Cisco® Nexus Switches

Replacing a Cisco Nexus 92300YC Cluster Switch

■ NetApp®

Contents

Configuring a new Cisco Nexus 92300YC switch

You can configure a new Nexus 92300YC switch by completing the steps detailed in this chapter.

Installing the Nexus 92300YC switch on systems running ONTAP 9.6 and later, starts with setting up an IP address and configuration to allow the switch to communicate through the management interface. You can then install the NX-OS software and reference configuration file (RCF). This procedure is intended for preparing the Nexus 92300YC switch before controllers are added.

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

- The Nexus 92300YC switch names are *cs1* and *cs2*.

- The example used in this procedure starts the upgrade on the second switch, **cs2**.

- The cluster LIF names are *node1_clus1* and *node1_clus2* for node1, and *node2_clus1* and *node2_clus2* for node2.

- The IPspace name is *Cluster*.

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

- The cluster ports on each node are named *e0a* and *e0b*.
  See the *Hardware Universe* for the actual cluster ports supported on your platform.
  NetApp Hardware Universe

- The Inter-Switch Links (ISLs) supported for the Nexus 92300YC switches are ports 1/65 and 1/66.

- The node connections supported for the Nexus 92300YC switches are ports 1/1 through 1/66.

- The examples in this procedure use two nodes, but you can have up to 24 nodes in a cluster.

Initial installation of the Cisco Nexus 92300YC switch

You can use this procedure to perform the initial installation of the Cisco Nexus 92300YC switch.

About this task

You can download the applicable NetApp Cisco NX-OS software for your switches from the NetApp Support Site at *mysupport.netapp.com*

mysupport.netapp.com

NX-OS is a network operating system for the Nexus series of Ethernet switches and MDS series of Fibre Channel (FC) storage area network switches provided by Cisco Systems.

This procedure provides a summary of the process to install your switches and get them running:

Steps

1. Connect the serial port to the host or serial port of your choice.

2. Connect the management port (on the non-port side of the switch) to the same network where your SFTP server is located.

3. At the console, set the host side serial settings:

   - 9600 baud

- 8 data bits

- 1 stop bit

- parity: none

- flow control: none

4. Booting for the first time or rebooting after erasing the running configuration, the Nexus 92300YC switch loops in a boot cycle. Interrupt this cycle by typing **yes** to abort Power on Auto Provisioning. You are then presented with the System Admin Account setup:

   Example

   ```
   $ VDC-1 %$ %POAP-2-POAP_INFO:   - Abort Power On Auto Provisioning [yes - continue with
   normal setup, skip - bypass password and basic configuration, no - continue with Power On
   Auto Provisioning] (yes/skip/no)[no]:
   yes
   Disabling POAP.......Disabling POAP
   2019 Apr 10 00:36:17 switch %$ VDC-1 %$ poap: Rolling back, please wait... (This may take
   5-15 minutes)


            ---- System Admin Account Setup ----


   Do you want to enforce secure password standard (yes/no) [y]:
   ```

5. Type **y** to enforce secure password standard:

   Example

   ```
   Do you want to enforce secure password standard (yes/no) [y]: y
   ```

6. Enter and confirm the password for user admin:

   Example

   ```
   Enter the password for "admin":
   Confirm the password for "admin":
   ```

7. Enter the Basic System Configuration dialog:

   Example

   ```
   This setup utility will guide you through the basic configuration of
   the system. Setup configures only enough connectivity for management
   of the system.

   Please register Cisco Nexus9000 Family devices promptly with your
   supplier. Failure to register may affect response times for initial
   service calls. Nexus9000 devices must be registered to receive
   entitled support services.

   Press Enter at anytime to skip a dialog. Use ctrl-c at anytime
   to skip the remaining dialogs.

   Would you like to enter the basic configuration dialog (yes/no):
   ```

8. Create another login account:

   Example

   ```
   Create another login account (yes/no) [n]:
   ```

9. Configure read-only and read-write SNMP community strings:

Example

```
Configure read-only SNMP community string (yes/no) [n]:

Configure read-write SNMP community string (yes/no) [n]:
```

10. Configure the cluster switch name:

Example

```
Enter the switch name : cs2
```

11. Configure the out-of-band management interface:

Example

```
Continue with Out-of-band (mgmt0) management configuration? (yes/no) [y]: y

Mgmt0 IPv4 address : 172.22.133.216

Mgmt0 IPv4 netmask : 255.255.224.0

Configure the default gateway? (yes/no) [y]: y

IPv4 address of the default gateway : 172.22.128.1
```

12. Configure advanced IP options:

Example

```
Configure advanced IP options? (yes/no) [n]: n
```

13. Configure Telnet services:

Example

```
Enable the telnet service? (yes/no) [n]: n
```

14. Configure SSH services and SSH keys:

Example

```
Enable the ssh service? (yes/no) [y]: y

      Type of ssh key you would like to generate (dsa/rsa) [rsa]: rsa

      Number of rsa key bits <1024-2048> [1024]: 2048
```

15. Configure other settings:

Example

```
Configure the ntp server? (yes/no) [n]: n

  Configure default interface layer (L3/L2) [L2]: L2

  Configure default switchport interface state (shut/noshut) [noshut]: noshut

  Configure CoPP system profile (strict/moderate/lenient/dense) [strict]: strict
```

16. Confirm switch information and save the configuration:

Example

```
Would you like to edit the configuration? (yes/no) [n]: n

Use this configuration and save it? (yes/no) [y]: y

[#######################################] 100%
Copy complete, now saving to disk (please wait)...
Copy complete.
```

Installing the NX-OS software

You can use this procedure to install the NX-OS software on the Nexus 92300YC switch.

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.

    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 92300YC switch.

    Example

    ```
    cs2# copy sftp: bootflash: vrf management
    Enter source filename: /code/nxos.9.2.2.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.9.2.2.bin  /bootflash/nxos.9.2.2.bin
    /code/nxos.9.2.2.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.9.2.2.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.9.2.2.img  /bootflash/n9000-epld.9.2.2.img
    /code/n9000-epld.9.2.2.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:

Example

```
cs2# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
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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 05.31
  NXOS: version 9.2(1)
  BIOS compile time:  05/17/2018
  NXOS image file is: bootflash:///nxos.9.2.1.bin
  NXOS compile time:  7/17/2018 16:00:00 [07/18/2018 00:21:19]


Hardware
  cisco Nexus9000 C92300YC Chassis
  Intel(R) Xeon(R) CPU D-1526 @ 1.80GHz with 16337884 kB of memory.
  Processor Board ID FDO220329V5

  Device name: cs2
  bootflash:  115805356 kB
Kernel uptime is 0 day(s), 4 hour(s), 23 minute(s), 11 second(s)

Last reset at 271444 usecs after Wed Apr 10 00:25:32 2019
  Reason: Reset Requested by CLI command reload
  System version: 9.2(1)
  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.

Example

```
cs2# install all nxos bootflash:nxos.9.2.2.bin

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

Verifying image bootflash:/nxos.9.2.2.bin for boot variable "nxos".
[####################] 100% -- SUCCESS

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

Preparing "nxos" version info using image bootflash:/nxos.9.2.2.bin.
[####################] 100% -- SUCCESS

Preparing "bios" version info using image bootflash:/nxos.9.2.2.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                                    9.2(1)             9.2(2)           yes
  1       bios     v05.31(05/17/2018):v05.28(01/18/2018)  v05.33(09/08/2018)        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
2019 Apr 10 04:59:35 cs2 %$ VDC-1 %$ %VMAN-2-ACTIVATION_STATE: Successfully deactivated virtual service
'guestshell+'

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

Example

```
cs2# show version

Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
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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 9.2(2)
  BIOS compile time:  09/08/2018
  NXOS image file is: bootflash:///nxos.9.2.2.bin
  NXOS compile time:  11/4/2018 21:00:00 [11/05/2018 06:11:06]


Hardware
  cisco Nexus9000 C92300YC Chassis
  Intel(R) Xeon(R) CPU D-1526 @ 1.80GHz with 16337884 kB of memory.
  Processor Board ID FDO220329V5

  Device name: cs2
  bootflash:  115805356 kB
  Kernel uptime is 0 day(s), 0 hour(s), 3 minute(s), 52 second(s)

Last reset at 182004 usecs after Wed Apr 10 04:59:48 2019
  Reason: Reset due to upgrade
  System version: 9.2(1)
  Service:

plugin
  Core Plugin, Ethernet Plugin

Active Package(s):
```

7. Upgrade the EPLD image and reboot the switch.

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.9.2.2.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.

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
```

Installing the Reference Configuration File (RCF)

You can install the RCF after setting up the Nexus 92300YC switch for the first time.

Steps

1. Connect the cluster switch to the management network.

2. Use the ping command to verify connectivity to the server hosting the RCF.

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 RCF to the Nexus 92300YC switch:

   Example

```
cs2# copy sftp: bootflash: vrf management
Enter source filename: /code/Nexus_92300YC_RCF_v1.0.2.txt
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/Nexus_92300YC_RCF_v1.0.2.txt   /bootflash/nxos.9.2.2.bin
/code/Nexus_92300YC_R  100% 9687   530.2KB/s   00:00
sftp> exit
Copy complete, now saving to disk (please wait)...
Copy complete.
```

4. Merge the RCF with the running-config of the switch:

   Example

```
cs2# copy bootflash:Nexus_92300YC_RCF_v1.0.2.txt running-config

Disabling ssh: as its enabled right now:
 generating ecdsa key(521 bits)......
generated ecdsa key

Enabling ssh: as it has been disabled
 this command enables edge port type (portfast) by default on all interfaces. You
 should now disable edge port type (portfast) explicitly on switched ports leading to
hubs,
 switches and bridges as they may create temporary bridging loops.

Edge port type (portfast) should only be enabled on ports connected to a single
 host. Connecting hubs, concentrators, switches, bridges, etc...  to this
 interface when edge port type (portfast) is enabled, can cause temporary bridging loops.
 Use with CAUTION

Edge Port Type (Portfast) has been configured on Ethernet1/1 but will only
 have effect when the interface is in a non-trunking mode.

...

Copy complete, now saving to disk (please wait)...
Copy complete.
```

5. Verify on the switch that the RCF has been merged successfully:

   show running-config

   Example

```
cs2# show running-config
!Command: show running-config
!Running configuration last done at: Wed Apr 10 06:32:27 2019
!Time: Wed Apr 10 06:36:00 2019

version 9.2(2) Bios:version 05.33
switchname cs2
vdc cs2 id 1
  limit-resource vlan minimum 16 maximum 4094
  limit-resource vrf minimum 2 maximum 4096
  limit-resource port-channel minimum 0 maximum 511
  limit-resource u4route-mem minimum 248 maximum 248
  limit-resource u6route-mem minimum 96 maximum 96
  limit-resource m4route-mem minimum 58 maximum 58
  limit-resource m6route-mem minimum 8 maximum 8

feature lacp

no password strength-check
```

```
username admin password 5 $5$HY9Kk3F9$YdCZ8iQJ1RtoiEFa0sKP5IO/LNG1k9C4lSJfi5kesl
6  role network-admin
ssh key ecdsa 521

banner motd #
*********************************************************************************
*                                                                               *
*  Nexus 92300YC Reference Configuration File (RCF) v1.0.2 (10-19-2018)         *
*                                                                               *
*  Ports 1/1  - 1/48: 10GbE Intra-Cluster Node Ports                           *
*  Ports 1/49 - 1/64: 40/100GbE Intra-Cluster Node Ports                       *
*  Ports 1/65 - 1/66: 40/100GbE Intra-Cluster ISL Ports                        *
*                                                                               *
*********************************************************************************
```

6. Save the running configuration so that it becomes the startup configuration when you reboot the switch:

Example

```
cs2# copy running-config startup-config

[########################################] 100%
Copy complete, now saving to disk (please wait)...
Copy complete.
```

7. Reboot the switch and verify that the running configuration is correct:

reload

Example

```
cs2# reload

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

Replacing a Cisco Nexus 92300YC switch

Replacing a defective Nexus 92300YC switch in a cluster network is a nondisruptive procedure (NDU).

Before you begin

The following conditions must exist before performing the switch replacement in the current environment and on the replacement switch.

- Existing cluster and network infrastructure:

    - The existing cluster must be verified as completely functional, with at least one fully connected cluster switch.

    - All cluster ports must be up.

    - All cluster logical interfaces (LIFs) must be **up** and on their home ports.

    - The ONTAP `cluster ping-cluster -node node1` command must indicate that `basic connectivity` and `larger than PMTU communication` are successful on all paths.

- Nexus 92300YC replacement switch:

    - Management network connectivity on the replacement switch must be functional.

    - Console access to the replacement switch must be in place.

    - The node connections are ports 1/1 through 1/64.

    - All Inter-Switch Link (ISL) ports must be disabled on ports 1/65 and 1/66.

    - The desired reference configuration file (`RCF`) and `NX-OS` operating system image switch must be loaded onto the switch.

    - Initial customization of the switch must be complete, as detailed in:
      Configuring a new Cisco Nexus 92300YC switch on page 4
      Any previous site customizations, such as STP, SNMP, and SSH, should be copied to the new switch.

About this task

You must execute the command for migrating a cluster LIF from the node where the cluster LIF is hosted.

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

- The names of the existing Nexus 92300YC switches are *cs1* and *cs2*.

- The name of the new Nexus 92300YC switch is *newcs2*.

- The node names are *node1* and *node2*.

- The cluster ports on each node are named *e0a* and *e0b*.

- The cluster LIF names are *node1_clus1* and *node1_clus2* for node1, and *node2_clus1* and *node2_clus2* for node2.

- The prompt for changes to all cluster nodes is `cluster1::*>`

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

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

Node: node1
                                                           Ignore
                                         Speed(Mbps) Health  Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status  Status
--------- ------------ ---------------- ---- ---- ----------- -------- ------
e0a       Cluster      Cluster          up   9000 auto/10000 healthy false
e0b       Cluster      Cluster          up   9000 auto/10000 healthy false

Node: node2
                                                           Ignore
                                         Speed(Mbps) Health  Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper  Status  Status
--------- ------------ ---------------- ---- ---- ----------- -------- ------
e0a       Cluster      Cluster          up   9000 auto/10000 healthy false
e0b       Cluster      Cluster          up   9000 auto/10000 healthy false
4 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_clus1 up/up     169.254.209.69/16  node1         e0a     true
            node1_clus2 up/up     169.254.49.125/16  node1         e0b     true
            node2_clus1 up/up     169.254.47.194/16  node2         e0a     true
            node2_clus2 up/up     169.254.19.183/16  node2         e0b     true
4 entries were displayed.


cluster1::*> network device-discovery show -protocol cdp
Node/       Local  Discovered
Protocol    Port   Device (LLDP: ChassisID)  Interface        Platform
----------- ------ ------------------------ ---------------- ----------------
node2       /cdp
            e0a    cs1                       Eth1/2           N9K-C92300YC
            e0b    cs2                       Eth1/2           N9K-C92300YC
node1       /cdp
            e0a    cs1                       Eth1/1           N9K-C92300YC
            e0b    cs2                       Eth1/1           N9K-C92300YC
4 entries were displayed.


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
node1            Eth1/1        144    H          FAS2980      e0a
node2            Eth1/2        145    H          FAS2980      e0a
cs2(FDO220329V5) Eth1/65       176    R S I s    N9K-C92300YC Eth1/65
cs2(FDO220329V5) Eth1/66       176    R S I s    N9K-C92300YC Eth1/66

Total entries displayed: 4


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
node1            Eth1/1        139    H          FAS2980      e0b
node2            Eth1/2        124    H          FAS2980      e0b
cs1(FDO220329KU) Eth1/65       178    R S I s    N9K-C92300YC Eth1/65
cs1(FDO220329KU) Eth1/66       178    R S I s    N9K-C92300YC Eth1/66

Total entries displayed: 4
```

Steps

1. Optional: 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.

2. 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.

Example

```
newcs2# config
Enter configuration commands, one per line. End with CNTL/Z.
newcs2(config)# interface e1/1-64
newcs2(config-if-range)# shutdown
```

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

network interface show -vserver Cluster -fields auto-revert

Example

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

           Logical
Vserver    Interface    Auto-revert
---------- ------------ ------------
Cluster    node1_clus1  true
Cluster    node1_clus2  true
Cluster    node2_clus1  true
Cluster    node2_clus2  true

4 entries were displayed.
```

4. Verify that all the cluster LIFs can communicate:

cluster ping-cluster

Example

```
cluster1::*> cluster ping-cluster node1

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)
```

5. Shut down the ISL ports 1/65 and 1/66 on the Nexus 92300YC switch cs1:

Example

```
cs1# configure
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# interface e1/65-66
cs1(config-if-range)# shutdown
cs1(config-if-range)#
```

6. Remove all of the cables from the Nexus 92300YC cs2 switch, and then connect them to the same ports on the Nexus 92300YC newcs2 switch.

7. Bring up the ISLs ports 1/65 and 1/66 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 Eth1/65(P) and Eth1/66(P).

Example

This example enables ISL ports 1/65 and 1/66 and displays the port channel summary on switch cs1:

```
cs1# configure
Enter configuration commands, one per line. End with CNTL/Z.
cs1(config)# int e1/65-66
cs1(config-if-range)# no shutdown

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
--------------------------------------------------------------------------------
1     Po1(SU)     Eth      LACP      Eth1/65(P)   Eth1/66(P)

cs1(config-if-range)#
```

8. Verify that port e0b is **up** on all nodes:

network port show ipspace Cluster

Example

The output should be similar to the following:

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

Node: node1
                                                          Ignore
                                        Speed(Mbps) Health  Health
Port     IPspace      Broadcast Domain Link MTU  Admin/Oper  Status  Status
--------- ------------ ---------------- ---- ----- ----------- -------- -------
e0a      Cluster      Cluster          up   9000  auto/10000  healthy false
e0b      Cluster      Cluster          up   9000  auto/10000  healthy false

Node: node2
                                                          Ignore
                                        Speed(Mbps) Health  Health
Port     IPspace      Broadcast Domain Link MTU  Admin/Oper  Status  Status
--------- ------------ ---------------- ---- ----- ----------- -------- -------
```

```
e0a        Cluster      Cluster                up   9000  auto/10000  healthy  false
e0b        Cluster      Cluster                up   9000  auto/auto   -        false

4 entries were displayed.
```

9. 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.

   In this example, LIF node1_clus2 on node1 is successfully reverted if the Home value is **true** and the port is e0b.

   ### Example

   The following commands return LIF `node1_clus2` on `node1` to home port `e0a` 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 `e0a` and `e0b` on node1.

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

               Logical      Status     Network            Current     Current Is
   Vserver     Interface    Admin/Oper Address/Mask       Node        Port    Home
   ----------- ------------ ---------- ------------------ ----------- ------- -----
   Cluster
               node1_clus1  up/up      169.254.209.69/16  node1       e0a     true
               node1_clus2  up/up      169.254.49.125/16  node1       e0b     true
               node2_clus1  up/up      169.254.47.194/16  node2       e0a     true
               node2_clus2  up/up      169.254.19.183/16  node2       e0a     false

   4 entries were displayed.
   ```

10. Display information about the nodes in a cluster:

    cluster 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         false   true
    node2         true    true
    ```

11. Verify that all physical cluster ports are up:

    network port show ipspace Cluster

    ### Example

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

    Node: node1

            Ignore
                                                        Speed(Mbps) Health   Health
    Port      IPspace     Broadcast Domain  Link  MTU   Admin/Oper  Status   Status
    --------- ----------- ----------------- ----- ----- ----------- -------- ------
    e0a       Cluster     Cluster           up    9000  auto/10000  healthy  false
    e0b       Cluster     Cluster           up    9000  auto/10000  healthy  false

    Node: node2
                                                                    Ignore
                                                        Speed(Mbps) Health   Health
    Port      IPspace     Broadcast Domain Link  MTU    Admin/Oper  Status   Status
    --------- ----------- ----------------- ----- ----- ----------- -------- ------
    e0a       Cluster     Cluster           up    9000  auto/10000  healthy  false
    e0b       Cluster     Cluster           up    9000  auto/10000  healthy  false

    4 entries were displayed.
    ```

12. Verify that all the cluster LIFs can communicate:

`cluster ping-cluster`

Example

```
cluster1::*> cluster ping-cluster -node node2
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)
```

13. Confirm the following cluster network configuration:

`network port 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
--------- ----------- ---------------- ---- ----- ----------- -------- ------
e0a       Cluster     Cluster          up   9000  auto/10000  healthy  false
e0b       Cluster     Cluster          up   9000  auto/10000  healthy  false

Node: node2
                                                           Ignore
                                  Speed(Mbps)        Health   Health
Port      IPspace     Broadcast Domain Link MTU      Admin/Oper Status  Status
--------- ----------- ---------------- ---- ---- ----------- -------- ------
e0a       Cluster     Cluster          up   9000 auto/10000  healthy  false
e0b       Cluster     Cluster          up   9000 auto/10000  healthy  false

4 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_clus1  up/up    169.254.209.69/16  node1         e0a     true
            node1_clus2  up/up    169.254.49.125/16  node1         e0b     true
            node2_clus1  up/up    169.254.47.194/16  node2         e0a     true
            node2_clus2  up/up    169.254.19.183/16  node2         e0b     true

4 entries were displayed.

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

Node/       Local  Discovered
Protocol    Port   Device (LLDP: ChassisID)  Interface        Platform
----------- ------ ------------------------- ---------------- ----------------
node2       /cdp
            e0a    cs1                       0/2              N9K-C92300YC
            e0b    newcs2                    0/2              N9K-C92300YC
node1       /cdp
            e0a    cs1                       0/1              N9K-C92300YC
            e0b    newcs2                    0/1              N9K-C92300YC
```

```
4 entries were displayed.


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
node1                Eth1/1          144    H           FAS2980       e0a
node2                Eth1/2          145    H           FAS2980       e0a
newcs2(FDO296348FU)  Eth1/65         176    R S I s     N9K-C92300YC  Eth1/65
newcs2(FDO296348FU)  Eth1/66         176    R S I s     N9K-C92300YC  Eth1/66


Total entries displayed: 4


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
node1                Eth1/1          139    H           FAS2980       e0b
node2                Eth1/2          124    H           FAS2980       e0b
cs1(FDO220329KU)     Eth1/65         178    R S I s     N9K-C92300YC  Eth1/65
cs1(FDO220329KU)     Eth1/66         178    R S I s     N9K-C92300YC  Eth1/66

Total entries displayed: 4
```

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