

Lesson 4: Managing Virtual Machine Movement

MOAC 70-412: Configuring Advanced Windows Server 2012 Services

Overview

- Objective 1.4 – Manage Virtual Machine (VM) movement.
 - Perform live migration
 - Perform quick migration
 - Perform storage migration
 - Import, export, and copy VMs
 - Migrate from other platforms (P2V and V2V)

Understanding Virtual Machine Movement

Lesson 4: Managing Virtual Machine Movement

Understanding Virtual Machine Movement

- For a server administrator, virtual machines are one of the best tools to use for providing functionality on demand.
- With relative speed and ease, you can deliver additional applications as soon as they are needed rather than waiting for the purchase of new hardware.

Understanding Virtual Machine Movement

- **Live migration:** The process of moving an entire VM or parts of a VM to another physical server without a cluster
- **Quick migration:** The process of moving an entire VM or parts of a VM to another physical server using a cluster
- **Storage migration:** The process of moving the storage of a VM from one physical server to another without a cluster

Understanding Live Migration

...

Lesson 4: Managing Virtual Machine Movement

Live Migration

- **Live migration** (LM) allows you to move the entire VM or its storage from one physical host to another without interrupting your users.
- This process is sometimes referred to as a “*shared nothing*” migration because the storage is mirrored over the network to the destination server while the VM continues to run and provide network services.
- To perform an LM, follow these four steps:
 1. Configure LM prerequisites.
 2. Configure LM security (constrained delegation , if needed).
 3. Configure the source and destination computers for LM.
 4. Move a running virtual machine or VM storage.

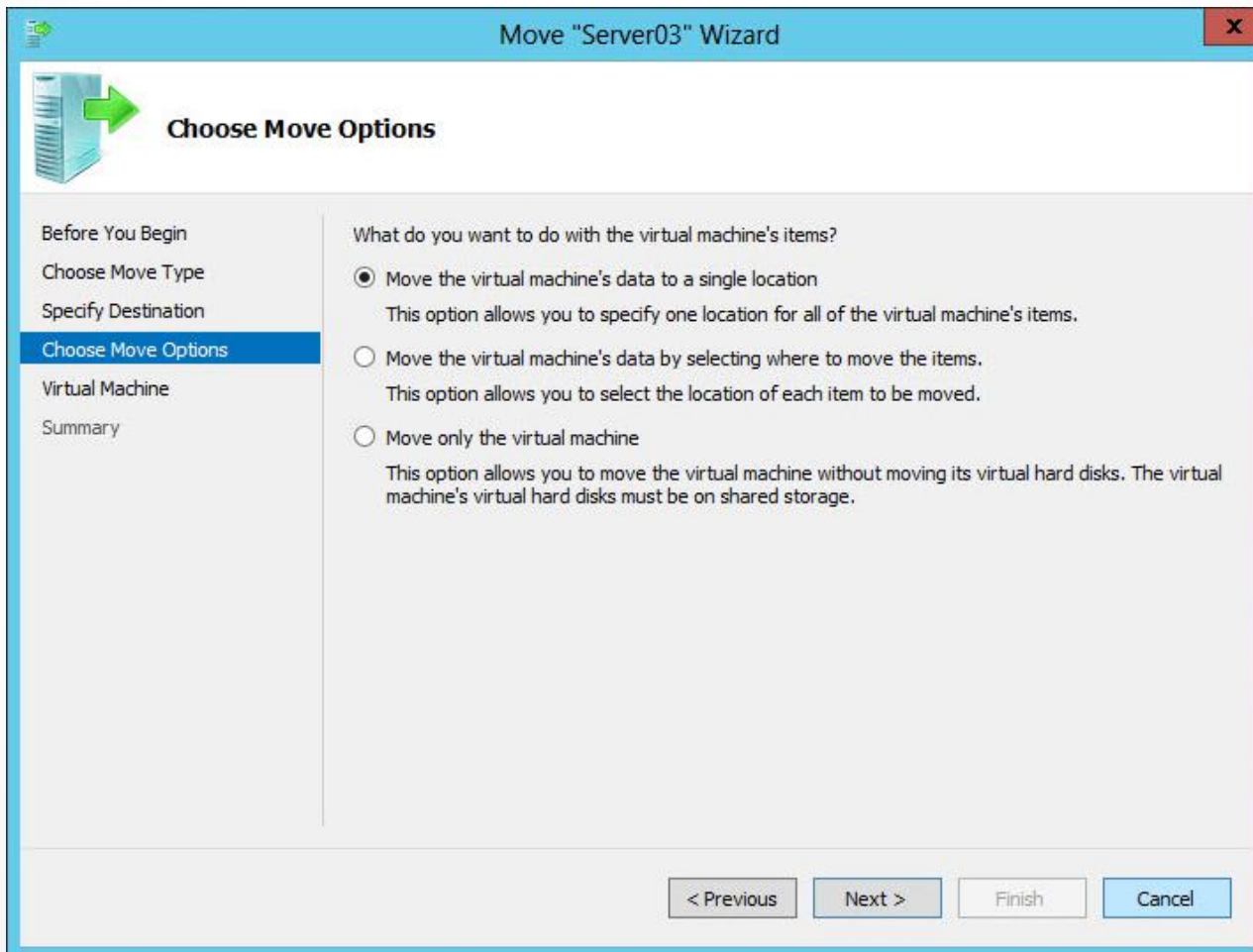
Live Migration

- To support LM, you need two or more Windows Server 2012 servers with the Hyper-V Role enabled and they must meet the following requirements:
 - Use processors from the same manufacturer (i.e., all Intel or all AMD)
 - All hosts must support hardware virtualization
 - Belong to the same Active Directory domain or two domains that trust one another; LM will not work with servers that are in a workgroup
 - The VMs must be configured to use either virtual hard disks (**VHD** or **VHDX**) or virtual Fibre Channel disks
 - Use of a private network dedicated to LM traffic is highly recommended
 - Membership in one of the following groups (Administrators, Domain Admins, Hyper-V Administrators) on both the source and destination machines or in Active Directory for both domains (if using trusted domains)

Move Options

- The three options to move virtual machines:
 - **Move the VM's data to a single location:** This is simplest.
 - **Move the VM's data by selecting where to move the items:** This provides the most options for where you can store the various components.
 - **Move only the VM:** This requires shared storage and allows you to move the VM without moving the virtual hard disk.

Move Options



The screenshot shows a Windows-style dialog box titled "Move 'Server03' Wizard". The window has a blue title bar with a close button (X) in the top right corner. Below the title bar, there is a header area with a server icon and a green arrow pointing right, followed by the text "Choose Move Options".

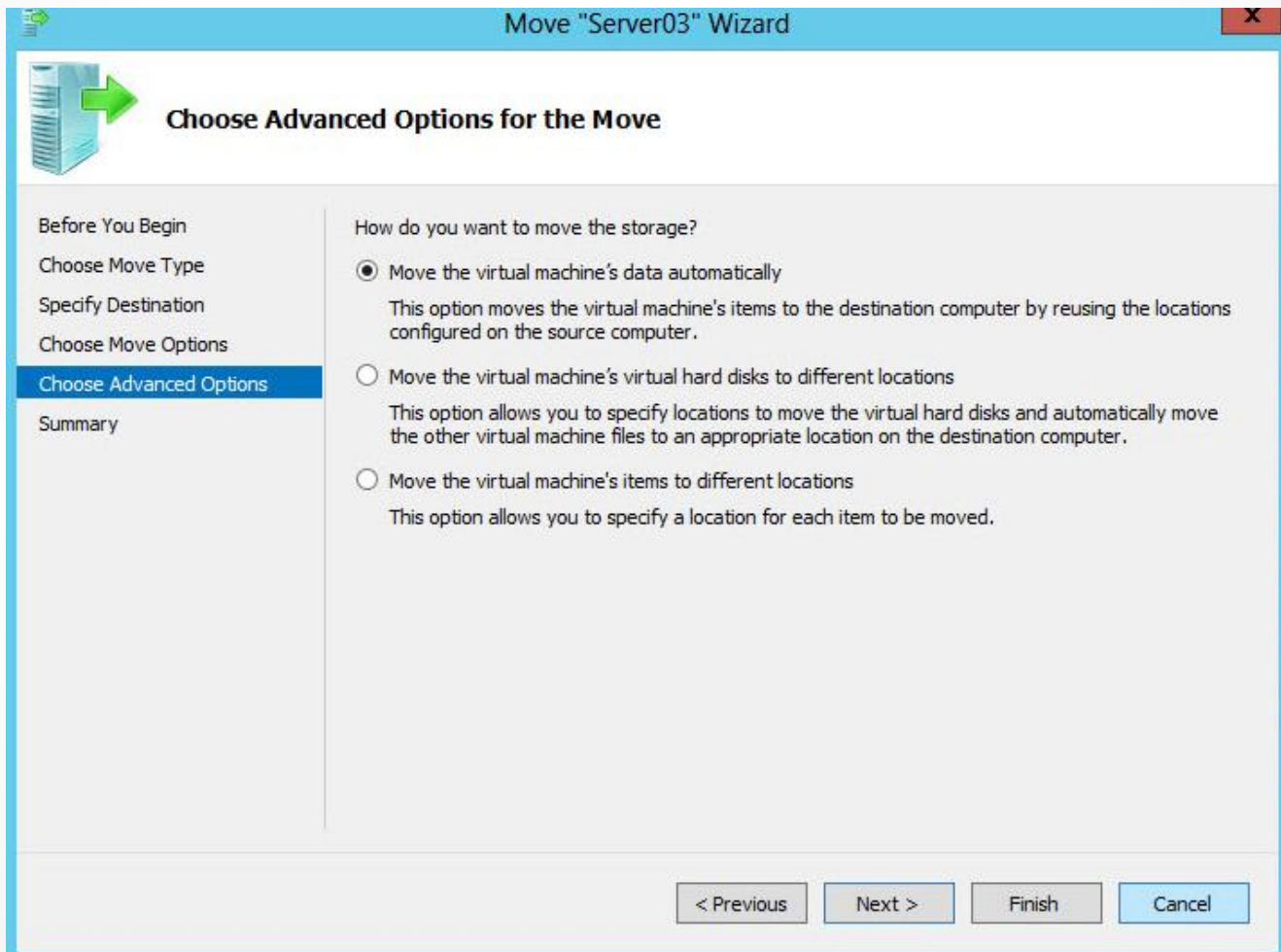
On the left side, there is a vertical navigation pane with the following items: "Before You Begin", "Choose Move Type", "Specify Destination", "Choose Move Options" (highlighted in blue), "Virtual Machine", and "Summary".

The main content area is titled "What do you want to do with the virtual machine's items?" and contains three radio button options:

- Move the virtual machine's data to a single location
This option allows you to specify one location for all of the virtual machine's items.
- Move the virtual machine's data by selecting where to move the items.
This option allows you to select the location of each item to be moved.
- Move only the virtual machine
This option allows you to move the virtual machine without moving its virtual hard disks. The virtual machine's virtual hard disks must be on shared storage.

At the bottom of the dialog box, there are four buttons: "< Previous", "Next >", "Finish", and "Cancel".

Advanced Options for Move



Quick Migration

- Windows Server 2012 includes way to move a Live VM that is hosted in a cluster called quick migration (QM).
- Quick migration is another process of moving a running VM from one physical host to another. However, QM occurs within the confines of a cluster.
- Quick migration allows you to:
 - Consolidate physical servers
 - Maintain availability during maintenance
 - Quickly restore services after service outages

Quick Migration

- The QM process
 - Saves the state of the running guest VM to disk or shared storage
 - Moves the storage connection from the source physical server to the destination server
 - Restores the state of the running guest VM to the destination server
- The speed of QM is dependent upon how much memory needs to be written to disk and the speed of the network connection between the source and destination servers.

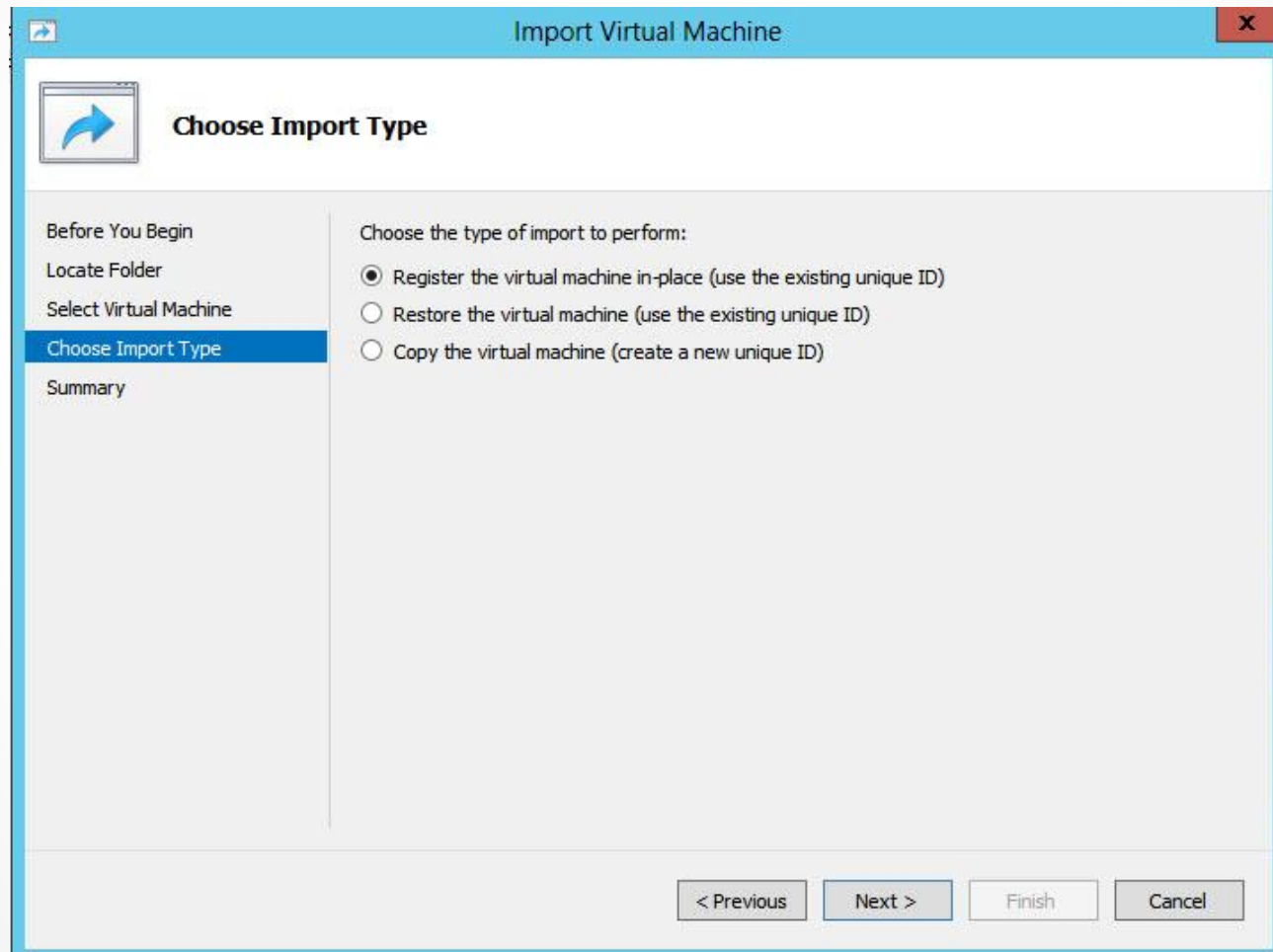
Storage Migration

- As VMs grow, they may outgrow their initial storage.
- Storage migration is yet another way to move live VM data without disrupting users.
- The three options are:
 - **Move the VM's data to a single location:** This is simplest.
 - **Move the VM's data by selecting where to move the items:** This provides the most options for where you can store the various components.
 - **Move only the VM:** This requires shared storage and allows you to move the VM without moving the virtual hard disk.

Exporting and Importing Virtual Machines

- Exporting a VM is the process of taking a partially or completely configured VM and creating other VMs without having to perform the installation and configuration from scratch.
- Importing and copying both require the use of the Import Virtual Machine wizard.
- Importing is the process of taking an existing set of VM files and re-creating the exact same VM.
- Copying is the process of using an exported VM like a template to create as many additional VMs as you need.

Importing Virtual Machines



P2V and V2V

- A physical machine to virtual machine (P2V) migration takes an existing physical computer and converts it into a virtual machine.
 - P2V migration can be performed with either Microsoft System Center 2012 SP1 (SC12) – Virtual Machine Manager (VMM or SCVMM) or the Disk2vhd tool from the Microsoft Sysinternals website.
- A virtual machine to virtual machine migration (V2V) converts an existing virtual machine to a different file format. Currently, SCVMM supports migrations from VMware, XenServer, or OVF.

Lesson Summary

- Live migration is the process of moving an entire VM or parts of a VM to another physical server without a cluster.
- When using Hyper-V Remote Management tools to perform migrations, you need to configure constrained delegation and use Kerberos authentication.
- If you are not using Hyper-V Remote Management tools to perform migrations, CredSSP is used to authenticate during migrations.
- Both source and destination computers must have incoming and outgoing live migrations enabled in Hyper-V settings.
- When moving VMs via live migration, there are three options for moving the virtual machine's data: to a single location, selecting where to move the items, and moving only the virtual machine.

Lesson Summary

- Quick migration is the process of moving an entire VM or parts of a VM to another physical server using a cluster.
- Storage migration is the process of moving the storage of a VM from one physical server to another without a cluster.
- Exporting a VM is the process of taking a partially or completely configured VM and creating other VMs without having to perform the installation and configuration from scratch.
- Importing a VM is the process of taking an existing set of VM files and re-creating the exact same VM.
- Copying is the process of using an exported VM like a template to create as many additional VMs as you need.

Lesson Summary

- P2V migration is the process of converting a physical machine to a virtual machine.
- P2V migration can be performed with either Microsoft System Center 2012 – Virtual Machine Manager or the Disk2vhd tool from Microsoft Sysinternals.
- V2V is the method by which SCVMM converts an existing virtual machine from VMware, XenServer, or OVF into a Hyper-V virtual machine.

Copyright 2013 John Wiley & Sons, Inc.

All rights reserved. Reproduction or translation of this work beyond that named in Section 117 of the 1976 United States Copyright Act without the express written consent of the copyright owner is unlawful. Requests for further information should be addressed to the Permissions Department, John Wiley & Sons, Inc. The purchaser may make backup copies for his/her own use only and not for distribution or resale. The Publisher assumes no responsibility for errors, omissions, or damages, caused by the use of these programs or from the use of the information contained herein.