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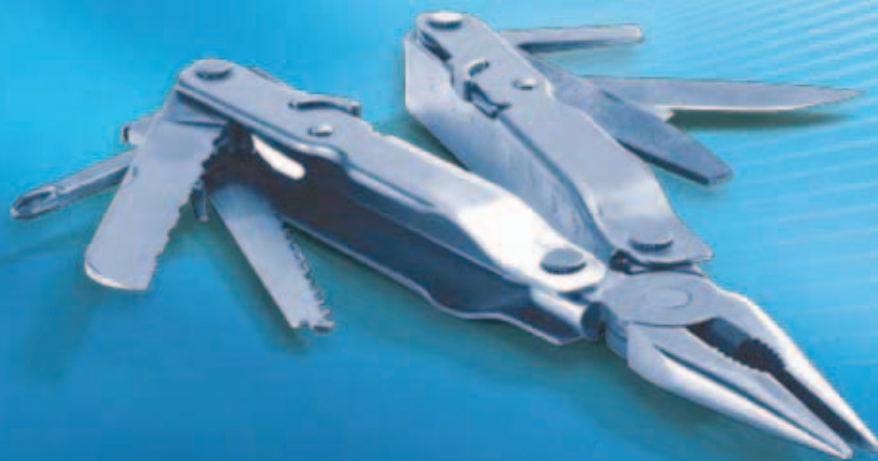
MCTS EXAM

70-652

Includes coverage of:

- MCTS Exam 70-403
- Hyper-V™ in Windows Server 2008 R2

Configuring Windows Server® Virtualization



Nelson Ruest,
Danielle Ruest,
and GrandMasters

SELF-PACED

Training Kit

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Exam 70-652: Configuring Windows Server Virtualization

OBJECTIVE	LOCATION IN BOOK
INSTALLING HYPER-V	
Select and configure hardware to meet Hyper-V prerequisites.	Chapter 1, Lessons 1, 2, and 3
Configure Windows Server 2008 for Hyper-V.	Chapter 1, Lesson 2 Chapter 2, Lessons 1 and 2
Configure Hyper-V to be highly available.	Chapter 3, Lesson 1
CONFIGURING AND OPTIMIZING HYPER-V	
Manage and optimize the Hyper-V Server.	Chapter 3, Lesson 3 Chapter 4, Lesson 2 Chapter 7, Lesson 1 Chapter 8, Lessons 1 and 2
Configure virtual networking.	Chapter 2, Lesson 3
Configure remote administration.	Chapter 3, Lesson 2
DEPLOYING VIRTUAL MACHINES	
Migrate a computer to Hyper-V.	Chapter 6, Lesson 1
Create or clone a virtual machine.	Chapter 4, Lesson 1 Chapter 5, Lesson 2
Create a virtual disk.	Chapter 4, Lesson 2
Manage templates, profiles, and the image library by using SCVMM 2008.	Chapter 5, Lessons 1 and 2
MANAGING AND MONITORING VIRTUAL MACHINES	
Monitor and optimize virtual machines.	Chapter 7, Lesson 1 Chapter 10, Lesson 1
Manage virtual machine settings.	Chapter 4, Lessons 1 and 2
Manage snapshots and backups.	Chapter 9, Lesson 1
Configure a virtual machine for high availability.	Chapter 10, Lesson 1

Exam Objectives The exam objectives listed here are current as of this book's publication date. Exam objectives are subject to change at any time without prior notice and at Microsoft's sole discretion. Please visit the Microsoft Learning Web site for the most current listing of exam objectives: <http://www.microsoft.com/learning/en/us/exams/70-652.msp>.

Exam 70-403: Configuring System Center Virtual Machine Manager 2008

OBJECTIVE	LOCATION IN BOOK
INSTALLING SCVMM	
Install SCVMM server components	Chapter 3, Lesson 2
Install administrator console	Chapter 3, Lesson 2
Install self-service portal	Chapter 5, Lesson 2
Install PRO tips	Chapter 6, Lesson 1
ADMINISTRATING SCVMM	
Configure user roles	Chapter 8, Lesson 2
Setup self service	Chapter 5, Lesson 2
Maintain VMM library	Chapter 5, Lesson 1
Configure hosts	Chapter 3, Lesson 2
Monitor jobs	Chapter 3, Lesson 2
MAINTAINING AND MONITORING VMs	
Configure VM hardware	Chapter 5, Lesson 1
Manage virtual machine checkpoints and patches	Chapter 5, Lesson 1
Monitoring and reporting VMs	Chapter 3, Lesson 2
DEPLOYING AND MIGRATING VMs	
Convert from physical or virtual platforms	Chapter 6, Lesson 1
Move VMs between hosts	Chapter 6, Lesson 1
Deploy VMs	Chapter 6, Lesson 1
Deploy a High Availability VM	Chapter 3, Lesson 2

This book is dedicated to the IT professionals who take the time to become virtualization professionals and resource pool administrators. We hope you will find this guide useful in your studies and in your efforts to improve virtual infrastructure deployments.

—DANIELLE AND NELSON

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Thanks must go to Lisa Kreissler and Richard Kobylka of GrandMasters for supporting us throughout this project. Finally, thanks to the Microsoft Press production team for their great work in helping us complete this book.

Introduction

This training kit is designed for IT professionals who plan to take the Microsoft Certified Technical Specialist (MCTS) Exam 70-652: Windows Server Virtualization, Configuring. The primary objective of this exam is to certify that architects know how to deploy and manage an efficient virtualization solution. We assume that before you begin using this kit, you have spent at least three years working with IT infrastructures. We also assume that you have worked on different phases of virtualization deployment projects, including design, deployment, and post-production/maintenance. The Preparation Guide for Exam 70-652 is available at <http://www.microsoft.com/learning/exams/70-652.msp>.

The labs in this training kit will use Microsoft Windows Server 2008 Enterprise edition. If you do not have access to this software, you can download a 180-day trial of Microsoft Windows Server 2008 through <http://www.microsoft.com/windowsserver2008/en/us/trial-software.asp>.

By using this training kit, you will learn how to do the following:

- Select and configure hardware to meet Hyper-V prerequisites.
- Configure Windows Server 2008 for Hyper-V.
- Configure Hyper-V high availability.
- Configure and optimize Hyper-V.
- Deploy virtual machines.
- Manage and monitor virtual machines.
- Implement a virtual machine management environment.
- Protect and secure virtual machines.
- Automate virtual machine management.

MORE INFO VIRTUALIZATION TEAM BLOG

Note that the Virtualization team blog is also a great source of information in support of the exam. Find it at <http://blogs.technet.com/virtualization/default.aspx>.

UPDATE ALERT UPDATE ALERTS AND COVERED EXAMS

You'll also find special notes called "Update Alerts" within this guide. These updates provide information about new features and functionality that were added to Hyper-V and other tools after their initial release. This includes the R2 releases of the products covered in this guide. This information is mostly available in Update Alerts since it is not included in the original 70-652 exam.

In addition, since there are no Microsoft Press Training Kits for exams 70-693: Windows Server Virtualization Administrator or 70-403: System Center Virtual Machine Manager 2008, Configuring, this guide attempts to perform triple duty by adding content in support of these exams along with the content for exam number 70-652.

Hardware Requirements

Because of the nature of virtualization technologies, you will require access to hardware resources to complete the exercises in each lab. To complete the practice exercises, the system requirements include:

- Two computers including the following features:
 - x64 processor with hardware-assisted virtualization and a minimum of 4 GB of RAM.
 - Two network interface cards (NICs) on each computer.
 - One computer will run the Windows Server 2008 Full Installation.
 - One computer will run the Windows Server 2008 Server Core Installation.
 - Both computers will be joined to the Contoso.com domain.
- You need a preinstalled Domain Controller running Windows Server 2008 with the Active Directory Domain Services (AD DS) role on a separate virtual machine or physical machine. It should be a single domain forest named Contoso.com and the name of the server should be Server01.
- One workstation running Windows XP SP3 or Windows Vista SP1 must be joined to the Contoso domain.
- Three external USB disk drives with a minimum of 100 GB.
- Ideally, you will have access to an MSDN or TechNet subscription to obtain source ISO files, but once again, the instructions in this guide work around this issue by targeting evaluation versions of software products that are in either ISO or EXE format. Wherever possible, the guide directs you to download preconfigured virtual machines in VHD format.

Table 1 lists the computer names, roles, and IP addresses required for the completion of the practice exercises.

IMPORTANT ACCESS RIGHTS FOR THE PRACTICES

To facilitate the exercises in this guide, all activities are performed with domain administrator access rights. However, note that in production environments you should always use the least privilege approach. This approach is detailed in Chapter 6, “Securing Hosts and Virtual Machines.”

TABLE 1 Computer Role and IP Address

COMPUTER NAME	ROLE	IP ADDRESS
Server01	Domain Controller	192.168.0.5
	Subnet mask	255.255.255.0
	Default gateway	192.168.0.1
ServerFull01	x64 Windows Server 2008 Enterprise edition	192.168.0.6
		192.168.0.7
ServerCore01	x64 Windows Server 2008 Enterprise edition	192.168.0.8
		192.168.0.9
Hyper-V Cluster	Temporary requirement	192.168.0.10
SSCVMM01	x64 Windows Server 2008 Enterprise edition	192.168.0.11
MAP Workstation	Windows Vista or Windows XP SP2	192.168.0.12

Because of the prohibitive cost of shared storage, the instructions in this guide work around this issue but still allow you to view and test all of the aspects of Hyper-V required for the exam. However, if you have access to some form of shared storage, your experience will be more complete.

Software Requirements

For all the exercises, you will need to download several software products and updates. The following list provides links for all the required major downloads. Required updates are indicated in each exercise.

1. VHD images of Windows Server 2008, Full installation and Server Core installation
<http://www.microsoft.com/windowsserver2008/en/us/trial-software.aspx>.
2. Microsoft Assessment and Planning tool
<http://www.microsoft.com/downloads/details.aspx?familyid=67240B76-3148-4E49-943D-4D9EA7F77730>.

- 3.** Windows Server 2008 Evaluation Copy
<http://www.microsoft.com/windowsserver2008/en/us/trial-software.aspx>.
- 4.** Remote Server Administration Tools (RSAT) (KB941314)
<http://support.microsoft.com/default.aspx/kb/941314>.
- 5.** Hyper-V RTM version update (KB950050):
Update for Windows Server 2008, 32-bit editions
<http://www.microsoft.com/downloads/details.aspx?FamilyId=6F69D661-5B91-4E5E-A6C0-210E629E1C42>.
Update for Windows Server 2008, 64-bit editions
<http://www.microsoft.com/downloads/details.aspx?FamilyId=F3AB3D4B-63C8-4424-A738-BADED34D24ED>.
- 6.** Hyper-V Manager on Windows Vista Service Pack 1 or later (KB952627)
<http://support.microsoft.com/kb/952627>.
- 7.** Virtual Machine Manager Configuration Analyzer
<http://go.microsoft.com/fwlink/?LinkID=132136>.
Microsoft Baseline Configuration Analyzer (MBCASetup64.msi)
<http://go.microsoft.com/fwlink/?LinkID=97952>.
- 8.** System Center Virtual Machine Manager VHD
<http://www.microsoft.com/downloads/details.aspx?FamilyID=4a27e89c-2d73-4f57-a62c-83afb4c953f0&DisplayLang=en>.
- 9.** System Center Virtual Machine Manager 2008 Evaluation Copy
<http://technet.microsoft.com/en-us/evalcenter/cc793138.aspx>.
- 10.** Windows Server 2008 Enterprise edition Evaluation ISO
<http://www.microsoft.com/downloads/details.aspx?FamilyID=13C7300E-935C-415A-A79C-538E933D5424&displaylang=en>.
- 11.** OpsMgr 2007 Evaluation Copy
<http://www.microsoft.com/downloads/details.aspx?familyid=C3B6A44C-A90F-4E7D-B646-957F2A5FFF5F&displaylang=en>.
- 12.** OpsMgr SP1
<http://www.microsoft.com/Downloads/details.aspx?FamilyID=ede38d83-32d1-46fb-8b6d-78fa1dcb3e85&displaylang=en>.
- 13.** OpsMgr Management Packs
<http://go.microsoft.com/fwlink/?LinkId=82105>.
- 14.** SCVMM 2008 Management Pack for OpsMgr
<http://www.microsoft.com/downloads/details.aspx?FamilyID=d6d5cddd-4ec8-4e3c-8ab1-102ec99c257f&DisplayLang=en>.

15. VMDK to VHD Converter
<http://vmtoolkit.com/files/default.aspx>.
16. Optional: Windows Server 2008 Failover Cluster Manager Console Update for x64 edition (KB951308)
<http://support.microsoft.com/kb/951308>.
17. Hyper-V with SCVMM updates for Windows Server 2008 x64 edition KB956589 and KB956774
<http://go.microsoft.com/fwlink/?LinkID=113199>
<http://go.microsoft.com/fwlink/?LinkId=128540>.
18. Offline Virtual Machine Servicing Tool
<http://technet.microsoft.com/en-us/library/cc501231.aspx>.
19. System Center Data Protection Manager 2007 Evaluation Copy
<http://technet.microsoft.com/en-us/evalcenter/bb727240.aspx>.
20. System Center Data Protection Manager 2007 SP1 Update
<http://go.microsoft.com/fwlink/?LinkID=120135>.
21. iSCSI Initiator Software for Windows Server 2003
<http://www.microsoft.com/downloads/details.aspx?familyid=12cb3c1a-15d6-4585-b385-befd1319f825&displaylang=en>.

We suggest you download these components ahead of time because several of them require quite some time to complete. Store them in an easily accessible shared folder and label them appropriately. This will improve the quality of your experience during the practices.

Using the CD

A companion CD is included with this training kit. The companion CD contains the following:

- **Practice tests** You can practice for the 70-652 certification exam by using tests created from a pool of realistic exam questions. These questions give you enough different practice tests to ensure that you're prepared.
- **eBook** An electronic version (eBook) of this training kit is included for use at times when you don't want to carry the printed book with you. The eBook is in Portable Document Format (PDF), and you can view it by using Adobe Acrobat or Adobe Reader.
- **Sample chapters** Sample chapters from other Microsoft Press titles. These chapters are in PDF format.

How to Install the Practice Tests

To install the practice test software from the companion CD to your hard disk, perform the following steps:

1. Insert the companion CD into your CD-ROM drive and accept the license agreement that appears onscreen. A CD menu appears.

NOTE

If the CD menu or the license agreement doesn't appear, AutoRun might be disabled on your computer. Refer to the `Readme.txt` file on the companion CD for alternative installation instructions.

2. Click Practice Tests and follow the instructions on the screen.

How to Use the Practice Tests

To start the practice test software, follow these steps:

1. Click Start and select All Programs, Microsoft Press Training Kit Exam Prep. A window appears that shows all the Microsoft Press training kit exam prep suites that are installed on your computer.
2. Double-click the practice test that you want to use.

Practice Test Options

When you start a practice test, you can choose whether to take the test in Certification Mode, Study Mode, or Custom Mode.

- **Certification Mode** Closely resembles the experience of taking a certification exam. The test has a set number of questions, it is timed, and you cannot pause and restart the timer.
- **Study Mode** Creates an untimed test in which you can review the correct answers and the explanations after you answer each question.
- **Custom Mode** Gives you full control over the test options so that you can customize them as you like.

In all modes, the user interface that you see when taking the test is basically the same, but different options are enabled or disabled, depending on the mode.

When you review your answer to an individual practice test question, a "References" section is provided. This section lists the location in the training kit where you can find the information that relates to that question, and it provides links to other sources of information. After you click Test Results to score your entire practice test, you can click the Learning Plan tab to see a list of references for every objective.