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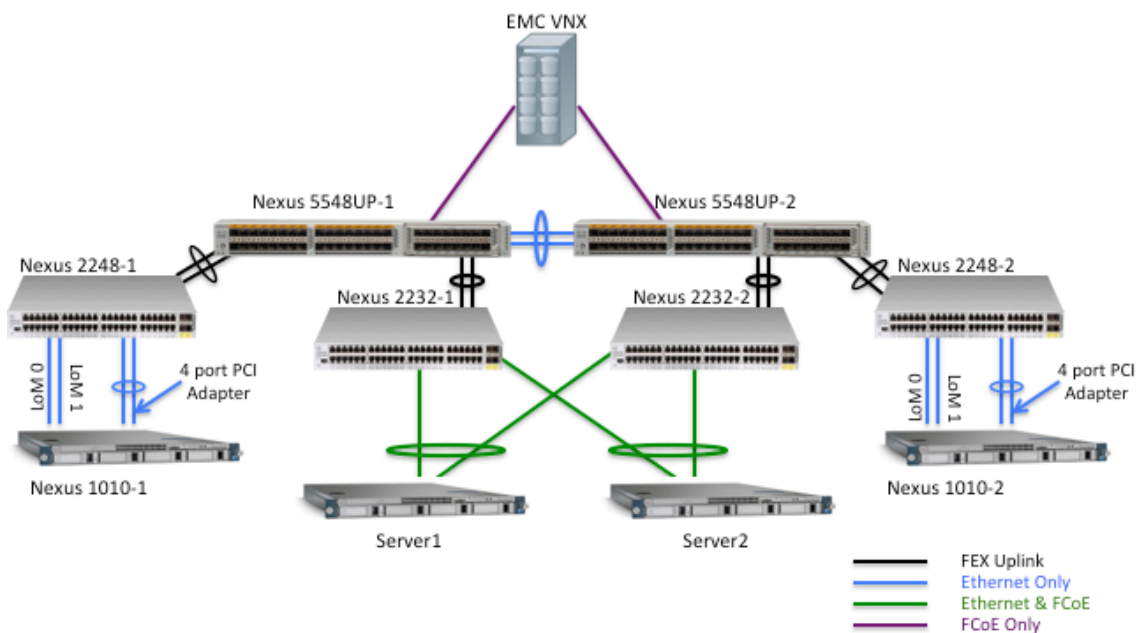
# Nexus 1010 Configuration Cheat Sheet

Date: January 2012

## Introduction

This document will walk you through how to install and configure a Nexus 1010. An end-to-end configuration example of installing the Nexus 1000V as a “Virtual Service Blade” (VSB) on the Nexus 1010 will be shown. 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) and will be using L2 mode for VSM to VEM communication. Details on how this is configured will be shown later in the documentation.

## Hardware and Software Environment

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

### Nexus Switches

- Nexus 5548UP, Nexus 2232PP 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)

### Server Hardware/Software

- UCS C200 M2
  - Emulex OCE11102 CNA be2net driver4.0.355.1
  - ESXi 5.0 build 469512
  - vCenter 5.0 Server build 455964
  - VMware Update Manager 5.0.0.8039

### 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. FCoE Setup
  - b. FEX Setup
  - c. vPC Setup
2. Nexus 1010 Installation and Configuration
  - a. Configuring Upstream Switch Ports
  - b. Building Primary & Secondary 1010
  - c. Creating VSM Virtual Service Blade
3. 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

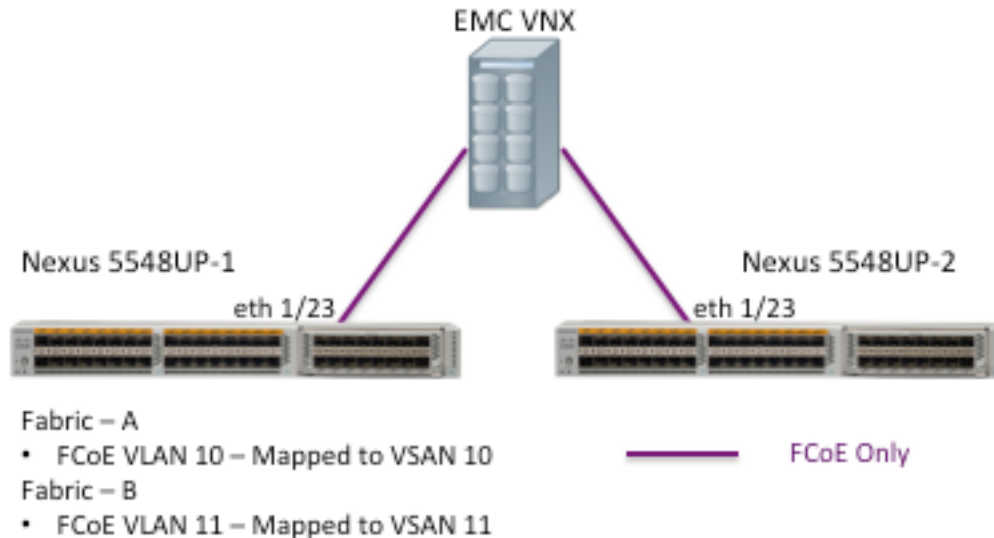
In this section, the Nexus 5500 switches will be configured to prepare for the necessary features needed for this solution. The key features that will be configured are:

- FCoE
- FEX
- vPC

## Nexus 5500 FCoE Setup

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

Figure 2: Nexus 5500 FCoE 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.

### 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 Storage Ports

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

### 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) ()
  Trunk vsans (initializing) ()
  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
vfc123	10	0xe50001	50:06:01:60:3e:a4:33:27	50:06:01:60:be:a0:33:27

Total number of flogi = 1.

**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.

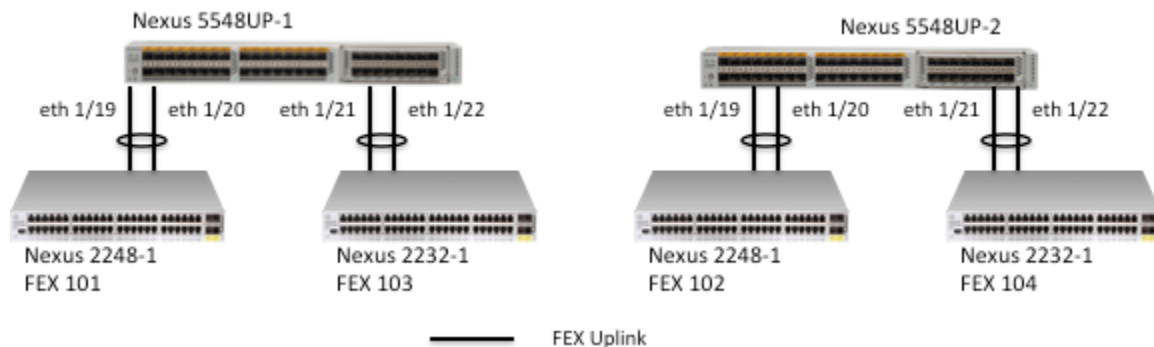
## REPEAT THESE STEPS FOR NEXUS 5548UP-2 TO CONFIGURE FCoE

**Note:** Make sure for 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 3: Nexus 2248 Details



```

5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# feature fex
5548up-1(config)# fex 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)# fex 103
5548up-1(config-fex)# interface port-channel 103
5548up-1(config-if)# switchport mode fex-fabric
5548up-1(config-if)# fex associate 103
5548up-1(config-if)# interface ethernet 1/21-22
5548up-1(config-if-range)# switchport mode fex-fabric
5548up-1(config-if-range)# fex associate 103
5548up-1(config-if-range)# channel-group 103
5548up-1(config-if-range)# show fex

```

FEX Number	FEX Description	FEX State	FEX Model	FEX Serial
101	FEX0101	Online	N2K-C2248TP-1GE	SSI141609ER
103	FEX0103	Online	N2K-C2232PP-10GE	SSI141902DK

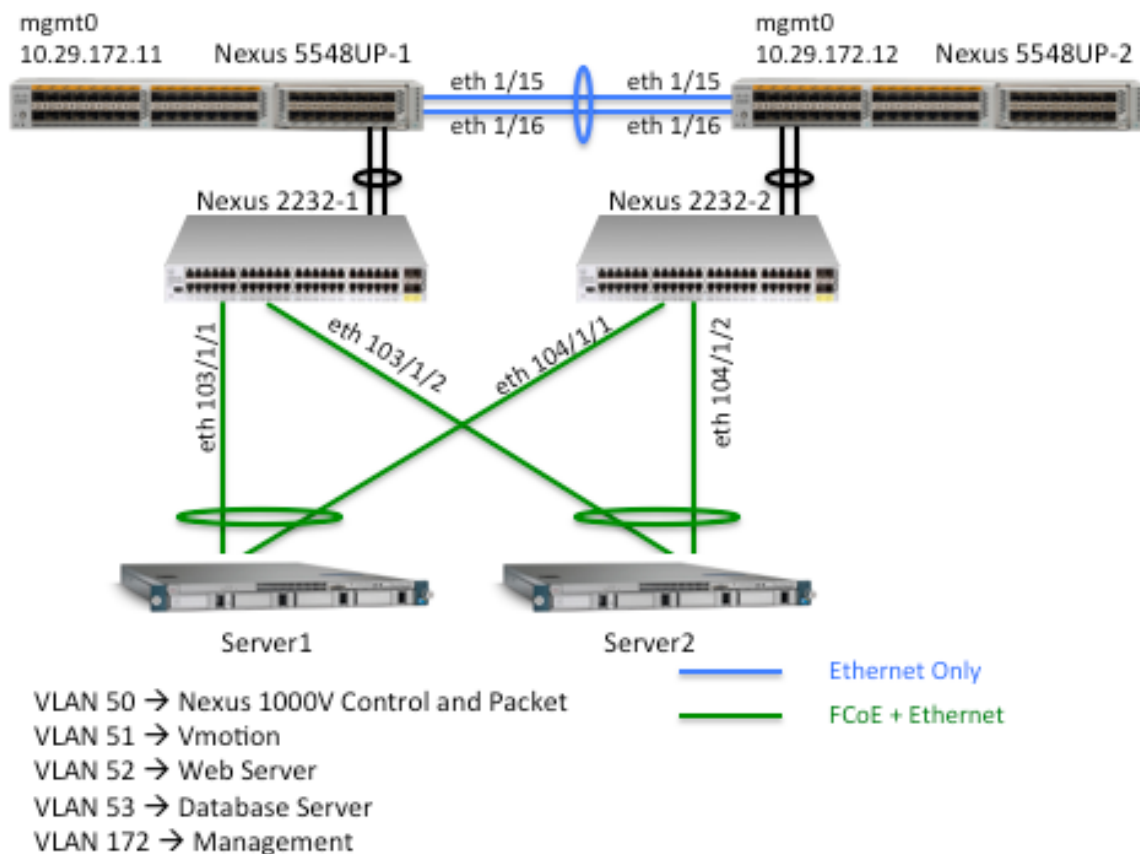
**REPEAT THESE STEPS FOR NEXUS 5548UP-2 TO CONFIGURE THE FEX**

**Note:** The FEX number for the Nexus 5548UP-2 should be 102 for the Nexus 2248 and 104 for the Nexus 2232.

**Nexus 5500 vPC Configuration**

This portion of the configuration will focus on enabling and configuring virtual port-channels for the server uplinks to the Nexus 2232. The diagram below will provide the details that will be used for the vPC configuration.

Figure 4: Server vPC Topology Details



**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 Nexus 5548UP-1 for vPC for Server1

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# interface port-channel 1001
5548up-1(config-if)# switchport mode trunk
5548up-1(config-if)# spanning-tree port type edge trunk
5548up-1(config-if)# vpc 1001
5548up-1(config-if)# interface ethernet 103/1/1
5548up-1(config-if)# switchport mode trunk
5548up-1(config-if)# spanning-tree port type edge trunk
5548up-1(config-if)# channel-group 1001
5548up-1(config-if)# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
       I - Individual    H - Hot-standby (LACP only)
       s - Suspended     r - Module-removed
       S - Switched      R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
```

Group	Port-Channel	Type	Protocol	Member Ports
1	Po1(SU)	Eth	LACP	Eth1/15(P) Eth1/16(P)
101	Po101(SU)	Eth	NONE	Eth1/19(P) Eth1/20(P)
103	Po103(SU)	Eth	NONE	Eth1/17(P) Eth1/18(P)
1001	Po1001(SU)	Eth	NONE	Eth103/1/1(P)

## Configuring Nexus 5548UP-2 for vPC for Server1

```
5548up-2# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-2(config)# interface port-channel 1001
5548up-2(config-if)# switchport mode trunk
5548up-2(config-if)# spanning-tree port type edge trunk
5548up-2(config-if)# vpc 1001
5548up-2(config-if)# interface ethernet 104/1/1
5548up-2(config-if)# switchport mode trunk
5548up-2(config-if)# spanning-tree port type edge trunk
5548up-2(config-if)# channel-group 1001
5548up-2(config-if)# show port-channel summary
Flags: D - Down          P - Up in port-channel (members)
       I - Individual    H - Hot-standby (LACP only)
       s - Suspended     r - Module-removed
       S - Switched      R - Routed
       U - Up (port-channel)
       M - Not in use. Min-links not met
```

Group	Port-Channel	Type	Protocol	Member Ports
1	Po1(SU)	Eth	LACP	Eth1/15(P) Eth1/16(P)
102	Po101(SU)	Eth	NONE	Eth1/19(P) Eth1/20(P)
104	Po103(SU)	Eth	NONE	Eth1/17(P) Eth1/18(P)
1001	Po1001(SU)	Eth	NONE	Eth104/1/1(P)

**REPEAT THE CREATION OF THE vPC for Server2**

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.

### Configuring FCoE Nexus 5548UP-1 for Server1

```
5548up-1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-1(config)# interface vfc 1001
5548up-1(config-if)# bind interface ethernet 103/1/1
5548up-1(config-if)# switchport trunk allowed vsan 10
5548up-1(config-if)# no shutdown
5548up-1(config-if)# vsan database
5548up-1(config-vsan-db)# vsan 10 interface vfc 1001
5548up-1(config-vsan-db)# show interface vfc 1001
vfc1001 is trunking
  Bound interface is Ethernet103/1/1
  Hardware is Ethernet
  Port WWN is 23:e8:00:05:73: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)                   ()
Trunk vsans (initializing)               ()
1 minute input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
1 minute output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
74 frames input, 10116 bytes
  0 discards, 0 errors
80 frames output, 9208 bytes
  0 discards, 0 errors
last clearing of "show interface" counters never
Interface last changed at Mon Jan 16 01:09:48 2012
```

### REPEAT THE CREATION OF THE VFC for Server2

Below is an output of the fabric login database:

```
5548up-1# show flogi database vsan 10
-----
INTERFACE    VSAN  FCID          PORT NAME          NODE NAME
-----
vfc123       10    0xe50001     50:06:01:60:3e:a4:33:27 50:06:01:60:be:a0:33:27
vfc1001      10    0xe50002     10:00:00:00:c9:a0:a1:93 20:00:00:00:c9:a0:a1:93
vfc1002      10    0xe50003     10:00:00:00:c9:a0:9f:1f 20:00:00:00:c9:a0:9f:1f
```

Total number of flogi = 3.

## Configuring FCoE Nexus 5548UP-2 for Server1

```
5548up-2# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
5548up-2(config)# interface vfc 1001
5548up-2(config-if)# bind interface ethernet 104/1/1
5548up-2(config-if)# switchport trunk allowed vsan 11
5548up-2(config-if)# no shutdown
5548up-2(config-if)# vsan database
5548up-2(config-vsan-db)# vsan 11 interface vfc 1001
5548up-2(config-vsan-db)# show interface vfc 1001
vfc1001 is trunking
  Bound interface is Ethernet104/1/1
  Hardware is Ethernet
  Port WWN is 23:e8:54:7f:ee:0c:08:bf
  Admin port mode is F, trunk mode is on
snmp link state traps are enabled
  Port mode is TF
  Port vsan is 11
Trunk vsans (admin allowed and active)    (11)
Trunk vsans (up)                          (11)
Trunk vsans (isolated)                    ()
Trunk vsans (initializing)                ()
1 minute input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
1 minute output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
55 frames input, 7704 bytes
  0 discards, 0 errors
60 frames output, 6728 bytes
  0 discards, 0 errors
last clearing of "show interface" counters never
Interface last changed at Mon Jan 16 01:19:17 2012
```

## REPEAT THE CREATION OF THE VFC for Server2

```
5548up-2# show flogi database vsan 11
```

INTERFACE	VSAN	FCID	PORT NAME	NODE NAME
vfc123	11	0x610001	50:06:01:61:3e:a4:33:27	50:06:01:60:be:a0:33:27
vfc1001	11	0x610002	10:00:00:00:c9:a0:a1:91	20:00:00:00:c9:a0:a1:91
vfc1002	11	0x610003	10:00:00:00:c9:a0:9f:1d	20:00:00:00:c9:a0:9f:1d

Total number of flogi = 3.

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 activevsan 10
zoneset name J05-ZoneSet-Avsan 10
zone name C200M2-ESXi5-0 vsan 10
* fcid0xe50001 [pwwn50:06:01:60:3e:a4:33:27]
* fcid0xe50002 [pwwn10:00:00:00:c9:a0:a1:93]
* fcid0xe50003 [pwwn10:00:00:00:c9:a0:9f:1f]
```

```

5548up-2# show zoneset activevsan 11
zoneset name J05-ZoneSet-B vsan 11
zone name C200M2-ESXi-5-0 vsan 11
* fcid0x610001 [pwwn50:06:01:61:3e:a4:33:27]
* fcid0x610002 [pwwn10:00:00:00:c9:a0:a1:91]
* fcid0x610003 [pwwn10:00:00:00:c9:a0:9f:1d]

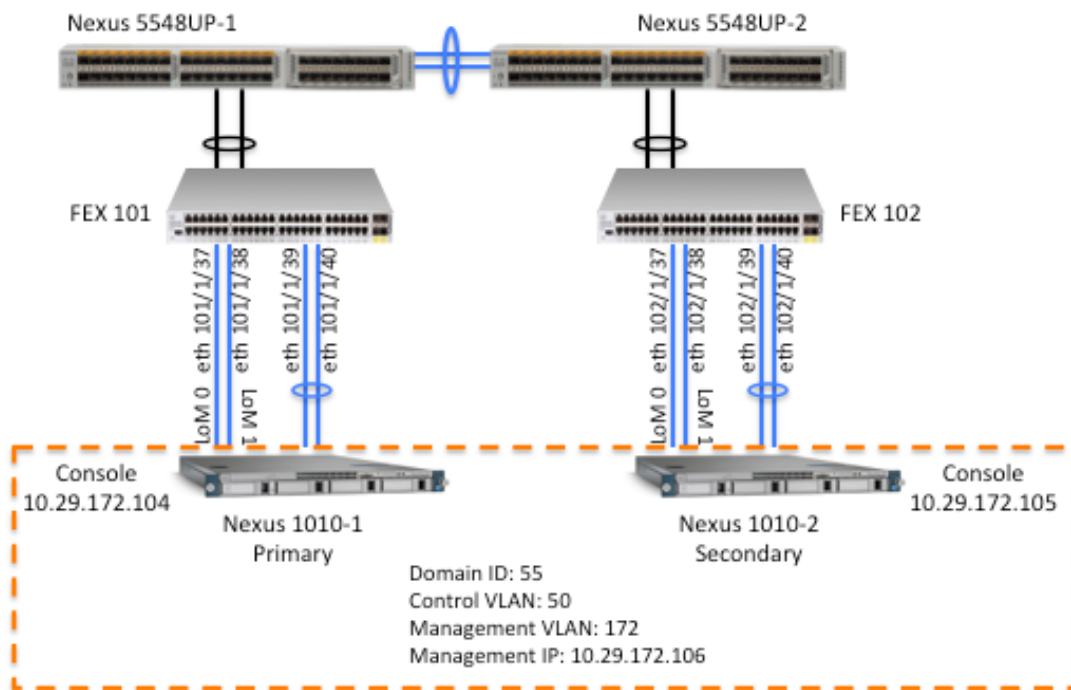
```

With the zoneset activated, the storage array is now able to see the UCS rack servers. Providing LUNs to the servers will not be shown here but a 500GB LUN is made available to both of the servers. The storage name for the ESXi servers is called “VNX-LUN0”.

## 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 5: 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, of 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 have the option to be used in a vPC configuration if additional physical redundancy is preferred..

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, you should see the following after successful login. 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**

Mgmt0IPv4netmask :**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:

```
switchnameJ05-1010
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>

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<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 SwHw

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, you should see the following after successful login. 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 “highly available” state and operational.

```

unix-server1$ sshadmin@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 SwHw

-----  
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

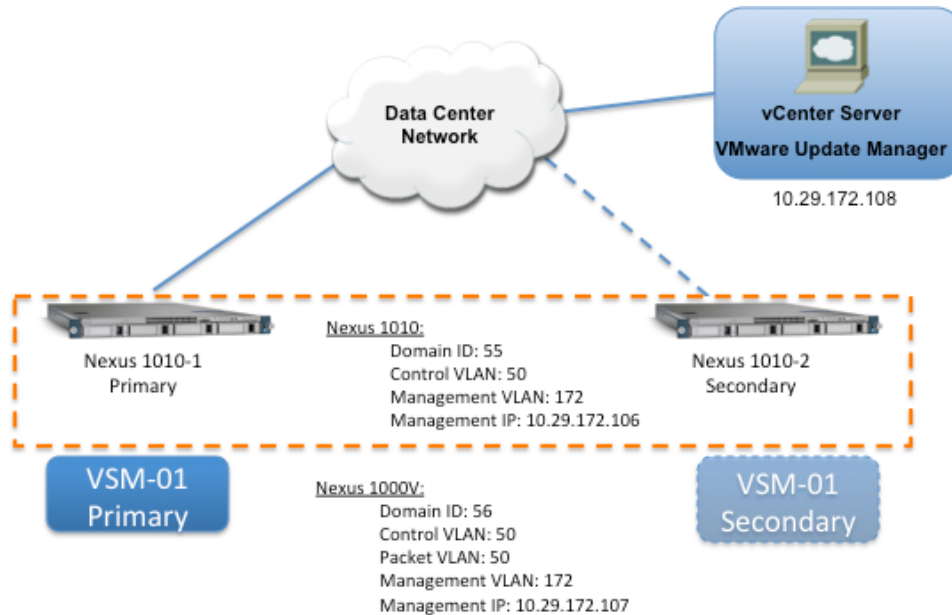
-----  
1 10.29.172.106 NA NA  
2 10.29.172.106 NA NA

\* 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 6: 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#dirbootflash: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
<b>J05-VSM-01</b>	<b>PRIMARY</b>	<b>VSB POWERED ON</b>	<b>Nexus1010-PRIMARY</b>
<b>J05-VSM-01</b>	<b>SECONDARY</b>	<b>VSB POWERED ON</b>	<b>Nexus1010-SECONDARY</b>

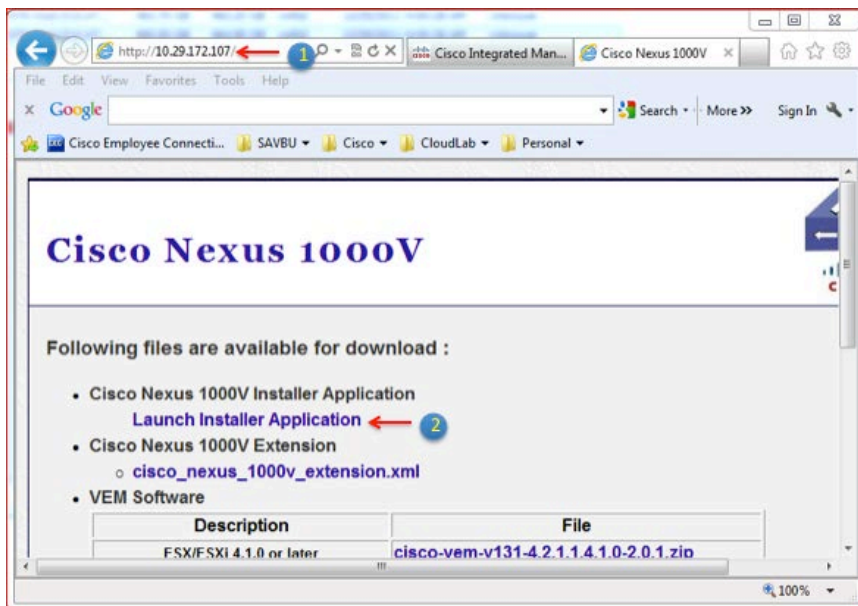
### Configuring Nexus 1000V VSMs

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.

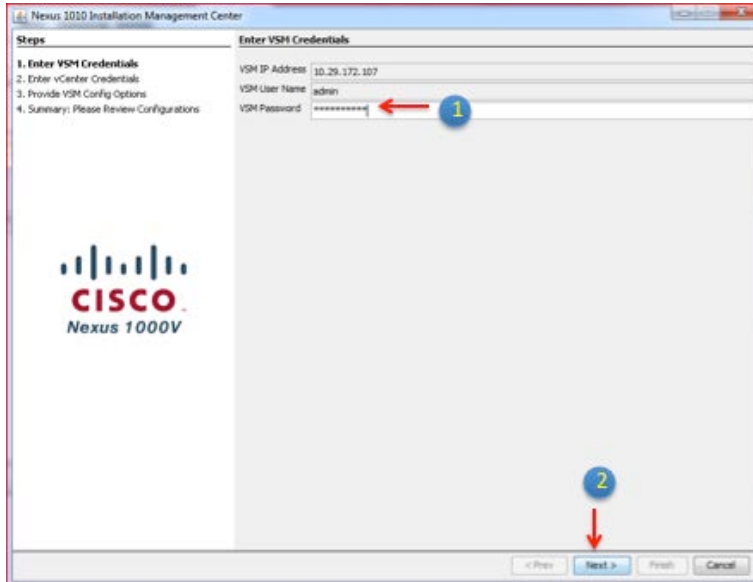
Figure 7: Opening Installer Application



1. Open a web browser and in the address bar, type in the IP Address of the VSM management.

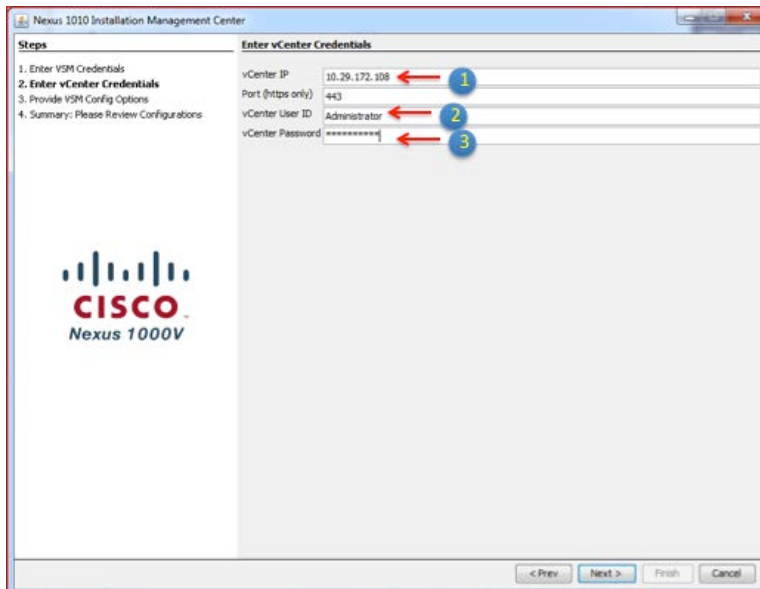
2. The following webpage will appear and click on “Launch Installer Application”

Figure 8: Installer Application Wizard



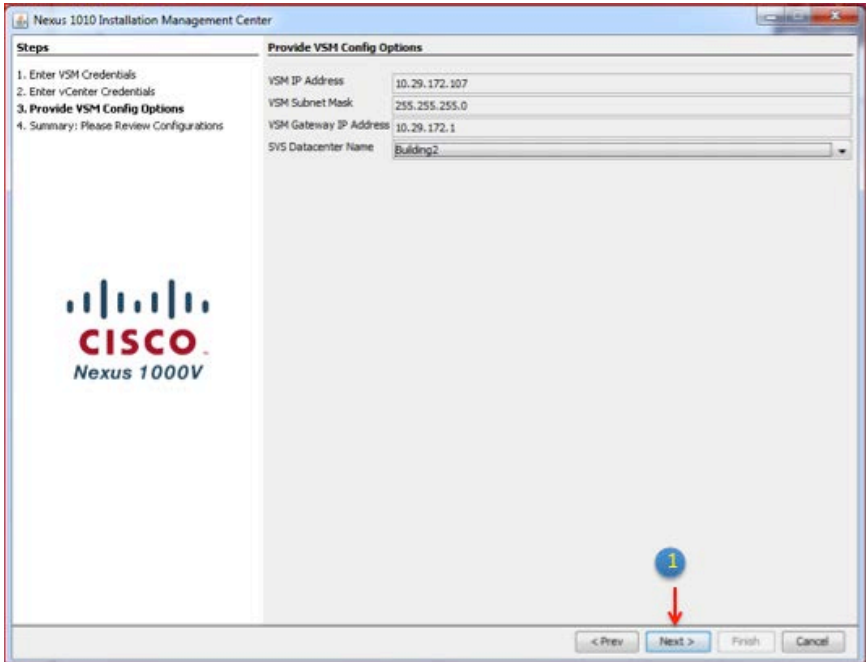
1. Type in the password for the “admin” user for the VSM
2. Click on “Next”

Figure 9: Installer Application Wizard Continued...



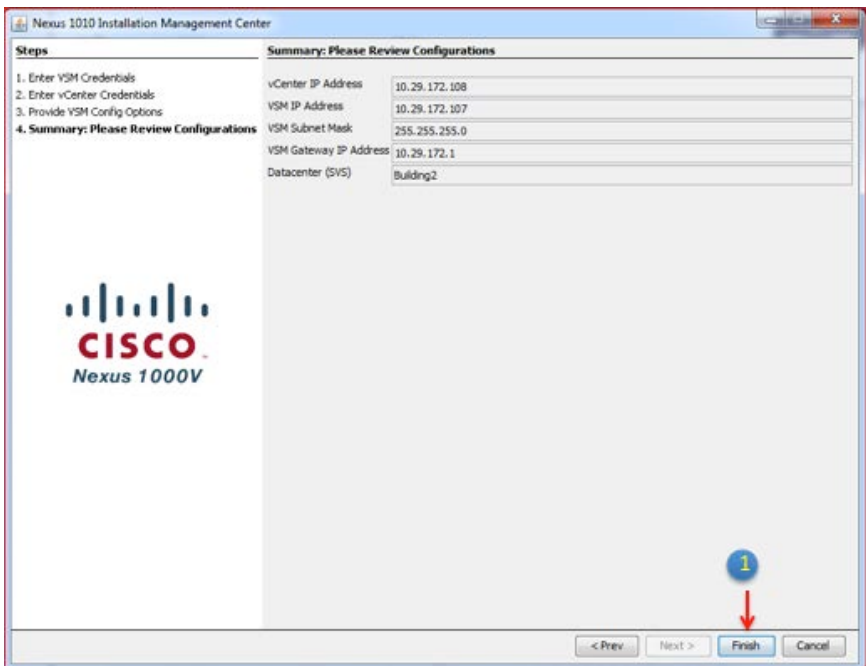
1. Please enter the vCenter IP address (ex: 10.29.172.108)
2. Type in the vCenter User ID (Administrator)
3. Type in the password for the vCenter Server

Figure 10: Installer Application Wizard Continued...



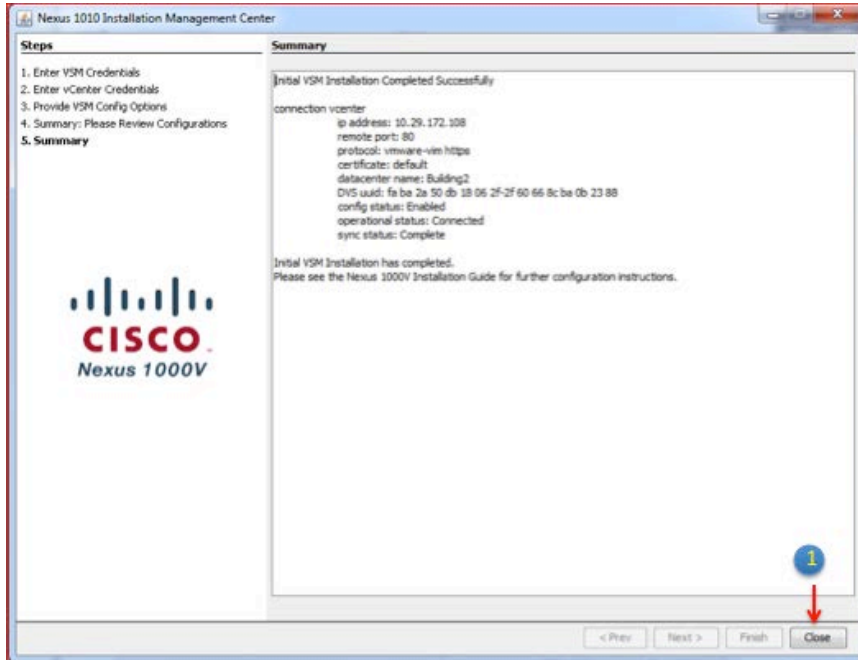
1. Verify the information and click on “Next”

Figure 11: Installer Application Wizard Continued...



1. Verify the information and click on “Finish”

Figure 12: Installer Application Wizard Continued...



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

Figure 13: Nexus 1000V Registration into vCenter Server



**Note:** Under the “Networking” screen of vCenter, you will notice 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 vsx connections
```

```
connectionvcenter:  
ip address: 10.29.172.108  
remote port: 80  
protocol: vmware-vim https  
certificate: default  
datacenter name: Building2  
admin:  
max-ports: 8192  
  DVS uuid: faba2a 50 db 18 06 2f-2f 60 66 8cba0b 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 N1KV-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 is set for “mac-pinning” for basic load-balancing and high availability.

### 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 for 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.

```

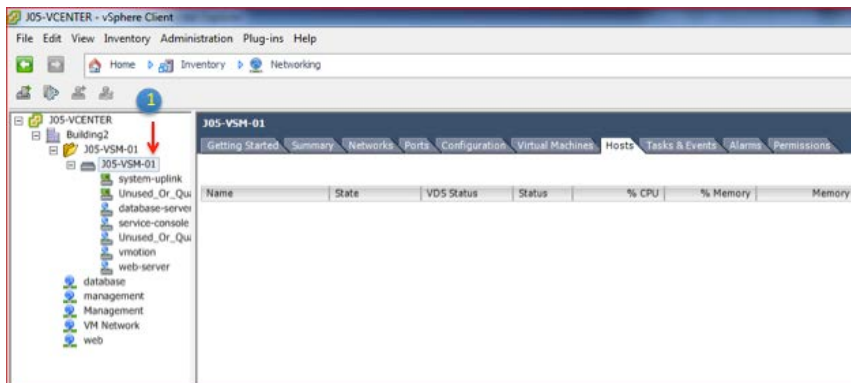
J05-VSM-01# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
J05-VSM-01(config)#port-profile type vethernet database-server
J05-VSM-01(config-port-prof)#switchport mode access
J05-VSM-01(config-port-prof)#switchport access vlan 52
J05-VSM-01(config-port-prof)#no shutdown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

```

### Adding the VEM

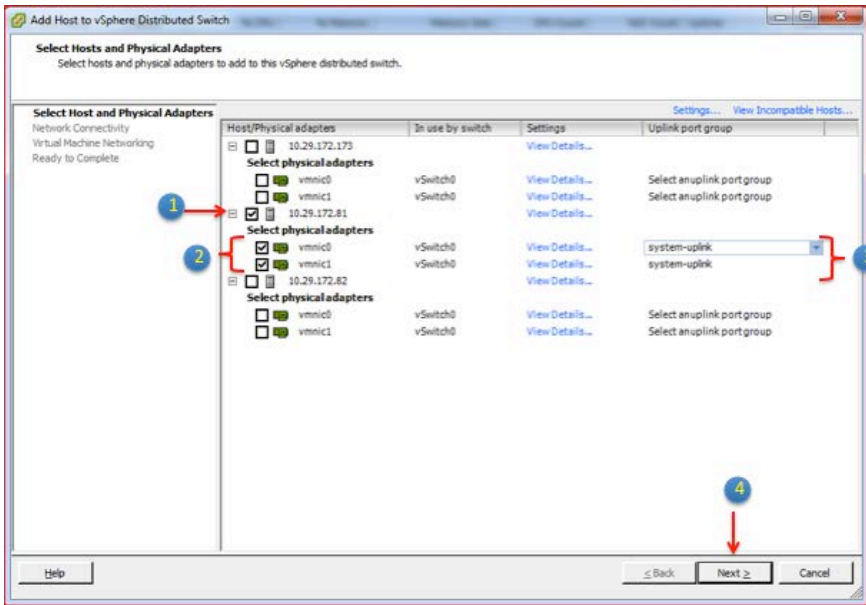
With all of the necessary port-profiles created, it is now possible to add the ESXi servers as VEM to the VSM. During this process, migration of the “service console” and “Vmotion” interfaces will be executed. Within this environment, VMware Update Manager (VUM) is also installed and will be used to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

Figure 14: Adding a VEM



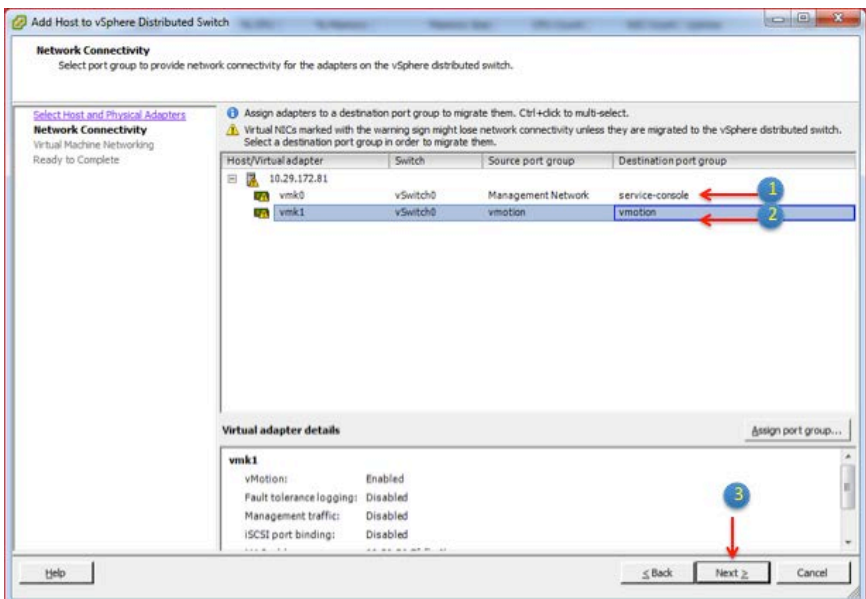
1. Goto the “Networking” view and select the VSM “J05-VSM-01”
2. To add a host to the Nexus 1000V, type in “Ctrl+H”

Figure 15: Adding a VEM Continued...



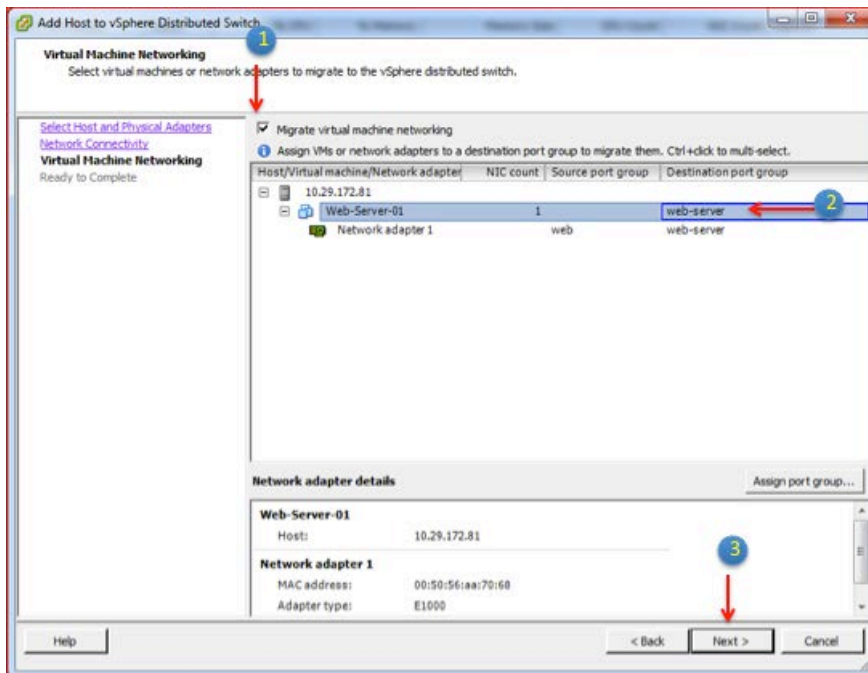
1. Click on the checkbox for the server(s) you want to add as a VEM. In this example, we will just add 1 server (10.29.172.81)
2. Click on the 2 network interfaces (vmnic0 and vmnic1) to be used by the VEM.
3. From the drop-down box under the “Uplink portgroup” column for each of the vmnics, select the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

Figure 16: Adding a VEM Continued...



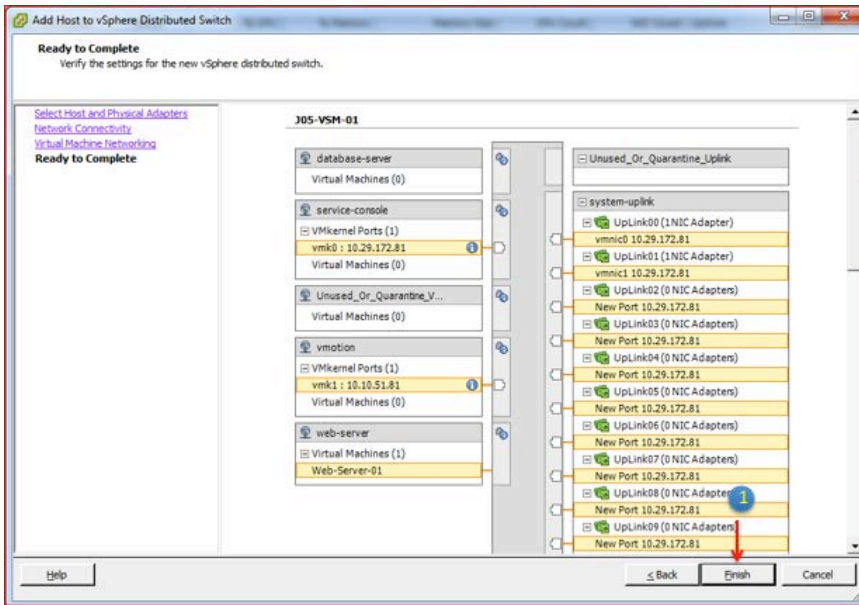
1. To migrate the service console to the Nexus 1000V, under the “Destination portgroup” column, select the “service-console” port-profile
2. To migrate the Vmotion interface, select the “vmotion” port-profile
3. Click on “Next”

Figure 17: 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 18: Adding a VEM Continued...

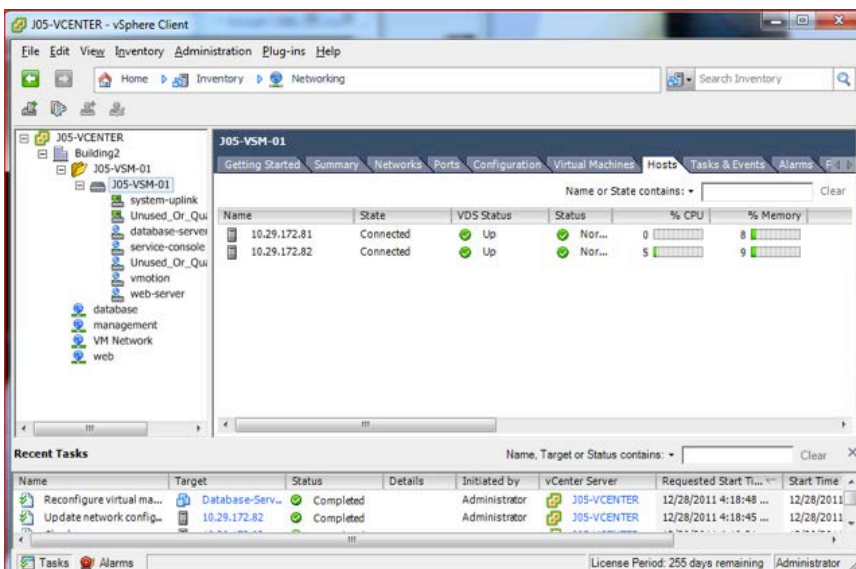


1. Click on “Finish” to complete the task

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

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

Figure 19: 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
```

Mod	Sw	Hw	Serial-Num	Server-Name
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
Veth1vmk0	VMware VMkernel	3	10.29.172.81	
Veth2vmk1	VMware VMkernel	3	10.29.172.81	
Veth3	Net Adapter 1	Web-Server-01	3	10.29.172.81
Veth4vmk0	VMware VMkernel	4	10.29.172.82	
Veth5vmk1	VMware VMkernel	4	10.29.172.82	
Veth6	Net Adapter 1	Database-Server-01	4	10.29.172.82