SRI LANKA INSTITUTE OF INFORMATION TECHNOLOGY

Assignment IV – vMotion

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Lab: Wednesday

What is vMotion?

vMotion helps to migrate a running virtual machine from one host to another with zero downtime, continuous service availability and complete transaction integrity.

Requirements of vMotion

There are some requirements that must be fulfilling before doing a vMotion. Those requirements can be divided into two categories.

1. Virtual machine requirements
2. Host requirements

Virtual Machine Requirements for vMotion Migration

- ✓ Must not have a connection to a virtual device with a local image mounted

  Virtual machines can't have virtual devices such as CD-ROM, floppy drives connect with physical medium that reside in the host. Otherwise this will block the vMotion migration.

  If there is an ISO image inside local data store or private data store which can be only seen by one host, then again migration cannot be done.

  Solution is to this problem is, place the ISO in shared data store or instead of putting physical media in the host, place them in the machine where you run vSphere client.

- ✓ Must not have a connection to an internal vSwitch
- ✓ Must not have CPU affinity configured

  vMotion cannot guarantee that the VM will be able to continue to run on a specific CPU number on the destination server

Hosts Requirements for vMotion Migration

Source and target host must have following requirements fulfilled;

- ✓ Visibility to all storage used by the virtual machine

  Hosts involved in vMotion should have access to shared storage where virtual machines can store their files. This allows seeing virtual machine files to both hosts. Ex: ISCSI, Fiber Channel (FC) or NFS

- ✓ At least a Gigabit Ethernet network

  Faster vMotion network allows more concurrent vMotion migration.
  - Four concurrent vMotion migration on 1Gbps network
  - Eight concurrent vMotion on 10Gbps network

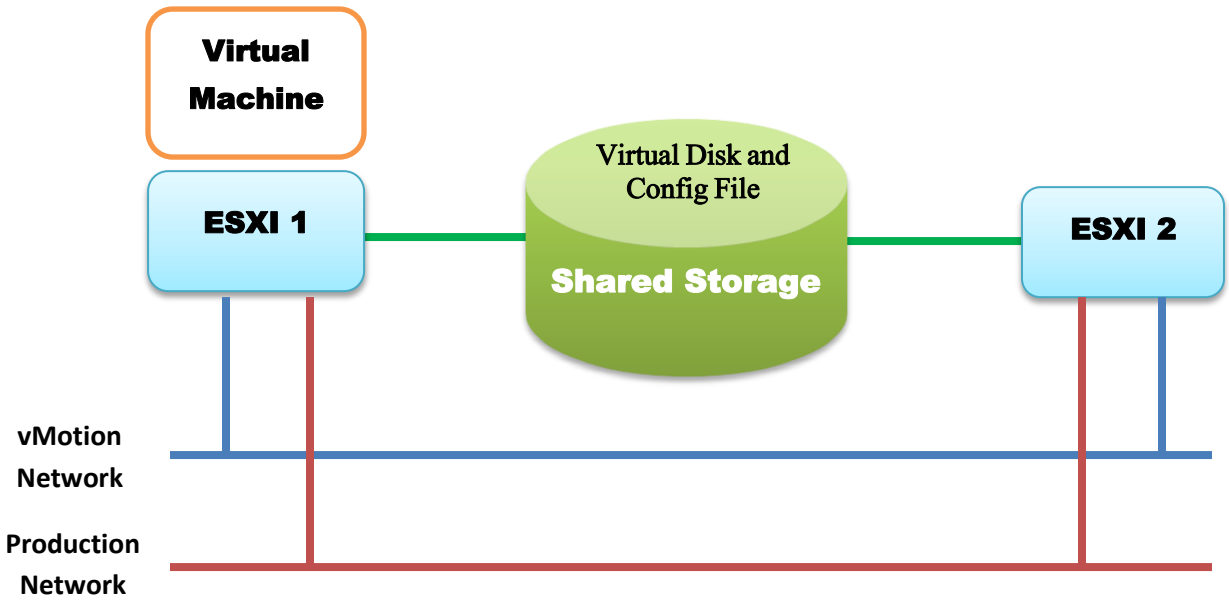
- ✓ Access to same physical network

  Virtual machine port groups on each side must have identical labels on them. In addition to that, hosts must be plugged in to the same physical networks.

- ✓ Compatible CPUs

  You need CPU compatibility between both physical servers. Using VMware CPU identification, we can see whether the CPUs are compatible. Compare both reports to identify incompatibilities. CPUs in both source and the destination servers should have exact same CPUs or they should be same family/manufacturer.

How vMotion works



- Shared Storage – Virtual machine files are stored in this shared storage. The advantage is that migration is can be done quickly since we don't have copy all the files from current host to new host. The only thing needs to copy is the memory status of the virtual machine. The memory status of virtual machine copied through this vMotion network.
- vMotion Network – It is a private, non-routed, faster network connection between two hosts
- Production Network – The host needs to have an identical network configuration (should include identical spelled labels) for virtual machine port groups for network. Production network is such network.

A system which completed above requirement can do vMotion. The host copies and sends the bulk copy of memory state of the virtual machine from 1st host to 2nd host across the vMotion network.

The first step is to ensure that the source virtual machine can be operated on the target destination server. Then a second virtual machine process is started on the target system and the resources are allocated. Next the bulk copy of memory state of the source virtual machine is created. This means all changes to the source virtual machine are written to an extra memory area. That copy of memory state then transferred to the target server. Then that memory state is restored at target virtual machine's memory. Then CPU of the source virtual machine is going to stop. The vMotion process is then completed and hard disk access is taken over by the target ESXI server. The source virtual machine is shut down. This means the virtual machine process on the source ESX is deleted.