



Cisco Nexus 9336C-FX2

Cluster and storage switches

NetApp
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Cisco Nexus 9336C-FX2

Overview

Overview of installation and configuration for Cisco Nexus 9336C-FX2 storage switches

The Cisco Nexus 9336C-FX2 storage switch is part of the Cisco Nexus 9000 platform and can be installed in a NetApp system cabinet. Storage switches allow you to route data between servers and storage arrays in a Storage Area Network (SAN).

Initial configuration overview

To initially configure a Cisco Nexus 9336C-FX2 switch on systems running ONTAP, follow these steps:

1. [Complete cabling worksheet.](#)
2. [Install the switch.](#)
3. [Configure switch.](#)
4. [Install switch in NetApp cabinet.](#)

Depending on your configuration, you can install the Cisco Nexus 9336C-FX2 switch and pass-through panel in a NetApp cabinet with the standard brackets that are included with the switch.

5. [Prepare to install NX-OS and RCF.](#)
6. [Install the NX-OS software.](#)
7. [Install the RCF config file.](#)

Install the RCF after setting up the Nexus 9336C-FX2 switch for the first time. You can also use this procedure to upgrade your RCF version.

Additional information

Before you begin installation or maintenance, be sure to review the following:

- [Configuration requirements](#)
- [Components and part numbers](#)
- [Required documentation](#)
- [Smart Call Home requirements](#)

Configuration requirements for Cisco Nexus 9336C-FX2 storage switches

For Cisco Nexus 9336C-FX2 switch installation and maintenance, be sure to review configuration and network requirements.

ONTAP support

From ONTAP 9.9.1, you can use Cisco Nexus 9336C-FX2 switches to combine storage and cluster

functionality into a shared switch configuration.

If you want to build ONTAP clusters with more than two nodes, you need two supported network switches.

Configuration requirements

For configuration, you need the appropriate number and type of cables and cable connectors for your switches.

Depending on the type of switch you are initially configuring, you need to connect to the switch console port with the included console cable; you also need to provide specific network information.

Network requirements

You need the following network information for all switch configurations.

- IP subnet for management network traffic
- Host names and IP addresses for each of the storage system controllers and all applicable switches
- Most storage system controllers are managed through the e0M interface by connecting to the Ethernet service port (wrench icon). On AFF A800 and AFF A700s systems, the e0M interface uses a dedicated Ethernet port.
- Refer to the [Hardware Universe](#) for the latest information.

For more information about the initial configuration of your switch, see the following guide: [Cisco Nexus 9336C-FX2 Installation and Upgrade Guide](#).

Components and part numbers for Cisco Nexus 9336C-FX2 storage switches

For Cisco Nexus 9336C-FX2 switch installation and maintenance, be sure to review the list of components and part numbers.

The following table lists the part number and description for the 9336C-FX2 switch, fans, and power supplies:

Part number	Description
X190200-CS-PE	N9K-9336C-FX2, CS, PTSX, 36PT10/25/40/100GQSFP28
X190200-CS-PI	N9K-9336C-FX2, CS, PSIN, 36PT10/25/40/100GQSFP28
X190210-FE-PE	N9K-9336C, FTE, PTSX, 36PT10/25/40/100GQSFP28
X190210-FE-PI	N9K-9336C, FTE, PSIN, 36PT10/25/40/100GQSFP28
X190002	Accessory Kit X190001/X190003
X-NXA-PAC-1100W-PE2	N9K-9336C AC 1100W PSU - Port side exhaust airflow
X-NXA-PAC-1100W-PI2	N9K-9336C AC 1100W PSU - Port side Intake airflow
X-NXA-FAN-65CFM-PE	N9K-9336C 65CFM, Port side exhaust airflow

Part number	Description
X-NXA-FAN-65CFM-PI	N9K-9336C 65CFM, Port side intake airflow

Documentation requirements for Cisco Nexus 9336C-FX2 storage switches

For Cisco Nexus 9336C-FX2 switch installation and maintenance, be sure to review specific switch and controller documentation to set up your Cisco 9336-FX2 switches and ONTAP cluster.

Switch documentation

To set up the Cisco Nexus 9336C-FX2 switches, you need the following documentation from the [Cisco Nexus 9000 Series Switches Support](#) page:

Document title	Description
<i>Nexus 9000 Series Hardware Installation Guide</i>	Provides detailed information about site requirements, switch hardware details, and installation options.
<i>Cisco Nexus 9000 Series Switch Software Configuration Guides</i> (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.
<i>Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide</i> (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.
<i>Cisco Nexus 9000 Series NX-OS Command Reference Master Index</i>	Provides links to the various command references provided by Cisco.
<i>Cisco Nexus 9000 MIBs Reference</i>	Describes the Management Information Base (MIB) files for the Nexus 9000 switches.
<i>Nexus 9000 Series NX-OS System Message Reference</i>	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.
<i>Cisco Nexus 9000 Series NX-OS Release Notes</i> (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
Controller-specific <i>Installation and Setup Instructions</i>	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.

Rail kit and cabinet documentation

To install a Cisco 9336-FX2 switch in a NetApp cabinet, see the following hardware documentation.

Name	Description
42U System Cabinet, Deep Guide	Describes the FRUs associated with the 42U system cabinet, and provides maintenance and FRU replacement instructions.
Install a Cisco 9336-FX2 switch in a NetApp Cabinet	Describes how to install a Cisco Nexus 9336C-FX2 switch in a four-post NetApp cabinet.

Smart Call Home requirements

To use Smart Call Home feature, review the following guidelines.

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. 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.

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

- 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

Install the 9336C-FX2 storage switch

Follow this procedure to install the Cisco Nexus 9336C-FX2 storage switch.

What you'll need

- 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.
- Applicable licenses, network and configuration information, and cables.
- Completed [cabling worksheets](#).
- 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 documentation. See [Required documentation](#) for more information.

Steps

1. Rack the cluster network and management network switches and controllers.

If you are installing your...	Then...
Cisco Nexus 9336C-FX2 in a NetApp system cabinet	See Install switch in NetApp cabinet for instructions to install the switch in a NetApp cabinet.
Equipment in a Telco rack	See the procedures provided in the switch hardware installation guides and the NetApp installation and setup instructions.

2. Cable the cluster network and management network switches to the controllers using the completed cabling worksheets.
3. Power on the cluster network and management network switches and controllers.

What's next?

Go to [Configure Cisco Nexus 9336C-FX2 storage switch](#).

Configure the 9336C-FX2 storage switch

Follow this procedure to configure the Cisco Nexus 9336C-FX2 switch.

What you'll need

- 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.
- Applicable licenses, network and configuration information, and cables.
- Completed [cabling worksheets](#).



- 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 documentation. See [Required documentation](#) for more information.

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.	The switch name 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.

Prompt	Response
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. <div>  <p>SSH is recommended when using Cluster Switch Health Monitor (CSHM) for its log collection features. SSHv2 is also recommended for enhanced security.</p> </div>
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. <div>  <p>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.</p> </div>

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?

Optionally, you can [install a Cisco Nexus 9336C-FX2 switch in a NetApp cabinet](#). Otherwise, go to [Prepare to install NX-OS and RCF](#).

Install a Cisco Nexus 9336C-FX2 switch in a NetApp cabinet

Depending on your configuration, you might need to install the Cisco Nexus 9336C-FX2 switch and pass-through panel in a NetApp cabinet. Standard brackets are included with the switch.

What you'll need

- For each switch, you must supply the eight 10-32 or 12-24 screws and clip nuts to mount the brackets and slider rails to the front and rear cabinet posts.
- You must use the Cisco standard rail kit to install the switch in a NetApp cabinet.



The jumper cords are not included with the pass-through kit and should be included with your switches. If they were not shipped with the switches, you can order them from NetApp (part number X1558A-R6).

Required documentation

Review the initial preparation requirements, kit contents, and safety precautions in the [Cisco Nexus 9000 Series Hardware Installation Guide](#).

Steps

1. Install the pass-through blanking panel in the NetApp cabinet.

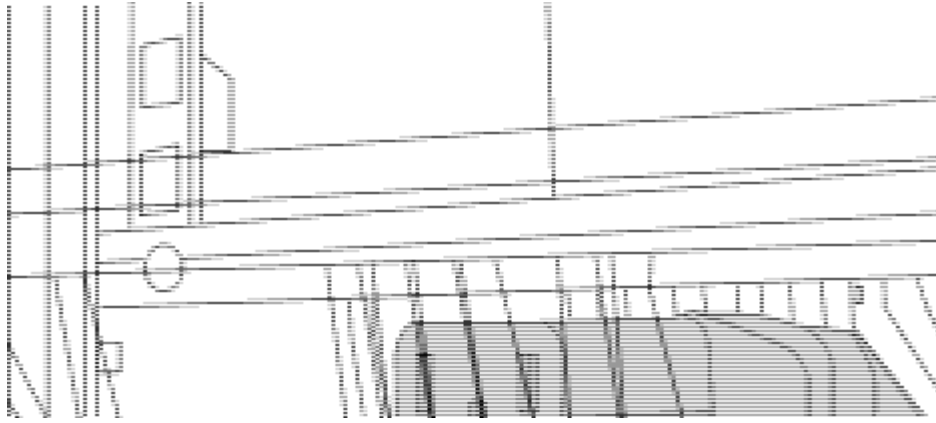
The pass-through panel kit is available from NetApp (part number X8784-R6).

The NetApp pass-through panel kit contains the following hardware:

- One pass-through blanking panel
- Four 10-32 x .75 screws
- Four 10-32 clip nuts
 - a. Determine the vertical location of the switches and blanking panel in the cabinet.

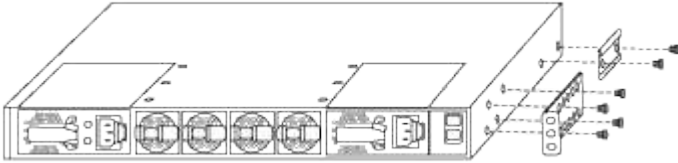
In this procedure, the blanking panel will be installed in U40.

- b. Install two clip nuts on each side in the appropriate square holes for front cabinet rails.
- c. Center the panel vertically to prevent intrusion into adjacent rack space, and then tighten the screws.
- d. Insert the female connectors of both 48-inch jumper cords from the rear of the panel and through the brush assembly.

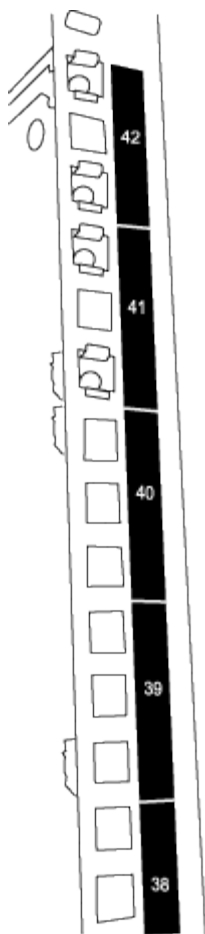


(1) Female connector of the jumper cord.

2. Install the rack-mount brackets on the Nexus 9336C-FX2 switch chassis.
 - a. Position a front rack-mount bracket on one side of the switch chassis so that the mounting ear is aligned with the chassis faceplate (on the PSU or fan side), and then use four M4 screws to attach the bracket to the chassis.



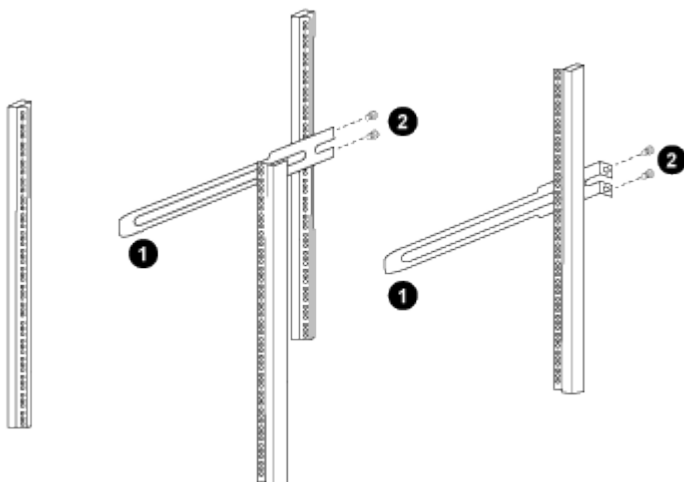
- b. Repeat step 2a with the other front rack-mount bracket on the other side of the switch.
 - c. Install the rear rack-mount bracket on the switch chassis.
 - d. Repeat step 2c with the other rear rack-mount bracket on the other side of the switch.
3. Install the clip nuts in the square hole locations for all four IEA posts.



The two 9336C-FX2 switches will always be mounted in the top 2U of the cabinet RU41 and 42.

4. Install the slider rails in the cabinet.

- a. Position the first slider rail at the RU42 mark on the back side of the rear left post, insert screws with the matching thread type, and then tighten the screws with your fingers.



(1) As you gently slide the slider rail, align it to the screw holes in the rack.

(2) Tighten the screws of the slider rails to the cabinet posts.

- b. Repeat step [4a](#) for the right side rear post.

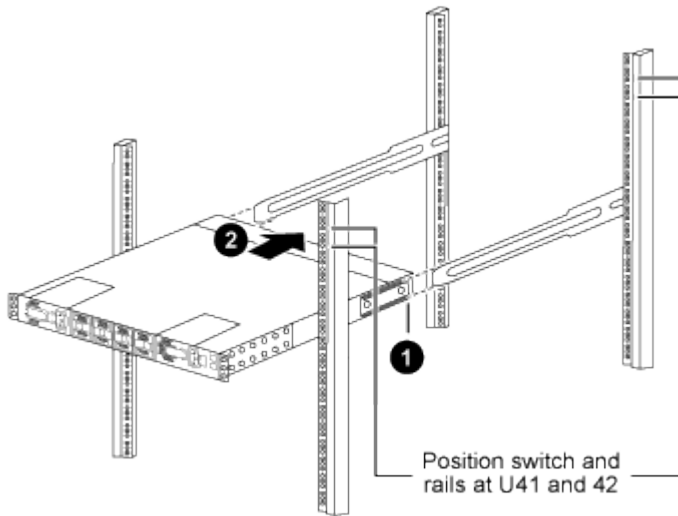
c. Repeat steps 4a and 4b at the RU41 locations on the cabinet.

5. Install the switch in the cabinet.



This step requires two people: one person to support the switch from the front and another to guide the switch into the rear slider rails.

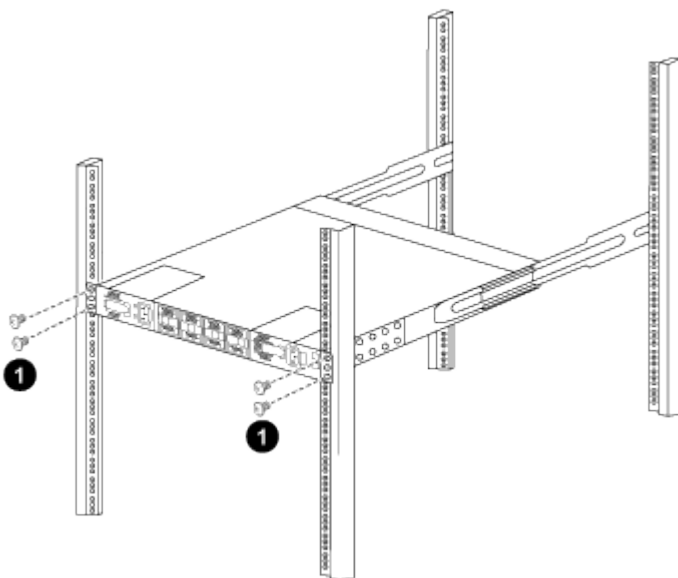
a. Position the back of the switch at RU41.



(1) As the chassis is pushed toward the rear posts, align the two rear rack-mount guides with the slider rails.

(2) Gently slide the switch until the front rack-mount brackets are flush with the front posts.

b. Attach the switch to the cabinet.



(1) With one person holding the front of the chassis level, the other person should fully tighten the four rear screws to the cabinet posts.

c. With the chassis now supported without assistance, fully tighten the front screws to the posts.

d. Repeat steps [5a](#) through [5c](#) for the second switch at the RU42 location.



By using the fully installed switch as a support, it is not necessary to hold the front of the second switch during the installation process.

6. When the switches are installed, connect the jumper cords to the switch power inlets.

7. Connect the male plugs of both jumper cords to the closest available PDU outlets.



To maintain redundancy, the two cords must be connected to different PDUs.

8. Connect the management port on each 9336C-FX2 switch to either of the management switches (if ordered) or connect them directly to your management network.

The management port is the upper-right port located on the PSU side of the switch. The CAT6 cable for each switch needs to be routed through the pass-through panel after the switches are installed to connect to the management switches or management network.

Configure software

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

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

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

Install the RCF after setting up the Nexus 9336C-FX2 switch for the first time. You can also use this procedure to upgrade your RCF version.

Prepare to install NX-OS software and RCF

Before you install the NX-OS software and the Reference Configuration File (RCF), follow this procedure.

About the examples

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

- The names of the two Cisco switches are cs1 and cs2.
- The node names are cluster1-01 and cluster1-02.
- The cluster LIF names are cluster1-01_clus1 and cluster1-01_clus2 for cluster1-01 and cluster1-02_clus1 and cluster1-02_clus2 for cluster1-02.
- The `cluster1::*>` prompt indicates the name of the cluster.

About this task

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

Steps

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

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



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

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

```
set -privilege advanced
```

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

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

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

Show example

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

Node/ Protocol Platform	Local Port	Discovered Device (LLDP: ChassisID)	Interface	
cluster1-02/cdp	e0a	cs1	Eth1/2	N9K-
C9336C	e0b	cs2	Eth1/2	N9K-
C9336C				
cluster1-01/cdp	e0a	cs1	Eth1/1	N9K-
C9336C	e0b	cs2	Eth1/1	N9K-
C9336C				

```
4 entries were displayed.
```

4. Check the administrative or operational status of each cluster interface.
 - a. Display the network port attributes:

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

Show example

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

Node: cluster1-02

Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status
-----
e0a        Cluster      Cluster      up    9000  auto/10000
healthy
e0b        Cluster      Cluster      up    9000  auto/10000
healthy

Node: cluster1-01

Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status
-----
e0a        Cluster      Cluster      up    9000  auto/10000
healthy
e0b        Cluster      Cluster      up    9000  auto/10000
healthy

4 entries were displayed.
```

b. Display information about the LIFs:

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


Show example

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

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

Cluster					
		cluster1-01_clus1	up/up	169.254.209.69/16	
cluster1-01		e0a true			
		cluster1-01_clus2	up/up	169.254.49.125/16	
cluster1-01		e0b true			
		cluster1-02_clus1	up/up	169.254.47.194/16	
cluster1-02		e0a true			
		cluster1-02_clus2	up/up	169.254.19.183/16	
cluster1-02		e0b true			

4 entries were displayed.

5. Ping the remote cluster LIFs:

```
cluster ping-cluster -node node-name
```

Show example

```
cluster1::*> cluster ping-cluster -node cluster1-02
Host is cluster1-02
Getting addresses from network interface table...
Cluster cluster1-01_clus1 169.254.209.69 cluster1-01      e0a
Cluster cluster1-01_clus2 169.254.49.125 cluster1-01      e0b
Cluster cluster1-02_clus1 169.254.47.194 cluster1-02      e0a
Cluster cluster1-02_clus2 169.254.19.183 cluster1-02      e0b
Local = 169.254.47.194 169.254.19.183
Remote = 169.254.209.69 169.254.49.125
Cluster Vserver Id = 4294967293
Ping status:

Basic connectivity succeeds on 4 path(s)
Basic connectivity fails on 0 path(s)

Detected 9000 byte MTU on 4 path(s):
    Local 169.254.19.183 to Remote 169.254.209.69
    Local 169.254.19.183 to Remote 169.254.49.125
    Local 169.254.47.194 to Remote 169.254.209.69
    Local 169.254.47.194 to Remote 169.254.49.125
Larger than PMTU communication succeeds on 4 path(s)
RPC status:
2 paths up, 0 paths down (tcp check)
2 paths up, 0 paths down (udp check)
```

6. Verify that the auto-revert command is enabled on all cluster LIFs:

```
network interface show -vserver Cluster -fields auto-revert
```

Show example

```
cluster1::*> network interface show -vserver Cluster -fields auto-revert
```

Vserver	Logical Interface	Auto-revert
Cluster	cluster1-01_clus1	true
	cluster1-01_clus2	true
	cluster1-02_clus1	true
	cluster1-02_clus2	true

4 entries were displayed.

7. For ONTAP 9.8 and later, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands:

```
system switch ethernet log setup-password and system switch ethernet log enable-collection
```

Show example

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs1
RSA key fingerprint is
e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs2
RSA key fingerprint is
57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system switch ethernet log enable-collection

Do you want to enable cluster log collection for all nodes in the
cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*>
```



If any of these commands return an error, contact NetApp support.

8. For ONTAP releases 9.5P16, 9.6P12, and 9.7P10 and later patch releases, enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands:

`system cluster-switch log setup-password` and `system cluster-switch log enable-`

collection

Show example

```
cluster1::*> system cluster-switch log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs1
RSA key fingerprint is
e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system cluster-switch log setup-password

Enter the switch name: cs2
RSA key fingerprint is
57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system cluster-switch log enable-collection

Do you want to enable cluster log collection for all nodes in the
cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*>
```



If any of these commands return an error, contact NetApp support.

What's next?

[Install the NX-OS software.](#)

Install the NX-OS software

Follow this procedure to install the NX-OS software on the Nexus 9336C-FX2 cluster switch.

Before you begin, complete the procedure in [Prepare to install NX-OS and RCF](#).

Review requirements

What you'll need

- A current backup of the switch configuration.
- A fully functioning cluster (no errors in the logs or similar issues).
- [Cisco Ethernet switch page](#). Consult the switch compatibility table for the supported ONTAP and NX-OS versions.
- Appropriate software and upgrade guides available on the Cisco web site for the Cisco switch upgrade and downgrade procedures. See [Cisco Nexus 9000 Series Switches](#).

About the examples

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

- The names of the two Cisco switches are cs1 and cs2.
- The node names are cluster1-01, cluster1-02, cluster1-03, and cluster1-04.
- The cluster LIF names are cluster1-01_clus1, cluster1-01_clus2, cluster1-02_clus1, cluster1-02_clus2 , cluster1-03_clus1, cluster1-03_clus2, cluster1-04_clus1, and cluster1-04_clus2.
- The `cluster1::*>` prompt indicates the name of the cluster.

Install the software

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

Steps

1. Connect the cluster switch to the management network.
2. Use the ping command to verify connectivity to the server hosting the NX-OS software and the RCF.

Show example

This example verifies that the switch can reach the server at IP address 172.19.2.1:

```
cs2# ping 172.19.2.1
Pinging 172.19.2.1 with 0 bytes of data:

Reply From 172.19.2.1: icmp_seq = 0. time= 5910 usec.
```

3. Copy the NX-OS software and EPLD images to the Nexus 9336C-FX2 switch.

Show example

```
cs2# copy sftp: bootflash: vrf management
Enter source filename: /code/nxos.9.3.5.bin
Enter hostname for the sftp server: 172.19.2.1
Enter username: user1

Outbound-ReKey for 172.19.2.1:22
Inbound-ReKey for 172.19.2.1:22
user1@172.19.2.1's password:
sftp> progress
Progress meter enabled
sftp> get /code/nxos.9.3.5.bin /bootflash/nxos.9.3.5.bin
/code/nxos.9.3.5.bin 100% 1261MB 9.3MB/s 02:15
sftp> exit
Copy complete, now saving to disk (please wait)...
Copy complete.

cs2# copy sftp: bootflash: vrf management

Enter source filename: /code/n9000-epld.9.3.5.img
Enter hostname for the sftp server: 172.19.2.1
Enter username: user1

Outbound-ReKey for 172.19.2.1:22
Inbound-ReKey for 172.19.2.1:22
user1@172.19.2.1's password:
sftp> progress
Progress meter enabled
sftp> get /code/n9000-epld.9.3.5.img /bootflash/n9000-
epld.9.3.5.img
/code/n9000-epld.9.3.5.img 100% 161MB 9.5MB/s 00:16
sftp> exit
Copy complete, now saving to disk (please wait)...
Copy complete.
```

4. 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) 2002-2020, Cisco and/or its affiliates.
All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under their
own
licenses, such as open source. This software is provided "as is,"
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limited to warranties of merchantability and fitness for a
particular purpose.
Certain components of this software are licensed under
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GNU General Public License (GPL) version 3.0 or the GNU
Lesser General Public License (LGPL) Version 2.1 or
Lesser General Public License (LGPL) Version 2.0.
A copy of each such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://opensource.org/licenses/gpl-3.0.html and
http://www.opensource.org/licenses/lgpl-2.1.php and
http://www.gnu.org/licenses/old-licenses/library.txt.
```

Software

```
  BIOS: version 08.38
  NXOS: version 9.3(4)
  BIOS compile time: 05/29/2020
  NXOS image file is: bootflash:///nxos.9.3.4.bin
  NXOS compile time: 4/28/2020 21:00:00 [04/29/2020 02:28:31]
```

Hardware

```
  cisco Nexus9000 C9336C-FX2 Chassis
  Intel(R) Xeon(R) CPU E5-2403 v2 @ 1.80GHz with 8154432 kB of
memory.
  Processor Board ID FOC20291J6K

  Device name: cs2
  bootflash: 53298520 kB
  Kernel uptime is 0 day(s), 0 hour(s), 3 minute(s), 42 second(s)
```



```
Last reset at 157524 usecs after Mon Nov  2 18:32:06 2020
Reason: Reset Requested by CLI command reload
System version: 9.3(4)
Service:
```

```
plugin
Core Plugin, Ethernet Plugin
```

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

```
cs2#
```

5. Install the NX-OS image.

Installing the image file causes it to be loaded every time the switch is rebooted.

Show example

```
cs2# install all nxos bootflash:nxos.9.3.5.bin
```

```
Installer will perform compatibility check first. Please wait.
```

```
Installer is forced disruptive
```

```
Verifying image bootflash:/nxos.9.3.5.bin for boot variable "nxos".
```

```
[#####] 100% -- SUCCESS
```

```
Verifying image type.
```

```
[#####] 100% -- SUCCESS
```

```
Preparing "nxos" version info using image bootflash:/nxos.9.3.5.bin.
```

```
[#####] 100% -- SUCCESS
```

```
Preparing "bios" version info using image bootflash:/nxos.9.3.5.bin.
```

```
[#####] 100% -- SUCCESS
```

```
Performing module support checks.
```

```
[#####] 100% -- SUCCESS
```

```
Notifying services about system upgrade.
```

```
[#####] 100% -- SUCCESS
```

```
Compatibility check is done:
```

Module	bootable	Impact	Install-type	Reason
1	yes	disruptive	reset	default upgrade is not hitless

```
Images will be upgraded according to following table:
```

Module	Image	Running-Version(pri:alt	New-
Version		Upg-Required	
1	nxos	9.3(4)	9.3(5)
yes			
1	bios	v08.37(01/28/2020):v08.23(09/23/2015)	
v08.38(05/29/2020)		yes	

```
Switch will be reloaded for disruptive upgrade.

Do you want to continue with the installation (y/n)? [n] y

Install is in progress, please wait.

Performing runtime checks.
[#####] 100% -- SUCCESS

Setting boot variables.
[#####] 100% -- SUCCESS

Performing configuration copy.
[#####] 100% -- SUCCESS

Module 1: Refreshing compact flash and upgrading
bios/loader/bootrom.
Warning: please do not remove or power off the module at this time.
[#####] 100% -- SUCCESS

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

6. Verify the new version of NX-OS software after the switch has rebooted:

```
show version
```

Show example

```
cs2# show version
```

```
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (C) 2002-2020, Cisco and/or its affiliates.
All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under their
own
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 05.33
  NXOS: version 9.3(5)
  BIOS compile time:  09/08/2018
  NXOS image file is: bootflash:///nxos.9.3.5.bin
  NXOS compile time:  11/4/2018 21:00:00 [11/05/2018 06:11:06]
```

Hardware

```
  cisco Nexus9000 C9336C-FX2 Chassis
  Intel(R) Xeon(R) CPU E5-2403 v2 @ 1.80GHz with 8154432 kB of
memory.
  Processor Board ID FOC20291J6K

  Device name: cs2
  bootflash: 53298520 kB
  Kernel uptime is 0 day(s), 0 hour(s), 3 minute(s), 42 second(s)
```

```
Last reset at 277524 usecs after Mon Nov  2 22:45:12 2020
```

```
Reason: Reset due to upgrade
```

```
System version: 9.3(4)
```

```
Service:
```

```
plugin
```

```
Core Plugin, Ethernet Plugin
```

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

7. Upgrade the EPLD image and reboot the switch.

Show example



```
cs2# show version module 1 epld
```

EPLD Device	Version
MI FPGA	0x7
IO FPGA	0x17
MI FPGA2	0x2
GEM FPGA	0x2
GEM FPGA	0x2
GEM FPGA	0x2
GEM FPGA	0x2

```
cs2# install epld bootflash:n9000-epld.9.3.5.img module 1
```

Compatibility check:

Module	Type	Upgradable	Impact	Reason
1	SUP	Yes	disruptive	Module Upgradable

Retrieving EPLD versions.... Please wait.

Images will be upgraded according to following table:

Module	Type	EPLD	Running-Version	New-Version	Upg-Required
1	SUP	MI FPGA	0x07	0x07	No
1	SUP	IO FPGA	0x17	0x19	Yes
1	SUP	MI FPGA2	0x02	0x02	No

The above modules require upgrade.

The switch will be reloaded at the end of the upgrade

Do you want to continue (y/n) ? [n] y

Proceeding to upgrade Modules.

Starting Module 1 EPLD Upgrade

Module 1 : IO FPGA [Programming] : 100.00% (64 of 64 sectors)

Module 1 EPLD upgrade is successful.

Module	Type	Upgrade-Result
1	SUP	Success

EPLDs upgraded.

Module 1 EPLD upgrade is successful.

8. 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

9. Repeat steps 1 to 8 to install the NX-OS software on switch cs1.

What's next?

[Install RCF config file.](#)

Install the Reference Configuration File (RCF)

You can install the RCF after setting up the Nexus 9336C-FX2 switch for the first time. You can also use this procedure to upgrade your RCF version.

Before you begin, complete the procedure in [Prepare to install NX-OS and RCF](#).

Unresolved directive in switch-cisco-9336c-fx2-storage/install-nxos-rcf-9336c-storage.adoc - include::.../_include/install-rcf-software-9336c.adoc[]

Ethernet Switch Health Monitoring log collection

You can use the log collection feature to collect switch-related log files in ONTAP.

+

The Ethernet switch health monitor (CSHM) is responsible for ensuring the operational health of Cluster and Storage network switches and collecting switch logs for debugging purposes. This procedure guides you through the process of setting up and starting the collection of detailed **Support** logs from the switch and starts an hourly collection of **Periodic** data that is collected by AutoSupport.

Before you begin

- Verify that you have set up your environment using the 9336C-FX2 cluster switch **CLI**.
- Switch health monitoring must be enabled for the switch. Verify this by ensuring the `Is Monitored:` field is set to **true** in the output of the `system switch ethernet show` command.

Steps

1. Create a password for the Ethernet switch health monitor log collection feature:

```
system switch ethernet log setup-password
```

Show example

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs1
Would you like to specify a user other than admin for log
collection? {y|n}: n

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs2
Would you like to specify a user other than admin for log
collection? {y|n}: n

Enter the password: <enter switch password>
Enter the password again: <enter switch password>
```

2. To start log collection, run the following command, replacing DEVICE with the switch used in the previous command. This starts both types of log collection: the detailed **Support** logs and an hourly collection of **Periodic** data.

```
system switch ethernet log modify -device <switch-name> -log-request true
```

Show example

```
cluster1::*> system switch ethernet log modify -device cs1 -log  
-request true
```

```
Do you want to modify the cluster switch log collection  
configuration? {y|n}: [n] y
```

```
Enabling cluster switch log collection.
```

```
cluster1::*> system switch ethernet log modify -device cs2 -log  
-request true
```

```
Do you want to modify the cluster switch log collection  
configuration? {y|n}: [n] y
```

```
Enabling cluster switch log collection.
```

Wait for 10 minutes and then check that the log collection completes:

```
system switch ethernet log show
```



If any of these commands return an error or if the log collection does not complete, contact NetApp support.

Troubleshooting

If you encounter any of the following error statuses reported by the log collection feature (visible in the output of `system switch ethernet log show`), try the corresponding debug steps:

Log collection error status	Resolution
RSA keys not present	Regenerate ONTAP SSH keys. Contact NetApp support.
switch password error	Verify credentials, test SSH connectivity, and regenerate ONTAP SSH keys. Review the switch documentation or contact NetApp support for instructions.
ECDSA keys not present for FIPS	If FIPS mode is enabled, ECDSA keys need to be generated on the switch before retrying.
pre-existing log found	Remove the previous log collection file on the switch.

switch dump log error	Ensure the switch user has log collection permissions. Refer to the prerequisites above.
------------------------------	--

Configure SNMPv3

Follow this procedure to configure SNMPv3, which supports Ethernet switch health monitoring (CSHM).

About this task

The following commands configure an SNMPv3 username on Cisco 9336C-FX2 switches:

- For **no authentication**:

```
snmp-server user SNMPv3_USER NoAuth
```
- For **MD5/SHA authentication**:

```
snmp-server user SNMPv3_USER auth [md5|sha] AUTH-PASSWORD
```
- For **MD5/SHA authentication with AES/DES encryption**:

```
snmp-server user SNMPv3_USER AuthEncrypt auth [md5|sha] AUTH-PASSWORD priv  
aes-128 PRIV-PASSWORD
```

The following command configures an SNMPv3 username on the ONTAP side:

```
cluster1::*> security login create -user-or-group-name SNMPv3_USER -application  
snmp -authentication-method usm -remote-switch-ipaddress ADDRESS
```

The following command establishes the SNMPv3 username with CSHM:

```
cluster1::*> system switch ethernet modify -device DEVICE -snmp-version SNMPv3  
-community-or-username SNMPv3_USER
```

Steps

1. Set up the SNMPv3 user on the switch to use authentication and encryption:

```
show snmp user
```

Show example

```
(sw1) (Config)# snmp-server user SNMPv3User auth md5 <auth_password>
priv aes-128 <priv_password>

(sw1) (Config)# show snmp user

-----
-----
                        SNMP USERS
-----
-----

User                Auth                Priv(enforce)    Groups
acl_filter
-----
-----
admin                md5                des(no)          network-admin
SNMPv3User           md5                aes-128(no)      network-operator
-----
-----

      NOTIFICATION TARGET USERS (configured for sending V3 Inform)
-----
-----

User                Auth                Priv
-----
-----

(sw1) (Config)#
```

2. Set up the SNMPv3 user on the ONTAP side:

```
security login create -user-or-group-name <username> -application snmp
-authentication-method usm -remote-switch-ipaddress 10.231.80.212
```

Show example

```
cluster1::*> system switch ethernet modify -device "sw1
(b8:59:9f:09:7c:22)" -is-monitoring-enabled-admin true

cluster1::*> security login create -user-or-group-name <username>
-application snmp -authentication-method usm -remote-switch
-ipaddress 10.231.80.212

Enter the authoritative entity's EngineID [remote EngineID]:

Which authentication protocol do you want to choose (none, md5, sha,
sha2-256)
[none]: md5

Enter the authentication protocol password (minimum 8 characters
long):

Enter the authentication protocol password again:

Which privacy protocol do you want to choose (none, des, aes128)
[none]: aes128

Enter privacy protocol password (minimum 8 characters long):
Enter privacy protocol password again:
```

3. Configure CSHM to monitor with the new SNMPv3 user:

```
system switch ethernet show-all -device "sw1" -instance
```

Show example

```
cluster1::*> system switch ethernet show-all -device "sw1" -instance

Device Name: sw1
IP Address: 10.231.80.212
SNMP Version: SNMPv2c
Is Discovered: true
SNMPv2c Community String or SNMPv3 Username: cshml!
Model Number: N9K-C9336C-FX2
Switch Network: cluster-network
Software Version: Cisco Nexus
Operating System (NX-OS) Software, Version 9.3(7)
Reason For Not Monitoring: None <---- displays
when SNMP settings are valid
Source Of Switch Version: CDP/ISDP
Is Monitored ?: true
Serial Number of the Device: QTFCU3826001C
RCF Version: v1.8X2 for

Cluster/HA/RDMA

cluster1::*>
cluster1::*> system switch ethernet modify -device "sw1" -snmp
-version SNMPv3 -community-or-username <username>
cluster1::*>
```

4. Verify that the serial number to be queried with the newly created SNMPv3 user is the same as detailed in the previous step after the CSHM polling period has completed.

```
system switch ethernet polling-interval show
```

Show example

```
cluster1::*> system switch ethernet polling-interval show
Polling Interval (in minutes): 5

cluster1::*> system switch ethernet show-all -device "sw1" -instance

Device Name: sw1
IP Address: 10.231.80.212
SNMP Version: SNMPv3
Is Discovered: true
SNMPv2c Community String or SNMPv3 Username: SNMPv3User
Model Number: N9K-C9336C-FX2
Switch Network: cluster-network
Software Version: Cisco Nexus
Operating System (NX-OS) Software, Version 9.3(7)
Reason For Not Monitoring: None <---- displays
when SNMP settings are valid
Source Of Switch Version: CDP/ISDP
Is Monitored?: true
Serial Number of the Device: QTFCU3826001C
RCF Version: v1.8X2 for

Cluster/HA/RDMA

cluster1::*>
```

Replace a Cisco Nexus 9336C-FX2 storage switch

You can replace a defective Nexus 9336C-FX2 switch in a cluster network. This is a nondisruptive procedure.

What you'll need

Before installing the NX-OS software and RCFs on a Cisco Nexus 9336C-FX2 storage switch, ensure that:

- Your system can support Cisco Nexus 9336C-FX2 storage switches.
- You have consulted the switch compatibility table on the Cisco Ethernet Switch page for the supported ONTAP, NX-OS, and RCF versions.
- You have referred to the appropriate software and upgrade guides available on the Cisco web site.

Cisco Nexus 3000 Series Switches:

- You have downloaded the applicable RCFs.
- The existing network configuration has the following characteristics:
 - The Cisco Ethernet Switches page has the latest RCF and NX-OS versions on your switches.

- Management connectivity must exist on both switches.
- The replacement Cisco Nexus 9336C-FX2 switch has the following characteristics:
 - Management network connectivity is functional.
 - Console access to the replacement switch is in place.
 - The appropriate RCF and NX-OS operating system image is loaded onto the switch.
 - Initial configuration of the switch is complete.

About this task

This procedure replaces the second Nexus 9336C-FX2 storage switch S2 with the new 9336C-FX switch NS2. The two nodes are node1 and node2.

Steps to complete:

- Confirm the switch to be replaced is S2.
- Disconnect the cables from switch S2.
- Reconnect the cables to switch NS2.
- Verify all device configurations on switch NS2.



There can be dependencies between command syntax in the RCF and NX-OS versions.

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=xh
```

x is the duration of the maintenance window in hours.

2. Check on the health status of the storage node ports to make sure that there is connection to storage switch S1:

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


Show example

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

Node	Port	Type	Mode	Speed (Gb/s)	State	Status	VLAN ID
node1							
	e3a	ENET	storage	100	enabled	online	30
	e3b	ENET	storage	0	enabled	offline	30
	e7a	ENET	storage	0	enabled	offline	30
	e7b	ENET	storage	0	enabled	offline	30
node2							
	e3a	ENET	storage	100	enabled	online	30
	e3b	ENET	storage	0	enabled	offline	30
	e7a	ENET	storage	0	enabled	offline	30
	e7b	ENET	storage	0	enabled	offline	30

```
storage::*>
```

3. Verify that storage switch S1 is available:

```
network device-discovery show
```

Show example

```
storage::*> network device-discovery show
Node/      Local Discovered
Protocol   Port  Device (LLDP: ChassisID)  Interface  Platform
-----
node1/cdp
          e3a   S1                      Ethernet1/1 NX9336C
          e4a   node2                  e4a         AFF-A700
          e4e   node2                  e4e         AFF-A700
node1/lldp
          e3a   S1                      Ethernet1/1 -
          e4a   node2                  e4a         -
          e4e   node2                  e4e         -
node2/cdp
          e3a   S1                      Ethernet1/2 NX9336C
          e4a   node1                  e4a         AFF-A700
          e4e   node1                  e4e         AFF-A700
node2/lldp
          e3a   S1                      Ethernet1/2 -
          e4a   node1                  e4a         -
          e4e   node1                  e4e         -
storage::*>
```

4. Run the `show lldp neighbors` command on the working switch to confirm that you can see both nodes and all shelves:

```
show lldp neighbors
```

Show example

```
S1# show lldp neighbors
Capability codes:
  (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
  (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other
Device ID      Local Intf  Hold-time  Capability  Port ID
node1          Eth1/1     121        S           e3a
node2          Eth1/2     121        S           e3a
SHFGD2008000011 Eth1/5     121        S           e0a
SHFGD2008000011 Eth1/6     120        S           e0a
SHFGD2008000022 Eth1/7     120        S           e0a
SHFGD2008000022 Eth1/8     120        S           e0a
```

5. Verify the shelf ports in the storage system:

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

Show example

```
storage::*> storage shelf port show -fields remote-device,remote-  
port  
shelf    id  remote-port  remote-device  
-----  --  -  
3.20     0  Ethernet1/5  S1  
3.20     1  -            -  
3.20     2  Ethernet1/6  S1  
3.20     3  -            -  
3.30     0  Ethernet1/7  S1  
3.20     1  -            -  
3.30     2  Ethernet1/8  S1  
3.20     3  -            -  
storage::*>
```

6. Remove all cables attached to storage switch S2.
7. Reconnect all cables to the replacement switch NS2.
8. Recheck the health status of the storage node ports:

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

Show example

```
storage::*> storage port show -port-type ENET  
  
Node           Port Type  Mode    Speed      State   Status   VLAN  
-----  -----  -  
node1  
          e3a  ENET   storage 100    enabled  online   30  
          e3b  ENET   storage  0     enabled  offline  30  
          e7a  ENET   storage  0     enabled  offline  30  
          e7b  ENET   storage  0     enabled  offline  30  
node2  
          e3a  ENET   storage 100    enabled  online   30  
          e3b  ENET   storage  0     enabled  offline  30  
          e7a  ENET   storage  0     enabled  offline  30  
          e7b  ENET   storage  0     enabled  offline  30  
storage::*>
```

9. Verify that both switches are available:

```
network device-discovery show
```

Show example

```
storage::*> network device-discovery show
Node/      Local Discovered
Protocol  Port  Device (LLDP: ChassisID)  Interface  Platform
-----  -
node1/cdp
          e3a  S1                        Ethernet1/1 NX9336C
          e4a  node2                     e4a         AFF-A700
          e4e  node2                     e4e         AFF-A700
          e7b  NS2                      Ethernet1/1 NX9336C
node1/lldp
          e3a  S1                        Ethernet1/1 -
          e4a  node2                     e4a         -
          e4e  node2                     e4e         -
          e7b  NS2                      Ethernet1/1 -
node2/cdp
          e3a  S1                        Ethernet1/2 NX9336C
          e4a  node1                     e4a         AFF-A700
          e4e  node1                     e4e         AFF-A700
          e7b  NS2                      Ethernet1/2 NX9336C
node2/lldp
          e3a  S1                        Ethernet1/2 -
          e4a  node1                     e4a         -
          e4e  node1                     e4e         -
          e7b  NS2                      Ethernet1/2 -
storage::*>
```

10. Verify the shelf ports in the storage system:

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

Show example

```
storage::*> storage shelf port show -fields remote-device,remote-  
port  
shelf    id    remote-port    remote-device  
-----  --    -  
3.20     0     Ethernet1/5    S1  
3.20     1     Ethernet1/5    NS2  
3.20     2     Ethernet1/6    S1  
3.20     3     Ethernet1/6    NS2  
3.30     0     Ethernet1/7    S1  
3.20     1     Ethernet1/7    NS2  
3.30     2     Ethernet1/8    S1  
3.20     3     Ethernet1/8    NS2  
storage::*>
```

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

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

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