clus2 169.254.7.5 node1-01 e7b
Cluster node1-02_clus1 169.254.197.206 node1-02 e7a
Cluster node1-02_clus2 169.254.195.186 node1-02 e7b
Cluster node1-03_clus1 169.254.192.49 node1-03 e7a
Cluster node1-03_clus2 169.254.182.76 node1-03 e7b
Cluster node1-04_clus1 169.254.59.49 node1-04 e7a
Cluster node1-04_clus2 169.254.62.244 node1-04 e7b
Local = 169.254.59.49 169.254.62.244
Remote = 169.254.36.44 169.254.7.5 169.254.197.206
169.254.195.186 169.254.192.49 169.254.182.76
Cluster Vserver Id = 4294967293
Ping status:
.....
Basic connectivity succeeds on 12 path(s)
Basic connectivity fails on 0 path(s)
.....
Detected 9000 byte MTU on 12 path(s):
    Local 169.254.59.49 to Remote 169.254.182.76
    Local 169.254.59.49 to Remote 169.254.192.49
    Local 169.254.59.49 to Remote 169.254.195.186
    Local 169.254.59.49 to Remote 169.254.197.206
    Local 169.254.59.49 to Remote 169.254.36.44
    Local 169.254.59.49 to Remote 169.254.7.5
    Local 169.254.62.244 to Remote 169.254.182.76
    Local 169.254.62.244 to Remote 169.254.192.49
    Local 169.254.62.244 to Remote 169.254.195.186
    Local 169.254.62.244 to Remote 169.254.197.206
    Local 169.254.62.244 to Remote 169.254.36.44
    Local 169.254.62.244 to Remote 169.254.7.5
Larger than PMTU communication succeeds on 12 path(s)
RPC status:
6 paths up, 0 paths down (tcp check)
6 paths up, 0 paths down (udp check)
```

What's next?

After you've upgraded your RCF, you [verify the SSH configuration](#).

Verify your SSH configuration

If you are using the Ethernet Switch Health Monitor (CSHM) and log collection features, verify that SSH and SSH keys are enabled on the switches.

Steps

1. Verify that SSH is enabled:

```
(switch) show ssh server  
ssh version 2 is enabled
```

2. Verify that the SSH keys are enabled:

```
show ssh key
```

Show example

```
(switch)# show ssh key
```

```
rsa Keys generated:Thu May 15 15:09:55 2025
```

```
ssh-rsa
```

```
AAAAB3NzaC1yc2EAAAADAQABAAQgQDCQJPZk7OGhg0j1t0NWKylnI8R8zDpuMpU6KKA  
jPOCShTFpibeYQqxOPTCAKACkut8dduZmc3bY9DIOle0cKYQ8PgS2mG9ovQ0RJ56RUNh  
VNPdJuhXM4ckHoiVJxIAbHkbcw8rzawbkT6cNBUiZY3MrOMh0e0CnMRhh9we  
MOo/vQ==
```

```
bitcount:1024
```

```
fingerprint:
```

```
SHA256:TMUXFgyRC3EcIZEVbQ/P0elDByBCJizPJ1XKMkIXfPI
```

```
could not retrieve dsa key information
```

```
ecdsa Keys generated:Thu May 15 15:12:09 2025
```

```
ecdsa-sha2-nistp521
```

```
AAAAE2VjZHNhLXNoYTItbmlzdHA1MjEAAAABmlzdHA1MjEAAACFBADquZcNSDA/eLAa  
ItXyxVZxsSJSSE3u4et9B6+RLq162zTe/3A6JTCyBrkfrMhQt9QMQ7XrMqJGxLSinXhyU  
ClBxwQD/ZbkZueZHiFuYg5hKN97wUYvts+EwpG2mSVonxKKp  
atmtgu48BqKfZTc4LZYL5vgdh5uuktJ0Z8mYHt3xKPXsvw==
```

```
bitcount:521
```

```
fingerprint:
```

```
SHA256:K8LDx6L7sJjLFn8iubUhjt66uk8TYmXwnQKWVD04C1o
```

```
**
```

```
(switch)# show feature | include scpServer
```

```
scpServer 1 enabled
```

```
(switch)# show feature | include ssh
```

```
sshServer 1 enabled
```

```
(switch)#
```

What's next?

After you've verified your SSH configuration, you [configure switch health monitoring](#).

Reset the 9364D-GX2A switch to factory defaults

To reset the 9364D-GX2A switch to factory defaults, you must erase the 9364D-GX2A switch settings.

About this task

- You must be connected to the switch using the serial console.
- This task resets the configuration of the management network.

Steps

1. Erase the existing configuration:

```
write erase
```

```
(cs2)# write erase
```

```
Warning: This command will erase the startup-configuration.  
Do you wish to proceed anyway? (y/n) [n] y
```

2. Reload the switch software:

```
reload
```

```
(cs2)# reload
```

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

The system reboots and enters the configuration wizard. During the boot, if you receive the prompt “Abort Auto Provisioning and continue with normal setup? (yes/no)[n]”, you should respond **yes** to proceed.

Replace a Cisco Nexus 9364D-GX2A switch

Follow these steps to replace a defective Nexus 9364D-GX2A switch in a cluster network. This is a nondisruptive procedure (NDU).

Review requirements

Before performing the switch replacement, make sure that:

- You have verified the switch serial number to ensure that the correct switch is replaced.
- On the existing cluster and network infrastructure:
 - The existing cluster is verified as completely functional, with at least one fully connected cluster switch.
 - All cluster ports are up.
 - All cluster logical interfaces (LIFs) are up and on their home ports.
 - The ONTAP `cluster ping-cluster -node <node-name>` command must indicate that basic

connectivity and larger than PMTU communication are successful on all paths.

- On the Nexus 9364D-GX2A replacement switch:
 - Management network connectivity on the replacement switch is functional.
 - Console access to the replacement switch is in place.
 - The node connections are ports 1/1 through 1/62.
 - All Inter-Switch Link (ISL) ports is disabled on ports 1/63 and 1/64.
 - The desired reference configuration file (RCF) and NX-OS operating system image switch is loaded onto the switch.
 - Initial customization of the switch is complete, as detailed in [Configure the 9364D-GX2A cluster switch](#).

Any previous site customizations, such as STP, SNMP, and SSH, are copied to the new switch.

- You have executed the command for migrating a cluster LIF from the node where the cluster LIF is hosted.

Enable console logging

NetApp strongly recommends that you enable console logging on the devices that you are using and take the following actions when replacing your switch:

- Leave AutoSupport enabled during maintenance.
- Trigger a maintenance AutoSupport before and after maintenance to disable case creation for the duration of the maintenance. See this Knowledge Base article [SU92: How to suppress automatic case creation during scheduled maintenance windows](#) for further details.
- Enable session logging for any CLI sessions. For instructions on how to enable session logging, review the "Logging Session Output" section in this Knowledge Base article [How to configure PuTTY for optimal connectivity to ONTAP systems](#).

Replace the switch

About the examples

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

- The names of the existing Nexus 9364D-GX2A switches are cs1 and cs2.
- The name of the new Nexus 9364D-GX2A switch is newcs2.
- The node names are node1-01, node1-02, node1-03, and node1-04.
- The cluster LIF names are node1-01_clus1 and node1-01_clus2 for node1-01, node1-02_clus1 and node1-02_clus2 for node1-02, node1-03_clus1 and node1-03_clus2 for node1-03, and node1-04_clus1 and node1-04_clus2 for node1-04.
- The prompt for changes to all cluster nodes is cluster1::*>

About this task

The following procedure is based on the following cluster network topology:

Show example

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

Node: node1-01

Ignore

						Speed(Mbps)	Health
Health	Port	IPspace	Broadcast Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	-----
-----	e7a	Cluster	Cluster	up	9000	auto/10000	healthy
false	e7b	Cluster	Cluster	up	9000	auto/10000	healthy
false							

Node: node1-02

Ignore

						Speed(Mbps)	Health
Health	Port	IPspace	Broadcast Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	-----
-----	e7a	Cluster	Cluster	up	9000	auto/10000	healthy
false	e7b	Cluster	Cluster	up	9000	auto/10000	healthy
false							

Node: node1-03

Ignore

						Speed(Mbps)	Health
Health	Port	IPspace	Broadcast Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	----	----	-----	-----
-----	e7a	Cluster	Cluster	up	9000	auto/10000	healthy
false	e7b	Cluster	Cluster	up	9000	auto/10000	healthy
false							

Node: node1-04

Ignore

					Speed(Mbps)	Health
Health						
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status						Status
-----	-----	-----	-----	-----	-----	-----

e7a	Cluster	Cluster		up	9000	auto/10000
false						healthy
e7b	Cluster	Cluster		up	9000	auto/10000
false						healthy

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

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

Cluster				
	node1-01_clus1	up/up	169.254.209.69/16	node1-01
e7a	true			
	node1-01_clus2	up/up	169.254.49.125/16	node1-01
e7b	true			
	node1-02_clus1	up/up	169.254.47.194/16	node1-02
e7a	true			
	node1-02_clus2	up/up	169.254.19.183/16	node1-02
e7b	true			
.				
.				
.				

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

Node/	Local	Discovered		
Protocol	Port	Device (LLDP: ChassisID)	Interface	Platform
-----	-----	-----	-----	-----

node1-01/cdp				
	e10a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/3	N9K-
C9364D-GX2A				
	e10b	cs2 (FDOXXXXXXXXX)	Ethernet1/16/3	N9K-
C9364D-GX2A				
	e11a	cs1 (FLMXXXXXXXXX)	Ethernet1/16/4	N9K-

```

C9364D-GX2A
    e11b    cs2 (FDOXXXXXXXXX)      Ethernet1/16/4    N9K-
C9364D-GX2A
    e1a     cs1 (FLMXXXXXXXXX)      Ethernet1/16/1    N9K-
C9364D-GX2A
    e1b     cs2 (FDOXXXXXXXXX)      Ethernet1/16/1    N9K-
C9364D-GX2A
    .
    .
    .
    e7a     cs1 (FLMXXXXXXXXX)      Ethernet1/16/2    N9K-
C9364D-GX2A
    e7b     cs2 (FDOXXXXXXXXX)      Ethernet1/16/2    N9K-
C9364D-GX2A
    .
    .
    .

```

```
cs1# show cdp neighbors
```

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
 S - Switch, H - Host, I - IGMP, r - Repeater,
 V - VoIP-Phone, D - Remotely-Managed-Device,
 s - Supports-STP-Dispute

Device-ID ID	Local Intrfce	Hldtme	Capability	Platform	Port
Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform	
newcs2 (FDOXXXXXXXXX) Eth1/31	Eth1/63	179	R S I s	N9K-C9332D-GX2B	
newcs2 (FDOXXXXXXXXX) Eth1/32	Eth1/64	179	R S I s	N9K-C9332D-GX2B	
node1-01 e1a	Eth1/4/1	123	H	AFX-1K	
node1-01 e7a	Eth1/4/2	123	H	AFX-1K	
node1-01 e10a	Eth1/4/3	123	H	AFX-1K	
node1-01 e11a	Eth1/4/4	123	H	AFX-1K	
node1-02 e1a	Eth1/9/1	138	H	AFX-1K	
node1-02 e7a	Eth1/9/2	138	H	AFX-1K	
node1-02	Eth1/9/3	138	H	AFX-1K	

```

e10a
node1-02          Eth1/9/4          138      H          AFX-1K
e11a
node1-03          Eth1/15/1         138      H          AFX-1K
e1a
node1-03          Eth1/15/2         138      H          AFX-1K
e7a
node1-03          Eth1/15/3         138      H          AFX-1K
e10a
node1-03          Eth1/15/4         138      H          AFX-1K
e11a
node1-04          Eth1/16/1         173      H          AFX-1K
e1a
node1-04          Eth1/16/2         173      H          AFX-1K
e7a
node1-04          Eth1/16/3         173      H          AFX-1K
e10a
node1-04          Eth1/16/4         173      H          AFX-1K
e11a

```

Total entries displayed: 18

newcs2# **show cdp neighbors**

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
S - Switch, H - Host, I - IGMP, r - Repeater,
V - VoIP-Phone, D - Remotely-Managed-Device,
s - Supports-STP-Dispute

Device-ID Port ID	Local Intrfce	Hldtme	Capability	Platform
cs1(FDOXXXXXXXXX) Eth1/31	Eth1/63	179	R S I s	N9K-C9332D-GX2B
cs1(FDOXXXXXXXXX) Eth1/32	Eth1/64	179	R S I s	N9K-C9332D-GX2B
node1-01 e1a	Eth1/4/1	123	H	AFX-1K
node1-01 e7a	Eth1/4/2	123	H	AFX-1K
node1-01 e10a	Eth1/4/3	123	H	AFX-1K
node1-01 e11a	Eth1/4/4	123	H	AFX-1K
node1-02 e1a	Eth1/9/1	138	H	AFX-1K

node1-02	Eth1/9/2	138	H	AFX-1K
e7a				
node1-02	Eth1/9/3	138	H	AFX-1K
e10a				
node1-02	Eth1/9/4	138	H	AFX-1K
e11a				
node1-03	Eth1/15/1	138	H	AFX-1K
e1a				
node1-03	Eth1/15/2	138	H	AFX-1K
e7a				
node1-03	Eth1/15/3	138	H	AFX-1K
e10a				
node1-03	Eth1/15/4	138	H	AFX-1K
e11a				
node1-04	Eth1/16/1	173	H	AFX-1K
e1a				
node1-04	Eth1/16/2	173	H	AFX-1K
e7a				
node1-04	Eth1/16/3	173	H	AFX-1K
e10a				
node1-04	Eth1/16/4	173	H	AFX-1K
e11a				

Total entries displayed: 18

Step 1: Prepare for replacement

1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=xh
```

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. Install the appropriate RCF and image on the switch, newcs2, and make any necessary site preparations.

If necessary, verify, download, and install the appropriate versions of the RCF and NX-OS software for the new switch. If you have verified that the new switch is correctly set up and does not need updates to the RCF and NX-OS software, continue to step 2.

- a. Go to the *NetApp Cluster and Management Network Switches Reference Configuration File Description Page* on the NetApp Support Site.
- b. Click the link for the *Cluster Network and Management Network Compatibility Matrix*, and then note the required switch software version.

- c. Click your browser's back arrow to return to the Description page, click **CONTINUE**, accept the license agreement, and then go to the Download page.
 - d. Follow the steps on the Download page to download the correct RCF and NX-OS files for the version of ONTAP software you are installing.
3. On the new switch, log in as admin and shut down all of the ports that will be connected to the node cluster interfaces (ports 1/1 to 1/64).

If the switch that you are replacing is not functional and is powered down, go to Step 4. The LIFs on the cluster nodes should have already failed over to the other cluster port for each node.

Show example

```
newcs2# config
newcs2(config)# interface e1/1/1-4,e1/2/1-4,e1/3/1-4,e1/4/1-4,e1/5/1-4,e1/6/1-4,e1/7/1-4,e1/8/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/9/1-4,e1/10/1-4,e1/11/1-4,e1/12/1-4,e1/13/1-4,e1/14/1-4,e1/15/1-4,e1/16/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/17/1-4,e1/18/1-4,e1/19/1-4,e1/20/1-4,e1/21/1-4,e1/22/1-4,e1/23/1-4,e1/24/1-4
csnewcs21(config-if-range)# shutdown
newcs2(config)# interface e1/25/1-4,e1/26/1-4,e1/27/1-4,e1/28/1-4,e1/29/1-4,e1/30/1-4,e1/31/1-4,e1/32/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/33/1-4,e1/34/1-4,e1/35/1-4,e1/36/1-4,e1/37/1-4,e1/38/1-4,e1/39/1-4,e1/40/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/41/1-4,e1/42/1-4,e1/43/1-4,e1/44/1-4,e1/35/1-4,e1/46/1-4,e1/47/1-4,e1/48/1-4
newcs2(config-if-range)# shutdown
newcs2(config)# interface e1/49/1-4,e1/50/1-4,e1/51/1-4,e1/52/1-4,e1/53/1-4,e1/54/1-4,e1/55/1-4,e1/56/1-4
newcs2(config-if-range)# shutdown\
newcs2(config)# interface e1/57/1-4,e1/58/1-4,e1/59/1-4,e1/60/1-4,e1/61/1-4,e1/62/1-4
newcs2(config-if-range)# shutdown
newcs2(config-if-range)# exit
newcs2(config)# exit
```

4. Verify that all cluster LIFs have auto-revert enabled:

```
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	node1-01_clus1	true
Cluster	node1-01_clus2	true
Cluster	node1-02_clus1	true
Cluster	node1-02_clus2	true
Cluster	node1-03_clus1	true
Cluster	node1-03_clus2	true
Cluster	node1-04_clus1	true
Cluster	node1-04_clus2	true

8 entries were displayed.

5. Verify the connectivity of the remote cluster interfaces:

- You can use the `network interface check cluster-connectivity show` command to display the details of an accessibility check for cluster connectivity:

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

Show example

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

Packet		Source	Destination
Node	Date	LIF	LIF
Loss			

node1-01			
	6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-
02_clus1	none		
	6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-
02_clus2	none		
node1-02			
	6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-
01_clus1	none		
	6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-
01_clus2	none		
.			
.			
.			

- b. Alternatively, you can also use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 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 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 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)
```

Step 2: Configure cables and ports

1. Shut down the ISL ports 1/63 and 1/64 on the Nexus 9364D-GX2A switch cs1.

```
cs1# config
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/63-64
cs1(config-if-range)# shutdown
cs1(config-if-range)# exit
cs1(config)# exit
```

2. Remove all of the cables from the Nexus 9364D-GX2B cs2 switch, and then connect them to the same ports on the Nexus 9364D-GX2A newcs2 switch.
3. Bring up the ISLs ports 1/63 and 1/64 between the cs1 and newcs2 switches, and then verify the port channel operation status.

Port-Channel should indicate Po1(SU) and Member Ports should indicate Eth1/63(P) and Eth1/64(P).

Show example

This example enables ISL ports 1/63 and 1/64 and displays the port channel summary on switch cs1:

```
cs1# config
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/63-64
cs1(config-if-range)# no shutdown
cs1(config-if-range)# exit
cs1(config)# exit
cs1#
cs1(config-if-range)# show port-channel summary
Flags:  D - Down          P - Up in port-channel (members)
        I - Individual    H - Hot-standby (LACP only)
        s - Suspended     r - Module-removed
        b - BFD Session Wait
        S - Switched      R - Routed
        U - Up (port-channel)
        p - Up in delay-lacp mode (member)
        M - Not in use. Min-links not met

-----
-----
Group Port-          Type      Protocol  Member Ports
      Channel
-----
-----
11      Po1 (SU)      Eth      LACP      Eth1/63 (P)  Eth1/64 (P)
999      Po999 (SD)   Eth      NONE      --
```

4. Verify that port e7b is up on all nodes:

```
network port show ipspace Cluster
```

Show example

The output should be similar to the following:

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

Node: node1-01

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	----	----	-----	-----	
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node1-02

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	----	----	-----	-----	
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node1-03

Ignore

						Speed(Mbps)	Health
Health							
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	----	----	-----	-----	
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	

```

healthy false
e7b          Cluster      Cluster      up    9000  auto/100000
healthy false

Node: node1-04

Ignore

Speed(Mbps) Health
Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status
Status
-----
-----
e7a        Cluster      Cluster      up    9000  auto/100000
healthy false
e7b        Cluster      Cluster      up    9000  auto/100000
healthy false

8 entries were displayed.

```

5. On the same node you used in the previous step, revert the cluster LIF associated with the port in the previous step by using the network interface revert command.

Show example

In this example, LIF node1-01_clus2 on node1-01 is successfully reverted if the Home value is true and the port is e7b.

The following commands return LIF node1-01_clus2 on node1-01 to home port e7a and displays information about the LIFs on both nodes. Bringing up the first node is successful if the Is Home column is true for both cluster interfaces and they show the correct port assignments, in this example e7a and e7b on node1-01.

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

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

Cluster				
e7a	node1-01_clus1	up/up	169.254.209.69/16	node1-01
e7b	node1-01_clus2	up/up	169.254.49.125/16	node1-01
e7b	node1-02_clus1	up/up	169.254.47.194/16	node1-02
e7a	node1-02_clus2	up/up	169.254.19.183/16	node1-02
	.			
	.			
	.			

6. Display information about the nodes in a cluster:

```
cluster show
```

Show example

This example shows that the node health for node1 and node2 in this cluster is true:

```
cluster1::*> cluster show
```

Node	Health	Eligibility
-----	-----	-----
node1-01	false	true
node1-02	true	true
node1-03	true	true
node1-04	true	true

7. Verify that all physical cluster ports are up:

```
network port show ipspace Cluster
```

Show example

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

Node: node1-01

Ignore

						Speed(Mbps)	Health
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	----	----	-----		
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: node1-02

Ignore

						Speed(Mbps)	Health
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	----	----	-----		
-----	-----						
e7a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e7b	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

.
. .
. .

8. Verify the connectivity of the remote cluster interfaces:

- You can use the `network interface check cluster-connectivity show` command to display the details of an accessibility check for cluster connectivity:

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

Show example

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

Packet		Source	Destination
Node	Date	LIF	LIF
Loss			

node1-01			
	6/4/2025 03:13:33 -04:00	node1-01_clus2	node1-02_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-01_clus2	node1-02_clus2
none			
node1-02			
	6/4/2025 03:13:33 -04:00	node1-02_clus2	node1-01_clus1
none			
	6/4/2025 03:13:34 -04:00	node1-02_clus2	node1-01_clus2
none			
.			
.			
.			

- a. Alternatively, you can also use the `cluster ping-cluster -node <node-name>` command to check the connectivity:

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

Show example

```
cluster1::*> cluster ping-cluster -node local
Host is node2
Getting addresses from network interface table...
Cluster node1_clus1 169.254.209.69 node1 e0a
Cluster node1_clus2 169.254.49.125 node1 e0b
Cluster node2_clus1 169.254.47.194 node2 e0a
Cluster node2_clus2 169.254.19.183 node2 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 169.254.47.194 to Remote 169.254.209.69
Local 169.254.47.194 to Remote 169.254.49.125
Local 169.254.19.183 to Remote 169.254.209.69
Local 169.254.19.183 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)
```

Step 3: Verify the configuration

1. Verify the health of all the ports on the cluster.

a. Cluster ports

- i. Verify that cluster ports are up and healthy across all nodes in the cluster:

```
network port show ipspace Cluster
```

```
network interface show -vserver cluster
```

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

```
show cdp neighbors
```

Show example

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

```
Node: node1-01
```

```
Ignore
```

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

```
Node: node1-02
```

```
Ignore
```

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

```
Node: node1-03
```

```
Ignore
```

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	----	----	-----
-----	-----					
e7a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e7b	Cluster	Cluster		up	9000	auto/100000
healthy	false					

Node: node1-04

Ignore

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

e7a	Cluster	Cluster		up	9000
healthy	false				auto/100000
e7b	Cluster	Cluster		up	9000
healthy	false				auto/100000

cluster1::*> **network interface show -vserver cluster**

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

Cluster				
01	node1-01_clus1	up/up	169.254.209.69/16	node1-
	e7a	true		
01	node1-01_clus2	up/up	169.254.49.125/16	node1-
	e7b	true		
02	node1-02_clus1	up/up	169.254.47.194/16	node1-
	e7b	true		
02	node1-02_clus2	up/up	169.254.19.183/16	node1-
	e7a	false		
	.			
	.			
	.			

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

Node/	Local	Discovered	
Protocol	Port	Device (LLDP: ChassisID)	Interface
Platform			

node1-01/cdp			

```

          e10a    cs1 (FLMXXXXXXXXX)      Ethernet1/16/3
N9K-C9364D-GX2A
          e10b    cs2 (FDOXXXXXXXXX)      Ethernet1/16/3
N9K-C9364D-GX2A
          e11a    cs1 (FLMXXXXXXXXX)      Ethernet1/16/4
N9K-C9364D-GX2A
          e11b    cs2 (FDOXXXXXXXXX)      Ethernet1/16/4
N9K-C9364D-GX2A
          e1a     cs1 (FLMXXXXXXXXX)      Ethernet1/16/1
N9K-C9364D-GX2A
          e1b     cs2 (FDOXXXXXXXXX)      Ethernet1/16/1
N9K-C9364D-GX2A
          .
          .
          .
          e7a     cs1 (FLMXXXXXXXXX)      Ethernet1/16/2
N9K-C9364D-GX2A
          e7b     cs2 (FDOXXXXXXXXX)      Ethernet1/16/2
N9K-C9364D-GX2A
          .
          .
          .

```

cs1# **show cdp neighbors**

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,

V - VoIP-Phone, D - Remotely-Managed-Device, s - Supports-STP-Dispute

Device-ID	Local Intrfce	Hldtme	Capability	
Platform	Port ID			
newcs2 (FDOXXXXXXXXX)	Eth1/63	179	R S I s	N9K-
C9332D-GX2B	Eth1/31			
newcs2 (FDOXXXXXXXXX)	Eth1/64	179	R S I s	N9K-
C9332D-GX2B	Eth1/32			
node1-01	Eth1/4/1	123	H	AFX-1K
e1a				
node1-01	Eth1/4/2	123	H	AFX-1K
e7a				
node1-01	Eth1/4/3	123	H	AFX-1K
e10a				
node1-01	Eth1/4/4	123	H	AFX-1K
e11a				

node1-02	Eth1/9/1	138	H	AFX-1K
e1a				
node1-02	Eth1/9/2	138	H	AFX-1K
e7a				
node1-02	Eth1/9/3	138	H	AFX-1K
e10a				
node1-02	Eth1/9/4	138	H	AFX-1K
e11a				
node1-03	Eth1/15/1	138	H	AFX-1K
e1a				
node1-03	Eth1/15/2	138	H	AFX-1K
e7a				
node1-03	Eth1/15/3	138	H	AFX-1K
e10a				
node1-03	Eth1/15/4	138	H	AFX-1K
e11a				
node1-04	Eth1/16/1	173	H	AFX-1K
e1a				
node1-04	Eth1/16/2	173	H	AFX-1K
e7a				
node1-04	Eth1/16/3	173	H	AFX-1K
e10a				
node1-04	Eth1/16/4	173	H	AFX-1K
e11a				

Total entries displayed: 18

newcs2# **show cdp neighbors**

Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge

S - Switch, H - Host, I - IGMP, r - Repeater,

V - VoIP-Phone, D - Remotely-Managed-Device, s - Supports-STP-Dispute

Device-ID	Local Intrfce	Hldtme	Capability	Platform
Port ID				
cs1 (FDOXXXXXXXXX)	Eth1/63	179	R S I s	N9K-
C9332D-GX2B	Eth1/31			
cs1 (FDOXXXXXXXXX)	Eth1/64	179	R S I s	N9K-
C9332D-GX2B	Eth1/32			
node1-01	Eth1/4/1	123	H	AFX-1K
e1a				
node1-01	Eth1/4/2	123	H	AFX-1K

```

e7a
node1-01          Eth1/4/3          123      H          AFX-1K
e10a
node1-01          Eth1/4/4          123      H          AFX-1K
e11a
node1-02          Eth1/9/1          138      H          AFX-1K
e1a
node1-02          Eth1/9/2          138      H          AFX-1K
e7a
node1-02          Eth1/9/3          138      H          AFX-1K
e10a
node1-02          Eth1/9/4          138      H          AFX-1K
e11a
node1-03          Eth1/15/1         138      H          AFX-1K
e1a
node1-03          Eth1/15/2         138      H          AFX-1K
e7a
node1-03          Eth1/15/3         138      H          AFX-1K
e10a
node1-03          Eth1/15/4         138      H          AFX-1K
e11a
node1-04          Eth1/16/1         173      H          AFX-1K
e1a
node1-04          Eth1/16/2         173      H          AFX-1K
e7a
node1-04          Eth1/16/3         173      H          AFX-1K
e10a
node1-04          Eth1/16/4         173      H          AFX-1K
e11a

```

Total entries displayed: 18

b. HA ports

- i. Verify that all the HA ports are up with a healthy status:

```
ha interconnect status show -node <node-name>
```

Show example

```
cluster1::*> ha interconnect status show -node node1-01
(system ha interconnect status show)

Node: node1-01
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE

cluster1::*> ha interconnect status show -node node1-02
(system ha interconnect status show)

Node: node1-02
Link 0 Status: up
Link 1 Status: up
Is Link 0 Active: true
Is Link 1 Active: true
IC RDMA Connection: up
Slot: 0
Debug Firmware: no

Interconnect Port 0 :
Port Name: e1a-17
MTU: 4096
Link Information: ACTIVE

Interconnect Port 1 :
```

```
Port Name: e1b-18
MTU: 4096
Link Information: ACTIVE
```

```
.
.
.
```

c. Storage ports

- i. Verify that all the storage ports are up with a healthy status:

```
storage port show -port-type ENET
```

Show example

```
cluster1::*> storage port show -port-type ENET
```

Node	Port	Type	Mode	Speed (Gb/s)	State	Status

node1-01						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-02						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online
node1-03						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
node1-04						
	e10a	ENET	-	100	enabled	online
	e10b	ENET	-	100	enabled	online
	e11a	ENET	-	100	enabled	online
	e11b	ENET	-	100	enabled	online

```
16 entries were displayed.
```

d. **Storage shelf ports**

- i. Verify that all the storage shelf ports are up with a healthy status:

```
storage shelf port show
```

Show example

```
cluster1::*> storage shelf port show
```

Shelf	ID	Module	State	Internal?
-----	--	-----	-----	-----
1.1				
	0	A	connected	false
	1	A	connected	false
	2	A	connected	false
	3	A	connected	false
	4	A	connected	false
	5	A	connected	false
	6	A	connected	false
	7	A	connected	false
	8	B	connected	false
	9	B	connected	false
	10	B	connected	false
	11	B	connected	false
	12	B	connected	false
	13	B	connected	false
	14	B	connected	false
	15	B	connected	false

```
16 entries were displayed.
```

- ii. Verify the connection status of all the storage shelf ports:

```
storage shelf port show -fields remote-device,remote-  
port,connector-state
```

Show example

```
cluster1::*> storage shelf port show -fields remote-  
device,remote-port,connector-state
```

shelf	id	connector-state	remote-port	remote-device
1.1	0	connected	Ethernet1/17/1	CX9332D-cs1
1.1	1	connected	Ethernet1/15/1	CX9364D-cs1
1.1	2	connected	Ethernet1/17/2	CX9332D-cs1
1.1	3	connected	Ethernet1/15/2	CX9364D-cs1
1.1	4	connected	Ethernet1/17/3	CX9332D-cs1
1.1	5	connected	Ethernet1/15/3	CX9364D-cs1
1.1	6	connected	Ethernet1/17/4	CX9332D-cs1
1.1	7	connected	Ethernet1/15/4	CX9364D-cs1
1.1	8	connected	Ethernet1/19/1	CX9332D-cs1
1.1	9	connected	Ethernet1/17/1	CX9364D-cs1
1.1	10	connected	Ethernet1/19/2	CX9332D-cs1
1.1	11	connected	Ethernet1/17/2	CX9364D-cs1
1.1	12	connected	Ethernet1/19/3	CX9332D-cs1
1.1	13	connected	Ethernet1/17/3	CX9364D-cs1
1.1	14	connected	Ethernet1/19/4	CX9332D-cs1
1.1	15	connected	Ethernet1/17/4	CX9364D-cs1

16 entries were displayed.

2. If you suppressed automatic case creation, re-enable it by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=END
```

What's next?

After you've replaced your switches, you [configure switch health monitoring](#).

Copyright information

Copyright © 2026 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.