



Nexus 1000V and HP's Virtual Connect

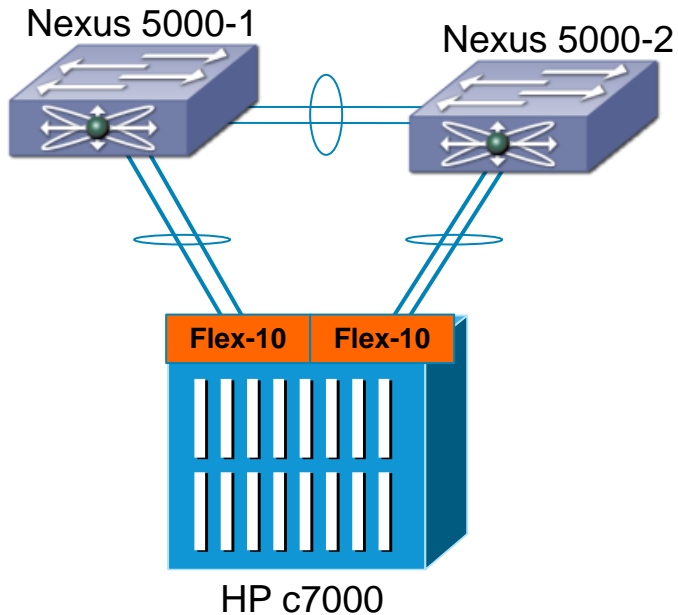
June 2010

Agenda

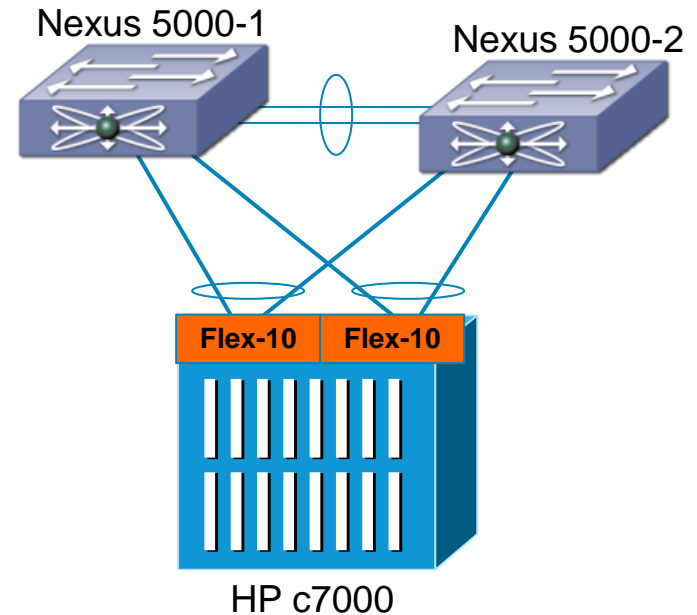
- Cisco Nexus 1000V with HP's Virtual Connect (Flex-10)
 - Physical Topologies
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Flex-10 with Nexus 5000 Physical Topologies

Single-homed Flex-10 to Nexus 5000
Connectivity (non-vPC)

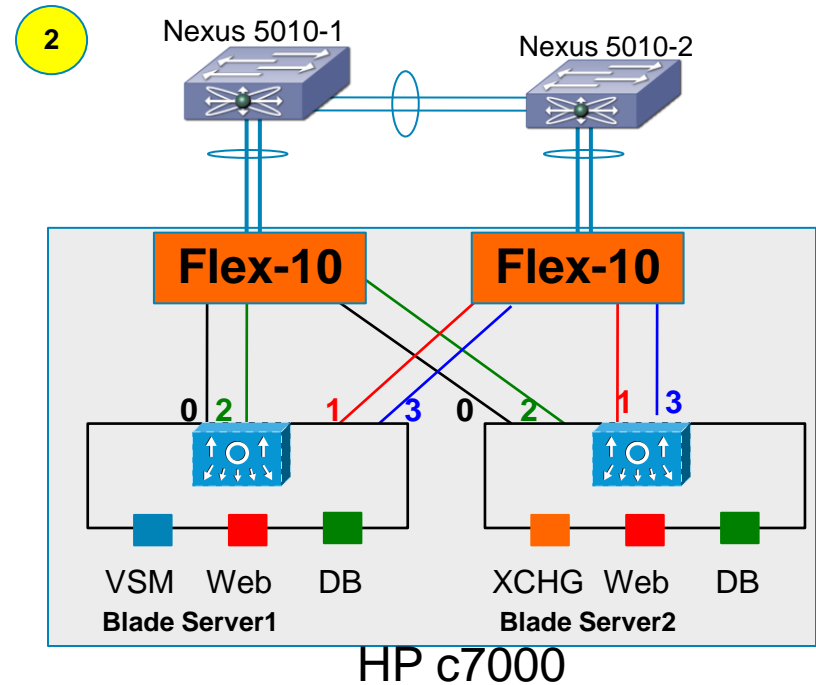
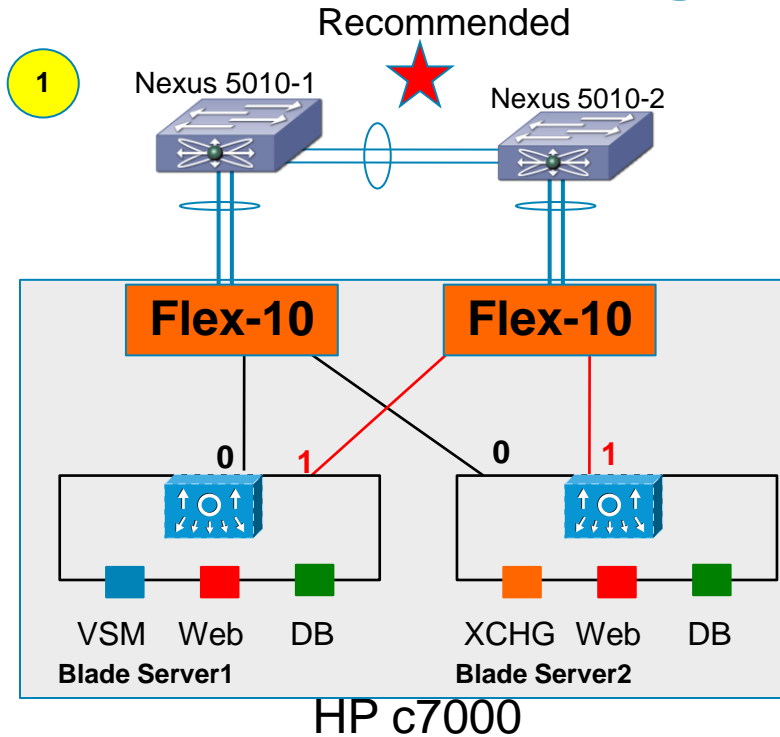


Dual-homed Flex-10 to Nexus 5000
Connectivity (vPC)



- Both topologies are supported
- vPC provides additional redundancy upstream in case a single upstream switch fails
- non-vPC has simpler network flow for easier troubleshooting, since HPVC does not provide much troubleshooting tools and upstream switch does not have much visibility into Flex-10 in a virtualized environment

Nexus 1000V Logical with FlexNIC Topology



| Type of Traffic | Option 1 | Option 2 |
|--|-----------------|-----------------|
| Service Console (mgmt), vmotion, vmkernel, FT, Control, Packet | vmnic0 & vmnic1 | vmnic0 & vmnic1 |
| VM Data | vmnic0 & vmnic1 | vmnic2 & vmnic3 |

Note: All traffic of the VMs, including vmotion, vmkernel and the VSM are behind the VEM.

- **Option 1:** is recommended and is the most simplest to manage.
- **Option 2:** provides additional separation for certain traffic utilizing HPVC FlexNIC technology.

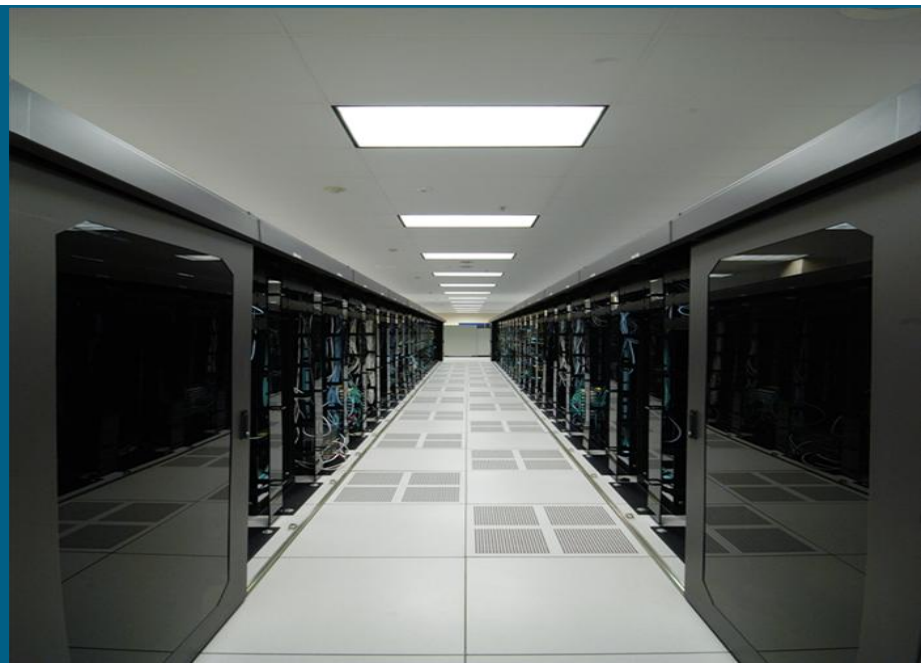
Test Environment Firmware

- Nexus 5000
 - Nexus 5010 hardware
 - Firmware 4.2(1)N1(1) - DeeWhy
- HP c7000 Chassis
 - HP Onboard Administrator – version 2.60
 - HP Virtual Connect – version 2.32
 - BL490c G6 blade server
 - iLO version 1.81
 - Power Management version 3.4
- VMware ESX Server
 - VMware ESX version 4.0 Update 1 (build 208167)
 - Broadcom LOM
 - driver (bnx2x) version 1.52.12 v40.3
 - firmware-version: bc 5.0.11
- Nexus 1000V
 - Version 4.0(4)SV1(3)

Note: Previous deployments of Nexus 1000V and HPVC were working in earlier versions. As new versions of code come from the above components (N5K, HPVC, VMware, and N1KV), Cisco continues to work closely with VMware but has little control on HPVC and what proper firmware for the overall HP c7000 chassis should be at. As new code arises from Cisco, we will continue to make sure the things work properly. Again, we will not have much control if new firmware from HP arises and may break this solution.

The above firmware was used in this environment and would suggest upgrading to these firmwares for all of the above components.

Sample Environment 1



2 FlexNICs – Nexus 1000V Only

Sample Environment 1 - Topology

VLAN Mappings

- Management (Service Console) → 182
- vmkernel (shared IP storage) → 100
- vmotion → 101
- Control & Packet → 200
- VM Data → 301-305

HPVC Shared Uplink Set

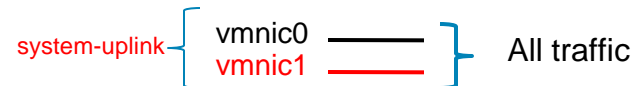
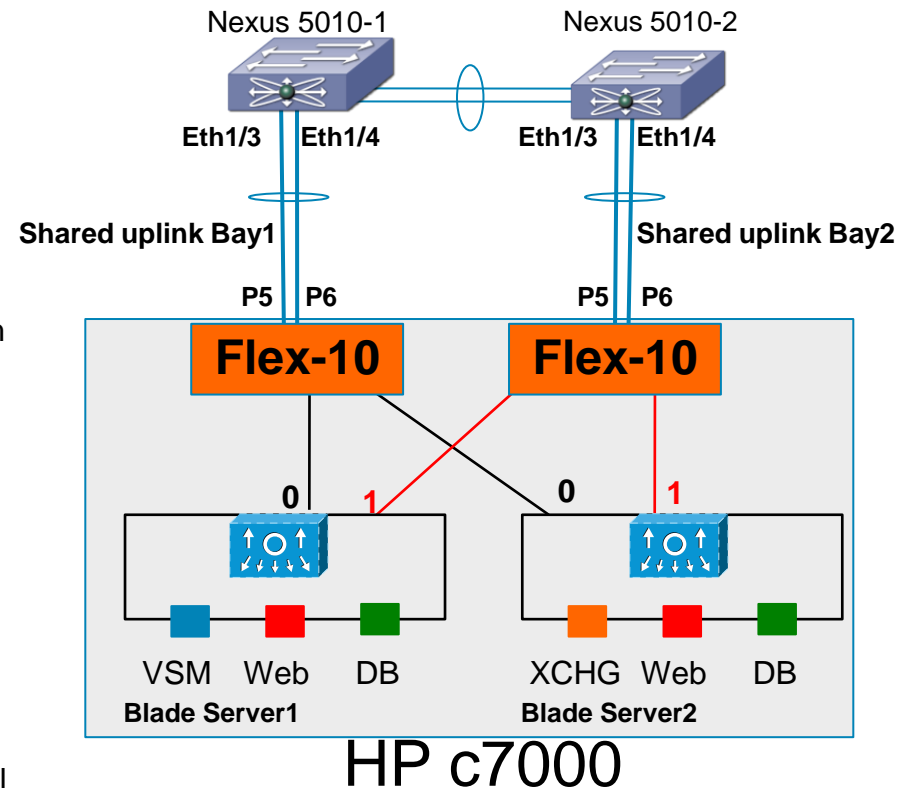
- Need to provide all vlans to traverse uplinks
- Recommended to name “uplink” set with particular naming convention to recognize the vlan traversing which uplink set.
- HPVC “vlan mapping” was used but refer to HP’s documentation on differences between “tunneling” and “vlan mapping”

HPVC Server Profile

- Create only 2 FlexNIC (default)
- FlexNIC1 is “pinned” to Flex-10 on Bay1
- FlexNIC2 is “pinned” to Flex-10 on Bay2
- When assigning the network to the FlexNIC, select “multiple networks” and choose the “Shared Uplink Set” that corresponds to the correct FlexNIC. Then “check” all the vlans.

Nexus 1000V Port-Profile

- Configure system-uplink as vPC-HM with mac-pinning
- Create port-profile for “vsm-control-packet” so that VSM can be behind VEM
- Create port-profiles service-console, ip-storage (vmkernel), vmotion as to migrate to Nexus 1000V control



Nexus 5010-1 Configuration

Nexus 5010-1 (Flex-10 Bay1)

```
n5k-1# show running-config interface ethernet 1/3-4
version 4.2(1)N1(1)
```

```
interface Ethernet1/3
  description "HP Chassis Flex-10 Bay1 - Port5"
  switchport mode trunk
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
  speed 10000
  channel-group 200 mode active
```

```
interface Ethernet1/4
  description "HP Chassis Flex-10 Bay1 - Port6"
  switchport mode trunk
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
  speed 10000
  channel-group 200 mode active
```

```
n5k-1# show running-config interface port-channel 200
version 4.2(1)N1(1)
```

```
interface port-channel200
  switchport mode trunk
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
```

N5K-1 & N5K-2 Port-Channel

```
n5k-1# show running-config interface ethernet 1/17-18
version 4.2(1)N1(1)
```

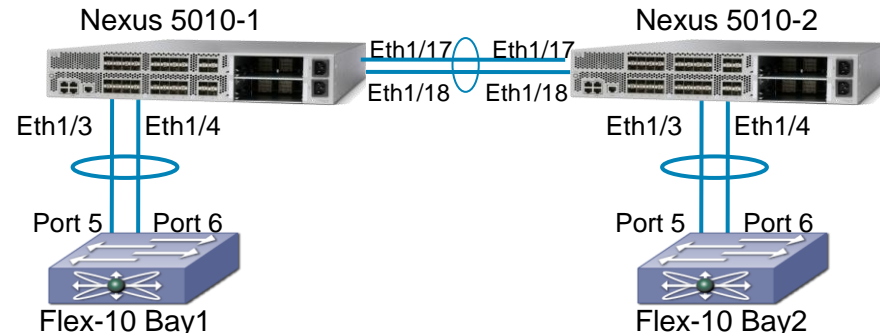
```
interface Ethernet1/17
  switchport mode trunk
  channel-group 1 mode active
```

```
interface Ethernet1/18
  switchport mode trunk
  channel-group 1 mode active
```

```
n5k-1# show running-config interface port-channel 1
version 4.2(1)N1(1)
```

```
interface port-channel1
  switchport mode trunk
```

Note: HPVC Flex-10 supports LACP, so configure the Nexus 5000 interfaces to channel-group mode "active" that are connected to the Flex-10 in the Port-Channel



Nexus 5010-2 Configuration

Nexus 5010-2 (Flex-10 Bay2)

```
n5k-2# show running-config interface ethernet 1/3-4
version 4.2(1)N1(1)
```

```
interface Ethernet1/3
  description "HP Chassis Flex-10 Bay1 - Port5"
  switchport mode trunk
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
  speed 10000
  channel-group 200 mode active
```

```
interface Ethernet1/4
  description "HP Chassis Flex-10 Bay1 - Port6"
  switchport mode trunk
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
  speed 10000
  channel-group 200 mode active
```

```
n5k-2# show running-config interface port-channel 200
version 4.2(1)N1(1)
```

```
interface port-channel200
  switchport mode trunk
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
```

N5K-2 & N5K-1 Port-Channel

```
n5k-2# show running-config interface ethernet 1/17-18
version 4.2(1)N1(1)
```

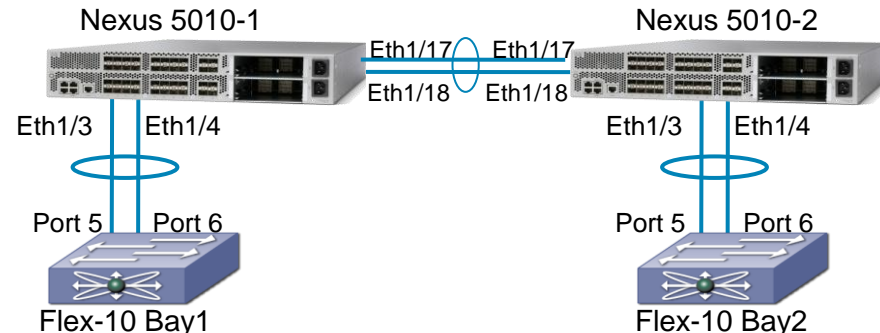
```
interface Ethernet1/17
  switchport mode trunk
  switchport trunk allowed vlan 1-3967,4048-4093
  channel-group 1 mode active
```

```
interface Ethernet1/18
  switchport mode trunk
  switchport trunk allowed vlan 1-3967,4048-4093
  channel-group 1 mode active
```

```
n5k-2# show running-config interface port-channel 1
version 4.2(1)N1(1)
```

```
interface port-channel1
  switchport mode trunk
  switchport trunk allowed vlan 1-3967,4048-4093
```

Note: HPVC Flex-10 supports LACP, so configure the Nexus 5000 interfaces to channel-group mode “active” that are connected to the Flex-10 in the Port-Channel



HPVC Flex-10 - Shared Uplinks Bay 1

Within Virtual Connect Manager, create a “Shared Uplink Set”

- Name: “Uplink-N5K-Bay1”
- Added Port X5 and Port X6 to Uplink Set
- Note the “Associated Networks (VLAN tagged)” that is created to traverse this Shared Uplink
- Note the naming of the network has unique naming so that it defines that it is coming from Bay1

The screenshot displays the HP Virtual Connect Manager interface. On the left is a navigation pane with sections for Domain Settings, Ethernet Settings, Fibre Channel Settings, Server Profiles, Ethernet Networks, and Shared Uplink Sets. The main area is titled 'Edit Shared Uplink Set: Uplink-N5K-Bay1' and contains two tables.

External Uplink Ports

| Port | Port Role | Port Status | Connector Type | Connected To | PID | Speed/Duplex | Delete |
|----------------------------|-----------|------------------|----------------|-----------------------|-----|--------------|--------|
| USE6361NY1: Bay 1: Port X6 | NA | OK Linked/Active | 10 Gb SFP-DAC | <input type="radio"/> | | Auto | X |
| USE6361NY1: Bay 1: Port X5 | NA | OK Linked/Active | 10 Gb SFP-DAC | <input type="radio"/> | | Auto | X |

Below the table is an 'Add PORT' button and a 'Connection Mode' dropdown set to 'Auto'.

Associated Networks (VLAN tagged)

| Network Name | VLAN ID | Native ? | Smart Link ? | Private Network ? | Advanced... | | |
|---------------------|---------|-------------------------------------|-------------------------------------|--------------------------|-------------|--|---|
| data-301-n5k-b1 | 301 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-300-n5k-b1 | 300 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| ip-storage-n5k-b1 | 100 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| mgmt-n5k-b1 | 182 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| vsm-ctrl-pkt-n5k-b1 | 200 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-302-n5k-b1 | 302 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-303-n5k-b1 | 303 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-304-n5k-b1 | 304 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-305-n5k-b1 | 305 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| vmotion-n5k-b1 | 101 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |

HPVC Flex-10 - Shared Uplinks Bay 2

Within Virtual Connect Manager, create a “Shared Uplink Set”

- Name: “Uplink-N5K-Bay2”
- Added Port X5 and Port X6 to Uplink Set
- Note the “Associated Networks (VLAN tagged)” that is created to traverse this Shared Uplink (should be same as “Uplink-N5K-Bay1”)
- Note the naming of the network has unique naming so that it defines that it is coming from Bay 2

The screenshot displays the HP Virtual Connect Manager interface. The left sidebar shows the navigation menu with categories like Domain Settings, Ethernet Settings, and Shared Uplink Sets. The main content area is titled 'Edit Shared Uplink Set: Uplink-N5K-Bay2'.

External Uplink Ports

| Port | Port Role | Port Status | Connector type | Connected To | PID | Speed/Duplex | Delete |
|----------------------------|-----------|------------------|----------------|-----------------------|-----|--------------|--------|
| USE6361NY1: Bay 2: Port X5 | NA | OK Linked/Active | 10 Gb SFP-DAC | <input type="radio"/> | | Auto | X |
| USE6361NY1: Bay 2: Port X6 | NA | OK Linked/Active | 10 Gb SFP-DAC | <input type="radio"/> | | Auto | X |

Connection Mode: ?

Associated Networks (VLAN tagged) ?

| Network Name | VLAN ID | Native ? | Smart Link ? | Private Network ? | Advanced... | | |
|---------------------|---------|-------------------------------------|-------------------------------------|--------------------------|-------------|--|---|
| ip-storage-n5k-b2 | 100 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| vsm-ctrl-pkt-n5k-b2 | 200 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| mgmt-n5k-b2 | 182 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-303-n5k-b2 | 303 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-300-n5k-b2 | 300 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-301-n5k-b2 | 301 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-302-n5k-b2 | 302 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-304-n5k-b2 | 304 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| data-305-n5k-b2 | 305 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |
| vmotion-n5k-b2 | 101 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | X |

Server Profiles – Blade Server1 (2 FlexNICs)

In Virtual Connect, creation of a “Server Profile” defines a few parameters is needed for this example

1. Ethernet Network - how many FlexNICs and which VLAN(s) those FlexNICs will be using
2. Assign Profile – Binds this Server Profile to a particular Blade Server in the chassis

The screenshot displays the HP Virtual Connect Manager interface. On the left is a navigation pane with sections for Domain Settings, Ethernet Settings, Fibre Channel Settings, Server Profiles, Ethernet Networks, and Shared Uplink Sets. The main area is titled "Edit Server Profile: ESX-Srv1-N5K-2FN".

Profile Information:

| Profile Name | Status | Serial Number (Logical) | Server UUID (Logical) |
|------------------|--------|-------------------------|--------------------------------------|
| ESX-Srv1-N5K-2FN | OK | VCX0000900 | 500c1c53-df73-42bb-a0b1-1f70677ba5d3 |

Ethernet Network Connections (Physical ports):

| Port | Network Name | Status | Port Speed Setting | Allocated Bandwidth | PXE | MAC | Mapping | Delete |
|------|-------------------|--------|--------------------|---------------------|----------|-------------------|------------------|--------|
| 1 | Multiple Networks | OK | Preferred | 10 Gb | Use BIOS | 00-17-A4-77-38-00 | LOM:1-a => Bay 1 | X |
| 2 | Multiple Networks | OK | Preferred | 10 Gb | Use BIOS | 00-17-A4-77-38-02 | LOM:2-a => Bay 2 | X |

Assign Profile to Server Bay:

| Power | Server Bay Assignment | SN | Model | Status | UID |
|-------|---|------------|--------------------|--------|-----|
| On | USE6361NY1: Bay 1 (ProLiant BL490c G6) Select Location | USE920M6C9 | ProLiant BL490c G6 | OK | |

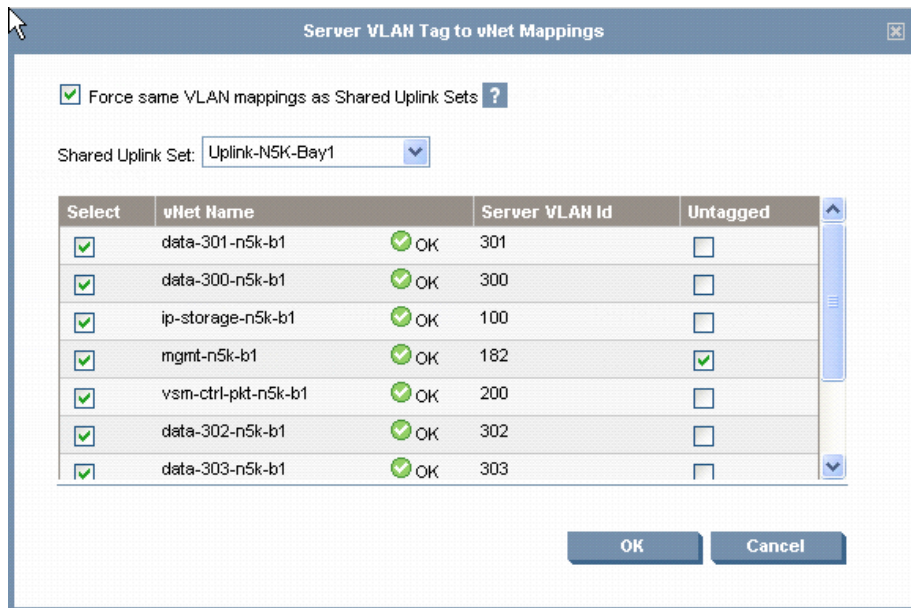
Buttons at the bottom: Delete, Copy Profile, Clear, Apply, Cancel.

Blade Server1 – FlexNIC “Network” settings

The FlexNIC will need to be configured for “Multiple Networks”, use the following to enable the vlans for this FlexNIC

- Click “Force same VLAN mappings as Shared Uplink Sets” to use these networks
- Check all the vlans to allow them to be enabled for the FlexNIC
- Note that “untagged” packets will be tagged for “mgmt-n5k-b1” vlan (vlan 182) – this is used if “Service Console” is set to “vlan 0”

FlexNIC – Port 1



Server VLAN Tag to vNet Mappings

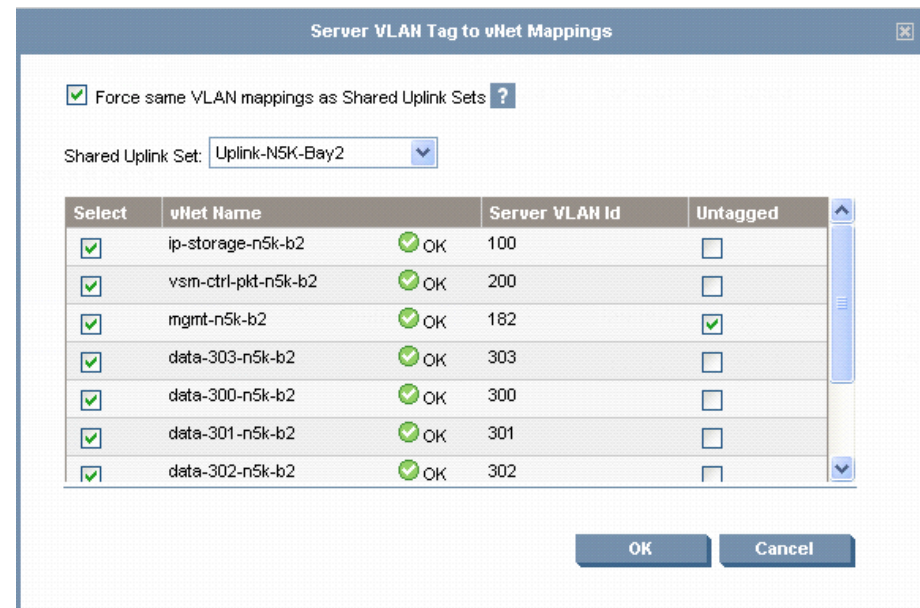
Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay1

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input checked="" type="checkbox"/> | data-301-n5k-b1 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b1 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | ip-storage-n5k-b1 | 100 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b1 | 182 | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b1 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b1 | 302 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b1 | 303 | <input type="checkbox"/> |

OK Cancel

FlexNIC – Port 2



Server VLAN Tag to vNet Mappings

Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay2

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input checked="" type="checkbox"/> | ip-storage-n5k-b2 | 100 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b2 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b2 | 182 | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b2 | 303 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b2 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-301-n5k-b2 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b2 | 302 | <input type="checkbox"/> |

OK Cancel

Server Profiles – Blade Server2 (2 FlexNICs)

In Virtual Connect, creation of a “Server Profile” defines a few parameters is needed for this example

1. Ethernet Network - how many FlexNICs and which VLAN(s) those FlexNICs will be using
2. Assign Profile – Binds this Server Profile to a particular Blade Server in the chassis

The screenshot displays the HP Virtual Connect Manager interface. The left sidebar shows the navigation tree with 'Server Profiles' expanded to 'Assigned Server Profiles', where 'ESX-Srv2-N5K-2FN' is selected. The main content area is titled 'Edit Server Profile: ESX-Srv2-N5K-2FN'. It features a 'Profile' table with one entry: 'ESX-Srv2-N5K-2FN' with a status of 'OK', serial number 'VCX0000901', and server UUID 'f42dc49f-3099-401b-80bc-ef91048d9f15'. Below this is the 'Ethernet Network Connections (Physical ports)' section, which contains a table with two entries, both named 'Multiple Networks'. The first entry is for port 1 and the second for port 2, both with a status of 'OK', 'Preferred' port speed, '10 Gb' bandwidth, and 'Use BIOS' PXE setting. The MAC addresses are '00-17-A4-77-38-04' and '00-17-A4-77-38-06', and the mappings are 'LOM:1-a => Bay 1' and 'LOM:2-a => Bay 2'. An 'Add Network Connection' button is located below the table. The 'Assign Profile to Server Bay' section shows a table with one entry for server bay 'USE6361NY1: Bay 2 (ProLiant BL490c G6)', with a status of 'OK' and a 'Select Location' button. At the bottom, there are buttons for 'Delete', 'Copy Profile', 'Clear', 'Apply', and 'Cancel'.

Profile

| Profile Name | Status | Serial Number (Logical) | Server UUID (Logical) |
|------------------|--------|-------------------------|--------------------------------------|
| ESX-Srv2-N5K-2FN | OK | VCX0000901 | f42dc49f-3099-401b-80bc-ef91048d9f15 |

Ethernet Network Connections (Physical ports)

| Port | Network Name | Status | Port Speed Setting | Allocated Bandwidth | PXE | MAC | Mapping | Delete |
|------|-------------------|--------|--------------------|---------------------|----------|-------------------|------------------|--------|
| 1 | Multiple Networks | OK | Preferred | 10 Gb | Use BIOS | 00-17-A4-77-38-04 | LOM:1-a => Bay 1 | X |
| 2 | Multiple Networks | OK | Preferred | 10 Gb | Use BIOS | 00-17-A4-77-38-06 | LOM:2-a => Bay 2 | X |

Assign Profile to Server Bay

| Power | Server Bay Assignment | SN | Model | Status | UID |
|-------|--|------------|--------------------|--------|-----|
| On | USE6361NY1: Bay 2 (ProLiant BL490c G6) | USE920M6C8 | ProLiant BL490c G6 | OK | |

Blade Server2 – FlexNIC “Network” settings

The FlexNIC will need to be configured for “Multiple Networks”, use the following to enable the vlans for this FlexNIC

- Click “Force same VLAN mappings as Shared Uplink Sets” to use these networks
- Check all the vlans to allow them to be enabled for the FlexNIC
- Note that “untagged” packets will be tagged for “mgmt-n5k-b1” vlan (vlan 182) – this is used if “Service Console” is set to “vlan 0”

FlexNIC – Port 1

Server VLAN Tag to vNet Mappings

Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay1

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input checked="" type="checkbox"/> | data-301-n5k-b1 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b1 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | ip-storage-n5k-b1 | 100 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b1 | 182 | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b1 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b1 | 302 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b1 | 303 | <input type="checkbox"/> |

OK Cancel

FlexNIC – Port 2

Server VLAN Tag to vNet Mappings

Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay2

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input checked="" type="checkbox"/> | ip-storage-n5k-b2 | 100 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b2 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b2 | 182 | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b2 | 303 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b2 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-301-n5k-b2 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b2 | 302 | <input type="checkbox"/> |

OK Cancel

Nexus 1000V Configuration



Nexus 1000V Configurations

- Creating Port-Profiles on Nexus 1000V
 - Configuring system-uplink
 - Configuring Service-Console, Vmotion, ip-storage (vmkernel), vsm-control-packet and other VM port-profiles
- Steps to Add VEMs and place VSM behind VEM
 - Add host to Nexus 1000V (use only 1 interface to import host as VEM)
 - Migrate service-console, vmkernel and vmotion port-groups to Nexus 1000V
 - Modify VSM (VM) to use port-profiles from Nexus 1000V (not vSwitch)
 - Add second physical vmnic to the Nexus 1000V control
 - Continue adding other hosts as VEMs

Note: These steps will not include how to install the VSM. Please consult the “Nexus 1000V installation guide” for details

Port-Profile: System-Uplink, Service-Console & Vmotion

Configuration of “System-Uplink”

- system vlans: recommended to add control, packet, service-console and vmkernel vlans
- switchport mode is set to “trunk” to allow required vlans to traverse the uplinks
- list of allowed vlans: default is all but can be pruned to limit to allowed list of vlans
- Since HPVC Flex-10 does not support “vPC”, setting the “channel-group auto mode on mac-pinning” is recommended for better load-balancing

System-Uplink Configuration from VSM

```
HPC7K-VSM# show running-config port-profile system-uplink
version 4.0(4)SV1(3)
port-profile type ethernet system-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk native vlan 182
  switchport trunk allowed vlan all
  channel-group auto mode on mac-pinning
  no shutdown
  system vlan 100,182,200
  state enabled
```

Configuration of “Service-Console”

- switchport mode is set to “access” for particular vlan (this case vlan 182)

Service-Console Configuration from VSM

```
HPC7K-VSM# show running-config port-profile service-console
version 4.0(4)SV1(3)
port-profile type vethernet service-console
  vmware port-group
  switchport mode access
  switchport access vlan 182
  no shutdown
  state enabled
```

Configuration of “VMotion”

- switchport mode is set to “access” for particular vlan (this case vlan 101)

VMotion Configuration from VSM

```
HPC7K-VSM# show running-config port-profile vmotion
version 4.0(4)SV1(3)
port-profile type vethernet vmotion
  vmware port-group
  switchport mode access
  switchport access vlan 101
  no shutdown
  state enabled
```

Port-Profile: Mgmt, IP-Storage & “Control-Packet”

- Following are port-profiles needed to be created to allow the VSM to reside behind the VEM
- The “control and packet” port-profile is recommended to have the “system-vlan” to have vlan 200, which is the vlan that control and packet vlan are set to in this example

Configuration of “mgmt”

- switchport mode is set to “access” for particular vlan (this case vlan 182)

Management Configuration from VSM

```
HPC7K-VSM# show running-config port-profile mgmt
version 4.0(4)SV1(3)
port-profile type vethernet mgmt
  vmware port-group
  switchport mode access
  switchport access vlan 182
  no shutdown
  state enabled
```

Configuration of “control-packet”

- switchport mode is set to “access” for particular vlan (this case vlan 200)

Control-Packet Configuration from VSM

```
HPC7K-VSM# show running-config port-profile vsm-ctrl-pkt
version 4.0(4)SV1(3)
port-profile type vethernet vsm-ctrl-pkt
  vmware port-group
  switchport mode access
  switchport access vlan 200
  no shutdown
  system vlan 200
  state enabled
```

Configuration of “IP-Storage”

- switchport mode is set to “access” for particular vlan (this case vlan 100)

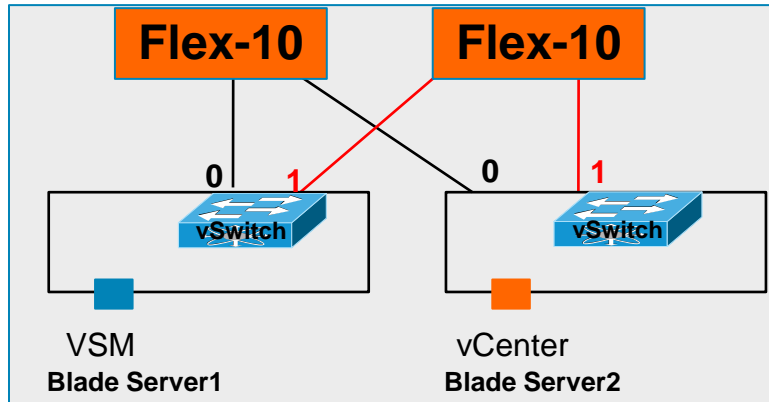
IP-Storage Port-Profile Configuration from VSM

```
HPC7K-VSM# show running-config port-profile ip-storage
version 4.0(4)SV1(3)
port-profile type vethernet ip-storage
  vmware port-group
  switchport mode access
  switchport access vlan 100
  no shutdown
  state enabled
```

Adding VEMs

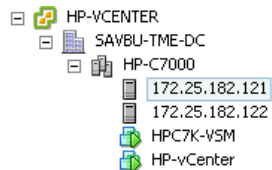


Before Adding Blade Server1 as VEM



- Note that VSM is currently on Blade Server1
- Will add Blade Server1 as VEM first

HP c7000



172.25.182.121 VMware ESX, 4.0.0, 208167

Getting Started Summary Virtual Machines Performance Configuration Tasks & Events Alarms Permissions Maps

View: Virtual Switch Distributed Virtual Switch

Networking

Virtual Switch: vSwitch0 [Remove...](#) [Properties...](#)

| Virtual Machine Port Group | Physical Adapters |
|-------------------------------------|-------------------|
| mgmt | vmnic0 10000 Full |
| 1 virtual machine(s) | vmnic1 10000 Full |
| HPC7K-VSM | |
| Virtual Machine Port Group | |
| vsm-ctrl-pkt | |
| 1 virtual machine(s) VLAN ID: 200 | |
| HPC7K-VSM | |
| VMkernel Port | |
| vmotion | |
| vmk1 : 192.168.1.121 VLAN ID: 101 | |
| VMkernel Port | |
| iscsi-nic | |
| vmk0 : 100.100.1.121 VLAN ID: 100 | |
| Service Console Port | |
| Service Console | |
| vswif0 : 172.25.182.121 | |

- Both vmnics are under vSwitch
- Port-Groups under vSwitch is used for VSM (VM)

Adding Blade Server1 as VEM

- Under “Networking”, make sure to select the Nexus 1000V VSM and go to the “Host” tab
- Right-click and select “Add Host to Distributed Switch...”

The screenshot displays the HP-VCENTER interface. On the left, a tree view shows the hierarchy: HP-VCENTER > SAVBU-TME-DC > HPC7K-VSM > HPC7K-VSM. Under the selected HPC7K-VSM, several network components are listed, including system-uplink, Unused_Or_Queue, ip-storage, mgmt, service-console, Unused_Or_Queue, vmotion, vsm-ctrl-pkt, and two additional mgmt and vsm-ctrl-pkt entries.

The main panel is titled "HPC7K-VSM" and features a navigation bar with tabs: Getting Started, Summary, Networks, Ports, Configuration, Virtual Machines, and Hosts. The "Hosts" tab is active, showing a table with the following columns: Name, State, DVS Status, Status, and % C. A context menu is open over the Hosts tab, listing the following options: Add Host to Distributed Virtual Switch..., Refresh, View Column (with a right-pointing arrow), and Export List...

Adding Blade Server1 as VEM Continued...

- Choose the radio-button for blade server1
- There are 2 active vmnics that are currently used by vSwitch, select only 1 vmnic (vmnic0 or vmnic1)
- Select the dvUplink port group, which in this case is “system-uplink” (click Next)

Add Host to Distributed Virtual Switch

Select host and physical adapters

Select a host and physical adapters to add to this distributed virtual switch. Use Host Profiles to add multiple hosts to the switch simultaneously. Host profiles can be accessed from the Home view. To add additional physical adapters to a host already added to the switch, go to Host > Configuration > Networking.

Select host and physical adapters
Ready to complete

| Host/Physical adapters | In use by switch | Physical adapter details | DVUplink port group |
|--|------------------|---------------------------------|-----------------------------|
| <input type="checkbox"/> 172.25.182.122 | | | |
| <input checked="" type="checkbox"/> 172.25.182.121 | | | |
| Select physical adapters | | | |
| <input type="checkbox"/> vmnic0 | vSwitch0 | View details... | Select a dvUplink port g... |
| <input checked="" type="checkbox"/> vmnic1 | vSwitch0 | View details... | system-uplink |
| <input type="checkbox"/> vmnic2 | -- | View details... | Select a dvUplink port g... |
| <input type="checkbox"/> vmnic3 | -- | View details... | Select a dvUplink port g... |
| <input type="checkbox"/> vmnic4 | -- | View details... | Select a dvUplink port g... |
| <input type="checkbox"/> vmnic5 | -- | View details... | Select a dvUplink port g... |
| <input type="checkbox"/> vmnic6 | -- | View details... | Select a dvUplink port g... |
| <input type="checkbox"/> vmnic7 | -- | View details... | Select a dvUplink port g... |

Help < Back Next > Cancel

Adding Blade Server1 as VEM Continued...

- Migration of “vmkernel” port-groups can be done here, where port-profiles have already been created
- Choose appropriate “Port Group” for each virtual adapter and click on “Next”
- Please note that when migrating “Service Console”, make sure that the port-profile is configured correctly so that communication to the “Service Console” is not lost during this migration phase

Add Host to Distributed Virtual Switch

Network connectivity
Select port or port group to provide network connectivity for the adapters on the distributed virtual switch.

[Select host and physical adapters](#)
Network connectivity
Ready to complete

The selected adapters are connected to another switch. To ensure that host 172.25.182.121 does not lose network connectivity, select a port or port group to provide connectivity to the adapters on HPC7K-V5M.

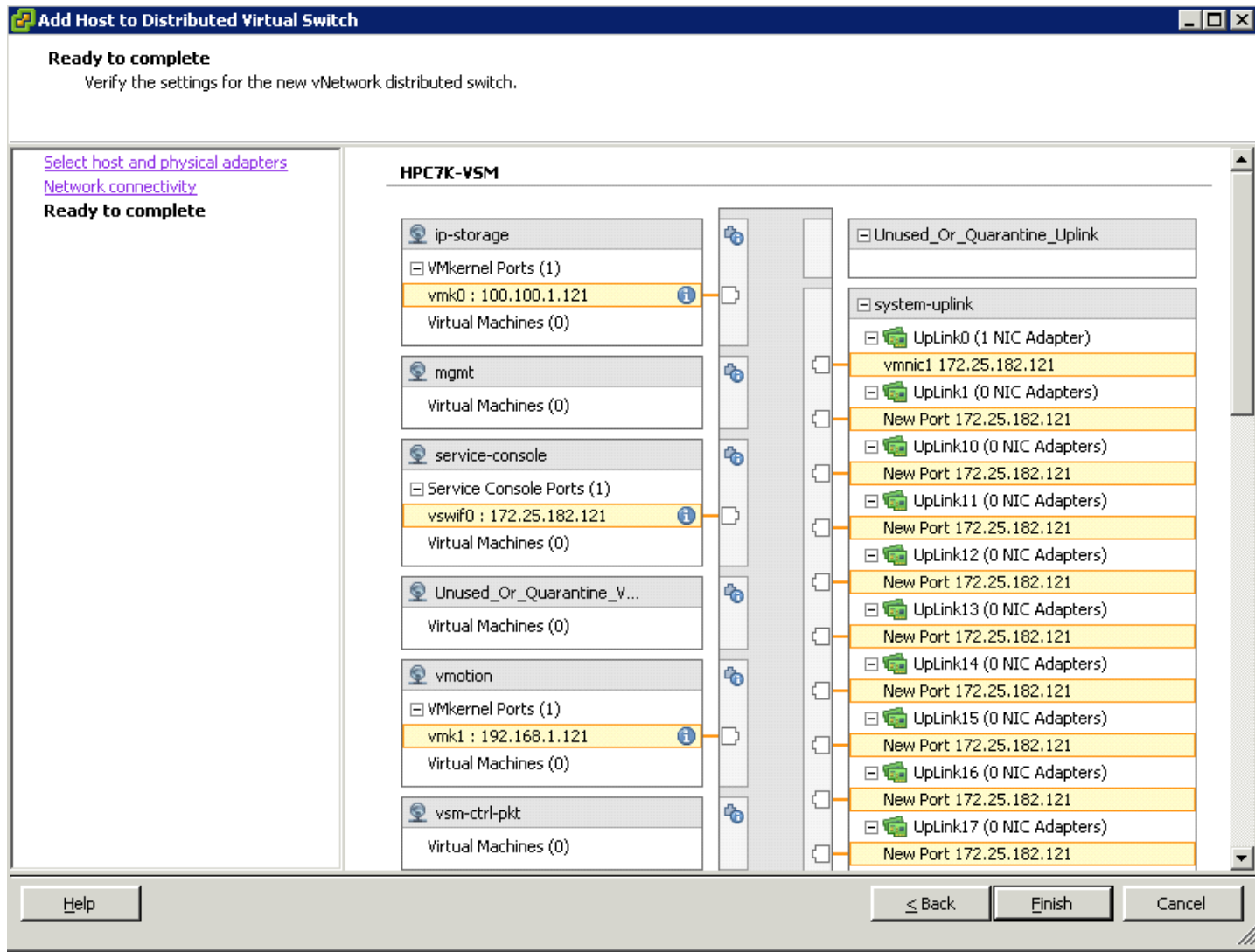
Select by: Port group

| | Virtual adapter | Switch | Port group |
|-------------------------------------|-----------------|----------|-----------------|
| <input checked="" type="checkbox"/> | vmotion | vSwitch0 | vmotion |
| <input checked="" type="checkbox"/> | iscsi-nic | vSwitch0 | ip-storage |
| <input checked="" type="checkbox"/> | Service Console | vSwitch0 | service-console |

Help < Back Next > Cancel

Adding Blade Server1 as VEM Continued...

- Click “Finish”
- Process of adding Blade Server 1 as a VEM begins
- Note that if VUM is installed (recommended), the VEM binaries are automatically installed to the ESX server. Otherwise a manual process to install the VEM on this ESX server is required. Please refer to the Nexus 1000V Configuration Guide for further detailed instructions



Verifying Blade Server 1 as VEM

- Verify that the Blade Server1 is a VEM on the VSM
- Take note of the virtual interfaces created for the migrated vmkernel interfaces

```
HPC7K-VSM# show module
```

| Mod | Ports | Module-Type | Model | Status |
|-----|-------|---------------------------|------------|----------|
| 1 | 0 | Virtual Supervisor Module | Nexus1000V | active * |
| 3 | 248 | Virtual Ethernet Module | NA | ok |

| Mod | Sw | Hw |
|-----|--------------|-----|
| 1 | 4.0(4)SV1(3) | 0.0 |
| 3 | 4.0(4)SV1(3) | 1.9 |

| Mod | MAC-Address(es) | Serial-Num |
|-----|--|------------|
| 1 | 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 |

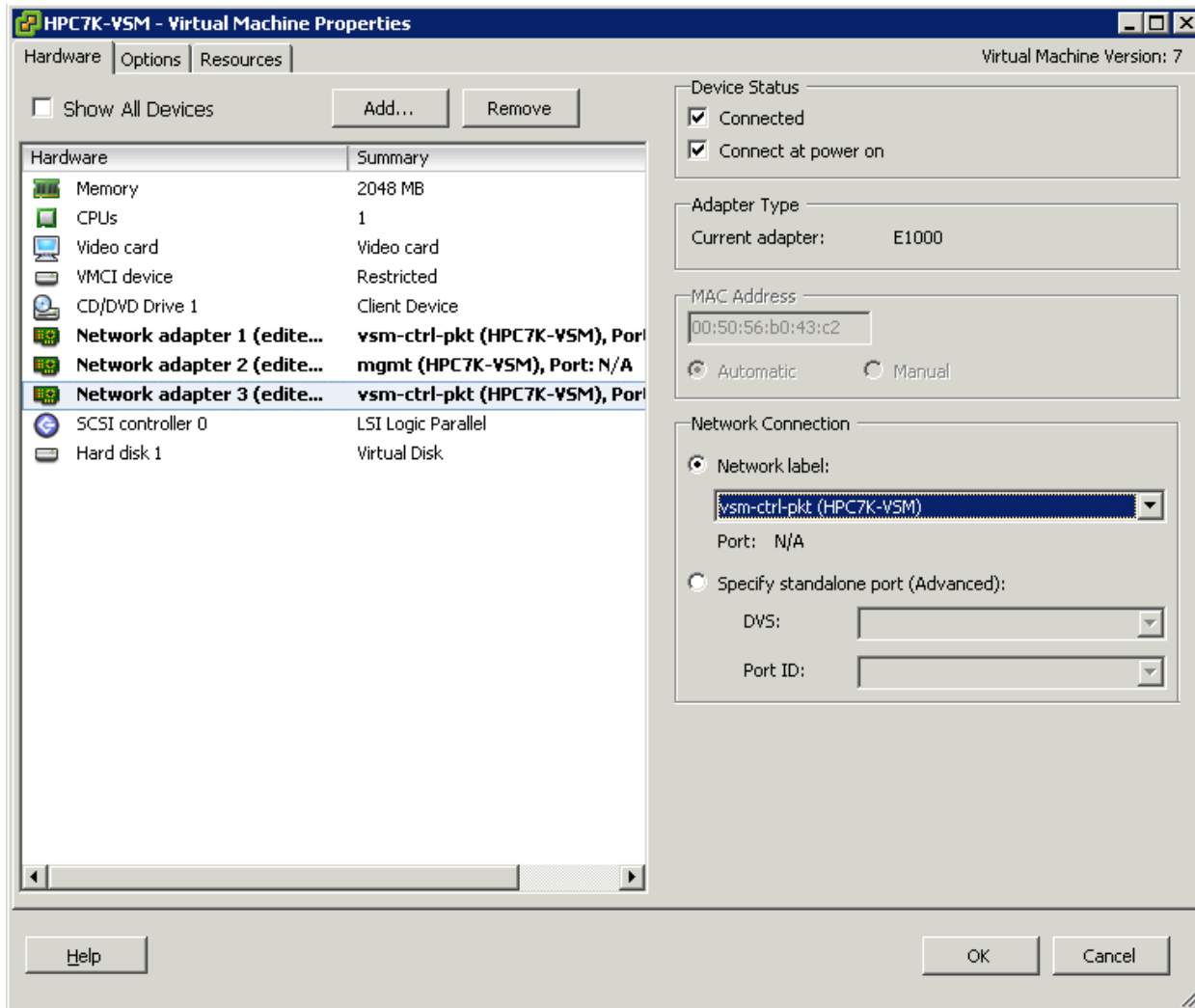
| Mod | Server-IP | Server-UUID | Server-Name |
|-----|----------------|--------------------------------------|----------------|
| 1 | 172.25.182.141 | NA | NA |
| 3 | 172.25.182.121 | 531c0c50-73df-bb42-a0b1-1f70677ba5d3 | 172.25.182.121 |

```
HPC7K-VSM# show interface virtual
```

| Port | Adapter | Owner | Mod | Host |
|-------|---------|------------------------|-----|----------------|
| Veth1 | vswif0 | VMware Service Console | 3 | 172.25.182.121 |
| Veth2 | vmk1 | VMware VMkernel | 3 | 172.25.182.121 |
| Veth3 | vmk0 | VMware VMkernel | 3 | 172.25.182.121 |

Moving VSM behind VEM

- Go to “Edit Settings” for the VSM VM
- Select the 3 adapters and modify the port-group to utilize the port-profiles (Nexus 1000V) for the appropriate adapter. These port-profiles were shown earlier
- Click on “OK” and when it completes refreshing the network, there will be a minor disruption in the access of the VSM during this process but will recover



Verifying VSM is behind VEM

- Take note of the virtual interfaces created for the 3 interfaces of the VSM

```
HPC7K-VSM# show interface virtual
```

| Port | Adapter | Owner | Mod | Host |
|-------|---------------|------------------------|-----|----------------|
| Veth1 | vswif0 | VMware Service Console | 3 | 172.25.182.121 |
| Veth2 | vmk1 | VMware VMkernel | 3 | 172.25.182.121 |
| Veth3 | vmk0 | VMware VMkernel | 3 | 172.25.182.121 |
| Veth4 | Net Adapter 1 | HPC7K-VSM | 3 | 172.25.182.121 |
| Veth5 | Net Adapter 2 | HPC7K-VSM | 3 | 172.25.182.121 |
| Veth6 | Net Adapter 3 | HPC7K-VSM | 3 | 172.25.182.121 |

Adding second vmnic to Nexus 1000V

- Go to “Configuration” tab and select “Networking”
- Select “Distributed Virtual Switch” and click on “Manage Physical Adapters” near the top right hand side

The screenshot displays the VMware ESX configuration interface for a Nexus 1000V. The top navigation bar includes tabs for Getting Started, Summary, Virtual Machines, Performance, Configuration, Tasks & Events, Alarms, Permissions, Maps, Storage Views, Hardware Status, and Update Manager. The Configuration tab is active, and the Networking section is selected. The view is set to Distributed Virtual Switch. The Distributed Virtual Switch is identified as HPC7K-VSM. A red arrow points to the "Manage Physical Adapters..." link. The interface shows a list of physical adapters connected to the switch, including ip-storage, VMkernel Ports (1), mgmt, Unused_Or_Quarantine_Uplink, and system-uplink. The system-uplink is expanded to show two UpLink0 adapters, each with 1 NIC Adapter.

172.25.182.121 VMware ESX, 4.0.0, 208167

Getting Started Summary Virtual Machines Performance Configuration Tasks & Events Alarms Permissions Maps Storage Views Hardware Status Update Manager

Hardware

- Processors
- Memory
- Storage
- ▶ Networking
- Storage Adapters
- Network Adapters
- Advanced Settings

Software

- Licensed Features
- Time Configuration

View: Virtual Switch Distributed Virtual Switch

Networking

Distributed Virtual Switch: HPC7K-VSM [Manage Virtual Adapters...](#) [Manage Physical Adapters...](#)

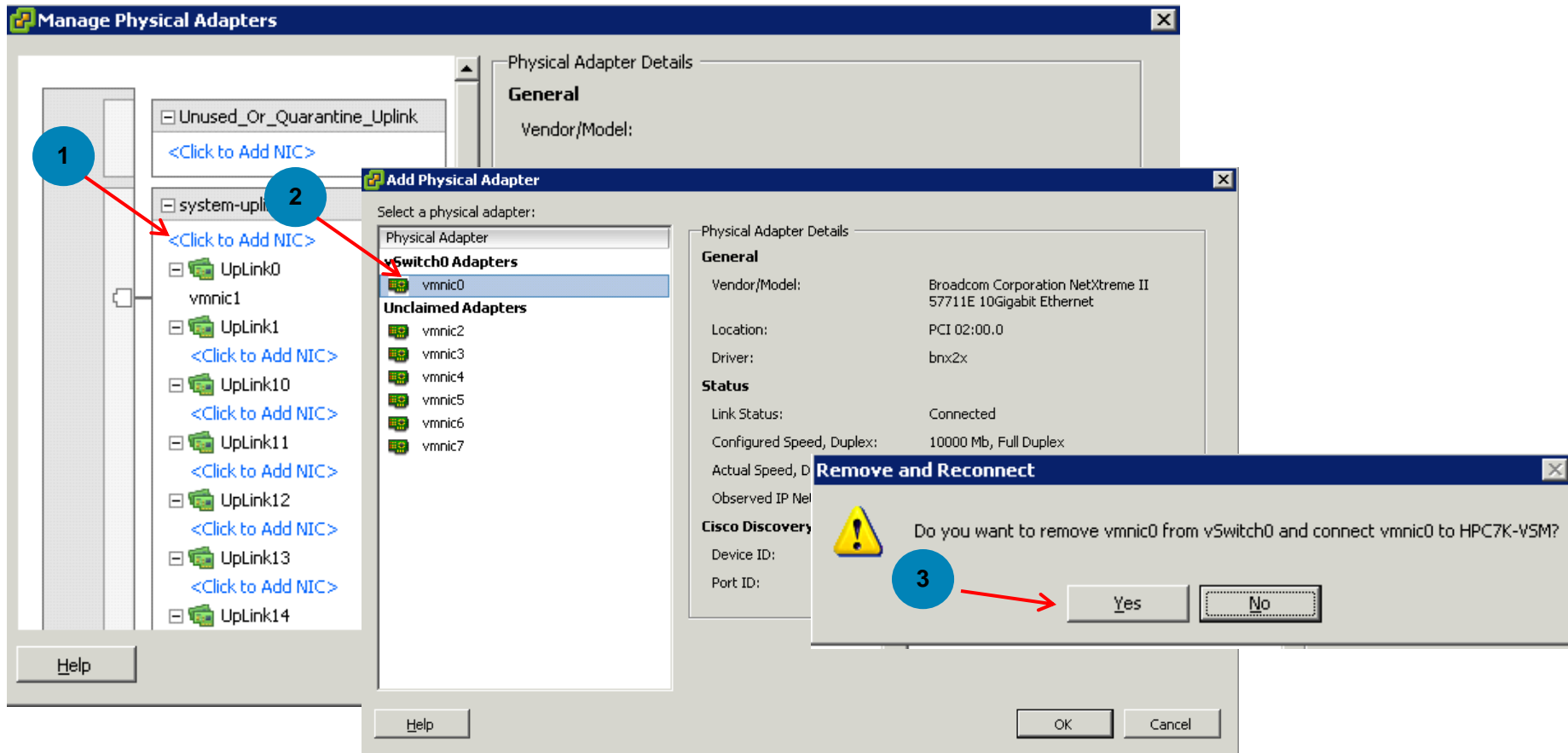
HPC7K-VSM ⓘ

- ip-storage ⓘ
- VMkernel Ports (1)
Virtual Machines (0)
- mgmt ⓘ
- Unused_Or_Quarantine_Uplink ⓘ
- system-uplink ⓘ
 - UpLink0 (1 NIC Adapter)
 - UpLink1 (1 NIC Adapter)

Adding second vmnic to Nexus 1000V Continued...

1. Click on "<Click to Add NIC>" under the "system-uplink" section
2. Another window will appear and select "vmnic0" and click "OK"
3. Another warning message will appear and click on "Yes"

When completed, vmnic0 will be shown as another interface used by Nexus 1000V



Verifying both vmnics are used for Nexus 1000V

- Run the following commands to verify both vmnics are used for Nexus 1000V

HPC7K-VSM# show interface brief

| Port | VRF | Status | IP Address | Speed | MTU |
|-------|-----|--------|----------------|-------|------|
| mgmt0 | -- | up | 172.25.182.141 | 1000 | 1500 |

| Ethernet Interface | VLAN | Type | Mode | Status | Reason | Ch # | Speed | Port |
|--------------------|------|------|-------|--------|--------|------|----------|------|
| Eth3/1 | 182 | eth | trunk | up | none | | 10G(D) 1 | |
| Eth3/2 | 182 | eth | trunk | up | none | | 10G(D) 1 | |

Physical interfaces automatically added in Port-Channel



| Port-channel Interface | VLAN | Type | Mode | Status | Reason | Speed | Protocol |
|------------------------|------|------|-------|--------|--------|----------|----------|
| Po1 | 182 | eth | trunk | up | none | a-10G(D) | none |

HPC7K-VSM# 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)

| Group | Port-Channel | Type | Protocol | Member Ports |
|-------|--------------|------|----------|---------------------|
| 1 | Po1(SU) | Eth | NONE | Eth3/1(P) Eth3/2(P) |

State of the Port-Channel is up



Repeat steps to add more VEMs

- For each additional ESX server, following the same procedure to add the VEM
- Steps on moving the VSM behind the VEM will depend if you have the secondary VSM on another ESX server that will be used as a VEM, if so, follow the same procedure
- It is always a best practice to utilize a single “vmnic” to allow to add the VEM first, then when things are functional, then add the second vmnic under Nexus 1000V control
- If existing VMs are using vSwitch port-groups, make sure that port-profiles are created for those to allow the migration of those VMs to be under control of the Nexus 1000V (i.e. VM Data Traffic – port-profiles)

Sample Environment 2



4 FlexNICs – Nexus 1000V

Sample Environment 2 - Topology

VLAN Mappings

- Management (Service Console) → 182
- vmkernel (shared IP storage) → 100
- vmotion → 101
- Control & Packet → 200
- VM Data → 301-305

HPVC Shared Uplink Set

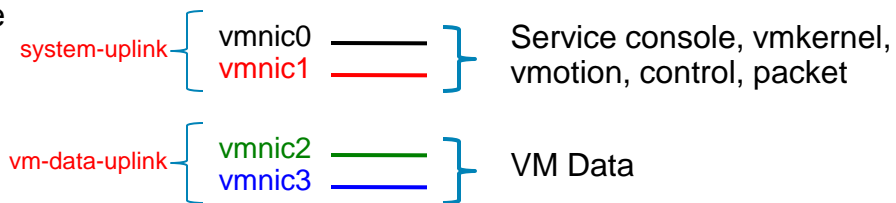
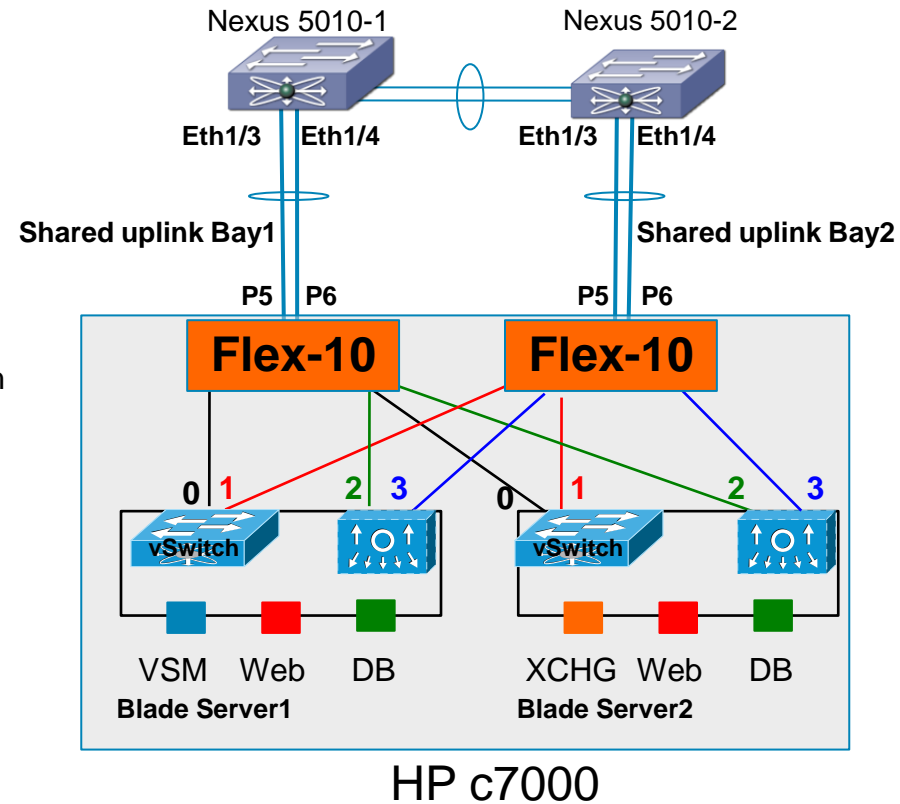
- Need to provide all vlans to traverse uplinks
- Recommended to name “uplink” set with particular naming convention to recognize the vlan traversing which uplink set.
- HPVC “vlan mapping” was used but refer to HP’s documentation on differences between “tunneling” and “vlan mapping”

HPVC Server Profile

- Create only 4 FlexNIC
- FlexNIC1 is “pinned” to Flex-10 on Bay1
- FlexNIC2 is “pinned” to Flex-10 on Bay2
- FlexNIC3 is “pinned” to Flex-10 on Bay1
- FlexNIC4 is “pinned” to Flex-10 on Bay2
- When assigning the network to the FlexNIC, select “multiple networks” and choose the “Shared Uplink Set” that corresponds to the correct FlexNIC. Then “check” the appropriate vlans

Nexus 1000V Port-Profile

- Configure system-uplink as vPC-HM with mac-pinning and allow only vlan traffic for vmnic0/vmnic1
- Configure vm-data-uplink as vPC-HM with mac-pinning and allow only vlan traffic for vmnic2/vmnic3



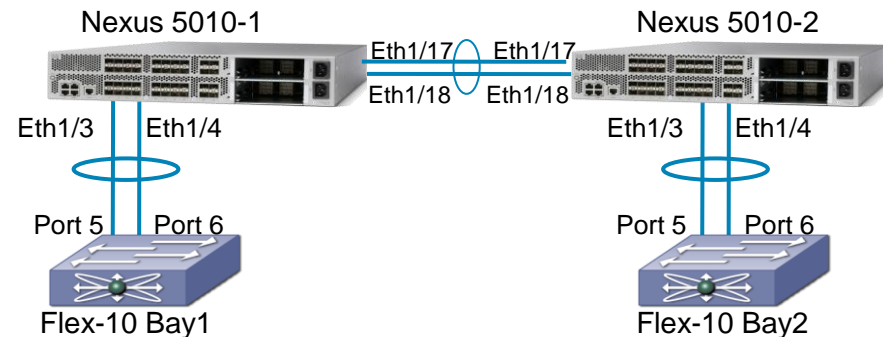
Nexus 5000 and HPVC Shared Uplink Configuration

Nexus 5000 Configuration

- Configuration is the same as in Example 1 for both 5010-1 and 5010-2
- Same vlans are utilized

HPVC Flex-10 Shared Uplink

- Configuration is the same as in Example 1 for both shared uplink sets
- Same vlans are utilized



Server Profiles – Blade Server1 (4 FlexNICs)

In Virtual Connect, creation of a “Server Profile” defines a few parameters is needed for this example

1. FlexNIC1 and FlexNIC2 are used for vSwitch and is configured to use only 3Gig of bandwidth
2. FlexNIC3 and FlexNIC4 are used for Nexus 1000V for the VM Data traffic and utilized the rest of the bandwidth, in this case 7Gig each

Define ▾ Configure ▾ Tools ▾ Help ▾

Edit Server Profile: ESX-Srv1-N5K-4FN

Profile

| Profile Name | Status | Serial Number (Logical) | Server UUID (Logical) |
|------------------|--------|-------------------------|--------------------------------------|
| ESX-Srv1-N5K-4FN | OK | VCX0000904 | 2892800f-48bc-4161-b99e-20c50babdbdc |

Ethernet Network Connections (Physical ports)

| Port | Network Name | Status | Port Speed Setting | Allocated Bandwidth | PXE | MAC | Mapping | Delete |
|------|-------------------|--------|--------------------|---------------------|----------|-------------------|------------------|--------|
| 1 | Multiple Networks | OK | Custom | 3 Gb | Use BIOS | 00-17-A4-77-38-08 | LOM:1-a => Bay 1 | ✕ |
| 2 | Multiple Networks | OK | Custom | 3 Gb | Use BIOS | 00-17-A4-77-38-0A | LOM:2-a => Bay 2 | ✕ |
| 3 | Multiple Networks | OK | Preferred | 7 Gb | Use BIOS | 00-17-A4-77-38-0C | LOM:1-b => Bay 1 | ✕ |
| 4 | Multiple Networks | OK | Preferred | 7 Gb | Use BIOS | 00-17-A4-77-38-0E | LOM:2-b => Bay 2 | ✕ |

Add Network Connection

Assign Profile to Server Bay

| Power | Server Bay Assignment | SN | Model | Status | UID |
|-------|---|------------|--------------------|--------|-----|
| On | USE6361NY1: Bay 1 (ProLiant BL490c G6) Select Location ▾ | USE920M6C9 | ProLiant BL490c G6 | OK | ● |

Blade Server1 – FlexNIC “Network” settings

The FlexNICs will need to be configured for “Multiple Networks”, use the following to enable the vlans for each of the FlexNIC

- Click “Force same VLAN mappings as Shared Uplink Sets” to use these networks
- Check all the vlans to allow them to be enabled for the FlexNIC

FlexNIC – Port 1

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input type="checkbox"/> | data-300-n5k-b1 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | ip-storage-n5k-b1 | 100 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b1 | 182 | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b1 | 200 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-302-n5k-b1 | 302 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-303-n5k-b1 | 303 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-304-n5k-b1 | 304 | <input type="checkbox"/> |

FlexNIC – Port 2

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input checked="" type="checkbox"/> | ip-storage-n5k-b2 | 100 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b2 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b2 | 182 | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | data-303-n5k-b2 | 303 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-300-n5k-b2 | 300 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-301-n5k-b2 | 301 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-302-n5k-b2 | 302 | <input type="checkbox"/> |

VLAN 100 – IP-Storage
 VLAN 101 - Vmotion
 VLAN 182 – Mgmt
 VLAN 200 – Ctrl-Pkt

FlexNIC – Port 3

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|--------------------------|
| <input checked="" type="checkbox"/> | data-301-n5k-b1 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b1 | 300 | <input type="checkbox"/> |
| <input type="checkbox"/> | ip-storage-n5k-b1 | 100 | <input type="checkbox"/> |
| <input type="checkbox"/> | mgmt-n5k-b1 | 182 | <input type="checkbox"/> |
| <input type="checkbox"/> | vsm-ctrl-pkt-n5k-b1 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b1 | 302 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b1 | 303 | <input type="checkbox"/> |

FlexNIC – Port 4

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|--------------------------|
| <input type="checkbox"/> | ip-storage-n5k-b2 | 100 | <input type="checkbox"/> |
| <input type="checkbox"/> | vsm-ctrl-pkt-n5k-b2 | 200 | <input type="checkbox"/> |
| <input type="checkbox"/> | mgmt-n5k-b2 | 182 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b2 | 303 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b2 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-301-n5k-b2 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b2 | 302 | <input type="checkbox"/> |

VLAN 300 – Data300
 VLAN 301 – Data301
 VLAN 302 – Data302
 VLAN 303 – Data303
 VLAN 304 – Data304
 VLAN 305 – Data305

Server Profiles – Blade Server2 (4 FlexNICs)

In Virtual Connect, creation of a “Server Profile” defines a few parameters is needed for this example

1. FlexNIC1 and FlexNIC2 are used for certain traffic (SC, vmkernel, vmotion, control/packet) and is configured to use only 3Gig of bandwidth
2. FlexNIC3 and FlexNIC4 are used for VM Data traffic and utilized the rest of the bandwidth, in this case 7Gig each

Define ▾ Configure ▾ Tools ▾ Help ▾

Edit Server Profile: ESX-Srv2-N5K-4FN

Profile

| Profile Name | Status | Serial Number (Logical) | Server UUID (Logical) |
|------------------|--------|-------------------------|--------------------------------------|
| ESX-Srv2-N5K-4FN | OK | VCX0000905 | 93522620-37d9-49ea-bf9e-7975fd0efcf0 |

Ethernet Network Connections (Physical ports)

| Port | Network Name | Status | Port Speed Setting | Allocated Bandwidth | PXE | MAC | Mapping | Delete |
|------|-------------------|--------|--------------------|---------------------|----------|-------------------|------------------|--------|
| 1 | Multiple Networks | OK | Custom | 3 Gb | Use BIOS | 00-17-A4-77-38-10 | LOM:1-a => Bay 1 | ✕ |
| 2 | Multiple Networks | OK | Custom | 3 Gb | Use BIOS | 00-17-A4-77-38-12 | LOM:2-a => Bay 2 | ✕ |
| 3 | Multiple Networks | OK | Preferred | 7 Gb | Use BIOS | 00-17-A4-77-38-14 | LOM:1-b => Bay 1 | ✕ |
| 4 | Multiple Networks | OK | Preferred | 7 Gb | Use BIOS | 00-17-A4-77-38-16 | LOM:2-b => Bay 2 | ✕ |

[Add Network Connection](#)

Assign Profile to Server Bay

| Power | Server Bay Assignment | SN | Model | Status | UID |
|-------|--|------------|--------------------|--------|-----|
| On | USE6361NY1: Bay 2 (ProLiant BL490c G6) Select Location | USE920M6C8 | ProLiant BL490c G6 | OK | |

Blade Server2 – FlexNIC “Network” settings

The FlexNICs will need to be configured for “Multiple Networks”, use the following to enable the vlans for each of the FlexNIC

- Click “Force same VLAN mappings as Shared Uplink Sets” to use these networks
- Check all the vlans to allow them to be enabled for the FlexNIC

FlexNIC – Port 1

Server VLAN Tag to vNet Mappings

Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay1

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input type="checkbox"/> | data-300-n5k-b1 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | ip-storage-n5k-b1 | 100 | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b1 | 182 | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b1 | 200 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-302-n5k-b1 | 302 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-303-n5k-b1 | 303 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-304-n5k-b1 | 304 | <input type="checkbox"/> |

OK Cancel

VLAN 100 – IP-Storage
 VLAN 101 - Vmotion
 VLAN 182 – Mgmt
 VLAN 200 – Ctrl-Pkt

FlexNIC – Port 2

Server VLAN Tag to vNet Mappings

Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay2

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|-------------------------------------|
| <input checked="" type="checkbox"/> | ip-storage-n5k-b2 | 100 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | vsm-ctrl-pkt-n5k-b2 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | mgmt-n5k-b2 | 182 | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | data-303-n5k-b2 | 303 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-300-n5k-b2 | 300 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-301-n5k-b2 | 301 | <input type="checkbox"/> |
| <input type="checkbox"/> | data-302-n5k-b2 | 302 | <input type="checkbox"/> |

OK Cancel

FlexNIC – Port 3

Server VLAN Tag to vNet Mappings

Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay1

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|--------------------------|
| <input checked="" type="checkbox"/> | data-301-n5k-b1 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b1 | 300 | <input type="checkbox"/> |
| <input type="checkbox"/> | ip-storage-n5k-b1 | 100 | <input type="checkbox"/> |
| <input type="checkbox"/> | mgmt-n5k-b1 | 182 | <input type="checkbox"/> |
| <input type="checkbox"/> | vsm-ctrl-pkt-n5k-b1 | 200 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b1 | 302 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b1 | 303 | <input type="checkbox"/> |

OK Cancel

VLAN 300 – Data300
 VLAN 301 – Data301
 VLAN 302 – Data302
 VLAN 303 – Data303
 VLAN 304 – Data304
 VLAN 305 – Data305

FlexNIC – Port 4

Server VLAN Tag to vNet Mappings

Force same VLAN mappings as Shared Uplink Sets ?

Shared Uplink Set: Uplink-N5K-Bay2

| Select | vNet Name | Server VLAN Id | Untagged |
|-------------------------------------|---------------------|----------------|--------------------------|
| <input type="checkbox"/> | ip-storage-n5k-b2 | 100 | <input type="checkbox"/> |
| <input type="checkbox"/> | vsm-ctrl-pkt-n5k-b2 | 200 | <input type="checkbox"/> |
| <input type="checkbox"/> | mgmt-n5k-b2 | 182 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-303-n5k-b2 | 303 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-300-n5k-b2 | 300 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-301-n5k-b2 | 301 | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | data-302-n5k-b2 | 302 | <input type="checkbox"/> |

OK Cancel

Nexus 1000V Configuration



Nexus 1000V Configurations

- Creating Port-Profiles on Nexus 1000V
 - Configuring system-uplink and vm-data-uplink
 - Configuring Service-Console, Vmotion, ip-storage (vmkernel), vsm-control-packet and other VM port-profiles
- Steps to Add VEMs and place VSM behind VEM
 - Add host to Nexus 1000V (use only 1 interface to import host as VEM)
 - Migrate service-console, vmkernel and vmotion port-groups to Nexus 1000V
 - Modify VSM (VM) to use port-profiles from Nexus 1000V (not vSwitch)
 - Add second physical vmnic to the Nexus 1000V control
 - Continue adding other hosts as VEMs

Note: These steps will not include how to install the VSM. Please consult the “Nexus 1000V installation guide” for details

Port-Profile: System-Uplink & vm-data-uplink

Configuration of “System-Uplink”

- system vlans: recommended to add control, packet, service-console and vmkernel vlans for “system-uplink” port-profile
- switchport mode is set to “trunk” to allow required vlans to traverse each of the uplink
- list of allowed vlans: default is all but can be pruned to limit to allowed list of vlans
- Since HPVC Flex-10 does not support “vPC”, setting the “channel-group auto mode on mac-pinning” is recommended for better load-balancing

system-Uplink Configuration from VSM

```
version 4.0(4)SV1(3)
port-profile type ethernet system-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk native vlan 182
  switchport trunk allowed vlan 100-101,182,200
  channel-group auto mode on mac-pinning
  no shutdown
  system vlan 100,182,200
  state enabled
```

vm-data-uplink Configuration from VSM

```
HPC7K-VSM# show running-config port-profile
vm-data-uplink
version 4.0(4)SV1(3)
port-profile type ethernet vm-data-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk allowed vlan 300-305
  channel-group auto mode on mac-pinning
  no shutdown
  state enabled
```

Port-Profile: Management & “Control-Packet”

- Following are port-profiles needed to be created to allow the VSM to reside behind the VEM
- The “control and packet” port-profile is recommended to have as the “system-vlan” set to vlan 200, which is the vlan that control and packet vlan are set to in this example

Configuration of “mgmt”

- switchport mode is set to “access” for particular vlan (this case vlan 182)

Management Configuration from VSM

```
HPC7K-VSM# show running-config port-profile mgmt
version 4.0(4)SV1(3)
port-profile type vethernet mgmt
  vmware port-group
  switchport mode access
  switchport access vlan 182
  no shutdown
  state enabled
```

Configuration of “vsm-ctrl-pkt”

- switchport mode is set to “access” for particular vlan (this case vlan 200)

Control-Packet Configuration from VSM

```
HPC7K-VSM# show running-config port-profile vsm-ctrl-pkt
version 4.0(4)SV1(3)
port-profile type vethernet vsm-ctrl-pkt
  vmware port-group
  switchport mode access
  switchport access vlan 200
  no shutdown
  system vlan 200
  state enabled
```

Port-Profile: IP-Storage, Service-Console, vMotion

- The following are port-profiles that are needed when migrating vSwitch portgroups to Nexus 1000V control
- Other port-profiles for VM Data can be created later and can be migrated after the ESX server becomes a VEM

Configuration of “IP-Storage”

- switchport mode is set to “access” for particular vlan (this case vlan 100)

IP-Storage Port-Profile Configuration from VSM

```
HPC7K-VSM# show running-config port-profile ip-storage
version 4.0(4)SV1(3)
port-profile type vethernet ip-storage
  vmware port-group
  switchport mode access
  switchport access vlan 100
  no shutdown
  state enabled
```

Configuration of “Service-Console”

- switchport mode is set to “access” for particular vlan (this case vlan 182)

Service-Console Configuration from VSM

```
HPC7K-VSM# show running-config port-profile service-console
version 4.0(4)SV1(3)
port-profile type vethernet service-console
  vmware port-group
  switchport mode access
  switchport access vlan 182
  no shutdown
  state enabled
```

Configuration of “vMotion”

- switchport mode is set to “access” for particular vlan (this case vlan 101)

vMotion Configuration from VSM

```
HPC7K-VSM# show running-config port-profile vmotion
version 4.0(4)SV1(3)
port-profile type vethernet vmotion
  vmware port-group
  switchport mode access
  switchport access vlan 101
  no shutdown
  state enabled
```

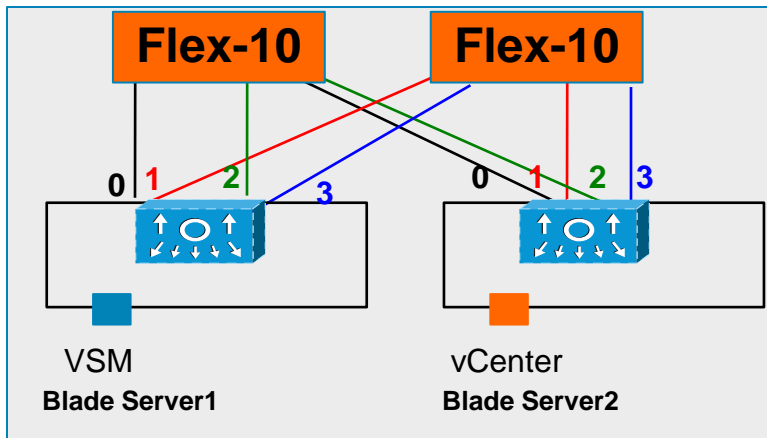
Adding VEMs



Before Adding Blade Server1 as VEM

- VSM (VM) mgmt interface is controlled by vSwitch & “control/packet” will eventually be managed by Nexus 1000V
- vmnic0/vmnic1 are teamed, vmnic2/vmnic3 are teamed

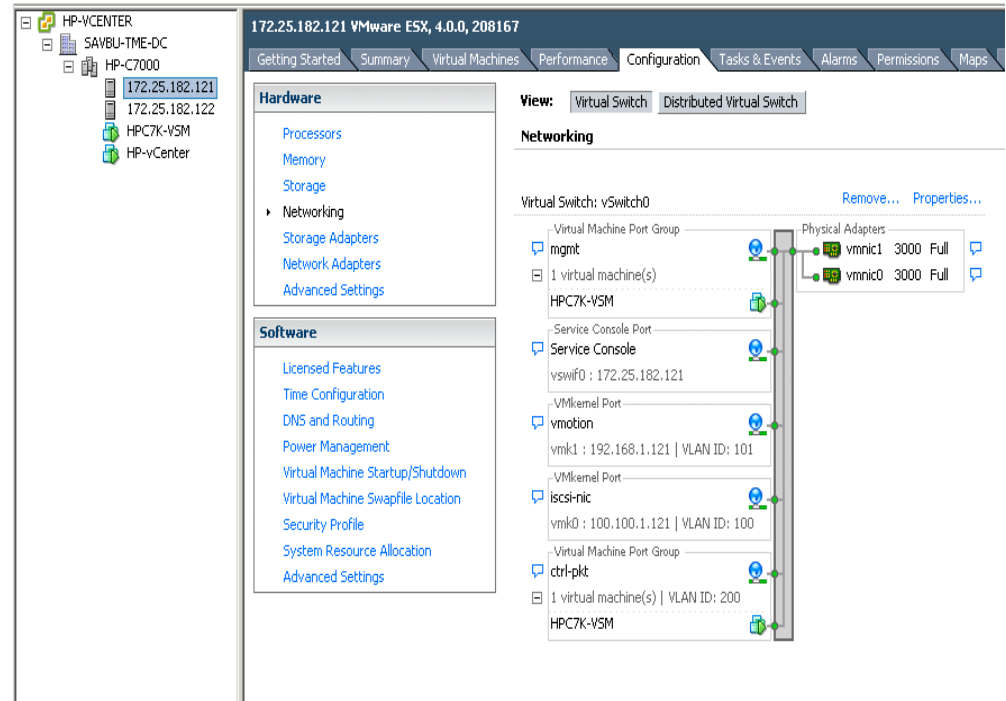
Note: The number of FlexNICs used (4) in this example shows where environments wants to utilize multiple FlexNICs to segregate their traffic within the controls of HP Virtual Connect



HP c7000

vmnic0 ——— } Service console, vmkernel,
vmnic1 ——— } vmotion, control, packet

vmnic2 ——— } VM Data
vmnic3 ——— }



Adding Blade Server1 as VEM

- Under “Networking”, make sure to select the Nexus 1000V VSM and go to the “Host” tab
- Right-click and select “Add Host to Distributed Switch...”

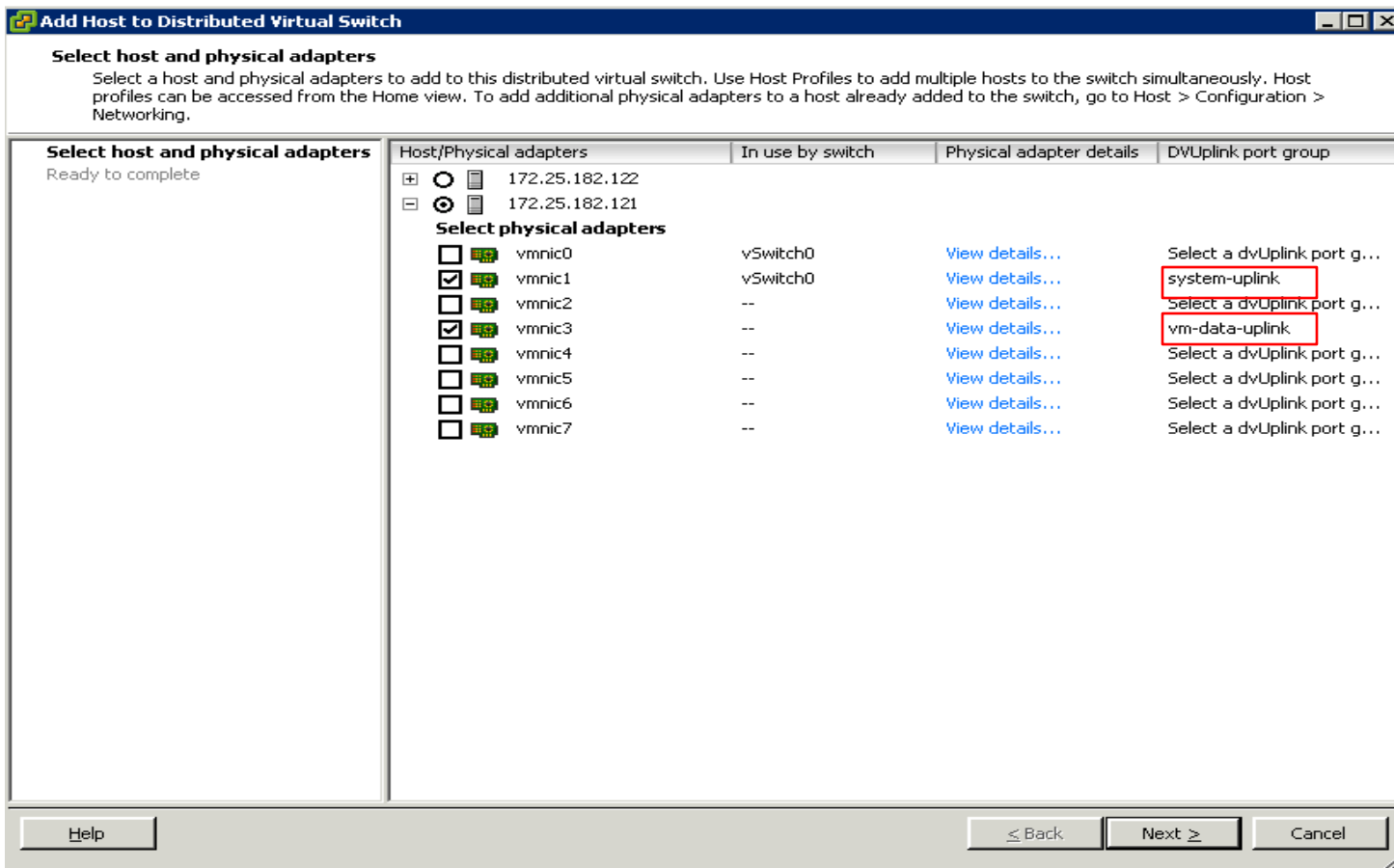
The screenshot displays the HP-VCENTER interface. On the left, a tree view shows the hierarchy: HP-VCENTER > SAVBU-TME-DC > HPC7K-VSM > HPC7K-VSM. Under the selected HPC7K-VSM, several network components are listed, including system-uplink, Unused_Or_Queue, ip-storage, mgmt, service-console, Unused_Or_Queue, vmotion, vsm-ctrl-pkt, and two additional mgmt and vsm-ctrl-pkt items.

The main panel is titled "HPC7K-VSM" and features a navigation bar with tabs: Getting Started, Summary, Networks, Ports, Configuration, Virtual Machines, and Hosts. The "Hosts" tab is active, showing a table with the following columns: Name, State, DVS Status, Status, and % C.

A context menu is open over the table, listing the following options: "Add Host to Distributed Virtual Switch...", "Refresh", "View Column" (with a right-pointing arrow), and "Export List...".

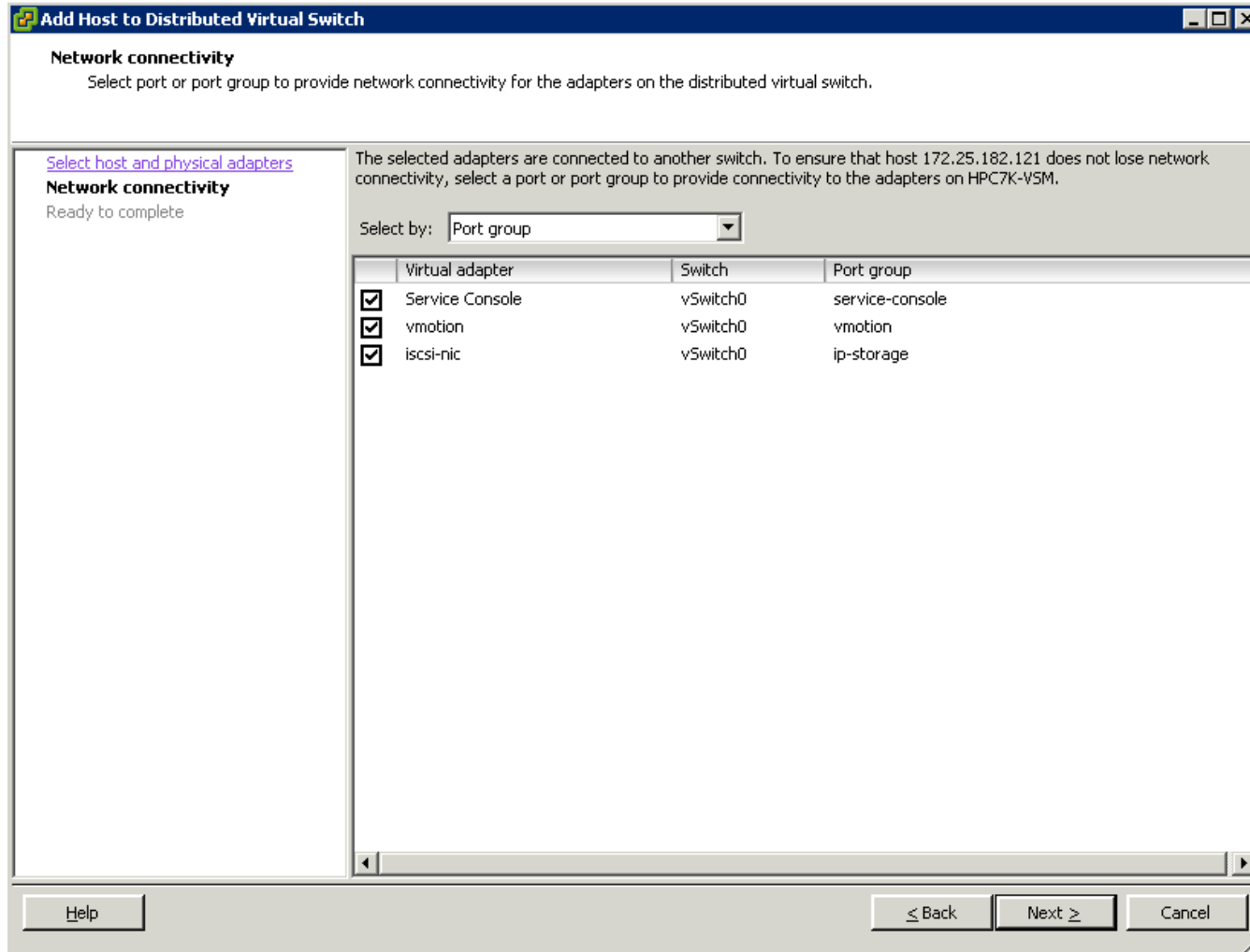
Adding Blade Server1 as VEM Continued...

- Choose the radio-button for blade server1
- There are 4 active vmnics that are currently used by vSwitch, select either vmnic0 or vmnic1 to be able to allow blade server1 to become a VEM (where control/packet traffic flows)
- Select the dvUplink port group, which in this case is “system-uplink” (click Next)
- Select either vmnic2 or vmnic3 so to allow “VM Data” traffic and select “vm-data-uplink”
- Additional physical nics will be added later for redundancy



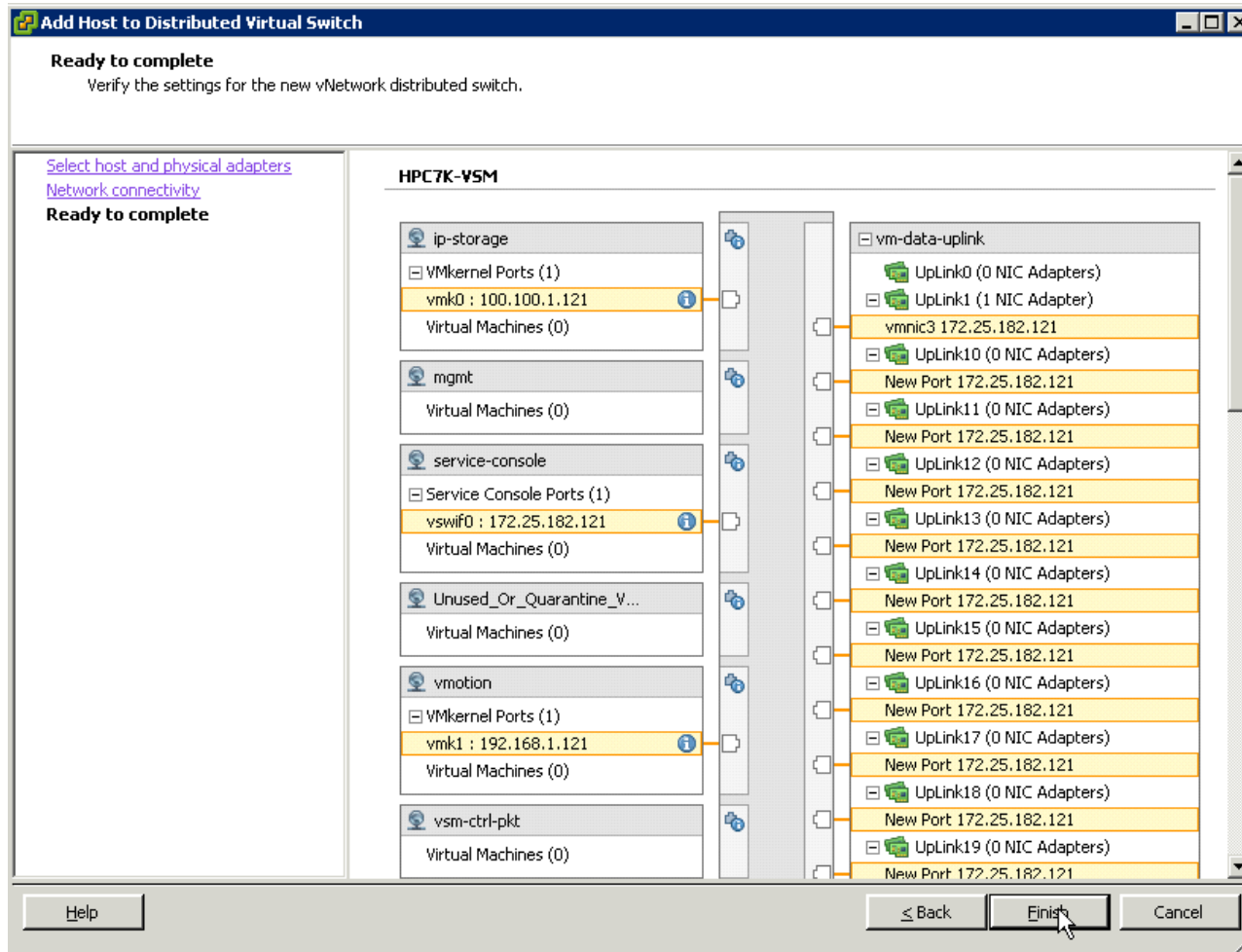
Adding Blade Server1 as VEM Continued...

- Migration of “vmkernel” port-groups can be done here, where port-profiles have already been created
- Choose appropriate “Port Group” for each virtual adapter and click on “Next”
- Please note that when migrating “Service Console”, make sure that the port-profile is configured correctly so that communication to the “Service Console” is not lost during this migration phase



Adding Blade Server1 as VEM Continued...

- Click “Finish”
- Process of adding Blade Server 1 as a VEM begins
- Note that if VUM is installed, the VEM binaries are automatically installed to the ESX server. Otherwise a manual process to install the VEM on this ESX server is required. Please refer to the Nexus 1000V Configuration Guide for further detailed instructions



Verifying Blade Server 1 as VEM

- Verify that the Blade Server1 is a VEM on the VSM

```
HPC7K-VSM# show module
```

| Mod | Ports | Module-Type | Model | Status |
|-----|-------|---------------------------|------------|----------|
| 1 | 0 | Virtual Supervisor Module | Nexus1000V | active * |
| 3 | 248 | Virtual Ethernet Module | NA | ok |

| Mod | Sw | Hw |
|-----|--------------|-----|
| 1 | 4.0(4)SV1(3) | 0.0 |
| 3 | 4.0(4)SV1(3) | 1.9 |

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

| Mod | Server-IP | Server-UUID | Server-Name |
|-----|----------------|--------------------------------------|-----------------|
| 1 | 172.25.182.141 | NA | NA |
| 3 | 172.25.182.121 | 0f809228-bc48-6141-b99e-20c50babdbdc | bl490cg6-esx-01 |

•this terminal session

```
HPC7K-VSM# show interface virtual
```

| Port | Adapter | Owner | Mod | Host |
|-------|---------|------------------------|-----|----------------|
| Veth1 | vswif0 | VMware Service Console | 3 | 172.25.182.121 |
| Veth2 | vmk1 | VMware VMkernel | 3 | 172.25.182.121 |
| Veth3 | vmk0 | VMware VMkernel | 3 | 172.25.182.121 |

Verifying Blade Server 1 as VEM Continued

- Verify Physical Interfaces for VEM

```
HPC7K-VSM# show module
```

| Mod | Ports | Module-Type | Model | Status |
|-----|-------|---------------------------|------------|----------|
| 1 | 0 | Virtual Supervisor Module | Nexus1000V | active * |
| 3 | 248 | Virtual Ethernet Module | NA | ok |

| Mod | Sw | Hw |
|-----|--------------|-----|
| 1 | 4.0(4)SV1(3) | 0.0 |
| 3 | 4.0(4)SV1(3) | 1.9 |

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

| Mod | Server-IP | Server-UUID | Server-Name |
|-----|----------------|--------------------------------------|-----------------|
| 1 | 172.25.182.141 | NA | NA |
| 3 | 172.25.182.121 | 0f809228-bc48-6141-b99e-20c50babdbdc | bl490cg6-esx-01 |

- this terminal session

```
HPC7K-VSM# show interface virtual
```

| Port | Adapter | Owner | Mod | Host |
|-------|---------|------------------------|-----|----------------|
| Veth1 | vswif0 | VMware Service Console | 3 | 172.25.182.121 |
| Veth2 | vmk1 | VMware VMkernel | 3 | 172.25.182.121 |
| Veth3 | vmk0 | VMware VMkernel | 3 | 172.25.182.121 |

Verifying Blade Server 1 as VEM

- Verify that the Blade Server1 is a VEM on the VSM

HPC7K-VSM# show interface brief

| Port | VRF | Status | IP Address | Speed | MTU |
|-------|-----|--------|----------------|-------|------|
| mgmt0 | -- | up | 172.25.182.141 | 1000 | 1500 |

| Ethernet Interface | VLAN | Type | Mode | Status | Reason | Ch # | Speed | Port |
|--------------------|------|------|-------|--------|--------|---------|---------|------|
| Eth3/2 | 182 | eth | trunk | up | none | 10(D) 1 | 10(D) 1 | |
| Eth3/4 | 1 | eth | trunk | up | none | 10(D) 2 | 10(D) 2 | |

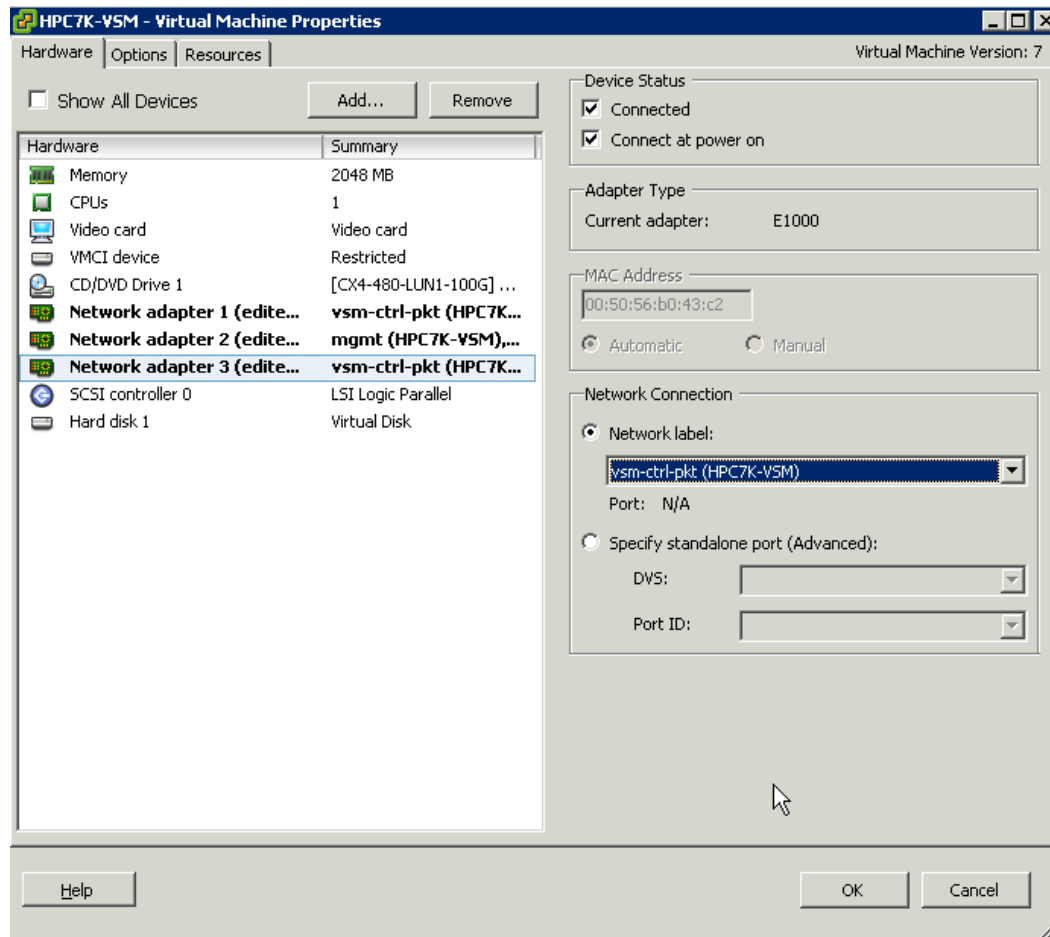
Note: Each of the uplink port-profiles has 1 physical interface and is automatically added to a Port-Channel

| Port-channel Interface | VLAN | Type | Mode | Status | Reason | Speed | Protocol |
|------------------------|------|------|-------|--------|--------|---------|----------|
| Po1 | 182 | eth | trunk | up | none | a-10(D) | none |
| Po2 | 1 | eth | trunk | up | none | a-10(D) | none |

| Port | VRF | Status | IP Address | Speed | MTU |
|-------|-----|--------|------------|-------|------|
| ctrl0 | -- | up | -- | 1000 | 1500 |

Moving VSM behind VEM

- Go to “Edit Settings” for the VSM VM
- Select the adapters (1 & 3) and modify the port-group to utilize the port-profile (vsm-ctrl-pkt under Nexus 1000V) for the appropriate adapter. This port-profile was shown earlier
- Select adapter 2 and choose the port-group for the “mgmt” from the VSM
- Click on “OK” and when it completes refreshing the network, there will be a minor disruption in the access of the VSM during this process but will recover. Data traffic will not be affected for any VMs that has already been utilizing the Nexus 1000V



Verifying VSM is behind VEM

- Take note of the virtual interfaces created for the 3 interfaces of the VSM

```
HPC7K-VSM# show interface virtual
```

```
-----  
Port      Adapter  Owner                               Mod Host  
-----  
Veth1     vswif0   VMware Service Console 3 172.25.182.121  
Veth2     vmk1     VMware VMkernel         3 172.25.182.121  
Veth3     vmk0     VMware VMkernel         3 172.25.182.121  
Veth4     Net Adapter 1 HPC7K-VSM                3 172.25.182.121  
Veth5     Net Adapter 2 HPC7K-VSM                3 172.25.182.121  
Veth6     Net Adapter 3 HPC7K-VSM                3 172.25.182.121
```

Adding second vmnic to Nexus 1000V

- Go to “Configuration” tab and select “Networking”
- Select “Distributed Virtual Switch” and click on “Manage Physical Adapters” near the top right hand side

The screenshot displays the VMware ESX configuration interface for a Nexus 1000V. The top navigation bar includes tabs for Getting Started, Summary, Virtual Machines, Performance, Configuration, Tasks & Events, Alarms, Permissions, Maps, Storage Views, Hardware Status, and Update Manager. The Configuration tab is active, and the Networking section is selected. The view is set to 'Distributed Virtual Switch'. The Distributed Virtual Switch is identified as 'HPC7K-VSM'. Below this, there are two columns of network adapters. The left column shows 'ip-storage' and 'mgmt'. The right column shows 'Unused_Or_Quarantine_Uplink' and 'system-uplink'. A red arrow points to the 'Manage Physical Adapters...' link in the top right corner of the Networking section.

172.25.182.121 VMware ESX, 4.0.0, 208167

Getting Started Summary Virtual Machines Performance Configuration Tasks & Events Alarms Permissions Maps Storage Views Hardware Status Update Manager

Hardware

- Processors
- Memory
- Storage
- ▶ Networking
- Storage Adapters
- Network Adapters
- Advanced Settings

Software

- Licensed Features
- Time Configuration

View: Virtual Switch Distributed Virtual Switch

Networking

Distributed Virtual Switch: HPC7K-VSM [Manage Virtual Adapters...](#) [Manage Physical Adapters...](#)

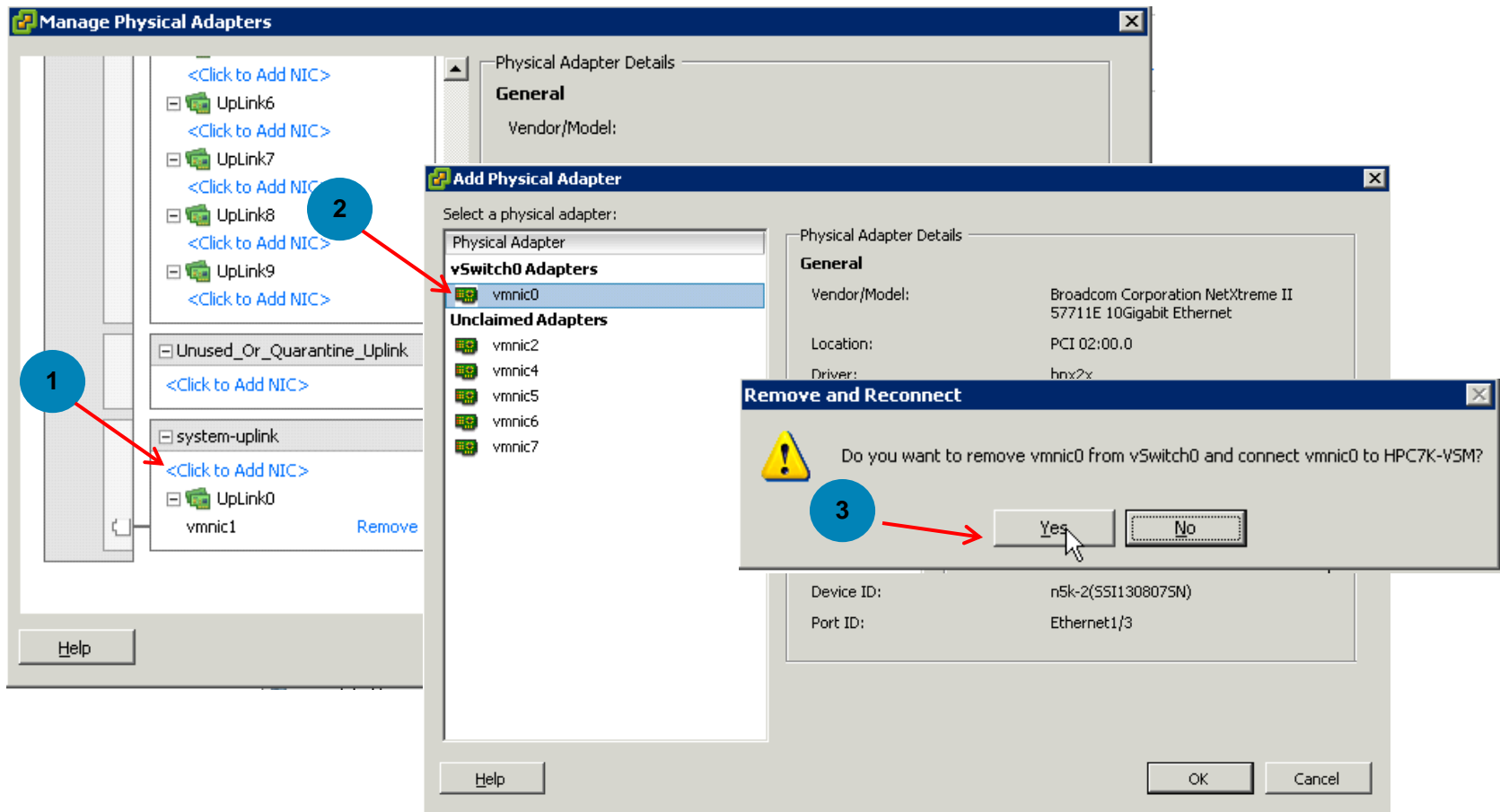
HPC7K-VSM

| Adapter Name | VMkernel Ports | Virtual Machines |
|-----------------------------|----------------|------------------|
| ip-storage | 1 | 0 |
| mgmt | | |
| Unused_Or_Quarantine_Uplink | | |
| system-uplink | | |
| Uplink0 (1 NIC Adapter) | | |
| Uplink1 (1 NIC Adapter) | | |

Adding second vmnic to system-uplink port-profile

1. Click on “<Click to Add NIC>” under the “system-uplink” section
2. Another window will appear and select “vmnic0” and click “OK”
3. Another warning message will appear and click on “Yes”

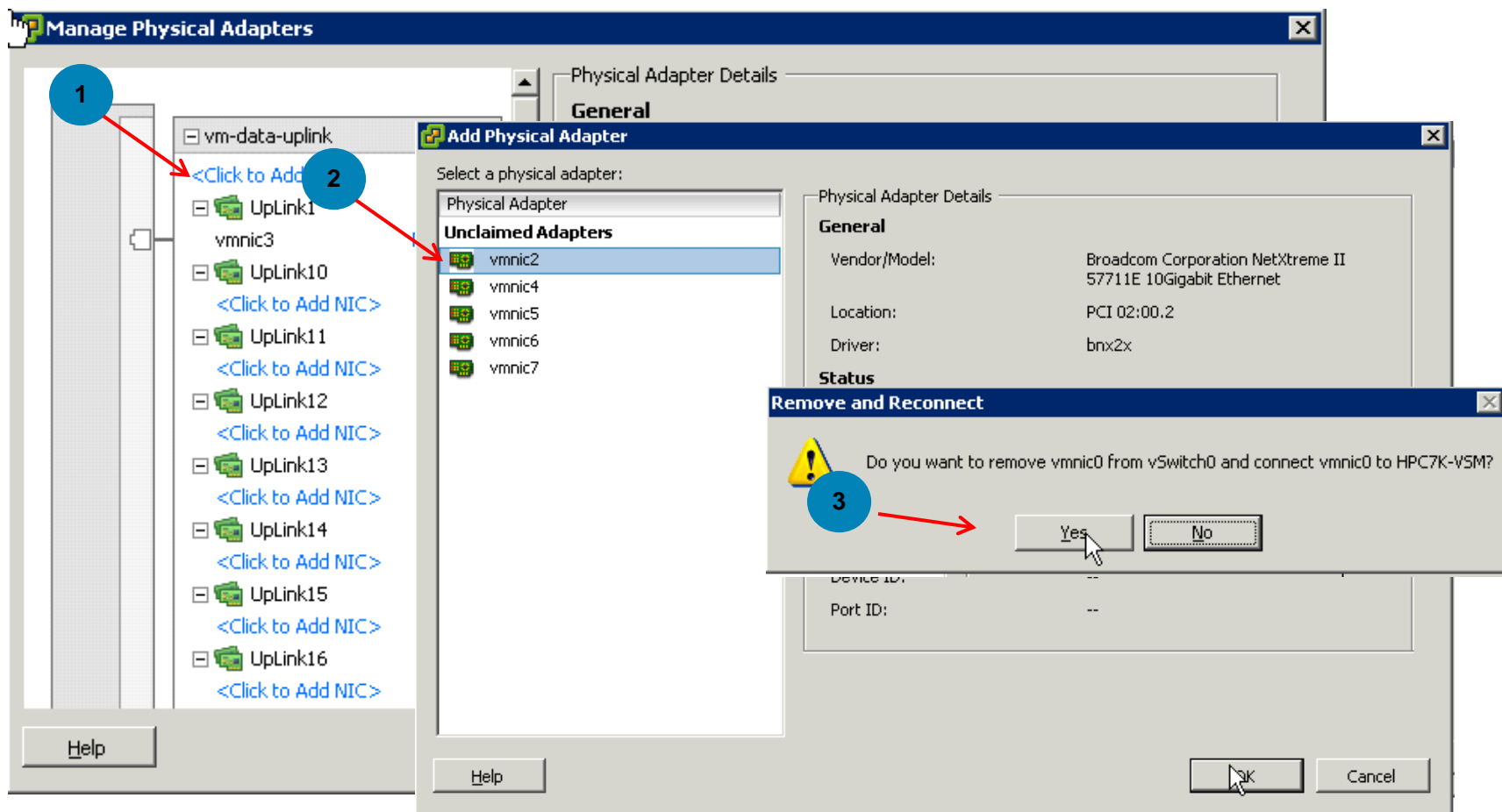
When completed, vmnic0 will be shown as another interface used for Nexus 1000V



Adding second vmnic to vm-data-uplink port-profile

1. Click on “<Click to Add NIC>” under the “vm-data-uplink” section
2. Another window will appear and select “vmnic2” and click “OK”
3. Another warning message will appear and click on “Yes”

When completed, vmnic2 will be shown as another interface used for Nexus 1000V



Verifying both vmnics are used for Nexus 1000V

- Run the following commands to verify both vmnics are used for Nexus 1000V for both uplink port-profiles

```
HPC7K-VSM# show interface brief
```

| Port | VRF | Status | IP Address | Speed | MTU |
|-------|-----|--------|----------------|-------|------|
| mgmt0 | -- | up | 172.25.182.141 | 1000 | 1500 |

| Ethernet Interface | VLAN | Type | Mode | Status | Reason | Ch # | Speed | Port |
|--------------------|------|-----------|------|--------|--------|------|---------|------|
| Eth4/1 | 182 | eth trunk | up | none | | | 10(D) 1 | |
| Eth4/2 | 182 | eth trunk | up | none | | | 10(D) 1 | |
| Eth4/3 | 1 | eth trunk | up | none | | | 10(D) 2 | |
| Eth4/4 | 1 | eth trunk | up | none | | | 10(D) 2 | |

Physical interfaces automatically added in Port-Channel




| Port-channel Interface | VLAN | Type | Mode | Status | Reason | Speed | Protocol |
|------------------------|------|-----------|------|--------|--------|---------|----------|
| Po1 | 182 | eth trunk | up | none | | a-10(D) | none |
| Po2 | 1 | eth trunk | up | none | | a-10(D) | none |

```
.... <skip>
```

```
HPC7K-VSM# show running-config interface port-channel 1  
version 4.0(4)SV1(3)
```

```
interface port-channel1  
inherit port-profile system-uplink
```



```
HPC7K-VSM# show running-config interface port-channel 2  
version 4.0(4)SV1(3)
```

```
interface port-channel2  
inherit port-profile vm-data-uplink
```



Shows which uplink port-profile the port-channel belongs to

Repeat steps to add more VEMs

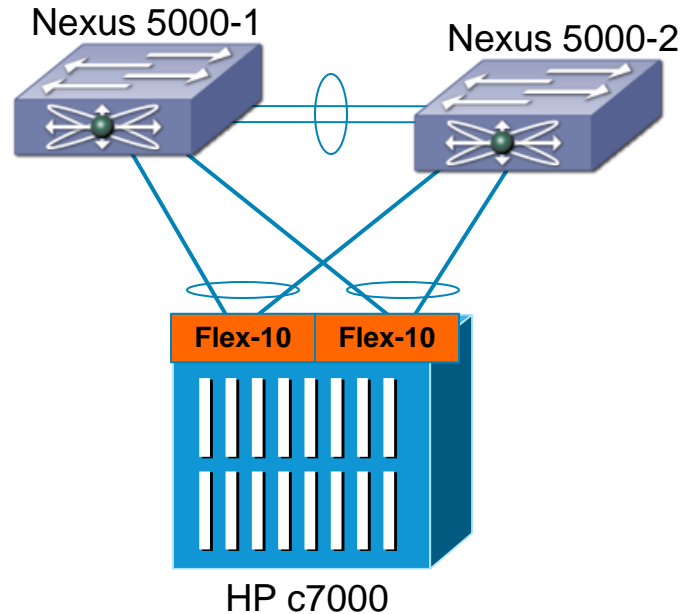
- For each additional ESX server, following the same procedure to add the VEM
- Steps on moving the VSM behind the VEM will depend if you have the secondary VSM on another ESX server that will be used as a VEM, if so, follow the same procedure
- It is always a best practice to utilize a single “vmnic” to allow to add the VEM first, then when things are functional, then add the second vmnic under Nexus 1000V control
- If existing VMs are using vSwitch port-groups, make sure that port-profiles are created for those to allow the migration of those VMs to be under control of the Nexus 1000V (i.e. VM Data Traffic – port-profiles)

Advance Configurations



vPC on Nexus 5000 with Flex-10

vPC on Nexus 5000 with Flex-10



- vPC provides additional redundancy upstream in case a single upstream switch fails
- Following details provide example on how to configure Nexus 5000 with Flex-10 for vPC
- For detail vPC configuration, please consult the Nexus 5000 configuration guide

Nexus 5010-1 Configuration

Nexus 5010-1 (Flex-10 Bay1)

```
n5k-1# show running-config interface ethernet 1/3-4
```

```
version 4.2(1)N1(1)
```

```
interface Ethernet1/3
  switchport mode trunk
  switchport trunk native vlan 182
  channel-group 13 mode active
```

```
interface Ethernet1/4
  switchport mode trunk
  switchport trunk native vlan 182
  channel-group 14 mode active
```

```
n5k-1# show running-config interface port-channel 13-14
```

```
version 4.2(1)N1(1)
```

```
interface port-channel13
  switchport mode trunk
  vpc 13
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
```

```
interface port-channel14
  switchport mode trunk
  vpc 14
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
```

N5K-1 & N5K-2 Port-Channel

```
n5k-1# show running-config interface ethernet 1/17-18
```

```
version 4.2(1)N1(1)
```

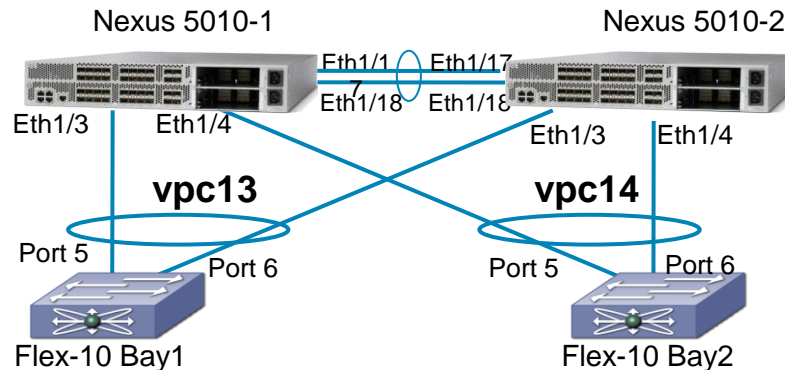
```
interface Ethernet1/17
  switchport mode trunk
  channel-group 1 mode active
```

```
interface Ethernet1/18
  switchport mode trunk
  channel-group 1 mode active
```

```
n5k-1# show running-config interface port-channel 1
```

```
version 4.2(1)N1(1)
```

```
interface port-channel1
  switchport mode trunk
  vpc peer-link
  spanning-tree port type network
```



Note: HPVC Flex-10 supports LACP, so configure the Nexus 5000 interfaces to channel-group mode “active” that are connected to the Flex-10 in the Port-Channel

Nexus 5010-2 Configuration

Nexus 5010-2 (Flex-10 Bay1)

```
n5k-2# show running-config interface ethernet 1/3-4
```

```
version 4.2(1)N1(1)
```

```
interface Ethernet1/3
  switchport mode trunk
  switchport trunk native vlan 182
  channel-group 13 mode active
```

```
interface Ethernet1/4
  switchport mode trunk
  switchport trunk native vlan 182
  channel-group 14 mode active
```

```
n5k-2# show running-config interface port-channel 13-14
```

```
version 4.2(1)N1(1)
```

```
interface port-channel13
  switchport mode trunk
  vpc 13
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
```

```
interface port-channel14
  switchport mode trunk
  vpc 14
  switchport trunk native vlan 182
  spanning-tree port type edge trunk
```

N5K-2 & N5K-1 Port-Channel

```
n5k-2# show running-config interface ethernet 1/17-18
```

```
version 4.2(1)N1(1)
```

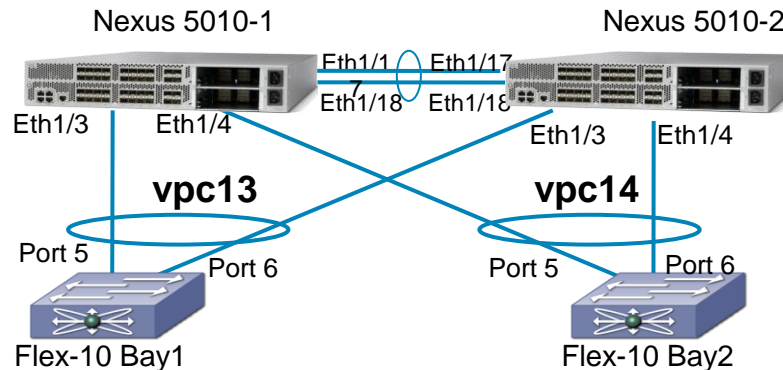
```
interface Ethernet1/17
  switchport mode trunk
  channel-group 1 mode active
```

```
interface Ethernet1/18
  switchport mode trunk
  channel-group 1 mode active
```

```
n5k-2# show running-config interface port-channel 1
```

```
version 4.2(1)N1(1)
```

```
interface port-channel1
  switchport mode trunk
  vpc peer-link
  spanning-tree port type network
```



Note: HPVC Flex-10 supports LACP, so configure the Nexus 5000 interfaces to channel-group mode “active” that are connected to the Flex-10 in the Port-Channel

