

Sri Lanka Institute of Information Technology

4th Year – 2nd Semester

ESBII – VMotion Assignment

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What is Vmotion?

VMware VMotion enables the live migration of running virtual machines from one physical server to another with zero downtime, continuous service availability, and complete transaction integrity. It is transparent to users.

Requirements of VMotion

- CPU compatibility.
- VMotion interface (minimum 1 Gb adapter)
- Shared central mass storage.
- Same naming for virtual port groups.
- Sufficient resources on the target host.
- At least one VSphere Essentials Plus license on the corresponding ESX host.

How VMotion Work?

First, the entire state of a virtual machine is encapsulated by a set of files stored on shared storage. VMware's clustered Virtual Machine File System (VMFS) allows multiple installations of ESX Server to access the same virtual machine files concurrently.

Second, the active memory and precise execution state of the virtual machine is rapidly transferred over a high speed network. This allows the virtual machine to instantaneously switch from running on the source ESX Server to the destination ESX Server. VMotion keeps the transfer period imperceptible to users by keeping track of on-going memory transactions in a bitmap. Once the entire memory and system state has been copied over to the target ESX Server, VMotion suspends the source virtual machine, copies the bitmap to the target ESX Server, and resumes the virtual machine on the target ESX Server. This entire process takes less than two seconds on a Gigabit Ethernet network.

Third, the networks used by the virtual machine are also virtualized by the underlying ESX Server. This ensures that even after the migration, the virtual machine network identity and network connections are preserved. VMotion manages the virtual MAC address as part of the process. Once the destination machine is activated, VMotion pings the network router to ensure that it is aware of the new physical location of the virtual MAC address. Since the migration of a virtual machine with VMotion preserves the precise execution state, the network identity, and the active network connections, the result is zero downtime and no disruption to users.

Servidor 1 VMware ESXi, 5.0.0, 623860

Summary Virtual Machines Performance Configuration Tasks & Events Alarms Permissions Maps Storage Views Hardware Status

Hardware

- Processors
- Memory
- Storage
- Networking
- Storage Adapters
- Network Adapters
- Advanced Settings
- Power Management

Software

- Licensed Features
- Time Configuration
- DNS and Routing
- Authentication Services
- Power Management
- Virtual Machine Startup/Shutdown
- Virtual Machine Swapfile Location
- Security Profile
- Host Cache Configuration
- System Resource Allocation
- Agent VM Settings
- Advanced Settings

Network Adapters

Device	Speed	Configured	Switch	MAC Address	Owner
Broadcom Corporation Broadcom NetXtreme II BCM5709 1000Base-T					
vmnic1	100 Full	Negotiate	vSwitch1	00:1a:64:dc:be:86	10.56.
vmnic0	1000 Full	Negotiate	vSwitch0	00:1a:64:dc:be:84	10.56.
Intel Corporation 82571EB Gigabit Ethernet Controller (Copper)					
vmnic9	1000 Full	Negotiate	None	00:15:17:ba:ba:0e	None
vmnic8	Down	Negotiate	None	00:15:17:ba:ba:0f	None
vmnic7	Down	Negotiate	None	00:15:17:ba:ba:0c	None
vmnic6	Down	Negotiate	None	00:15:17:ba:ba:0d	None
vmnic5	1000 Full	Negotiate	vSwitch0	00:15:17:ba:bb:ea	10.56.
vmnic4	Down	Negotiate	None	00:15:17:ba:bb:ab	None
vmnic3	Down	Negotiate	None	00:15:17:ba:bb:a8	None
vmnic2	1000 Full	Negotiate	vSwitch1	00:15:17:ba:bb:a9	10.56.

tab Configuration-> Networking

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View: vSphere Standard Switch | vSphere Distributed Switch

Networking

Standard Switch: vSwitch0 Refresh Add Networking... Properties...

Physical Adapters: vmnic5 (1000 Full), vmnic0 (1000 Full)

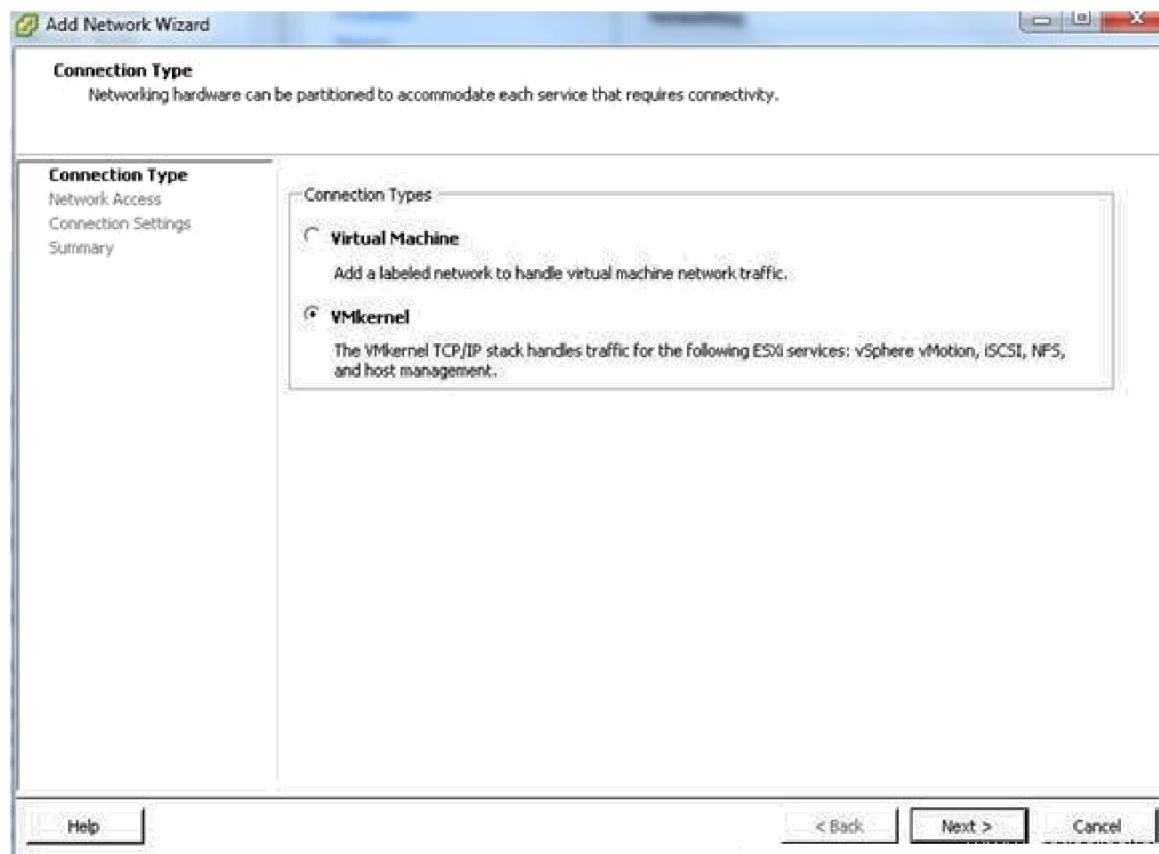
Virtual Machine Port Group: Management (VMkernel Port), Management Network (vmk0)

Standard Switch: vSwitch1 Remove... Properties...

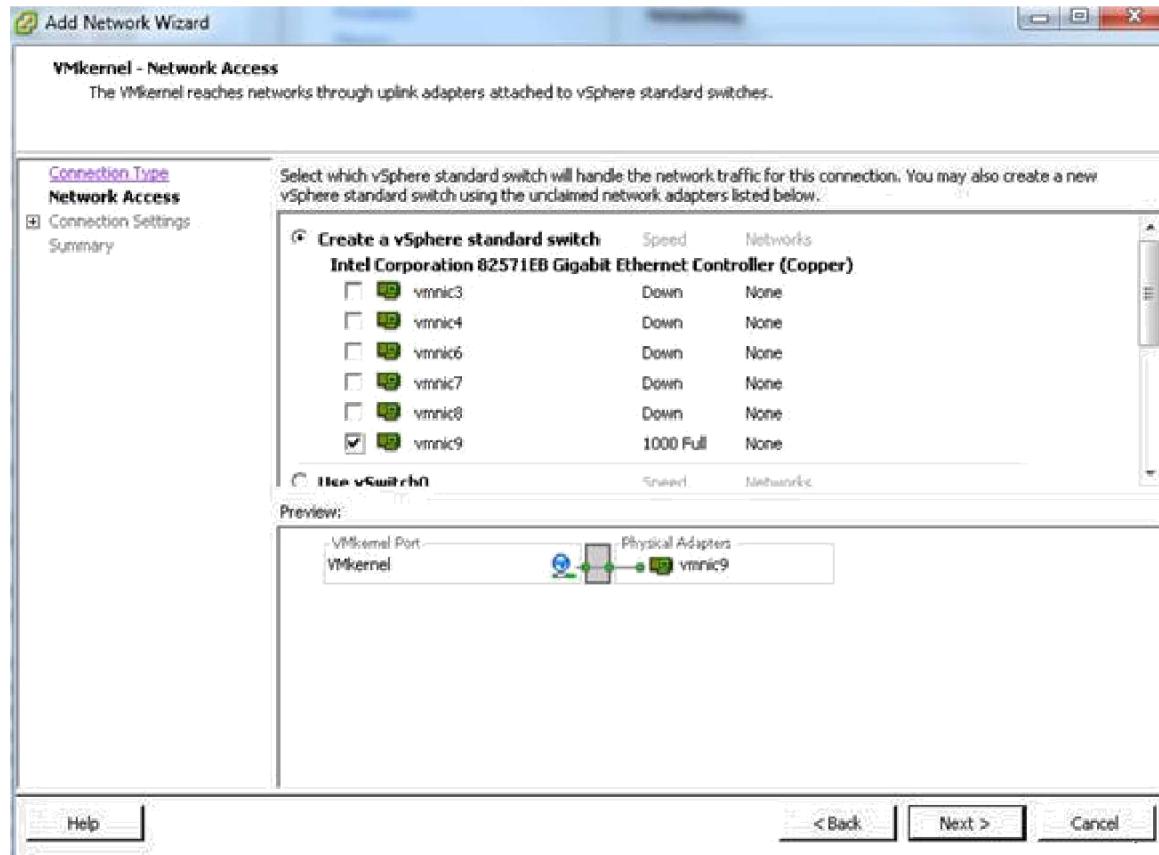
Physical Adapters: vmnic2 (1000 Full), vmnic1 (100 Full)

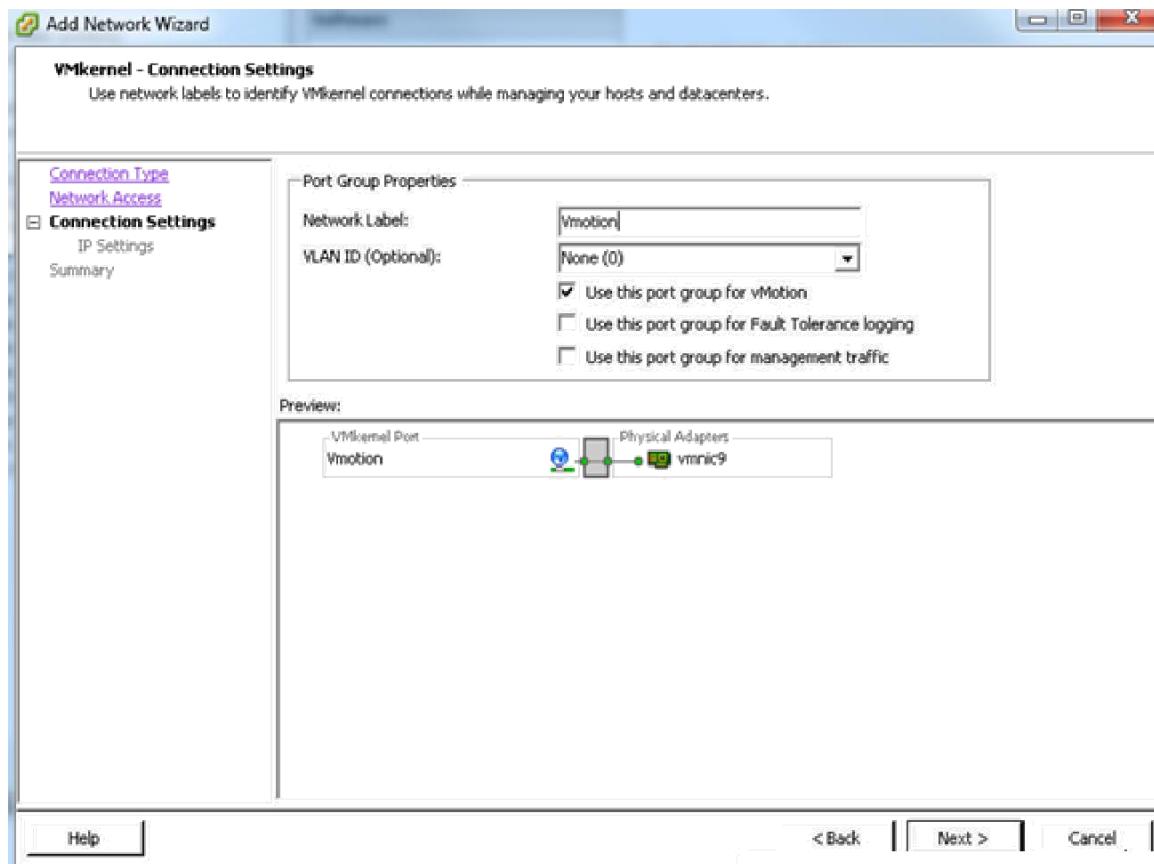
Virtual Machine Port Group: VLAN 4 Servers I (7 virtual machine(s))

Click on **Add Networking** to create the vSwitch.



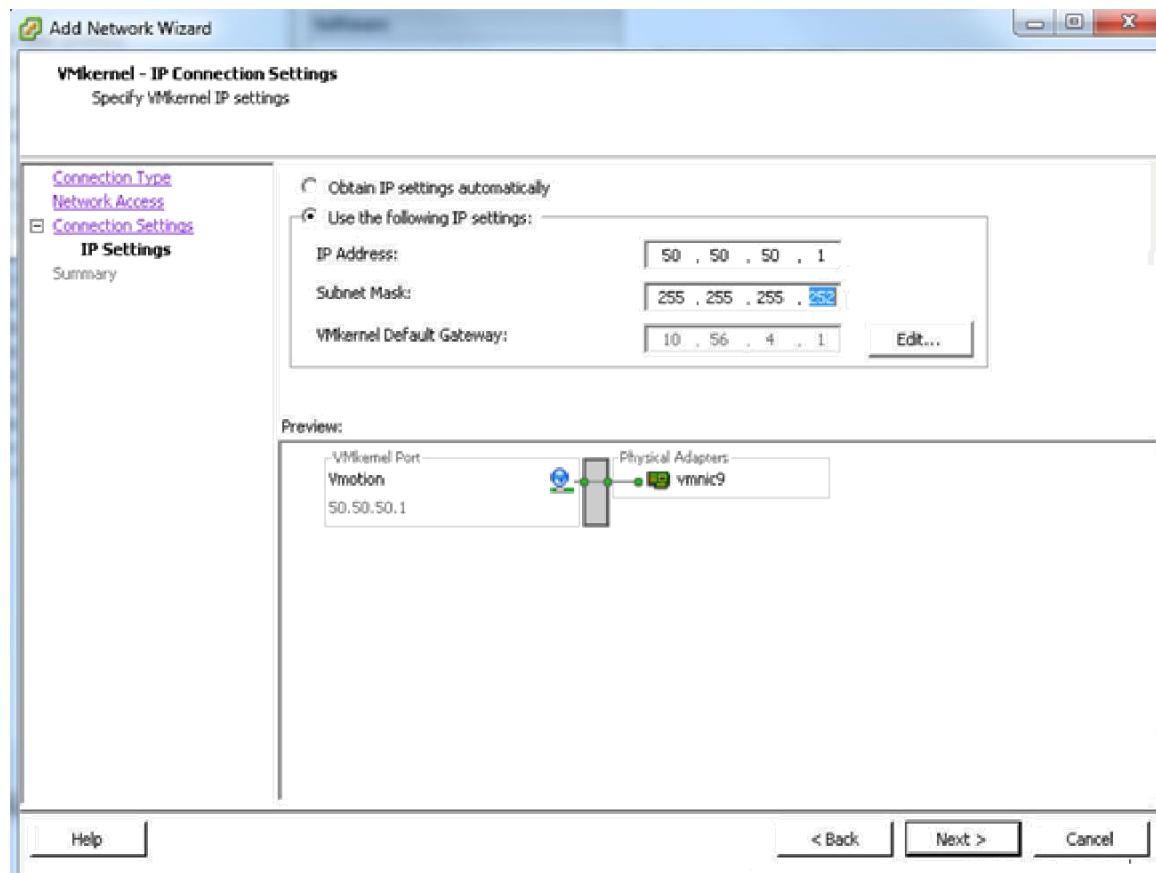
Select **VMKernel** and click on **Next**.





We set **Use this port group for vMotion**.

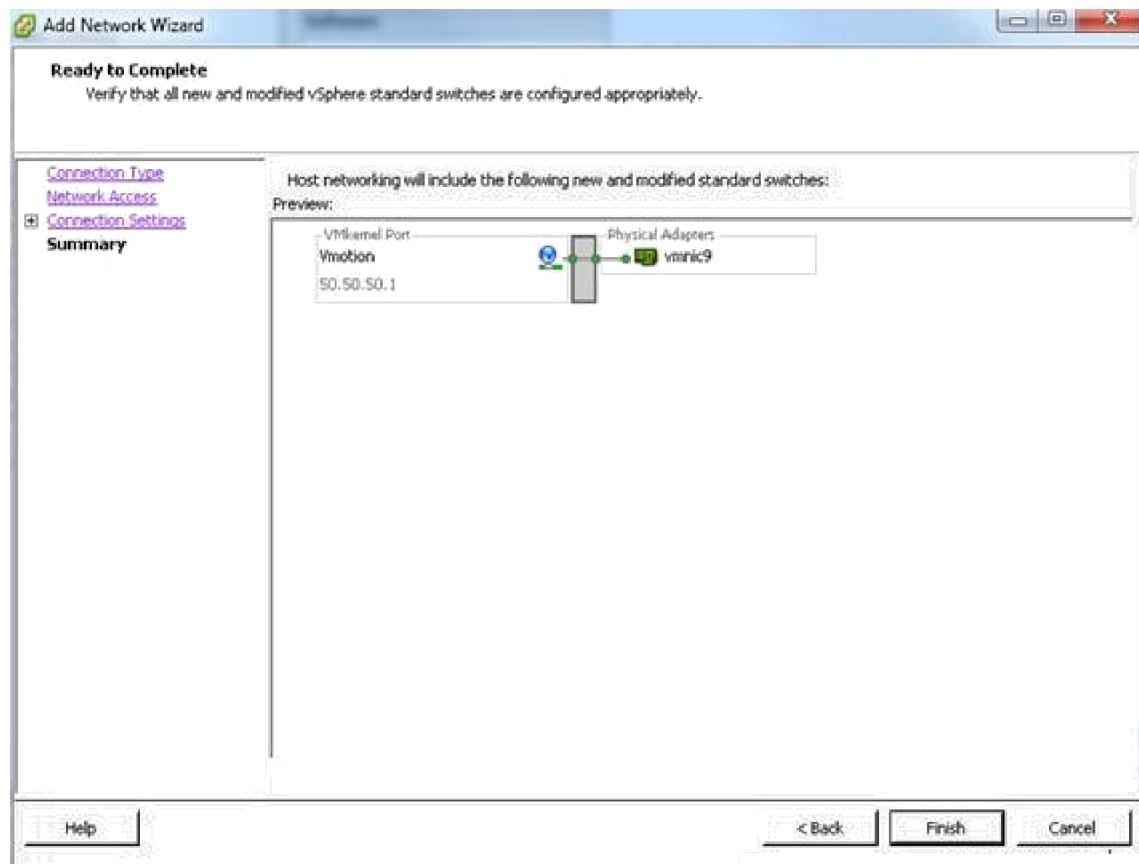
We wrote a **Label Network** different if you want (optional) and click on **Next**. We for example we put **Vmotion**.



IP Address: 50.50.50.1

Subnet Mask: 255.255.255.252 (Since we will use only 2 ip's).

Click on **Next**.



Click on **Finish**.

Servidor 2 VMware ESXi, 5.0.0, 623860

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View: vSphere Standard Switch | vSphere Distributed Switch | Refresh | Add Networking... | Properties...

Standard Switch: vSwitch0

Physical Adapters: vmnic5 1000 Full, vmnic0 1000 Full

Virtual Machine Port Group: Management, VMkernel Port, Management Network

Standard Switch: vSwitch1

Physical Adapters: vmnic2 1000 Full, vmnic1 100 Full

Virtual Machine Port Group: VLAN 4 Servers I, 7 virtual machine(s)

Standard Switch: vSwitch2

Physical Adapters: vmnic9 1000 Full

VMkernel Port: Vmotion, vmk0 : 50.50.50.1

We select the tab **Configuration-> Network Adapters** and we see that we have visibility of the new connections.

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vmnic7	Down	Negotiate	None	00:15:17:ba:bd:e8	None
vmnic6	Down	Negotiate	None	00:15:17:ba:bb:e9	None
vmnic5	1000 Full	Negotiate	vSwitch0	00:15:17:ba:bb:b2	10.56.
vmnic4	Down	Negotiate	None	00:15:17:ba:bb:b3	None
vmnic3	Down	Negotiate	None	00:15:17:ba:bb:b0	None
vmnic2	1000 Full	Negotiate	vSwitch1	00:15:17:ba:bb:b1	10.56.

Now look at the tab **Configuration-> Networking**

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View: vSphere Standard Switch vSphere Distributed Switch Refresh Add Networking... Properties...

Networking

Standard Switch: vSwitch0

Virtual Machine Port Group:
VM Network (green icon)
VMkernel Port (blue icon)
Management Network (blue icon)

Physical Adapters:
vmnic5 1000 Full
vmnic0 1000 Full

Remove... Properties...

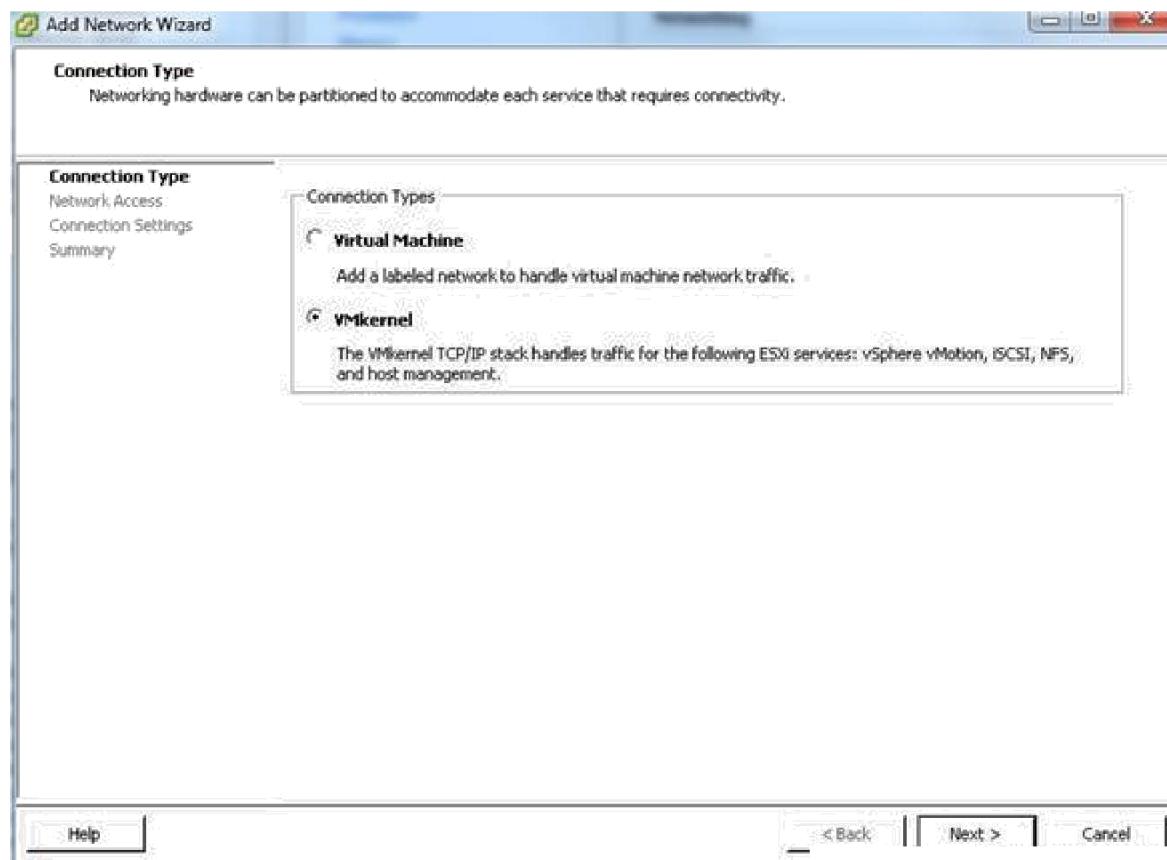
Standard Switch: vSwitch1

Virtual Machine Port Group:
VLAN 4 Servers II (green icon)
20 virtual machine(s) (blue icon)

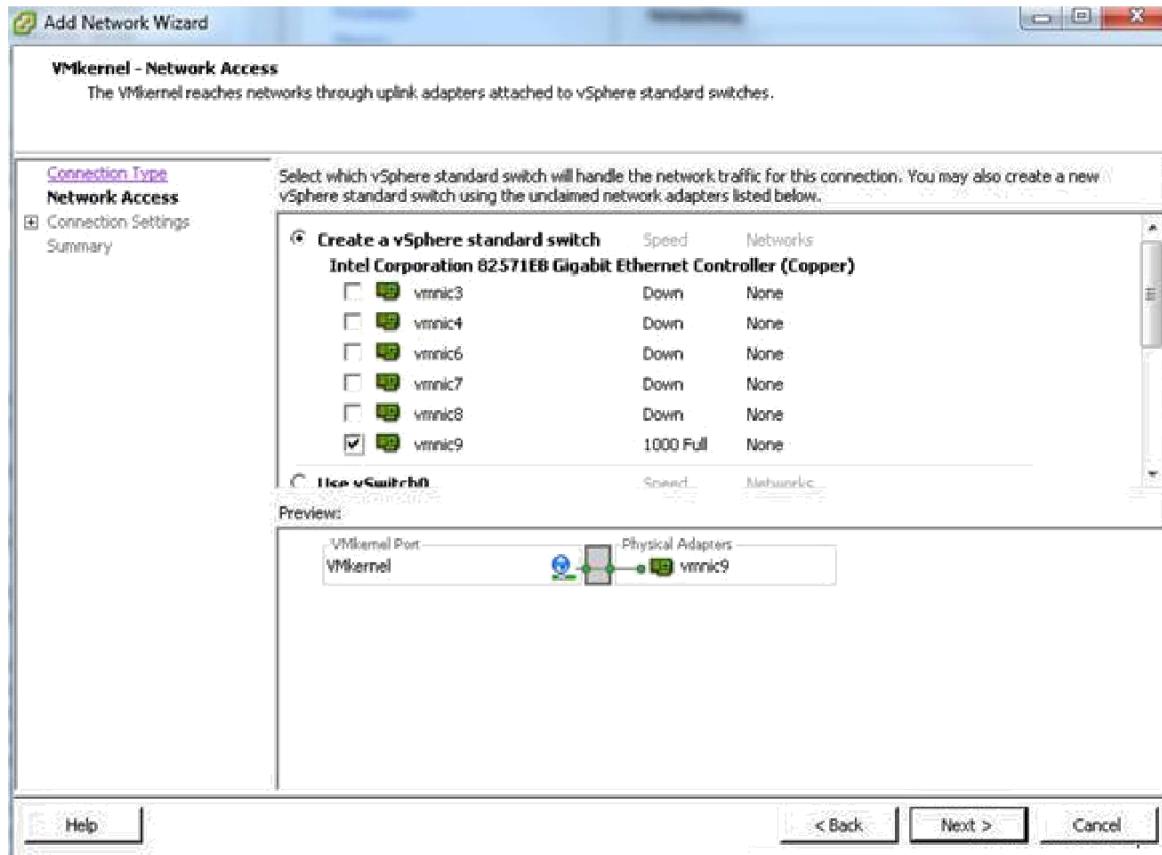
Physical Adapters:
vmnic2 1000 Full
vmnic1 1000 Full

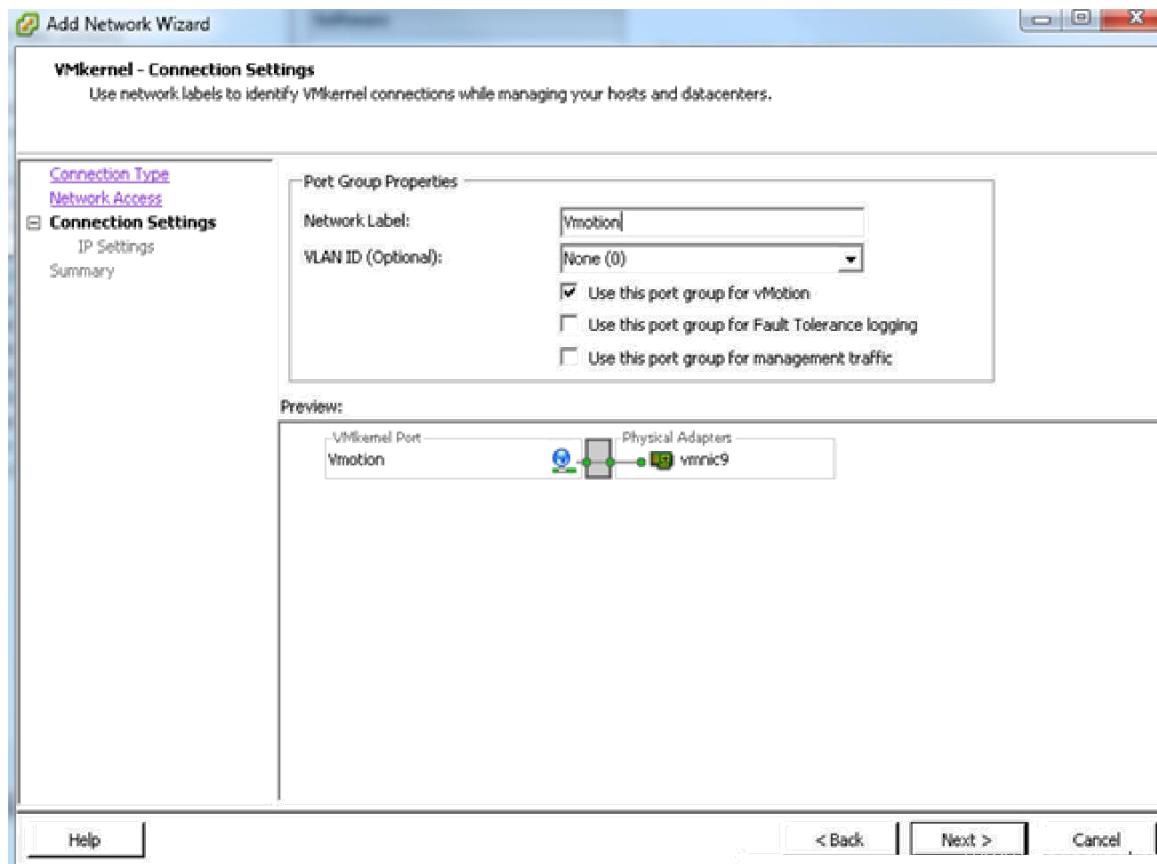
Remove... Properties...

Click on **Add Networking** to create the vSwitch.

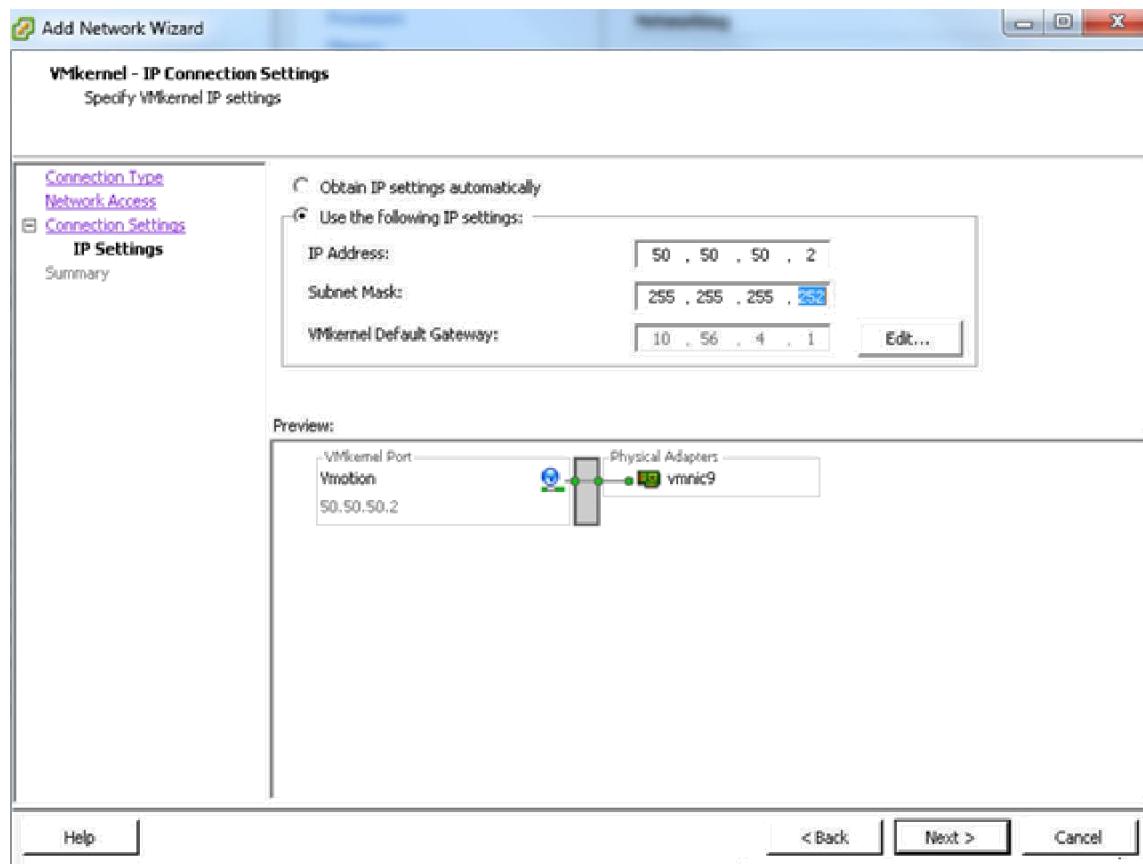


Select **VMKernel** and click on **Next**.





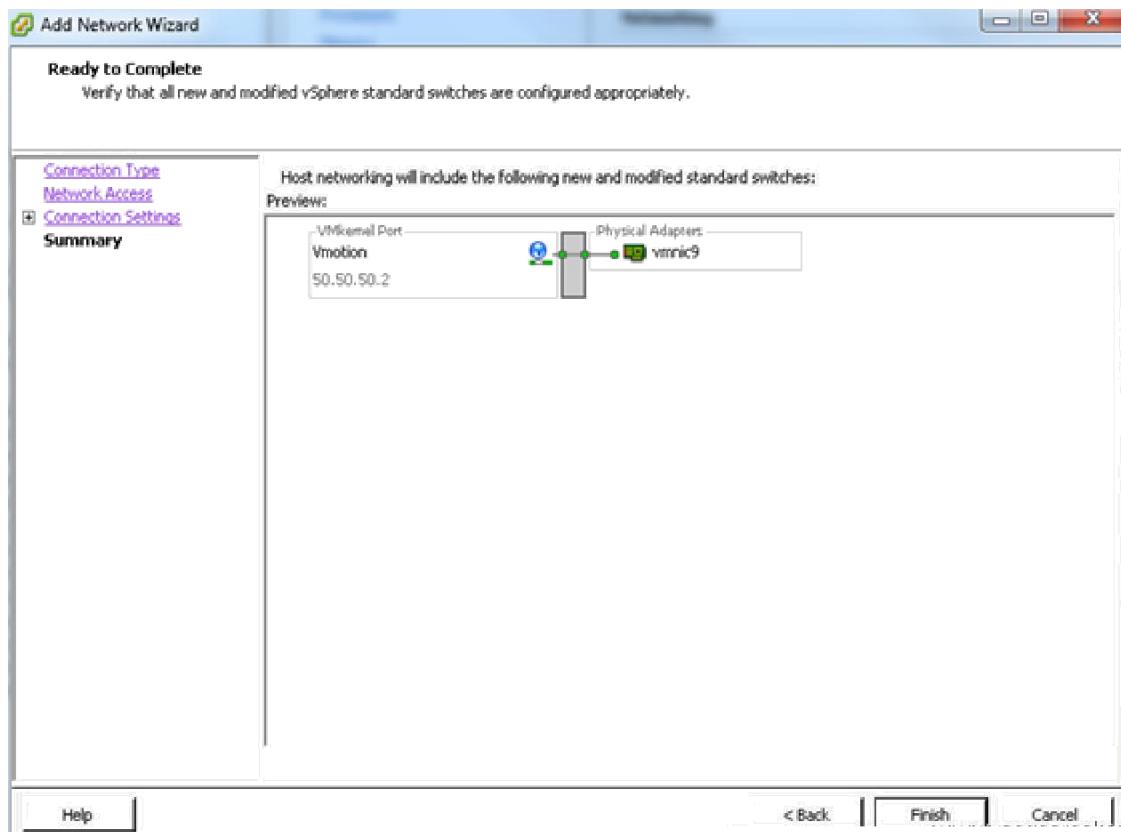
Use this port group for VMotion.



IP Address: 50.50.50.2 (This ip must be different from the server that configured earlier 1).

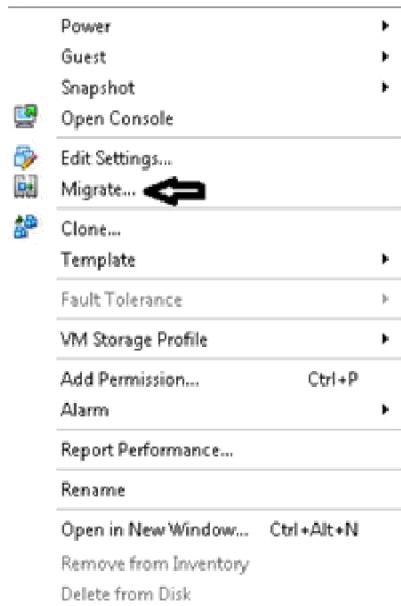
Subnet Mask: 255.255.255.252

Click on **Next**.



Click on **Finish**.

now what we will do to ensure that the entire system is working properly migrate a VM from one ESXi to the other using Vmotion functionality you just configured.



Click on **Migrate**.

The screenshot shows the 'Select Migration Type' step of the 'Migrate Virtual Machine' wizard. On the left, a sidebar lists options: 'Select Destination', 'Select Resource Pool', 'vMotion Priority', and 'Ready to Complete'. The main panel has three radio button options: 'Change host' (selected), 'Change datastore', and 'Change both host and datastore'. Each option has a brief description and a warning message. The 'Change host' section includes a warning about storage vMotion licensing.

Select Migration Type

Change host
Move the virtual machine to another host.

Change datastore
Move the virtual machine's storage to another datastore.
⚠ Storage vMotion is not licensed on this host. To perform this function without a license, power off the virtual machine.

Change both host and datastore
Move the virtual machine to another host and move its storage to another datastore.
⚠ The virtual machine must be powered off to change the VM's host and datastore.

Click on **Next**.

The screenshot shows the 'Select Destination' step of the 'Migrate Virtual Machine' wizard. The sidebar on the left shows 'Select Migration Type' (selected) and 'Select Destination' (disabled). The main panel displays a tree view of destination hosts and clusters. Under 'Nombre de la Organización', there is a cluster named 'Nombre del Clúster' which contains two servers: 'servidor 1' and 'servidor 2'. Below the tree, a 'Compatibility:' section shows 'Validation succeeded'.

Select Destination

Select the destination host or cluster for this virtual machine migration.

Select Migration Type

Select Destination

vMotion Priority
Ready to Complete

Nombre de la Organización

Nombre del Clúster

servidor 1

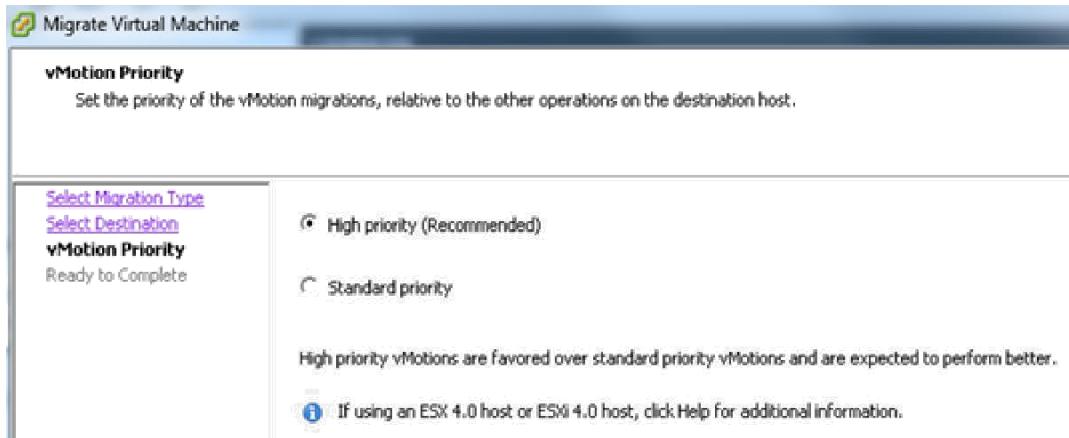
servidor 2

Compatibility:

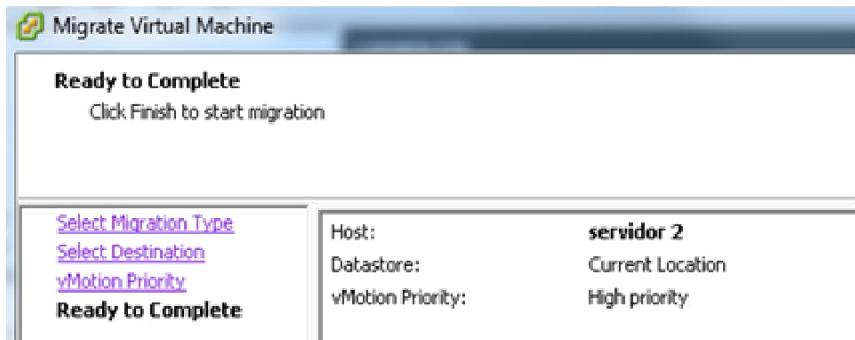
Validation succeeded

Select the target server where to move the virtual machine.

Click on **Next**.



Click on **Next**.



Click on **Finish** to start the migration.

Name	Target	Status	Initiated by	Requested Start Ti...	Start Time	Completed Time
Migrate virtual machine	CONVERTER	Completed		22/10/2012 14:55:02	22/10/2012 14:55:02	22/10/2012 14:55:49