LAB 7
CREATING AND CONFIGURING VIRTUAL MACHINE SETTINGS

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This lab contains the following exercises and activities:

Exercise 7.1	Installing the Hyper-V Role
Exercise 7.2	Creating a Virtual Machine
Lab Challenge	Creating a Virtual Machine Using Windows PowerShell
Exercise 7.3	Configuring Dynamic Memory
Lab Challenge	Configuring Dynamic Memory Using Windows PowerShell

BEFORE YOU BEGIN

The lab environment consists of three servers connected to a local area network, which is configured to function as the domain controller for a domain called *adatum.com.* The computers required for this lab are listed in Table 7-1.

Table 7-1
Computers Required for Lab 7

Computer	***Operating System***	***Computer Name***
Domain controller 1	Windows Server 2016	SERVERA
Member server 2	Windows Server 2016	SERVERB
Member server 3	Windows Server 2016	SERVERC

In addition to the computers, you also require the software listed in Table 7-2 to complete Lab 7.

Table 7-2
Software Required for Lab 7

Software	***Location***
Lab 7 student worksheet	Lab07_worksheet.docx (provided by instructor)

Working with Lab Worksheets

Each lab in this manual requires that you answer questions, take screen shots, and perform other activities that you will document in a worksheet named for the lab, such as Lab07_worksheet.docx. It is recommended that you use a USB flash drive to store your worksheets, so you can submit them to your instructor for review. As you perform the exercises in each lab, open the appropriate worksheet file, fill in the required information, and save the file to your flash drive.

After completing this lab, you will be able to:

- Install Hyper-V
- Create Hyper-V virtual machines
- Configure VMs to use dynamic memory

Estimated lab time: 50 minutes

Exercise 7.1	Installing the Hyper-V Role
Overview	In this exercise, you use the DISM.exe program to install the Hyper-V role on one of your member servers.
Mindset	What hardware is necessary to run Hyper-V?
Completion time	10 minutes

1. Log on to **SERVERB** as **domain Administrator**, then on the SERVERB computer, click the Windows **PowerShell** button on the taskbar. An "Administrator: Windows PowerShell" window appears.

In Windows Server 2016, click Start menu and you will see "Windows PowerShell" icon.

2. At the Windows PowerShell prompt, type the following command, double check your typing, and press Enter:

DISM /online /enable-feature /featurename:Microsoft-Hyper-V

Deployment Image Servicing and Management (DISM)

3. The system installs the Hyper-V role and prompts you to restart the server (see Figure 7-1).

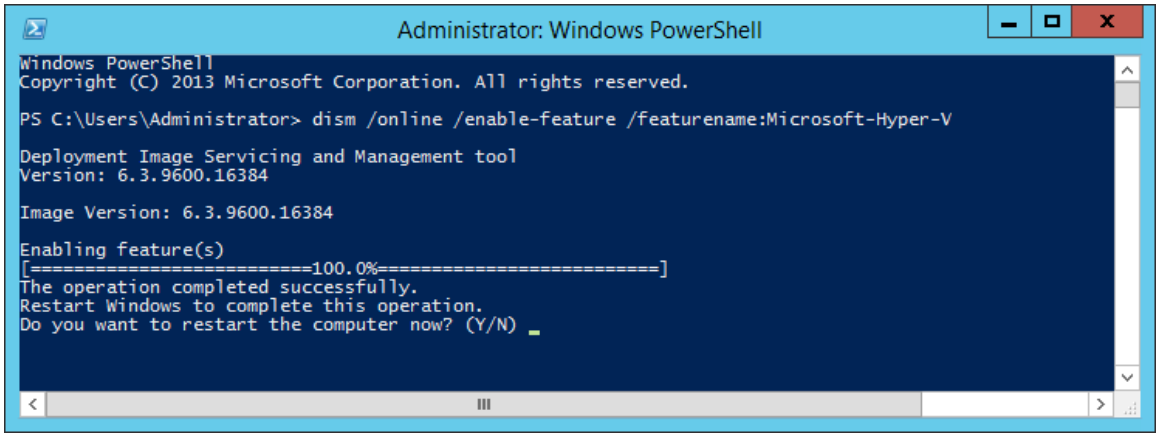

Figure 7-1
Prompt to restart the server

4. Press Y. The system restarts.

5. Log on to SERVERB using the **domain Administrator** account and the password **Pa$$w0rd**. The Server Manager console opens.

6. In the Server Manager console, select **Manage** > **Add Roles and Features**. The Add Roles and Features Wizard appears, displaying the *Before you begin* page.

7. Click Next. The *Select Installation Type* page appears.

8. Leave the *Role-based or feature-based installation* radio button selected and click Next. The *Select Destination Server* page appears.

9. Click Next to accept the default local server. The *Select Server Roles* page appears.

10. Click Next. The *Select features* page appears.

11. Expand **Remote Server Administration Tools** and expand **Role Administration Tools** and select the **Hyper-V Management Tools** check box.

12. Click Next. The Confirm installation selections page appears.

13. Click Install. The *Installation Progress* page appears as the wizard installs the Hyper-V role.

14. Click Close. The Add Roles and Features Wizard closes.

End of exercise. You can leave the windows open for the next exercise.

Exercise 7.2	Creating a Virtual Machine
Overview	In this exercise, you create a new virtual machine using the Hyper-V Manager console.
Mindset	How does Hyper-V provide resources that are virtual equivalents of physical hardware?
Completion time	10 minutes

1. On the **SERVERB** computer, which has the Server Manager console open, select **Tools** >**Hyper-V Manager**. The Hyper-V Manager console appears.

[SCREEN SHOT 1] Take a screen shot of the Hyper-V Manager by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 7 worksheet.

2. In the left pane, select the SERVERB node.

3. In the right pane, click **New** > **Virtual Machine**. The New Virtual Machine Wizard appears, displaying the *Before You Begin* page.

4. Click Next. The *Specify Name and Location* page appears.

5. In the Name text box, type **Vmachine1** and click Next. The *Specify Generation* page appears. The default is “Generation 1”.

6. Click Next. The *Assign Memory* page appears.

7. In the Startup memory text box, type **128** and then click Next. The *Configure Networking* page appears.

Note	*The memory amounts used in this exercise are intended for demonstration purposes only. They are insufficient to run virtual machines with Windows guest operating systems.*

Question 1	*Why are you unable to connect this virtual machine to a network?*

8. Click Next. The *Connect Virtual Hard Disk* page appears. Change virtual hard disk size to 10 GB.

9. Click Next. The *Installation Options* page appears.

10. Click Next. The *Completing the New Virtual Machine Wizard* page appears.

11. Click **Finish**. The wizard creates the new virtual machine, and it appears in the Hyper-V Manager console.

End of exercise. You can leave the windows open for the next exercise.

Question 2	*Why would a virtual machine in this default configuration fail to boot if you were to start it?*

Lab Challenge	Creating a VM with Windows PowerShell
Overview	To complete this challenge, you must create a virtual machine using Windows PowerShell commands, as you would on a Server Core installation.
Completion time	10 minutes

Create a new Generation 2 Hyper-V virtual machine named **Vmachine2**, with a 10 GB virtual hard disk and 512 MB of startup memory using the same default settings as the one you created with the New Virtual Machine Wizard in Exercise 7.2.

Write out the Windows PowerShell command(s) that will execute the required settings. Then, take a screen shot of the Hyper-V Manager console showing the two VMs you created, Vmachine1 and Vmachine2, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 7 worksheet file in the page provided by pressing Ctrl+V.

End of Exercise 7.3. You can leave the windows open for the next exercise.

Exercise 7.3	Configuring Dynamic Memory
Overview	In this exercise, you configure your virtual machine to use Dynamic Memory, enabling it to assign itself additional memory as needed.
Mindset	How can you tell how much memory a virtual machine needs at any given time?
Completion time	10 minutes

1. On the SERVERB computer, in the Hyper-V Manager console, select the **Vmachine1** virtual machine you created previously and, in the right pane, click **Settings**. The *Settings for Vmachine1 on SERVERB* dialog box appears.

2. In the Hardware list, click the **Memory** icon. The Memory page appears (see Figure 7-2).

   Note that in Windows Server 2016, the first setting is **RAM**, instead of **Startup RAM** in Windows Server 2016.

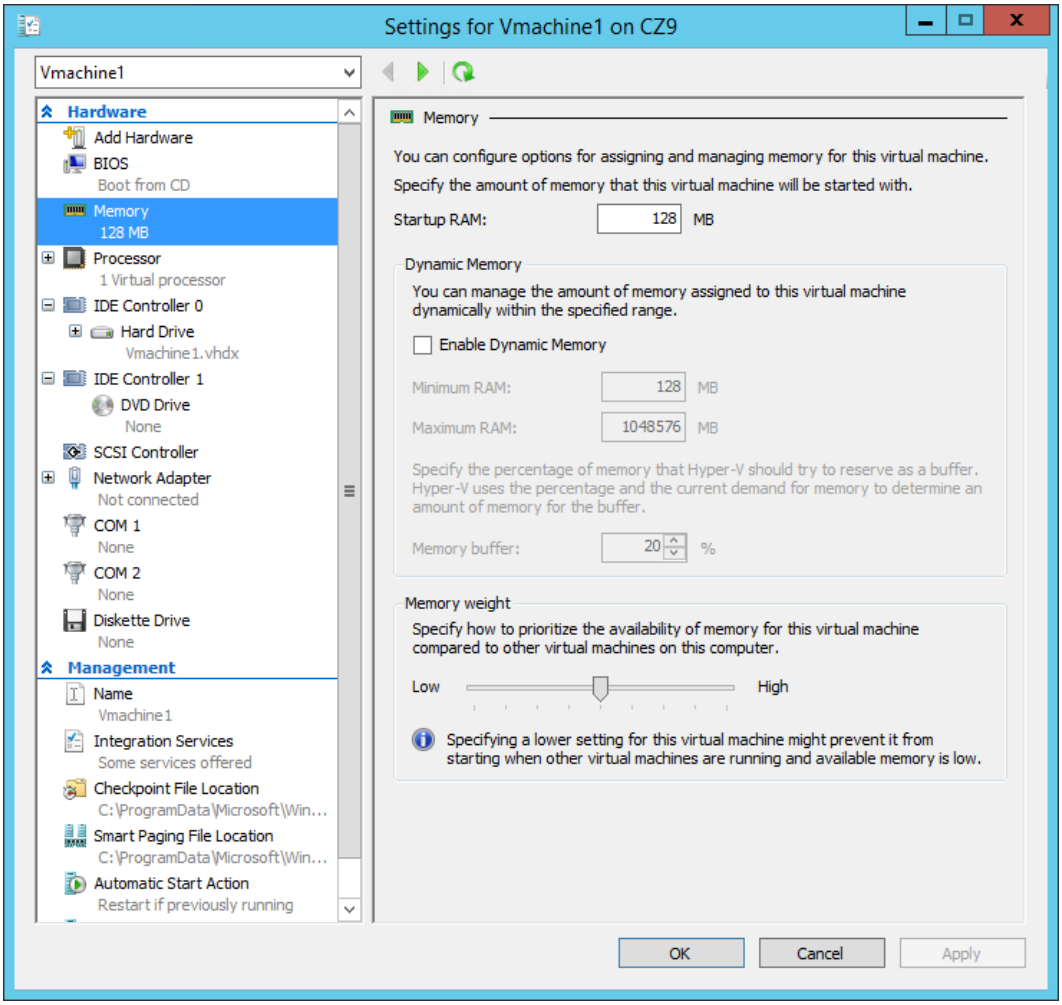

Figure 7-2
The Memory page of the Settings dialog box

3. In the *Startup RAM* (or RAM in Server 2016) text box, type **256**.

Question 3	*What is the maximum amount of memory that Vmachine1 can use in its current configuration with Startup RAM set to 1024 megabytes?*

4. Select the *Enable Dynamic Memory* check box to enable the Dynamic Memory controls.

5. In the Minimum RAM text box, type **128** and in the Maximum RAM text box, type **480**.

Question 4	*Why is it possible for the Minimum RAM value to be smaller than the Startup RAM value?*

6. In the Memory Buffer spin box, set the value to **50**%.

Question 5	*Will increasing the Memory Buffer value on all of your virtual machines enable the Hyper-V server to run more or fewer VMs? Why?*

7. Increase the Memory Weight value by pushing the slider all the way to the right.

Question 6	*How will increasing the Memory Weight value on all of a Hyper-V server's virtual machines to the maximum affect their performance?*

[SCREEN SHOT 2] Take a screen shot of the memory page of the settings dialog box by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 7 worksheet.

8. Click OK to close the Settings for Vmachine1 on SERVERB dialog box.

End of exercise. You can leave the windows open for the next exercise.

Lab Challenge	Configuring Dynamic Memory Using Windows PowerShell
Overview	To complete this challenge, you must configure a virtual machine to use dynamic memory.
Completion time	10 minutes

Using Windows PowerShell commands only, configure the Vmachine2 virtual machine you created in the previous challenge to use dynamic memory, using the same values you assigned to Vmachine1 in Exercise 7.3.

Write out the Windows PowerShell command(s) that will apply the required settings. Then, after you execute the commands, use Windows PowerShell to display the dynamic memory settings and take a screen shot of the display by pressing Alt+Prt Scr. Paste the resulting image into the Lab 7 worksheet file in the page provided by pressing Ctrl+V.

End of lab. You can log off or start a different lab. If you want to restart this lab, you'll need to click the End Lab button in order for the lab to be reset.