

# **SRI LANKA INSTITUTE OF INFORMATION TECHNOLOGY**

## **Enterprise Standards and Best Practices for IT Infrastructure**

4 th Year 2<sup>nd</sup> Semester 2016

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Practical Session: <WD Wednesday >

Practical Number: 4

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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.

## capabilities

- **Load balancing:** VMware's distributer resources scheduler can load-balance virtual infrastructure resources between ESX servers. If one of the hosts nears overutilization, guest VMs can be migrated from one ESX Server to another while in use by end users.
- **Distributed Power Management:** moves running VMs from one ESX server to another using VMotion so that ESX Servers can be powered off when the load on the virtual infrastructure is low. This can tremendously reduce a company's power and cooling costs.
- **Maintenance of ESX servers:** with VMotion, VMware administrators can move running virtual machines off one ESX server to another to perform hardware or software maintenance.

## How VMotion Work?

Live migration is an important virtualization feature. It allows a VM to be migrated from one machine to another while the VM is running. VM data to be migrated include CPU state, memory, and other virtual devices state such as virtual network devices. Live migration typically consists of the following steps. Mark memory pages. In the beginning of live migration, the VM will be briefly paused. All memory pages of this VM will be marked as dirty, and will be migrated later. Pre-copy. After all memory pages are marked, the pre-copy phase starts. Pre-copy iteratively scans the entire VM memory and migrate pages that have been marked as dirty. During the pre-copy phase, the VM is running. A page that has been migrated may be modified again. The hypervisor needs to trap those modifications and mark those pages as dirty, to make sure they are migrated. Tracking dirty pages can be done with hardware support or without hardware support (e.g., shadow page table). Pre-copy can have several iterations until only a small number of memory pages are

left or the specified criteria are met. The pre-copy phase may be time-consuming if VM memory is large or the VM has memory-intensive workloads. Checkpoint. After the pre-copy completes, the hypervisor will pause VM again and checkpoint the virtual device state and the virtual CPU state. Switch-over. The checkpoint data and the remaining dirtied pages that are not copied by the pre-copy phase will be transferred to the destination. Resume VM. After all data are transferred, the checkpoint data will be restored to the VM in the destination host. The VM is then resumed on the destination host

## 1. Configuration Networking

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	Observ
<b>Broadcom Corporation Broadcom NetXtreme II BCM5709 1000Base-T</b>					
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.
<b>Intel Corporation 82571EB Gigabit Ethernet Controller (Copper)</b>					
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:aa	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.

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## 2. Creating Networking vSphere vSwitch.

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**View:** vSphere Standard Switch vSphere Distributed Switch

**Networking** Refresh Add Networking... Properties...

**Standard Switch: vSwitch0** Remove... Properties...

Virtual Machine Port Group

- Management
- VMkernel Port
- Management Network
- vmk0 :

Physical Adapters

- vmnic5 1000 Full
- vmnic0 1000 Full

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

Virtual Machine Port Group

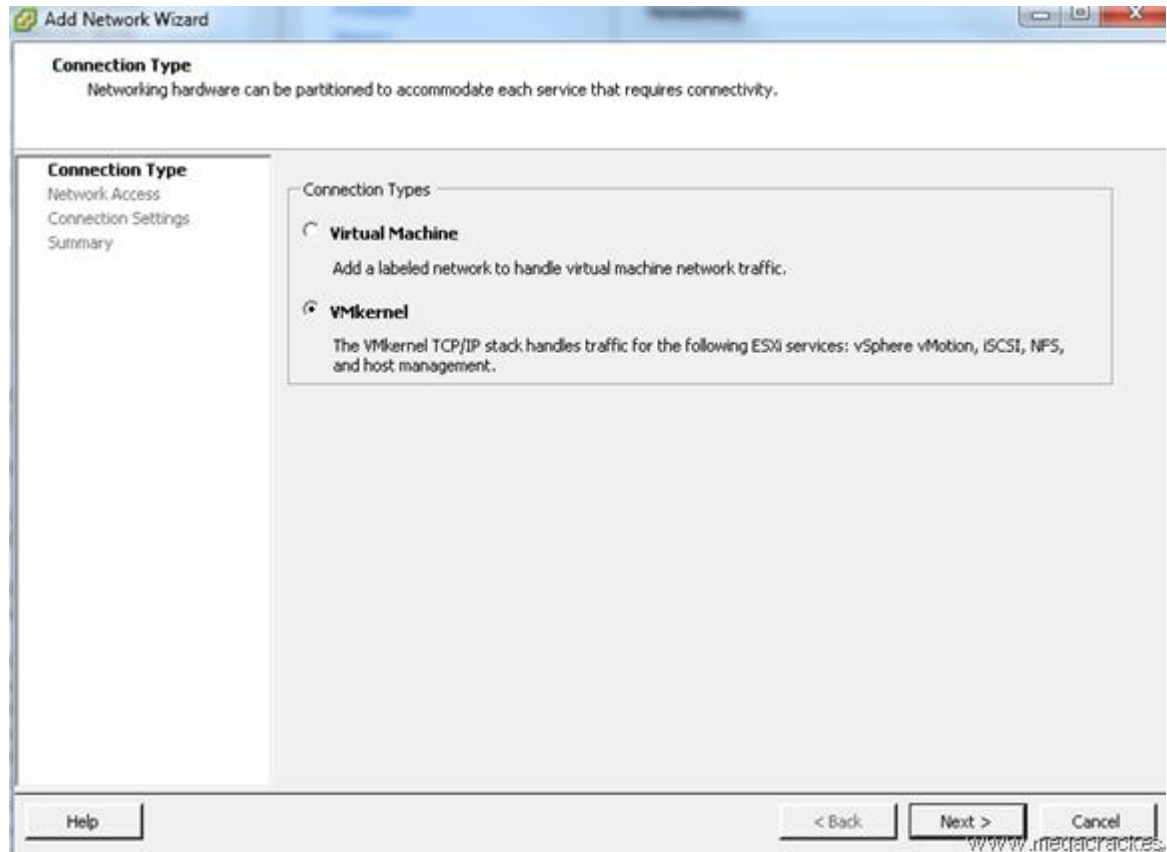
- VLAN 4 Servers I
- 7 virtual machine(s)

Physical Adapters

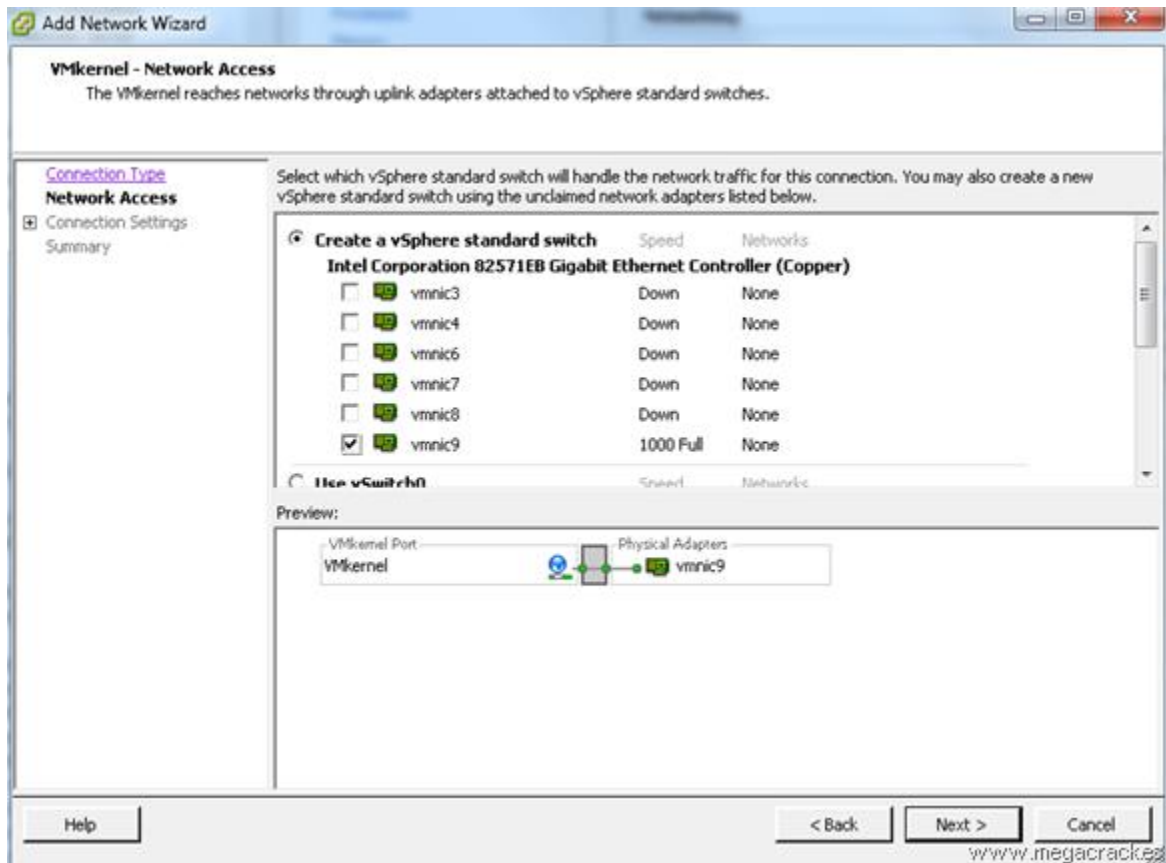
- vmnic2 1000 Full
- vmnic1 100 Full

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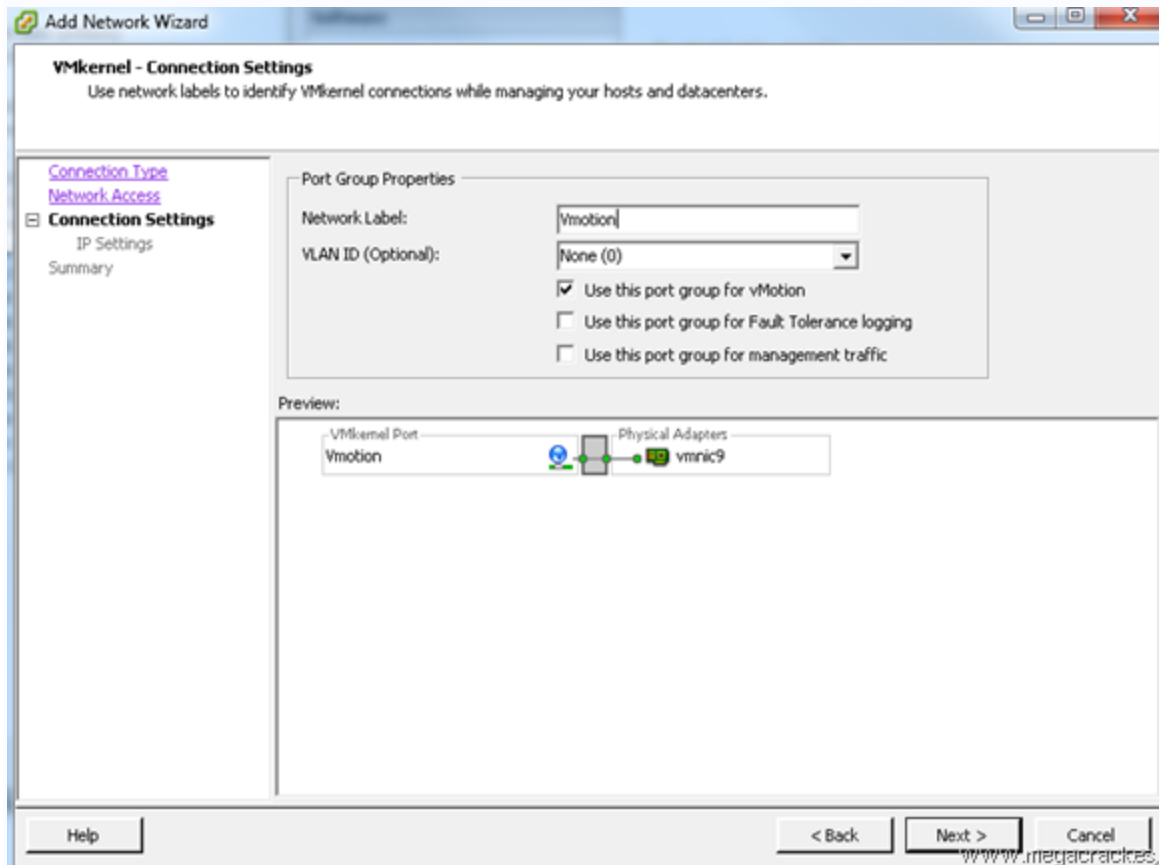
### 3. Select connection type each service that request



#### 4. get network access adopters switch to vSphere standers switch

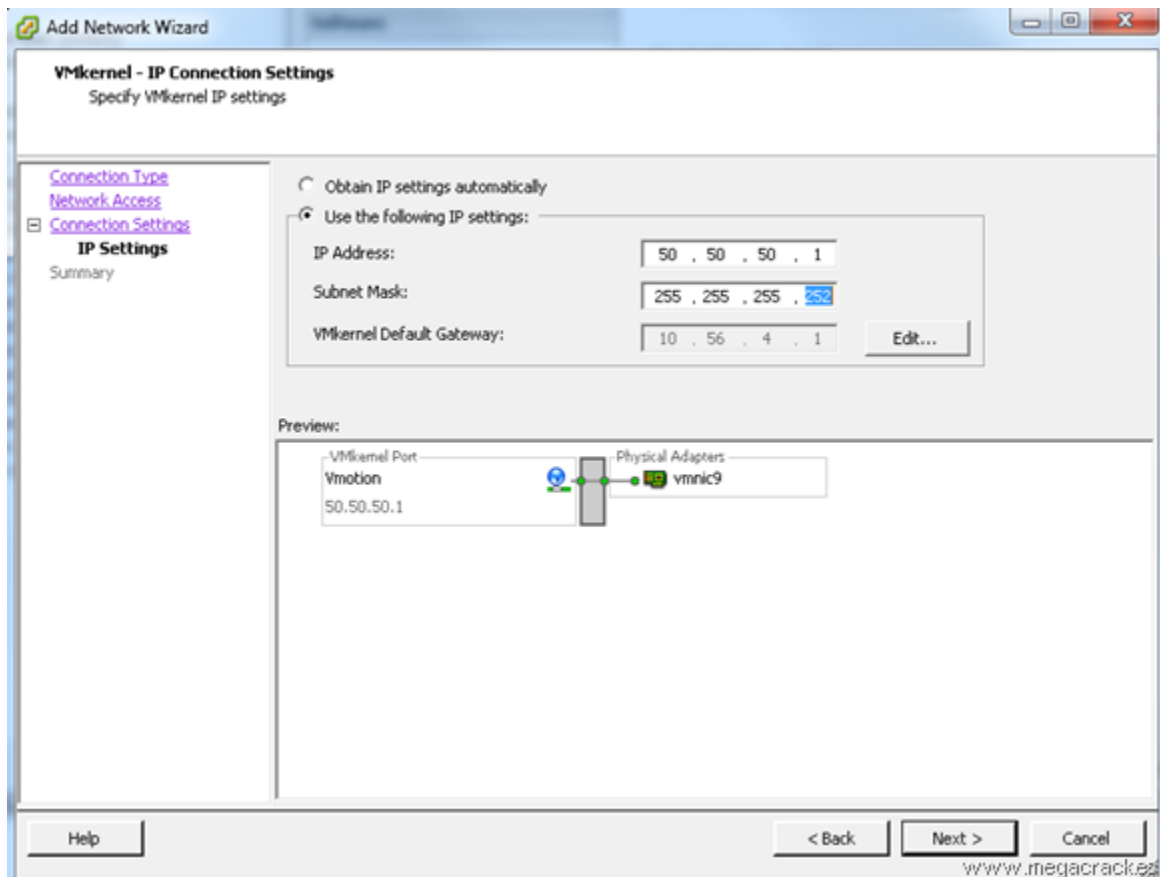


## 5. Change the connection settings host and data center



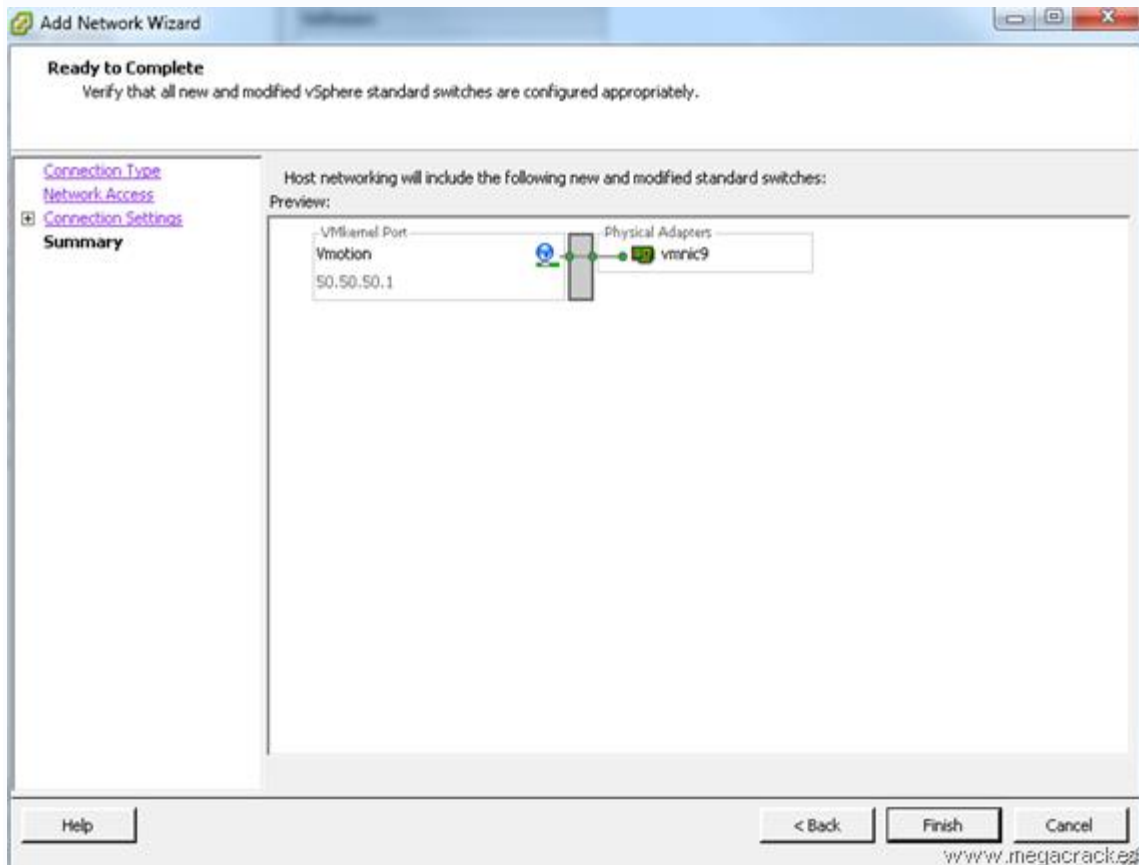
## 6. IP Connection settings

- IP Address: 50.50.50.1





## 7. Verify vSphere switches are configured correctly



## 8. Get and identify the visibility of the new connections.

Servidor 2 VMware ESX, 5.0.0, 623860

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Management  
VMkernel Port  
Management Network  
vmlk0 :

Physical Adapters  
vmnic5 1000 Full  
vmnic0 1000 Full

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

Virtual Machine Port Group  
VLAN 4 Servers 1  
7 virtual machine(s)

Physical Adapters  
vmnic2 1000 Full  
vmnic1 100 Full

**Standard Switch: vSwitch2** Remove... Properties...

VMkernel Port  
Vmotion  
vmlk1 : 50.50.50.1

Physical Adapters  
vmnic9 1000 Full

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## 9. Check the Networking adapter

Servidor 2 VMware ESXi, 5.0.0, 623860

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vmnic0	1000 Full	Negotiate	vSwitch0	00:1a:64:dc:c4:90	10.56.
<b>Intel Corporation 82571EB Gigabit Ethernet Controller (Copper)</b>					
vmnic9	1000 Full	Negotiate	None	00:15:17:ba:bd:ea	None
vmnic8	Down	Negotiate	None	00:15:17:ba:bd:eb	None
vmnic7	Down	Negotiate	None	00:15:17:ba:bd:e8	None
vmnic6	Down	Negotiate	None	00:15:17:ba:bd: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.

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## 10. Networking to create vSphere sundered vSwitch.

Servidor 2 VMware ESX, 5.0.0, 623860

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**Standard Switch: vSwitch0** Remove... Properties...

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- VM Network
- VMkernel Port
- Management Network
- vmk0 :

Physical Adapters

- vmnic5 1000 Full
- vmnic0 1000 Full

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

Virtual Machine Port Group

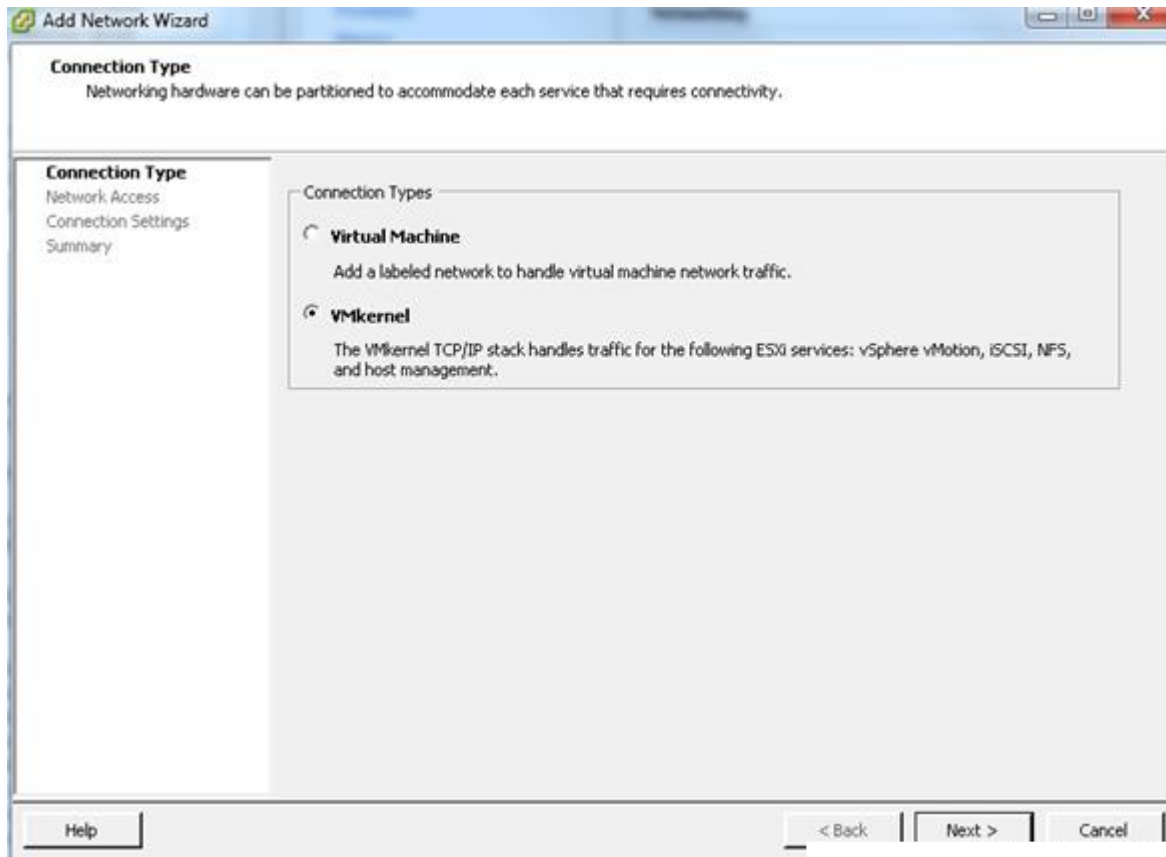
- VLAN 4 Servers 1
- 20 virtual machine(s)

Physical Adapters

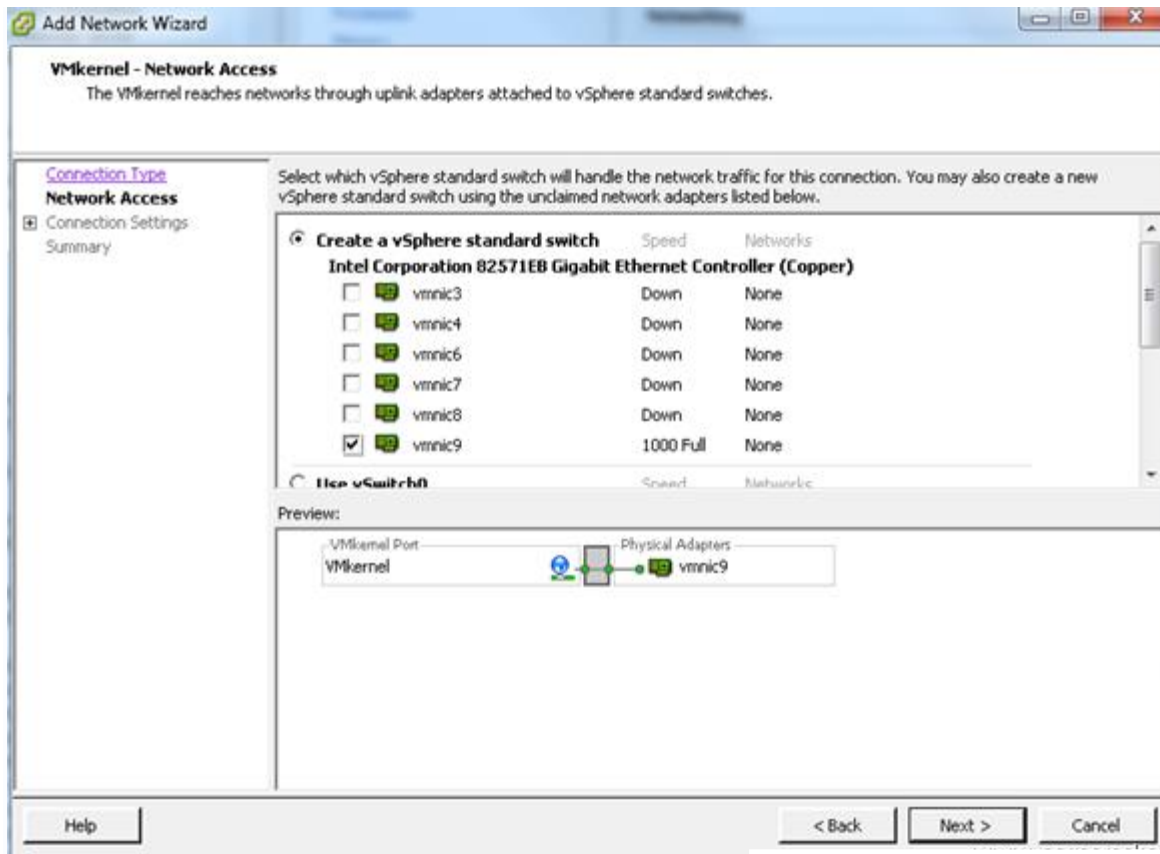
- vmnic2 1000 Full
- vmnic1 1000 Full

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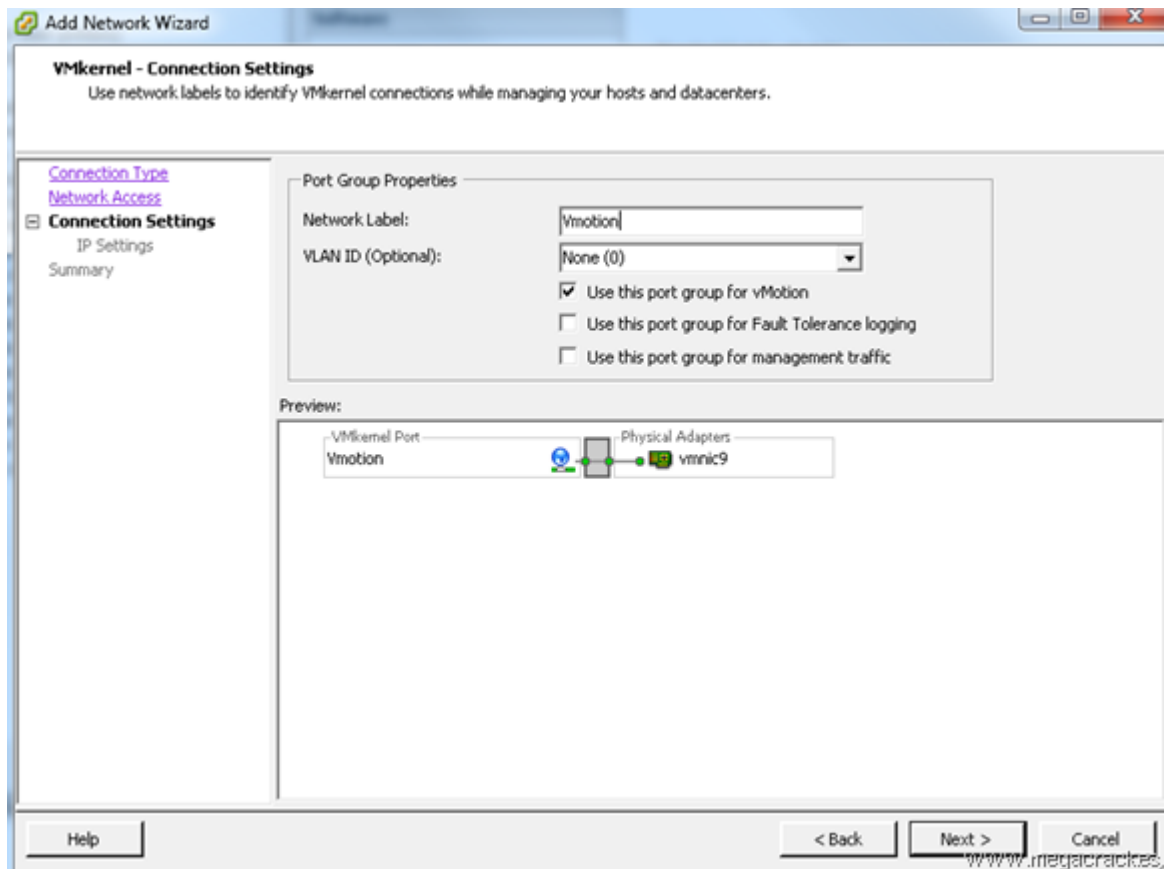
## 11. Select connection type each service that request



## 11. Use this port group for VMotion.

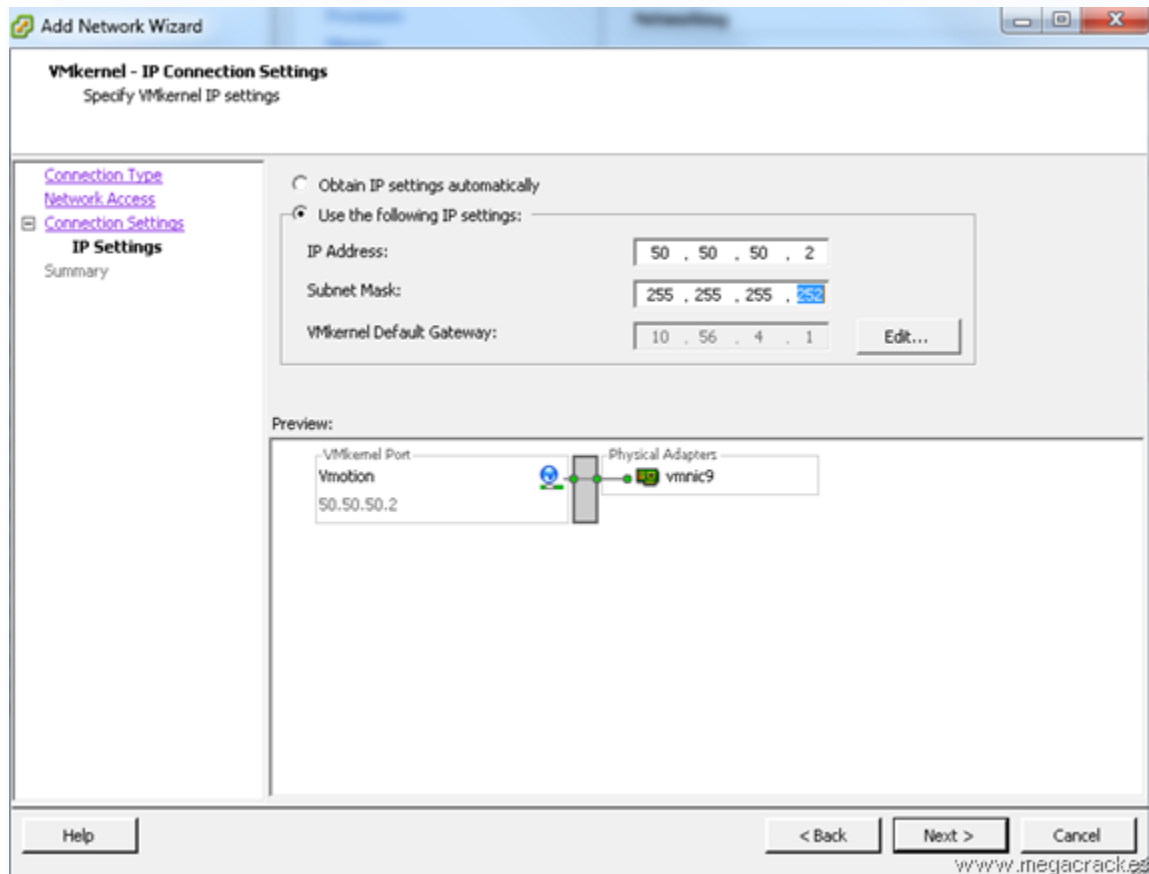


## 12. managing host and datacenter



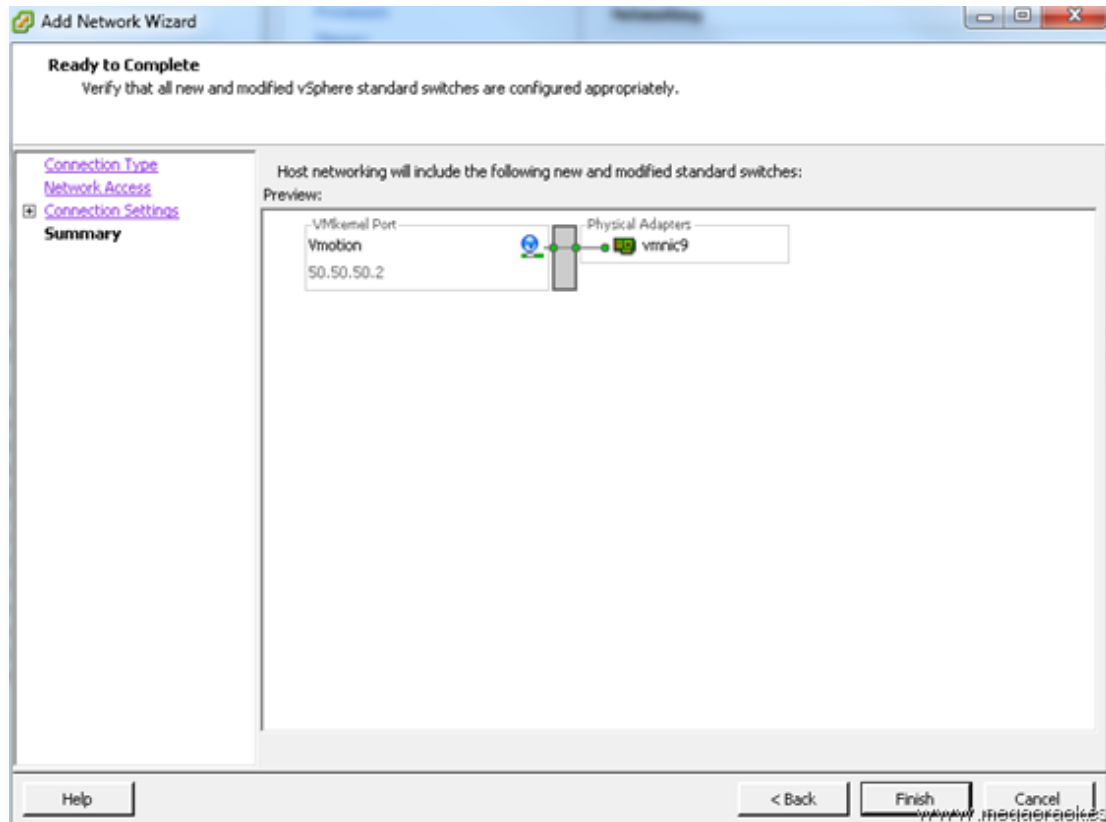
### 13. Change the Ip connection setting

IP Address: 50.50.50.2



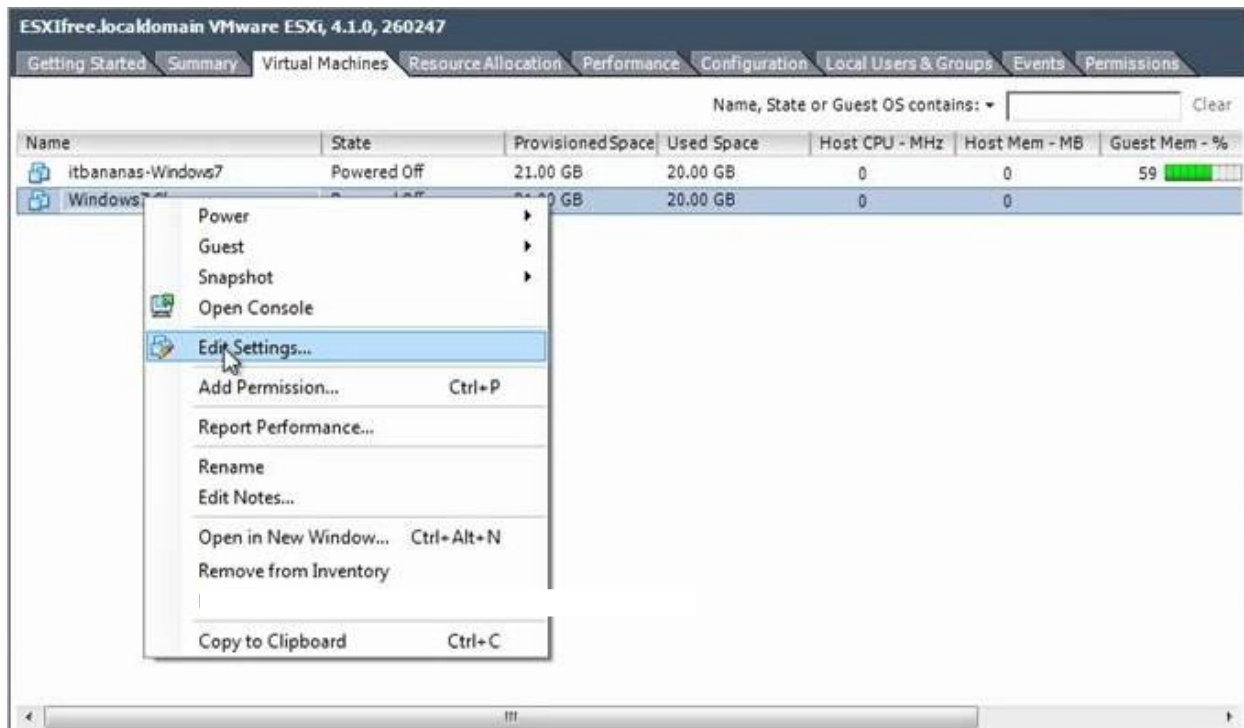


## 14. Verify the all new and modified vSphere switchers

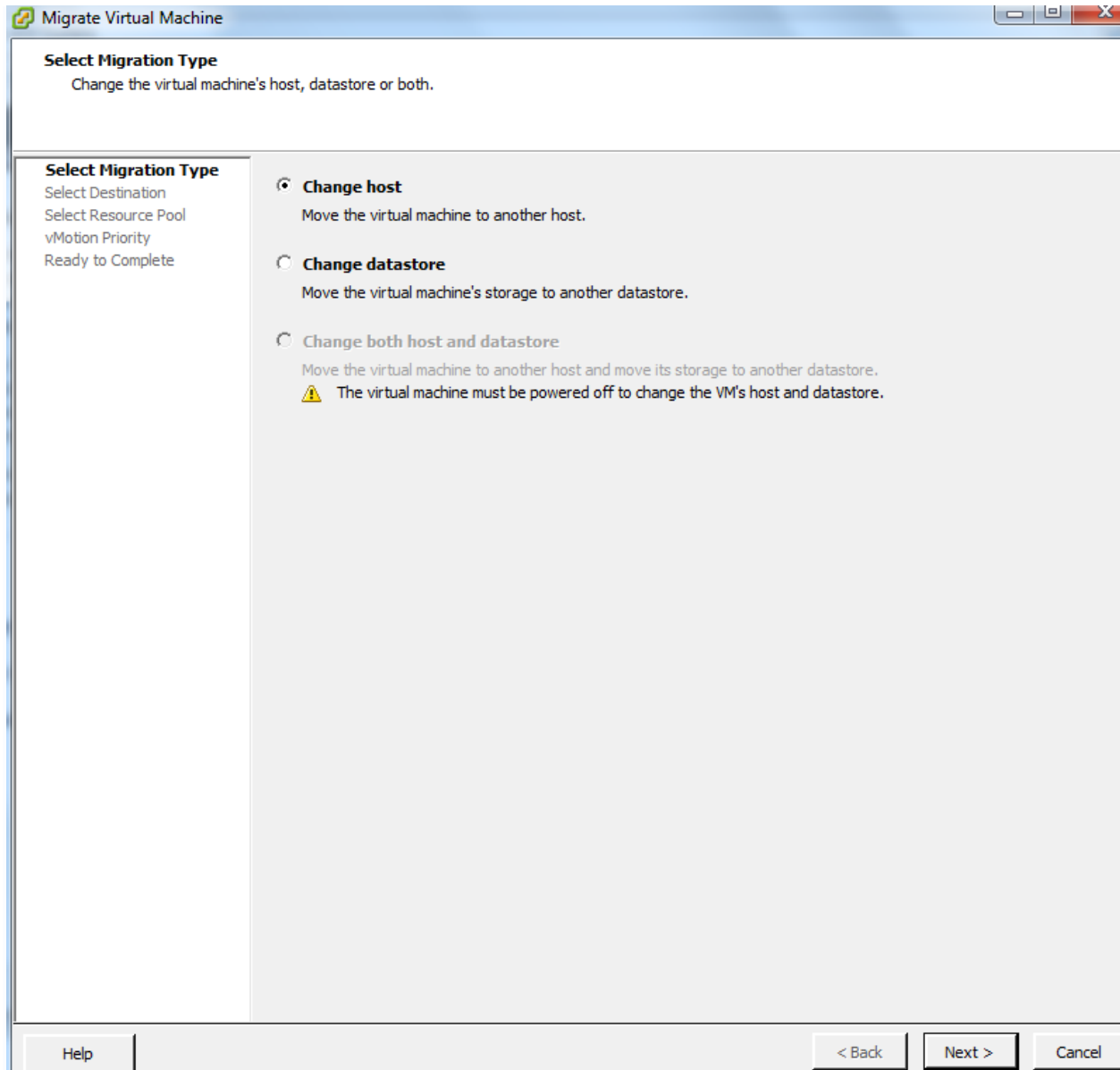


Now what we will do to ensure that the entire system is working properly migrate a VM from one ESXi to the other using Vmotion functionality you just configured.

## 15. Edit the settings




## 16. Change the virtual machine host and data store both.



The screenshot shows a window titled "Migrate Virtual Machine" with a standard Windows-style title bar. The main content area is titled "Select Migration Type" and includes the instruction "Change the virtual machine's host, datastore or both." Below this, there is a list of migration options on the left and a detailed description of the selected option on the right.

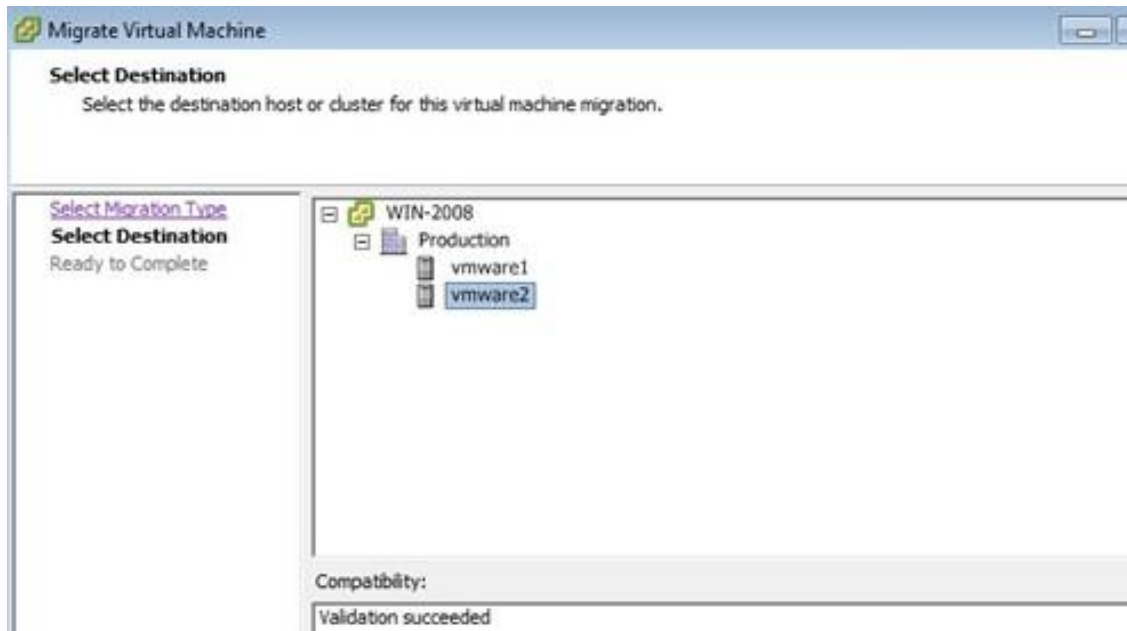
**Select Migration Type**  
Change the virtual machine's host, datastore or both.

**Select Migration Type**  
Select Destination  
Select Resource Pool  
vMotion Priority  
Ready to Complete

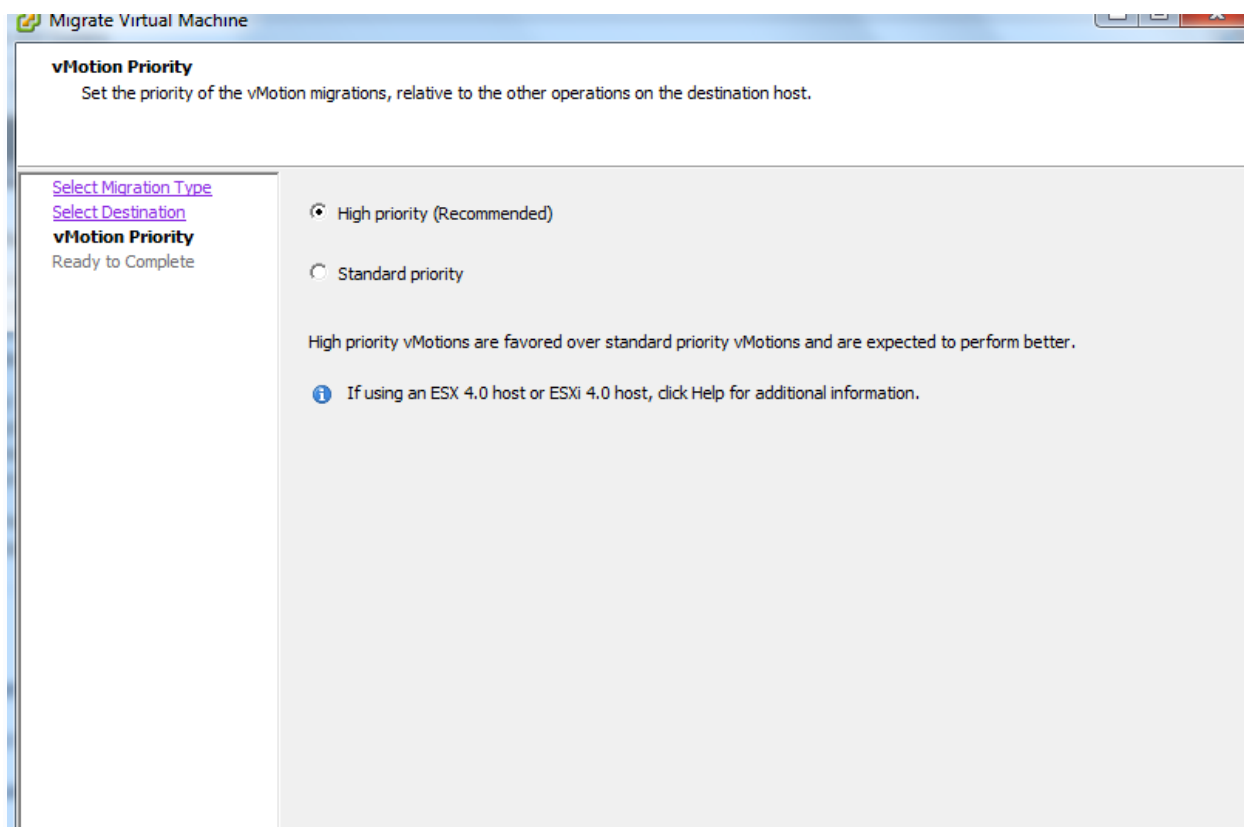
- ☒ **Change host**  
Move the virtual machine to another host.
- ☐ **Change datastore**  
Move the virtual machine's storage to another datastore.
- ☐ **Change both host and datastore**  
Move the virtual machine to another host and move its storage to another datastore.  
 The virtual machine must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

Help < Back Next > Cancel

## 17. Select destination host for data store for this virtual machine migration



## 18. Set the vMotion priority for migration



## 19. Complete Migration

The screenshot shows the 'Migrate Virtual Machine' wizard in its final 'Ready to Complete' stage. The window title is 'Migrate Virtual Machine'. The main heading is 'Ready to Complete' with the instruction 'Click Finish to start migration'. On the left, there is a sidebar with links: 'Select Migration Type', 'Select Destination', 'VMotion Priority', and 'Ready to Complete' (which is highlighted). The main area contains a summary of the migration settings under the heading 'Review this summary before finishing the wizard.'.

Review this summary before finishing the wizard.	
Host:	esx3.wiredbraincoffee.com
ResourcePool:	Resources
Datastore:	Current Location
VMotion Priority:	Optimal VMotion with Reserved CPU

At the bottom of the window, there are three buttons: 'Help', '< Back', and 'Finish'.