

使用POAP配置NXOS到ACI的自動轉換

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簡介

本文檔介紹如何透過自動調配(POAP)自動轉換將OS（作業系統）從Nexus作業系統(NXOS®)切換到ACI。

何時需要它？

在現有的流程中，如果使用NXOS®映像接收退回材料授權(RMA)/新交換機，則將這些交換機轉換為ACI模式並將其增加到ACI交換矩陣將非常耗時且複雜。

有三種情況需要此功能，

- 1)更換故障枝葉/主幹交換機
- 2)增加新的枝葉/主幹以擴展ACI交換矩陣
- 3)增加/更換遠端枝葉

必備條件

ACI版本5.2(3)中引入了將NXOS®轉換為ACI模式的現有過程非常複雜且非常耗時，因此可簡化該過程並使其接近即插即用（加電自動調配）POAP自動轉換功能。POAP功能在NXOS®7.X版本開始提供，該版本總結說您嘗試增加的新交換機必須運行更高的版本。

什麼是POAP？

POAP代表Power on auto provisioning。找不到啟動配置時，Nexus交換機上會自動觸發POAP進程。

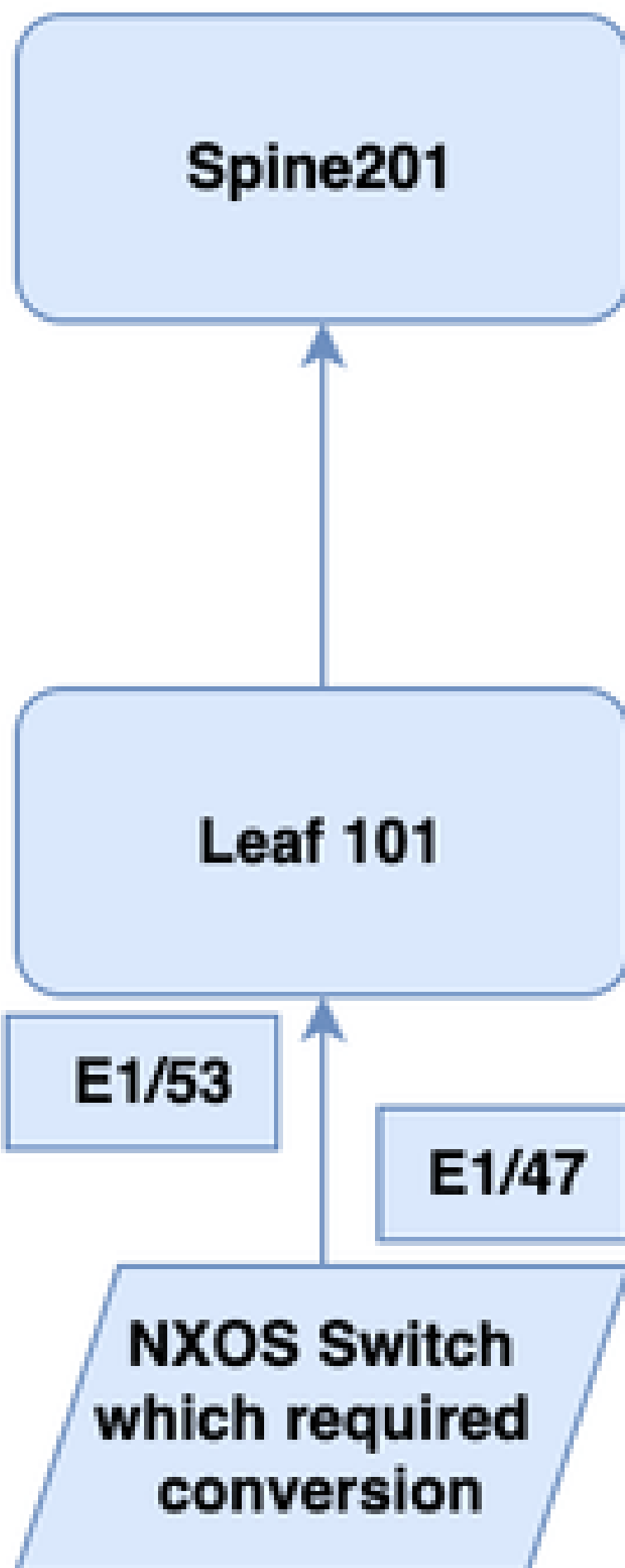
當觸發Poap時，交換機將首先從管理介面啟動動態主機配置協定(DHCP)進程，如果未收到DHCP確認，則在所有其他埠上啟動此DHCP發現。在ACI中，APIC充當DHCP伺服器，為交換機提供IP地址和python指令碼位置。下載python指令碼後，將會呼叫ACI映像下載並在交換機上自動進

行轉換。ACI在基礎設施網路中運行Poap。

拓撲

在此拓撲中，您需要轉換主幹節點201、枝葉節點101和nxos交換機。此nxos交換機可以直接連線到主幹或枝葉交換機，這意味著轉換成功後，您可以將它直接安裝到交換矩陣。

在本配置示例中，您需要將ACI枝葉101埠E1/53連線到新的交換機節點埠E1/47。請確保只有枝葉和主幹上的交換矩陣埠可用於POAP。



Fabric Membership

Registered Nodes

Nodes Pending Registration

Unreachable Nodes

Unmanaged Fabric Nodes

Auto Firmware Update

0

Unsupported

0

Undiscovered

1

Unknown

Serial Number	Pod ID	Node ID	RL TEP Pool	Name	Node Type	Supported Model	SSL Certificate	Status
FDO233002HC	1	0	0		Leaf	no	n/a	

第6步：註冊新的交換機節點，按一下右鍵並選擇註冊。

Fabric Membership

Registered Nodes

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Unmanaged Fabric Nodes

Auto Firmware Update

0

Unsupported

0

Undiscovered

1

Unknown

Serial Number	Pod ID	Node ID	RL TEP Pool	Name	Node Type	Supported Model	SSL Certificate	Status
FDO233002HC	1	0	0		Leaf	no	n/a	

Register

Edit Node and Fabric Name

Remove From Controller

第7步：增加節點ID、節點名稱並註冊枝葉。

Register



Serial Number: FDO233002HC

Pod ID:

1



Node ID:

1891



Node Name:

poap-leaf

Role:

leaf



Rack Name:

select



Cancel

Register

第8步：在NXOS交換機啟動期間，會出現提示，詢問您是否要中止POAP並繼續正常設定。選擇「否」，繼續POAP。

（如果裝置具有啟動配置，則必須執行寫擦除並重新載入裝置，以強制nexus交換機進入POAP模式。）

Abort Power On Auto Provisioning [yes - continue with normal setup, skip - bypass password and basic co

>>>> *This message appears on the console which means POAP process started on new switch node, Do not br*

第9步：觀察新交換機節點的控制檯，您將看到這些日誌。

<#root>

%% %POAP-2-POAP_DHCP_DISCOVER_START: [FD0233002HC-A4:53:0E:3D:D9:A3] -

POAP DHCP Discover phase started <<< POAP Process started, new switch node is sending DHCP discover

2024 Jun 24 13:21:31 switch %% VDC-1 %% %POAP-2-POAP_INFO: - Abort Power On Auto Provisioning [yes -

2024 Jun 24 13:21:32 switch %% VDC-1 %% %POAP-2-POAP_INFO:

Recieved DHCP offer from server ip - 10.0.0.1 <<< DHCP offer has been recived from APIC

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: Recieved DHCP offer from server ip - 10.0.0.1

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - Using DHCP
Eth1/47

from 10.0.0.1

<<< This is the interface used on new switch node

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] -

Assigned Host Name: poap-leaf <<< Hostname assigned to new switch node based on node-name you specifie

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] -

Assigned IP address: 10.0.232.68 <<< New switch node got an IP Address

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - Netmask: 2

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - DNS Server

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - Default Ga

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - Script Ser

2024 Jun 24 13:21:39 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] -

Script Name: aci_poap_bootfile.py <<< This script is responsible for performing NXOS to ACI mode convers

2024 Jun 24 13:21:49 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - The POAP S

<<< Downloading script

2024 Jun 24 13:21:49 switch %% VDC-1 %% %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - The POAP S

[copy tftp://10.0.0.1/aci_poap_bootfile.py bootflash:scripts/script.sh vrf default]

2024 Jun 24 13:21:50 switch %% VDC-1 %% %POAP-2-POAP_SCRIPT_DOWNLOADED: [FD0233002HC-A4:53:0E:3D:D9:A3]

Successfully downloaded POAP script file <<< Script downloaded

2024 Jun 24 13:21:50 switch %\$ VDC-1 %\$ %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - Script file

2024 Jun 24 13:21:50 switch %\$ VDC-1 %\$ %POAP-2-POAP_INFO: [FD0233002HC-A4:53:0E:3D:D9:A3] - MD5 checks

2024 Jun 24 13:21:50 switch %\$ VDC-1 %\$ %POAP-2-POAP_SCRIPT_STARTED_MD5_VALIDATED: [FD0233002HC-A4:53:0

POAP script execution started(MD5 validated) <<< Validating MD5 Checksum before downloading ACI ima

2024 Jun 24 13:21:52 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: -

Starting to download image - /script.sh <<< Starting ACI image download as script is executed in t

2024 Jun 24 13:21:52 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: - The command is : terminal dont-ask ; term

184633.793: 2024 Jun 24 13:25:50 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: -

Downloading the image completed - /script.sh <<< ACI image download completed

184633.819: 2024 Jun 24 13:25:50 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: - Image file found in bootflas

184635.739: 2024 Jun 24 13:25:52 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: - no boot nxos o/p : - /script

184640.147: 2024 Jun 24 13:25:56 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: - copy running-config o/p : [#

184642.147: 2024 Jun 24 13:25:58 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: - boot aci o/p : Warning: Plea

184649.973: 2024 Jun 24 13:26:06 switch %\$ VDC-1 %\$ %USER-1-SYSTEM_MSG: -

md5sum o/p : e9065f12d6eac79d15091f0c595ed9e5 - /script.sh <<< Post download MD5 checksum validati

184657.960: 2024 Jun 24 13:26:14 switch %\$ VDC-1 %\$ %VMAN-2-ACTIVATION_STATE: Successfully deactivated

184701.033: 2024 Jun 24 13:26:17 switch %\$ VDC-1 %\$ %PLATFORM-2-PFM_SYSTEM_RESET:

Manual system restart from Command Line Interface <<< Rebooting the device to perform the conversion

第10步：名為Poap-Leaf的新交換機節點開始在註冊節點中顯示。

Fabric Membership

Registered Nodes	Nodes Pending Registration	Unreachable Nodes	Unmanaged Fabric Nodes
3 Leafs 0 Virtual Leafs 0 Decommissioned 0 Maintenance 0 Active 0 Inactive	1 Spines 0 Virtual Spines 0 Decommissioned 0 Maintenance 1 Active 0 Inactive		

Serial Number	Model	Pod ID	Node ID	Name	Node Type	IP	Maintenance Mode
PD034165A39	N9K-CR3180YC-FX	1	101	Leaf101	Leaf	10.8.232.64/32	No
PD034167C4	N9K-CR3180YC-FX	1	102	Leaf102	Leaf	10.8.232.65/32	No
PD0341737H	N9K-CR3180YC-FX	1	103	Leaf103	Leaf	10.8.232.67/32	No
PD02162POL8	N9K-CR504	1	201	Spine1	Spine	10.8.232.61/32	No
PD033902HC	Cisco N9K-CR3108TC-EX	1	1001	poap-leaf	Leaf	10.8.232.68/32	No

第11步：從新交換機節點的CLI驗證其已轉換為ACI模式。

<#root>

User Access Verification

(none) login: admin

```
*****

Fabric discovery in progress, show commands are not fully functional

Logout and Login after discovery to continue to use show commands.

Run show discoveryissues for more details.

*****

(none)#

<<< Device is in ACI discovey mode now
```

第12步：現在將新交換機節點正確連線到ACI交換矩陣。

第13步：刪除poap成功轉換後的NXOS轉換策略。

Fabric Membership

Registered Nodes

Nodes Pending Registration

Unreachable Nodes

Unmanaged Fabric Nodes

Auto Firmware Update

4

Leafs

0 Decommissioned

0 Maintenance

3 Active

0 Inactive

0

Virtual Leafs

0 Decommissioned

0 Maintenance

0 Active

0 Inactive

1

Spines

0 Decommissioned

0 Maintenance

1 Active

0 Inactive

0

Virtual Spines

0 Decommissioned

0 Maintenance

0 Active

0 Inactive

Client - FDO24161A39

General

NXOS Conversion Policy

NXOS Oper Details

Faults

History

Serial Number	Path Name	POAP Enabled
FDO24161A39	eth1/53	true
FDO241611C4		
FDO2417137H		
FOX2352PGLB		
FDO233002HC		

IP	Maintenance Mode	Status
10.0.232.64/32	No	Active
10.0.232.66/32	No	Active
10.0.232.67/32	No	Active
10.0.232.65/32	No	Active
10.0.232.68/32	No	Unsupported

Client - FDO24161A39

General

NXOS Conversion Policy

NXOS Oper Details

Faults

History

Path Name	POAP Enabled
eth1/53	true

Delete

Are you sure you want to delete the selected NXOS Conversion Policy?

Yes

No

Close

++ You also encounter an Fault F427 when you configure POAP, please ensure that fault is cleared post s
 This fault is an reminder that you have configured an port on ACI Leaf switch for POAP usage

APIC上的POAP dhcp日誌

要檢視APIC上的DHCP日誌，請參閱給定的位置和日誌檔案。

```
<#root>
```

```
apic1# cd /var/log/dme/log/
apic1# less dhcpd.bin.log | grep ISC | grep a4:53:0e:3d:d9:a3
```

```
30167||2024-06-24T13:12:04.170069236+00:00||dhcp||INFO|||ISC
dhcpd: DHCPDISCOVER from a4:53:0e:3d:d9:a3 via 10.0.232.64
||../svc/dhcpd/src/gen/ifc/beh/imp/./DhcpdSvc.cc||68
<<< DHCP Discovered recieved from Leaf101 Infra Loopback IP , Leaf 101 is acting as DHCP Relay

30167||2024-06-24T13:12:04.170129519+00:00||dhcp||INFO|||ISC
dhcpd: DHCPOFFER on 10.0.232.68 to a4:53:0e:3d:d9:a3 via 10.0.232.64
||../svc/dhcpd/src/gen/ifc/beh/imp/./DhcpdSvc.cc||68
<<< DHCP Offer forwarded from APIC

30167||2024-06-24T13:12:07.219176308+00:00||dhcp||INFO|||ISC
dhcpd: Received host decl = FD0233002HC
{
uid "FD0233002HC"; dynamic; option host-name "poap-leaf"; fixed-address 10.0.232.68; option cisco.node-r
} ||../svc/dhcpd/src/gen/ifc/beh/imp/./DhcpdSvc.cc||68 bico 04.421.
<<< DHCP Server provides IP, DHS and TFTP server IP address to download python script and ACI image

30167||2024-06-24T13:12:07.220213143+00:00||dhcp||INFO|||ISC dhcpd: Received host decl = FD0233002HC {
30167||2024-06-24T13:12:10.167297645+00:00||dhcp||DBG4|||ISC dhcpd: Before updateUid 12:||../svc/dhcpd
30167||2024-06-24T13:12:10.167454624+00:00||dhcp||DBG4|||ISC dhcpd: not our server id ours 0.0.0.0 rec
30167||2024-06-24T13:12:10.167588015+00:00||dhcp||DBG4|||ISC dhcpd: Before updateUid 12:||../svc/dhcpd
30167||2024-06-24T13:12:10.167639084+00:00||dhcp||INFO|||ISC dhcpd: DHCPREQUEST for 10.0.232.68 (10.0.
30167||2024-06-24T13:12:10.167706966+00:00||dhcp||INFO|||ISC dhcpd: DHCPACK on 10.0.232.68 to a4:53:0e
30167||2024-06-24T13:12:10.167806426+00:00||dhcp||DBG4|||ISC dhcpd: updateUid 11:FD0233002HC, ../commo
30167||2024-06-24T13:12:12.221336321+00:00||dhcp||INFO|||ISC dhcpd: Received host decl = FD0233002HC {
```

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。