Windows 2012 NPIV on UCS配置示例

目录

简介

本文档介绍如何在统一计算系统(UCS)版本2.1(2a)上配置Windows Server 2012 N_Port ID Virtualization(NPIV)。 通过此功能，在服务器上运行的虚拟机(VM)可以共享单个适配器，并且仍然可以独立访问其自己的受保护存储。

先决条件

要求

Cisco 建议您了解以下主题：

- 与UCS Manager(UCSM)版本2.1(2)兼容的Windows交换矩阵网络接口控制器(fNIC)驱动程序
- UCSM版本2.1(2)虚拟接口卡(VIC)固件映像
- 交换矩阵互联/I/O模块(IOM)上的UCSM版本2.1(2)
- Hyper-V 2012和Windows 2012访客

使用的组件

本文档中的信息基于以下软件和硬件版本：

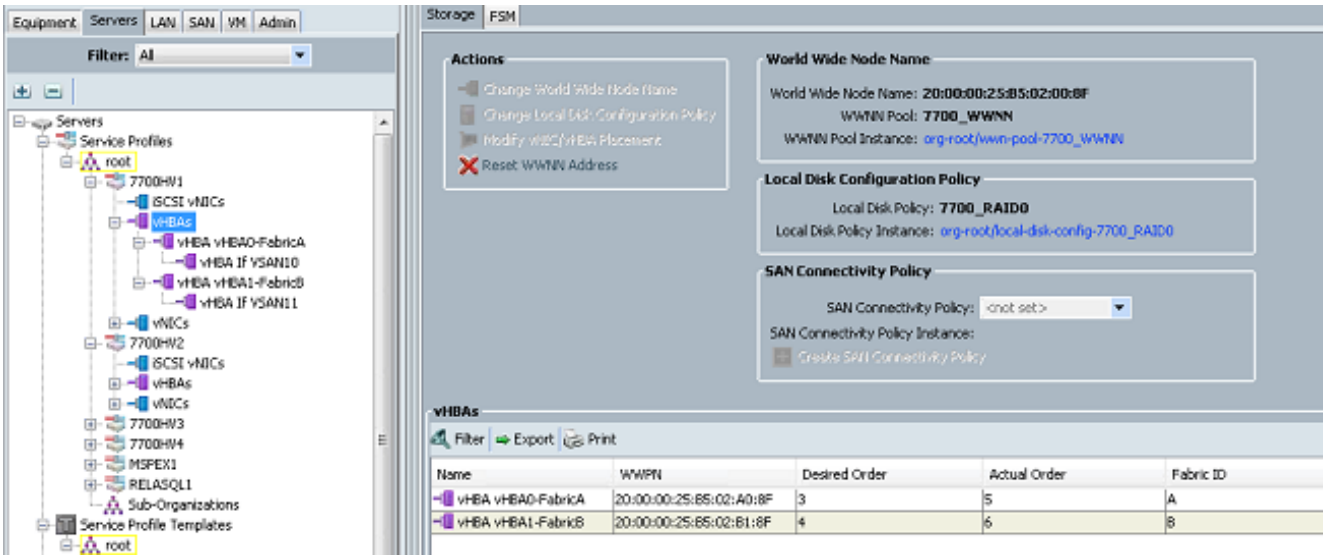
- Hyper-V版本3.0
- Windows Server 2012
- NetApp存储
- UCS机箱、交换矩阵互联和B系列服务器
- Cisco Nexus 5000 系列交换机

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

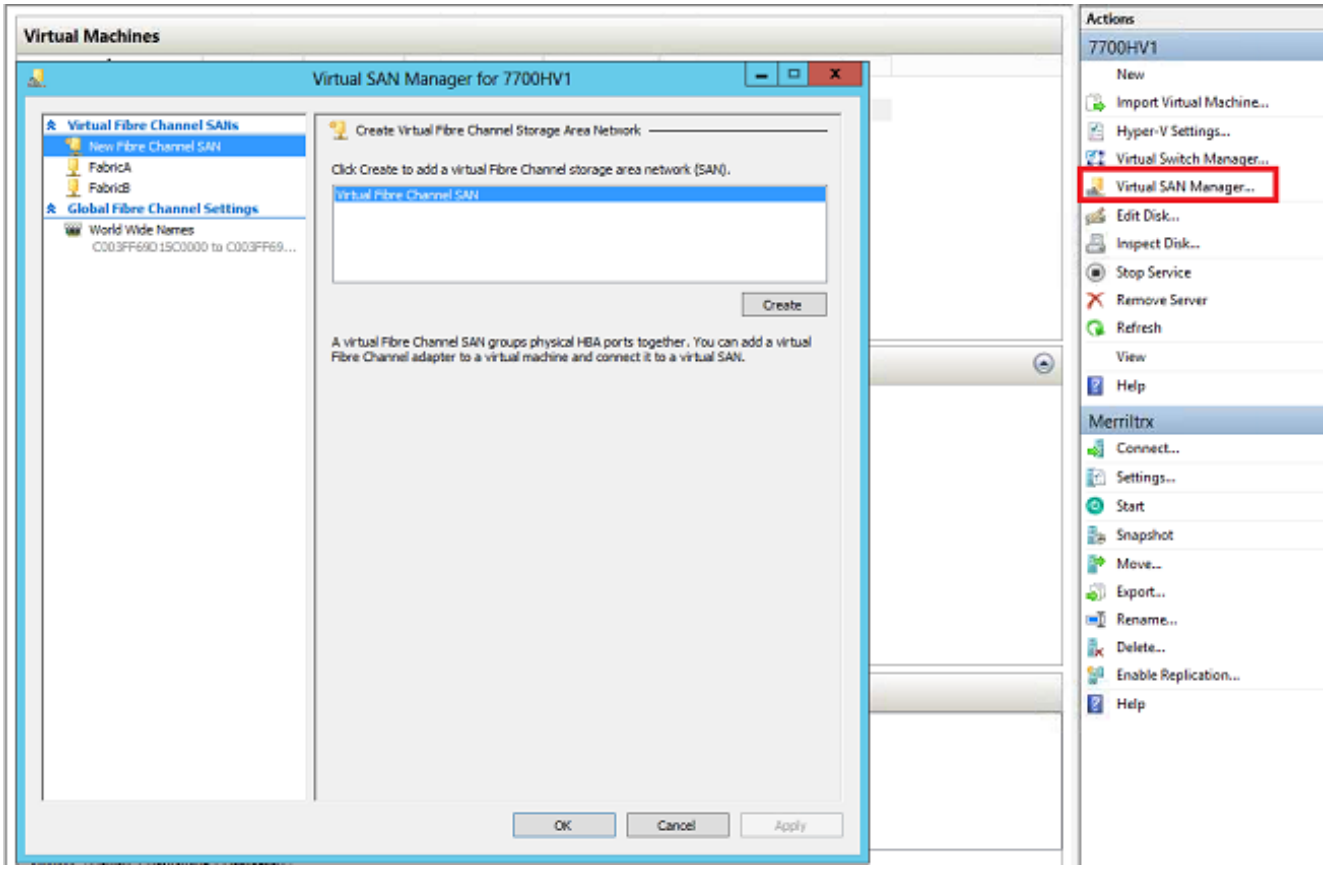
配置

要配置NPIV，请完成以下步骤：

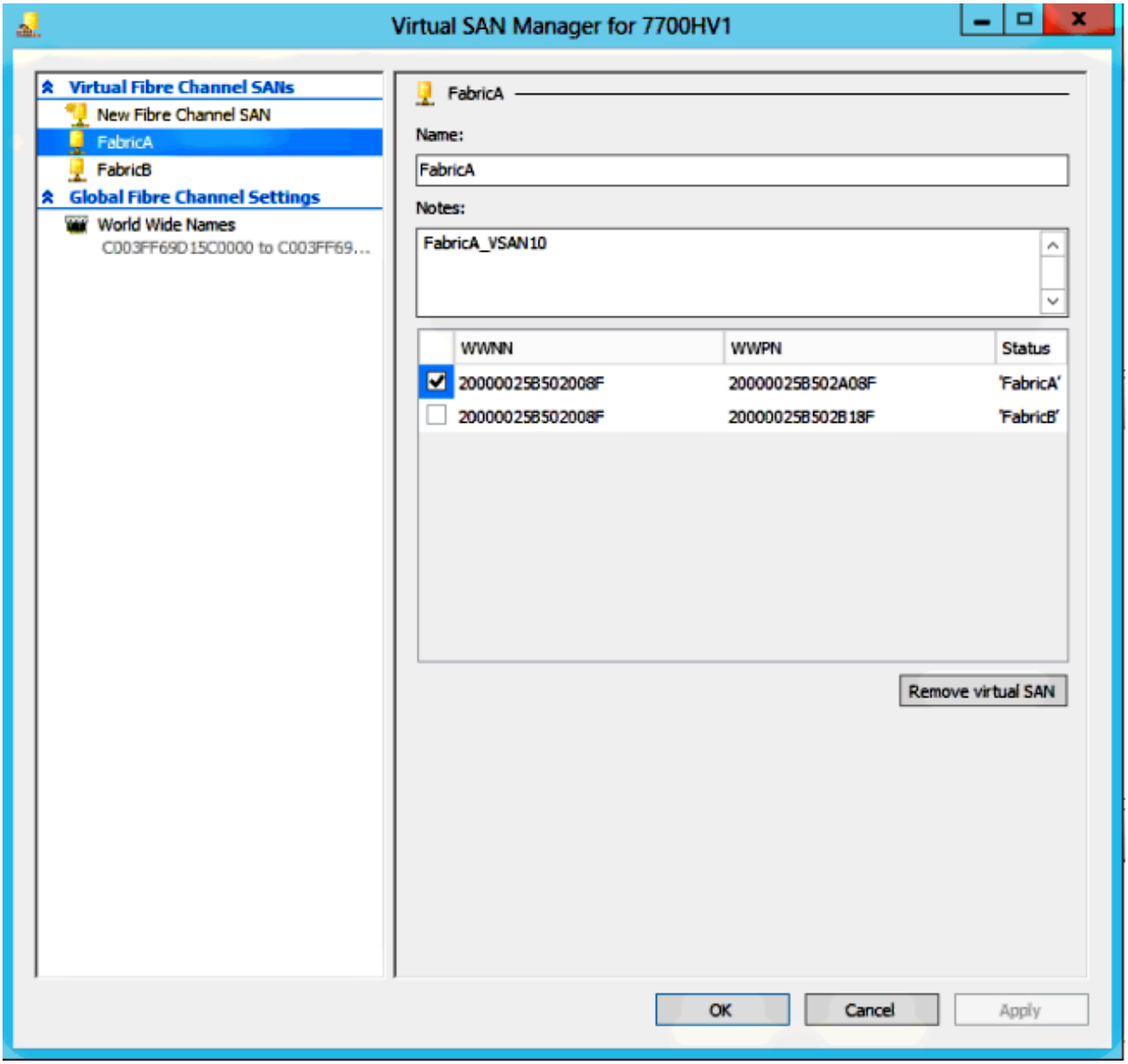
1. 从UCS的角度来看，您必须使用两个虚拟主机总线适配器(vHBA)配置服务配置文件，每个交换矩阵一个。此图显示了一个服务配置文件的vHBA。您可以将全球端口名称(WWPN)与文档后面显示的输出中的服务配置文件关联。
   注意：当您使用存储区域网络(SAN)存储来引导Hyper-V主机时，强烈**建**议将一组单独的vHBA用于VM流量和设备引导。本示例概述了使用两个vHBA的基本配置。



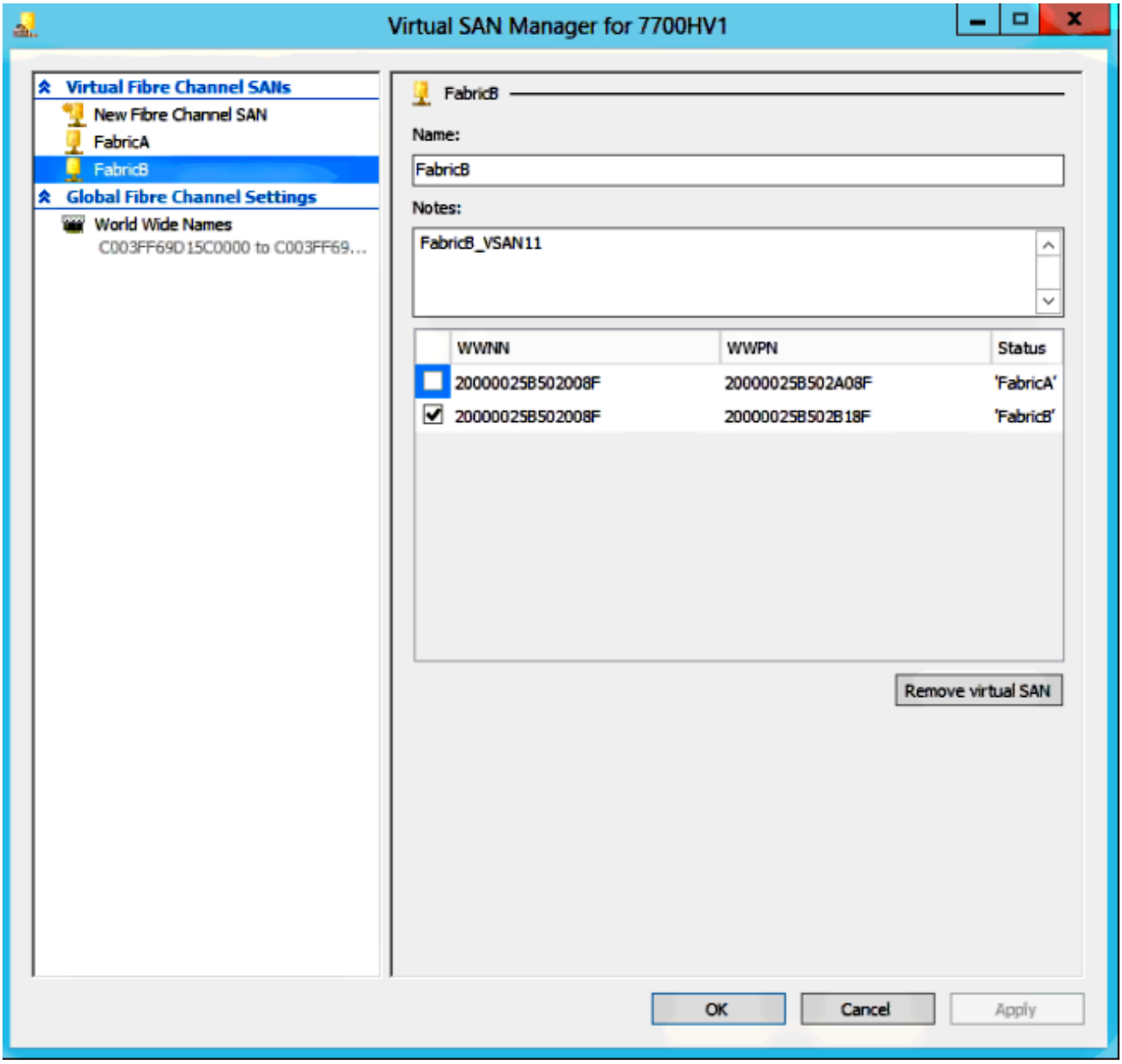
2. 从Hyper-V管理器配置虚拟存储区域网络(VSAN)。您必须创建两个VSAN，每个交换矩阵一个。在其他Hyper-V主机中创建VSAN时，请确保使用相同的名称；否则，实时迁移将不起作用。单击主**机**，然后单击**Virtual SAN Manager。**



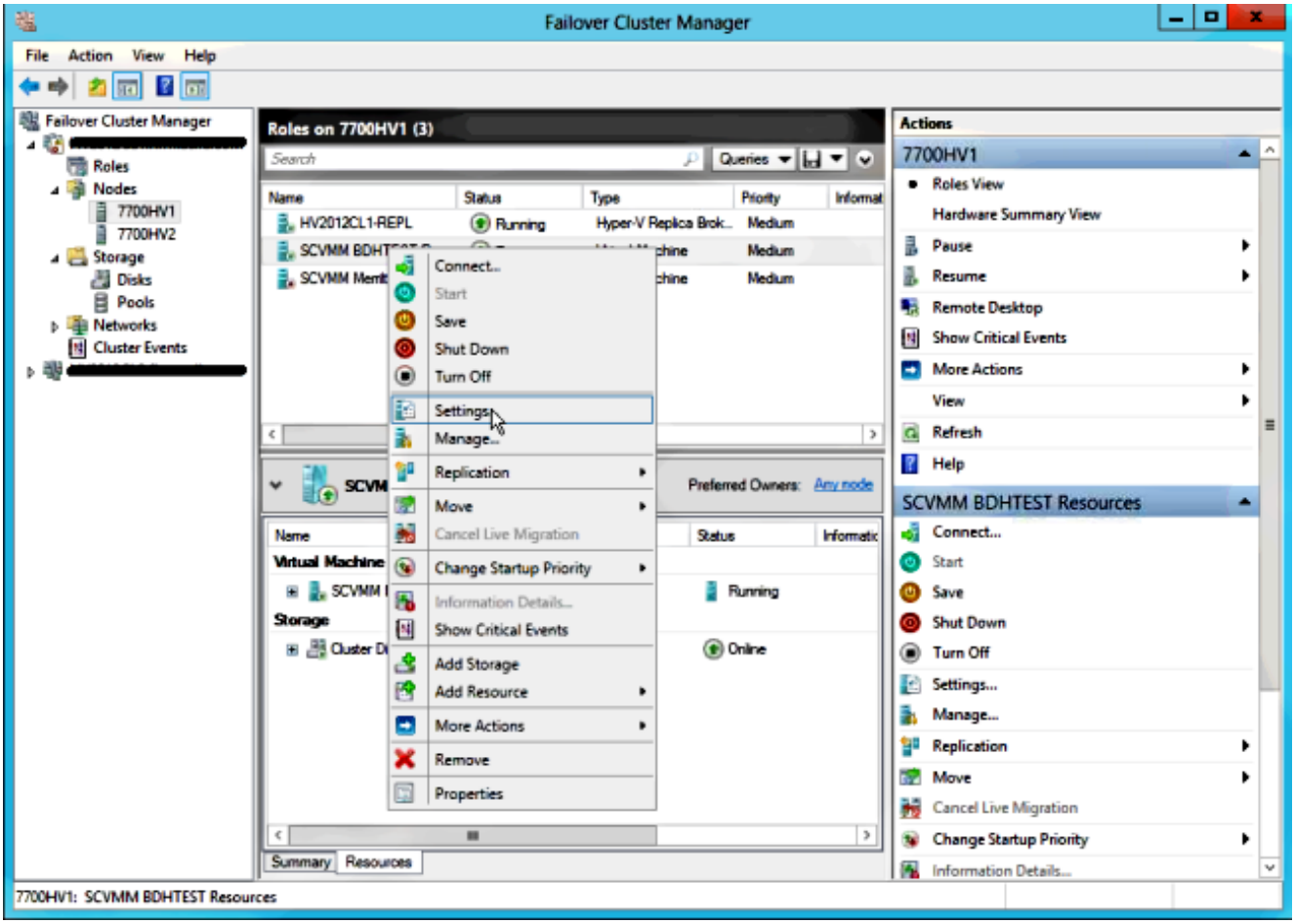
3. 创建名为FabricA的新光纤通道SAN，并选择与vHBA0-FabricA对应的全球范围节点名称(WWNN)/WWPN。



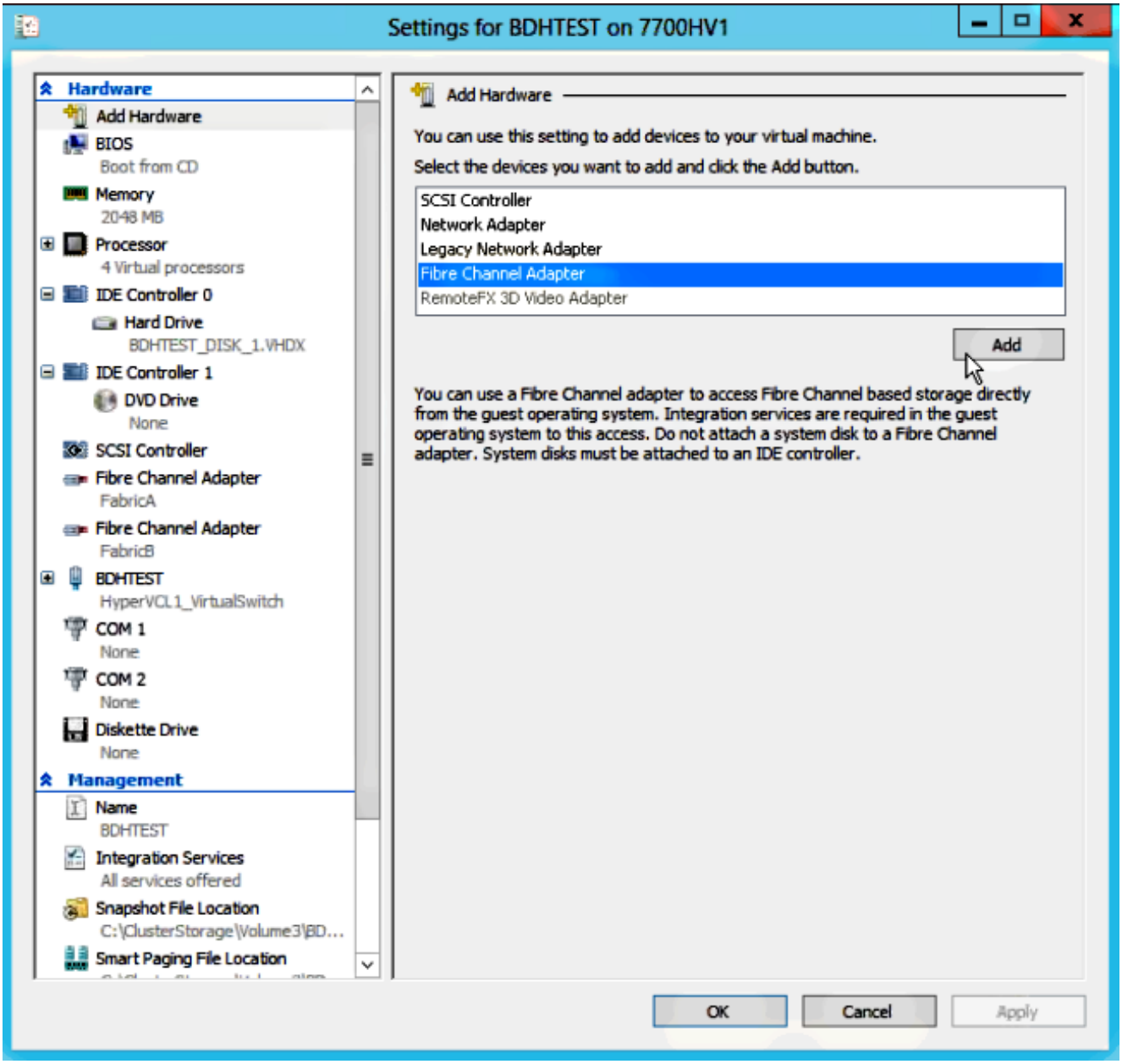
4. 添加FabricB，并选择与vHBA1-FabricB对应的WWNN/WWPN。



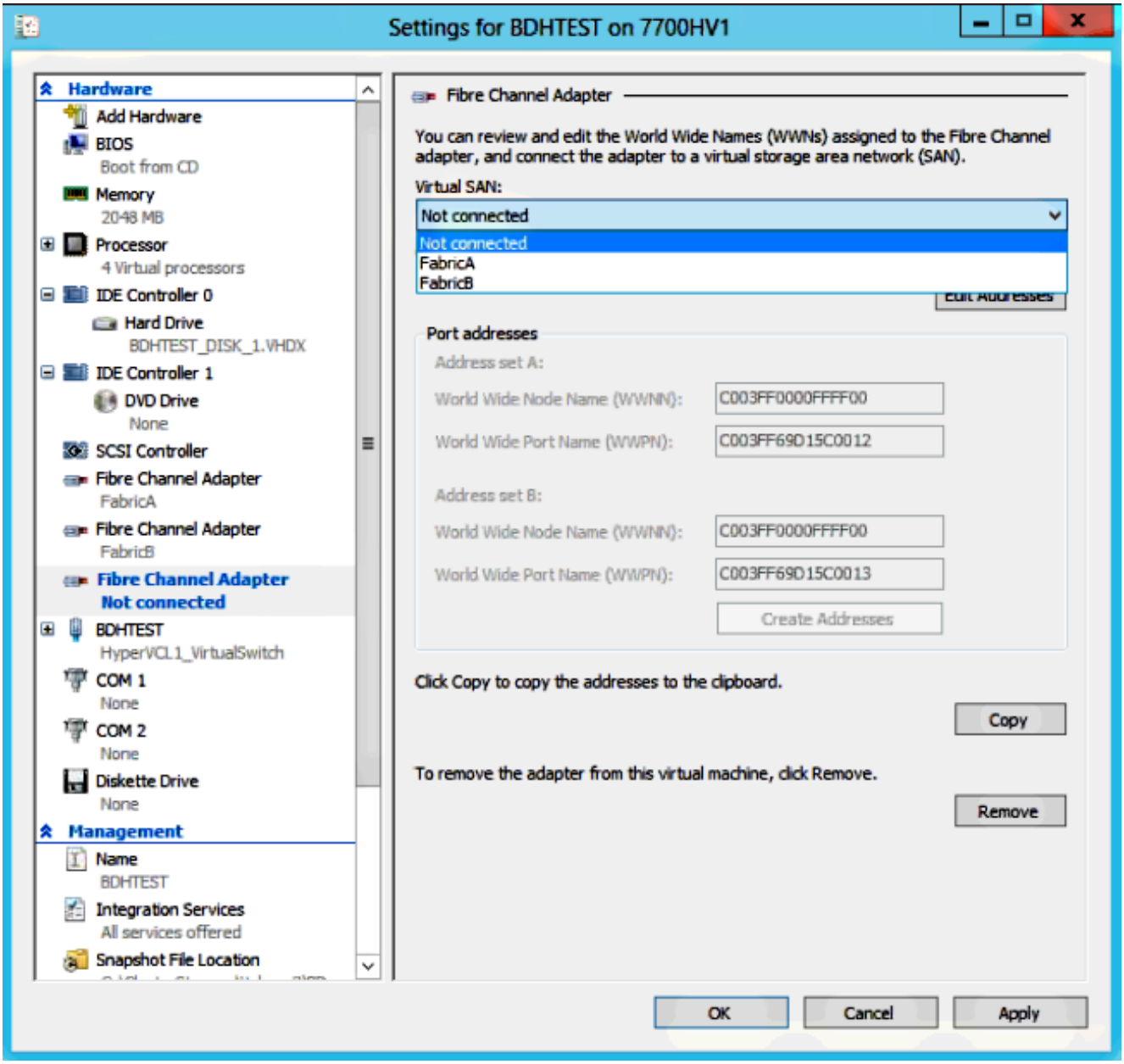
5. 配置Windows Server 2012 VM的设置，并添加两个光纤通道适配器。关闭VM电源后，右键单击并选择**Settings**。由于这些主机是集群的一部分，因此使用故障转移集群管理器可以完成此操作。



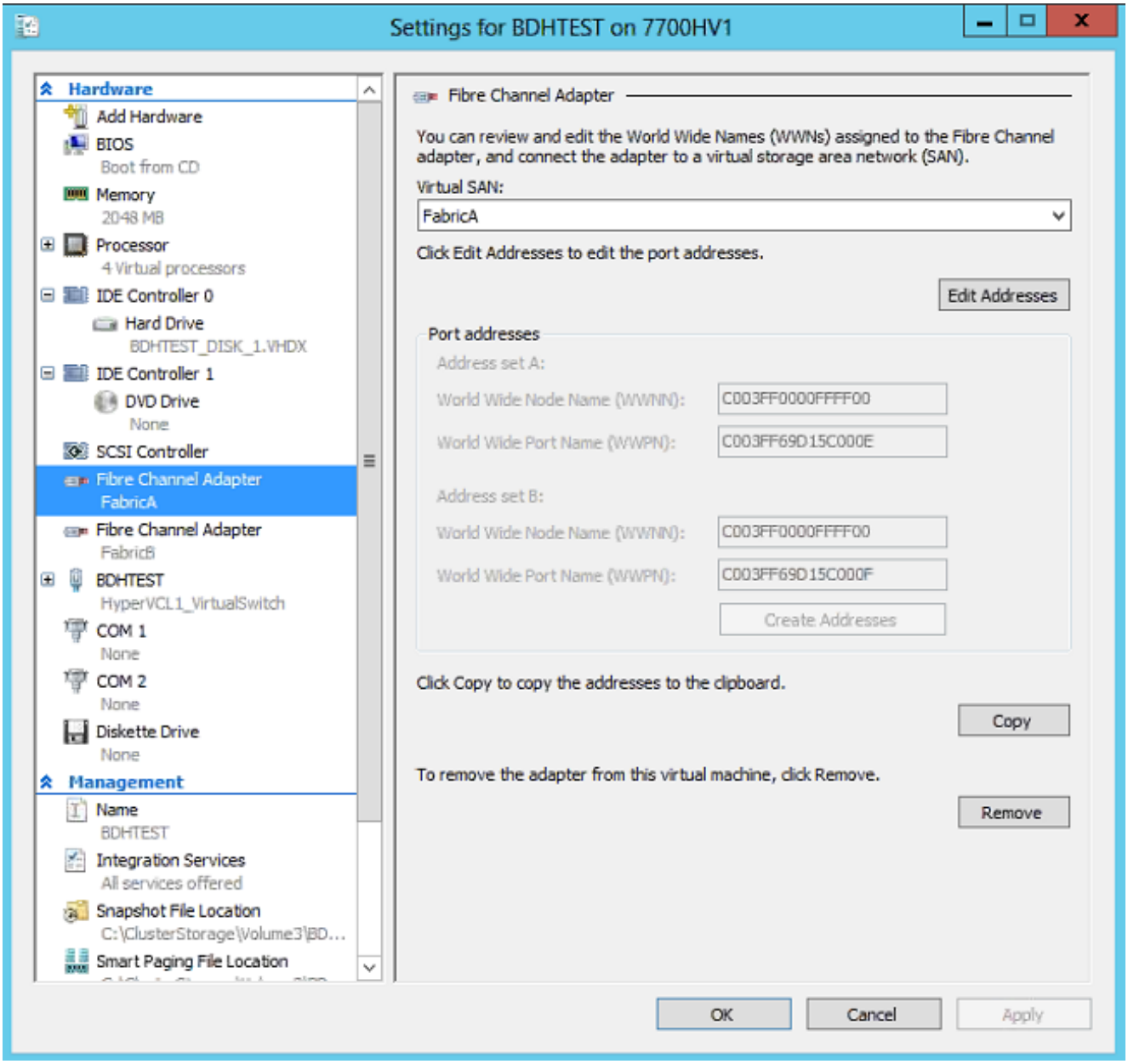
6. 单击Add Hardware(添加硬件)，选择Fibre Channel Adapter（光纤通道适配器），然后单击Add（添加）。

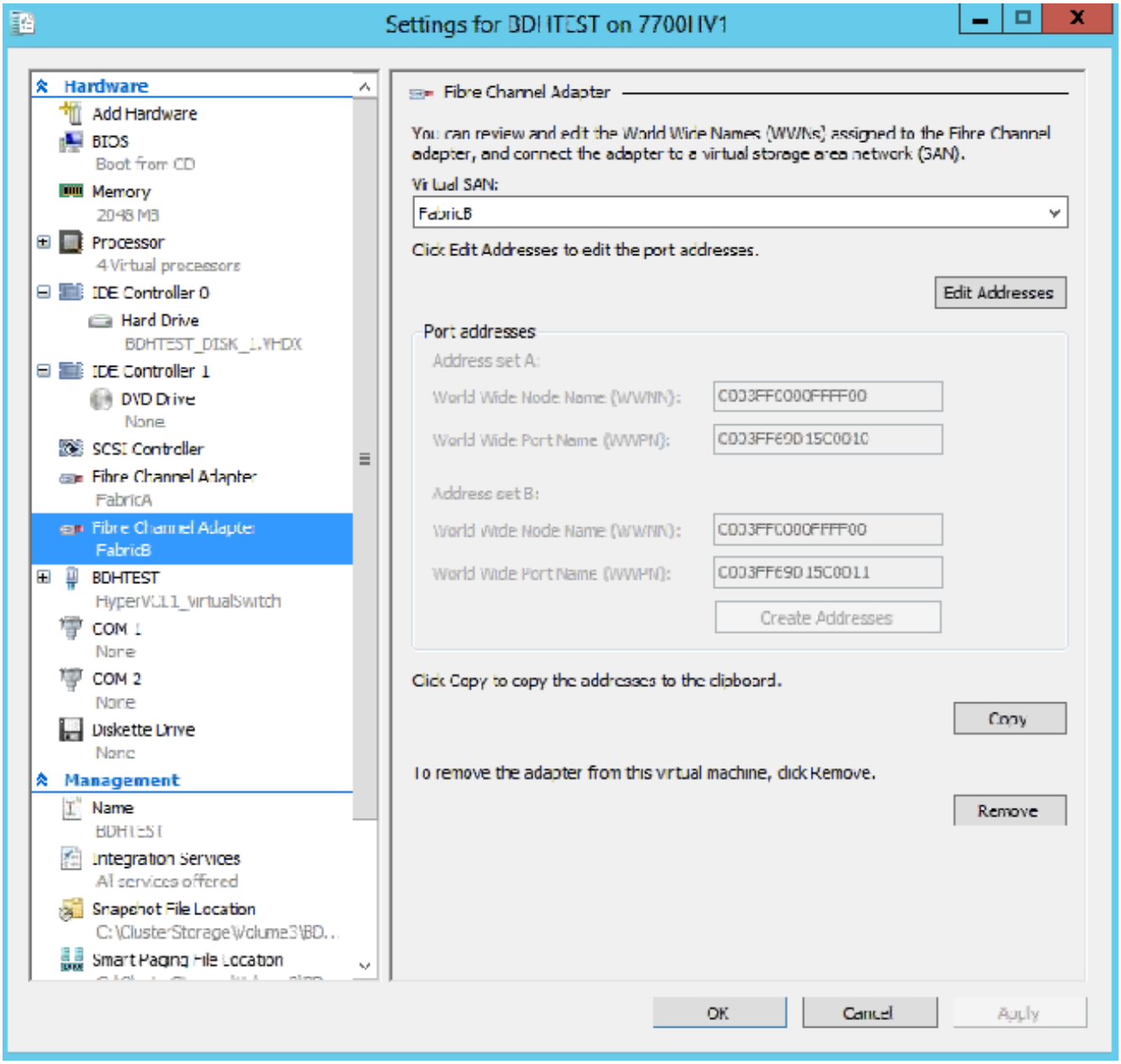


7. 为第一个适配器选择虚拟SAN FabricA，为第二个适配器选择虚拟SAN FabricB。



这些映像显示适配器及其各自的WWNN/WWPN。


Settings for BDHTEST on 7700HV1
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



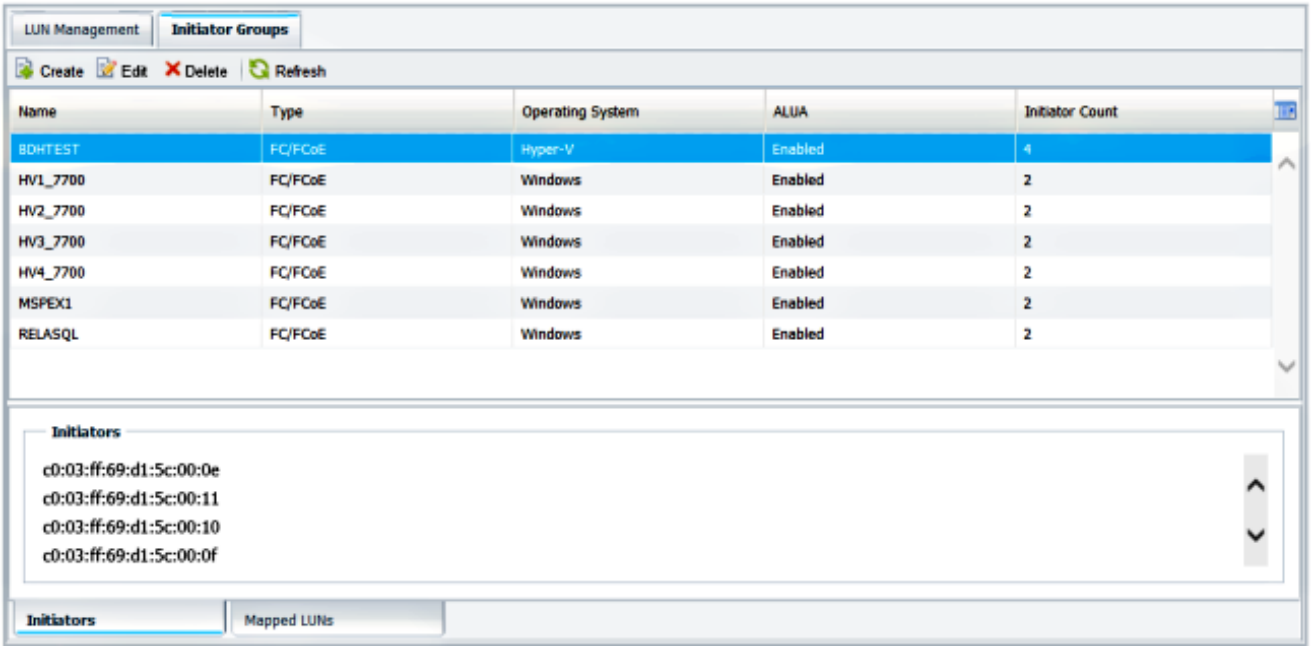
8. 在Nexus 5k交换机上添加分区。

   以下是Nexus 5000系列交换机外观示例（未显示UCS vHBA的WWPN分区）：

```
! Zoning for HYVERTEST Fabric A

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

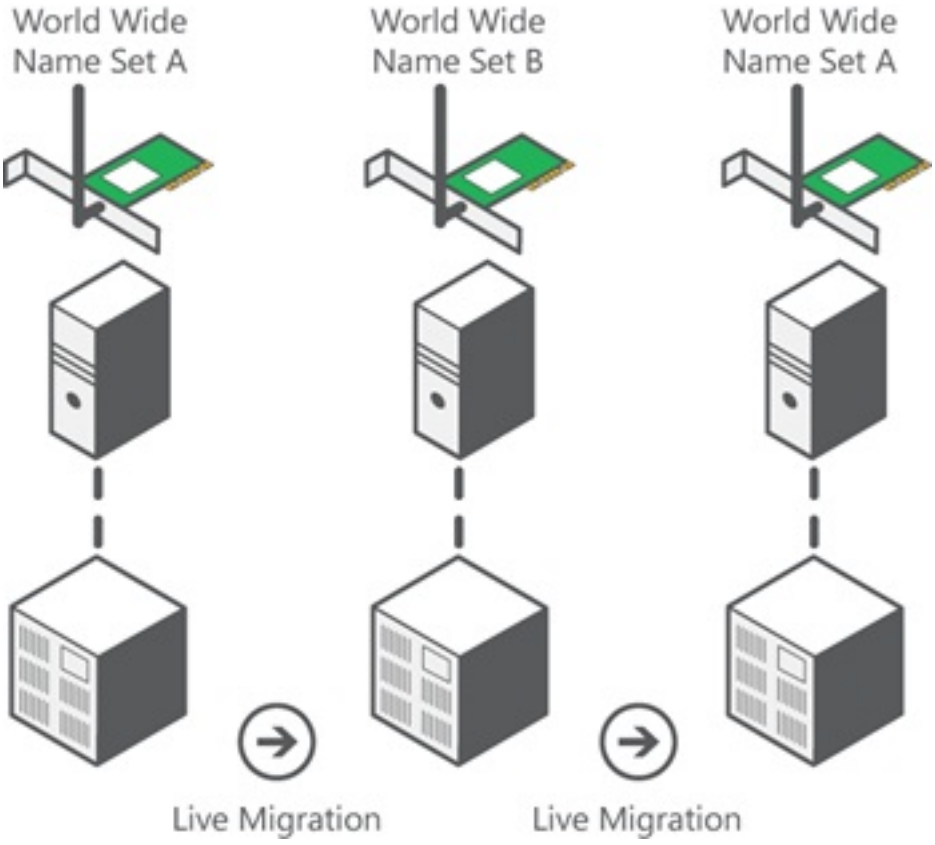
```
!Zoning for HYPERVTEST Fabric B

fcalias name HYPERVTEST vsan 11
member pwwn c0:03:ff:69:d1:5c:00:10
member pwwn 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. 将WWPN添加到**NetApp**，以确保它们可以访问逻辑单元号(LUN)。



实时迁移

每个VM适配器有两组WWNN/WWPN。Hyper-V在实时迁移期间使用这些功能。此图显示每个WWPN在实时迁移期间的使用方式。



来源：[Hyper-V虚拟光纤通道概述]

请注意，两个WWPN都登录到交换矩阵时会出现重叠。

这保证了存储上的连续工作而不会中断，即使在迁移失败的情况下也是如此。

“验**证实时迁**移”部分显示实时迁移过程中的flogi数据库，因此您可以在该过程中查看适配器flogi的两个WWPN。

快速迁移

与实时迁移不同，快速迁移会暂停移动的VM。

因此，没有理由从集中登录两个WWPN。相反，VM可以从一个节点注销并从新节点登录。

验证实时迁移

如果所有配置都正确，您应在UCS vHBA和VM光纤通道适配器的flogi数据库中看到flogi条目。

```
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
```

要显示LUN，请在访客VM中打开磁盘管理，然后输入**rescan disks**命令。如果LUN出现两次，则未启用多路径I/O(MPIO)。

在实时迁移期间，您应在每台交换机中看到地址集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
```

故障排除

本部分提供了可用于对配置进行故障排除的信息。

常见问题

- 当**Microsoft Windows 2012 FNIC驱**动程序的版本不正确时，**Hyper-V Manager > Virtual SAN Manager中的**虚拟光纤通道SAN的“状态”列会显示设备或驱动程序不支持虚拟光纤通道消息。通过转到Device Manager > Storage Controllers > Cisco VIC FCoE Storport Miniport > Properties > Driver，验证当前FNIC驱动程**序版本**。使用UCS互操作性矩阵以根据刀片型号、UCS固件版本和适配器确定支持哪个驱动程序。如有必要，请更新驱动程序。

- 在某些情况下， Live Migration会与Synthetic FibreChannel端口**一起失败：未能完成保留资源**消息。应验证以下几点：

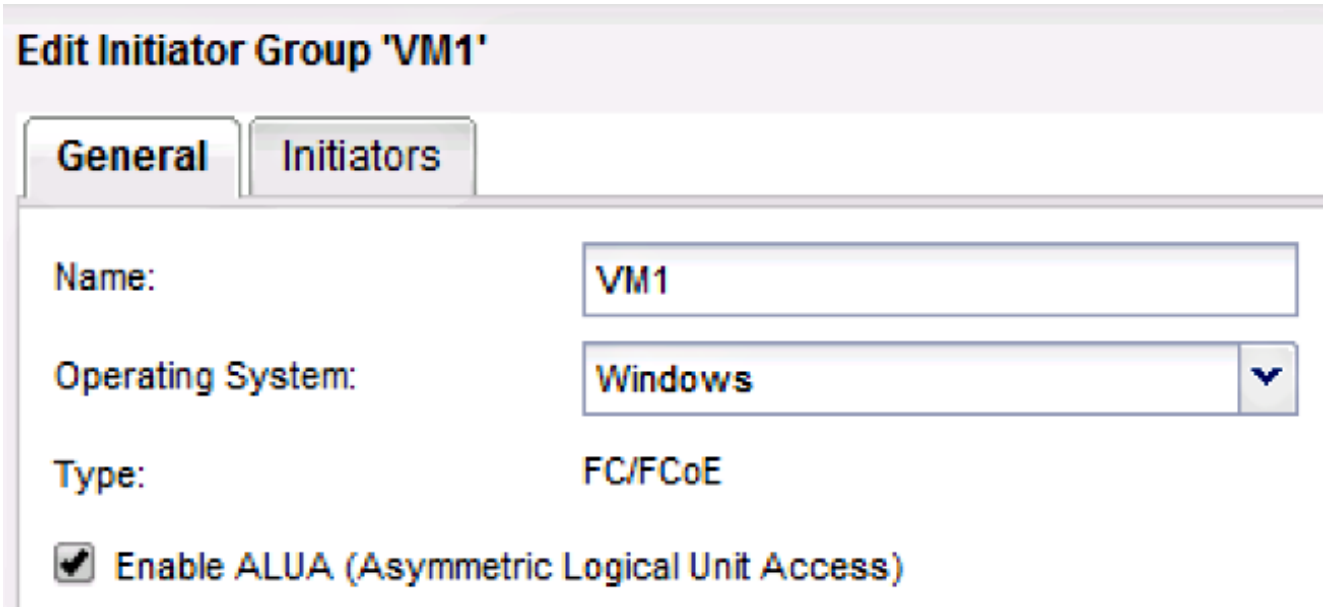
  WWPN是否添加到存储目标 — NetApp中的启动器组。分区信息是否用于访问分配给虚拟机的两组WWPN。是否已从Microsoft应用了最新的修补程序，包括KB 2894032。

- 当设备使用相同的HBA对来引导和VM流量时，实时迁移可能会失败。这在Unified Computing System Virtual Machine Live Migration Fails with Virtual Fibre Channel Adapters中描述。

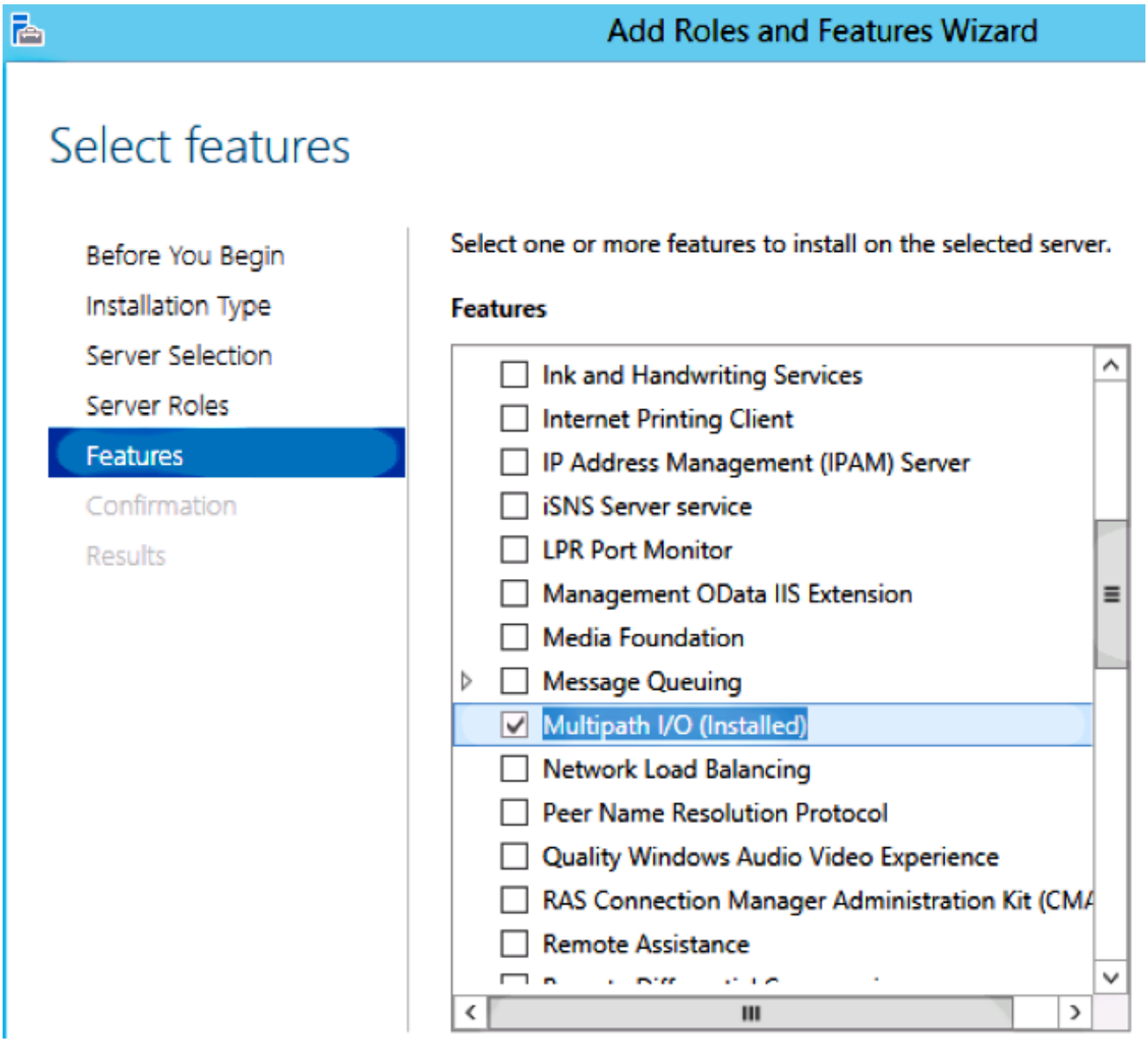
MPIO

为了恢复能力和容错能力，应在操作系统上启用MultiPath I/O。

1. 在NetApp上为特定启动器组启用非对称逻辑单元访问(ALUA)。



2. 在Microsoft端启用MPIO功能。在“添**加角色和功能**”中，确保已启用MPIO。



相关信息

- Hyper-V虚拟光纤通道概述
- 虚拟机实时迁移概述
- 技术支持和文档 - Cisco Systems