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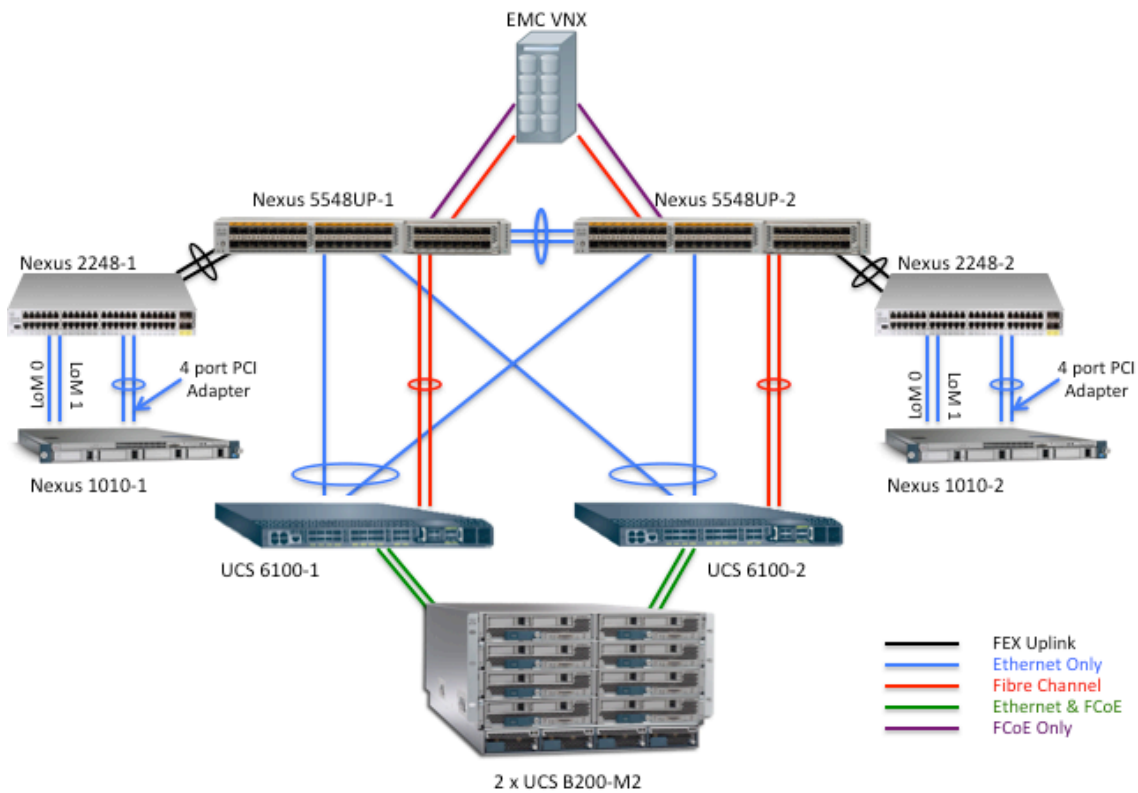
Nexus 1000V with UCS Configuration Cheat Sheet

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Introduction

This document will walk you through how to configure a Unified Computing System (UCS) blade server(s) and install the Nexus 1000V within this environment. Certain features and technologies on the UCS will “NOT” be discussed and only pertinent features that affect the Nexus 1000V will be focused on. The following is the topology that will be used for the cheat sheet.

Figure 1: Physical Topology



In this environment, the Nexus 1010 will host the Nexus 1000V Virtual Supervisor Module (VSM). Details on how this is configured will be shown later in this documentation.

Hardware and Software Environment

The following are the hardware and software used for the cheat sheet

Nexus Switches

- Nexus 5548UP and Nexus 2248TP
 - NX-OS version 5.1(3)N1(1)
- Nexus 1010
 - NX-OS version 4.2(1)SP1(3)
- Nexus 1000V
 - NX-OS version 4.2(1)SV1(4a)

UCS Hardware/Software

- Fabric Interconnect 6120
- UCS B200 M2
 - Cisco M81KR Converged Network Adapter (CNA)
 - ESXi 5.0 build 469512
 - vCenter 5.0 Server build 455964
 - VMware Update Manager 5.0.0.8039
- UCS Manager version 2.0(1t)

Storage Array

- EMC VNX 5300
 - Firmware 5.31.000.5.502

Cheat Sheet Tasks

The following are the high level tasks that will be completed:

1. Nexus 5500 Configuration
 - a. Fibre Channel & FCoE Setup
 - b. FEX Setup
 - c. vPC Setup
2. UCS Blade Server Configuration
 - a. Creating Service Profile Template
 - b. Creating Service Profile
 - c. Associating Service Profile
3. Nexus 1010 Installation and Configuration
 - a. Configuring Upstream Switch Ports
 - b. Building Primary & Secondary 1010
 - c. Creating VSM Virtual Service Blade
4. Nexus 1000V Installation and Configuration
 - a. Installation of VSM on Nexus 1010
 - b. Configuring Port-Profile of type Ethernet
 - c. Configuring Port-Profiles of type vEthernet
 - d. Adding VEM

Nexus 5500 Configuration

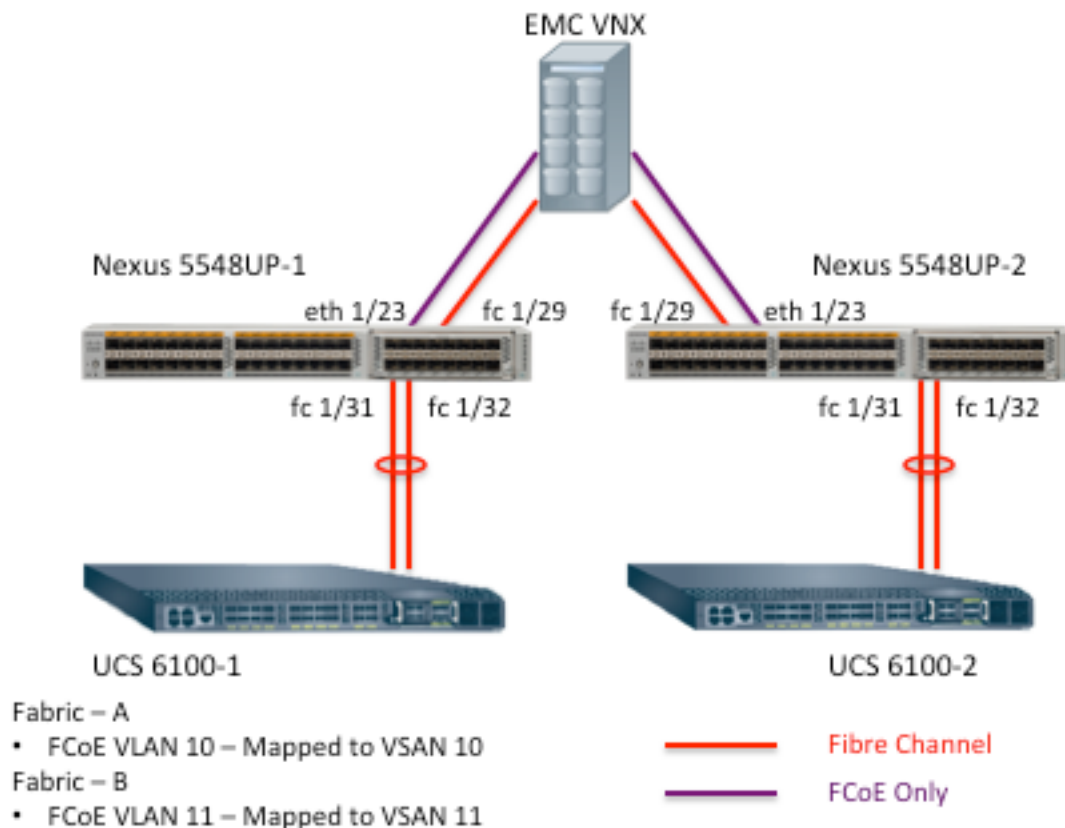
In this section, the Nexus 5500 switches will be configured to prepare for the necessary features needed for this solution. The key features that will be configured are:

- FCoE/FC
- FEX
- vPC

Nexus 5500 FCoE and FC Setup

The figure below shows the details of the Nexus 5500 environment for FCoE and FC:

Figure 2: Nexus 5500 FCoE and FC Topology



Note: The Nexus 5548UP-1 switch will be used for Fabric-A and Nexus 5548UP-2 will use Fabric-B.

The first task is to enable “Storage Services” to allow the Nexus 5500 to provide Fibre Channel (FC) services as well as FCoE. Please follow the steps below to set up the Nexus 5500 for FC and FCoE services.

Enabling Storage Services

```
5548up-1# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
5548up-1(config)# feature fcoe
```

```

FC license checked out successfully
fc_plugin extracted successfully
FC plugin loaded successfully
FCoE manager enabled successfully
FC enabled on all modules successfully
Enabled FCoE QoS policies successfully

```

Note: With the release of NX-OS 5.1(3)N1(1), it is not necessary to manually configure the QoS settings for FCoE Class-of-Service (CoS) on the Nexus 5500s. It is automatically done for you unless there is a conflict with an existing QoS setting on the switch, in which case a manual configuration is needed.

Enabling FC Ports

With the Nexus 5548UP providing the “Universal Port” concept, we can define certain ports to be utilized as FC ports. In our environment, the first 28 ports will be used for Ethernet (1GE or 10GE) and the remaining 4 ports of the base ports will be reserved as Fibre Channel (1/2/4/8 Gig) ports. Follow the steps below to complete this task:

```

5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# slot 1
5548up-1(config-slot)# port 29 - 32 type fc
5548up-1(config-slot)# copy running-config startup-config
[#####] 100%
Copy complete, now saving to disk (please wait)...
5548up-1(config-slot)# reload
WARNING: This command will reboot the system
Do you want to continue? (y/n) [n] y

```

Note: Since we are modifying the base ports of the Nexus 5548UP, it is required to save the configuration changes and reload the whole switch.

Once the switch comes back online, verify that ports 29-32 are set for Fibre Channel. Run the following command:

```
5548up-1# show interface brief
```

Interface	Vsan	Admin Mode	Admin Trunk Mode	Status	SFP	Oper Mode	Oper Speed (Gbps)	Port Channel
fc1/29	1	auto	on	down	swl	--		--
fc1/30	1	auto	on	down	swl	--		--
fc1/31	1	auto	on	down	swl	--		--
fc1/32	1	auto	on	down	swl	--		--

Ethernet Interface	VLAN	Type	Mode	Status	Reason	Speed	Port Ch #
Eth1/1	1	eth access	down	SFP not inserted		10G(D)	--
Eth1/2	1	eth access	down	SFP not inserted		10G(D)	--

Creating VSAN and FCoE VLAN

For our Fabric-A, we will create VSAN 10 for the environment and utilize VLAN 10 as our FCoE VLAN. Follow the steps below to complete these tasks.

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# vsan database
5548up-1(config-vsan-db)# vsan 10
5548up-1(config-vsan-db)# exit
5548up-1(config)# vlan 10
5548up-1(config-vlan)# fcoe vsan 10
```

Configuring FCoE and FC Storage Ports

The following steps will walk you through how to configure the FC and FCoE ports for the EMC VNX storage array.

Enabling EMC VNX FC Port

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# vsan database
5548up-1(config-vsan-db)# vsan 10 interface fc1/29
5548up-1(config)# interface fc1/29
5548up-1(config-if)# no shutdown
5548up-1(config-if)# show interface brief
```

Interface	Vsan	Admin Mode	Admin Trunk Mode	Status	SFP	Oper Mode	Oper Speed (Gbps)	Port Channel
fc1/29	10	auto	on	up	swl	F	8	--
fc1/30	1	auto	on	down	swl	--	--	--
fc1/31	10	auto	on	down	swl	--	--	--
fc1/32	10	auto	on	down	swl	--	--	--

Ethernet Interface	VLAN	Type	Mode	Status	Reason	Speed	Port Ch #
Eth1/1	1	eth access	down	SFP not inserted		10G(D)	--
Eth1/2	1	eth access	down	SFP not inserted		10G(D)	--

...

[skip]

```
5548up-1# show flogi database vsan 10
```

INTERFACE	VSAN	FCID	PORT NAME	NODE NAME
fc1/29	10	0xe500ef	50:06:01:64:3e:a0:33:27	50:06:01:60:be:a0:33:27

Total number of flogi = 1.

Enabling EMC VNX FCoE Port.

```
5548up-1# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
5548up-1(config)# interface vfc123
5548up-1(config-if)# vsan database
5548up-1(config-vsan-db)# vsan 10 interface vfc123
5548up-1(config-vsan-db)# interface vfc123
5548up-1(config-if)# bind interface ethernet 1/23
5548up-1(config-if)# switchport trunk allowed vsan 10
5548up-1(config-if)# no shutdown
5548up-1(config-if)# interface ethernet 1/23
5548up-1(config-if)# switchport mode trunk
5548up-1(config-if)# switchport trunk allowed vlan 1, 10
5548up-1(config-if)# spanning-tree port type edge trunk
```

Warning: 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

```
5548up-1(config-if)# show interface vfc123
```

```
vfc123 is trunking
  Bound interface is Ethernet1/23
  Hardware is Ethernet
  Port WWN is 20:7a:00:05:73:ed:72:bf
  Admin port mode is F, trunk mode is on
  snmp link state traps are enabled
  Port mode is TF
  Port vsan is 10
Trunk vsans (admin allowed and active) (10)
Trunk vsans (up) (10)
  Trunk vsans (isolated) (0)
  Trunk vsans (initializing) (0)
  1 minute input rate 8 bits/sec, 1 bytes/sec, 0 frames/sec
  1 minute output rate 56 bits/sec, 7 bytes/sec, 0 frames/sec
  15 frames input, 1616 bytes
  0 discards, 0 errors
  16 frames output, 2000 bytes
  0 discards, 0 errors
  last clearing of "show interface" counters never
  Interface last changed at Mon Dec 19 23:46:34 2011
```

```
5548up-1# show flogi database vsan 10
```

INTERFACE	VSAN	FCID	PORT NAME	NODE NAME
fc1/29	10	0xe500ef	50:06:01:64:3e:a0:33:27	50:06:01:60:be:a0:33:27
vfc123	10	0xe50001	50:06:01:60:3e:a4:33:27	50:06:01:60:be:a0:33:27

Total number of flogi = 2.

Note: When configuring the FCoE port for the EMC VNX array, it is important to verify that the EMC array has allow the particular FCoE VLAN (ex: VLAN 10) to traverse that particular port.

Configuring Nexus 5500 FC Ports as Port-Channels for UCS 6100

```
5548up-1# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```

5548up-1(config)# feature npiv
5548up-1(config)# feature fport-channel-trunk
5548up-1(config)# interface san-port-channel 100
5548up-1(config-if)# channel mode active
5548up-1(config-if)# no shutdown
5548up-1(config-if)# vsan database
5548up-1(config-vsan-db)# vsan 10 interface san-port-channel 100
5548up-1(config-vsan-db)# vsan 10 interface fc1/31-32
5548up-1(config-vsan-db)# interface fc1/31-32
5548up-1(config-if)# channel-group 100
fc1/31 fc1/32 added to port-channel 31 and disabled
please do the same operation on the switch at the other end of the port-channel,
then do "no shutdown" at both ends to bring it up

```

Note: At this point in time, we will not enable these interfaces. We will need to configure the UCS 6100 FC Uplink ports before enabling the ports on the Nexus.

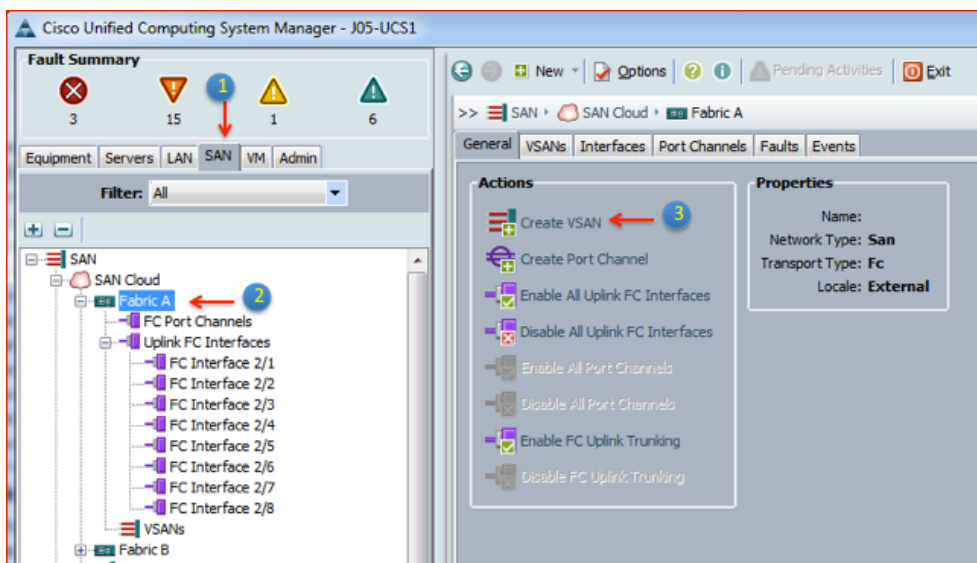
Configuring UCS 6100 FC Ports as Port-Channels

Configuration of the FC Uplinks from the FI will be shown below. Please follow the diagrams to create and enable the FC port-channel from the Fabric Interconnect. First login to the UCS Manager

Creating VSAN for UCS

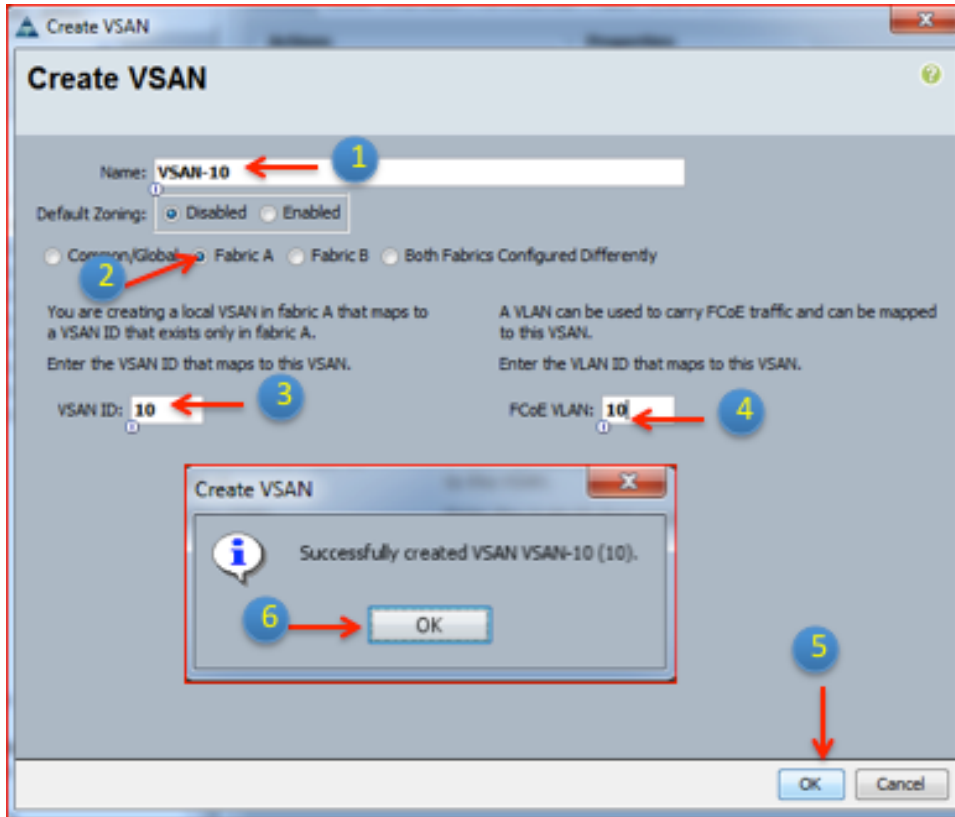
VSAN(s) need to be created before creating the FC port channel. The steps below will describe how that is completed.

Figure 3: Creating VSAN



- 1) Click on the "SAN" tab
- 2) Select "Fabric A"
- 3) Click on "Create VSAN"

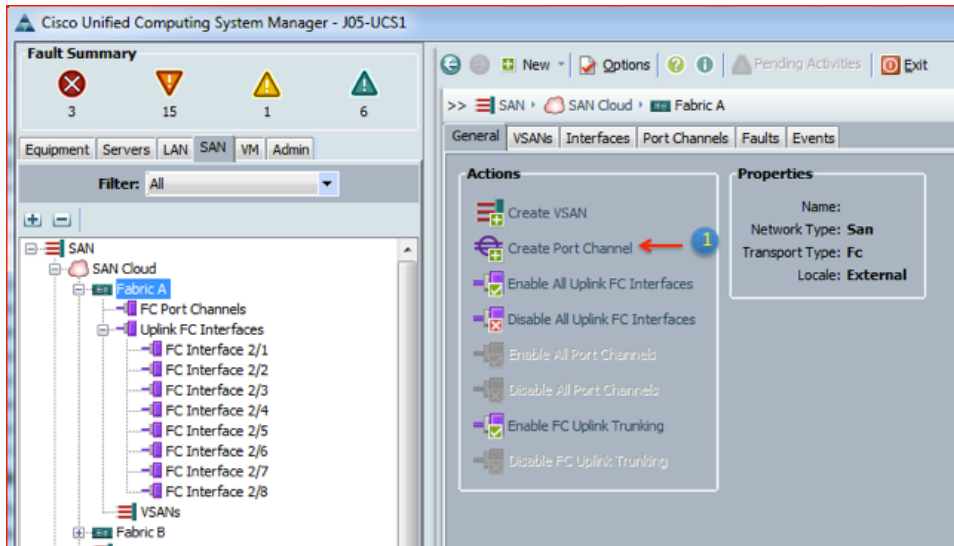
Figure 4: Creating VSAN Continued...



- 1) Type in a name for this VSAN (ex: VSAN-10)
- 2) Select the radio button for “Fabric A”
- 3) Type in “10” for the VSAN number
- 4) Type in “10” for the associated VLAN number
- 5) Click “OK”
- 6) A window will appear on the success of the VSAN creation...click “OK”

Creating FC Port Channel for UCS

Figure 5: Create FC Port-Channel



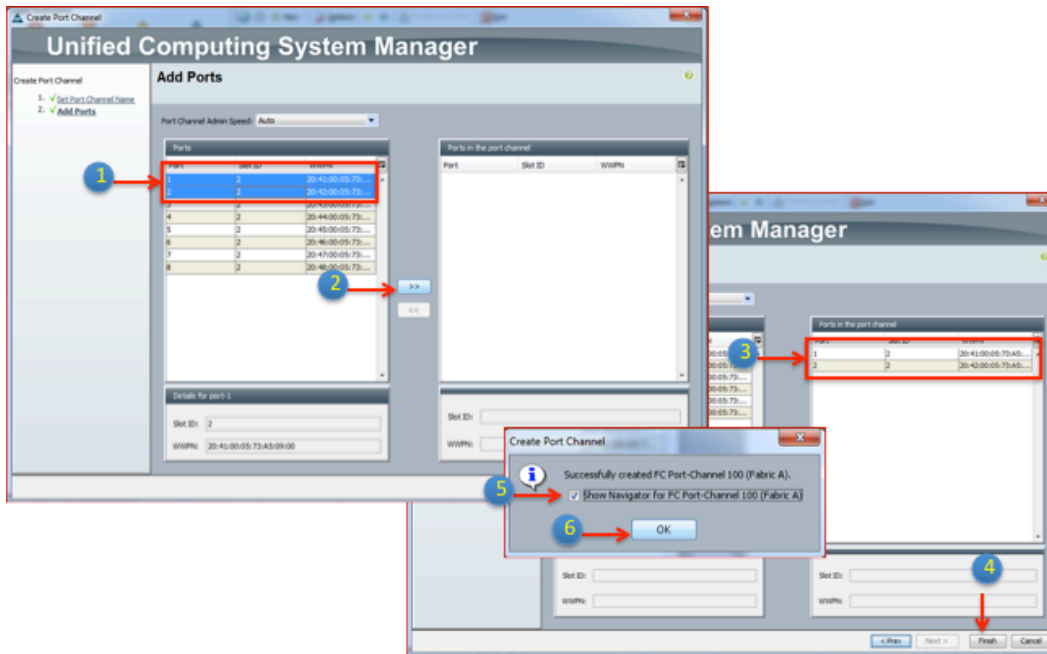
- 1) Click on “Create Port Channel”

Figure 6: Create FC Port Channel Continued...



- 1) A window will appear verifying if you want to continue and with Port Channel number limitation. Click on “Yes” to continue
- 2) A new window will appear. Type in Port Channel ID number (ex: 100)
- 3) Provide a name identifier for this Port Channel
- 4) Click on “Next”

Figure 7: Create FC Port Channel Continued...

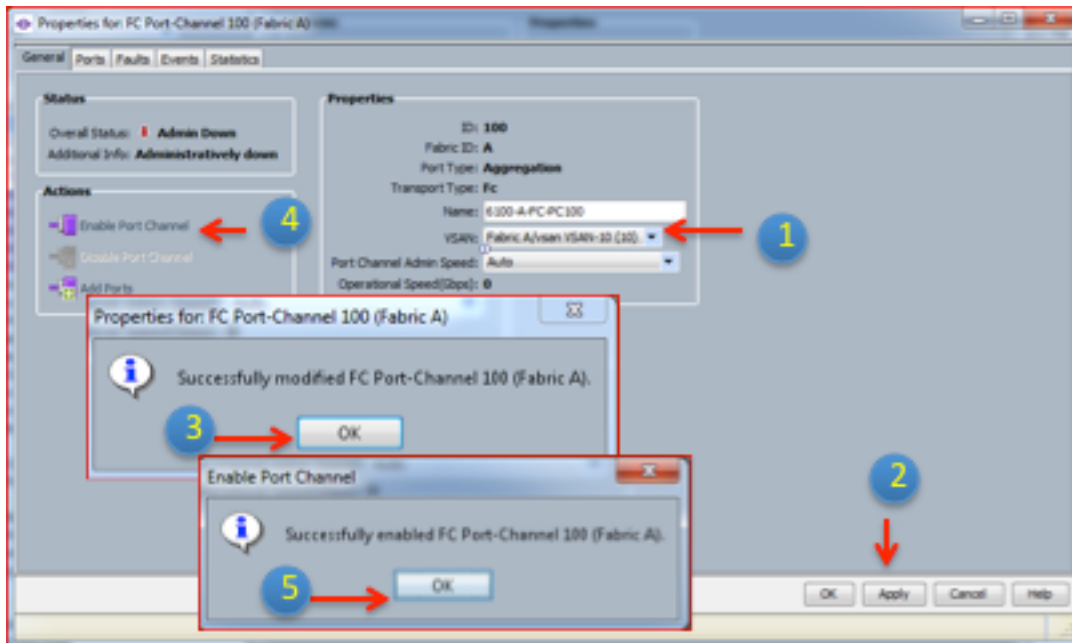


- 1) In this next window, select the FC Uplink interfaces by clicking on them
- 2) Once the interfaces are selected, click on the “>>” arrow
- 3) Verify the interfaces have moved over to the “Ports in the Port Channel” window
- 4) Click on “Finish”
- 5) A new window will appear, please select the checkbox for “Show Navigator for FC Port Channel 100 (Fabric A)”
- 6) Click on “OK”

So before enabling the port channel from the UCS Manager, we will first need to enable the physical FC interfaces on the Nexus 5548UP. Below are the commands to complete this task:

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# interface fc1/31-32
5548up-1(config-if)# no shutdown
```

Figure 8: Create FC Port Channel Continued...



- 1) On the “VSAN” drop down box, select “Fabric A/vsan VSAN-10 (10)”
- 2) Click on “Apply” to save this new setting
- 3) Click “OK” to acknowledge the new setting
- 4) Click on “Enable Port Channel”
- 5) A new window will appear and click on “OK”

The Port Channel should be operational and “Up” on the UCS Manager and on the Nexus 5500 FC ports. To verify this on the Nexus 5500 switch, run the following command:

```
5548up-1# show flogi database vsan 10
```

```
-----
INTERFACE    VSAN  FCID          PORT NAME          NODE NAME
-----
fc1/29       10    0xe500ef     50:06:01:64:3e:a0:33:27  50:06:01:60:be:a0:33:27
vfc123      10    0xe50001     50:06:01:60:3e:a4:33:27  50:06:01:60:be:a0:33:27
San-po100   10    0xe50002     24:64:00:05:73:a5:09:00  20:0a:00:05:73:a5:09:01
```

Total number of flogi = 3.

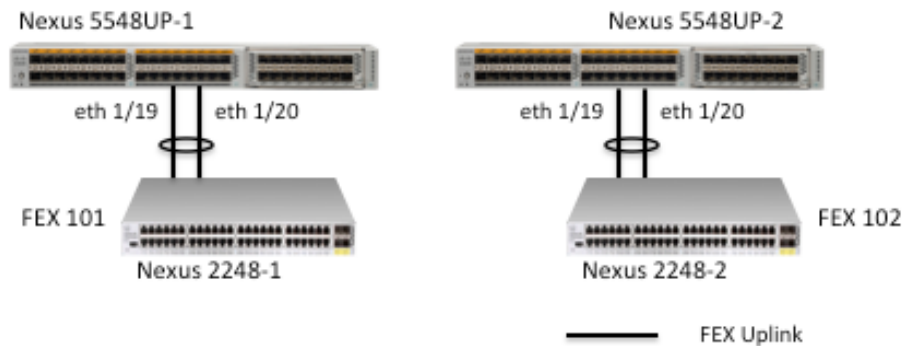
REPEAT THESE STEPS FOR NEXUS 5548UP-2 and UCS 6100-2 “Fabric B” TO CONFIGURE FC and FCoE

Note: Make sure VSAN and VLAN are set for 11 and NOT 10

Nexus 5500 FEX Configuration

This section will configure the Nexus 2248TP connected to the Nexus 5548UP. The following is a more detailed diagram for this section:

Figure 9: Nexus 2248 Details



```

5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# feature flex
5548up-1(config)# flex 101
5548up-1(config-fex)# interface port-channel 101
5548up-1(config-if)# switchport mode fex-fabric
5548up-1(config-if)# fex associate 101
5548up-1(config-if)# interface ethernet 1/19-20
5548up-1(config-if-range)# switchport mode fex-fabric
5548up-1(config-if-range)# fex associate 101
5548up-1(config-if-range)# channel-group 101
5548up-1(config-if-range)# show flex

```

FEX Number	FEX Description	FEX State	FEX Model	FEX Serial
101	FEX0101	Online	N2K-C2248TP-1GE	SSI141609ER

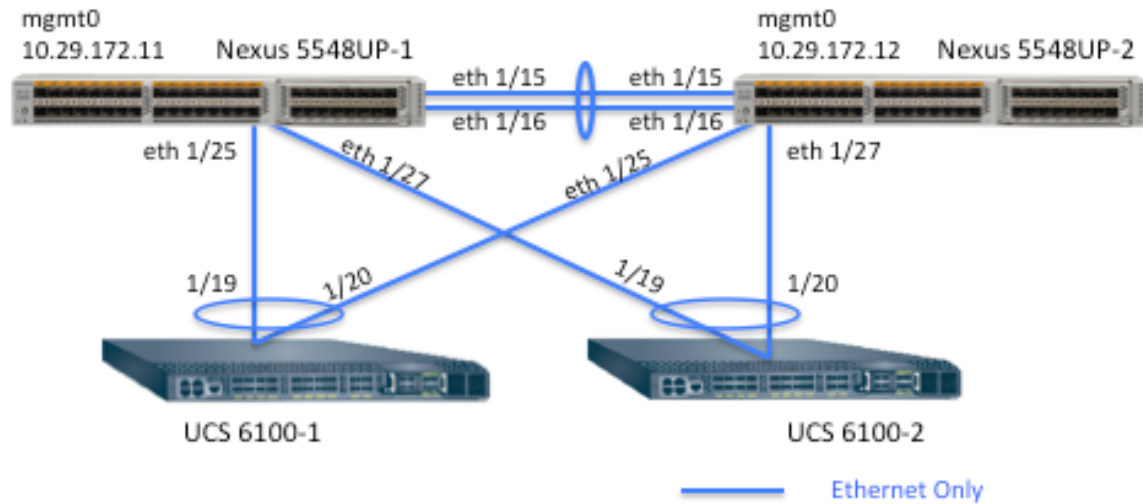
REPEAT THESE STEPS FOR NEXUS 5548UP-2 TO CONFIGURE THE FEX

Note: The FEX number for the Nexus 5548UP-2 should be 102

Nexus 5500 vPC Configuration

This portion of the configuration will focus on enabling and configuring virtual port-channels for the UCS 6100 Ethernet uplinks to the Nexus 5500. The diagram below will provide the details that will be used for the vPC configuration.

Figure 10: vPC Topology Details



VLAN 50 → Nexus 1000V Control and Packet
 VLAN 51 → Vmotion
 VLAN 52 → Web Server
 VLAN 53 → Database Server
 VLAN 172 → Management

Creating VLANs on Nexus 5548UP-1

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# vlan 50
5548up-1(config-vlan)# name N1KV-Control-Packet
5548up-1(config-vlan)# vlan 51
5548up-1(config-vlan)# name Vmotion
5548up-1(config-vlan)# vlan 52
5548up-1(config-vlan)# name Web-Server
5548up-1(config-vlan)# vlan 53
5548up-1(config-vlan)# name Database-Server
5548up-1(config-vlan)# vlan 172
5548up-1(config-vlan)# name Management
```

REPEAT THE CREATION OF THE SAME VLANS ON THE NEXUS 5548UP-2

Configuring Nexus 5548UP-1 for vPC feature

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# feature vpc
5548up-1(config)# feature lacp
5548up-1(config)# interface port-channel 1
5548up-1(config-if)# switchport mode trunk
5548up-1(config-if)# interface ethernet 1/15-16
5548up-1(config-if-range)# switchport mode trunk
5548up-1(config-if-range)# channel-group 1 mode active
5548up-1(config-if-range)# exit
5548up-1(config)# vpc domain 5
5548up-1(config-vpc-domain)# peer-keepalive destination 10.29.172.12 vrf management
```

```
5548up-1(config-vpc-domain)# interface port-channel 1
```

```
5548up-1(config-if)# vpc peer-link
```

Please note that spanning tree port type is changed to "network" port type on vPC peer-link. This will enable spanning tree Bridge Assurance on vPC peer-link provided the STP Bridge Assurance

(which is enabled by default) is not disabled.

Configuring Nexus 5548UP-2 for vPC feature

```
5548up-2# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
5548up-2(config)# feature vpc
```

```
5548up-2(config)# feature lacp
```

```
5548up-2(config)# interface port-channel 1
```

```
5548up-2(config-if)# switchport mode trunk
```

```
5548up-2(config-if)# interface ethernet 1/15-16
```

```
5548up-2(config-if-range)# switchport mode trunk
```

```
5548up-2(config-if-range)# channel-group 1 mode active
```

```
5548up-2(config-if-range)# exit
```

```
5548up-2(config)# vpc domain 5
```

```
5548up-2(config-vpc-domain)# peer-keepalive destination 10.29.172.11 vrf management
```

```
5548up-2(config-vpc-domain)# interface port-channel 1
```

```
5548up-2(config-if)# vpc peer-link
```

Please note that spanning tree port type is changed to "network" port type on vPC peer-link. This will enable spanning tree Bridge Assurance on vPC peer-link provided the STP Bridge Assurance

(which is enabled by default) is not disabled.

Configuring vPC Interface on Nexus 5548UP-1 for UCS 6100-1 Connections

Configuring on Nexus 5548UP-1

```
5548up-1# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
5548up-1(config)# interface port-channel 25
```

```
5548up-1(config-if)# switchport mode trunk
```

```
5548up-1(config-if)# vpc 25
```

```
5548up-1(config-if)# switchport trunk allowed vlan 50-53, 172
```

```
5548up-1(config-if)# spanning-tree port type edge trunk
```

Warning: 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

```
5548up-1(config-if)# interface ethernet 1/25
```

```
5548up-1(config-if)# switchport mode trunk
```

```
5548up-1(config-if)# switchport trunk allowed vlan 50-53, 172
```

```
5548up-1(config-if)# spanning-tree port type edge trunk
```

Warning: 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

```
5548up-1(config-if)# channel-group 25 mode active
```

Configuring on Nexus 5548UP-2

```
5548up-2# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
5548up-2(config)# interface port-channel 25
```

```
5548up-2(config-if)# switchport mode trunk
```

```

5548up-2(config-if)# switchport trunk allowed vlan 50-53, 172
5548up-2(config-if)# vpc 25
5548up-2(config-if)# spanning-tree port type edge trunk
Warning: 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 5548up-2(config-if)# interface ethernet 1/25
5548up-2(config-if)# switchport mode trunk
5548up-2(config-if)# switchport trunk allowed vlan 50-53, 172
5548up-2(config-if)# spanning-tree port type edge trunk
Warning: 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
5548up-2(config-if)# channel-group 25 mode active

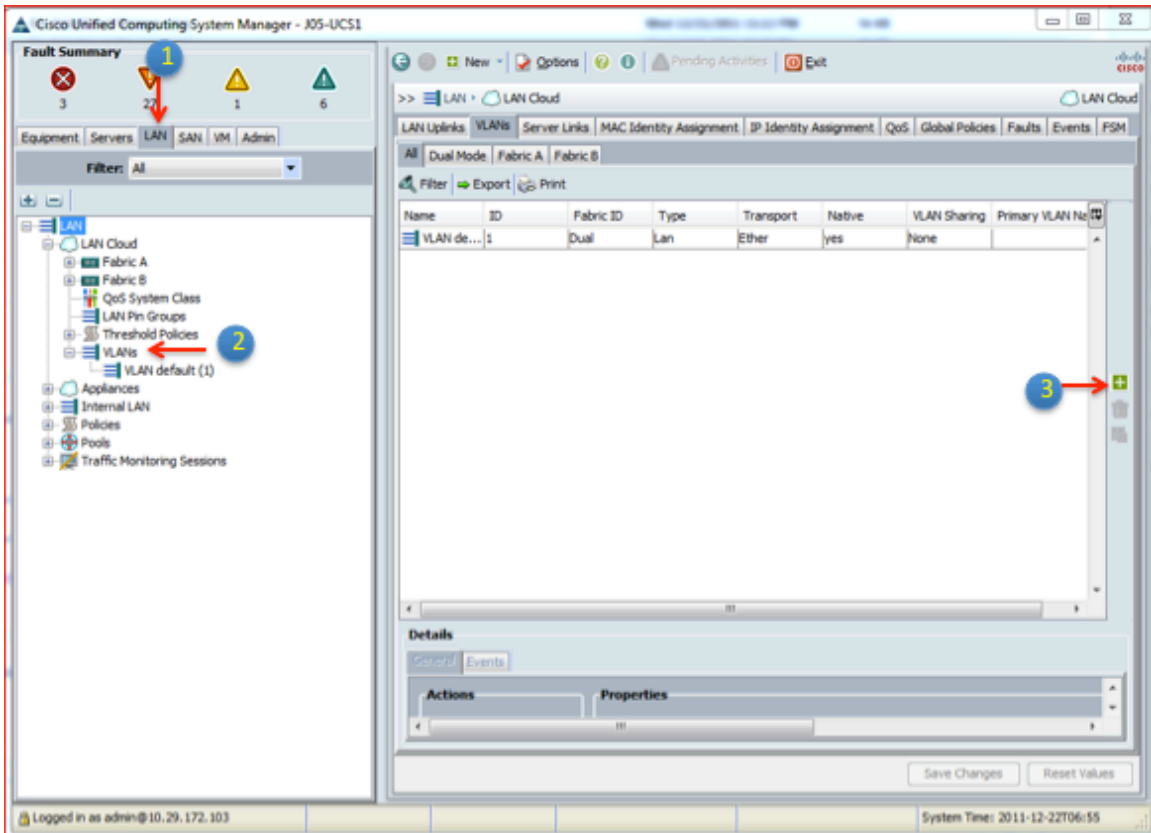
```

Note: Since the UCS 6100 is in “End-Host-Mode”, the vPC needs to be configured as “edge ports” for spanning-tree, which is similar to portfast. The port-channel interface will be in a Down “D” state since the UCS 6100 has not yet been configured.

Creating VLANs for UCS 6100 -1

Follow the figures below to complete the task of creating VLANs on the UCS 6100.

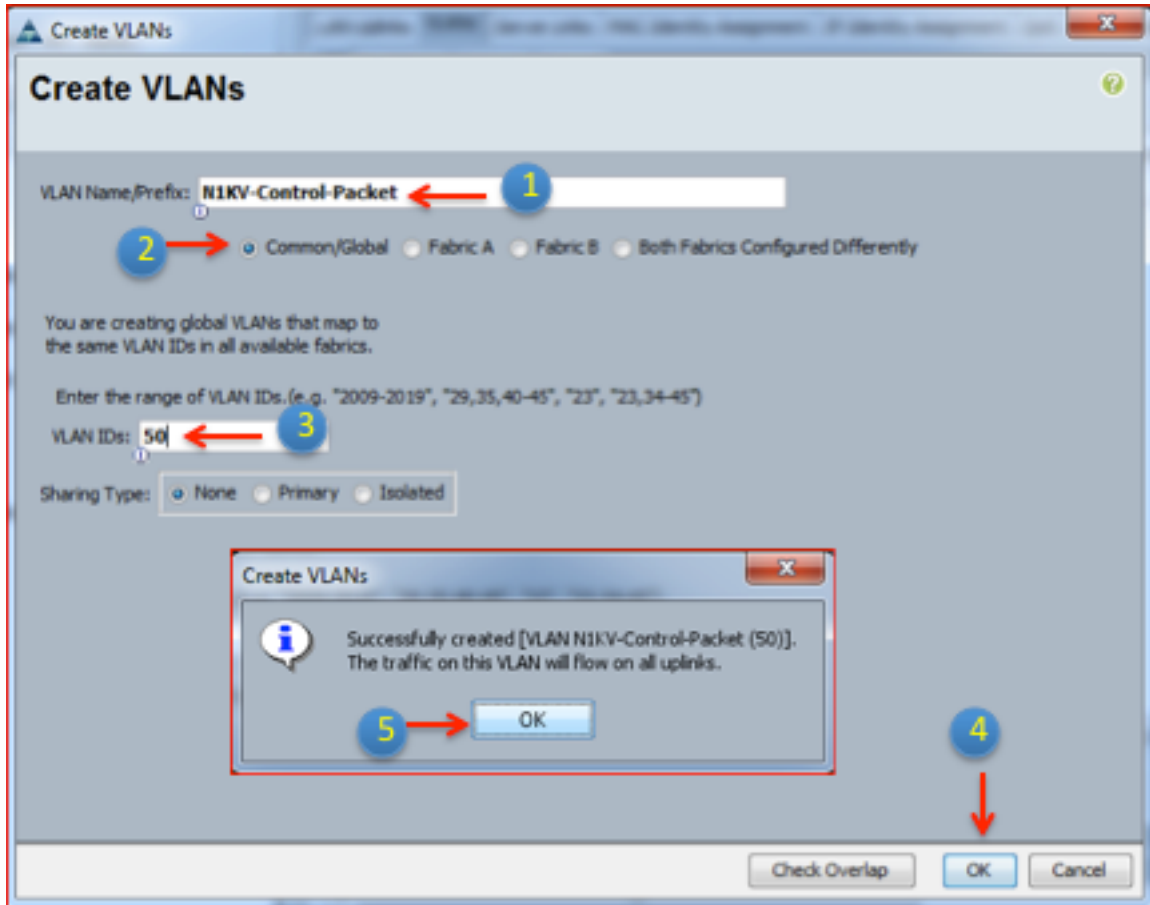
Figure 11: Creating VLANs



1) Select the “LAN” tab

- 2) Under the “LAN Cloud” on the left-hand bar, select “VLANs”
- 3) On the right-hand pane, select the green “+” symbol to create a VLAN

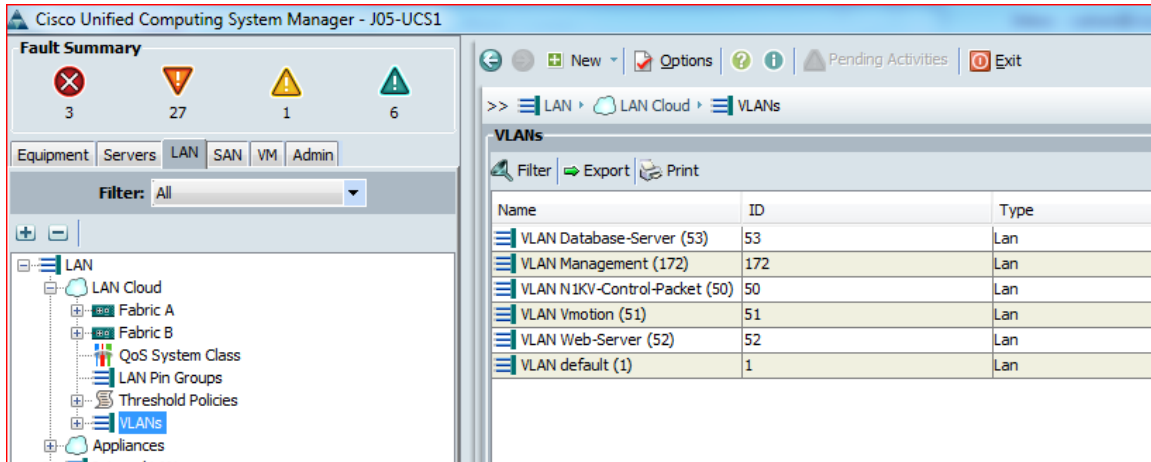
Figure 12: Creating VLANs continued...



- 1) Provide a name for this VLAN
- 2) Verify the radio button “Common/Global” is selected
- 3) Provide a VLAN number (ex: 50)
- 4) Click on “OK” to create the new VLAN
- 5) A new window will appear to confirm the creation, click on “OK”

REPEAT THE STEPS FROM FIGURE 11 AND 12 TO CREATE ADDITIONAL VLANS. THE FIGURE BELOW SHOWS ALL OF THE VLANS THAT WERE CREATED

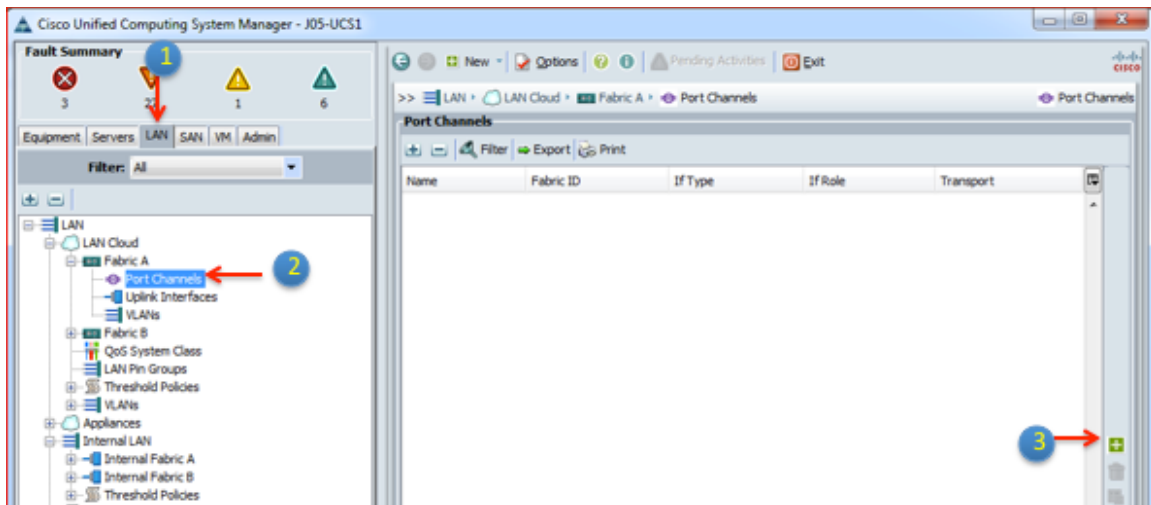
Figure 13: Created VLANs



Configuring UCS 6100-1 Ethernet Ports as Port-Channels

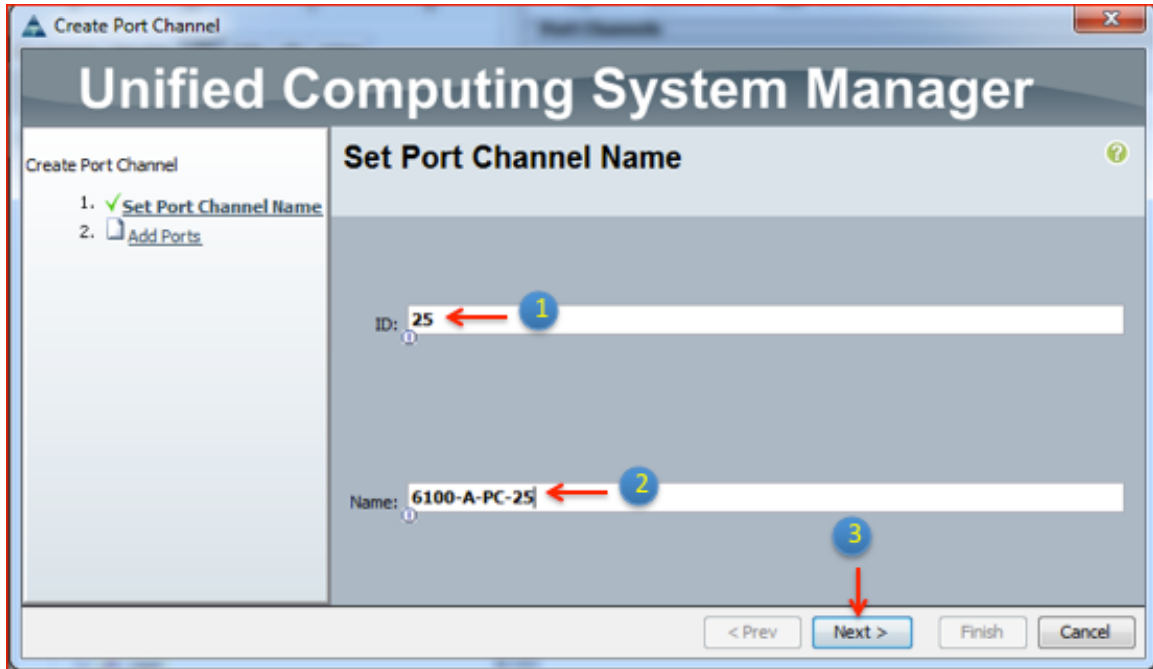
Configuration of the Ethernet Uplinks from the FI will be shown below. Please follow the diagrams to create and enable the Ethernet port-channel from the Fabric Interconnect. First login to the UCS Manager:

Figure 14: Creating Ethernet Port-Channel on “Fabric A”



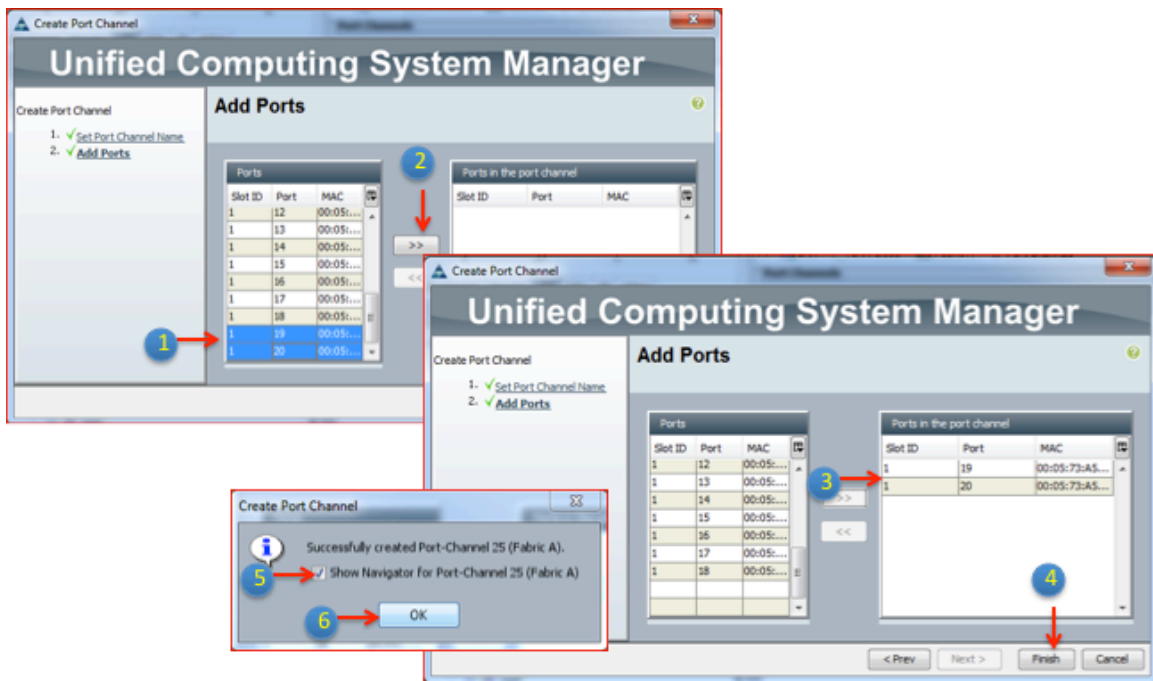
- 1) Select the "LAN" tab
- 2) Under the "LAN Cloud", expand "Fabric A" and select "Port Channels" on the left-hand panel
- 3) On the right-hand panel, click on the green "+" to create a new Port Channel

Figure 15: Creating Ethernet Port-Channel on “Fabric A” Continued...



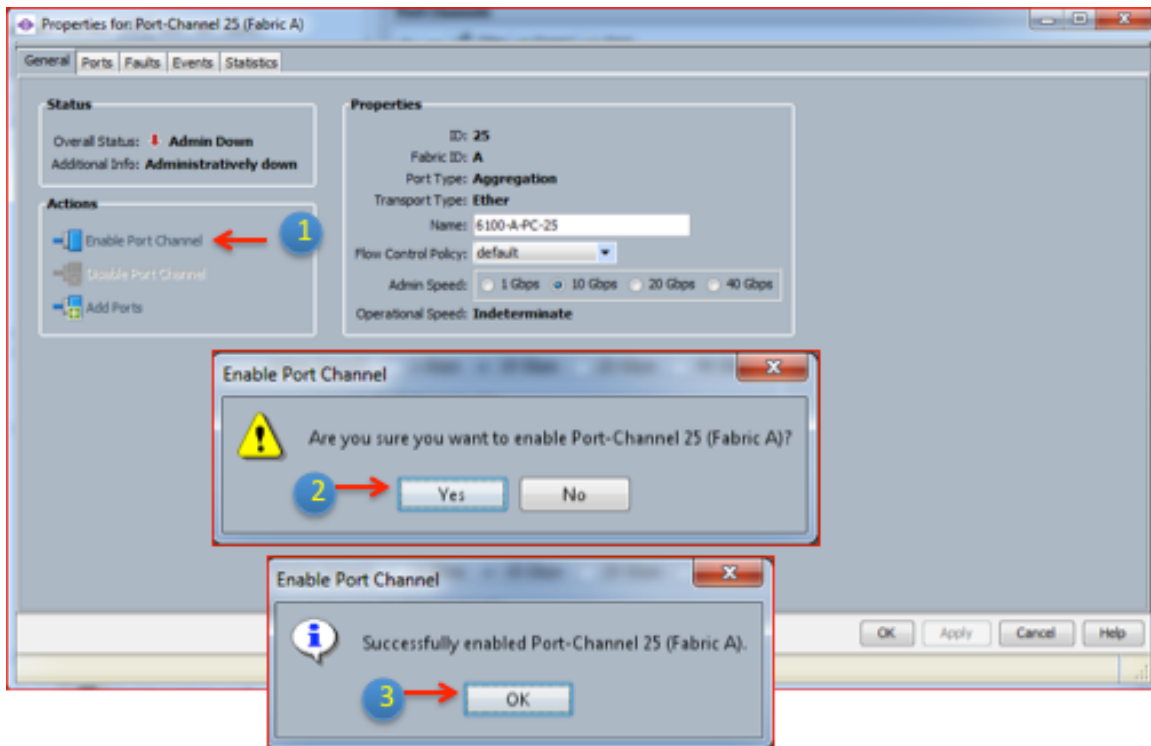
1. Type in the Port Channel ID number, in this example it is “25”
2. Provide a name for this Port Channel
3. Click on “Next”

Figure 16: Creating Ethernet Port-Channel on “Fabric A” Continued...



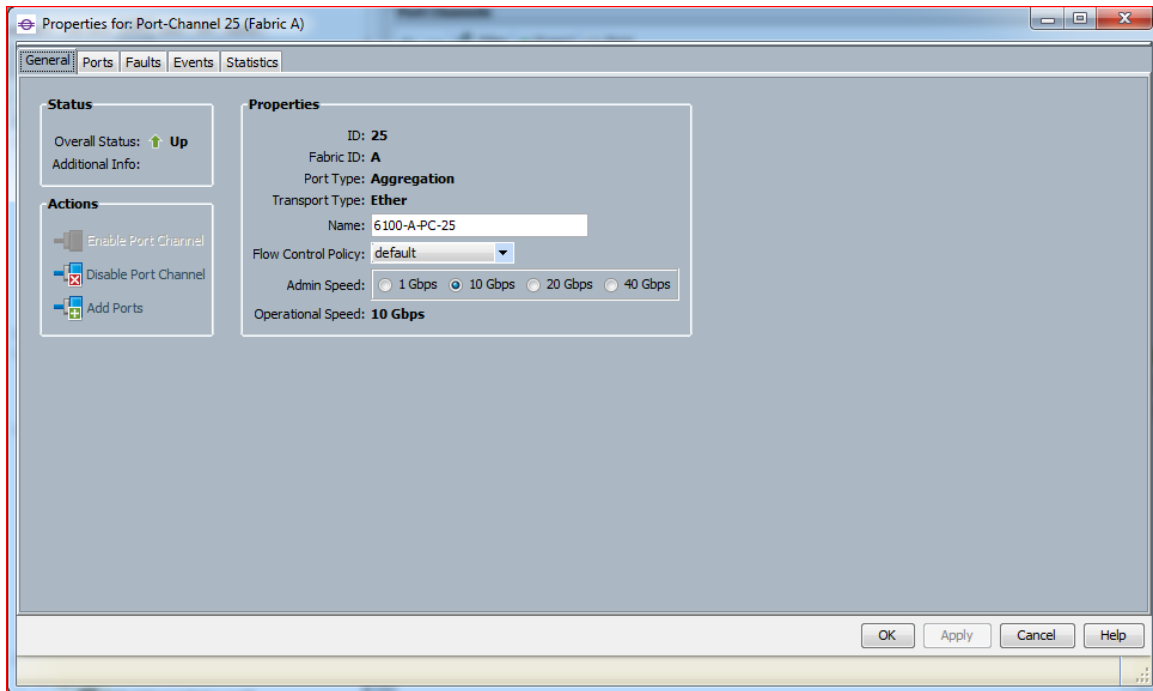
1. Select the ports to add to the Port Channel (in this example: ports 19 and 20)
2. Click on the “>>” to add the ports
3. Verify the ports are added
4. Click on “Finish”
5. A new window will appear and select the checkbox “Show Navigator for Port Channel 25 (Fabric A)”
6. Click “OK”

Figure 17: Creating Ethernet Port-Channel on “Fabric A” Continued...



1. Click on “Enable Port Channel”
2. Click “Yes” to enable the Port Channel
3. After successfully enabling the Port Channel, click on “OK”

Figure 18: Completion of Creating and Enabling an Ethernet Port Channel for Fabric A



REPEAT THE ABOVE STEPS FOR CREATING ETHERNET PORT CHANNEL FOR FABRIC B.

Note: In the environment for Fabric B, Port Channel ID number used will be “27”.

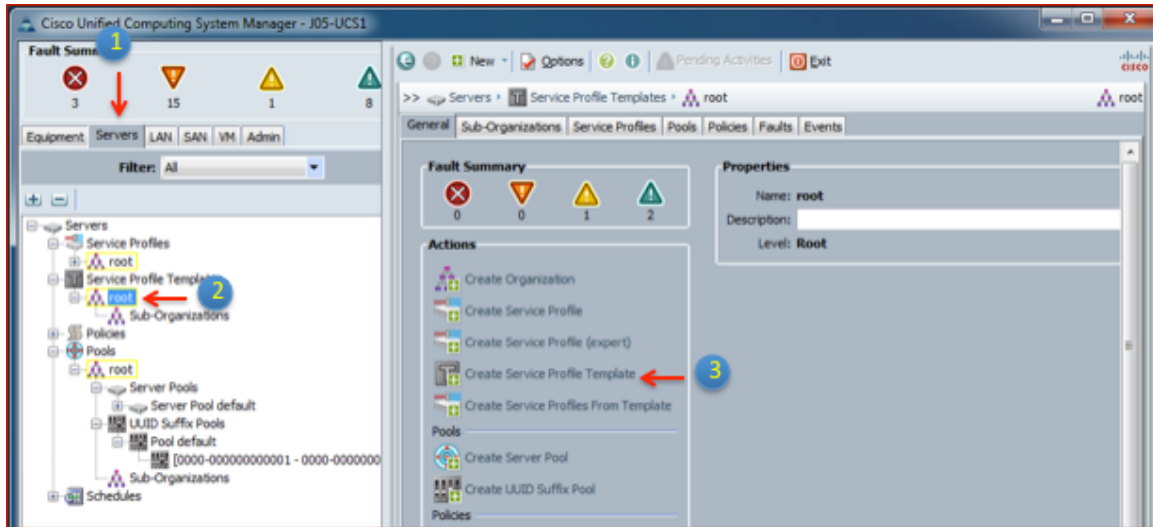
UCS Blade Server Configuration

With the network and SAN uplinks configured, we now need to build the service profiles for the blade servers inside the blade chassis. These blade servers will be installed with ESXi 5.0 (build 469512). The following section will not go through all of the configuration best practice; such as boot parameters, bios upgrades, etc. This section will focus on the critical components of the service profile, such as virtual NIC, VLAN and virtual HBA configurations.

Create UCS Service Profile Template

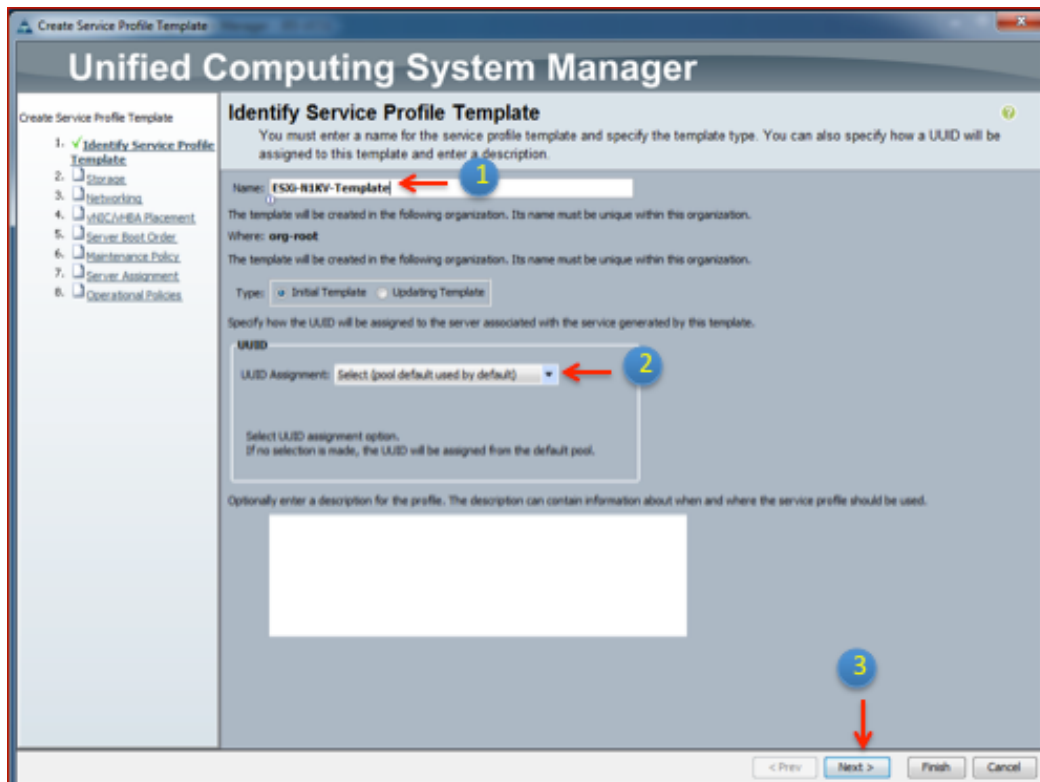
This section will walk you through creating the service profile template. This template will be used for the 2 blade servers that will bind to the service profile. Follow the screenshots to walk through building this template.

Figure 19: Creating UCS Service Profile Template



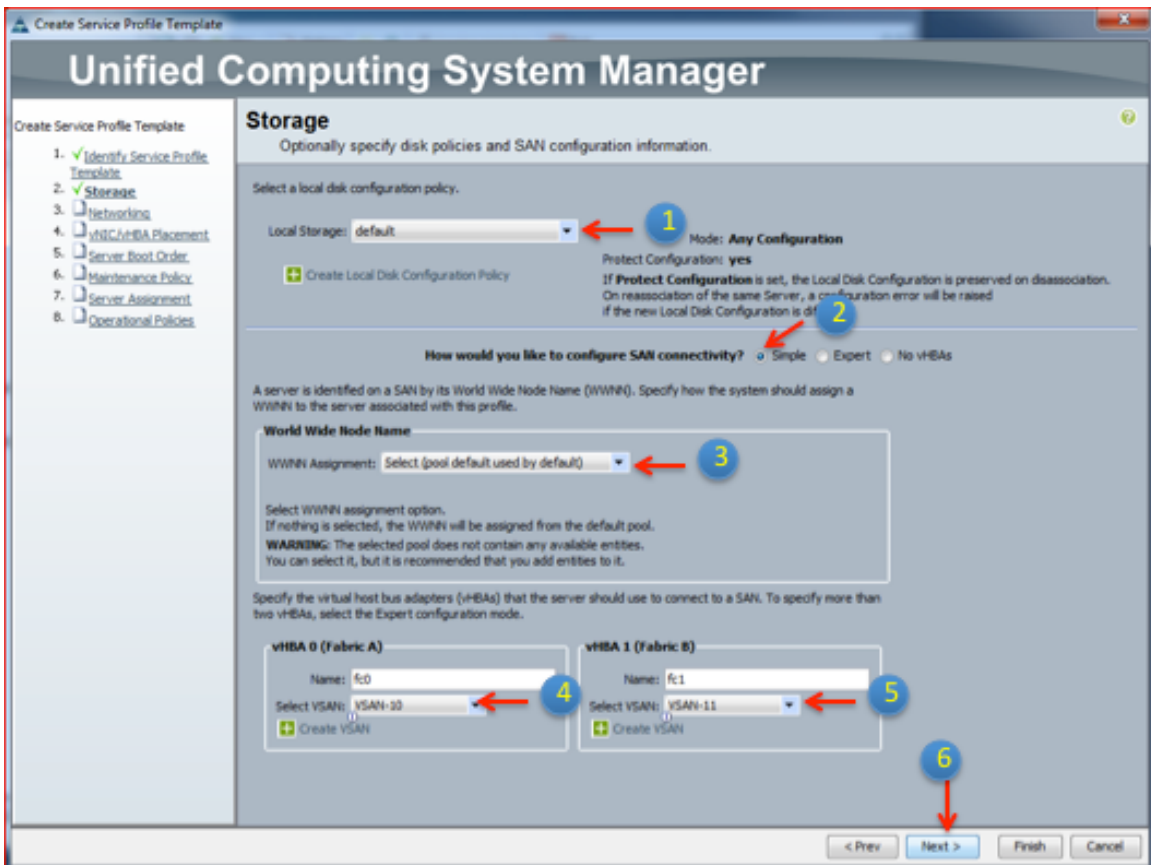
- 1) Login to UCS Manager and select the “Servers”
- 2) Under the “Service Profile Templates”, select “root”
- 3) On the right-hand window panel, click on “Create Service Profile Template”

Figure 20: Creating UCS Service Profile Template Continued...



- 1) Type in a name for the template (ex: ESXi-N1KV-Template)
- 2) The UUID drop down box is set to default. Customers can set their own UUID pool.
- 3) Click on “Next”

Figure 21: Creating Service Profile Template Continued...



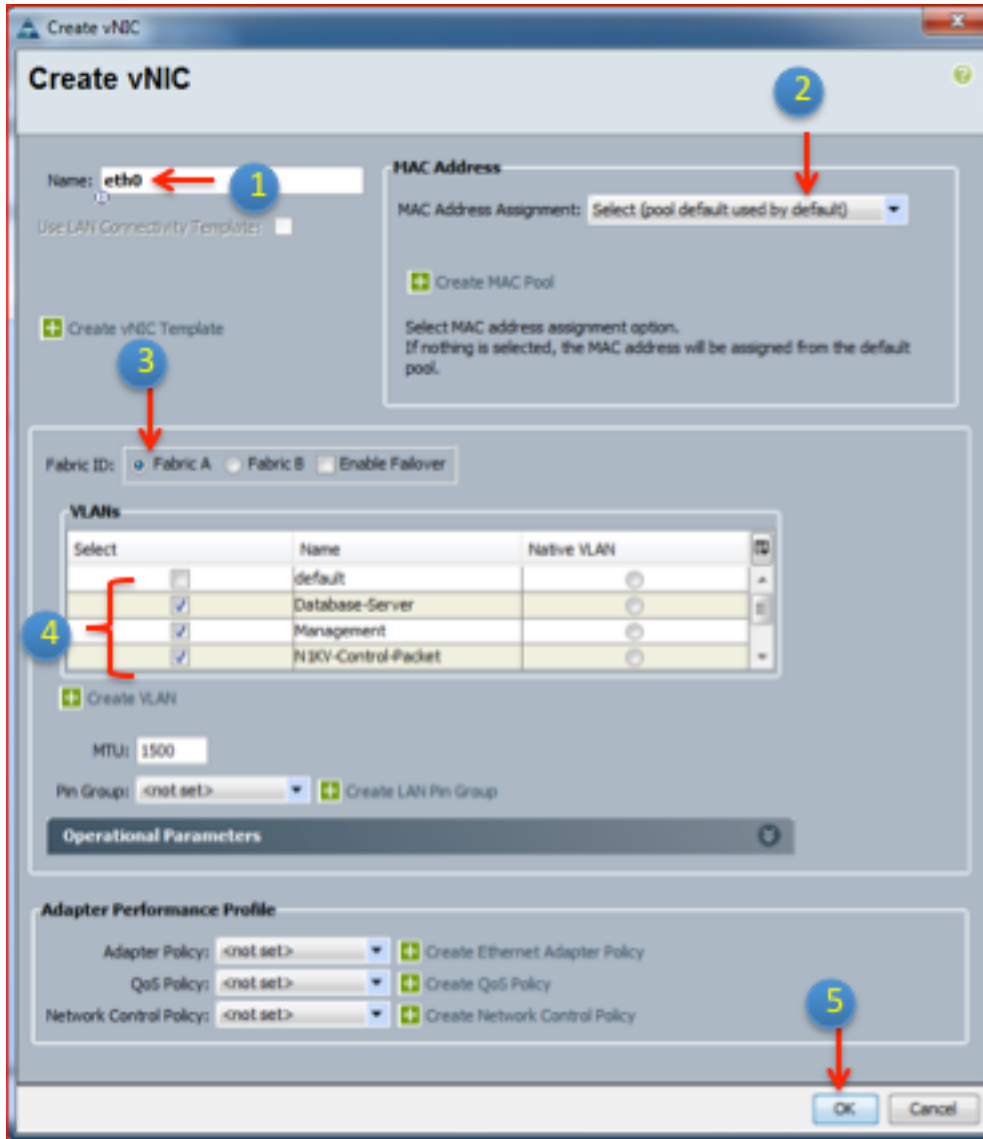
- 1) In the “Local Storage” drop down box, select the “default”. The local storage setting is not critical and customers can utilize whatever local storage policy they choose.
- 2) In the “How would you like to configure SAN connectivity”, verify that the “simple” radio button is chosen
- 3) In the “World Wide Node Name” drop down box, leave the default option.
- 4) For “vHBA 0 (Fabric A)”, select “VSAN-10” from the “Select VSAN” drop down box.
- 5) For “vHBA 1 (Fabric B)”, select “VSAN-11” from the “Select VSAN” drop down box.
- 6) Click on “Next”

Figure 22: Creating Service Profile Template Continued...



- 1) In this next window, the “Dynamic vNIC Connection Policy” should be set to the default, which is **“Select a Policy to use (no Dynamic vNIC Policy by default)”**
- 2) On the “How would you like to configure LAN connectivity”, select the “Expert” radio button
- 3) Click on the “Add” button

Figure 23: Creating Service Profile Template

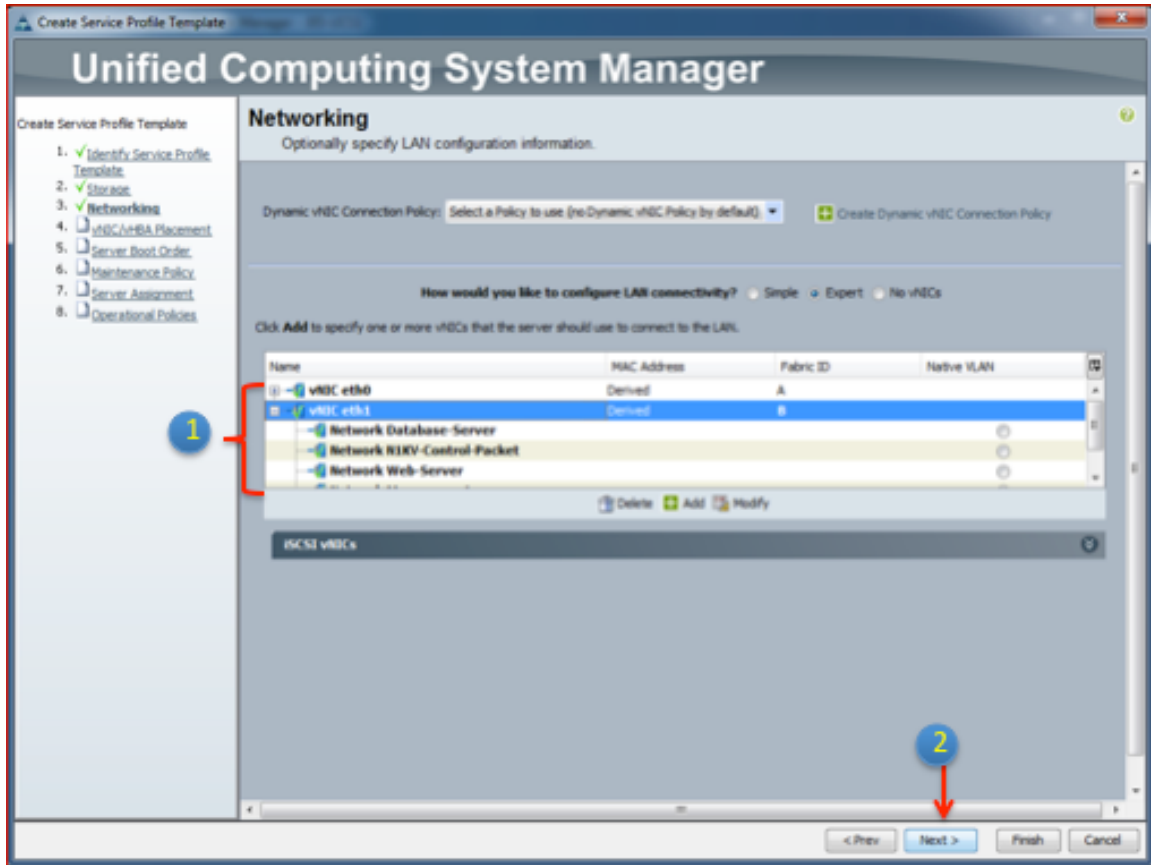


- 1) Provide a name for the virtual NIC (ex: eth0)
- 2) In the “Mac Address Assignment”, leave the default as “Select (pool default used by default)”
- 3) For this interface “eth0”, the Fabric ID should be set to “Fabric A”
- 4) In the “VLAN” section, please click on the checkbox for all the VLANs that will be utilized, which should be everything created excluding the “default”.
- 5) Click on “OK”

Note: It is critical that the “Enable Failover” checkbox SHOULD NOT be selected. There will be no “Native VLAN” selected since the installation of ESXi will have a vlan tag for the service console.

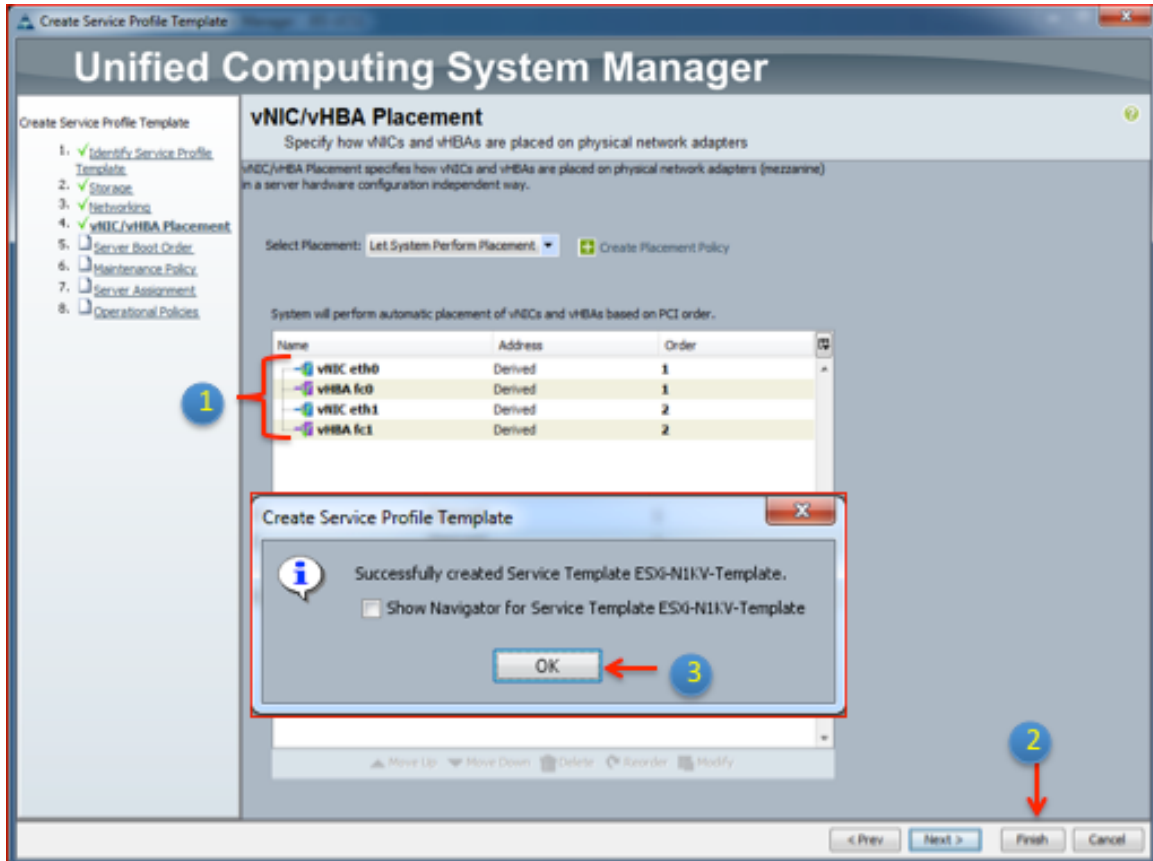
REPEAT THE CREATION OF THE VNIC FOR ETH1. ETH1 SHOULD USE FABRIC B AND UTILIZE ALL OF THE SAME VLANS. FIGURE 24 SHOWS THE COMPLETION OF 2 VIRTUAL NICs.

Figure 24: Creating Service Profile Template Continued...



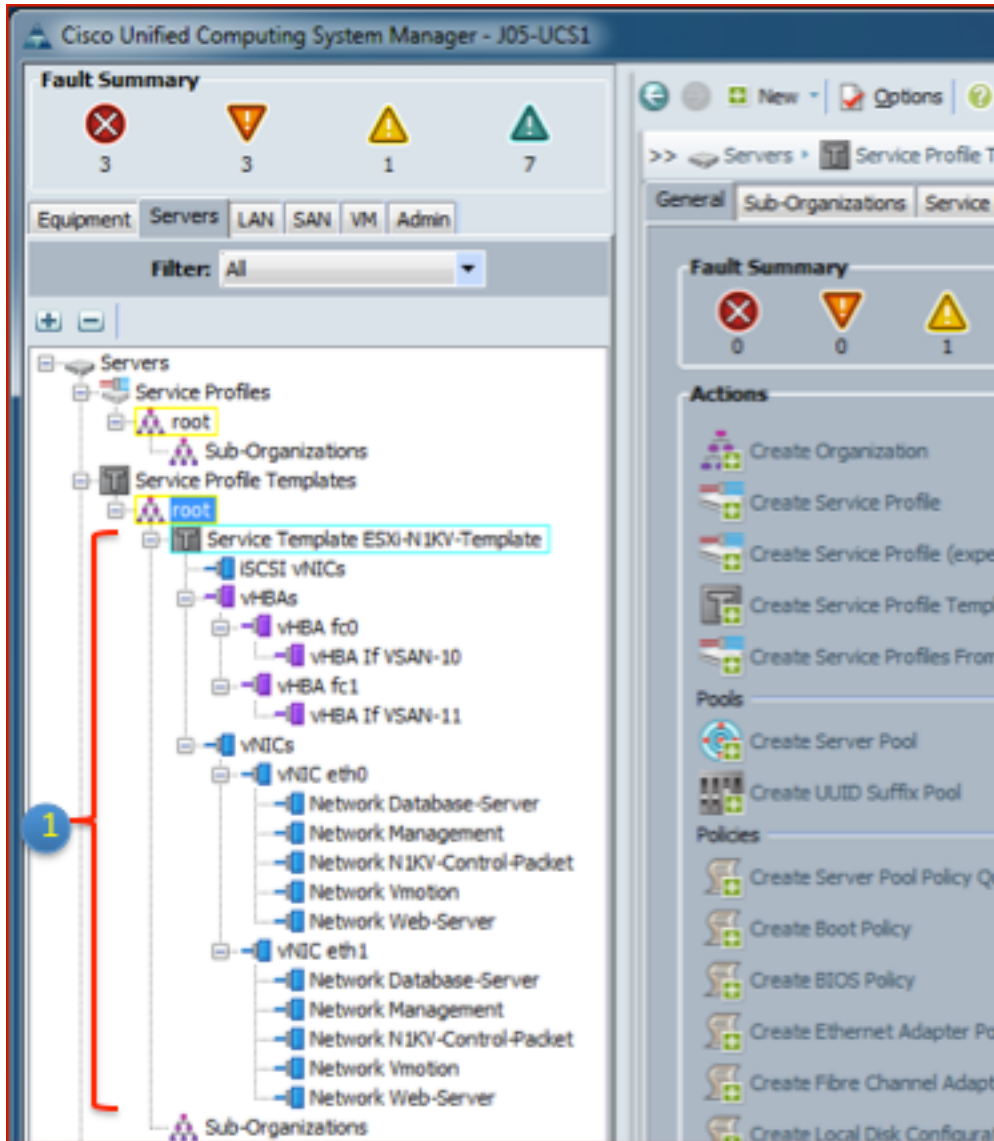
- 1) Verify the 2 vNICs (eth0 and eth1)
- 2) Click on "Next"

Figure 25: Creating Service Profile Template Continued...



- 1) Verify the order of the virtual interfaces
- 2) Continuing with the wizard is possible if other policies like Server Boot Order, Maintenance Policy, Server Assignment or Operational Policies are needed. For this template, the default will be used. So click on "Finish" to complete the Service Profile Template wizard.
- 3) Another window will appear and then click on "OK".

Figure 26: Service Profile Template

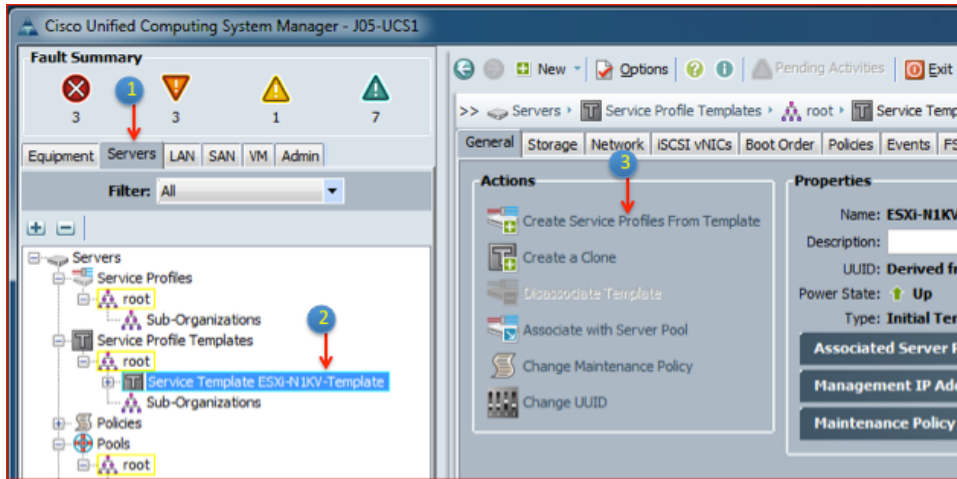


1. Verify settings for Service Profile ESXi-N1KV-Template

Creating Service Profile

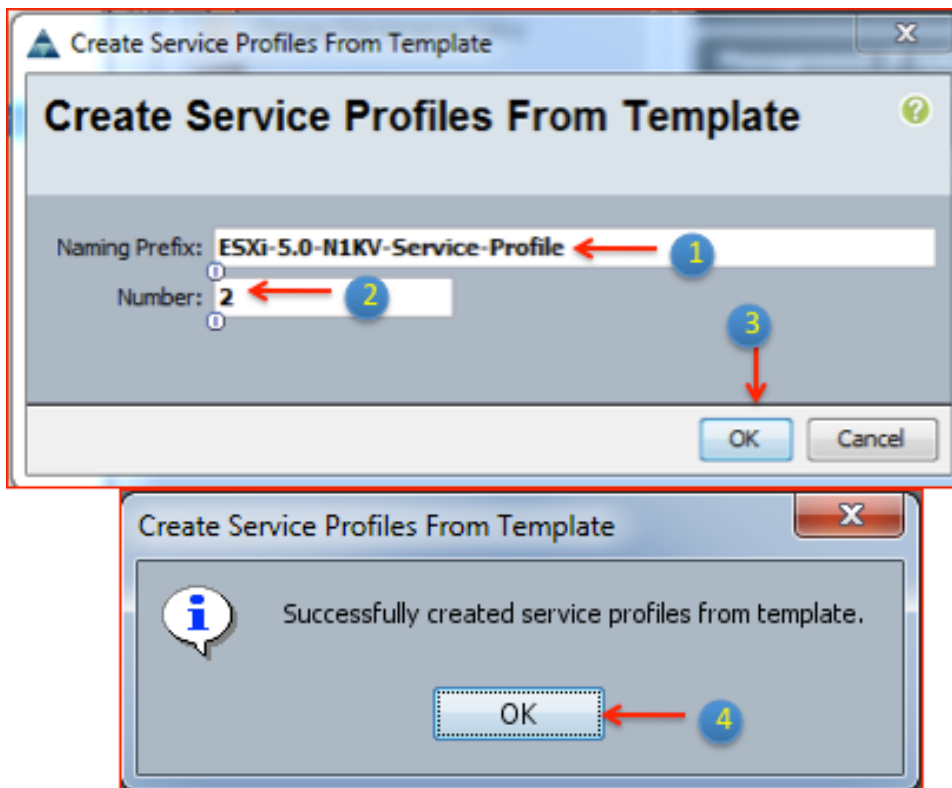
With the Service Profile Template created, we can now create a Service Profile to associate to the blade server(s). Follow these steps to complete this task.

Figure 27: Create Service Profile



1. Select the “Servers” tab
2. Under the “Service Profile Templates” select “Service Template ESXi-N1KV-Template”
3. On the right-hand panel, click on “Create Service Profiles from Template”

Figure 28: Create Service Profile Continued...



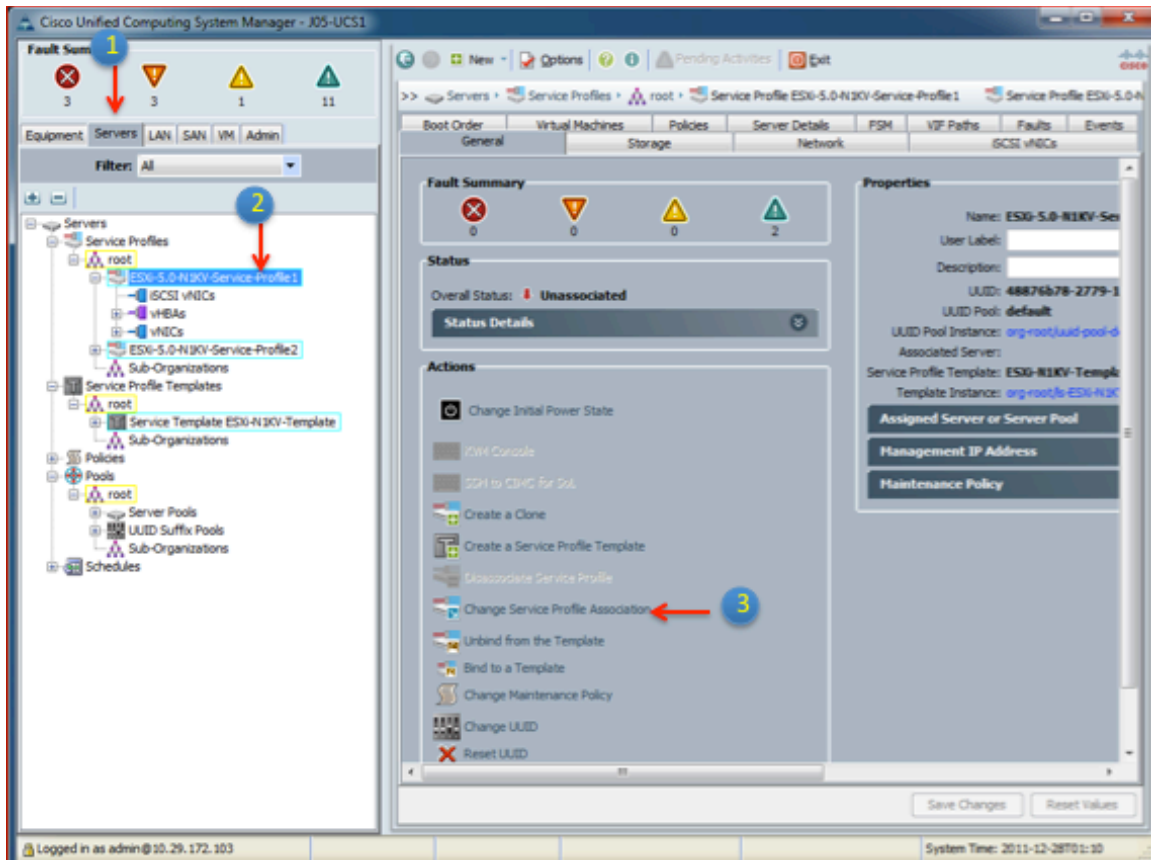
1. Provide a “Naming Prefix” (ex: ESXi-5.0-N1KV-Service-Profile)

2. Enter the number of Service Profiles to create
3. Click “OK”
4. Another window will appear. Then click on “OK”

Associate Blade Server to Service Profile

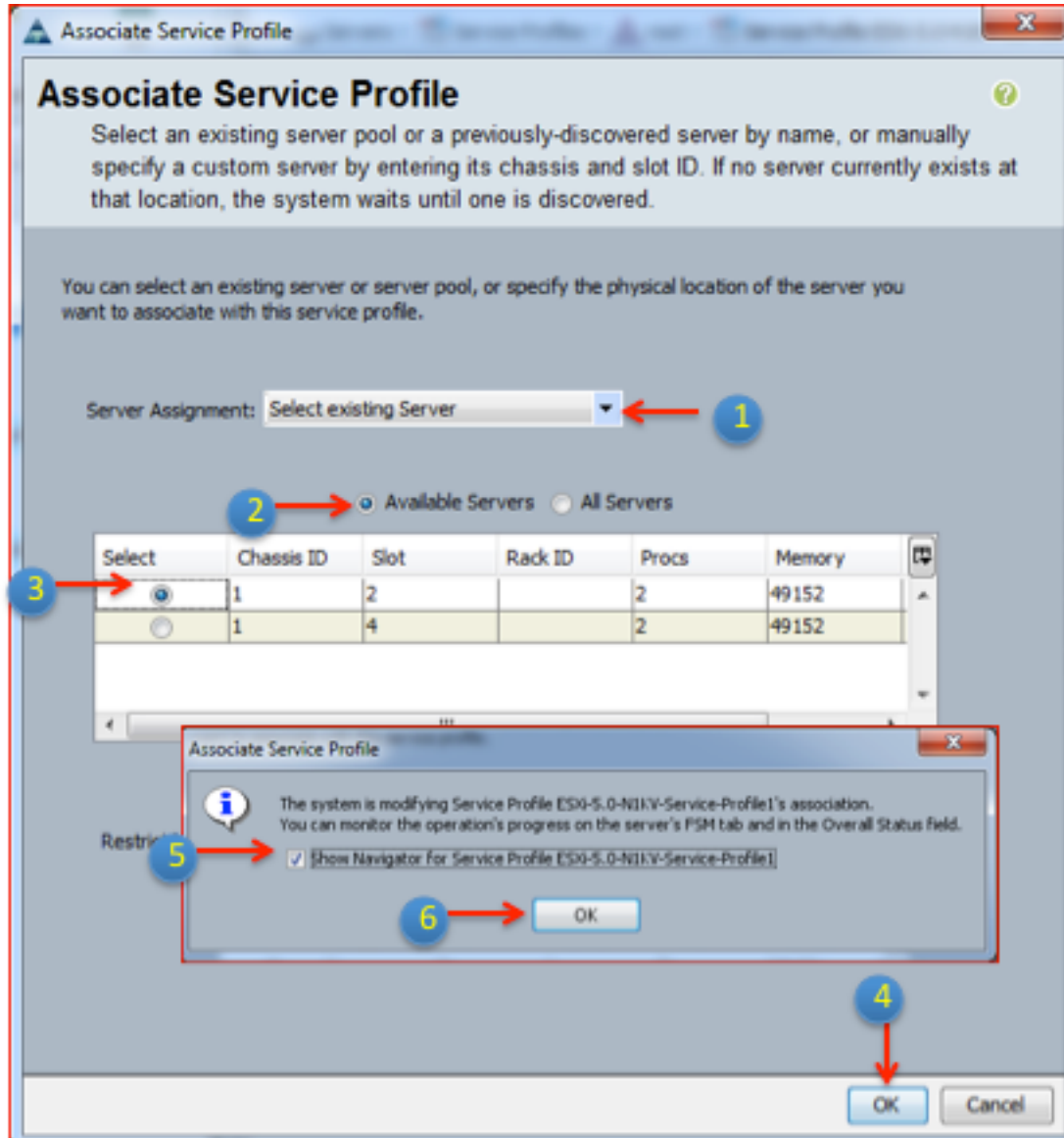
With the 2 Service Profiles created, this section will now associate a blade server to the service profile. Follow the steps below to complete this task.

Figure 29: Associating Blade Server to Service Profile



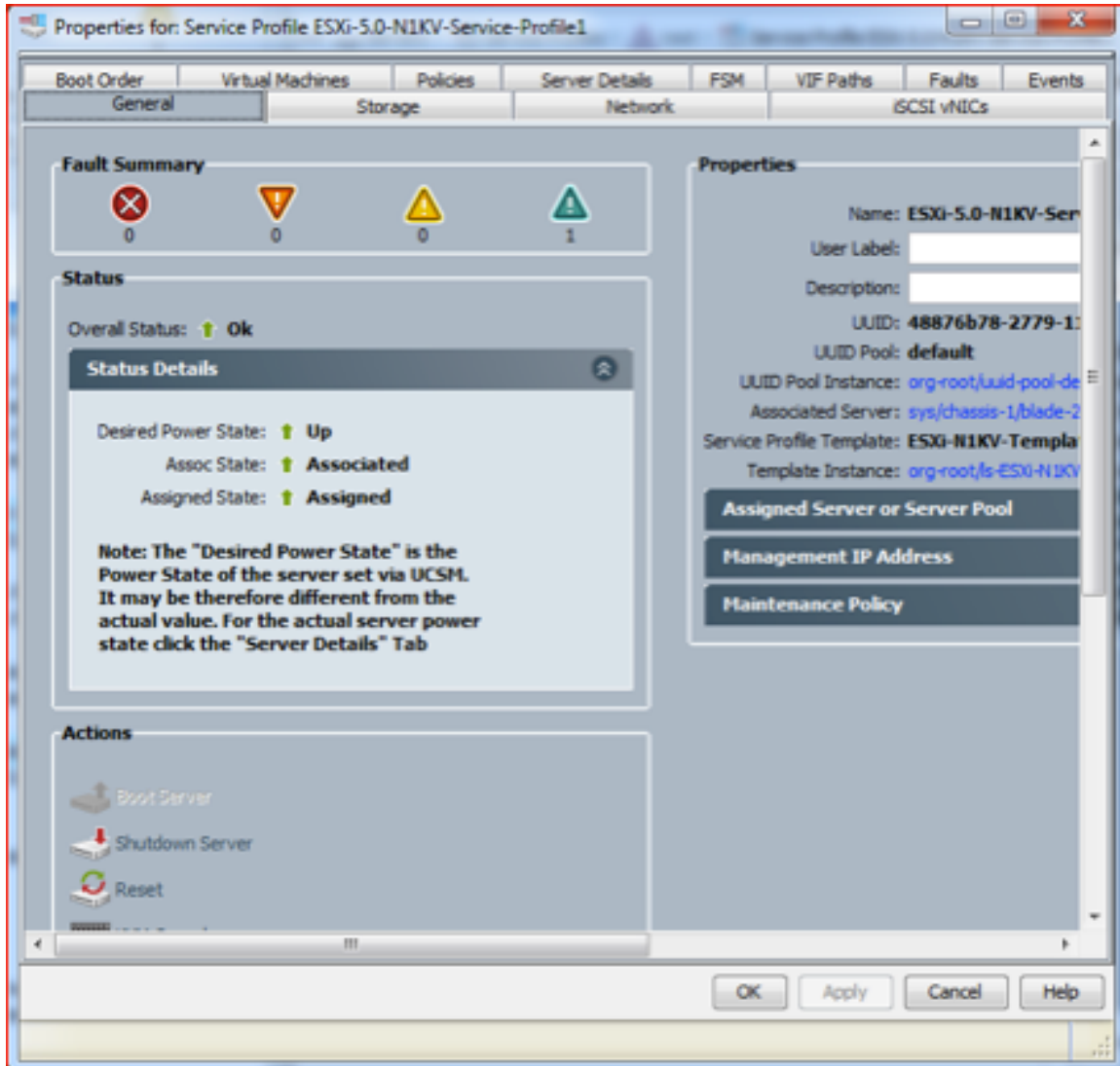
1. Select the “Servers” tab
2. Select one of the service profiles that was created
3. On the right-hand panel, click on “Change Service Profile Association”

Figure 30: Associating Blade Server to Service Profile Continued...



1. From the “Server Assignment” drop down box, select “Select existing Server”
2. Make sure that “Available Servers” radio button is selected
3. Select the blade server you want to associate to this service profile. In this example, we selected blade server in Chassis 1 Slot 2.
4. Click on the “OK” button
5. Another window will appear, make sure the “Show Navigator for Service Profile ESXi-5.0-N1KV-Service-Profile1” checkbox is selected.
6. Click on “OK” button.

Figure 31: Associating Blade Server to Service Profile Continued...



Note: Verify that the “Assoc State” and “Assigned State” has a green up-arrow.

REPEAT THESE STEPS TO ASSOCIATE THE ESXi-5.0-N1KV-SERVICE-PROFILE2 TO THE SECOND BLADE SERVER IN THE CHASSIS.

This completes the UCS blade server configuration. Installation of ESXi 5.0 still needs to be completed. This paper will not show the installation process. For this, please refer to VMware’s documentation on installation of vSphere 5.0.

After the servers were installed, the FCoE interface for each server was able to login. Below is an output of the fabric login database:

```
5548up-1# show flogi database vsan 10
```

INTERFACE	VSAN	FCID	PORT NAME	NODE NAME
fc1/29	10	0xe500ef	50:06:01:64:3e:a0:33:27	50:06:01:60:be:a0:33:27
vfc123	10	0xe50001	50:06:01:60:3e:a4:33:27	50:06:01:60:be:a0:33:27
San-po100	10	0xe50002	24:64:00:05:73:a5:09:00	20:0a:00:05:73:a5:09:01
San-po100	10	0xe50003	20:00:00:25:b5:00:00:2f	20:00:00:25:b5:00:00:3f
San-po100	10	0xe50004	20:00:00:25:b5:00:00:1f	20:00:00:25:b5:00:00:2e

Total number of flogi = 5.

5548up-2# show flogi database vsan 11

INTERFACE	VSAN	FCID	PORT NAME	NODE NAME
fc1/29	11	0x6100ef	50:06:01:65:3e:a0:33:27	50:06:01:60:be:a0:33:27
San-po100	11	0x610002	24:64:00:05:73:a5:08:80	20:0b:00:05:73:a5:08:81
San-po100	11	0x610003	20:00:00:25:b5:00:00:0f	20:00:00:25:b5:00:00:3f
San-po100	11	0x610004	20:00:00:25:b5:00:00:3e	20:00:00:25:b5:00:00:2e
vfc123	11	0x610001	50:06:01:61:3e:a4:33:27	50:06:01:60:be:a0:33:27

Total number of flogi = 5.

In this setup, we will zone up the FCoE ports from the initiators to the FCoE targets. Even though there is a FC storage port, it is not necessary to add that to the zone. The following is the zoneset and zone created for this environment.

```
5548up-1# show zoneset active vsan 10
zoneset name J05-ZoneSet-A vsan 10
zone name B200M2-ESXi5-0 vsan 10
* fcid 0xe50001 [pwwn 50:06:01:60:3e:a4:33:27]
* fcid 0xe50003 [pwwn 20:00:00:25:b5:00:00:1f]
* fcid 0xe50004 [pwwn 20:00:00:25:b5:00:00:2f]
```

```
5548up-2# show zoneset active vsan 11
zoneset name J05-ZoneSet-B vsan 11
zone name B200M2-ESXi5-0 vsan 11
* fcid 0x610001 [pwwn 50:06:01:61:3e:a4:33:27]
* fcid 0x610003 [pwwn 20:00:00:25:b5:00:00:0f]
* fcid 0x610004 [pwwn 20:00:00:25:b5:00:00:3e]
```

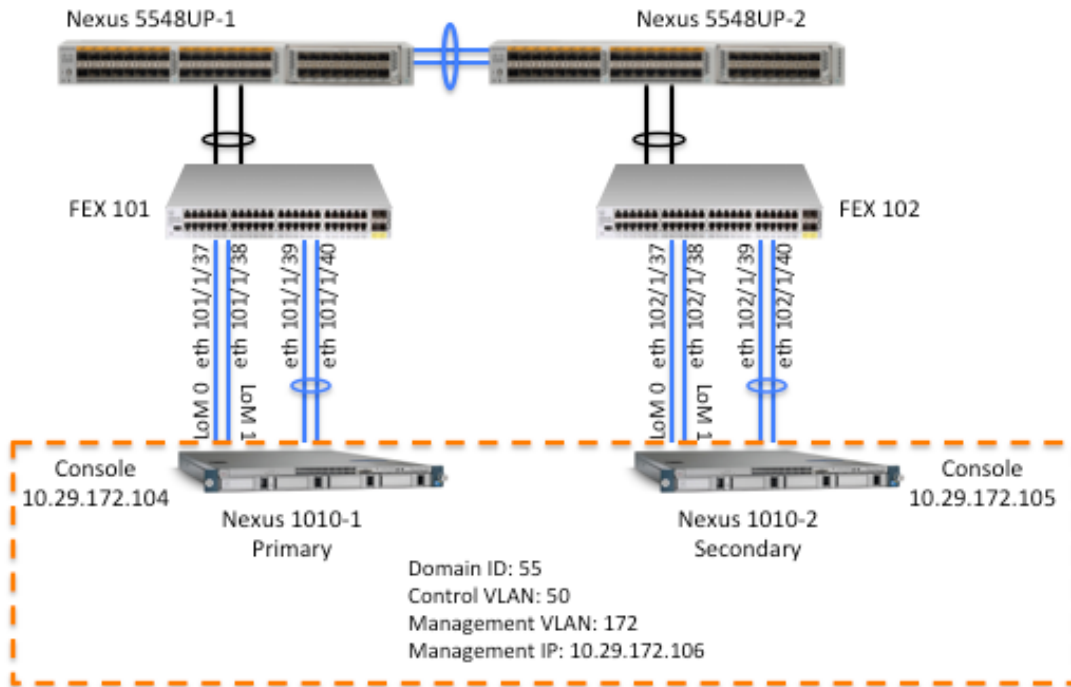
With the zoneset activated, the storage array is now able to see the UCS blade servers. Providing LUNs to the servers will not be shown here but a 300GB LUN is made available to both of the servers. The storage name for the ESXi servers is called “VNX-LUN1”.

Nexus 1010 Installation and Configuration

This section will focus on installing and configuring the Nexus 1010 appliance to host the virtual supervisor modules (VSMs). In configuring the Nexus 1010, the user has the choice of which “network uplink type” to configure. It is typically recommended to use option 3, which is what we will use in this environment. Please read the latest Nexus 1010 Deployment Guide to get more details on what those options are and what best fits

your needs. The figure below provides details of the Nexus 1010 and what needs to be configured.

Figure 32: Nexus 1010 Appliance Topology



Configuring Nexus 5548UP for Nexus 1010 Appliance

Using option 3 of the “network uplink type” for the Nexus 1010 appliance will utilize the 2 LAN on Motherboard (LoM) interfaces for management traffic and the 4x 1GE interfaces for Control, Packet and Data traffic, which only 2 will be used for this environment. The LoM interfaces can’t be configured as port-channels and will be in an active/standby state whereas the other 4 ports can be used in a port-channel to provide better load balancing and utilization of the bandwidth. These ports can be used in a vPC configuration if additional physical redundancy is preferred, but is not necessary.

Below are steps to configure the Nexus 2248 ports, where the 1010 ports are connected.

Configuring Nexus 1010 LoM Ports Connected to Nexus 2248

```
5548up-1# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
5548up-1(config)# interface ethernet 101/1/37-38
```

```
5548up-1(config-if-range)# switchport mode trunk
```

```
5548up-1(config-if-range)# switchport trunk allowed vlan 172
```

```
5548up-1(config-if-range)# spanning-tree port type edge trunk
```

Warning: 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

Configuring Nexus 1010 Control/Packet/Data GE Ports Connected to Nexus 2248

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# interface port-channel 139
5548up-1(config-if)# switchport mode trunk
5548up-1(config-if)# switchport trunk allowed vlan 50
5548up-1(config-if)# spanning-tree port type edge trunk
Warning: 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
5548up-1(config-if)# interface ethernet 101/1/39-40
5548up-1(config-if-range)# switchport mode trunk
5548up-1(config-if-range)# switchport trunk allowed vlan 50
5548up-1(config-if-range)# spanning-tree port type edge trunk
Warning: 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

5548up-1(config-if-range)# channel-group 139 mode active
5548up-1(config-if-range)# show interface port-channel 139 brief
```

```
-----
Port-channel    VLAN  Type   Mode  Status  Reason           Speed  Protocol
Interface
-----
Po139           1     eth    trunk up      none          a-1000(D) lacp
-----
```

REPEAT THE ABOVE STEPS FOR THE NEXUS 1010-2 APPLIANCE PORTS

Installing Nexus 1010 Appliance

This cheat sheet **WILL NOT** go through how to enable the console port (i.e. CIMC port via Serial over LAN) on the Nexus 1010. For this, please consult the Nexus 1010 Configuration Guide. The steps below will show you how to configure the Nexus 1010-1 as the primary 1010 and Nexus 1010-2 as the secondary 1010.

Installing Nexus 1010-1 as Primary

Open a Secure Shell session to the CIMC Console Port for Nexus 1010-1. When consoling into the Nexus 1010, you may have to **hit the "Enter" key a couple of times** to see something on the screen. Once you do and successfully login, you should see the following. Then follow "setup" of the Nexus 1010.

```
unix-server1$ ssh admin@10.29.172.104
admin@10.29.172.104's password:

-rw-r--r-- 1 root root 108810240 Oct  6 19:15 /bootflash/repository/nexus-1000v.VSG1.2.iso

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

Enter the password for "admin":
```

Confirm the password for "admin":
Enter HA role[primary/secondary]: **primary**

Enter network-uplink type <1-4>:
1. Ports 1-2 carry all management, control and data vlans
2. Ports 1-2 management and control, ports 3-6 data
3. Ports 1-2 management, ports 3-6 control and data
4. Ports 1-2 management, ports 3-4 control, ports 5-6 data
3

Enter control vlan <1-3967, 4048-4093>: **50**

Enter the domain id<1-4095>: **55**

Enter management vlan <1-3967, 4048-4093>: **172**

Saving boot configuration. Please wait...

[#####] 100%

---- Basic System Configuration Dialog ----

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

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): **yes**

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

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

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

Enter the VSA name : **J05-1010**

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

Mgmt0 IPv4 address : **10.29.172.106**

Mgmt0 IPv4 netmask : **255.255.255.0**

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

IPv4 address of the default gateway : **10.29.172.1**

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

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

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

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

Number of rsa key bits <768-2048> [1024]: **1024**

Enable the http-server? (yes/no) [y]: **yes**

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

The following configuration will be applied:

```
switchname J05-1010
interface mgmt0
ip address 10.29.172.106 255.255.255.0
no shutdown
vrf context management
ip route 0.0.0.0/0 10.29.172.1
ssh key rsa 1024 force
ssh server enable
feature http-server
```

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

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

[#####] 100%

System is going to reboot to configure network uplinks

Note: Wait until the system reloads and login with the password entered during the setup

Close Network Connection to Exit

```
Nexus 1010
J05-1010 login: admin
Password:
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
J05-1010# show module
```

Mod	Ports	Module-Type	Model	Status
1	0	Nexus 1010 (Virtual Services App	Nexus1010	active *

Mod	Sw	Hw
1	4.2(1)SP1(3)	0.0

Mod	MAC-Address(es)	Serial-Num
1	00-19-07-6c-5a-a8 to 00-19-07-6c-62-a8	NA

Mod	Server-IP	Server-UUID	Server-Name
1	10.29.172.106	NA	NA

* this terminal session

Installing Nexus 1010-2 as Secondary

Open a Secure Shell session to the CIMC Console Port for Nexus 1010-2. When consoling into the Nexus 1010, you may have to **hit the “Enter” key a couple of times** to see something on the screen. Once you do and successfully login, you should see the following. Then follow “setup” of the Nexus 1010.

```
unix-server1$ ssh admin@10.29.172.105
```

```
-rw-r--r-- 1 root root 108810240 Oct 5 01:59 /bootflash/repository/nexus-1000v.VSG1.2.iso
```

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

```
Enter the password for "admin":
Confirm the password for "admin":
Enter HA role[primary/secondary]: secondary
```

```
Enter network-uplink type <1-4>:
1. Ports 1-2 carry all management, control and data vlans
2. Ports 1-2 management and control, ports 3-6 data
3. Ports 1-2 management, ports 3-6 control and data
4. Ports 1-2 management, ports 3-4 control, ports 5-6 data
3
```

```
Enter control vlan <1-3967, 4048-4093>: 50
```

```
Enter the domain id<1-4095>: 55
```

```
Enter management vlan <1-3967, 4048-4093>: 172
```

```
Saving boot configuration. Please wait...
```

```
[#####] 100%
System is going to reboot to configure network uplinks
```

Note: Wait until the system reloads, which may take up to 5 minutes to come online.

Verify Operational State and Redundancy of the Nexus 1010 Pair

Login to the Nexus 1010 management interface and verify the pair of Nexus 1010s are in a “highly available” state and operational.

```
unix-server1$ ssh admin@10.29.172.106
Nexus 1010
Password:
Bad terminal type: "xterm-256color". Will assume vt100.
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
J05-1010# show redundancy status
Redundancy role
-----
    administrative: primary
    operational: primary

Redundancy mode
-----
    administrative: HA
    operational: HA

This supervisor (sup-1)
-----
Redundancy state: Active
Supervisor state: Active
Internal state: Active with HA standby

Other supervisor (sup-2)
-----
Redundancy state: Standby

Supervisor state: HA standby
Internal state: HA standby

System start time: Mon Dec 26 08:54:54 2011

System uptime: 0 days, 2 hours, 43 minutes, 0 seconds
Kernel uptime: 0 days, 0 hours, 12 minutes, 19 seconds
Active supervisor uptime: 0 days, 0 hours, 5 minutes, 39 seconds
J05-1010# show module
Mod Ports Module-Type Model Status
-----
1 0 Nexus 1010 (Virtual Services App Nexus1010 active *
2 0 Nexus 1010 (Virtual Services App Nexus1010 ha-standby

Mod Sw Hw
```

```

-----
1  4.2(1)SP1(3)  0.0
2  4.2(1)SP1(3)  0.0

```

```

Mod  MAC-Address(es)          Serial-Num
-----

```

```

1  00-19-07-6c-5a-a8 to 00-19-07-6c-62-a8  NA
2  00-19-07-6c-5a-a8 to 00-19-07-6c-62-a8  NA

```

```

Mod  Server-IP    Server-UUID          Server-Name
-----

```

```

1  10.29.172.106  NA                  NA
2  10.29.172.106  NA                  NA

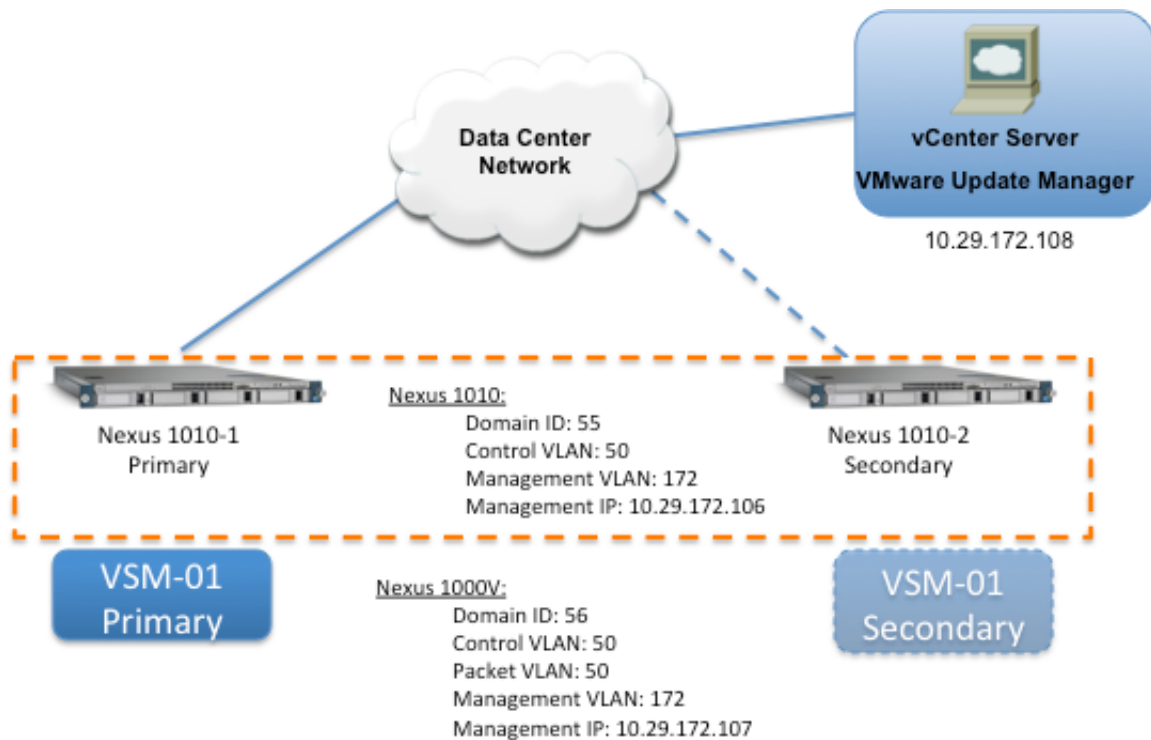
```

* this terminal session

Nexus 1000V Installation and Configuration

This section will focus on installing and configuring the Nexus 1000V onto the Nexus 1010 appliance. The figure below depicts the details for the Nexus 1000V environment.

Figure 33: Nexus 1000V Environment



Installing Nexus 1000V VSMs

With the Nexus 1010 already in a highly available state, when deploying the Nexus 1000V VSM, both primary and secondary VSMs will be created. Please download the latest version of the Nexus 1000V ISO image onto the bootflash of the Nexus 1010 repository directory. Follow the steps below to install the Nexus 1000V.


```

J05-1010# dir bootflash:repository
 16384  Oct 06 19:09:02 2011  lost+found/
183412736  Oct 06 19:13:01 2011  nam-app-x86_64.5-1-1.iso
169666560  Oct 06 19:14:22 2011  nexus-1000v.4.2.1.SV1.4a.iso
108810240  Oct 06 19:15:14 2011  nexus-1000v.VSG1.2.iso

Usage for bootflash://sup-local
 308867072 bytes used
3682512896 bytes free
3991379968 bytes total
J05-1010# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-1010(config)# virtual-service-blade J05-VSM-01
J05-1010(config-vs-b-config)# virtual-service-blade-type new nexus-1000v.4.2.1.SV1.4a.iso
J05-1010(config-vs-b-config)# interface control vlan 50
J05-1010(config-vs-b-config)# interface packet vlan 50
J05-1010(config-vs-b-config)# no shutdown
J05-1010(config-vs-b-config)# enable
Enter vsb image: [nexus-1000v.4.2.1.SV1.4a.iso] <ENTER>
Enter domain id[1-4095]: 56
Management IP version [V4/V6]: [V4] <ENTER>
Enter Management IP address: 10.29.172.107
Enter Management subnet mask: 255.255.255.0
IPv4 address of the default gateway: 10.29.172.1
Enter HostName: J05-VSM-01
Enter the password for 'admin': Cisco12345

```

Once the setup of the Nexus 1000V virtual service blade (VSB) is completed, both the primary and secondary VSM will be deployed and will take a few minutes to complete. Run the command to make sure the state of the VSB is “VSB POWERED ON”.

```
J05-1010# show virtual-service-blade summary
```

```

-----
Name           Role           State           Nexus1010-Module
-----
J05-VSM-01   PRIMARY       VSB POWERED ON  Nexus1010-PRIMARY
J05-VSM-01   SECONDARY     VSB POWERED ON  Nexus1010-SECONDARY

```

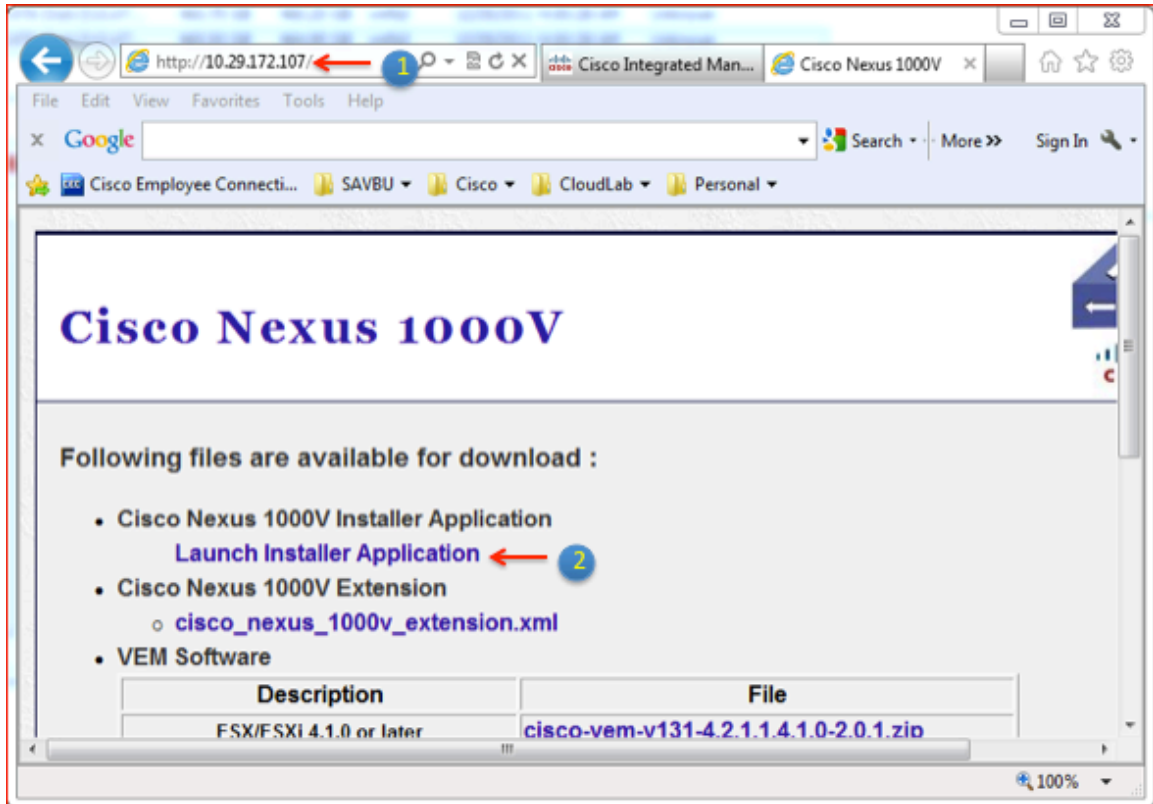
Configuring Nexus 1000V VSMs

There are multiple tasks that need to be completed when configuring the Nexus 1000V VSM. Please follow the steps below to complete these tasks.

Register VSM to vCenter

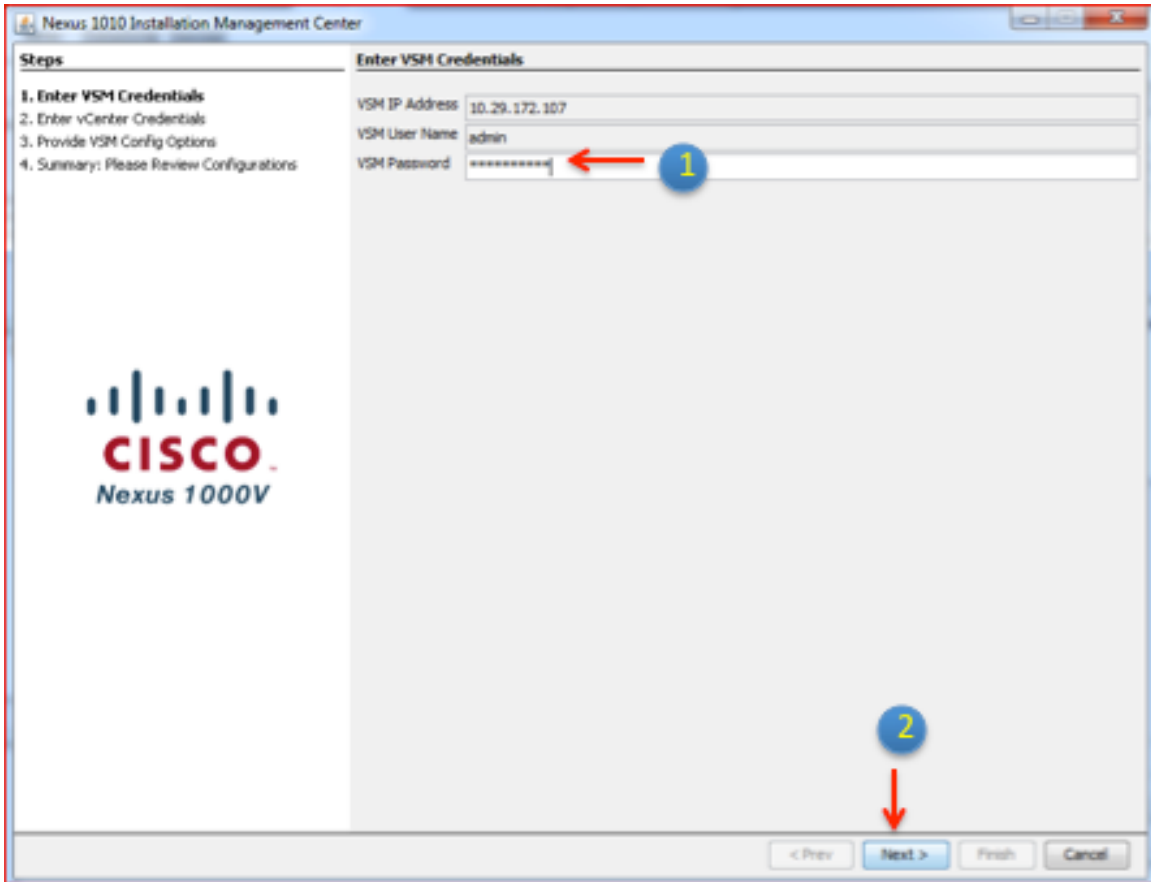
The VSM is now installed on the Nexus 1010 with a management IP address. We will utilize the “Installer Application” to register and do basic configuration of the VSM. Follow the screenshots below to complete this task.

Figure 34: Opening Installer Application



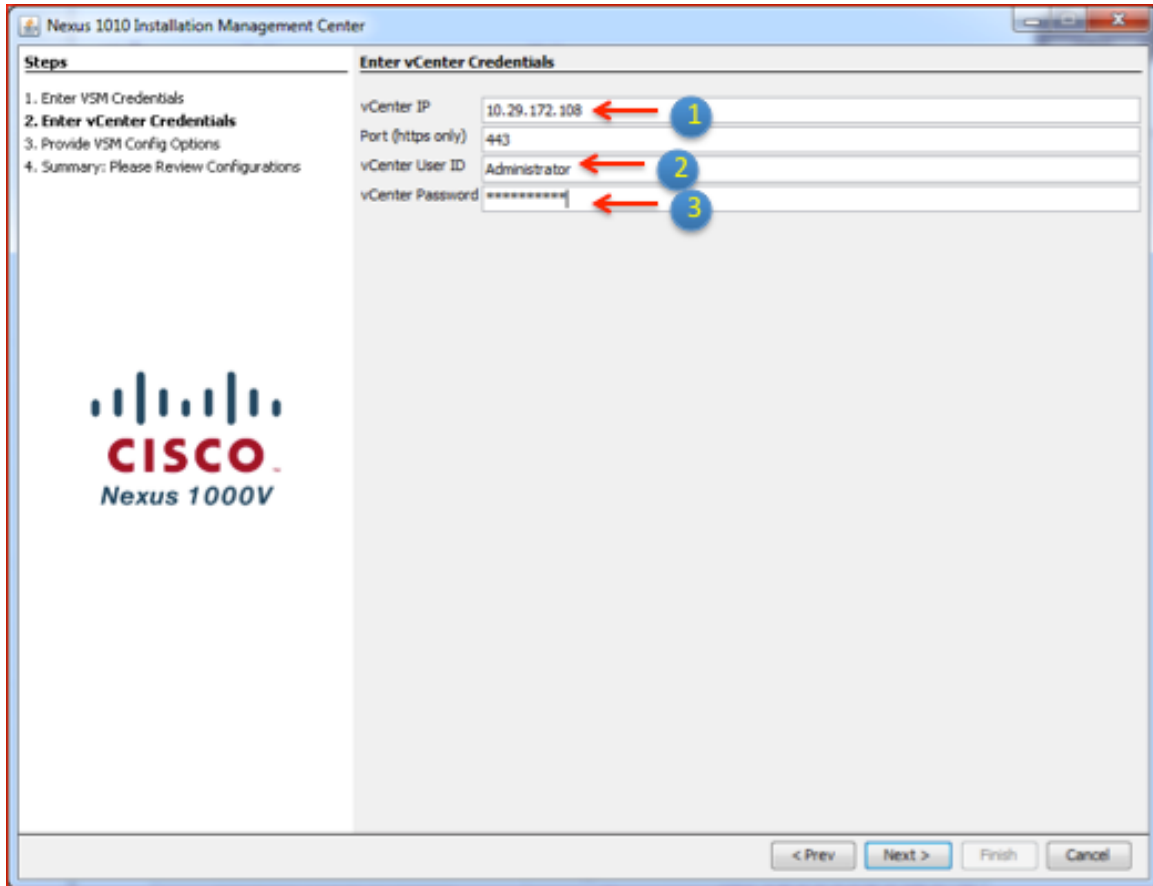
1. Open a web browser and in the address bar, type in the IP Address of the VSM management.
2. The following webpage will appear and click on “Launch Installer Application”

Figure 35: Installer Application Wizard



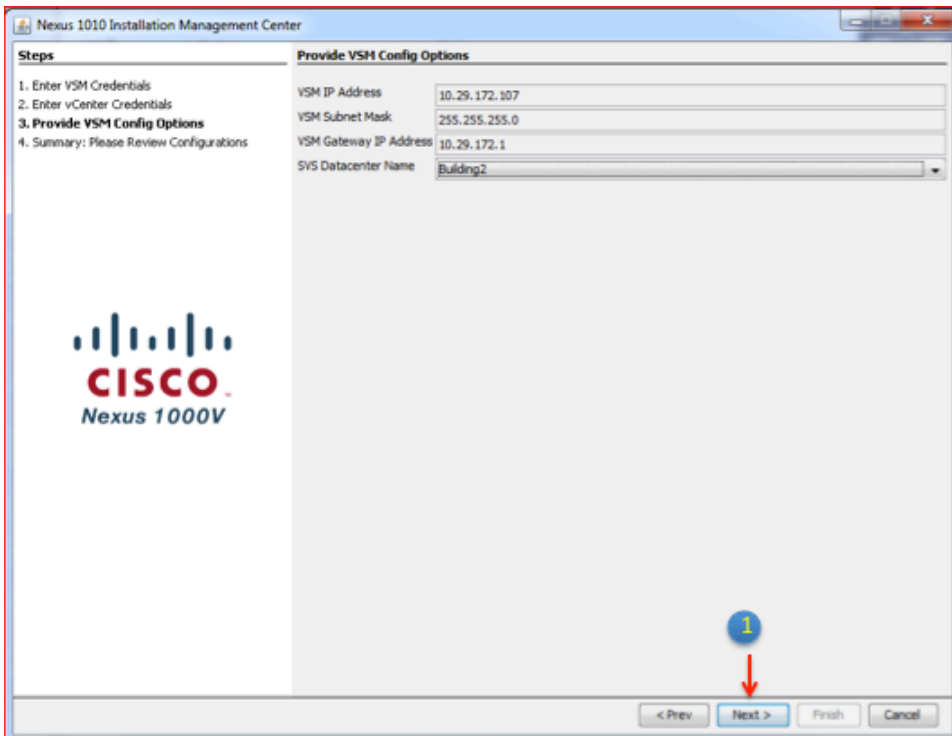
1. Type in the password for the “admin” user for the VSM
2. Click on “Next”

Figure 36: Installer Application Wizard Continued...



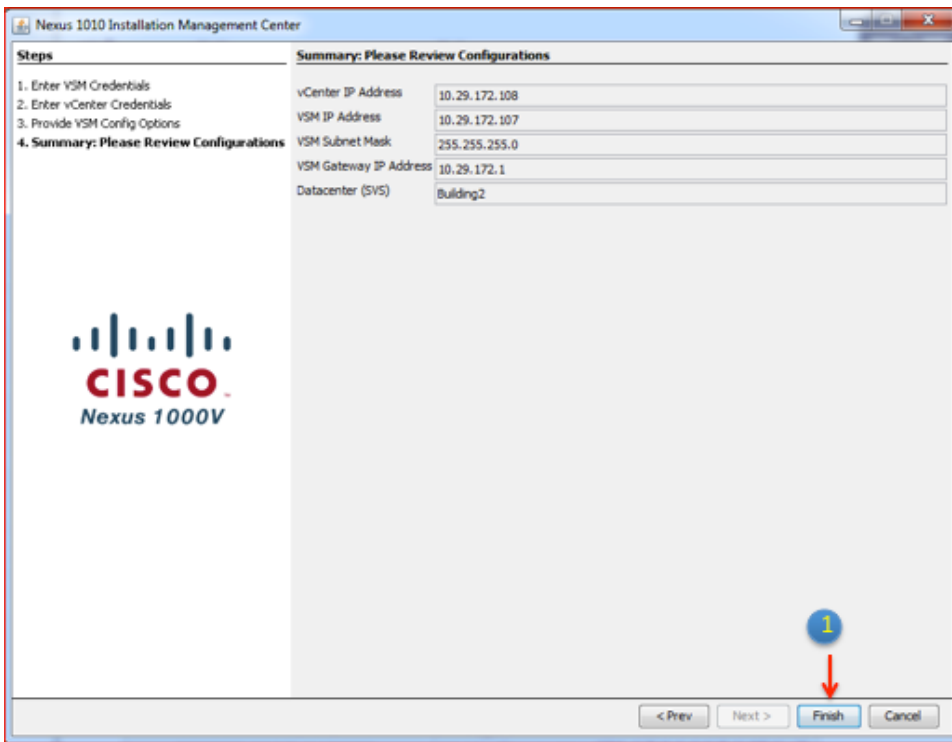
1. Please enter the vCenter IP address (ex: 10.29.172.108)
2. Type in the vCenter User ID (Administrator)
3. Type in the password for the vCenter Server

Figure 37: Installer Application Wizard Continued...



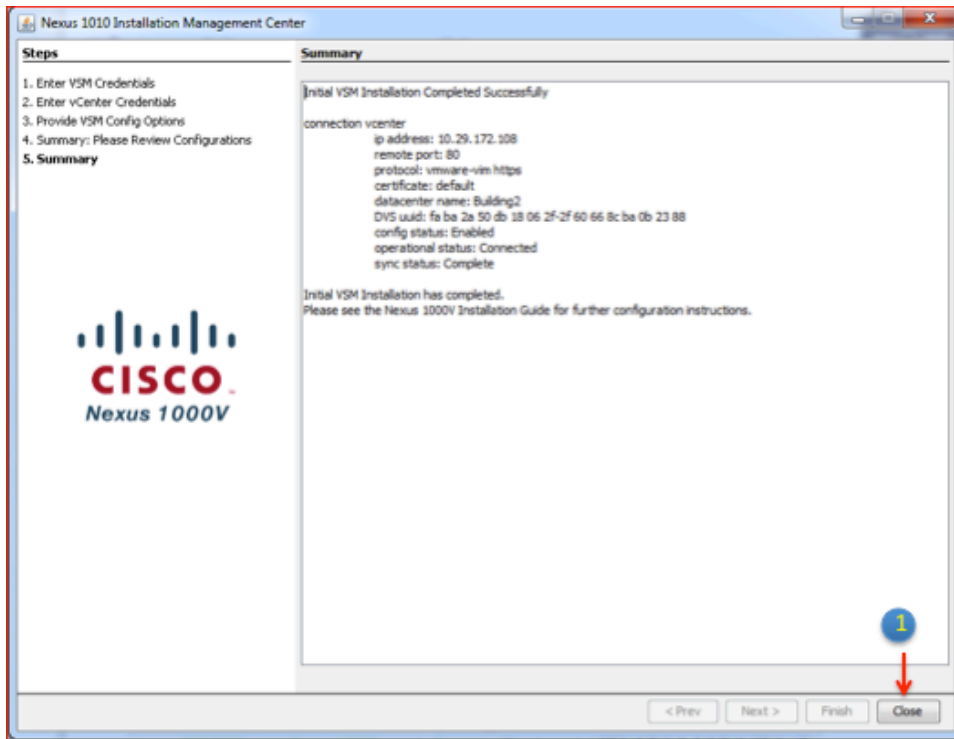
1. Verify the information and click on “Next”

Figure 38: Installer Application Wizard Continued...



1. Verify the information and click on “Finish”

Figure 39: Installer Application Wizard Continued...



1. Wait for the completion of the VSM installation completion and click on “Close”

Figure 40: Nexus 1000V Registration into vCenter Server



Note: Under the “Networking” screen of vCenter, you will noticed that the VSM name “J05-VSM-01” is now a DVS for vCenter.

With the wizard completed, the Nexus 1000V “svs connection” is also created. Below is the configuration of that svs connection. Login to the Nexus 1000V management and run the following command.

```
J05-VSM-01# show svs connections
```

```
connection vcenter:
  ip address: 10.29.172.108
  remote port: 80
  protocol: vmware-vim https
  certificate: default
  datacenter name: Building2
  admin:
  max-ports: 8192
  DVS uuid: fa ba 2a 50 db 18 06 2f-2f 60 66 8c ba 0b 23 88
  config status: Enabled
  operational status: Connected
  sync status: Complete
  version: VMware vCenter Server 5.0.0 build-455964
```

Creating VLANs for the VSM

The “control” and “packet” vlans are automatically created when installing the VSM. Other VLANs need to be created. Follow these steps to create the needed VLANs.

```
J05-VSM-01# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-VSM-01(config)# vlan 50
J05-VSM-01(config-vlan)# name NIKV-Control-Packet
J05-VSM-01(config-vlan)# vlan 51
J05-VSM-01(config-vlan)# name Vmotion
J05-VSM-01(config-vlan)# vlan 52
J05-VSM-01(config-vlan)# name Web-Server
J05-VSM-01(config-vlan)# vlan 53
J05-VSM-01(config-vlan)# name Database-Server
J05-VSM-01(config-vlan)# vlan 172
J05-VSM-01(config-vlan)# name Management
```

Configuring Port-Profile of Type Ethernet

The port-profiles of type “ethernet” are utilized for the physical NIC interfaces on the servers. This port-profile determines what type of traffic is allowed and is used for the communication between the VSM and the VEMs. Follow the steps below on how to create this uplink port-profile.

```
J05-VSM-01# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-VSM-01(config)# port-profile type ethernet system-uplink
J05-VSM-01(config-port-prof)# switchport mode trunk
J05-VSM-01(config-port-prof)# switchport trunk allowed vlan 50-53, 172
J05-VSM-01(config-port-prof)# no shutdown
J05-VSM-01(config-port-prof)# vmware port-group
```

```
J05-VSM-01(config-port-prof)# channel-group auto mode on mac-pinning
J05-VSM-01(config-port-prof)# system vlan 50, 172
J05-VSM-01(config-port-prof)# state enabled
```

Note: There are 2 things to note for the uplink port-profile.

1. VLAN 50 is used for communication between the VSM to the VEM and VLAN 172 is used for the service console of the ESXi servers. That is why those 2 VLANs need to be configured as “system vlans”.
2. The “channel-group” configuration needs to be configured for “mac-pinning” since the UCS blade servers is not able to be configured utilizing a LACP port-channel. So the recommended configuration is to use mac-pinning.

Configuring Port-Profile of Type vEthernet

With the uplink port-profile configured, this portion will describe the necessary port-profiles that are needed to create the following type of interfaces:

1. Service Console (vmkernel)
2. Vmotion (vmkernel)
3. Web Server Virtual Machines
4. Database Server Virtual Machines

Service Console Port-Profile

The service console port-profile will be created to allow the migration of the existing service console (vmkernel) interface on vSwitch to be managed by the VEM. It is **critical** that this port-profile is also configured as a “system vlan”.

```
J05-VSM-01# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-VSM-01(config)# port-profile type vethernet service-console
J05-VSM-01(config-port-prof)# switchport mode access
J05-VSM-01(config-port-prof)# switchport access vlan 172
J05-VSM-01(config-port-prof)# no shutdown
J05-VSM-01(config-port-prof)# vmware port-group
J05-VSM-01(config-port-prof)# system vlan 172
J05-VSM-01(config-port-prof)# state enabled
```

Vmotion Port-Profile

The vmotion port-profile will be created for the vmotion (vmkernel) interfaces for each of the ESXi servers.

```
J05-VSM-01# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-VSM-01(config)# port-profile type vethernet vmotion
J05-VSM-01(config-port-prof)# switchport mode access
J05-VSM-01(config-port-prof)# switchport access vlan 51
J05-VSM-01(config-port-prof)# no shutdown
J05-VSM-01(config-port-prof)# vmware port-group
J05-VSM-01(config-port-prof)# state enabled
```

Web Server Port-Profile

The web-server port-profile will be created for virtual machines that will be utilized for Web Servers.

```
J05-VSM-01# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-VSM-01(config)# port-profile type vethernet web-server
J05-VSM-01(config-port-prof)# switchport mode access
J05-VSM-01(config-port-prof)# switchport access vlan 52
J05-VSM-01(config-port-prof)# no shutdown
J05-VSM-01(config-port-prof)# vmware port-group
J05-VSM-01(config-port-prof)# state enabled
```

Database Server Port-Profile

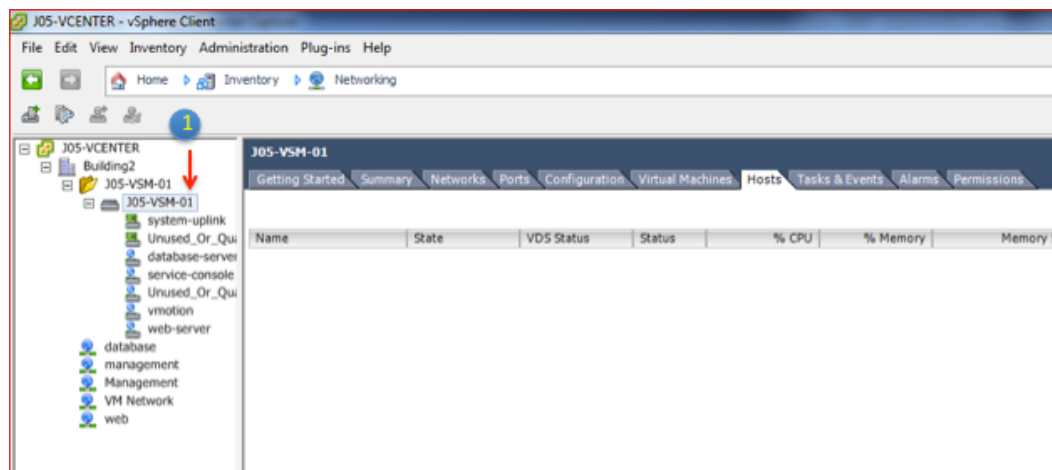
The database-server port-profile will be created for virtual machines that will be utilized for Web Servers.

```
J05-VSM-01# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-VSM-01(config)# port-profile type vethernet database-server
J05-VSM-01(config-port-prof)# switchport mode access
J05-VSM-01(config-port-prof)# switchport access vlan 52
J05-VSM-01(config-port-prof)# no shutdown
J05-VSM-01(config-port-prof)# vmware port-group
J05-VSM-01(config-port-prof)# state enabled
```

Adding the VEM

With all of the necessary port-profiles created, it is now possible to add the ESXi servers as VEM to the VSM. During this process, migration of the “service console” and “Vmotion” interfaces will be executed. Within this environment, VMware Update Manager (VUM) is also installed and will be used to install the VEM binaries. Please follow the screen shots below to complete these tasks.

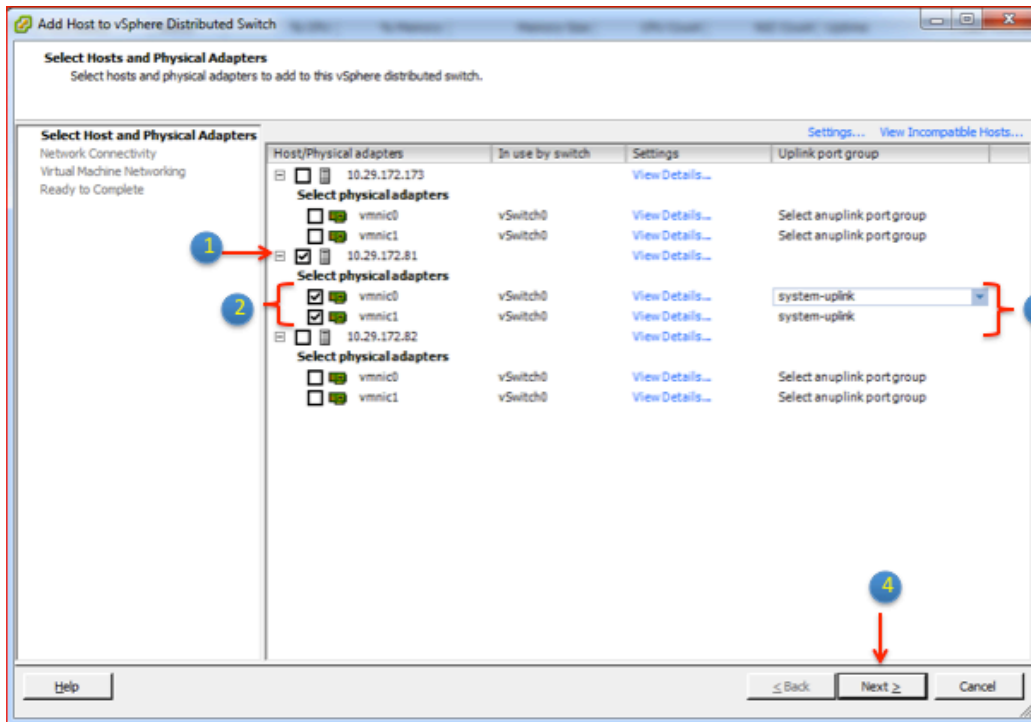
Figure 41: Adding a VEM



1. Goto the “Networking” view and select the VSM “J05-VSM-01”

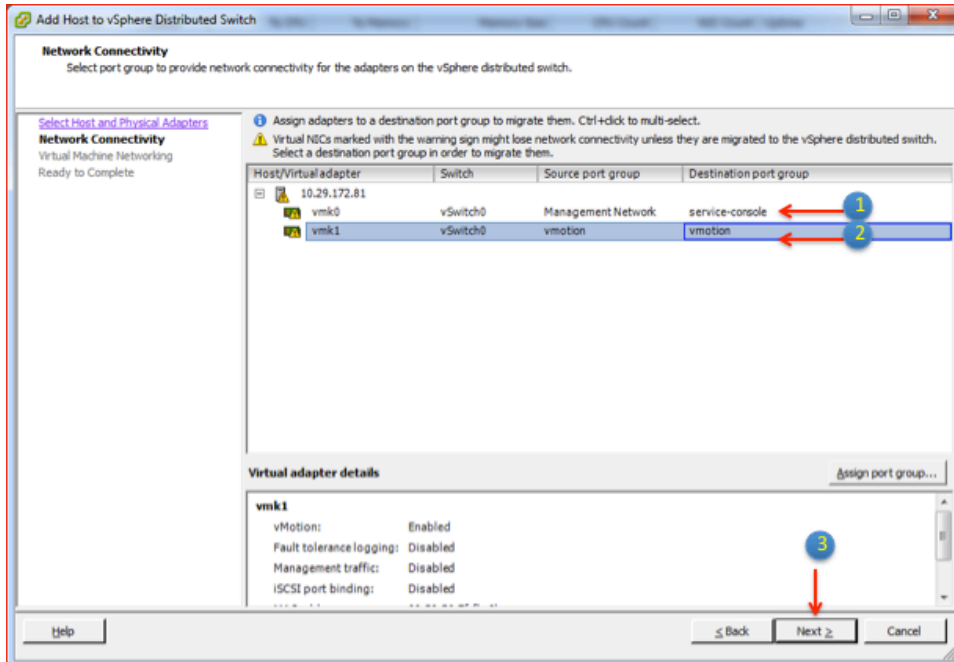
2. To add a host to the Nexus 1000V, type in “Ctrl+H”

Figure 42: Adding a VEM Continued...



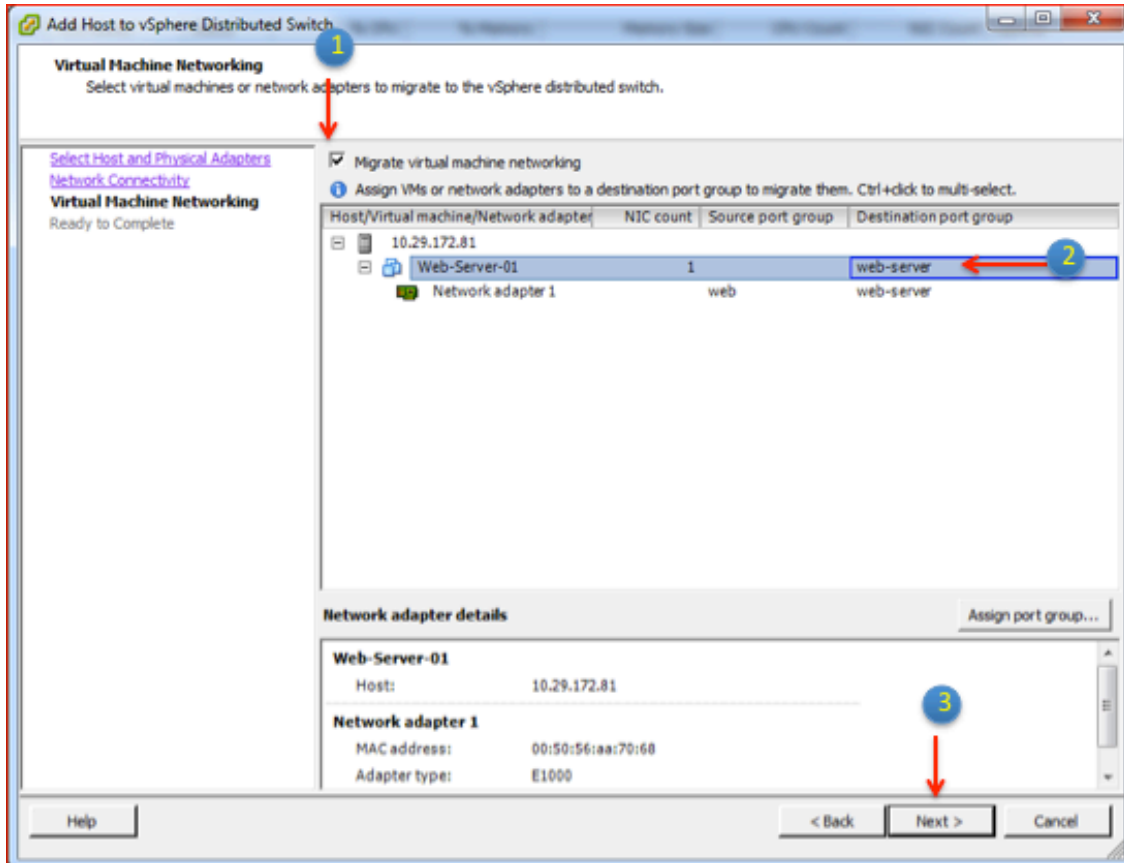
1. Click on the checkbox for the server(s) you want to add as a VEM. In this example, we will just add 1 server (10.29.172.81)
2. Click on the 2 network interfaces (vmnic0 and vmnic1) to be used by the VEM.
3. From the drop-down box under the “Uplink portgroup” column, select the port-profile “system-uplink” for each of the vmnics.
4. Click on “Next”

Figure 43: Adding a VEM Continued...



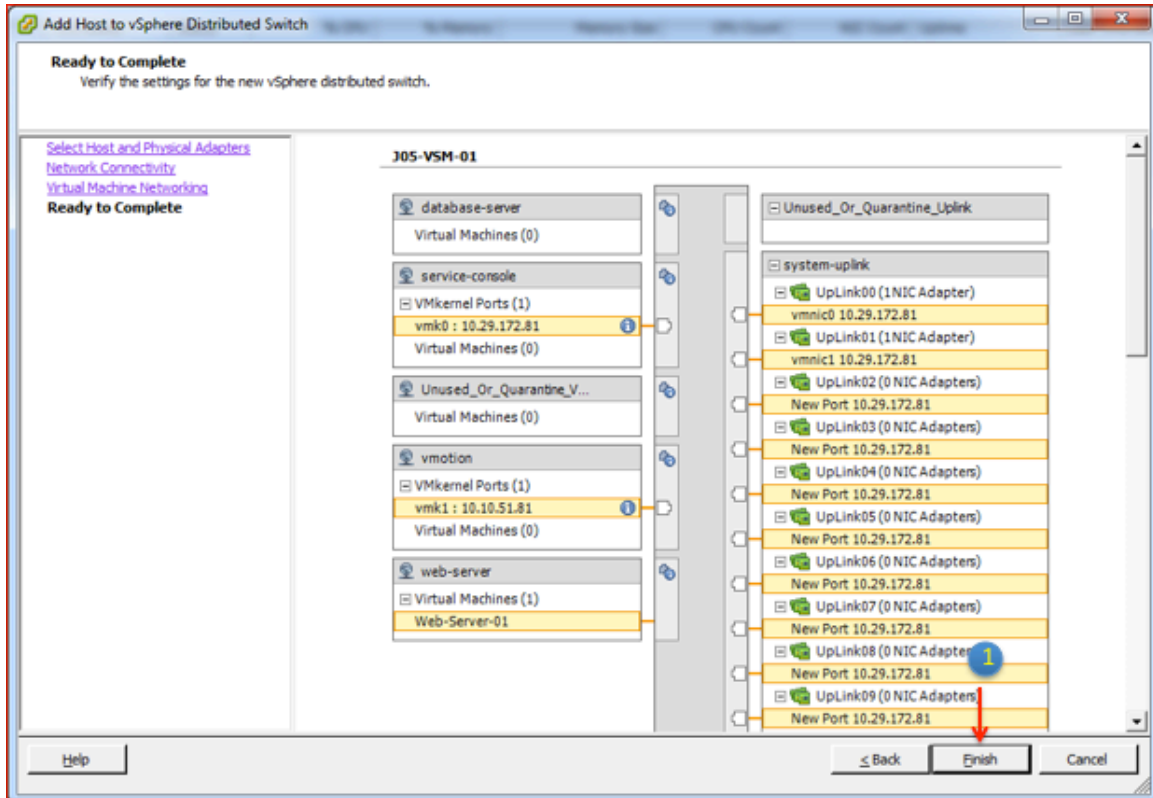
1. To migrate the service console to the Nexus 1000V, under the “Destination portgroup” column, select the “service-console” port-profile
2. To migrate the Vmotion interface, select the “vmotion” port-profile
3. Click on “Next”

Figure 44: Adding a VEM Continued...



1. Click on the checkbox “Migrate virtual machine networking”
2. For the virtual machine’s network adapter, from the drop down box, select the appropriate port-profile for the virtual machine. In this example, this will be the web-server port-profile
3. Click on “Next”

Figure 45: Adding a VEM Continued...

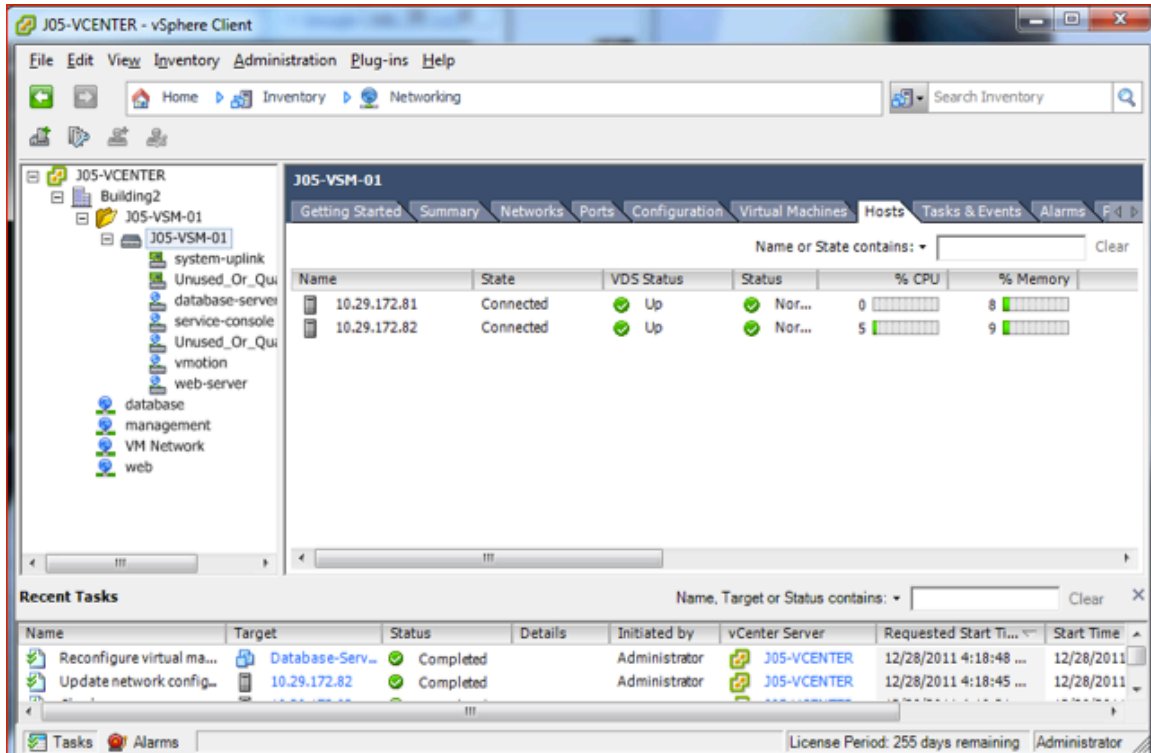


1. Click on “Finish” to complete the task

REPEAT THE STEPS TO ADD THE SECOND SERVER (VEM).

The following diagram will show the two servers that have been added as VEMs.

Figure 46: Completion of Adding VEMs



To verify the service console, vmotion, and virtual machine interfaces are a part of the Nexus 1000V management, run the following commands:

```
J05-VSM-01# show module
```

Mod	Ports	Module-Type	Model	Status
1	0	Virtual Supervisor Module	Nexus1000V	active *
2	0	Virtual Supervisor Module	Nexus1000V	ha-standby
3	248	Virtual Ethernet Module	NA	ok
4	248	Virtual Ethernet Module	NA	ok

Mod	Sw	Hw
1	4.2(1)SV1(4a)	0.0
2	4.2(1)SV1(4a)	0.0
3	4.2(1)SV1(4a)	VMware ESXi 5.0.0 Releasebuild-469512 (3.0)
4	4.2(1)SV1(4a)	VMware ESXi 5.0.0 Releasebuild-469512 (3.0)

Mod	MAC-Address(es)	Serial-Num
1	00-19-07-6c-5a-a8 to 00-19-07-6c-62-a8	NA
2	00-19-07-6c-5a-a8 to 00-19-07-6c-62-a8	NA
3	02-00-0c-00-03-00 to 02-00-0c-00-03-80	NA
4	02-00-0c-00-04-00 to 02-00-0c-00-04-80	NA

Mod	Server-IP	Server-UUID	Server-Name
---	-----	-----	-----

```
1      10.29.172.107  NA                                     NA
2      10.29.172.107  NA                                     NA
3      10.29.172.81   48876b78-2779-11e1-0000-00000000004f 10.29.172.81
4      10.29.172.82   48876b78-2779-11e1-0000-00000000002f 10.29.172.82
```

* this terminal session
J05-VSM-01# show interface virtual

```
-----  
Port      Adapter      Owner                Mod  Host  
-----  
Veth1     vmk0          VMware VMkernel      3    10.29.172.81  
Veth2     vmk1          VMware VMkernel      3    10.29.172.81  
Veth3     Net Adapter 1 Web-Server-01        3    10.29.172.81  
Veth4     vmk0          VMware VMkernel      4    10.29.172.82  
Veth5     vmk1          VMware VMkernel      4    10.29.172.82  
Veth6     Net Adapter 1 Database-Server-01  4    10.29.172.82
```