Hands-on Virtual Computing, 2e

Chapter 1 Solutions

Answers to the Chapter 1 Review Questions

1. When using virtualization software to run a virtual machine, the virtual machine’s hard disk is which of the following?

c. A specially formatted file on the host computer’s hard drive

1. Virtualization software runs within the OS of a physical computer that’s referred to as which of the following?

b. Host computer

1. Which of the following is the most important limit on the number of virtual machines you can run at once on a physical computer?

a. Amount of RAM

1. Virtual machines are managed by using which of the following?

c. An administrative console provided by the virtualization software package

1. Which of the following virtualization products requires purchasing a license?

c. VMware Workstation

1. Accumulating many specialized servers in an organization is often referred to as which of the following?

b. Server sprawl

1. Which of the following allows installing multiple versions of Microsoft Office concurrently on a single desktop?

b. VMware ThinApp

1. Which of the following virtualization features provides security by preventing the CPU from executing certain instructions?

b. NX/XD feature

1. Which of the following virtualization products are data center oriented? (Choose all that apply.)

a. Microsoft Hyper-V

c. VMware vSphere

1. Virtual machine performance can be enhanced by which of the following? (Choose all that apply.)

a. Adding physical memory to the host computer

d. Using hardware virtualization

1. Which of the following virtualization features allows you to select a saved virtual machine state you want to return to? (Choose all that apply.)

b. Snapshots

c. Undo Disks

1. Which of the following is a file format used to store an image of a CD?

b. ISO

1. Which of the following virtual disk types provides the best performance but uses more physical disk space?

a. Fixed-size

1. Which of the following is a virtualization feature commonly used with VDI to reduce the disk space required to host many user virtual desktops? (Choose all that apply.)

d. Linked Clones

1. Which of the following network options allows connecting a virtual machine to the Internet without accessing the local network directly?

a. Shared (NAT)

1. Which of the following products is intended to support VDI?

c. VMware Horizon

1. Which of the following products is used for application virtualization? (Choose all that apply)

c. VMware ThinApp

d. Microsoft App-V

1. How are VMware Tools and Microsoft Virtual Machine Additions added to your virtualization software?

b. Installed on the guest OS

1. Which of the following service types supports application running in the cloud?

a. SaaS

1. Which type of cloud would you use if you wanted to host a Web-based order system but needed addition capacity during peak loads?

d. Hybrid cloud

**Tips and Solutions for Chapter 1**

**Activity 1-1:**

In this activity students will create a VMware account that they can use to obtain trial copies of products as well as free educational classes.

In step 10 students should record their VMware customer number.

**Activity 1-2: Creating a Microsoft Live Account and Viewing Microsoft Azure Product Features**

In this activity students will create or access a Windows Live account and then view and record information about Microsoft Azure features. Students may then use their Windows Live account to obtain a trial subscription to the Microsoft Azure service and use it to work with virtual machines and virtual networks.

In step 6 students should record one or more solutions:

In step 7 students should record some of the following features:

**Activity 1-3: Downloading VMware Workstation 12**

In this activity, students download VMware Workstation 12 for Windows and get a 30-day trial serial number.

**Activity 1-4: Downloading Oracle VirtualBox Files**

In this activity, students download the installation files for Oracle VirtualBox software. Students may skip this activity if you have the VirtualBox installation files available to them on a network drive or other media.

Solutions to the Case Project Assignments

**Case Project 1-1: Identifying Virtualization Software Features**

Using the information in this chapter, fill in the following table of features for each virtualization package:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **VMware Workstation 12** | **Oracle VirtualBox** | **Microsoft**  **Hyper-V** |
| Support for SCSI virtual disks | Yes | Yes | Yes |
| Support for ISO image files | Yes | Yes | Yes |
| Support for USB devices | Yes | Yes | Yes |
| Support for saving machine state | Yes | Yes | Yes |
| Support for multiple snapshots | Yes | No | Yes |
| Support for parenting/ cloning | Yes | No | Yes |
| Support for shared (NAT) networking | Yes | Yes | Yes |
| Support for bridged networking | Yes | Yes | Yes |
| Support for teams | By version | No | No |
| Support for additional virtual machine tools | Yes | Yes | Yes |
| Support for non-Windows guest systems | Yes | Yes | Limited |
| Support for 64-bit guest OSs | Yes | Yes | Yes |
| Requires a 64-bit processor | Yes | No | Yes |
| Requires each virtual machine OS to have its own license | Yes | No | No |

**Case Project 1-2: Selecting a Virtualization Product for Classroom Use**

Superior Technical College’s computer department is planning to use virtual machines in its computer lab. The lab currently consists of Intel Dual core processors with 2 GB of RAM running Windows 8 professional. Instructors want to place a master copy of a preset virtual computer environment on the classroom server for each unit in a course. Students should be able to build a virtual machine from the master and then use the cloned VM for their work in that unit. At the end of the unit, students submit changes they have made, and instructors use students’ changes to give them credit for the unit. The lab computers are limited in terms of memory and CPU capability, so instructors are also interested in the use of VDI and thin clients for the student computers. The college has asked you to recommend a virtualization product and explain how this environment could be set up. Write a brief report recommending a product and explaining the reasons for your recommendation.

**Hyper-V Solution:** Use Hyper-V on each student computer. Hyper-V includes a Parenting option that allows linked clones. The instructors could create a parent machine for each unit and then have each student use a linked clone based on that image. After completing the unit, the instructors could check the linked clone for the proper changes and students could continue to the next unit by using a clone linked to that unit’s parent. While VDI would be another option, it would involve purchasing more licenses for the client computer connections and would require a lot of classroom server power to run all the virtual desktops.

**Case Project 1-3: Reducing Server Sprawl**

The IT Department at Universal AeroSpace uses three Windows 2008 servers: one for the Accounting Department, one for Engineering, and one for the Marketing Department. These servers are running on separate systems that are aging and don’t have the capability for future expansion. The IT Department wants to purchase new hardware and upgrade to Windows Server 2016. To save costs, they would like to use virtualization to consolidate their servers and provide for high-availability in the event of a hardware failure. As a consultant for Computer Technology Services, you have been asked to write a report that includes which data center virtualization product you recommend and why.

**Solution:** For this environment Hyper-V would be the economical solution as the product ships with Windows Server 2016.

**Case Project 1-4: Selecting a VDI Service**

The Universal AeroSpace company is planning to implement data center virtualization using VMware VSphere and two Windows servers with a large SAN disk system. Management would like to host applications on the Web to allow staff and students to access technical information from any location using a variety of devices. Because the IT Department is located in a different city, they need to access the virtual server’s administrative console remotely. As a consultant for Computer Technology Services, you have been asked to write a report that includes the benefits of using VDI and which VDI product you recommend and why. The report should include a diagram showing the VDI components that will be needed.

**VMware Solution:** The students should select the VMware View or Horizon product since the organization is currently using the VSphere system. The diagram should be similar to the one shown previously in Figure 1-5.

**Case Project 1-5: Selecting a Cloud Service**

Rocky Ridge Enterprises currently uses desktops in a peer-to-peer network to share files and a printer. Management wants to implement a server-based IT system that uses Active Directory and provides more features and security than currently available on the peer-to-peer network. They would also like to have some of this information available on-line to sales people while on the road. Since they are not sure of their longer term needs, they want to hold their hardware costs to a minimum. Write a recommendation of which type of service you would recommend along with any reasons for making this recommendation.

**Solution:** Students should recommend either Microsoft Azure, VMware vCloud, or Amazon Web Services along with the reason for their decision. Student decisions may be based on information you recommend in the class. If you have time, have the students use AWS or Azure to deploy a cloud-based virtual machine they could use to demonstrate cloud services.

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Chapter 01

Additional Activities and Case Projects Solutions

**Solutions to the Additional Activities:**

**Activity 1-5: Checking for Hardware Virtualization Support**

In this optional activity students are to download and run the “coreinfo” software to document their computer’s virtualization support. In step 10 students should document the following:

Processor virtualization features such as SVM or VMX and SLAT.

**Activity 1-6:** **Viewing Information about VMware vCloud Services**

In this optional activity students are to access VMware vCloud and then view and record information about cloud features.

In Step 4, students should list the following 4 features given on the VCloud Air Private Cloud Web page:

Provides cost-effective starting point

Creates Portable Workloads

Extends your Data Center

Offers High Availability

In step 6 students should identify what is ideal about each of the the following:

1. Amazon Web Service: Cloud-native apps and app development

2. Microsoft Azure: App development in Microsoft Shops

3. VMware vCloud Air: vSphere-based workloads

**Activity 1-7: Create an Amazon Web Services account and view services**

In this optional activity students create a AWS account and then view service options. Encourage students should note any differences or similarities between AWS and Microsoft Azure. Note that students will need to enter a credit card number to create an AWS account.

**Activity 1-8:** **Acquiring a Windows 10 ISO image**

In this optional activity you will go to Microsoft site and download a Windows 10 installation ISO image that you can use for performing activities.

Students should optionally perform this activity to obtain a 32-bit ISO image of Windows 10 they can use for later chapter activities. You may alternatively supply them this image on a shared network drive or removable media.

**Solutions to the Additional Case Projects:**

**Case Project 1-6: Introduction to VMware vCloud Services**

In this project students will access VMware vCloud online lab services to practice working with the cloud environment. To complete this lab, students will need a computer or paper notepad available to make notes as requested in Steps 4 and 7.