Sri Lanka Institute of Information Technology

vMotion Report

Enterprise Standards and Best Practices for IT Infrastructure

4th year- 2nd Semester

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Batch : -Weekned

What is vMotion

vMotion allows you to move virtual servers and desktops from one physical server to another without having to shut down the virtual desktop or server. All of this is done in real time without the user of the virtual machine even knowing they have been moved.

What is vMotion Migration

Migration is the process of moving a virtual machine from one host or storage location to another. Copying a virtual machine creates a new virtual machine. It is not a form of migration. vSphere supports the following migration types:

- Cold migration
- Migration of a suspended virtual machine
- Migration with VMotion
- Migration with Storage VMotion
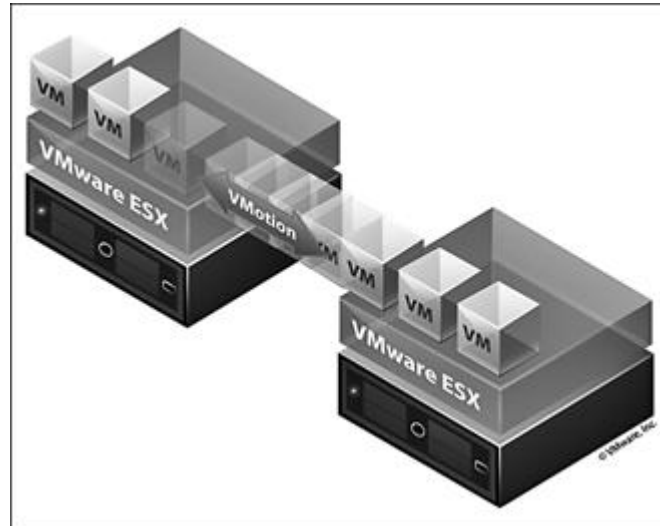
Hardware Requirements for vMotion Migration

- A virtual machine must not have a connection to an internal vSwitch (vSwitch with zero uplink adapters).

- A virtual machine must not have a connection to a virtual device (such as a CD-ROM or floppy drive) with a local image mounted.

- A virtual machine must not have CPU affinity configured.

- If a virtual machine uses an RDM, the RDM must be accessible by the destination host.

Software Requirements for vMotion Migration

- Make sure that your operating system supports vCenter Server.

- vCenter Server requires a 64-bit operating system.

- The .NET 3.5 SP1 installation might require Internet connectivity to download more files.

- The 64-bit system DSN is required for vCenter Server to connect to its database.

Host Requirements for vMotion Migration

Source and destination hosts must have:

- Visibility to all storage (Fibre Channel, iSCSI, or NAS) used by the virtual machine:

  - 128 concurrent vMotion migrations per VMware vStorage VMFS datastore

- At least a Gigabit Ethernet network:

  - Four concurrent vMotion migrations on a 1Gbps network

  - Eight concurrent vMotion migrations on a 10Gbps network

- Access to the same physical networks
- Compatible CPUs:

  - CPU feature sets of both the source and destination host must be compatible.

  - Some features can be hidden by using Enhanced vMotion Compatibility (EVC) or compatibility masks.
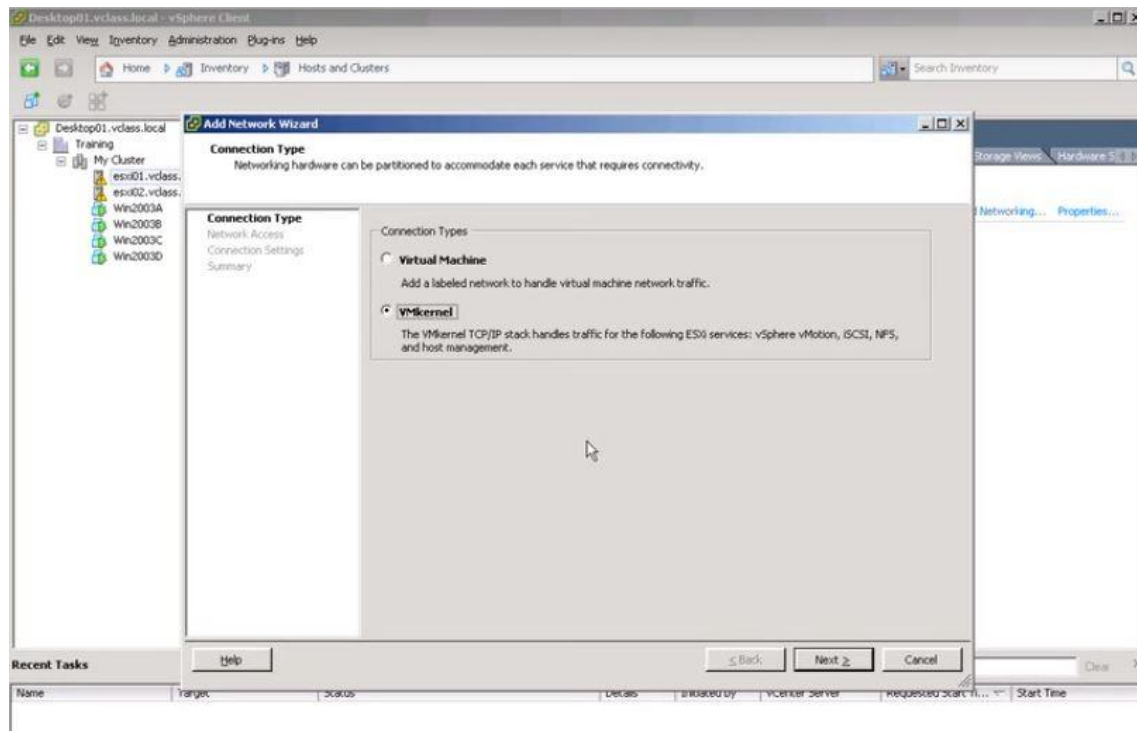
Demonstration of vMotion Migration

1. Log in to the VMware vSphere client to do the VMware vSphere migration.
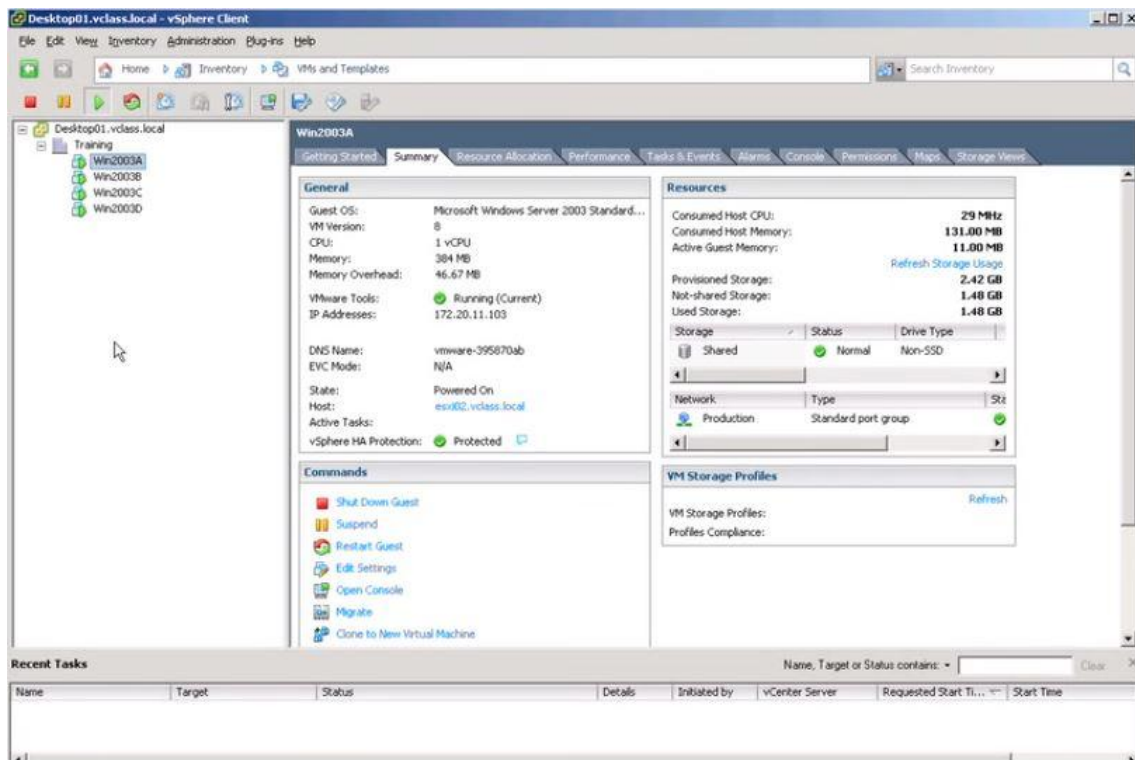
2. If we have the files in shared storage we have to change VMs and template to host and cluster. Then click the exsi01 and go to configuration tab. Select networking in hardware section then click on the add networking.
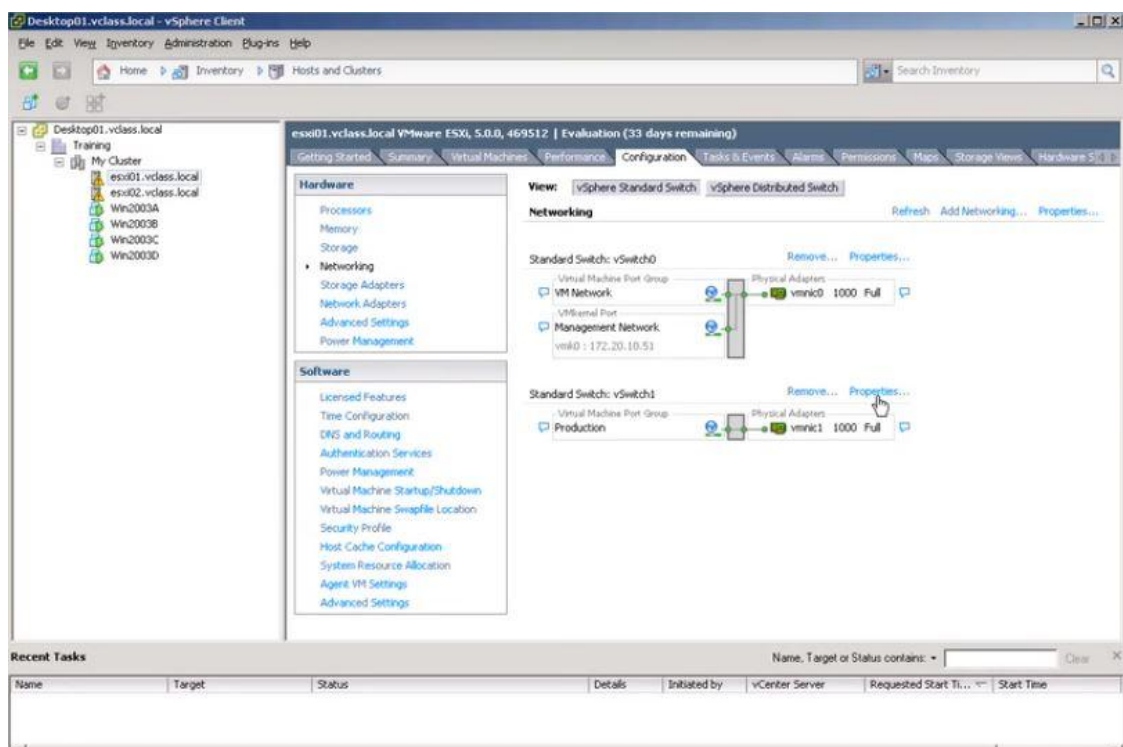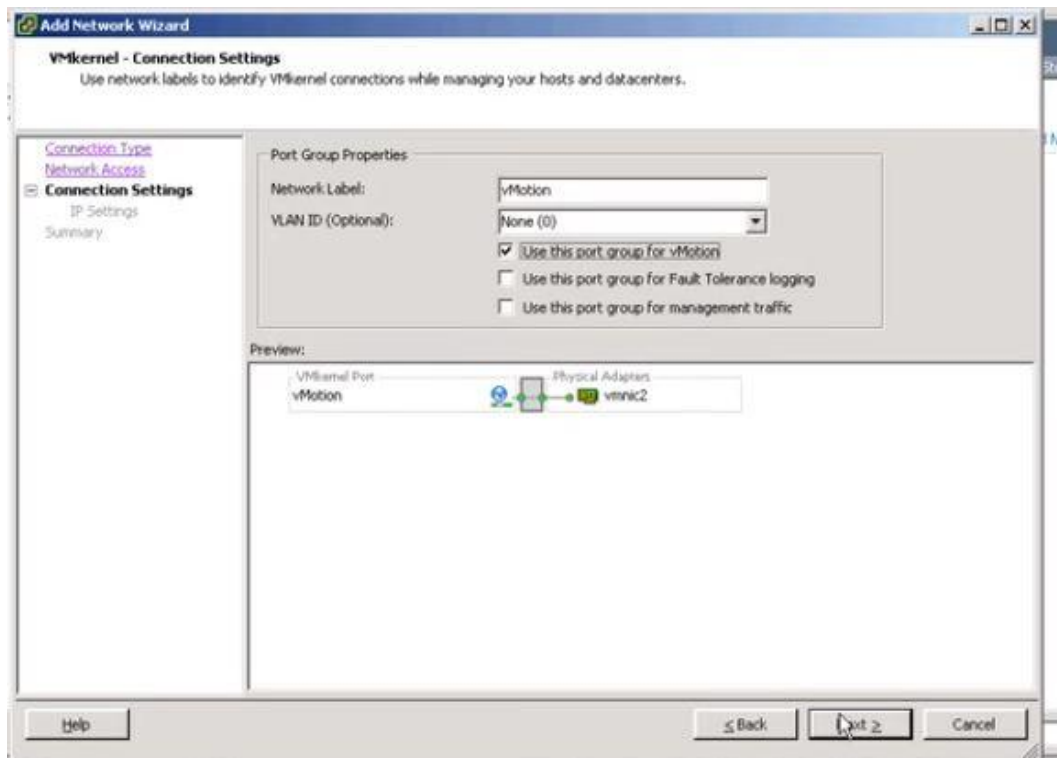
3. Select VMKernel and click on Next.

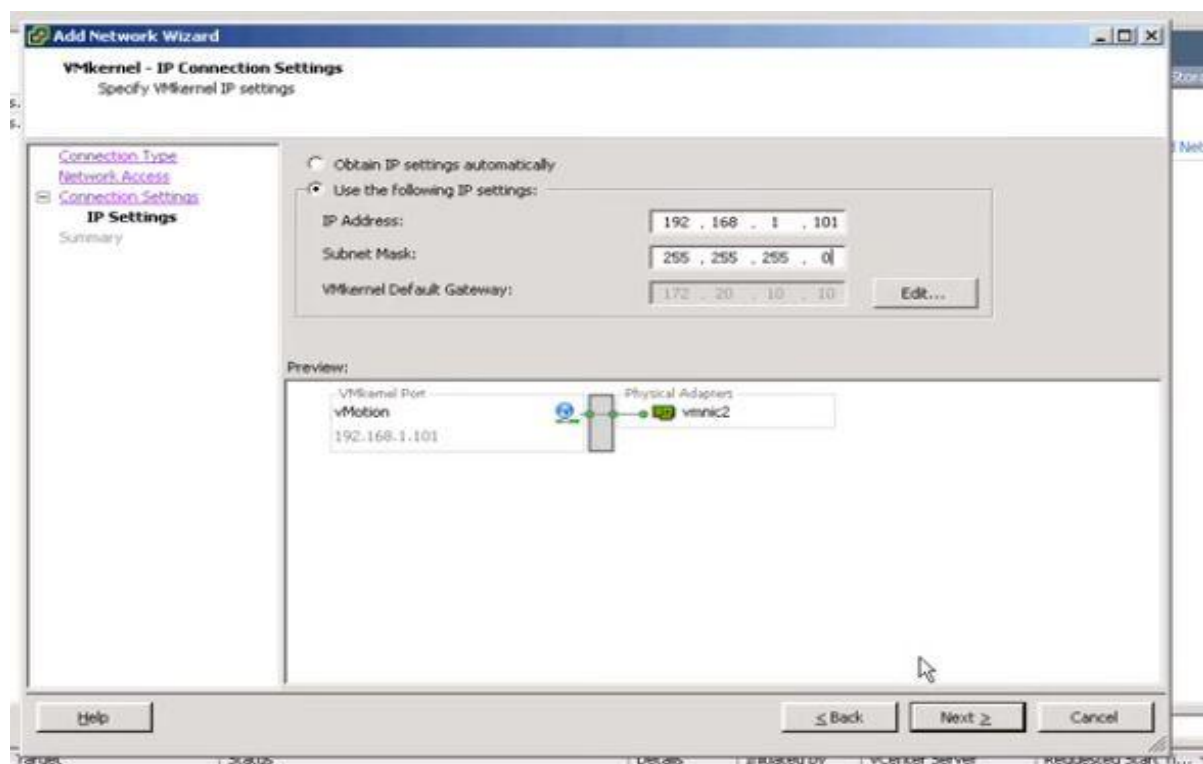4. After appearing this screen then click next button.
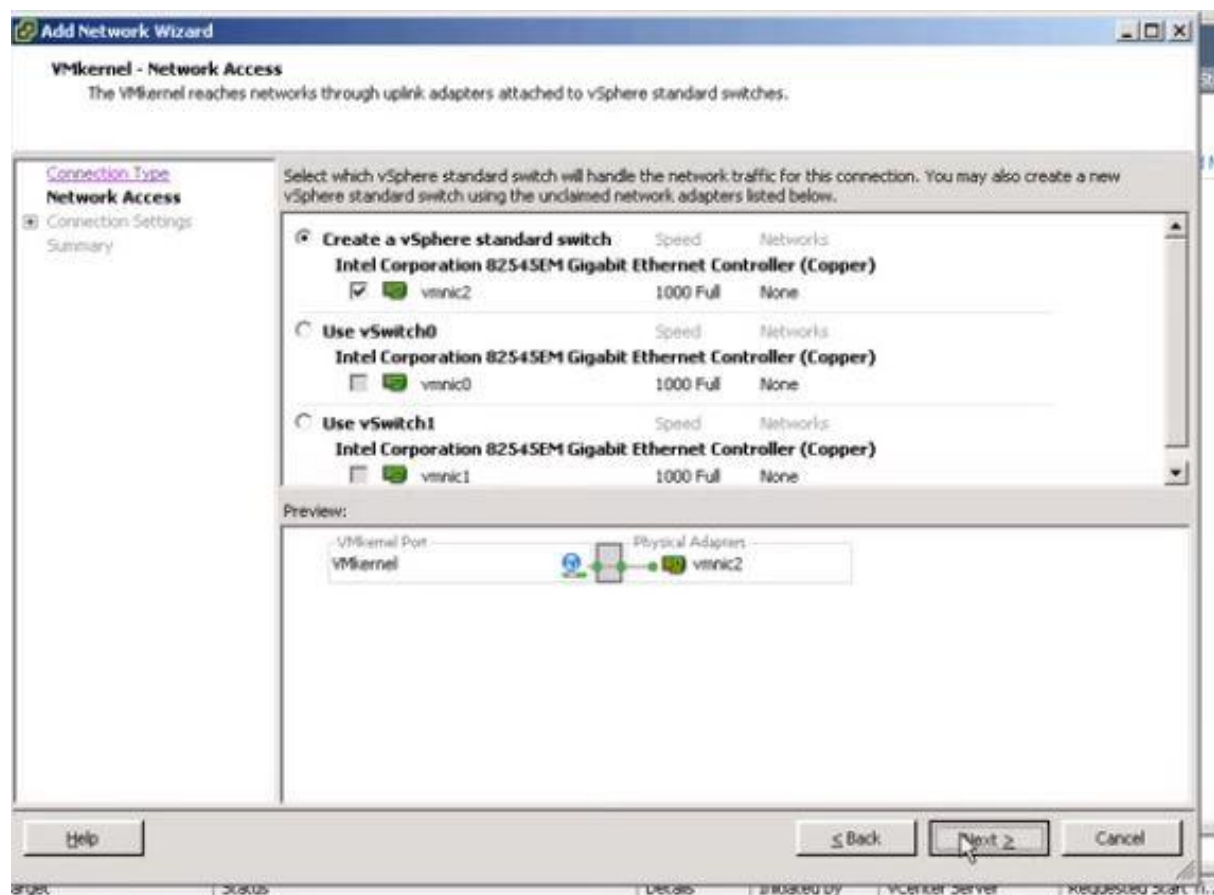
5. Select a meaningful name, make sure that it is spelt the same on both esxi servers, it is case sensitive. Then tick the "use this port group for vMotion".
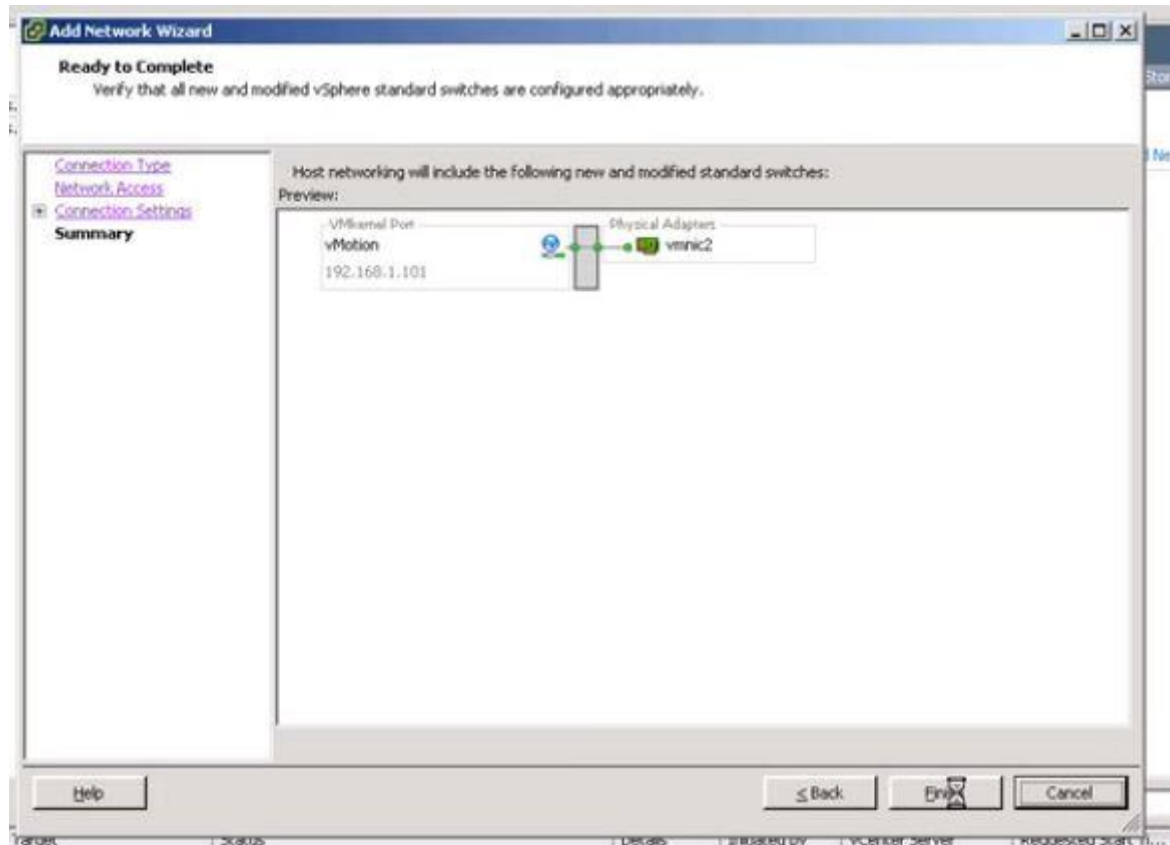

6. Use the following IP settings,

   IP Address: 192.168.1.101

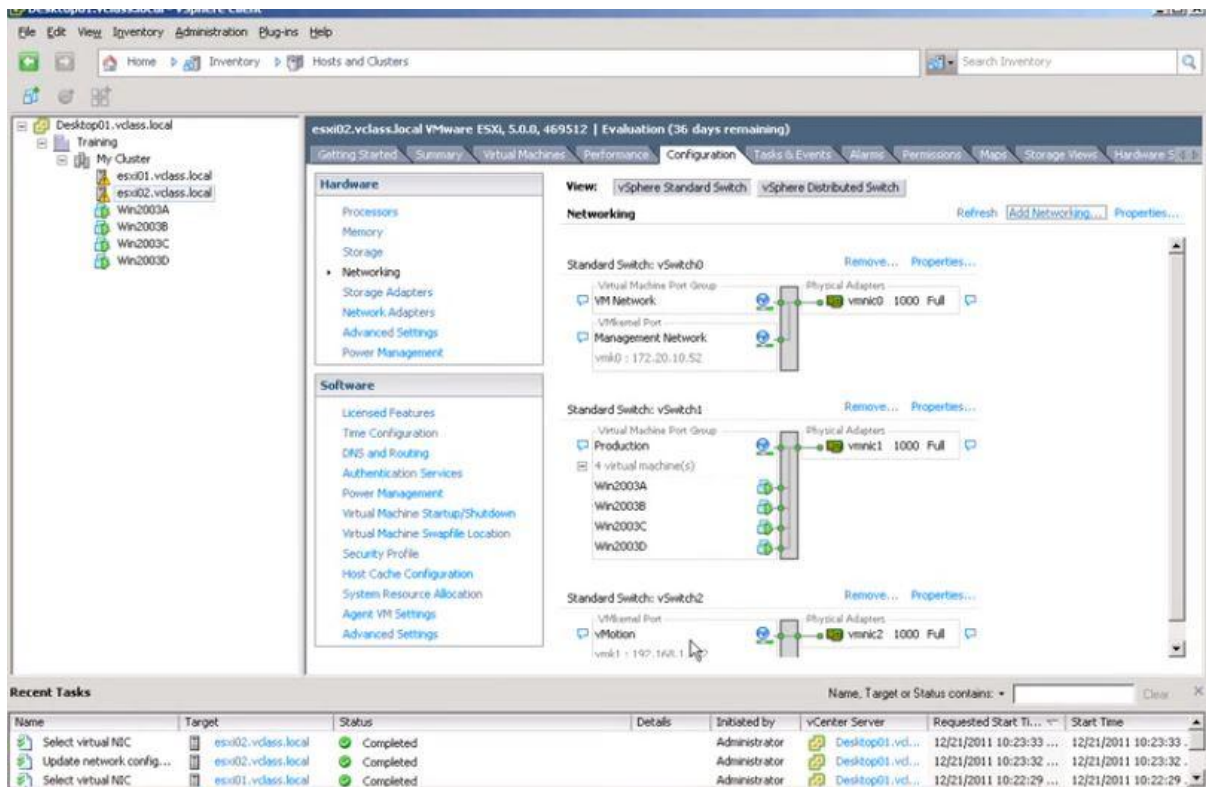   Subnet Mask: 255.255.255.0 Click on Next.

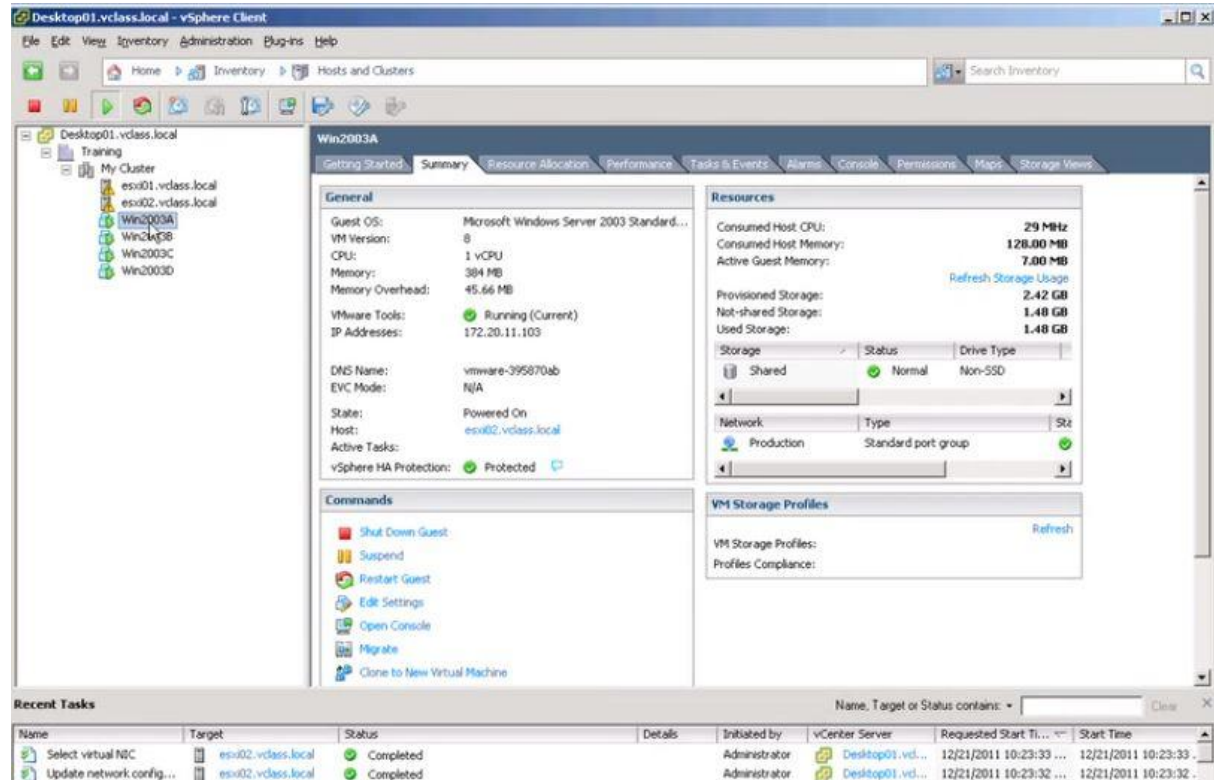7. Then get the summary page and Click on Finish.

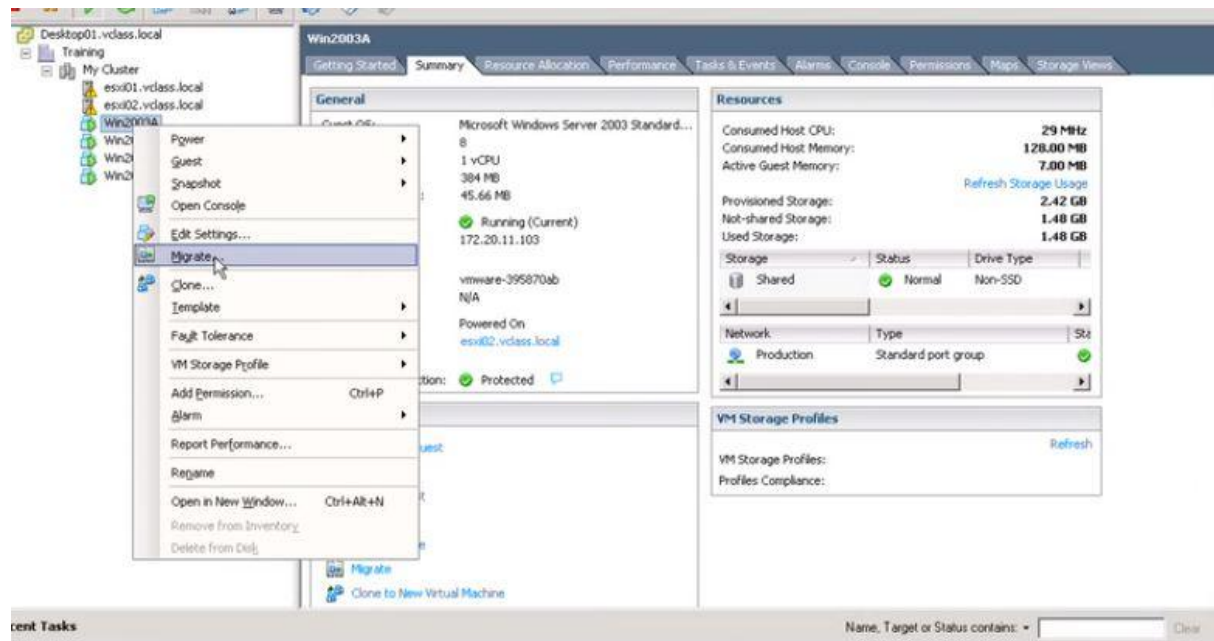8. Do the same procedure starting from step1 to step 7 to the exsi02.

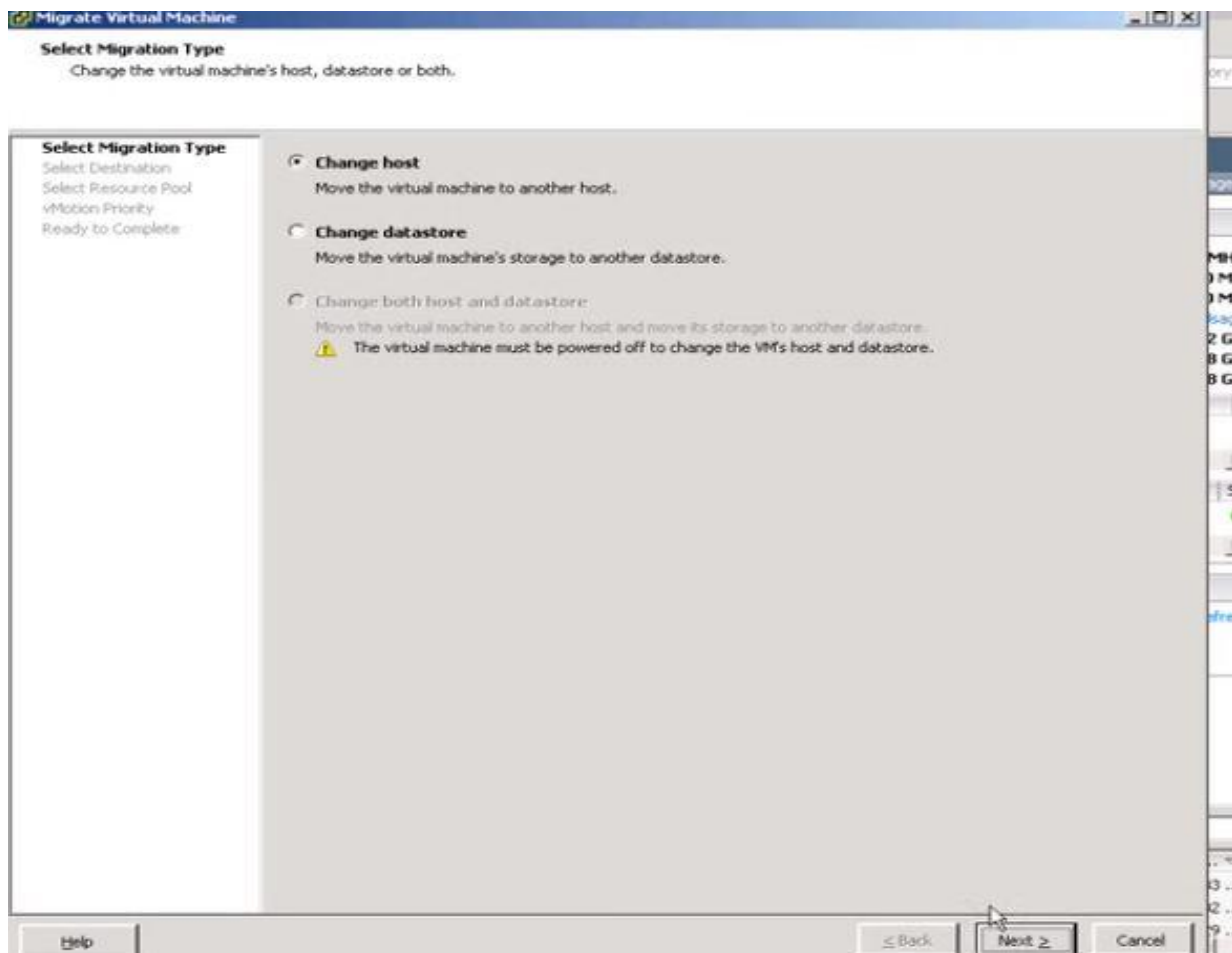9. The selected gate will be reduce traffic.

10. Select the virtual machine.

11. Right Click on the virtual machine and click the Migrate.

12. The below screen will appear, as we are only changing the exsi host we select "change host".

13. Next we select the destination host, as esxi01 if for any reason the VM cannot be migrated any errors will be produced in the button screen, other you will see "Validation succeeded" and Click on Next.
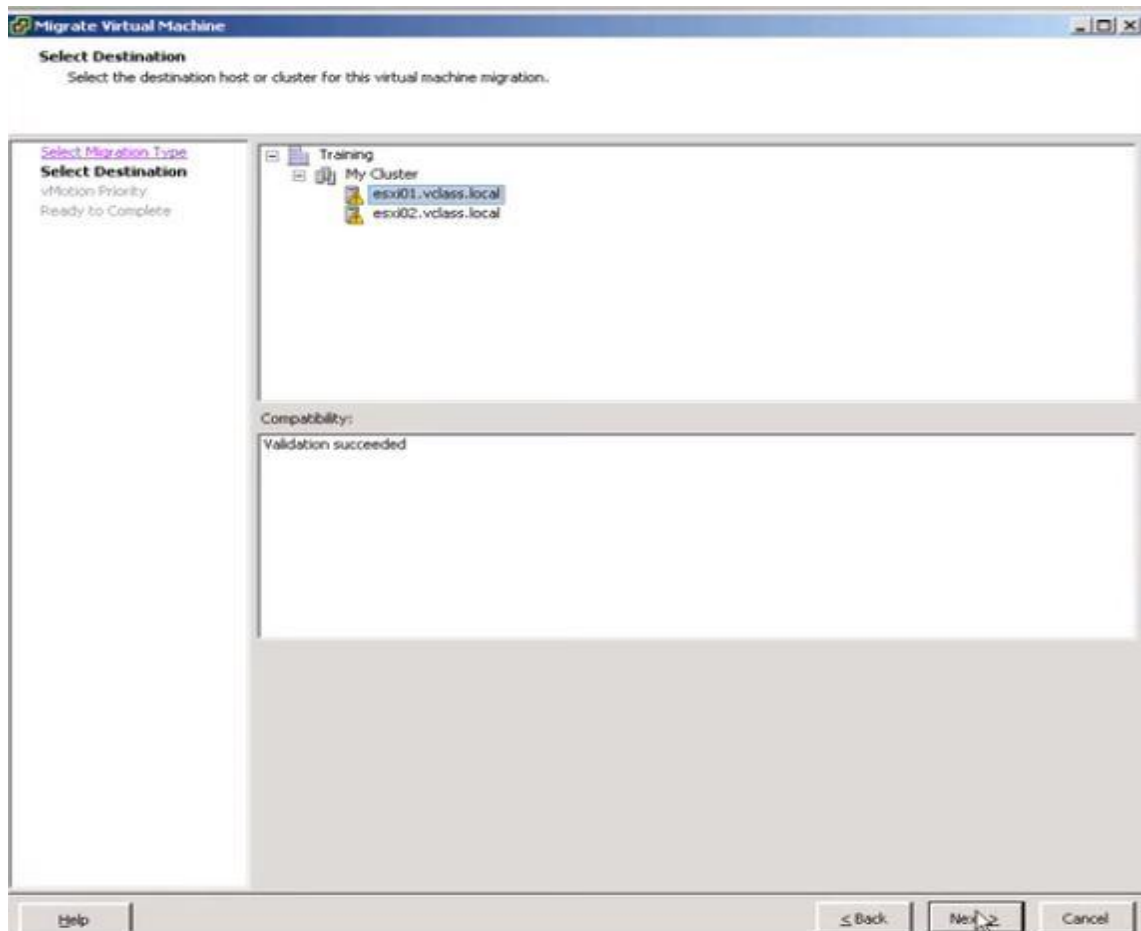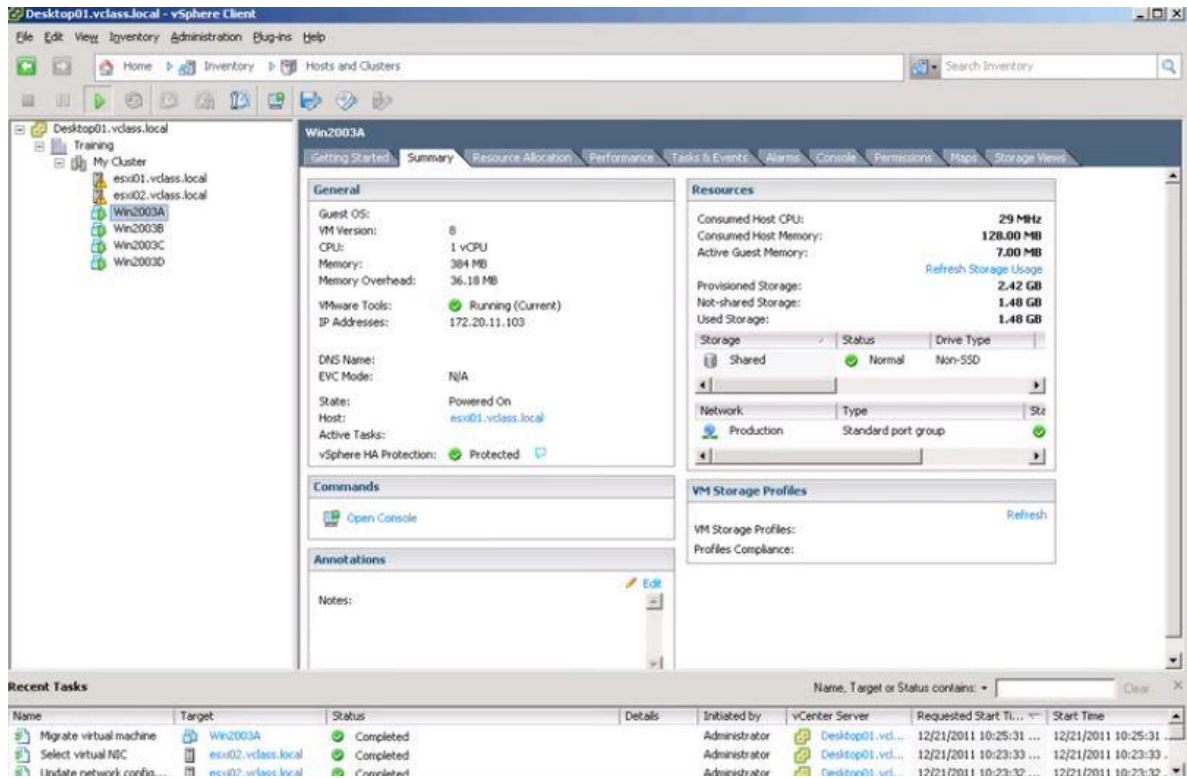
14. Next comes a priority screen, depending on the resources available and time of the day will decide the priority level and Click on Next.
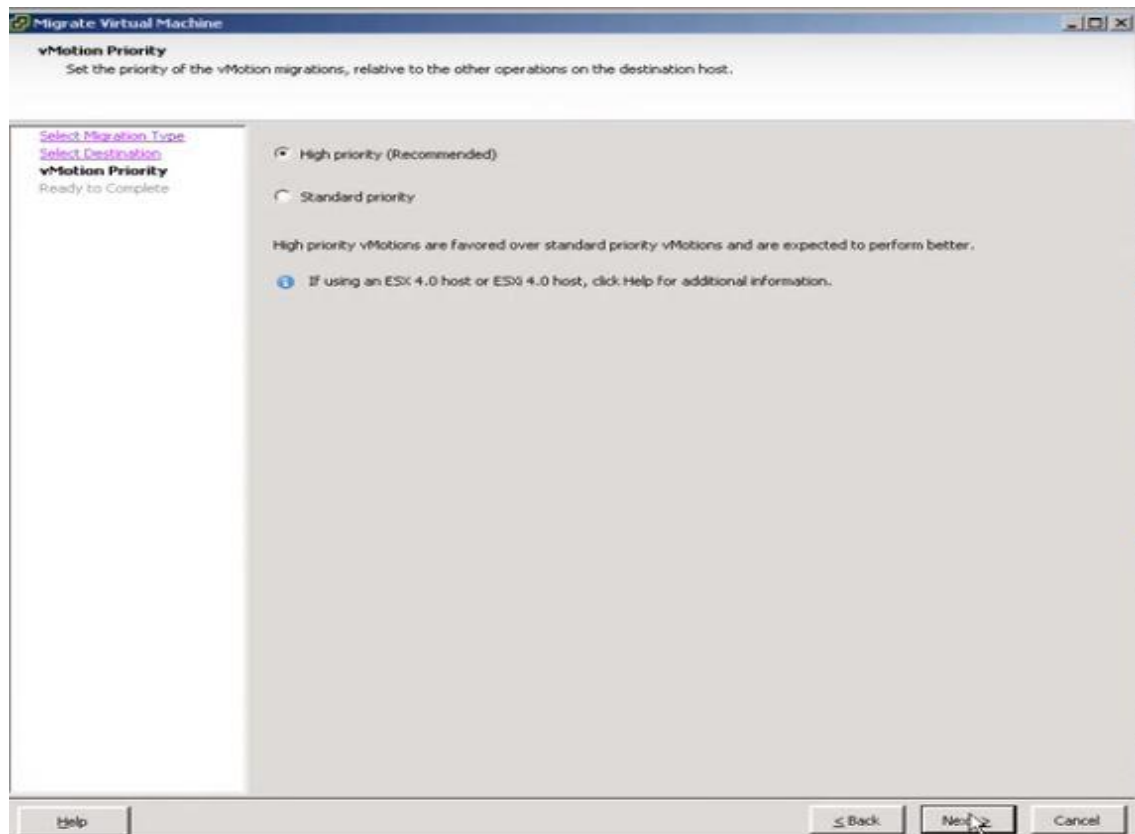
15. Next comes a summary screen and Click on Finish to start the migration.
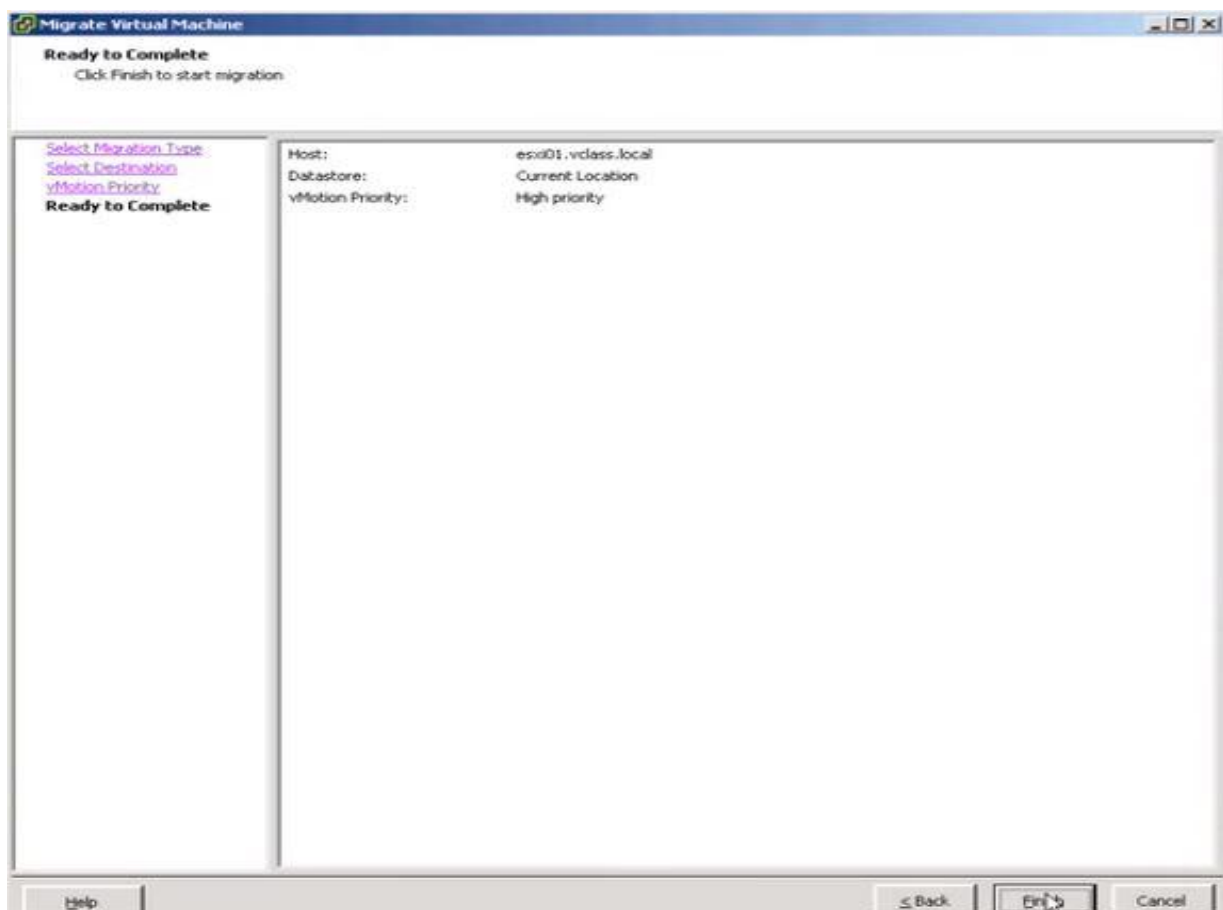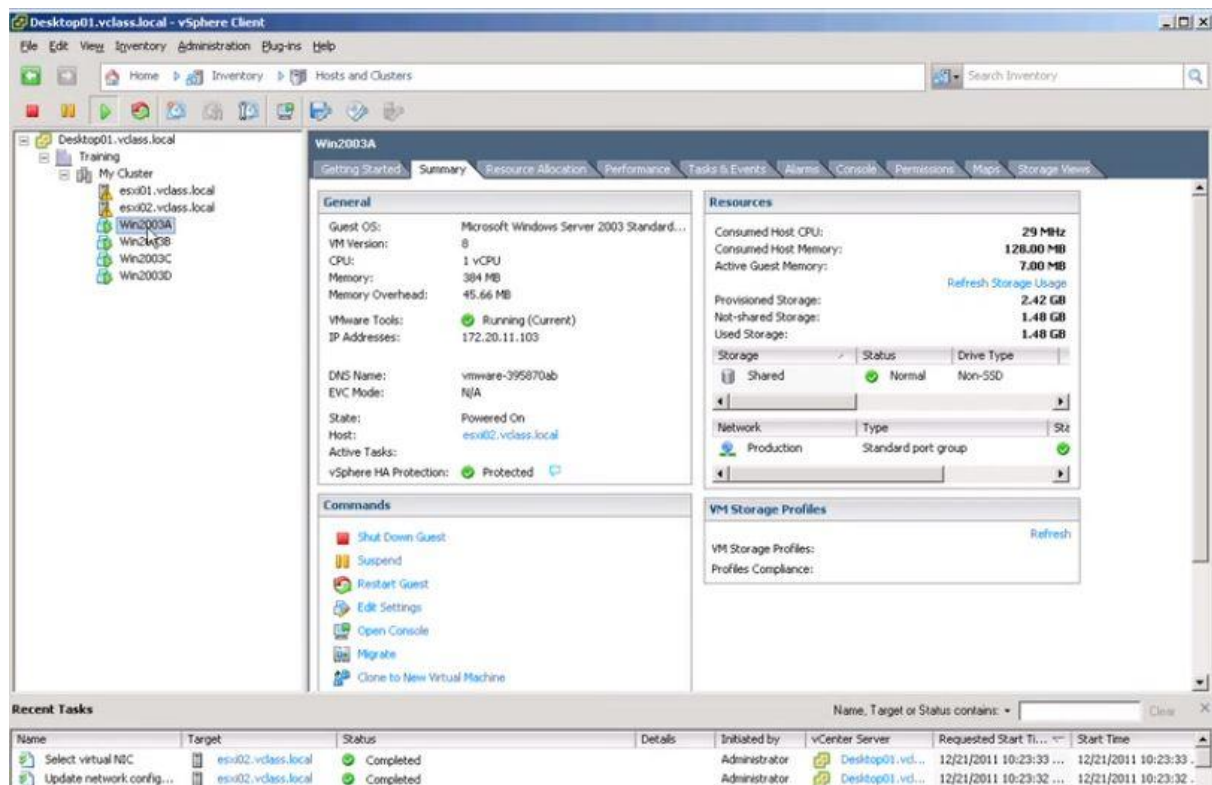
16. You can see that the VM was running on exsi01 and used the Shared storage datastore.


17. Finally the VM is successfully migrated, you can clearly see that it is now running on exsi02 and it is still using the same data store (datastore), the whole process only took 16 seconds, this of course may take longer depending on the VM memory size and usage.

Advantages of the vMotion Migration

- Automatically optimize and allocate entire pools of resources for maximum hardware utilization and availability.

    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.
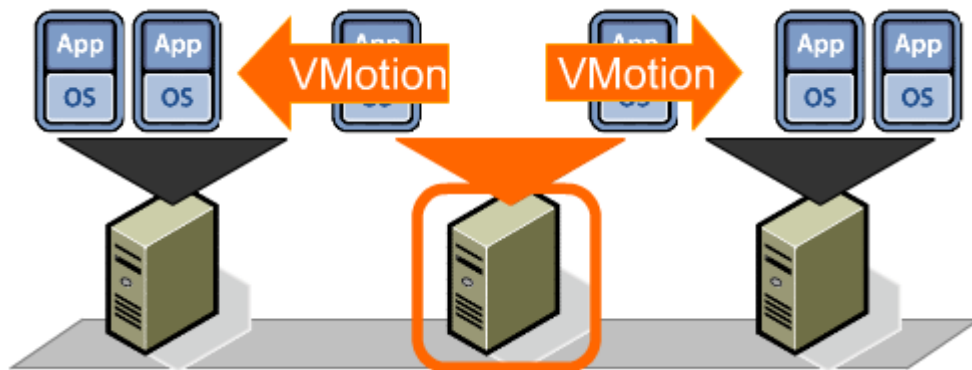
- Allow continued virtual machine operation while accommodating scheduled hardware downtime.

    90% of downtime is scheduled, before vMotion administrators had to do server maintenance late at night in order to avoid disrupting users. Having all the servers as virtual machines, you only have to move the VM to another physical host, creating zero downtime for the users and allowing administrators to perform maintenance at any time.

- Allow VMware Distributed Resource Scheduler (DRS) to balance virtual machines across hosts.

- Move VM's from failing or underperforming priorities.

    If there looks like a server is about to fail or is reaching its capacity, administrators can manually move VMs to another physical host, this allows your data center to be more dynamic in nature. Instead of having to upgrade hardware, you can move VM to another host to allow each VM to be more flexible in nature. If 2 VM's are putting a physical host to capacity then you could move one to another server that isn't being used as much.

Disadvantage of the vMotion Migration

- VM type type may not be part of organization standard
- Swivel is often deployed in the DMZ and a VM infrastructure may not be present