Enterprise Standards and Best Practices for IT Infrastructure

Assignment 6

VMOTION

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Weekday Batch

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

- Having a Virtual Center.
- 2 have physical servers with ESXi installed.
- Having a Gigabit network cable to connect from one server to another directly.

Vmotion Compatibility

V Motion has quite a few requirements that need to be in place before it will work correctly. Here is a list of the key requirements for V Motion to work.

- Each host must be correctly licensed
- Each host must meet shared storage requirements
- Each host must meet the networking requirements
- Each compatible CPU must be from the same family

When configuring vMotion between hosts I would recommend keeping to one brand of server per cluster, i.e. Dell, HP, IBM. Also always ensure that these servers are compatible with each other. You can confirm this by speaking to the server manufacturer. A very important item to consider is to always ensure you are using the latest BIOS version on each of your hosts. Ensuring that the CPU's are compatible with each other is essential for vMotion to work successfully, this is because the host

that the virtual machine migrates to have to be capable of carrying on any instructions that the first host was running. If a virtual machine is successfully running an application on one host and you migrate it to another host without these capabilities the application would most likely crash, possibly even the whole server would crash, hence why vMotion compatibility is required between hosts before you can migrate a running virtual machine. It is user-level instructions that bypass the virtualisation layer such as Streaming SIMD Extensions (SSE), SSE2 SSSE3, SSE4.1 and Advanced Encryption Standard (AES) Instruction Sets that can differ greatly between CPU models and families of processors, and so can cause application instability after the migration.

Benefits of Vmotion

 Automatically optimize and allocate entire pools of resources

By having all your server and/or desktops virtualized you can move VM's from one physical host to another, which is done rapidly over a high speed network connection, the original host and destination host stay in sync until the transfer it complete leaving the user unaware of the move. This allows network administrators to easily select resource pools to assign to the different VMs

vSphere Migration

The process of moving a virtual machine from one host or storage location to another.

vSphere Migration Types

- Cold migration

  Moves a powered-off virtual machine to a new host. Optionally, can relocate configuration and disk files to new storage locations. Cold migration can be used to migrate virtual machines from one datacenter to another.

  If a virtual machine is shut down, can move it to a different cluster, resource pool, or host by copying all virtual machine files to a different directory.

- Migration of a suspended virtual machine

  Moves a suspended virtual machine to a new host. Optionally, can relocate configuration and disk files to new storage location. Can migrate suspended virtual machines from one datacenter to another.

- Migration with VMotion
- Migration with Storage VMotion

Moves the virtual disks or configuration file of a powered-on virtual machine to a new datastore.

Migration with Storage VMotion allows to move a virtual machine's storage without interruption in the availability of the virtual machine.

Storage VMotion allows to move a running virtual machine from one VMFS volume to another. Taking the virtual machine or its associated storage offline is not required. All datastore types are supported, including local storage, VMFS, and NAS (network attached storage).

Can place the virtual machine and all its disks in a single location, or select separate locations for the virtual machine configuration file and each virtual disk. The virtual machine remains on the same host during Storage VMotion.

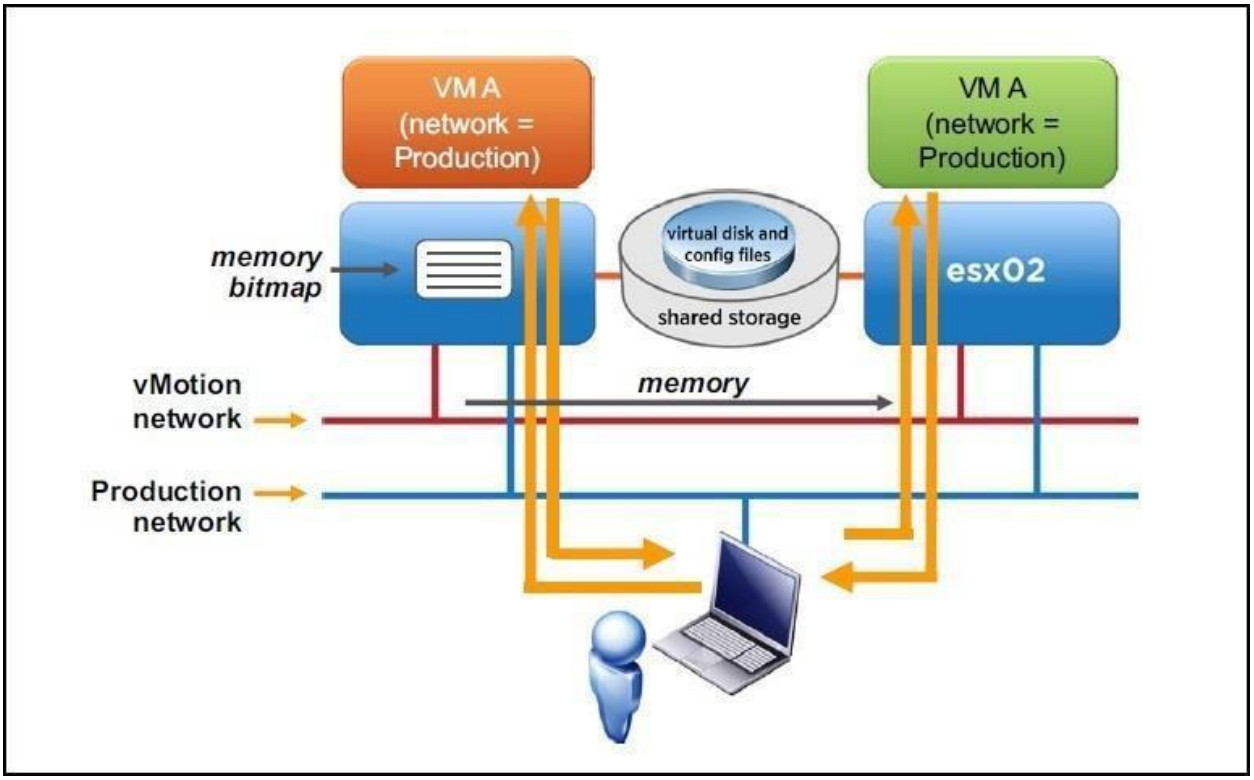
To perform storage VMotion, use the VirtualMachine.RelocateVM_Task method. The Relocate VMSpec passed in to the method allows to specify the target data store and target host or resource pool.

VMware VMotion

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

VMotion can be used to

- Improve hardware utilization.
- Allow continued virtual machine operation while accommodating scheduled hardware downtime.
- Allows vSphere Distributed Resource Scheduler to balance virtual machines across hosts.



Requirements to perform vMotion

- Must have a shared storage, between two hosts.

No need to copy have to copy only the memory status.

- vMotion network.
- Production network.
- Must not have a connection to a virtual device.
- Virtual machines cannot have a connection to a vSwitch.
- Must not have CPU affinity configured.

Source and destination hosts must have.

- Visibility to all storage used by the virtual machine
- At least a Gigabit Ethernet network
- Access to the same physical networks
- Compatible CPUs

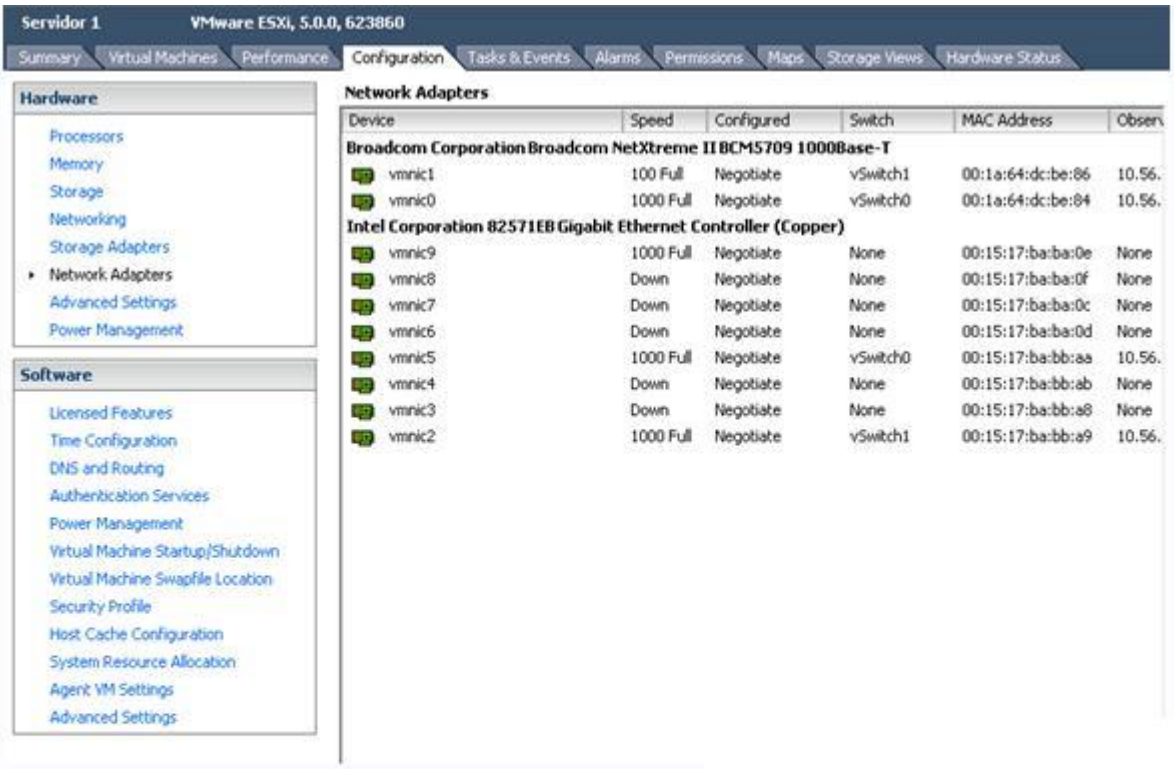
vMotion pros:

- Dynamic allocation services of the software allow you to allocate resources and memory while the processes are running.
- Security service of the software is flexible and allows you to implement user defined policy enforcement.
- The software supports all major operating systems as well as wide range of hardware.
- vMotion allows to precisely identify the optimal placement for virtual machine.
- Virtual machines can be optimized within resource pools automatically.

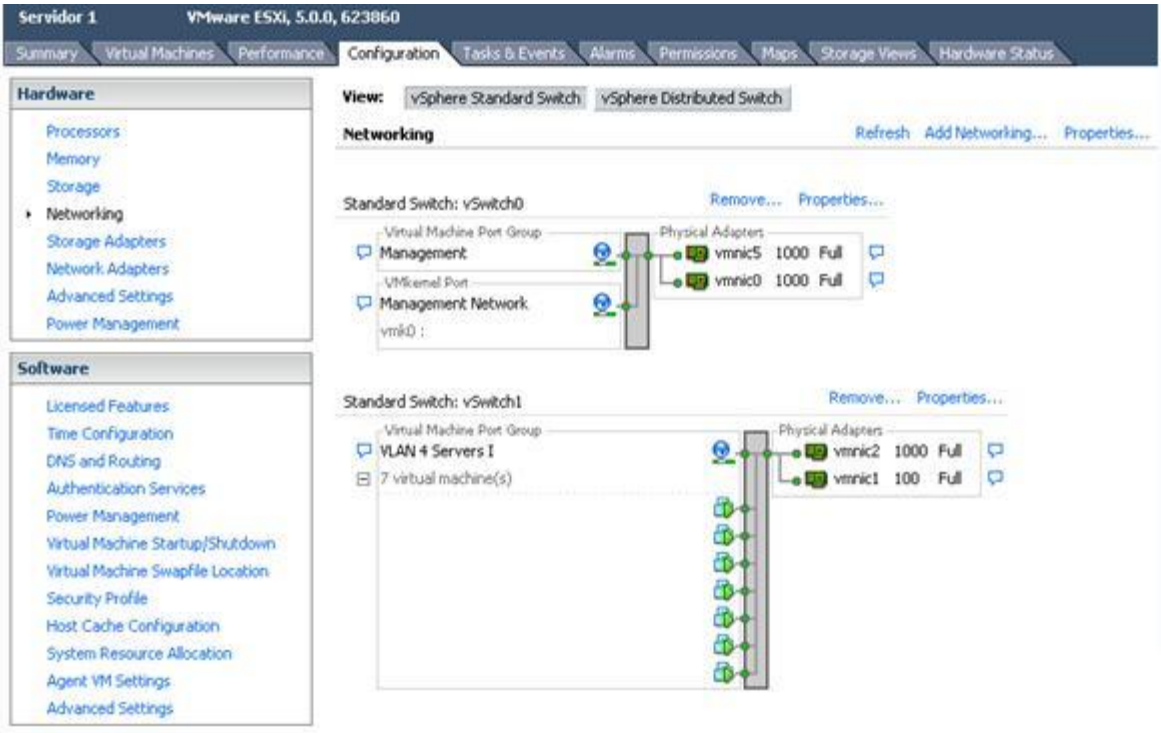
vMotion cons:

- There is no module for performance management on the software.
- Unlike its competitors, the software does not offer any reporting capabilities.
- Configuration features of the software do not include auto recovery, configuration history, and NIC teaming capabilities.
- There are no performance management features of adaptive analysis, memory compression, and continuous resource allocation on the software.

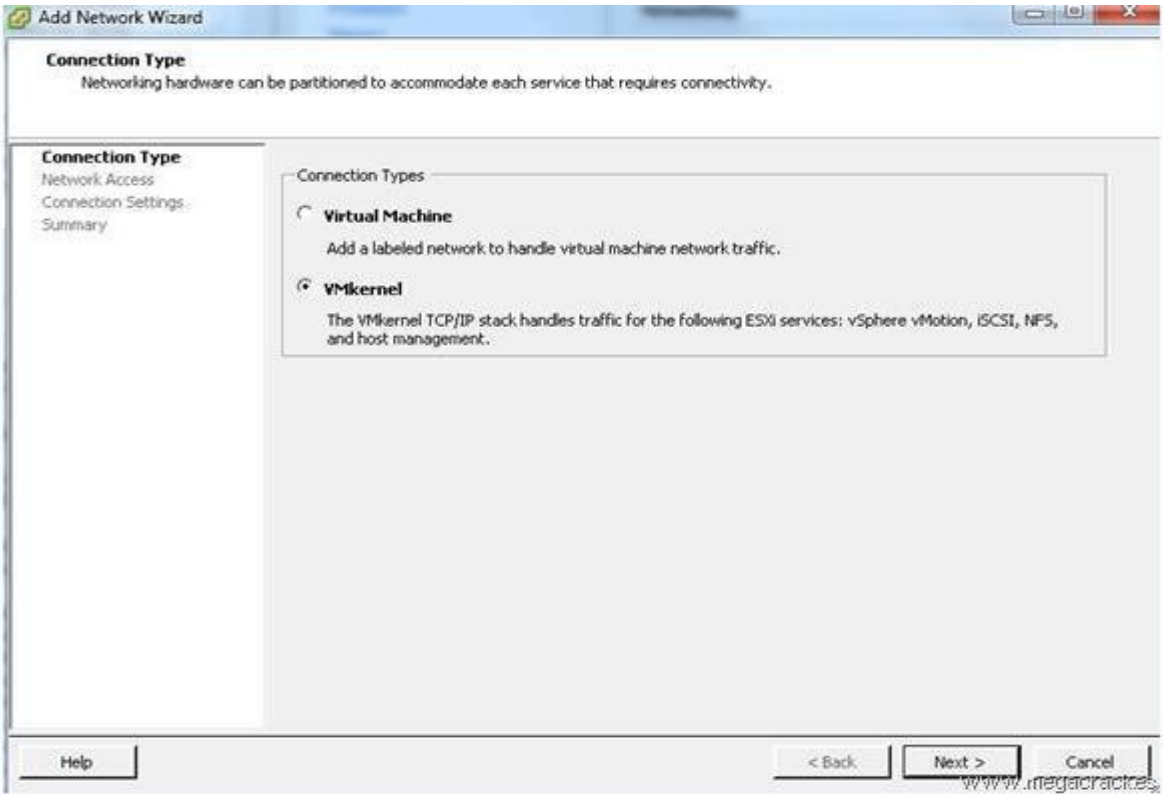
1. tab **Configuration-> Networking**

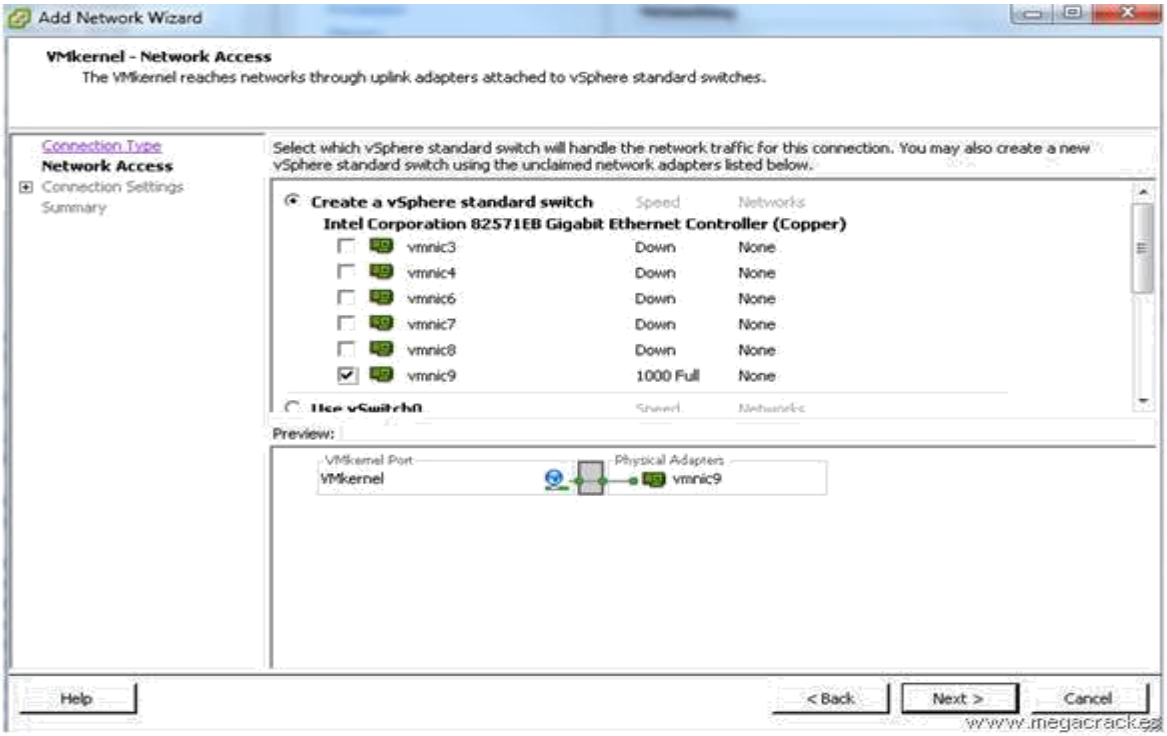


2. Click on **Add Networking** to create the vSwitch.



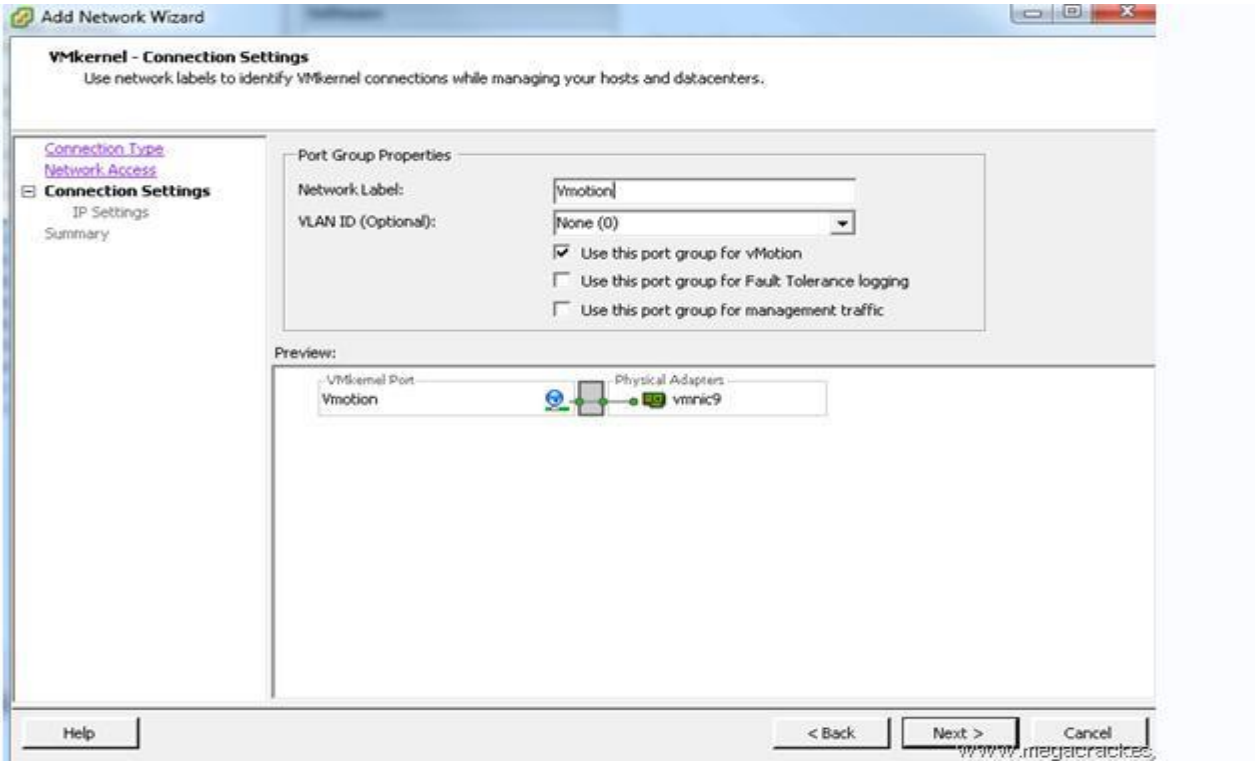
3. Select **VMKernel** and click on **Next.**





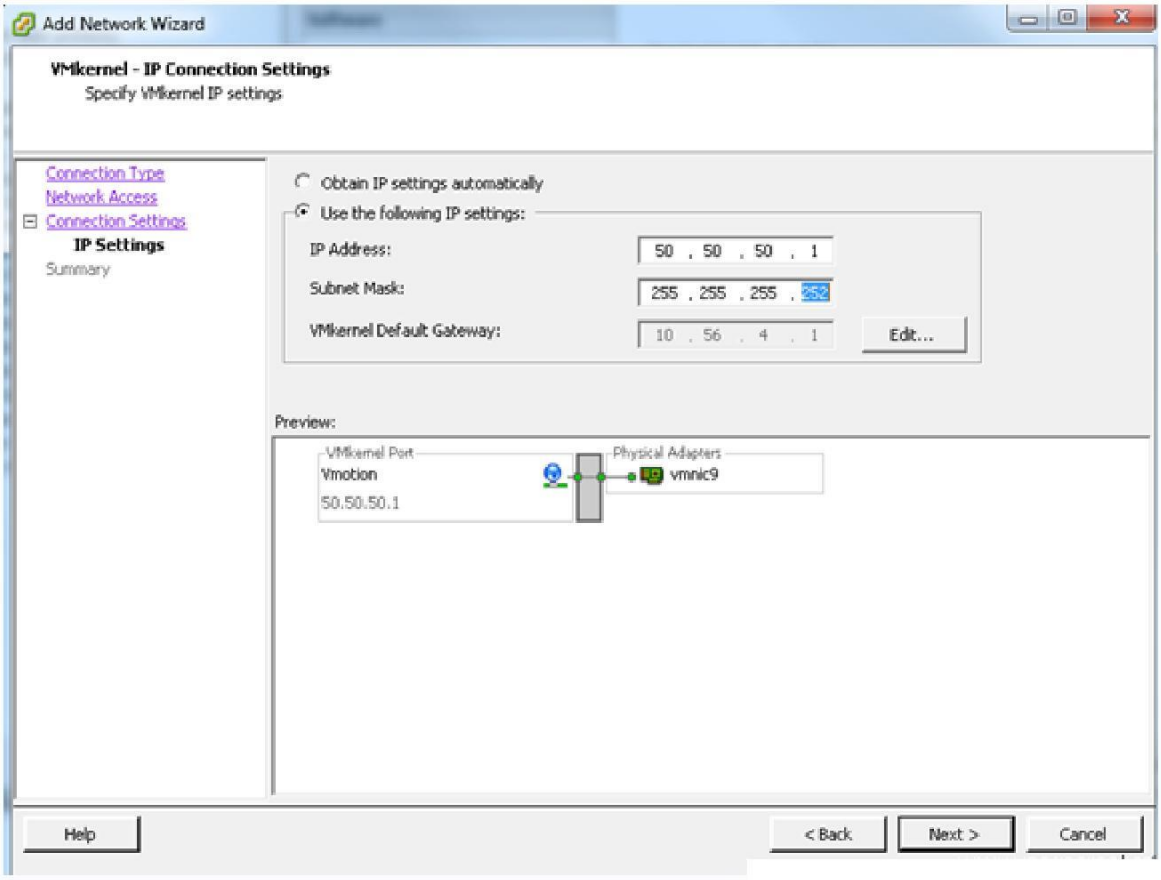
4. We set **Use this port group for vMotion.**

We wrote a **Label Network** different if you want example we put **Vmotion.**

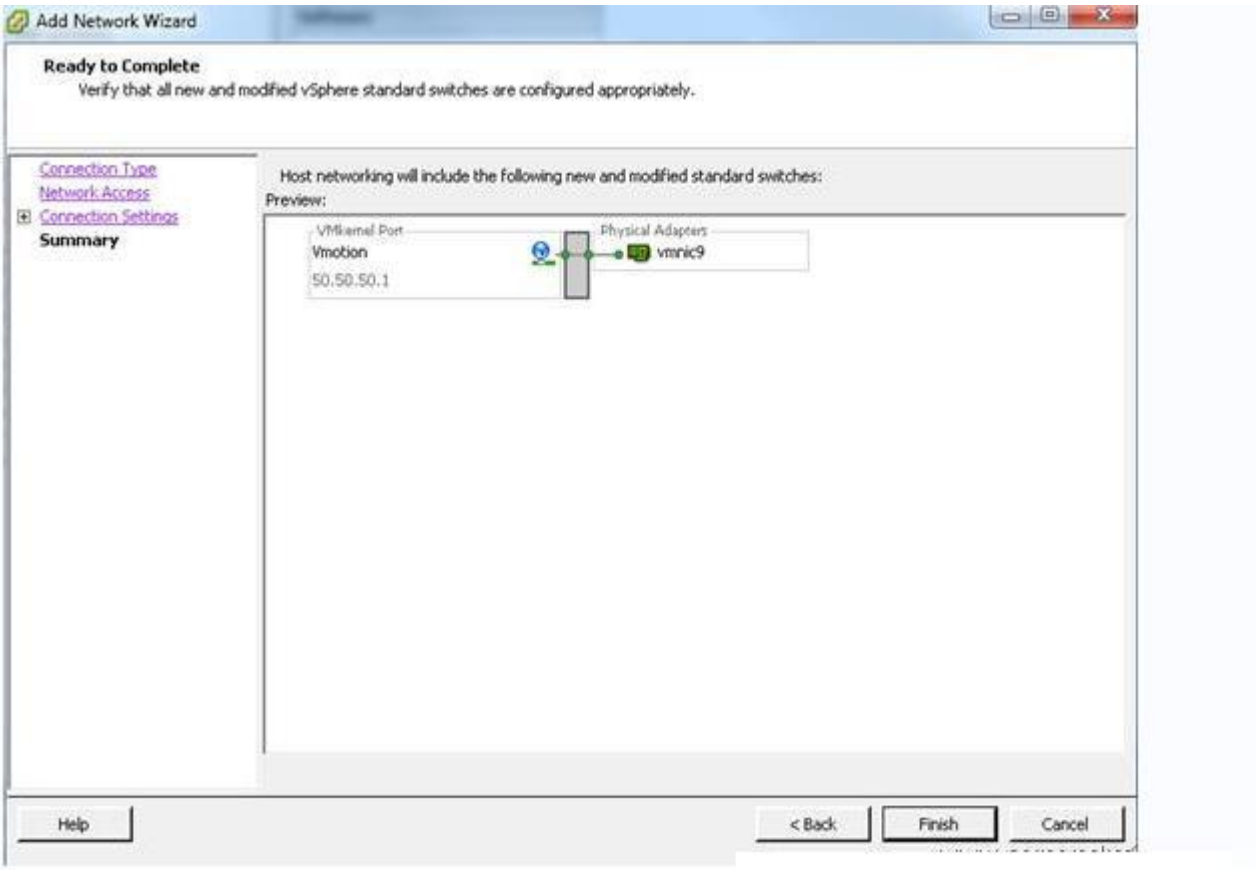


5. **IP Address: 50.50.50.1**

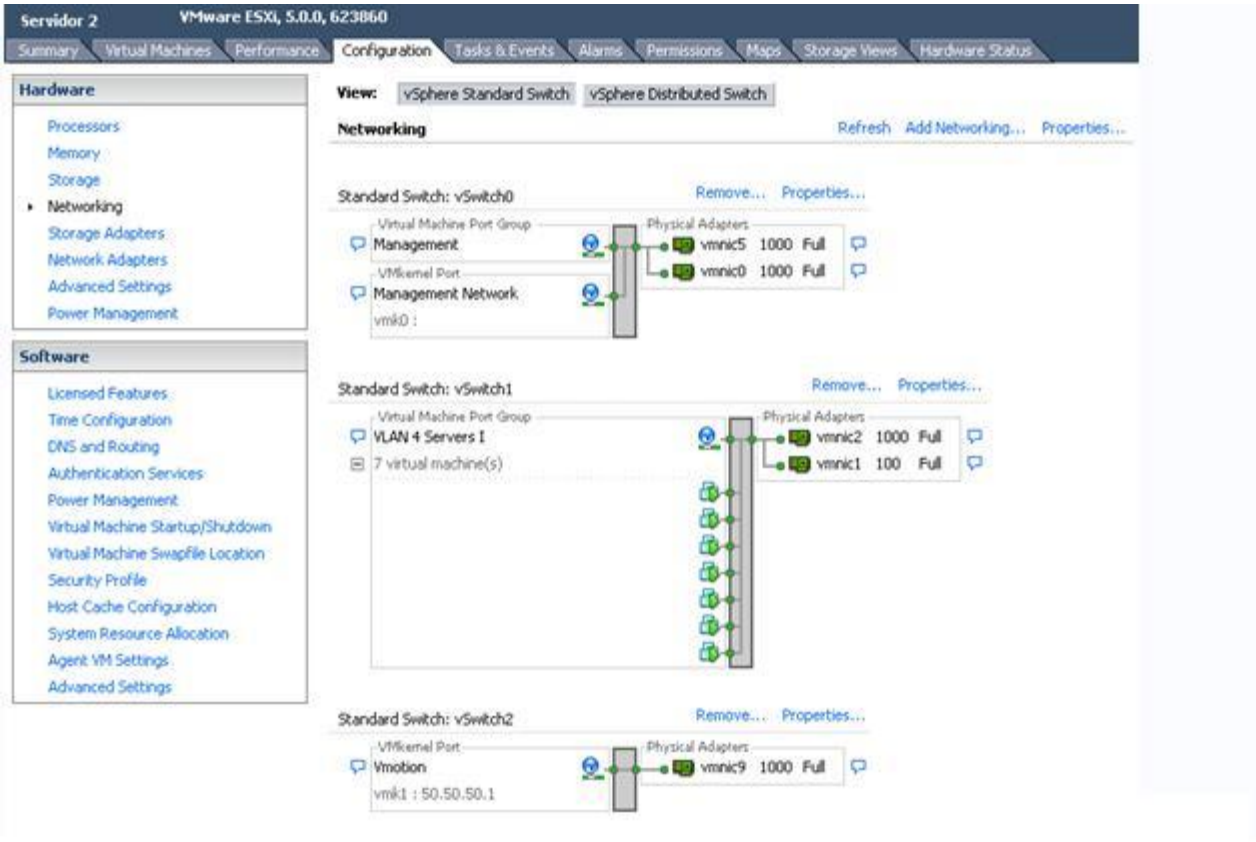
   Subnet Mask: 255.255.255.252 (Since we will use only 2 ip's). Click on **Next.**



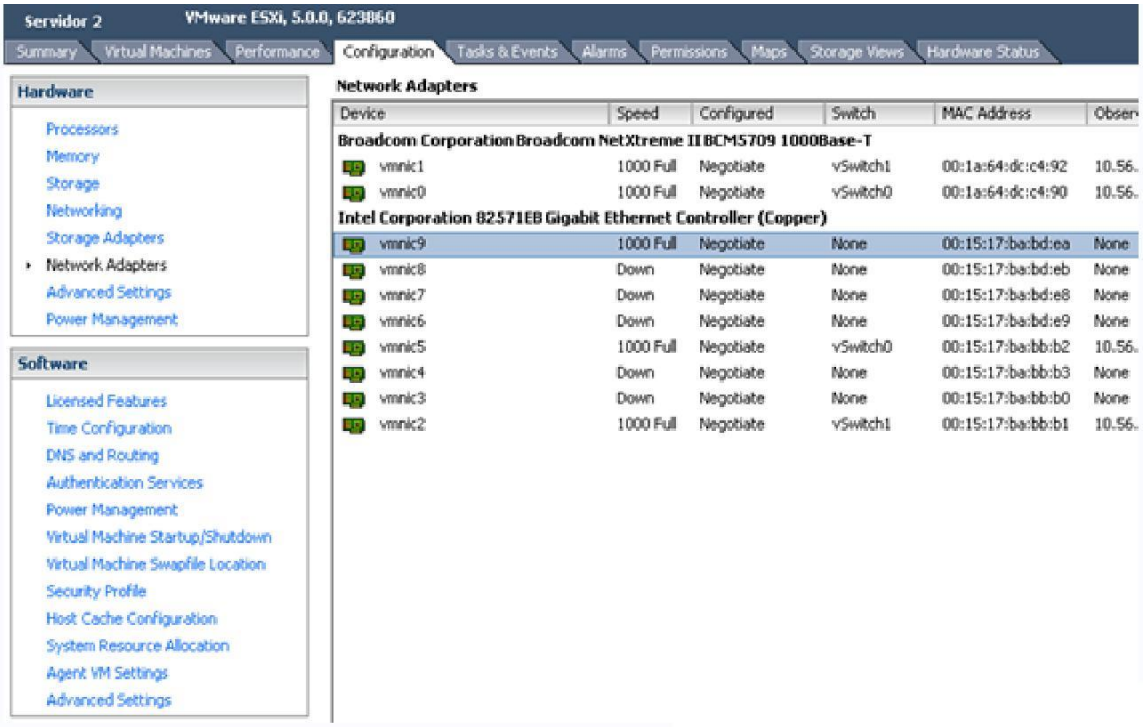
6. Click on **Finish.**



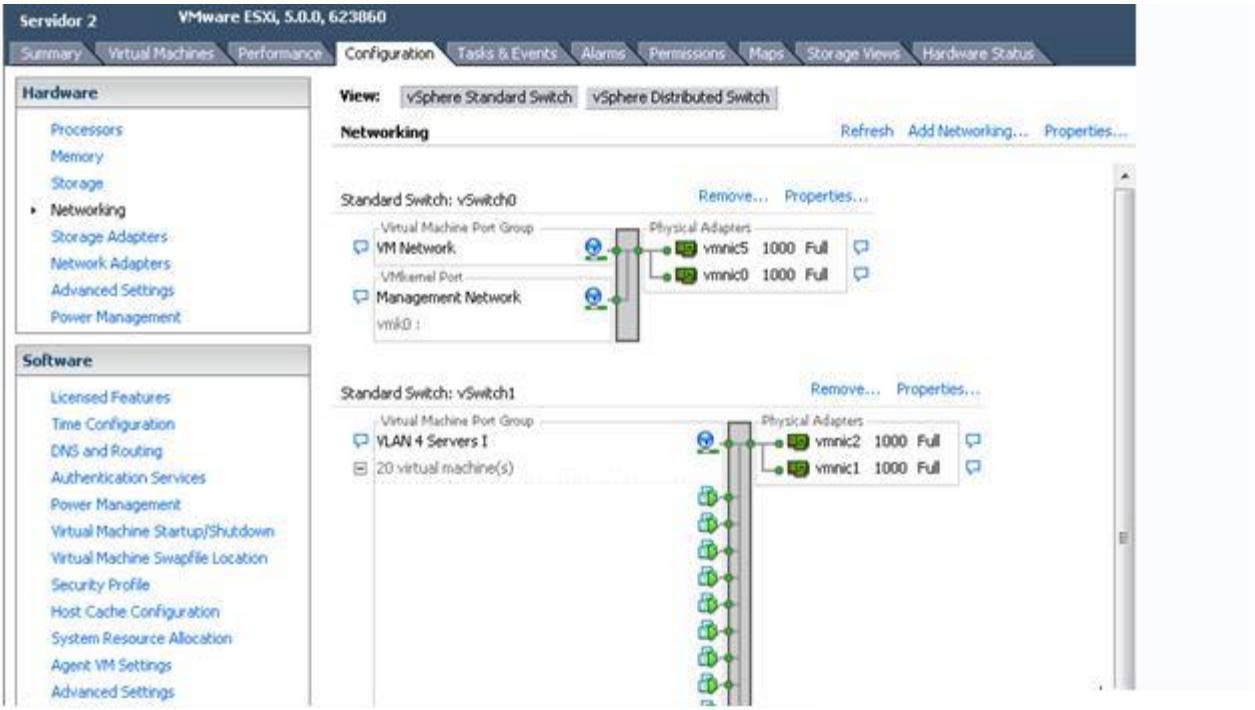
7. We select the tab **Configuration-> Network Adapters** and we see that we have visibility of the new connections.



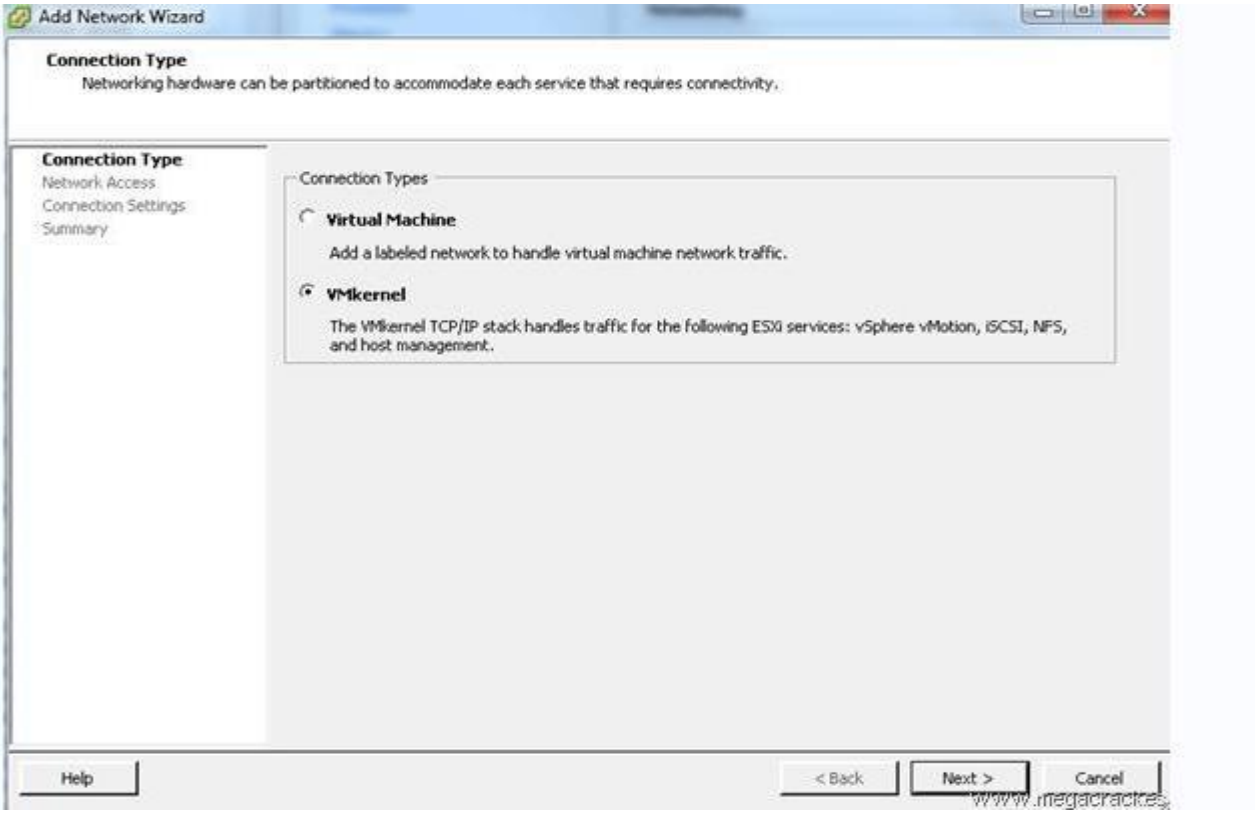
8. Now look at the tab **Configuration-> Networking**



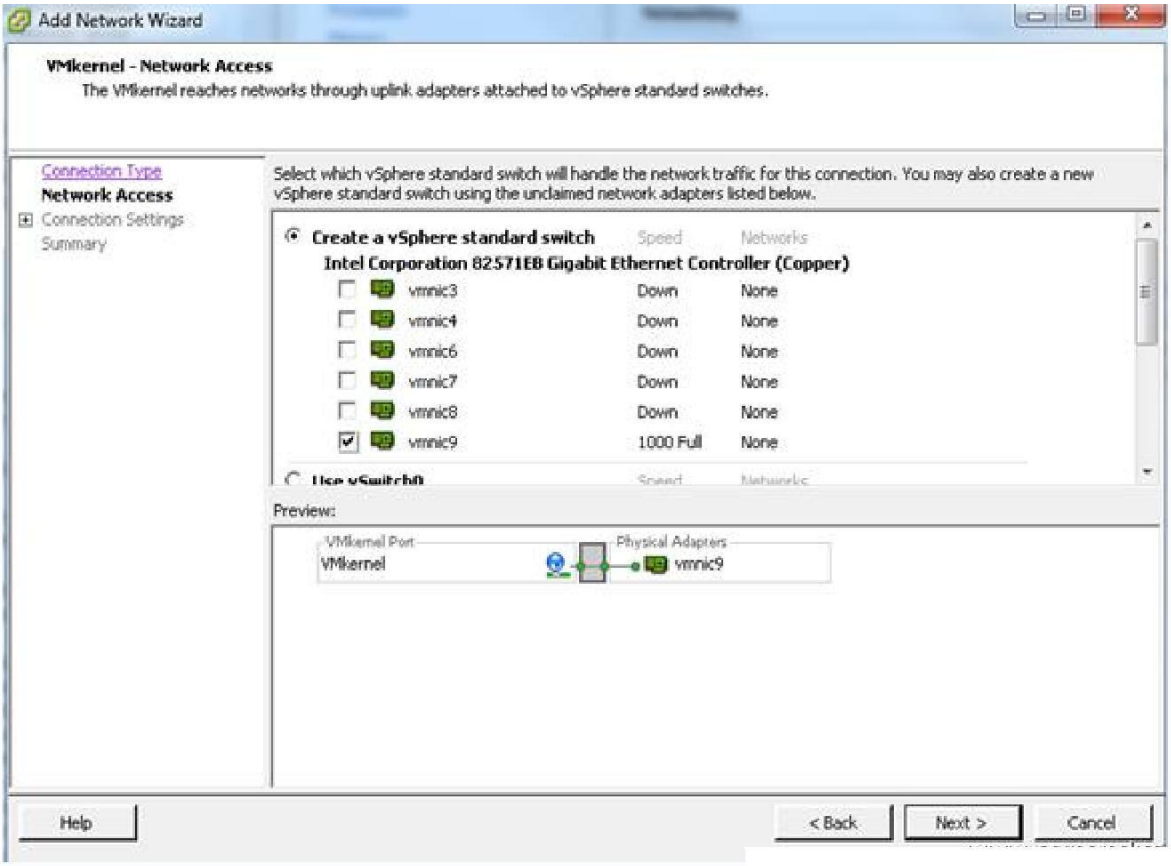
9. Click on **Add Networking** to create the vSwitch.

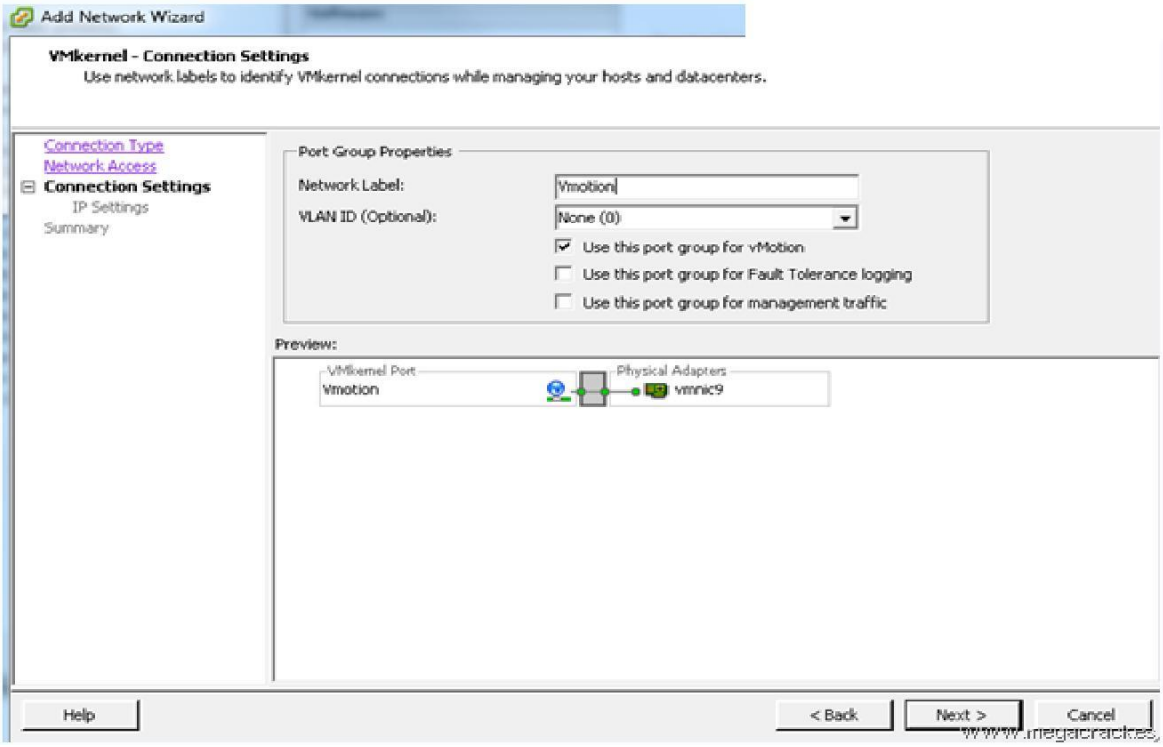


10. Select **VMKernel** and click on **Next.**



11. **Use this port group for VMotion.**

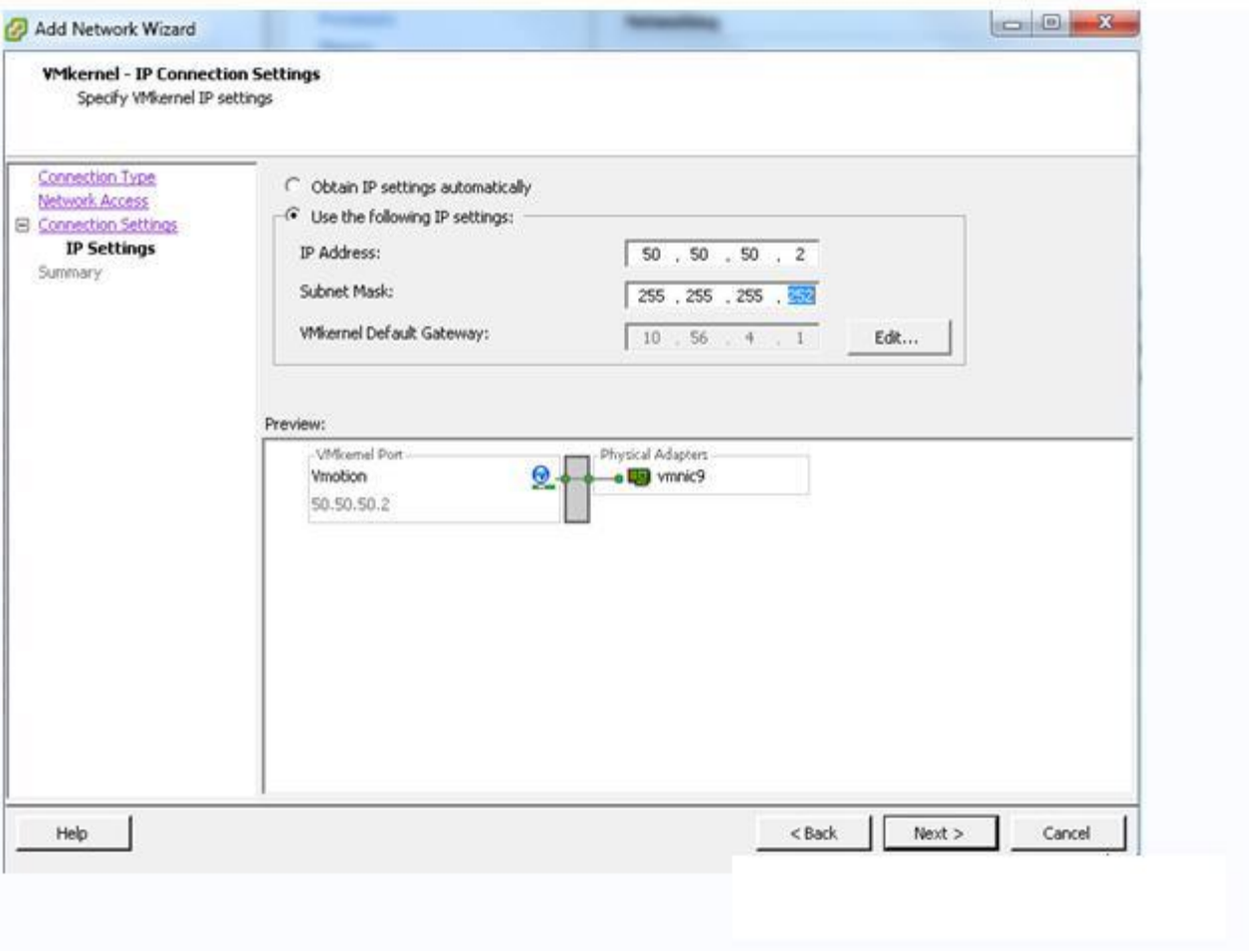




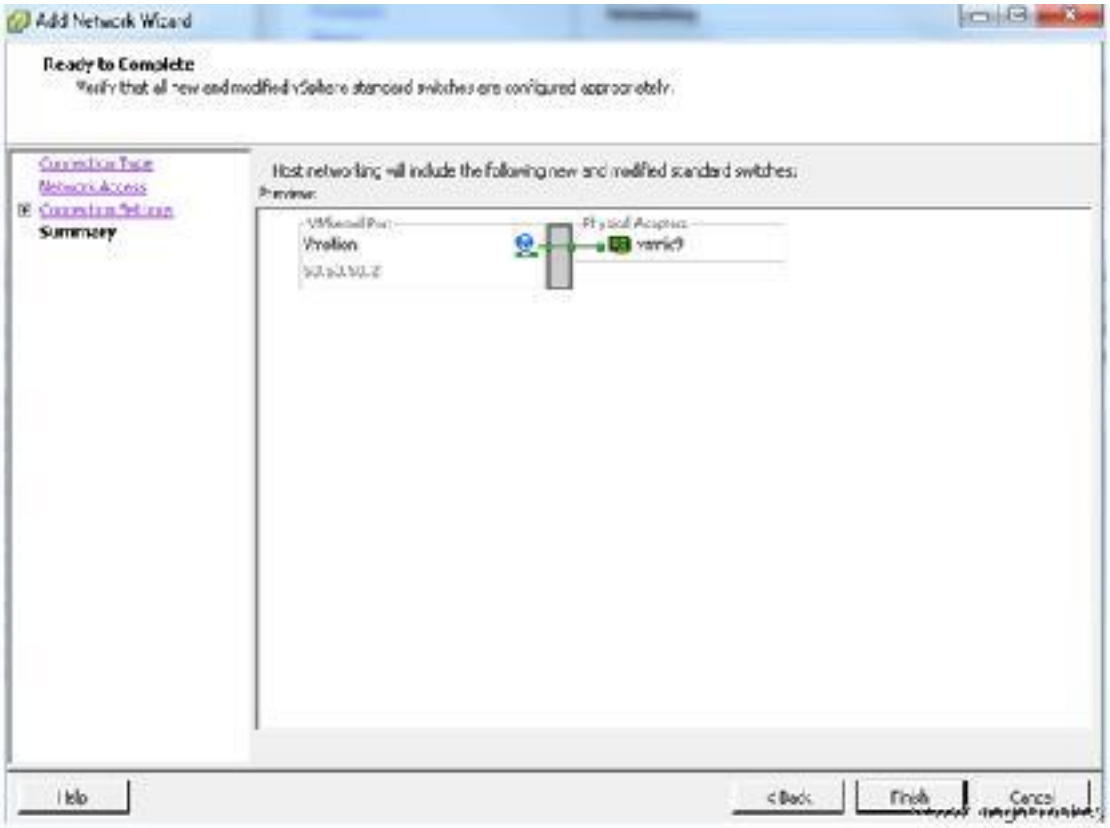
12. **IP Address: 50.50.50.2** (This ip must be different from the server that configured earlier 1).

    Subnet Mask: 255.255.255.252

    Click on **Next.**

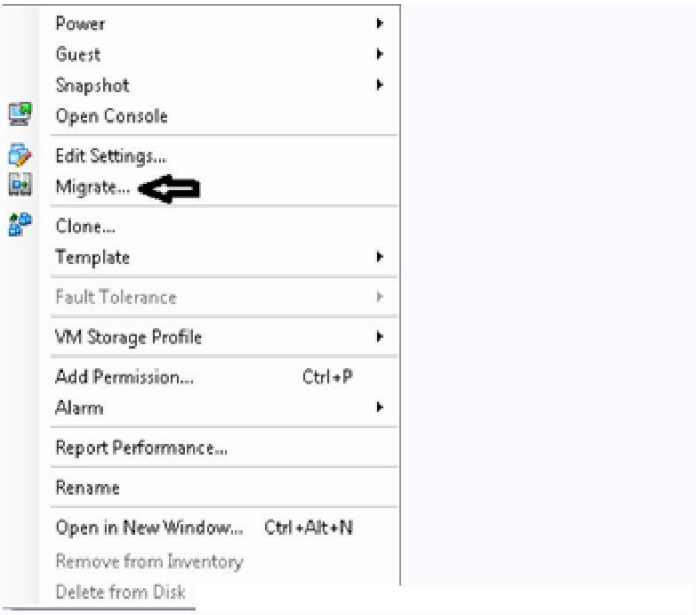


13. Click on **Finish**.

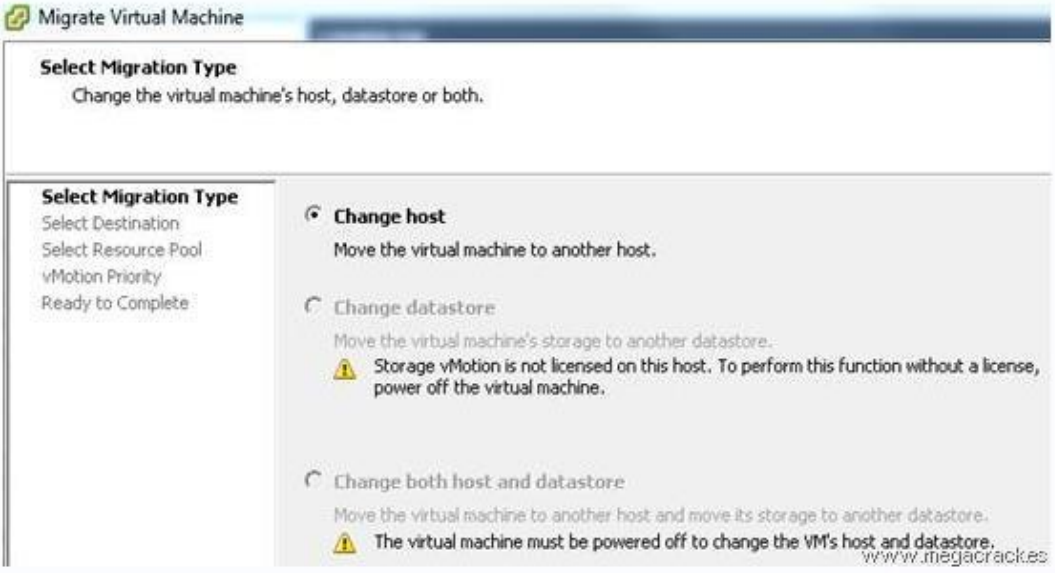


Now what we will do to ensure that the entire system is working properly migrate a VM from one ESXi to the other using Vmotion functionality you just configured.

14. Click on **Migrate.**



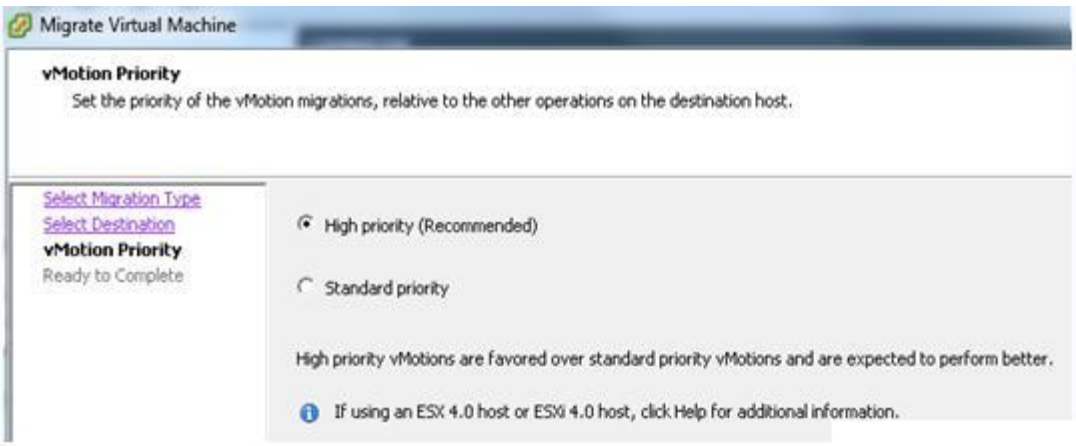
15. Click on **Next.**

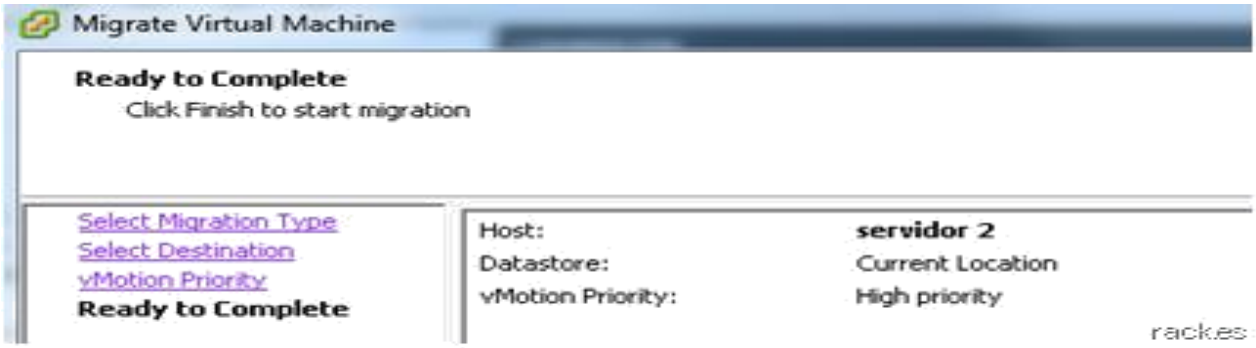


16. Select the target server where to move the virtual machine.

    Click on **Next.**

17. Click on **Next.**





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