

Windows 2012 NPIV on UCS配置示例

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簡介

本檔案介紹如何在整合運算系統(UCS)版本2.1(2a)上設定Windows Server 2012 N_Port ID虛擬化(NPIV)。使用此功能，在伺服器上運行的虛擬機器(VM)可以共用一個介面卡，並且仍然可以獨立訪問其自己的受保護儲存。

必要條件

需求

思科建議您瞭解以下主題：

- 與UCS Manager(UCSM)版本2.1(2)相容的Windows交換矩陣網路介面控制器(fNIC)驅動程式
- UCSM 2.1(2)版虛擬介面卡(VIC)韌體映像
- 交換矩陣互聯I/O模組(IOM)上的UCSM版本2.1(2)
- Hyper-V 2012和Windows 2012訪客

採用元件

本文中的資訊係根據以下軟體和硬體版本：

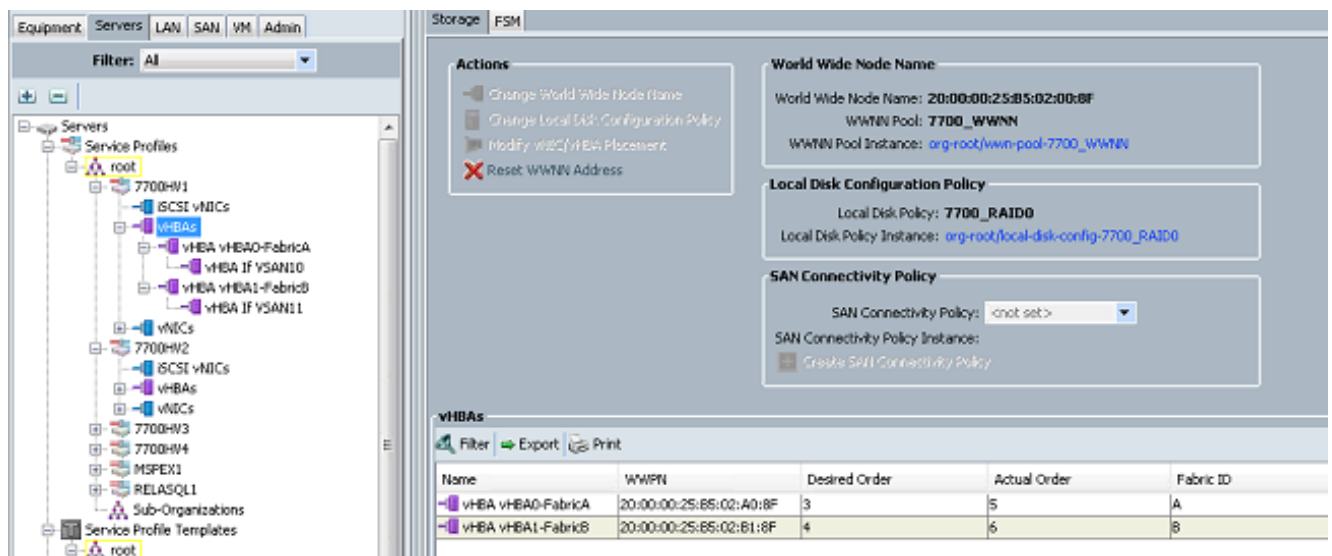
- Hyper-V版本3.0
- Windows Server 2012
- NetApp儲存
- UCS機箱、交換矩陣互聯和B系列伺服器
- Cisco Nexus 5000 系列交換器

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

設定

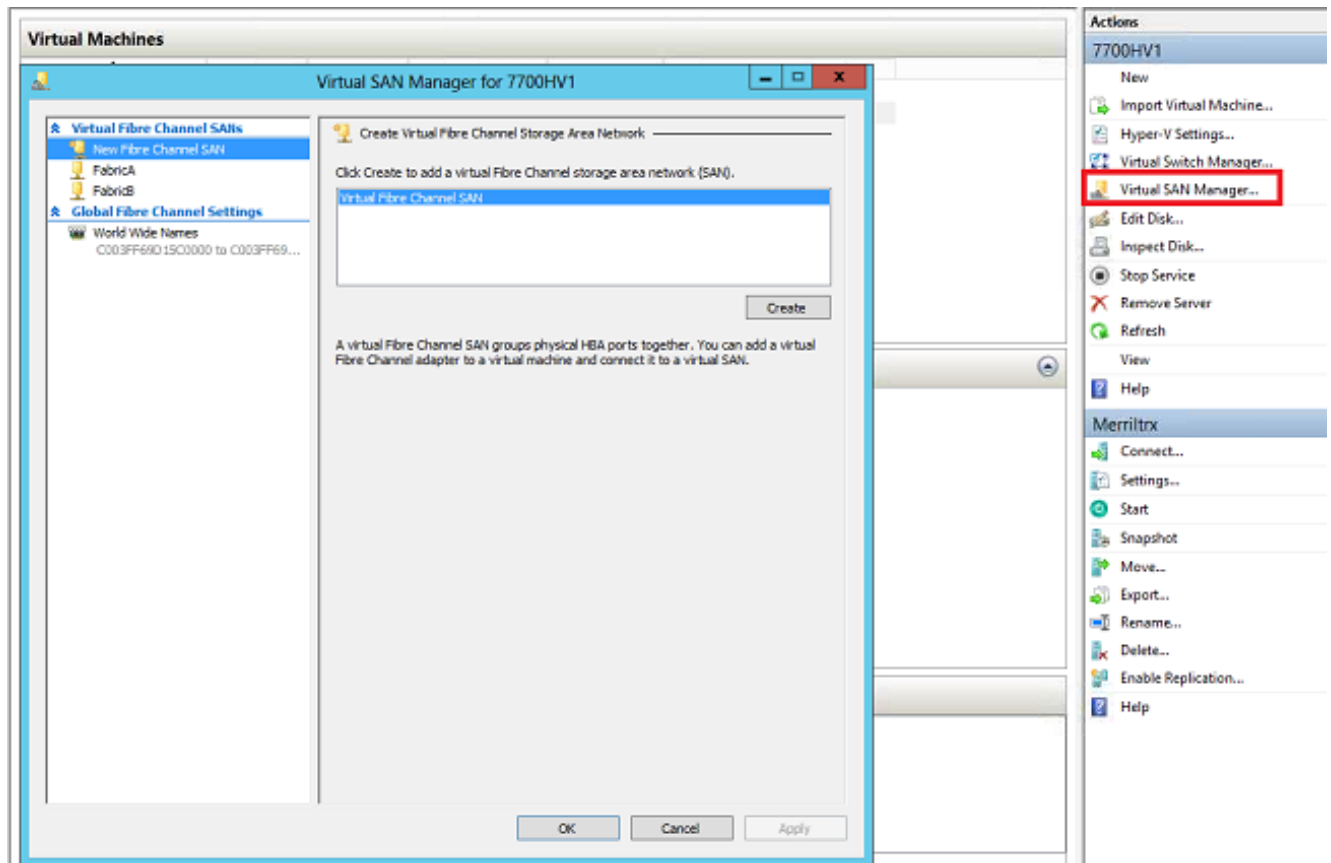
完成以下步驟以配置NPV:

1. 從UCS的角度來看，您必須使用兩個虛擬主機匯流排介面卡(vHBA)配置服務配置檔案，每個交換矩陣一個。此圖顯示一個服務配置檔案的vHBA。您可以將全球通用連線埠名稱(WWWPN)與輸出中的服務設定檔相關聯，該服務設定檔稍後會顯示在文檔中。
附註：使用儲存區域網路(SAN)儲存啟動Hyper-V主機時，強烈建議將vHBA的單獨集用於VM流量和裝置啟動。本示例概述了具有兩個vHBA的基本配置。

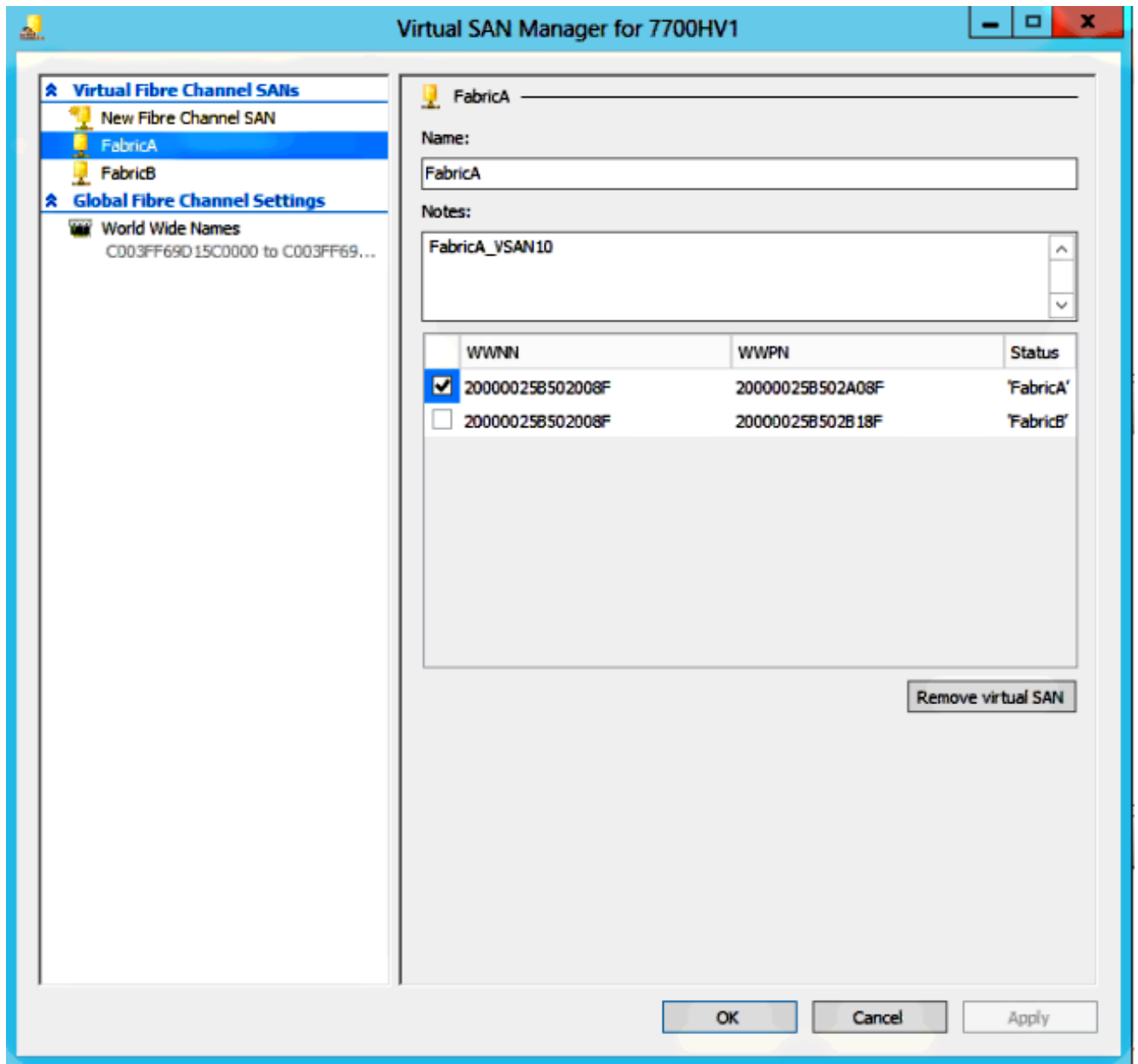


Name	WWPN	Desired Order	Actual Order	Fabric ID
vHBA vHBA0-FabricA	20:00:00:25:65:02:A0:8F	3	5	A
vHBA vHBA1-FabricB	20:00:00:25:65:02:B1:8F	4	6	B

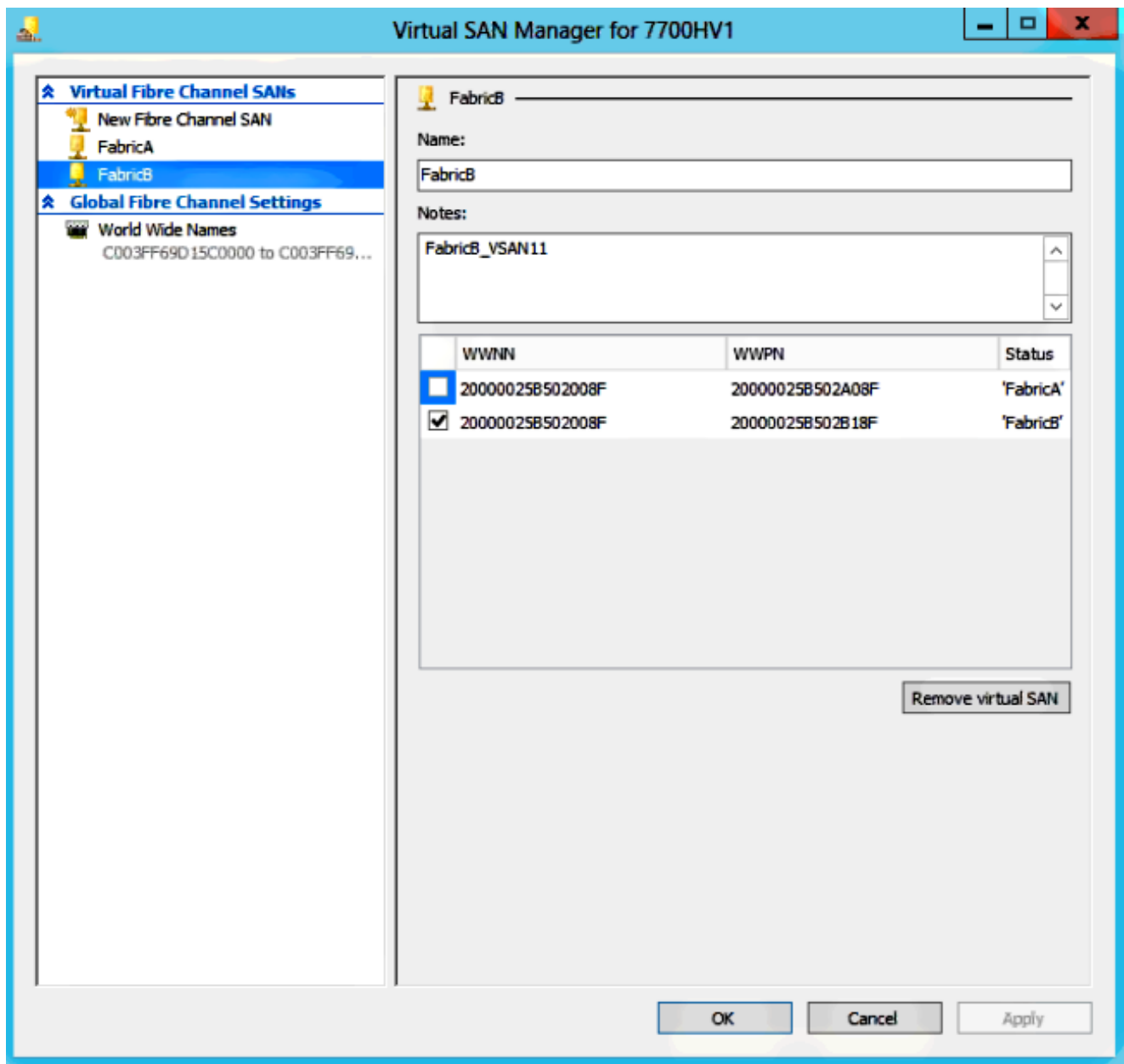
2. 從Hyper-V管理器配置虛擬儲存區域網路(VSAN)。您必須建立兩個VSAN，每個交換矩陣一個。在其他Hyper-V主機中建立VSAN時，請確保使用相同的名稱；否則，即時遷移不起作用。按一下host，然後按一下Virtual SAN Manager。



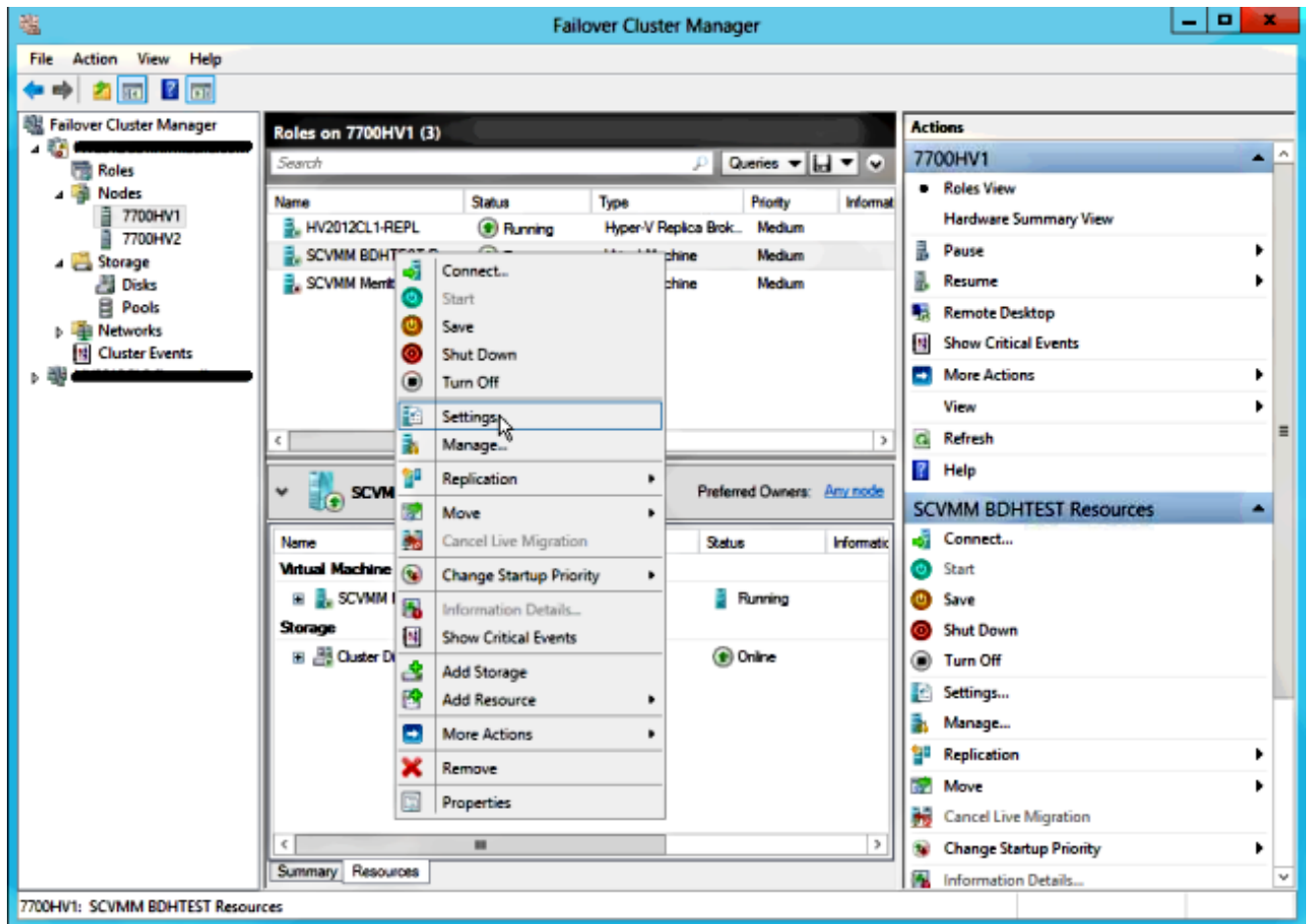
3. 建立一個名為FabricA的新光纖通道SAN，然後選擇與vHBA0-FabricA對應的World Wide Node Name(WWNN)/WWPN。



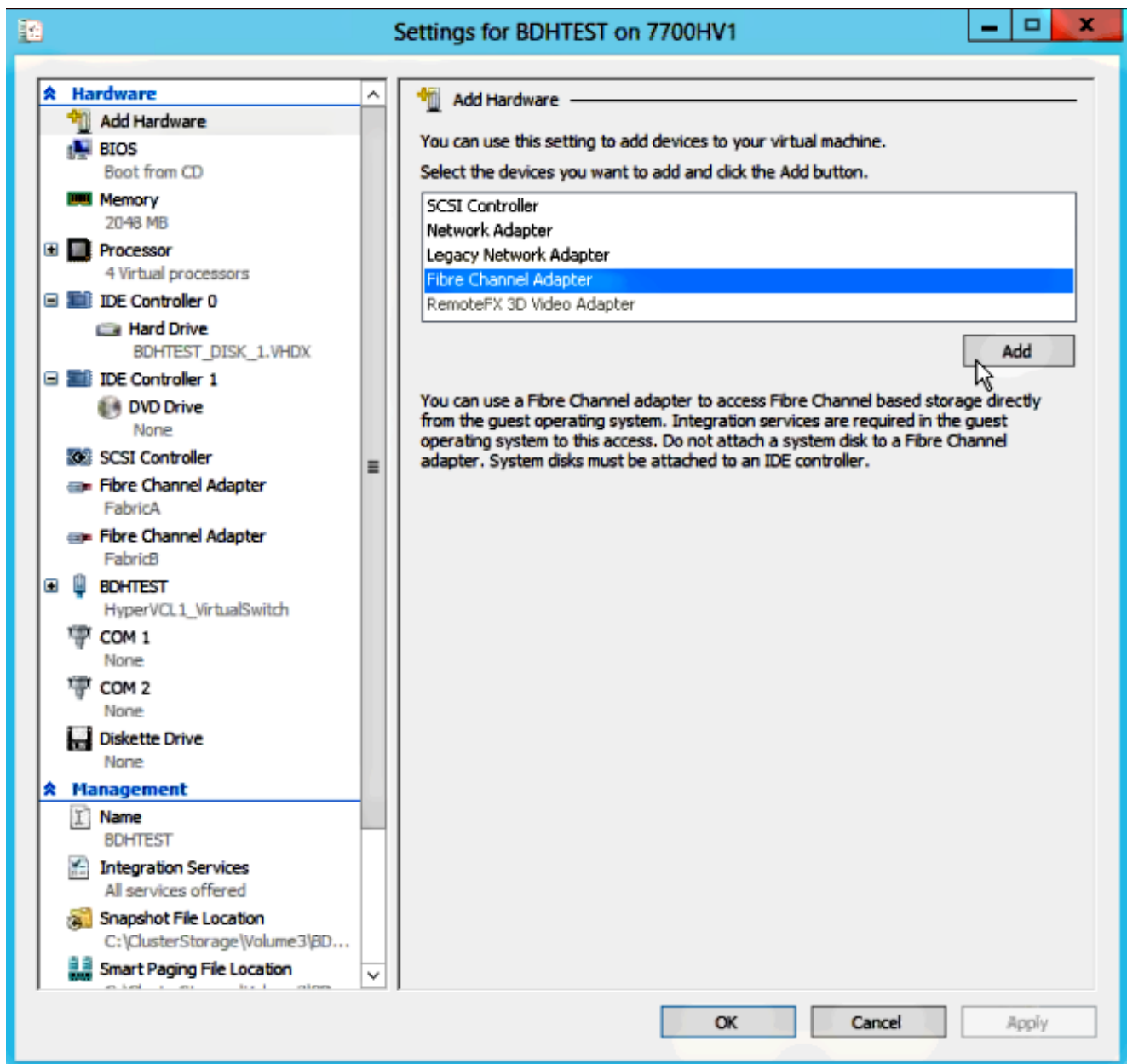
4. 新增FabricB，然後選擇與vHBA1-FabricB對應的WWNN/WWPN。



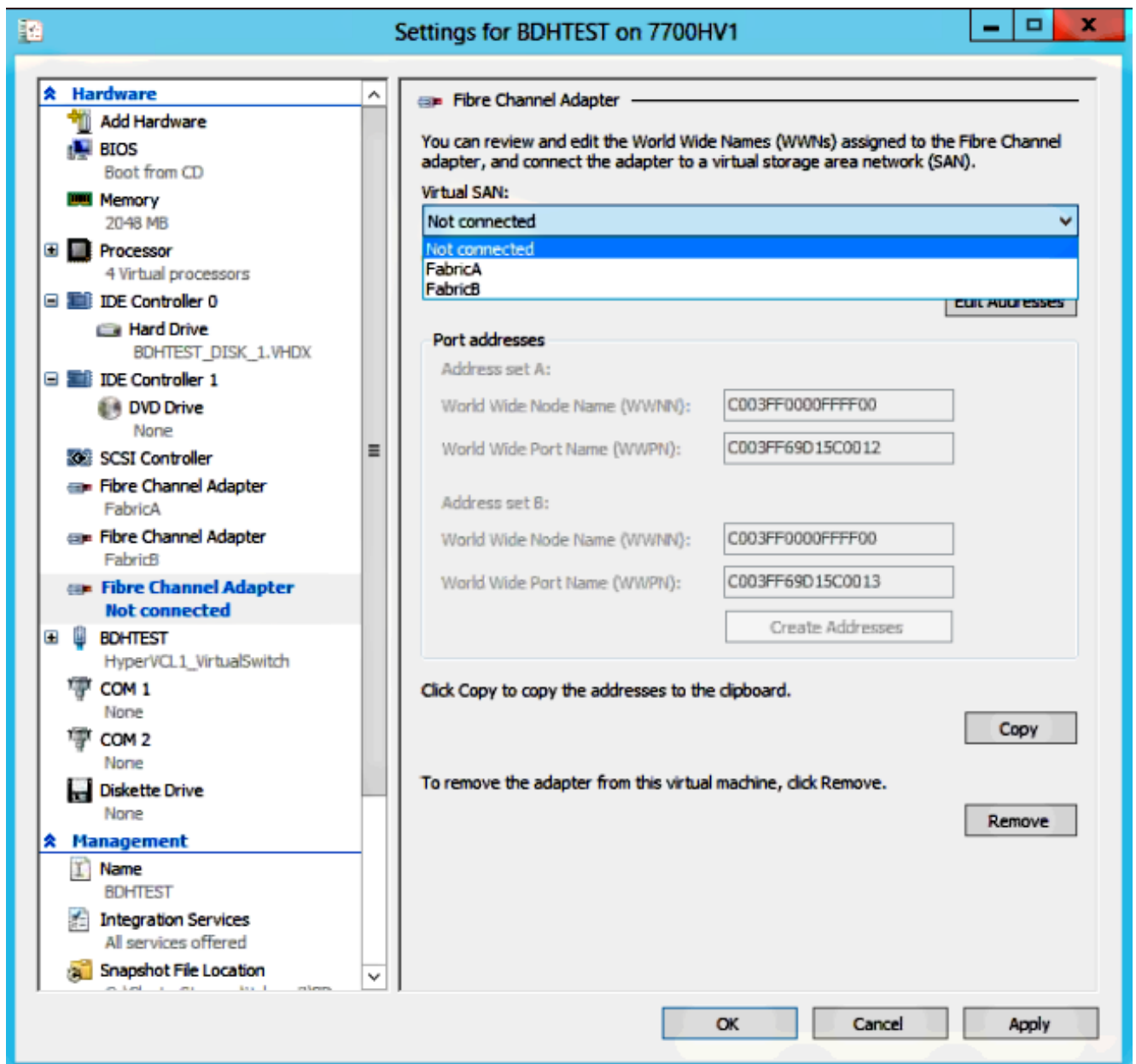
5. 配置Windows Server 2012 VM的設定，並新增兩個光纖通道介面卡。關閉虛擬機器後，按一下右鍵並選擇設定。這通過故障轉移群集管理器完成，因為這些主機是群集的一部分。



6. 按一下Add Hardware，選擇Fibre Channel Adapter，然後按一下Add。



7. 選擇Virtual SAN FabricA作為第一個介面卡，Virtual SAN FabricB作為第二個介面卡。



這些影像顯示了介面卡及其各自的WWNN/WWPN。

The screenshot displays the 'Settings for BDHTEST on 7700HV1' window. The left-hand 'Hardware' pane lists various components, with 'Fibre Channel Adapter FabricA' selected. The right-hand pane shows the configuration for this adapter, including a 'Virtual SAN' dropdown set to 'FabricA', a section for 'Port addresses' with two sets (A and B) of WWNN and WWPNN values, and buttons for 'Edit Addresses', 'Copy', and 'Remove'. The 'Management' section at the bottom left shows the VM name 'BDHTEST' and other settings.

Hardware

- Add Hardware
- BIOS
Boot from CD
- Memory
2048 MB
- Processor
4 Virtual processors
- IDE Controller 0
Hard Drive
BDHTEST_DISK_1.VHDX
- IDE Controller 1
DVD Drive
None
- SCSI Controller
- Fibre Channel Adapter
FabricA**
- Fibre Channel Adapter
FabricB
- BDHTEST
HyperVCL1_VirtualSwitch
- COM 1
None
- COM 2
None
- Diskette Drive
None

Management

- Name
BDHTEST
- Integration Services
All services offered
- Snapshot File Location
C:\ClusterStorage\Volume3\BD...
- Smart Paging File Location

Fibre Channel Adapter

You can review and edit the World Wide Names (WWNs) assigned to the Fibre Channel adapter, and connect the adapter to a virtual storage area network (SAN).

Virtual SAN:
FabricA

Click Edit Addresses to edit the port addresses.

Edit Addresses

Port addresses

Address set A:

World Wide Node Name (WWNN): C003FF0000FFFF00

World Wide Port Name (WWPN): C003FF69D15C000E

Address set B:

World Wide Node Name (WWNN): C003FF0000FFFF00

World Wide Port Name (WWPN): C003FF69D15C000F

Create Addresses

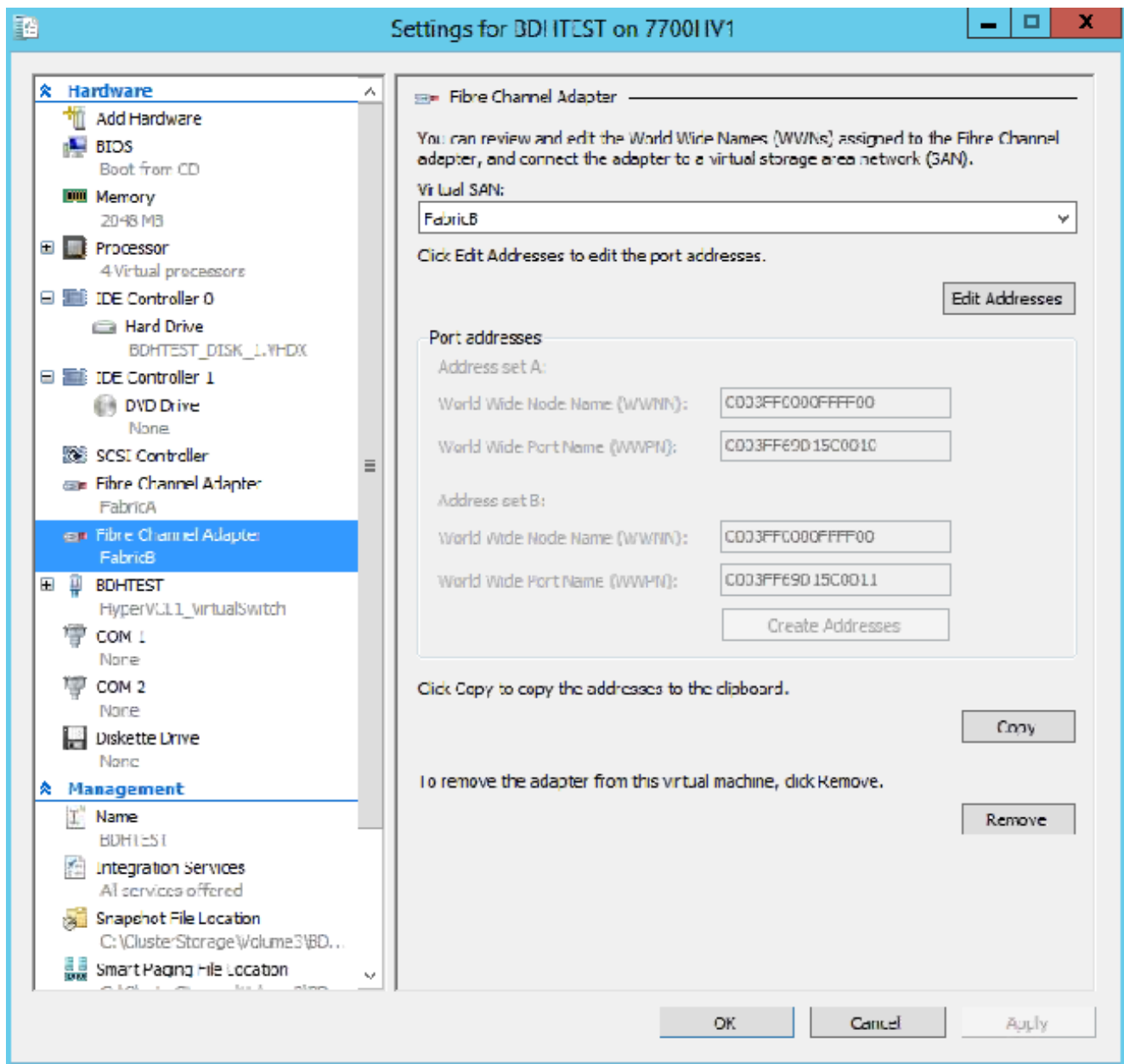
Click Copy to copy the addresses to the clipboard.

Copy

To remove the adapter from this virtual machine, click Remove.

Remove

OK Cancel Apply



8. 在Nexus 5k交換機上新增分割槽。

以下是Nexus 5000系列交換機可能看上去的示例（未顯示UCS vHBA的WWPN的分割槽）：

```
! Zoning for HYVERTEST Fabric A
```

```
fcalias name HYPERVTEST vsan 10
member pwn c0:03:ff:69:d1:5c:00:0e
member pwn c0:03:ff:69:d1:5c:00:0f
```

```
zone name HYPERVTEST_to_NetApp1 vsan 10
Member fcalias HYPERVTEST
Member fcalias NetApp1
```

```
zoneset name HyperVZoneset1 vsan 10
member HYPERVTEST_to_NetApp1
```

```
zoneset activate name HyperVZoneset1 vsan 10
```

```

!Zoning for HYPERVTEST Fabric B

fcalias name HYPERVTEST vsan 11
member pwn c0:03:ff:69:d1:5c:00:10
member pwn c0:03:ff:69:d1:5c:00:11

zone name HYPERVTEST_to_NetApp2 vsan 11
Member fcalias HYPERVTEST
Member fcalias NetApp2

zoneset name HypervZoneset2 vsan 11
member HYPERVTEST_to_NetApp2

zoneset activate name HyperVZoneset2 vsan 11

```

9. 將WWPN新增到NetApp，以確保它們可以訪問邏輯單元號(LUN)。

The screenshot shows the 'Initiator Groups' management interface. At the top, there are tabs for 'LUN Management' and 'Initiator Groups', with 'Initiator Groups' selected. Below the tabs are icons for 'Create', 'Edit', 'Delete', and 'Refresh'. The main area contains a table with the following data:

Name	Type	Operating System	ALUA	Initiator Count
BDHTEST	FC/FCoE	Hyper-V	Enabled	4
HV1_7700	FC/FCoE	Windows	Enabled	2
HV2_7700	FC/FCoE	Windows	Enabled	2
HV3_7700	FC/FCoE	Windows	Enabled	2
HV4_7700	FC/FCoE	Windows	Enabled	2
MSPEX1	FC/FCoE	Windows	Enabled	2
RELASQL	FC/FCoE	Windows	Enabled	2

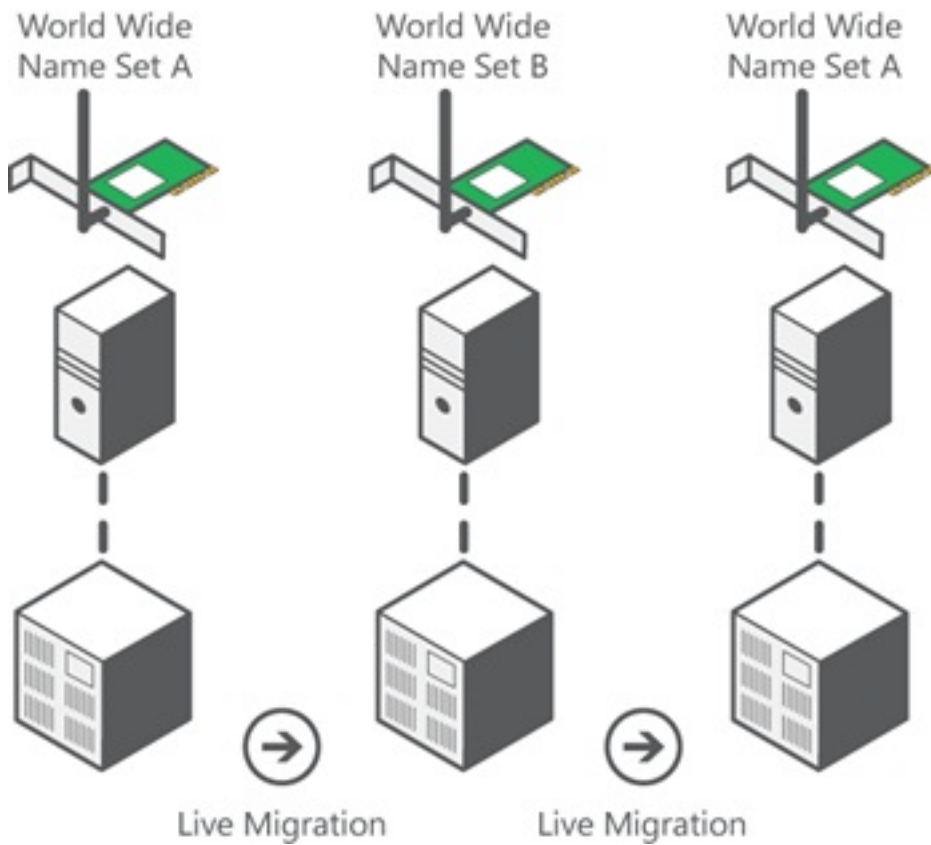
Below the table, there is a section titled 'Initiators' which contains a list of WWPNs:

- c0:03:ff:69:d1:5c:00:0e
- c0:03:ff:69:d1:5c:00:11
- c0:03:ff:69:d1:5c:00:10
- c0:03:ff:69:d1:5c:00:0f

At the bottom of the interface, there are two tabs: 'Initiators' (selected) and 'Mapped LUNs'.

即時遷移

每個VM介面卡具有兩組WWNN/WWPN。這些在Hyper-V即時遷移期間使用。此圖顯示每個WWPN如何在即時遷移期間使用。



來源：[Hyper-V 虛擬光纖通道概述](#)

必須注意的是，在重疊的時刻，兩個WWPN都登入到交換矩陣。

這可以保證在儲存上連續工作，而不會出現中斷，即使是在遷移失敗的情況下。

Verify Live Migration 部分顯示在即時遷移過程中的flogi資料庫，以便您可以在該過程中檢視介面卡浮動的兩個WWPN。

快速遷移

與即時遷移不同，快速遷移會暫時暫停移動的虛擬機器。

因此，沒有理由從集中登入兩個WWPN。相反，VM可以從一個節點註銷，然後從新節點登入。

驗證即時遷移

如果所有配置都正確，您應該在UCS vHBA和VM光纖通道介面卡的浮動資料庫中看到一個浮動條目。

```
NEXUS1# show flogi database
```

```
-----  
Interface VSAN FCID Port Name Node Name
```

```

-----
fc1/31 10 0x930001 50:0a:09:83:8d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
fc1/32 10 0x930000 50:0a:09:84:9d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
San-po31 10 0x930002 24:1f:54:7f:ee:57:1d:c0 20:0a:54:7f:ee:57:1d:c1
San-po31 10 0x930003 20:00:00:25:b5:02:a0:8f 20:00:00:25:b5:02:00:8f <vHBA0-FabricA
San-po31 10 0x930004 20:00:00:25:b5:02:a0:9f 20:00:00:25:b5:02:00:9f
San-po31 10 0x930005 20:00:00:25:b5:02:a0:6f 20:00:00:25:b5:02:00:6f
San-po31 10 0x930006 20:00:00:25:b5:02:a0:7f 20:00:00:25:b5:02:00:7f
San-po31 10 0x930007 20:00:00:25:b5:02:a0:4f 20:00:00:25:b5:02:00:4f
San-po31 10 0x930008 20:00:00:25:b5:02:a0:5f 20:00:00:25:b5:02:00:5f
San-po31 10 0x930009 c0:03:ff:69:d1:5c:00:0e c0:03:ff:00:00:ff:ff:00 <Set A for
Adapter FabricA

```

NEXUS2# **show flogi database**

```

-----
Interface VSAN FCID Port Name Node Name
-----
fc1/31 11 0x9f0001 50:0a:09:84:8d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
fc1/32 11 0x9f0000 50:0a:09:83:9d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
San-po32 11 0x9f0002 24:20:54:7f:ee:57:1a:80 20:0b:54:7f:ee:57:1a:81
San-po32 11 0x9f0003 20:00:00:25:b5:02:b1:8f 20:00:00:25:b5:02:00:8f <vHBA1-FabricB
San-po32 11 0x9f0004 20:00:00:25:b5:02:b1:9f 20:00:00:25:b5:02:00:9f
San-po32 11 0x9f0005 20:00:00:25:b5:02:b1:6f 20:00:00:25:b5:02:00:6f
San-po32 11 0x9f0006 20:00:00:25:b5:02:b1:7f 20:00:00:25:b5:02:00:7f
San-po32 11 0x9f0007 20:00:00:25:b5:02:b1:4f 20:00:00:25:b5:02:00:4f
San-po32 11 0x9f0008 20:00:00:25:b5:02:b1:5f 20:00:00:25:b5:02:00:5f
San-po32 11 0x9f000b c0:03:ff:69:d1:5c:00:10 c0:03:ff:00:00:ff:ff:00 <Set A for
Adapter FabricB

```

要顯示LUN，請在來賓虛擬機器中開啟磁碟管理，然後輸入重新掃描磁碟命令。如果LUN出現兩次，則多路徑I/O(MPIO)未啟用。

在即時遷移過程中，您應該看到每台交換機中的地址集A和地址集B的WWPN。

NEXUS1# **show flogi database**

```

-----
Interface VSAN FCID Port Name Node Name
-----
fc1/31 10 0x930001 50:0a:09:83:8d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
fc1/32 10 0x930000 50:0a:09:84:9d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
San-po31 10 0x930002 24:1f:54:7f:ee:57:1d:c0 20:0a:54:7f:ee:57:1d:c1
San-po31 10 0x930003 20:00:00:25:b5:02:a0:8f 20:00:00:25:b5:02:00:8f
San-po31 10 0x930004 20:00:00:25:b5:02:a0:9f 20:00:00:25:b5:02:00:9f
San-po31 10 0x930005 20:00:00:25:b5:02:a0:6f 20:00:00:25:b5:02:00:6f
San-po31 10 0x930006 20:00:00:25:b5:02:a0:7f 20:00:00:25:b5:02:00:7f
San-po31 10 0x930007 20:00:00:25:b5:02:a0:4f 20:00:00:25:b5:02:00:4f
San-po31 10 0x930008 20:00:00:25:b5:02:a0:5f 20:00:00:25:b5:02:00:5f
San-po31 10 0x930009 c0:03:ff:69:d1:5c:00:0e c0:03:ff:00:00:ff:ff:00 <Address Set A
San-po31 10 0x93000a c0:03:ff:69:d1:5c:00:0f c0:03:ff:00:00:ff:ff:00 <Address Set B

```

NEXUS2# **show flogi database**

```

-----
Interface VSAN FCID Port Name Node Name
-----
fc1/31 11 0x9f0001 50:0a:09:84:8d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
fc1/32 11 0x9f0000 50:0a:09:83:9d:80:b7:ae 50:0a:09:80:8d:80:b7:ae
San-po32 11 0x9f0002 24:20:54:7f:ee:57:1a:80 20:0b:54:7f:ee:57:1a:81
San-po32 11 0x9f0003 20:00:00:25:b5:02:b1:8f 20:00:00:25:b5:02:00:8f
San-po32 11 0x9f0004 20:00:00:25:b5:02:b1:9f 20:00:00:25:b5:02:00:9f
San-po32 11 0x9f0005 20:00:00:25:b5:02:b1:6f 20:00:00:25:b5:02:00:6f
San-po32 11 0x9f0006 20:00:00:25:b5:02:b1:7f 20:00:00:25:b5:02:00:7f
San-po32 11 0x9f0007 20:00:00:25:b5:02:b1:4f 20:00:00:25:b5:02:00:4f

```

```
San-po32 11 0x9f0008 20:00:00:25:b5:02:b1:5f 20:00:00:25:b5:02:00:5f
San-po32 11 0x9f000b c0:03:ff:69:d1:5c:00:10 c0:03:ff:00:00:ff:ff:00 <Address Set A
San-po32 11 0x9f000c c0:03:ff:69:d1:5c:00:11 c0:03:ff:00:00:ff:ff:00 <Address Set B
```

疑難排解

本節提供的資訊可用於對組態進行疑難排解。

常見問題

- 當Microsoft Windows 2012 FNIC驅動程式版本不正確時，在Hyper-V Manager > Virtual SAN Manager中，**device or driver not support virtual fibre channel**消息將顯示在「虛擬光纖通道 SAN的狀態」列下。通過轉至Device Manager > Storage Controllers > Cisco VIC FCoE Storport Miniport > Properties > Driver，驗證當前FNIC驅動程式版本。使用[UCS互操作性清單](#)，根據刀片型號、UCS韌體版本和介面卡確定支援哪個驅動程式。如有必要，請更新驅動程式。

- 在特定條件下，使用合成光纖通道埠實時遷移失敗：**無法完成資源保留**消息。需要核實以下幾點：

是否將WWPN新增到NetApp中的儲存目標 — 啟動器組。分割槽資訊是否考慮分配給虛擬機器的兩組WWPN的訪問許可權。是否已從Microsoft應用最新的修補程式，包括KB 2894032。

- 當裝置使用同一對HBA進行引導和VM流量時，即時遷移可能會失敗。[Unified Computing System Virtual Machine Live Migration Fails with Virtual Fibre Channel Adapters](#)中對此進行了說明。

MPIO

為了獲得恢復能力和容錯能力，應在作業系統上啟用MultiPath I/O。

1. 在NetApp上為特定啟動器組啟用非對稱邏輯單元訪問(ALUA)。

Edit Initiator Group 'VM1'

General

Initiators

Name:

VM1

Operating System:

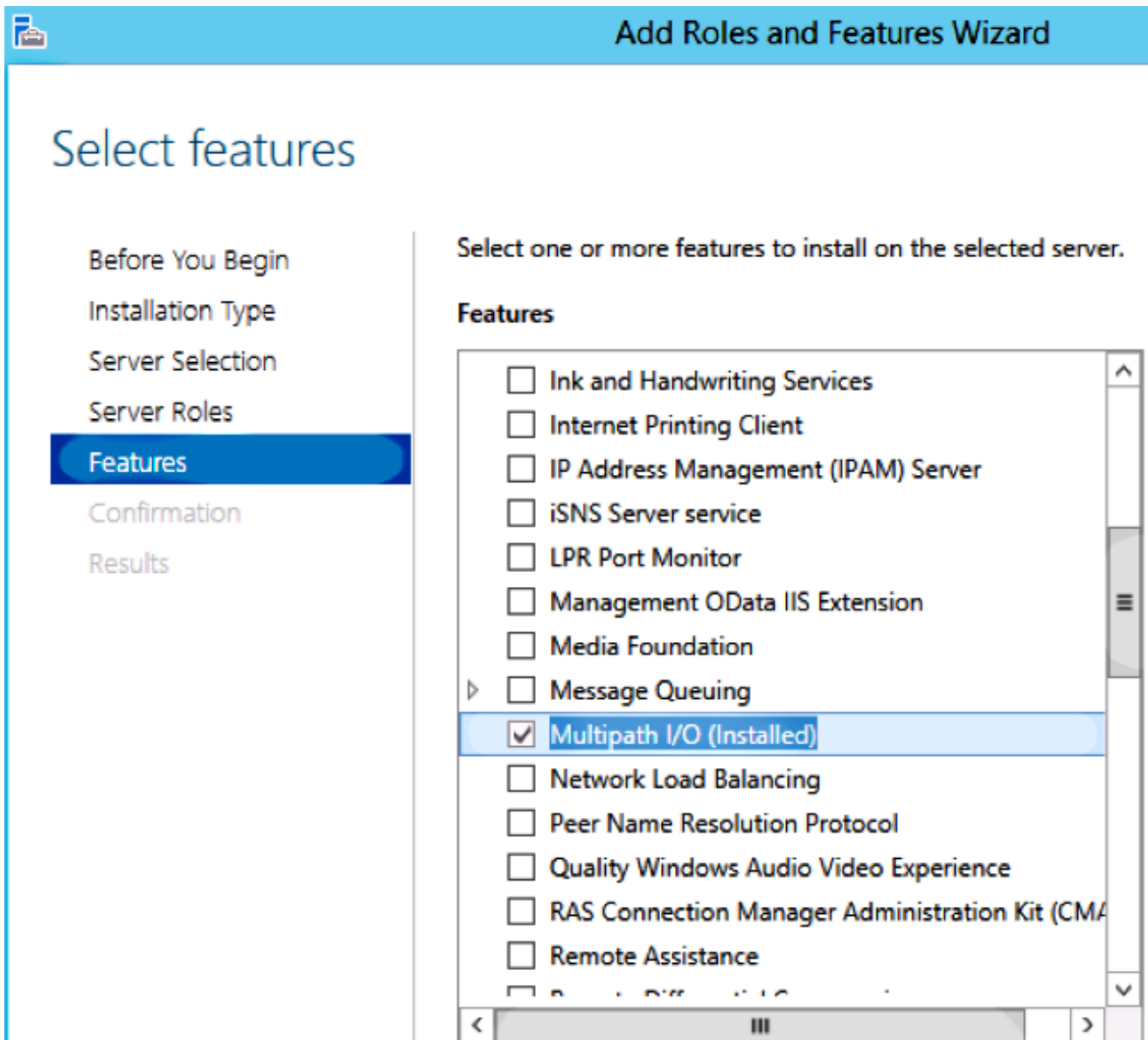
Windows

Type:

FC/FCoE

Enable ALUA (Asymmetric Logical Unit Access)

2. 在Microsoft端啟用MPIO功能。在Add Roles and Features中，確保已啟用MPIO。



Add Roles and Features Wizard

Select features

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Select one or more features to install on the selected server.

Features

- Ink and Handwriting Services
- Internet Printing Client
- IP Address Management (IPAM) Server
- iSNS Server service
- LPR Port Monitor
- Management OData IIS Extension
- Media Foundation
- Message Queuing
- Multipath I/O (Installed)**
- Network Load Balancing
- Peer Name Resolution Protocol
- Quality Windows Audio Video Experience
- RAS Connection Manager Administration Kit (CMA)
- Remote Assistance

相關資訊

- [Hyper-V 虛擬光纖通道概述](#)
- [虛擬機器即時遷移概述](#)
- [技術支援與文件 - Cisco Systems](#)