



設定軟體 Cluster and storage switches

NetApp
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設定軟體

Cisco Nexus 9336C-FX2叢集交換器的軟體安裝工作流程

若要安裝及設定Cisco Nexus 9336C-FX2交換器的軟體、請依照下列步驟操作：

1. "準備安裝NX-OS軟體和RCF"。
2. "安裝NX-OS軟體"。
3. "安裝參考組態檔 (RCF) "。

初次設定Nexus 9336C-FX2交換器之後、請安裝RCF。您也可以使用此程序來升級RCF版本。

可用的 **RCF** 組態

下表說明適用於不同組態的 RCFs。選擇適用於您組態的 RCF。

如需特定連接埠和 VLAN 使用詳細資料、請參閱 RCF 中的橫幅和重要附註一節。

RCF 名稱	說明
2-Cluster-HA-Breakout	支援兩個 ONTAP 叢集、至少有八個節點、包括使用共用叢集 + HA 連接埠的節點。
4-Cluster-HA-Breakout	支援四個 ONTAP 叢集、至少有四個節點、包括使用共享叢集 + HA 連接埠的節點。
1-Cluster-HA	所有連接埠均設定為 40/100GbE。支援連接埠上的共用叢集 / HA 流量。AFF A320、AFF A250 和 FAS500f 系統所需。此外、所有連接埠都可作為專用叢集連接埠使用。
1-Cluster-HA-Breakout	連接埠可設定為 4x10GbE 離線、4x25GbE 離線（100GbE 交換器上的 RCF 1.6+）和 40/100GbE。在使用共享叢集 / HA 連接埠的節點上、支援共享叢集 / HA 流量：AFF A320、AFF A250 和 FAS500f 系統。此外、所有連接埠都可作為專用叢集連接埠使用。
叢集式 HA 儲存設備	連接埠設定為用於叢集 + HA 的 40/100GbE、用於叢集的 4x10GbE Breakout、用於叢集 + HA 的 4x25GbE Breakout、以及用於每個儲存 HA 配對的 100GbE。
叢集	兩種 RCF 類型、分別配置 4 個 10GbE 連接埠（中斷）和 40/100GbE 連接埠。除了 AFF A320、AFF A250 和 FAS500f 系統之外、所有的 FS/AFF 節點都受到支援。
儲存設備	所有連接埠均設定為 100GbE NVMe 儲存連線。

準備安裝NX-OS軟體和RCF

在安裝NX-OS軟體和參考組態檔（RCF）之前、請遵循此程序。

關於範例

本程序中的範例使用下列交換器和節點命名法：

- 兩個Cisco交換器的名稱為CS1和CS2。
- 節點名稱為cluster1-01和cluster1-02。
- 叢集LIF名稱為cluster1-01_clus1、cluster1-01_clus2（叢集1-01）和cluster1-02_clus2（叢集1-01）、cluster1-02_clus2（叢集1-02）。
- 「cluster1：*：>」提示會指出叢集的名稱。

關於這項工作

此程序需要同時使用ONTAP 支援指令和Cisco Nexus 9000系列交換器的指令；ONTAP 除非另有說明、否則會使用支援指令。

步驟

1. 如果AutoSupport 此叢集啟用了「支援功能」、請叫用AutoSupport 下列訊息來抑制自動建立案例：
「System Node AutoSupport Rsepooke -Node *-type all -most MAn=x h」

其中x是維護時段的持續時間（以小時為單位）。



此資訊可通知技術支援人員執行此維護工作、以便在維護期間抑制自動建立案例。AutoSupport

2. 將權限等級變更為進階、並在系統提示您繼續時輸入* y*：

"進階權限"

出現進階提示（「*>」）。

3. 顯示每個叢集互連交換器的每個節點已設定多少個叢集互連介面：

「network device-dDiscovery show -protocol cup」

顯示範例

```
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. 檢查每個叢集介面的管理或作業狀態。

a. 顯示網路連接埠屬性：

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

顯示範例

```
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. 顯示關於生命的資訊：

「網路介面show -vserver叢集」

顯示範例

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

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

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遠端叢集LIF：

「叢集ping叢集節點節點名稱」

顯示範例

```
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. 驗證是否已在所有叢集生命體上啟用自動還原命令：

「網路介面show -vserver叢集-功能 變數自動回復」

顯示範例

```
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. 對於更新版本的支援、請使用下列命令啟用乙太網路交換器健全狀況監視器記錄收集功能、以收集交換器相關的記錄檔ONTAP：

「系統交換器乙太網路記錄設定密碼」和「系統交換器乙太網路記錄啟用-收集」

```

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::*>

```



如果這些命令中有任何一個出現錯誤、請聯絡NetApp支援部門。

- 針對發行9.5P16、9.6P12及9.7P10及更新版本的修補程式、請使用下列命令啟用乙太網路交換器健全狀況監視器記錄收集功能、以收集交換器相關的記錄檔ONTAP：

「系統叢集交換器記錄設定密碼」和「系統叢集交換器記錄啟用收集」

```
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::*>
```



如果這些命令中有任何一個出現錯誤、請聯絡NetApp支援部門。

接下來呢？

"安裝NX-OS軟體"。

安裝NX-OS軟體

請遵循此程序、在Nexus 9336C-FX2叢集交換器上安裝NX-OS軟體。

開始之前、請先完成中的程序 ["準備安裝NX-OS和RCF"](#)。

檢閱要求

您需要的產品

- 交換器組態的目前備份。
- 完全正常運作的叢集（記錄檔中沒有錯誤或類似問題）。
- ["Cisco乙太網路交換器頁面"](#)。請參閱交換器相容性表、以瞭解支援ONTAP 的功能表和NX-OS版本。
- Cisco網站提供適當的軟體與升級指南、適用於Cisco交換器升級與降級程序。請參閱 ["Cisco Nexus 9000系列交換器"](#)。

關於範例

本程序中的範例使用下列交換器和節點命名法：

- 兩個Cisco交換器的名稱為CS1和CS2。
- 節點名稱為cluster1-01、cluster1-02、cluster1-03和cluster1-04。
- 叢集LIF名稱為cluster1-01_clus1、cluster1-01_clus2、cluster1-02_clus1、cluster1-02_clus2、cluster1-03_clus1、cluster1-03_clus2、cluster1-04_clus1和cluster1-04_clus2。
- 「cluster1:*:>」提示會指出叢集的名稱。

安裝軟體

此程序需要同時使用ONTAP 支援指令和Cisco Nexus 9000系列交換器的指令；ONTAP 除非另有說明、否則會使用支援指令。

步驟

1. 將叢集交換器連接至管理網路。
2. 使用ping命令來驗證與裝載NX-OS軟體和RCF之伺服器的連線能力。

顯示範例

此範例可驗證交換器是否能以IP位址172.19.2.1連至伺服器：

```
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. 將NX-OS軟體和EPLD映像複製到Nexus 9336C-FX2交換器。

顯示範例

```
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. 驗證NX-OS軟體的執行版本：

《如何版本》

```
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 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. 安裝NX-OS映像。

安裝映像檔會在每次重新開機時載入映像檔。

```
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 Upg-Required	New-
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. 在交換器重新開機後、驗證新版本的NX-OS軟體：

《如何版本》

```
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. 升級EPLD映像、然後重新啟動交換器。



```
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. 交換器重新開機後、再次登入、並確認新版的EPLD已成功載入。

顯示範例

```
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. 重複步驟 1 至 8、在交換器 CS1 上安裝 NX-OS 軟體。

接下來呢？

["安裝參考組態檔 \(RCF\)"](#)。

安裝參考組態檔 (RCF)

您可以在初次設定Nexus 9336C-FX2交換器之後、安裝參考組態檔 (RCF)。您也可以使用此程序來升級RCF版本。

開始之前、請先完成中的程序 ["準備安裝NX-OS和RCF"](#)。

如需可用 RCF 組態的詳細資訊、請參閱 ["軟體安裝工作流程"](#)。

檢閱要求

您需要的產品

- 交換器組態的目前備份。
- 完全正常運作的叢集（記錄檔中沒有錯誤或類似問題）。
- 目前的RCF檔案。
- 安裝RCF時所需的交換器主控台連線。

建議的文件

- ["Cisco乙太網路交換器頁面"](#) 請參閱交換器相容性表、以瞭解支援ONTAP 的功能表和RCF版本。請注意、RCF中的命令語法與NX-OS版本中的命令語法之間可能存在相依性。
- ["Cisco Nexus 3000系列交換器"](#)。如需Cisco交換器升級與降級程序的完整文件、請參閱Cisco網站上提供的適當軟體與升級指南。

安裝RCF

關於範例

本程序中的範例使用下列交換器和節點命名法：

- 兩個Cisco交換器的名稱為CS1和CS2。
- 節點名稱為cluster1-01、cluster1-02、cluster1-03和cluster1-04。
- 叢集LIF名稱為cluster1-01_clus1、cluster1-01_clus2、cluster1-02_clus1、cluster1-02_clus2、cluster1-03_clus1、cluster1-03_clus2、cluster1-04_clus1和cluster1-04_clus2。
- 「cluster1：*：>」提示會指出叢集的名稱。

本程序中的範例使用兩個節點。這些節點使用兩個10GbE叢集互連連接埠e0a和e0b。請參閱 ["Hardware Universe"](#) 驗證平台上的叢集連接埠是否正確。



命令輸出可能會因ONTAP 不同版本的不相同而有所差異。

關於這項工作

此程序需要同時使用ONTAP 支援指令和Cisco Nexus 9000系列交換器的指令；ONTAP 除非另有說明、否則會使用支援指令。

在此程序期間、不需要運作中的交換器間連結（ISL）。這是因為RCF版本變更可能會暫時影響ISL連線。為確保叢集作業不中斷、下列程序會在目標交換器上執行步驟時、將所有叢集生命體移轉至作業夥伴交換器。



在安裝新的交換器軟體版本和RCFs之前、您必須清除交換器設定並執行基本組態。您必須使用序列主控台連線至交換器。此工作會重設管理網路的組態。

步驟1：準備安裝

1. 顯示連接至叢集交換器之每個節點上的叢集連接埠：

「網路裝置探索秀」

```

cluster1::*> network device-discovery show
Node/          Local  Discovered
Protocol      Port   Device (LLDP: ChassisID)  Interface
Platform
-----
-----
cluster1-01/cdp
          e0a    cs1                Ethernet1/7      N9K-
C9336C
          e0d    cs2                Ethernet1/7      N9K-
C9336C
cluster1-02/cdp
          e0a    cs1                Ethernet1/8      N9K-
C9336C
          e0d    cs2                Ethernet1/8      N9K-
C9336C
cluster1-03/cdp
          e0a    cs1                Ethernet1/1/1    N9K-
C9336C
          e0b    cs2                Ethernet1/1/1    N9K-
C9336C
cluster1-04/cdp
          e0a    cs1                Ethernet1/1/2    N9K-
C9336C
          e0b    cs2                Ethernet1/1/2    N9K-
C9336C
cluster1::*>

```

2. 檢查每個叢集連接埠的管理和作業狀態。

a. 驗證所有的叢集連接埠是否為「正常」狀態*「up」*：

```
network port show -role cluster
```



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

```
Node: cluster1-01
```

```
Ignore
```

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
-----	-----					
e0a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e0d	Cluster	Cluster		up	9000	auto/100000
healthy	false					

```
Node: cluster1-02
```

```
Ignore
```

						Speed (Mbps)
Health	Health					
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper
Status	Status					
-----	-----	-----	-----	-----	-----	-----
-----	-----					
e0a	Cluster	Cluster		up	9000	auto/100000
healthy	false					
e0d	Cluster	Cluster		up	9000	auto/100000
healthy	false					

```
8 entries were displayed.
```

```
Node: cluster1-03
```

```
Ignore
```

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

Node: cluster1-04

Ignore

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

cluster1::*>

b. 確認所有叢集介面 (I生命) 都位於主連接埠：

「網路介面show -role cluster」

顯示範例

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

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

Cluster				
	cluster1-01_clus1	up/up	169.254.3.4/23	
cluster1-01	e0a true			
	cluster1-01_clus2	up/up	169.254.3.5/23	
cluster1-01	e0d true			
	cluster1-02_clus1	up/up	169.254.3.8/23	
cluster1-02	e0a true			
	cluster1-02_clus2	up/up	169.254.3.9/23	
cluster1-02	e0d true			
	cluster1-03_clus1	up/up	169.254.1.3/23	
cluster1-03	e0a true			
	cluster1-03_clus2	up/up	169.254.1.1/23	
cluster1-03	e0b true			
	cluster1-04_clus1	up/up	169.254.1.6/23	
cluster1-04	e0a true			
	cluster1-04_clus2	up/up	169.254.1.7/23	
cluster1-04	e0b true			
8 entries were displayed.				
cluster1::*>				

c. 驗證叢集是否顯示兩個叢集交換器的資訊：

「系統叢集交換器show -is監控、可運作的true」

顯示範例

```
cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
Switch                                     Type                                     Address
Model
-----
-----
cs1                                     cluster-network                         10.233.205.90      N9K-
C9336C
    Serial Number: FOCXXXXXXGD
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS) Software,
Version
                                9.3(5)
    Version Source: CDP

cs2                                     cluster-network                         10.233.205.91      N9K-
C9336C
    Serial Number: FOCXXXXXXGS
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS) Software,
Version
                                9.3(5)
    Version Source: CDP
cluster1::*>
```

3. 停用叢集生命體上的自動還原。

顯示範例

```
cluster1::*> network interface modify -vserver Cluster -lif * -auto
-revert false
```

步驟2：設定連接埠

1. 在叢集交換器CS2上、關閉連接至節點叢集連接埠的連接埠。

顯示範例

```
cs2(config)# interface eth1/1/1-2,eth1/7-8
cs2(config-if-range)# shutdown
```

2. 驗證叢集LIF是否已移轉至叢集交換器CS1上裝載的连接埠。這可能需要幾秒鐘的時間。

「網路介面show -role cluster」

顯示範例

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

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

Cluster				
	cluster1-01_clus1	up/up	169.254.3.4/23	
cluster1-01	e0a true			
	cluster1-01_clus2	up/up	169.254.3.5/23	
cluster1-01	e0a false			
	cluster1-02_clus1	up/up	169.254.3.8/23	
cluster1-02	e0a true			
	cluster1-02_clus2	up/up	169.254.3.9/23	
cluster1-02	e0a false			
	cluster1-03_clus1	up/up	169.254.1.3/23	
cluster1-03	e0a true			
	cluster1-03_clus2	up/up	169.254.1.1/23	
cluster1-03	e0a false			
	cluster1-04_clus1	up/up	169.254.1.6/23	
cluster1-04	e0a true			
	cluster1-04_clus2	up/up	169.254.1.7/23	
cluster1-04	e0a false			
8 entries were displayed.				
cluster1::*>				

3. 驗證叢集是否正常：

「叢集展示」

顯示範例

```
cluster1::*> cluster show
Node                Health Eligibility Epsilon
-----
cluster1-01         true   true      false
cluster1-02         true   true      false
cluster1-03         true   true      true
cluster1-04         true   true      false
4 entries were displayed.
cluster1::*>
```

4. 如果您尚未這麼做、請將下列命令的輸出複製到文字檔、以儲存目前交換器組態的複本：

```
show running-config
```

5. 清除交換器CS2上的組態、然後執行基本設定。



更新或套用新的RCF時、您必須清除交換器設定並執行基本組態。您必須連線至交換器序列主控台連接埠、才能再次設定交換器。

- a. 清理組態：

顯示範例

```
(cs2) # write erase

Warning: This command will erase the startup-configuration.

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

- b. 重新啟動交換器：

顯示範例

```
(cs2) # reload

Are you sure you would like to reset the system? (y/n) y
```

6. 使用下列傳輸傳輸協定之一、將RCF複製到交換器CS2的bootflash：FTP、TFTP、SFTP或scp。如需Cisco

命令的詳細資訊、請參閱中的適當指南 "[Cisco Nexus 9000系列NX-OS命令參考](#)" 指南：

顯示範例

本範例顯示使用TFTP將RCF複製到交換器CS2上的bootFlash：

```
cs2# copy tftp: bootflash: vrf management
Enter source filename: Nexus_9336C_RCF_v1.6-Cluster-HA-Breakout.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)...
```

7. 將先前下載的RCF套用至bootFlash。

如需Cisco命令的詳細資訊、請參閱中的適當指南 "[Cisco Nexus 9000系列NX-OS命令參考](#)" 指南：

顯示範例

此範例顯示在交換器CS2上安裝的RCF檔案「Nexus_9336C_RCF-v1.6-Cluster-HA-Breakout.txt」：

```
cs2# copy Nexus_9336C_RCF_v1.6-Cluster-HA-Breakout.txt running-
config echo-commands
```

8. 檢查「show banner motd」命令的橫幅輸出。您必須閱讀並遵循這些指示、以確保交換器的組態和操作正確無誤。

```

cs2# show banner motd

*****
*****
* NetApp Reference Configuration File (RCF)
*
* Switch    : Nexus N9K-C9336C-FX2
* Filename  : Nexus_9336C_RCF_v1.6-Cluster-HA-Breakout.txt
* Date      : 10-23-2020
* Version   : v1.6
*
* Port Usage:
* Ports 1- 3: Breakout mode (4x10G) Intra-Cluster Ports, int
e1/1/1-4, e1/2/1-4
, e1/3/1-4
* Ports 4- 6: Breakout mode (4x25G) Intra-Cluster/HA Ports, int
e1/4/1-4, e1/5/
1-4, e1/6/1-4
* Ports 7-34: 40/100GbE Intra-Cluster/HA Ports, int e1/7-34
* Ports 35-36: Intra-Cluster ISL Ports, int e1/35-36
*
* Dynamic breakout commands:
* 10G: interface breakout module 1 port <range> map 10g-4x
* 25G: interface breakout module 1 port <range> map 25g-4x
*
* Undo breakout commands and return interfaces to 40/100G
configuration in confi
g mode:
* no interface breakout module 1 port <range> map 10g-4x
* no interface breakout module 1 port <range> map 25g-4x
* interface Ethernet <interfaces taken out of breakout mode>
* inherit port-profile 40-100G
* priority-flow-control mode auto
* service-policy input HA
* exit
*
*****
*****

```

9. 確認RCF檔案為正確的更新版本：

「如何執行設定」

當您檢查輸出以確認您擁有正確的RCF時、請確定下列資訊正確無誤：

- RCF橫幅
- 節點和連接埠設定
- 自訂

輸出會因站台組態而異。請檢查連接埠設定、並參閱版本說明、以瞭解您安裝的RCF的任何特定變更。

10. 驗證RCF版本和交換器設定是否正確之後、請將執行組態檔複製到啟動組態檔。

如需Cisco命令的詳細資訊、請參閱中的適當指南 "[Cisco Nexus 9000系列NX-OS命令參考](#)" 指南：

顯示範例

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

11. 重新開機交換器CS2。您可以在交換器重新開機時忽略節點上報告的「叢集連接埠當機」事件。

顯示範例

```
cs2# reload
This command will reboot the system. (y/n)? [n] y
```

12. 驗證叢集上叢集連接埠的健全狀況。

- a. 驗證叢集中所有節點的e0d連接埠是否正常運作：

「網路連接埠show -role cluster」

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

```
Node: cluster1-01
```

```
Ignore
```

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

```
Node: cluster1-02
```

```
Ignore
```

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

```
Node: cluster1-03
```

```
Ignore
```

						Speed(Mbps)	Health
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e0a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e0d	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

Node: cluster1-04

Ignore

Health						Speed(Mbps)	Health
Port	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
Status							
-----	-----	-----	-----	-----	-----	-----	-----
-----	-----						
e0a	Cluster	Cluster		up	9000	auto/100000	
healthy	false						
e0d	Cluster	Cluster		up	9000	auto/100000	
healthy	false						

8 entries were displayed.

- a. 驗證叢集的交換器健全狀況（這可能不會顯示交換器CS2、因為LIF不是位於e0d上）。

```

cluster1::*> network device-discovery show -protocol cdp
Node/          Local  Discovered
Protocol      Port   Device (LLDP: ChassisID)  Interface
Platform
-----
-----
cluster1-01/cdp
          e0a      cs1                      Ethernet1/7
N9K-C9336C
          e0d      cs2                      Ethernet1/7
N9K-C9336C
cluster01-2/cdp
          e0a      cs1                      Ethernet1/8
N9K-C9336C
          e0d      cs2                      Ethernet1/8
N9K-C9336C
cluster01-3/cdp
          e0a      cs1                      Ethernet1/1/1
N9K-C9336C
          e0b      cs2                      Ethernet1/1/1
N9K-C9336C
cluster1-04/cdp
          e0a      cs1                      Ethernet1/1/2
N9K-C9336C
          e0b      cs2                      Ethernet1/1/2
N9K-C9336C

cluster1::*> system cluster-switch show -is-monitoring-enabled
-operational true
Switch                                Type                Address
Model
-----
-----
cs1                                    cluster-network     10.233.205.90
NX9-C9336C
    Serial Number: FOCXXXXXXGD
    Is Monitored: true
    Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
    Software, Version
                        9.3(5)
    Version Source: CDP

cs2                                    cluster-network     10.233.205.91

```

```
NX9-C9336C
  Serial Number: FOCXXXXXXGS
    Is Monitored: true
      Reason: None
    Software Version: Cisco Nexus Operating System (NX-OS)
Software, Version
                9.3(5)
  Version Source: CDP

2 entries were displayed.
```

您可能會在CS1交換器主控台觀察到下列輸出、視先前載入交換器的RCF版本而定：

```
2020 Nov 17 16:07:18 cs1 %$ VDC-1 %$ %STP-2-UNBLOCK_CONSIST_PORT:
Unblocking port port-channel1 on VLAN0092. Port consistency
restored.
2020 Nov 17 16:07:23 cs1 %$ VDC-1 %$ %STP-2-BLOCK_PVID_PEER:
Blocking port-channel1 on VLAN0001. Inconsistent peer vlan.
2020 Nov 17 16:07:23 cs1 %$ VDC-1 %$ %STP-2-BLOCK_PVID_LOCAL:
Blocking port-channel1 on VLAN0092. Inconsistent local vlan.
```

13. 在叢集交換器CS1上、關閉連接至節點叢集連接埠的連接埠。

顯示範例

以下範例使用介面範例輸出：

```
cs1(config)# interface eth1/1/1-2,eth1/7-8
cs1(config-if-range)# shutdown
```

14. 驗證叢集LIF是否已移轉至交換器CS2上裝載的連接埠。這可能需要幾秒鐘的時間。

「網路介面show -role cluster」

```

cluster1::*> network interface show -role cluster

```

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

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

15. 驗證叢集是否正常：

「叢集展示」

顯示範例

```
cluster1::*> cluster show
Node                Health    Eligibility    Epsilon
-----
cluster1-01         true     true           false
cluster1-02         true     true           false
cluster1-03         true     true           true
cluster1-04         true     true           false
4 entries were displayed.
cluster1::*>
```

16. 在交換器 CS1 上重複步驟 4 至 11。
17. 在叢集生命體上啟用自動還原。

顯示範例

```
cluster1::*> network interface modify -vserver Cluster -lif * -auto
-revert True
```

18. 重新開機交換器CS1。您可以這樣做、觸發叢集生命期以恢復到其主連接埠。您可以在交換器重新開機時忽略節點上報告的「叢集連接埠當機」事件。

顯示範例

```
cs1# reload
This command will reboot the system. (y/n)? [n] y
```

步驟3：驗證組態

1. 驗證連接至叢集連接埠的交換器連接埠是否為* up*。

```
show interface brief
```

顯示範例

```
cs1# show interface brief | grep up
.
.
Eth1/1/1      1      eth  access up      none
10G(D)  --
Eth1/1/2      1      eth  access up      none
10G(D)  --
Eth1/7        1      eth  trunk  up      none
100G(D)  --
Eth1/8        1      eth  trunk  up      none
100G(D)  --
.
.
```

2. 確認預期的節點仍已連線：

「How cup neighbor」

顯示範例

```
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        133      H              FAS2980
e0a
node2              Eth1/2        133      H              FAS2980
e0a
cs2                Eth1/35       175      R S I s        N9K-C9336C
Eth1/35
cs2                Eth1/36       175      R S I s        N9K-C9336C
Eth1/36

Total entries displayed: 4
```


3. 使用下列命令、確認叢集節點位於正確的叢集 VLAN 中：

```
show vlan brief
```

```
show interface trunk
```

```
cs1# show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Po1, Eth1/1, Eth1/2, Eth1/3 Eth1/4, Eth1/5, Eth1/6, Eth1/7 Eth1/8, Eth1/35, Eth1/36 Eth1/9/1, Eth1/9/2, Eth1/9/3 Eth1/9/4, Eth1/10/1, Eth1/10/2 Eth1/10/3, Eth1/10/4
17	VLAN0017	active	Eth1/1, Eth1/2, Eth1/3, Eth1/4 Eth1/5, Eth1/6, Eth1/7, Eth1/8 Eth1/9/1, Eth1/9/2, Eth1/9/3 Eth1/9/4, Eth1/10/1, Eth1/10/2 Eth1/10/3, Eth1/10/4
18	VLAN0018	active	Eth1/1, Eth1/2, Eth1/3, Eth1/4 Eth1/5, Eth1/6, Eth1/7, Eth1/8 Eth1/9/1, Eth1/9/2, Eth1/9/3 Eth1/9/4, Eth1/10/1, Eth1/10/2 Eth1/10/3, Eth1/10/4
31	VLAN0031	active	Eth1/11, Eth1/12, Eth1/13 Eth1/14, Eth1/15, Eth1/16 Eth1/17, Eth1/18, Eth1/19 Eth1/20, Eth1/21, Eth1/22
32	VLAN0032	active	Eth1/23, Eth1/24,

```

Eth1/25
Eth1/28
Eth1/31
Eth1/34
33    VLAN0033          active  Eth1/11, Eth1/12,
Eth1/13
Eth1/16
Eth1/19
Eth1/22
34    VLAN0034          active  Eth1/23, Eth1/24,
Eth1/25
Eth1/28
Eth1/31
Eth1/34

```

```
cs1# show interface trunk
```

```

-----
Port          Native  Status      Port
              Vlan                Channel
-----
Eth1/1        1      trunking    --
Eth1/2        1      trunking    --
Eth1/3        1      trunking    --
Eth1/4        1      trunking    --
Eth1/5        1      trunking    --
Eth1/6        1      trunking    --
Eth1/7        1      trunking    --
Eth1/8        1      trunking    --
Eth1/9/1      1      trunking    --
Eth1/9/2      1      trunking    --
Eth1/9/3      1      trunking    --
Eth1/9/4      1      trunking    --
Eth1/10/1     1      trunking    --
Eth1/10/2     1      trunking    --
Eth1/10/3     1      trunking    --
Eth1/10/4     1      trunking    --

```

Eth1/11	33	trunking	--
Eth1/12	33	trunking	--
Eth1/13	33	trunking	--
Eth1/14	33	trunking	--
Eth1/15	33	trunking	--
Eth1/16	33	trunking	--
Eth1/17	33	trunking	--
Eth1/18	33	trunking	--
Eth1/19	33	trunking	--
Eth1/20	33	trunking	--
Eth1/21	33	trunking	--
Eth1/22	33	trunking	--
Eth1/23	34	trunking	--
Eth1/24	34	trunking	--
Eth1/25	34	trunking	--
Eth1/26	34	trunking	--
Eth1/27	34	trunking	--
Eth1/28	34	trunking	--
Eth1/29	34	trunking	--
Eth1/30	34	trunking	--
Eth1/31	34	trunking	--
Eth1/32	34	trunking	--
Eth1/33	34	trunking	--
Eth1/34	34	trunking	--
Eth1/35	1	trnk-bndl	Pol
Eth1/36	1	trnk-bndl	Pol
Pol	1	trunking	--

```

-----
Port                Vlans Allowed on Trunk
-----
Eth1/1              1,17-18
Eth1/2              1,17-18
Eth1/3              1,17-18
Eth1/4              1,17-18
Eth1/5              1,17-18
Eth1/6              1,17-18
Eth1/7              1,17-18
Eth1/8              1,17-18
Eth1/9/1            1,17-18
Eth1/9/2            1,17-18
Eth1/9/3            1,17-18
Eth1/9/4            1,17-18
Eth1/10/1           1,17-18
Eth1/10/2           1,17-18
Eth1/10/3           1,17-18

```

Eth1/10/4	1, 17-18
Eth1/11	31, 33
Eth1/12	31, 33
Eth1/13	31, 33
Eth1/14	31, 33
Eth1/15	31, 33
Eth1/16	31, 33
Eth1/17	31, 33
Eth1/18	31, 33
Eth1/19	31, 33
Eth1/20	31, 33
Eth1/21	31, 33
Eth1/22	31, 33
Eth1/23	32, 34
Eth1/24	32, 34
Eth1/25	32, 34
Eth1/26	32, 34
Eth1/27	32, 34
Eth1/28	32, 34
Eth1/29	32, 34
Eth1/30	32, 34
Eth1/31	32, 34
Eth1/32	32, 34
Eth1/33	32, 34
Eth1/34	32, 34
Eth1/35	1
Eth1/36	1
Pol	1
..	
..	
..	
..	
..	



如需特定連接埠和 VLAN 使用詳細資料、請參閱 RCF 中的橫幅和重要附註一節。

4. 確認CS1與CS2之間的ISL正常運作：

「How port-channel Summary」

顯示範例

```
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      Eth1/35 (P)      Eth1/36 (P)
cs1#
```

5. 驗證叢集生命區是否已還原至其主連接埠：

「網路介面show -role cluster」

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

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

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

6. 驗證叢集是否正常：

「叢集展示」

顯示範例

```
cluster1::*> cluster show
Node           Health Eligibility Epsilon
-----
cluster1-01    true   true      false
cluster1-02    true   true      false
cluster1-03    true   true      true
cluster1-04    true   true      false
4 entries were displayed.
cluster1::*>
```

7. Ping遠端叢集介面以驗證連線能力：

「叢集ping叢集節點本機」


```

cluster1::*> cluster ping-cluster -node local
Host is cluster1-03
Getting addresses from network interface table...
Cluster cluster1-03_clus1 169.254.1.3 cluster1-03 e0a
Cluster cluster1-03_clus2 169.254.1.1 cluster1-03 e0b
Cluster cluster1-04_clus1 169.254.1.6 cluster1-04 e0a
Cluster cluster1-04_clus2 169.254.1.7 cluster1-04 e0b
Cluster cluster1-01_clus1 169.254.3.4 cluster1-01 e0a
Cluster cluster1-01_clus2 169.254.3.5 cluster1-01 e0d
Cluster cluster1-02_clus1 169.254.3.8 cluster1-02 e0a
Cluster cluster1-02_clus2 169.254.3.9 cluster1-02 e0d
Local = 169.254.1.3 169.254.1.1
Remote = 169.254.1.6 169.254.1.7 169.254.3.4 169.254.3.5 169.254.3.8
169.254.3.9
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 169.254.1.3 to Remote 169.254.1.6
    Local 169.254.1.3 to Remote 169.254.1.7
    Local 169.254.1.3 to Remote 169.254.3.4
    Local 169.254.1.3 to Remote 169.254.3.5
    Local 169.254.1.3 to Remote 169.254.3.8
    Local 169.254.1.3 to Remote 169.254.3.9
    Local 169.254.1.1 to Remote 169.254.1.6
    Local 169.254.1.1 to Remote 169.254.1.7
    Local 169.254.1.1 to Remote 169.254.3.4
    Local 169.254.1.1 to Remote 169.254.3.5
    Local 169.254.1.1 to Remote 169.254.3.8
    Local 169.254.1.1 to Remote 169.254.3.9
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)

```

在 Cisco 9336C-FX2 叢集交換器上啟用 SSH

如果您使用叢集交換器健全狀況監視器（CSHM）和記錄收集功能、則必須產生SSH金

鑰、然後在叢集交換器上啟用SSH。

步驟

1. 確認 SSH 已停用：

```
show ip ssh
```

顯示範例

```
(switch)# show ip ssh
```

SSH Configuration

```
Administrative Mode: ..... Disabled
SSH Port: ..... 22
Protocol Level: ..... Version 2
SSH Sessions Currently Active: ..... 0
Max SSH Sessions Allowed: ..... 5
SSH Timeout (mins): ..... 5
Keys Present: ..... DSA(1024) RSA(1024)
ECDSA(521)
Key Generation In Progress: ..... None
SSH Public Key Authentication Mode: ..... Disabled
SCP server Administrative Mode: ..... Disabled
```

2. 產生SSH金鑰：

```
crypto key generate
```

```
(switch)# config

(switch) (Config)# crypto key generate rsa

Do you want to overwrite the existing RSA keys? (y/n): y

(switch) (Config)# crypto key generate dsa

Do you want to overwrite the existing DSA keys? (y/n): y

(switch) (Config)# crypto key generate ecdsa 521

Do you want to overwrite the existing ECDSA keys? (y/n): y

(switch) (Config)# aaa authorization commands "noCmdAuthList" none
(switch) (Config)# exit
(switch)# ip ssh server enable
(switch)# ip scp server enable
(switch)# ip ssh pubkey-auth
(switch)# write mem

This operation may take a few minutes.
Management interfaces will not be available during this time.
Are you sure you want to save? (y/n) y

Config file 'startup-config' created successfully.

Configuration Saved!
```

3. 重新啟動交換器：

"重裝"

4. 確認SSH已啟用：

```
show ip ssh
```

```
(switch) # show ip ssh
```

SSH Configuration

```
Administrative Mode: ..... Enabled
SSH Port: ..... 22
Protocol Level: ..... Version 2
SSH Sessions Currently Active: ..... 0
Max SSH Sessions Allowed: ..... 5
SSH Timeout (mins): ..... 5
Keys Present: ..... DSA(1024) RSA(1024)
ECDSA(521)
Key Generation In Progress: ..... None
SSH Public Key Authentication Mode: ..... Enabled
SCP server Administrative Mode: ..... Enabled
```

接下來呢？

"啟用記錄收集"。

乙太網路交換器健全狀況監控記錄收集

您可以使用記錄收集功能、在 ONTAP 中收集交換器相關的記錄檔。乙太網路交換器健全狀況監視器（CSHM）負責確保叢集與儲存網路交換器的作業健全狀況、並收集交換器記錄以供偵錯之用。本程序將引導您完成設定及開始從交換器收集詳細 * 支援 * 記錄的程序、並開始每小時收集 AutoSupport 所收集的 * 定期 * 資料。

開始之前

- 使用 9336C-FX2 叢集交換器 **CL1** 來確認您已設定環境。
- 必須為交換器啟用交換器健全狀況監控。請務必確認 Is Monitored: 欄位在的輸出中設為 * 真 * system switch ethernet show 命令。

步驟

1. 為乙太網路交換器健全狀況監視器記錄收集功能建立密碼：

「系統交換器乙太網路記錄設定密碼」

```
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. 若要啟動記錄收集、請執行下列命令、以先前命令中使用的切換參數取代裝置。這會同時啟動記錄收集的兩種類型：詳細的 * 支援 * 記錄檔和 * 定期 * 資料的每小時集合。

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

```
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.
```

等待 10 分鐘、然後檢查記錄收集是否完成：

```
system switch ethernet log show
```



如果這些命令中有任何一個傳回錯誤、或記錄集合未完成、請聯絡 NetApp 支援部門。

疑難排解

如果您遇到記錄收集功能報告的下列任何錯誤狀態（可在的輸出中看到 `system switch ethernet log show`）、請嘗試對應的除錯步驟：

* 記錄收集錯誤狀態 *	* 解決方法 *
• 不存在 RSA 金鑰 *	重新產生 ONTAP SSH 金鑰。請聯絡 NetApp 支援部門。
• 交換器密碼錯誤 *	驗證認證、測試 SSH 連線、並重新產生 ONTAP SSH 金鑰。請參閱交換器說明文件、或聯絡 NetApp 支援部門以取得相關指示。
• FIPS 不存在 ECDSA 金鑰 *	如果啟用 FIPS 模式、則必須先在交換器上產生 ECDSA 金鑰、然後再重新嘗試。
• 找到之前存在的記錄 *	移除交換器上先前的記錄集合檔案。
• 交換器傾印記錄錯誤 *	確保交換器使用者擁有記錄收集權限。請參閱上述先決條件。

設定 SNMPv3

請遵循此程序來設定支援乙太網路交換器健全狀況監控（CSHM）的 SNMPv3。

關於這項工作

下列命令可在 Cisco 9336C-FX2 交換器上設定 SNMPv3 使用者名稱：

- 若為 *無驗證*：`snmp-server user SNMPv3_USER NoAuth`
- 對於 *MD5/SHA 驗證*：`snmp-server user SNMPv3_USER auth [md5|sha] AUTH-PASSWORD`
- 對於採用 AES/DES 加密的 *MD5/SHA 驗證*：`snmp-server user SNMPv3_USER AuthEncrypt auth [md5|sha] AUTH-PASSWORD priv aes-128 PRIV-PASSWORD`

下列命令可在ONTAP Sfeside上設定一個v3使用者名稱：「cluster1::*>安全登入create -user-or group name MPv2_user-applicationSNMP -imize-method USM -reme-switch-ipaddress_address_」

下列命令會使用 CSHM 建立 SNMPv3 使用者名稱：`cluster1::*> system switch ethernet modify -device DEVICE -snmp-version SNMPv3 -community-or-username SNMPv3_USER`

步驟

1. 設定交換器上的v3使用者使用驗證和加密：

```
show snmp user
```

```

(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. 設定位在邊上的v3使用者ONTAP：

```

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

```



```
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. 設定 CSHM 以監控新的 SNMPv3 使用者：

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

```

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. 驗證要與新建立的 SNMPv3 使用者查詢的序號、是否與 CSHM 輪詢期間結束後上一步所述相同。

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

```
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::*>
```

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