

OFFICIAL MICROSOFT LEARNING PRODUCT

# 20687D

## Configuring Windows® 8.1

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Revised July 2013

# Module 1

## Windows 8.1 in an Enterprise Environment

### Contents:

Lesson 2: Overview of Windows 8.1	2
Module Review and Takeaways	4

## Lesson 2

# Overview of Windows 8.1

### Contents:

Demonstration: Customizing the Windows 8.1 UI	3
Demonstration: Customizing Windows 8.1 Settings	3

## Demonstration: Customizing the Windows 8.1 UI

### Demonstration Steps

1. Sign in to LON-CL1 as **Adatum\Adam** with password **Pa\$\$w0rd**.
2. On the Start screen, click the **Photos** tile.
3. In the Photos app, move the pointer to the top of the screen, click, and then drag the pointer towards the bottom of the screen until the app closes.
4. From the Start screen, right-click the **Photos** tile, click **Resize**, and then click **Wide**.
5. Click and drag the **Photos** tile above the **Mail** tile.
6. Right-click the **Photos** tile, and then click **Unpin from Start**.
7. From the Start screen, move the pointer to the bottom of the screen, and then click the Down Arrow.
8. Right-click the **Calculator** tile, and then click **Pin to Start**.
9. From the Start screen, click the **Desktop** tile.
10. On the desktop, right-click the **Start** button, and then click **Command Prompt**.
11. On the desktop, right-click the taskbar, and then click **Properties**.
12. On the **Taskbar and Navigation Properties** page, click the **Navigation** tab.
13. On the **Navigation** tab, in the Start screen section, select the **When I sign in or close all apps on a screen, go to the desktop instead of Start** check box, and then click **OK**.
14. Close all open windows.
15. Sign out of LON-CL1.
16. Leave all virtual machines running, as they will be used for the next demonstration.

## Demonstration: Customizing Windows 8.1 Settings

### Demonstration Steps

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. From the Start screen, open the **Charms** menu, click **Settings**, and then click **Change PC Settings**.
3. On the PC Settings screen, click **PC & devices**.
4. On the **PC & devices** page, in the Lock screen apps section, click the Plus Sign (+) icon, click **Weather**, and then click the back arrow.
5. On the PC Settings screen, click **Accounts**.
6. View the available options.
7. On the Accounts screen, click the back arrow.
8. On the PC Settings screen, click **Search & apps**.
9. On the Search & apps screen, click **Share**.
10. On the Frequent screen, change Items in list to **10**, and then click the back arrow.
11. Close the PC Settings screen.
12. Revert the LON-CL1 and LON-DC1 virtual machines.

## Module Review and Takeaways

### Review Question(s)

**Question:** What advantages does the domain environment provide for managing Windows 8.1 computers?

**Answer:** Answers will vary. Students might mention centralized management and configuration with Group Policy, and centralized authentication with Active Directory® Domain Services (AD DS). Domains also provide logical and security boundaries that can help an organization to provide a management structure for Windows 8.1 computers.

# Module 2

## Installing and Deploying Windows® 8.1

### Contents:

<b>Lesson 1:</b> Preparing to Install and Deploy Windows 8.1	2
<b>Lesson 2:</b> Installing Windows 8.1	4
<b>Lesson 3:</b> Customizing and Preparing a Windows 8.1 Image for Deployment	7
<b>Lesson 4:</b> Volume Activation for Windows 8.1	12
Module Review and Takeaways	14
Lab Review Questions and Answers	15

## Lesson 1

# Preparing to Install and Deploy Windows 8.1

### Contents:

Questions and Answers

3

## Questions and Answers

### Planning for a Windows 8.1 Installation

**Question:** Can you use Microsoft Office 2013 on Windows RT?

**Answer:** Yes. You can use Microsoft Office 2013 on Windows RT because this app is part of Windows RT by default. Otherwise, you can install only Windows Store apps on Windows RT.

### Considerations for Deploying Windows 8.1 in the Enterprise Environment

**Question:** Why do enterprises not use default Windows 8.1 DVD media to perform installations?

**Answer:** Installations from default Windows 8.1 DVD media requires user interaction, must be performed locally, and is used to install an operating system on a single computer at a time. Windows 8.1 DVD media could be useful for deploying Windows 8.1 in small branch offices. However, because of the manual intervention that is required, even small office environments typically use custom Windows 8.1 installation media.

### Hardware Requirements for Installing Windows 8.1

**Question:** Do you have to create a virtual machine with at least 1 GB of memory if you want to install Windows 8.1 Pro on that virtual machine?

**Answer:** 1 gigabyte (GB) of memory is the recommended minimum for installing Windows 8.1. However, you can install Windows 8.1 even if a computer or virtual machine has less than 1 GB of memory—for example, 512 megabytes (MB). If you install Windows 8.1 on a virtual machine on the Hyper-V virtualization platform, you also can use the Dynamic Memory feature.

### Determining Device Driver Compatibility

**Question:** Can you use a device driver from a 64-bit version of Windows 8 with a 32-bit version of Windows 8.1?

**Answer:** The 32-bit version of Windows 8.1 can use 32-bit device drivers only, and the 64-bit version of Windows 8.1 can use 64-bit device drivers only. This means that you cannot use any device driver from a 64-bit version of Windows 8 with a 32-bit version of Windows 8.1.

### Common Application Compatibility Issues

**Question:** Can you run a program that was developed for Windows XP on Windows 8.1?

**Answer:** Windows 8.1 is backward-compatible with older versions of Windows operating systems. In general, you can run most programs that were developed for older versions of Windows operating systems on Windows 8.1. However, some changes in Windows 8.1 can cause compatibility issues. For example, if a program depends on a component that is deprecated in Windows 8.1, you will not be able to run it on Windows 8.1 by default, or sometimes, not at all.

## Lesson 2

# Installing Windows 8.1

### Contents:

Questions and Answers

5

## Questions and Answers

### Options for Installing Windows 8.1

**Question:** What is the main difference between a clean installation of Windows 8.1 and migration to Windows 8.1?

**Answer:** With a clean installation, you finish with a fresh Windows 8.1 installation, in which no apps or user data are present. A migration to Windows 8.1 includes a clean installation as one of its steps. Migration is performed after a clean installation, and it reinstalls apps and restores user settings and data in the Windows 8.1 environment.

### Methods for Performing a Clean Installation

**Question:** What happens with user settings, data, and installed apps if you perform a clean installation of Windows 8.1 on a computer that has Windows 7 installed?

**Answer:** If you perform a clean installation of Windows 8.1, the existing users, their settings, data, and installed apps on the computer that is running Windows 7 are not migrated to Windows 8.1. If you did not format the volume, this information will be preserved in the Windows.old folder, but it will not be used in the Windows 8.1 environment.

### Upgrading to Windows 8.1

**Question:** Can you upgrade Windows 7 Pro to Windows 8.1 Pro if you start a computer from Windows 8.1 DVD installation media?

**Answer:** No. You can perform an upgrade to Windows 8.1 only if you run Setup.exe from an existing operating system. If you start a computer from DVD media, you can perform a clean installation of Windows 8.1, but you cannot upgrade the existing operating system to Windows 8.1.

### Supported Windows 8.1 Upgrade Paths

**Question:** Can you upgrade the 32-bit version of Windows 8 Pro to the 64-bit version of Windows 8.1 Pro?

**Answer:** Cross-architecture upgrade to Windows 8.1 is not supported. Therefore, you cannot upgrade the 32-bit version of Windows 8 Pro to the 64-bit version of Windows 8.1 Pro.

### Migrating to Windows 8.1

**Question:** You have a user who wants to upgrade a Windows XP computer to Windows 8.1. The computer meets all of the hardware requirements for Windows 8.1. The user wants to retain all of the existing user settings and applications. The user has no time-related requirements and can be without the computer while you install Windows 8.1. How should you perform the Windows 8.1 installation?

**Answer:** While most of the scenario would suggest an in-place upgrade, you cannot upgrade Windows XP directly to Windows 8.1. Therefore, in this scenario, you need to perform a migration to retain the user's settings, and you must reinstall the applications.

### What Is Windows To Go?

**Question:** When would you use Windows To Go in your company?

**Answer:** Answers might vary. You typically would use Windows To Go when you cannot or do not want to install Windows 8.1 on a physical computer, such as in a Bring-Your-Own-Device scenario where users are using their own devices. By using Windows To Go, you can start that device in a customized Windows 8.1 environment that can be domain-joined. You then can access company resources without modifying anything on the device, including the installed

operating system and user data. The device must be compatible with Windows 8.1 to use it with Windows To Go.

## Booting from a Native Boot Virtual Hard Disk

**Question:** Do you need to enable the Client Hyper-V feature if you want to use native boot from a virtual hard disk that contains Windows 8.1 Pro?

**Answer:** Native boot from virtual hard disk uses physical hardware, and it does not need the Client Hyper-V feature. You can use native boot from virtual hard disk even when the Client Hyper-V feature is not enabled.

## Lesson 3

# Customizing and Preparing a Windows 8.1 Image for Deployment

### Contents:

Questions and Answers	8
Demonstration: Building an Answer File by Using Windows SIM	9
Demonstration: Creating Bootable Windows PE Media	10

## Questions and Answers

### The Windows Image File Format

**Question:** Why is the size of a single Windows image file that contains images of Windows 8.1 and Windows 8.1 Pro considerably smaller than the combined size of two Windows image files, where one contains a Windows 8.1 image and the other contains a Windows 8.1 Pro image?

**Answer:** Windows image files use compression, but they also use single instancing, which means that if multiple images in the same Windows image file contain the same file, then that file is stored only once in the Windows image file. Windows 8.1 and Windows 8.1 Pro share many files, which mean that single instancing can save a considerable amount of space if both images are in the same Windows image file. If each image is in a separate Windows image file, single instancing cannot be used, and the combined size of the Windows image files will be considerably larger.

### Tools for Performing an Image-Based Installation

**Question:** Can you set up Windows DS on a Windows 8.1 computer?

**Answer:** Windows DS is a Windows Server role, and it cannot be set up on Windows 8.1 or any other Windows client computer.

### The Image-Based Installation Process

**Question:** Can you create a customized Windows 8.1 installation image only by using tools that are included in Windows 8.1?

**Answer:** You can create a customized Windows 8.1 installation image by first installing Windows 8.1, customizing the installation—for example, by modifying Windows 8.1 settings and installing apps—generalizing the installation by using Sysprep.exe, and finally by capturing the image. You can perform all these steps by using tools that are part of Windows 8.1, but remember that you cannot capture an image while the operating system is running. You need to capture it from an alternate operating system—for example, from Windows PE, which is not included in Windows 8.1, but is available in Windows ADK.

### Using Answer Files to Automate an Installation Process

**Question:** What must you do before you can create an answer file for a Windows 8.1 installation?

**Answer:** If you want to create an answer file, you must have the catalog for the Windows image. Because the catalog of the Windows 8.1 images is not included on Windows 8.1 DVD media, you first need to create the catalog file. Windows SIM can create the catalog, but only if the Windows image file is on writable media. Therefore, you also need to copy Install.wim onto USB media or a hard drive.

### Preparing a Reference Installation by Using Sysprep

**Question:** Why should you not run Sysprep on a Windows 8.1 computer that is deployed and being used already?

**Answer:** Sysprep removes system-specific data, including computer name, and it cleans up the event log and uninstalls computer-specific drivers. If you were to run Sysprep on a deployed computer, all computer-specific settings would be lost, and the user would have the out-of-box experience (OOBE).

### What Is Windows PE?

**Question:** What are some of the tasks in which you can use Windows PE for troubleshooting?

**Answer:** You can use Windows PE to replace system files, to recover data before a Windows installation, and to run diagnostic and configuration tools on a system on which a Windows operating system is not installed or where a Windows installation is not functioning properly.

**Question:** How you can customize Windows PE?

**Answer:** Before you can customize Windows PE, you first need to build the Windows PE environment, which you can perform by running the CopyPE.cmd script. After that, you can use the same tool, Dism.exe, to mount, customize, and unmount the Windows PE image. When Windows PE is customized, you can write it to startup media by using the MakeWinPEMedia.cmd script.

## Using DISM to Capture and Apply an Installation Image

**Question:** What must you do before you can capture an image of a Windows 8.1 computer by using Dism.exe?

**Answer:** You cannot capture an image of a running operating system. Before you can capture a Windows 8.1 image, you must start the computer from an alternate operating system, such as Windows PE. In most cases, you also should generalize Windows 8.1 by using Sysprep before you capture the image.

## Modifying and Maintaining Windows Images

**Question:** Can you use Dism.exe to modify only Windows installation images in a .wim file?

**Answer:** You can use Dism.exe for modifying Windows installation images in a .wim file offline, but you can also use it for modifying other images, such as Windows PE images offline. You can also use Dism.exe for modifying an online image of the running Windows 8.1 installation.

## Demonstration: Building an Answer File by Using Windows SIM

### Demonstration Steps

1. On the Start screen, type **Image Manager**, and then press Enter.
2. In Windows System Image Manager, click **File**, and then click **Select Windows Image**.
3. In the **Select a Windows Image** dialog box, browse to the **E:\Labfiles\mod02\Sources** folder, click **Install.wim**, and then click **Open**.
4. In Windows System Image Manager, click **File**, and then click **New Answer File**.
5. In the Windows Image pane, expand **Components**, scroll down, expand and right-click **amd64\_Microsoft-Windows-Setup\_6.3.9600.16384\_neutral\DiskConfiguration\Disk**, and then click **Add Setting to Pass 1 windowsPE**.
6. In the Answer File pane, verify that **Disk** is selected. In the Disk Properties pane, double-click **DiskID**, and then type **0**.
7. In the Disk Properties pane, double-click **WillWipeDisk**, and then from the drop-down list, click **True**.
8. In the Windows Image pane, expand the **Components** node and right-click **amd64\_Microsoft-Windows-Setup\_6.3.9600.16384\_neutral\DiskConfiguration\Disk\CreatePartitons\CreatePartition**, and then click **Add Setting to Pass 1 windowsPE**.
9. In the Answer File pane, verify that **CreatePartition** is selected.
10. In the CreatePartition Properties pane, double-click **Extend**, and then from the drop-down list, click **True**.

11. In the CreatePartition Properties pane, double-click **Order**, and then type **1**.
12. In the CreatePartition Properties pane, double-click **Type**, and then from the drop-down list, click **Primary**.
13. In the Windows Image pane, expand the **Components** node, right-click **amd64\_Microsoft-Windows-Setup\_6.3.9600.16384\_neutral\ImagelInstall\OSImage\InstallTo**, and then click **Add Setting to Pass 1 windowsPE**.
14. In the Answer File pane, verify that **InstallTo** is selected.
15. In the InstallTo Properties pane, double-click **DiskID**, and then type **0**.
16. In the InstallTo Properties pane, double-click **PartitionID**, and then type **1**.
17. In the Windows Image pane, expand the **Components** node, right-click **amd64\_Microsoft-Windows-Setup\_6.3.9600.16384\_neutral\UserData**, and then click **Add Setting to Pass 1 windowsPE**.
18. In the Answer File pane, verify that **UserData** is selected.
19. In the UserData Properties pane, double-click **AcceptEULA**, and then in the drop-down box, click **True**.
20. In the UserData Properties pane, double-click **Organization**, and then type **Adatum**.
21. In Windows System Image Manager, click **File**, and then click **Save Answer File As**.
22. In the Save As window, in the navigation pane, click **Desktop**. In the **File Name** box, type **Autounattend.xml**, and then click **Save**.
23. On the desktop, double-click **Autounattend.xml**. In **How do you want to open this type of file (.xml)**, click **More options** and click **Internet Explorer**. Autounattend.xml opens in Internet Explorer®.
24. Verify that the settings that you configured in Windows SIM are saved in the answer file.

## Demonstration: Creating Bootable Windows PE Media

### Demonstration Steps

1. On LON-CL1, on Start screen, type **imaging**, and then press Enter to start the Deployment and Imaging Tools Environment.
2. At the command prompt, type the following, and then press Enter:

```
copy c:\winpe C:\winpe
```



**Note:** This command copies the necessary files to the C:\winpe folder. If the folder does not exist, Windows creates it.

3. At the command prompt, run the following command to view the content of the default Windows PE image:

```
Dism /Get-WimInfo /Index:1 /WimFile:c:\winpe\media\sources\boot.wim
```

4. At the command prompt, run the following command to mount the Windows PE image:

```
Dism /mount-image /imagefile:c:\winpe\media\sources\boot.wim /index:1 /mountdir:C:\winpe\mount
```

5. Open File Explorer and navigate to the **C:\winpe\mount** folder. Verify that four subfolders are present.
6. Close File Explorer.
7. At the command prompt, unmount the Windows PE image by running the following command:

```
Dism /unmount-image /mountdir:C:\winpe\mount /commit
```



**Note:** If you did not close File Explorer and C:\winpe\mount is open, you will get an error when running the **dism** command to unmount the image, but the image will be unmounted.

8. Open File Explorer and navigate to the **C:\winpe\mount** folder. Verify that the folder is now empty.
9. At the command prompt, type the following, and then press Enter:

```
MakeWinPEMedia /ISO C:\winpe c:\winpe\winpe.iso
```

## Lesson 4

# Volume Activation for Windows 8.1

### Contents:

Questions and Answers

13

## Questions and Answers

### What Is Activation?

**Question:** What is activation?

**Answer:** Activation is a process that links a product key that is used for installation with the installation of that product on a specific device.

### Volume Activation Technologies

**Question:** How can you determine if Windows 8.1 is activated? How you can activate Windows 8.1?

**Answer:** You can determine if Windows 8.1 is activated by checking System properties or by running the **slmgr.vbs -dli** command. You can activate Windows 8.1 by running the **slmgr.vbs -ato** command or on the Activate Windows settings page.

### How KMS Activation Works

**Question:** Can a Windows 8.1 computer be a KMS host?

**Answer:** Yes. A Windows 8.1 computer can be a KMS host. However, this is not a best practice because a Windows 8.1 computer is not always connected to the network, and it is used by end users. We recommend that a server running Windows Server 2012 or a newer operating system act as a KMS host.

### How Active Directory-Based Activation Works

**Question:** What type of connection is established between a Windows 8.1 computer and a Windows Server 2012 R2 domain controller when Active Directory-based activation is performed?

**Answer:** When a Windows 8.1 computer wants to activate, it establishes Lightweight Directory Access Protocol (LDAP) communication with the domain controller. This is the same type of connection for other interactions between client computers and domain controllers, so you do not need to open any additional port on the firewall to allow Active Directory-based activation.

### Tools to Manage Activation

**Question:** What is the main benefit that VAMT provides for an environment without direct Internet connectivity?

**Answer:** One of the features of VAMT is MAK proxy activation, which enables you to use VAMT to activate all the clients on a network at once, without requiring the clients to have Internet connectivity.

### Troubleshooting Volume Activation

**Question:** Will the user be notified immediately if a Windows 8.1 computer cannot reactivate by using a KMS host?

**Answer:** After Windows 8.1 is activated initially, it has up to 180 days for the reactivation. During that time, it will try to contact the activation server every seven days, and sometimes, even more often. If one of the attempts to reactivate is not successful—for example, if a KMS host is not available—the user will not be notified. You can find such events in the event log. The user will be notified only if Windows 8.1 is unable to activate in 180 days.

## Module Review and Takeaways

**Question:** Can you use the Client Hyper-V feature on 32-bit versions of Windows 8.1 Enterprise?

**Answer:** No. You cannot use the Client Hyper-V feature on 32-bit versions of Windows 8.1 Enterprise. This feature is available in Windows 8.1 Enterprise, but only in the 64-bit version.

**Question:** One of your users has been promoted to a new position and has been given a new computer. The user needs the new apps that the job requires. The user also needs to have the documents and settings from the old Windows 7 computer transferred to the new computer. How should you perform the Windows 8.1 installation?

**Answer:** You should perform a side-by-side migration in this scenario because a new computer and a new set of apps are being used. After installing Windows 8.1 on the new computer and installing new apps, you need to migrate the user's documents and settings that are on the Windows 7 computer to the new computer.

# Lab Review Questions and Answers

## Lab A: Installing Windows 8.1

### Question and Answers

**Question:** After you test your operating system on the virtual machines on the test computer, how can you migrate those virtual machines to the production environment?

**Answer:** You can export or copy the virtual machines from Client Hyper-V on Windows 8.1 and then import them to the Windows Server 2012 R2 computer that is running the Hyper-V role in the production environment.

**Question:** Why would you not use default Windows 8.1 installation media if you need to deploy Windows 8.1 to 30 computers?

**Answer:** Default Windows 8.1 installation requires you to provide several answers during the installation. This enables users to perform basic customization. However, when you need to deploy Windows 8.1 to multiple computers, you typically would want to use a higher degree of customization and perform unattended installations.

## Lab B: Customizing and Capturing a Windows 8.1 Image

### Question and Answers

**Question:** Do you need to install Windows ADK if you want to use the Dism.exe command?

**Answer:** No. Dism.exe is part of Windows 8.1, and you do not need to install Windows ADK to be able to use Dism.exe.

**Question:** How can you create an answer file for an unattended Windows 8.1 installation, and where can you get this tool?

**Answer:** An answer file for an unattended Windows 8.1 installation is an XML file, which means that you can use any text editor to create it. However, Windows ADK includes Windows SIM, which is a specialized tool for creating Windows answer files. This tool includes extensive help files, and it also can validate answer files.

**Question:** How can you capture a Windows 8.1 image?

**Answer:** You can capture a Windows 8.1 image by using the Dism.exe command. In most cases, you should generalize a Windows 8.1 installation before you capture it. You also should be aware that you cannot capture an image of a running operating system. You should start the computer by using Windows PE.

## Lab C: Deploying a Windows 8.1 Image

### Question and Answers

**Question:** Can you inject a service pack in an offline Windows image?

**Answer:** You can use Dism.exe to mount and perform many modifications to an offline Windows image, but you cannot inject a service pack in an offline Windows image. You only can apply a service pack to an online Windows image.

**Question:** Can you deploy a Windows image to a computer with a new, blank hard drive?

**Answer:** You can deploy a Windows image to a partition that is formatted already. If you have a blank hard drive, you first must partition it and format the partition before you can deploy a Windows image to it.

# Module 3

## Tools Used for Configuring and Managing Windows 8.1

### Contents:

Lesson 2: Using Windows PowerShell to Configure and Manage Windows 8.1	2
Lesson 3: Using Group Policy to Manage Windows 8.1	5
Module Review and Takeaways	8
Lab Review Questions and Answers	9

## Lesson 2

# Using Windows PowerShell to Configure and Manage Windows 8.1

### Contents:

Demonstration: Using Windows PowerShell ISE	3
Demonstration: Using Windows PowerShell Remoting	4

## Demonstration: Using Windows PowerShell ISE

### Demonstration Steps

#### Prepare the computer to run scripts

1. On LON-CL1, on the Start screen, type **Admin**, and then click **Administrative Tools**.
2. In the Administrative Tools window, double-click **Windows PowerShell ISE**.
3. In Windows PowerShell ISE, at the Windows PowerShell command prompt, type **Get-ExecutionPolicy**, and then press Enter. Confirm that the current execution policy is Unrestricted.

#### Open and review a script

1. In Windows PowerShell ISE, click **File**, and then click **Open**.
2. In the Open window, browse to **E:\Labfiles\Mod04**, click **Services.ps1**, and then click **Open**.
3. Read the script, and then explain what the script is doing. Note the following:
  - Comments are green
  - Variables are red
  - Cmdlets are bright blue
  - Text in quotation marks is dark red

#### Modify and test a script

1. Select line 3 in the script, and then press F8 to run the selection.
2. Read the output in the console pane, and then notice that the line from the script appears in the console pane.
3. In the console pane, type **\$services**, and then press Enter.
4. Read the output in the console pane. Notice that a list of services displays.
5. Press F5 to run the script.
6. Read the output, and then notice that it does not have multiple colors.
7. At the end of line 14, type **-ForegroundColor \$color**.
8. Press F5 to run the script.
9. In the **Windows PowerShell ISE** dialog box, select the **In the future, do not show this message** check box, and then click **OK**.
10. Read the output, and then notice that running services are green and services that are not running are red.
11. On line 16, type **Write-Host "A total of" \$services.count "services were evaluated"**
12. Press F5 to run the script.
13. In the Commands pane, in the **Name** box, type **Write-Host**, and then click **Write-Host**.
14. In the **BackgroundColor** box, select **Gray**.
15. In the **ForegroundColor** box, select **Black**.
16. In the **Object** box, type **"Script execution is complete"**.
17. Click **Copy**, and then paste onto line 17 of the script.
18. Press F5 to run the script.

19. Press Ctrl+S to save the script.
20. Close all open windows.

### Run a script from the Windows PowerShell command prompt

1. On the Start screen, type **PowerShell**, and then click **Windows PowerShell**.
2. At the Windows PowerShell command prompt, type **Set-Location E:\Labfiles\Mod04**, and then press Enter.
3. Type **.\Services.ps1**, and then press Enter.
4. Close the Command Prompt window.

## Demonstration: Using Windows PowerShell Remoting

### Demonstration Steps

1. Ensure that you are signed into LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. To ensure that you have the correct execution policy in place, run.

```
Set-ExecutionPolicy RemoteSigned
```

3. Answer **Yes** to confirm the execution policy change.
4. Type the following cmdlet, and then press Enter.

```
Enable-PSremoting
```

If you receive an error about a network connection being public, run **Enable-PSremoting -SkipNetwork** instead. Point out the error to students; it is an error they will see often.

5. At the Do you want to continue? prompt, type **A**, and then press Enter.
6. Run the following cmdlet.

```
Enter-PSSession -ComputerName LON-DC1
```

7. Run the following cmdlet.

```
Get-Process
```

8. Run the following cmdlet.

```
Exit-PSSession
```

9. Run the following cmdlet.

```
Invoke-Command -ComputerName LON-CL1,LON-DC1 -ScriptBlock { Get-EventLog -LogName Security -Newest 10 }
```

## Lesson 3

# Using Group Policy to Manage Windows 8.1

### Contents:

Demonstration: Configuring Group Policy Settings	6
Demonstration: Configuring Domain-Based GPOs	6

## Demonstration: Configuring Group Policy Settings

### Demonstration Steps

#### Edit the local GPO to restrict the use of registry editing tools

1. On LON-CL1, on the Start screen, type **group**, click **Settings**, and then click **Edit group policy**.
2. In the Local Group Policy Editor, under User Configuration, expand **Administrative Templates**, click **System**, and then double-click **Prevent access to registry editing tools**.
3. In the Prevent access to registry editing tools window, click **Enabled**, and then click **OK**.
4. Close the Local Group Policy Editor.
5. On the Start screen, type **regedit**, and then click **regedit.exe**.
6. In the Registry Editor window, click **OK**.

#### Edit the local GPO to allow administrators to use registry editing tools

1. On the Start screen, type **mmc**, and then click **mmc.exe**.
2. In the Console1 – [Console Root] window, click **File**, and then click **Add/Remove Snap-in**.
3. In the Add or Remove Snap-ins window, in the **Available snap-ins** box, click **Group Policy Object Editor**, and then click **Add**.
4. In the Select Group Policy Object window, click **Browse**.
5. In the Browse for a Group Policy Object window, click the **Users** tab, click **Administrators**, and then click **OK**.
6. In the Select Group Policy Object window, click **Finish**.
7. In the Add or Remove Snap-ins window, click **OK**.
8. In the Microsoft Management Console, expand **Local Computer\Administrators Policy**, expand **User Configuration**, expand **Administrative Templates**, click **System**, and then double-click **Prevent access to registry editing tools**.
9. In the Prevent access to registry editing tools window, click **Disabled**, and then click **OK**.
10. On the Start screen, type **regedit**, and then click **regedit.exe**.
11. Revert the LON-CL1 virtual machine. Do not revert LON-DC1, as it will be used in the next demonstration.

## Demonstration: Configuring Domain-Based GPOs

### Demonstration Steps

#### Use the GPMC to create a new GPO

1. Switch to LON-DC1, and then sign in as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. In Server Manager, click **Tools**, and then click **Group Policy Management**.
3. If necessary, expand **Forest: Adatum.com**, expand **Domains**, and then expand **Adatum.com**.
4. Select and then right-click the **Group Policy Objects** folder, and then click **New**.
5. In the **New GPO** dialog box, in the **Name** field, type **Desktop**, and then click **OK**.

## Configure domain-based Group Policy settings

1. In the Group Policy Management Console, Expand the **Group Policy Objects** folder, right-click the **Desktop** policy, and then click **Edit**.
2. In the Group Policy Management Editor window, under Computer Configuration, expand **Policies**, expand **Windows Settings**, expand **Security Settings**, expand **Local Policies**, and then click **Security Options**.
3. In the details pane, double-click **Interactive logon: Do not display last user name**.
4. In the **Interactive logon: Do not display last user name Properties** dialog box, select the **Define this policy setting** check box, click **Enabled**, and then click **OK**.
5. Under the Security Settings node, click **System Services**.
6. In the details pane, double-click **Windows Installer**.
7. In the **Windows Installer Properties** dialog box, select **Define this policy setting** check box, and then click **OK**.
8. Under User Configuration, expand **Policies**, expand **Administrative Templates**, and then click **Start Menu and Taskbar**.
9. In the details pane, double-click **Remove Search link from Start Menu**.
10. In the **Remove Search link from Start Menu** dialog box, click **Enabled**, and then click **OK**.
11. Under the Administrative Templates folder, expand **Control Panel**, and then click **Display**.
12. In the details pane, double-click **Hide Settings tab**.
13. In the **Hide Settings tab** dialog box, click **Enabled**, and then click **OK**.
14. Close all open windows on LON-DC1.
15. Revert the LON-DC1 virtual machine.

## Module Review and Takeaways

**Question:** Recently, your organization added Windows 8.1 computers to the network. You have tried to connect to a remote computer that is running Windows 8.1 by using Event Viewer, but you cannot connect. You know that the remote computer is turned on. Why is this problem occurring, and how can you resolve it?

**Answer:** By default, Windows Firewall does not allow remote management. You need to update Windows Firewall to allow remote management on the remote computer.

**Question:** One of the server administrators is complaining that you need to use Remote Desktop and connect to a domain controller to manage user accounts. What alternative can you use to administer user accounts from a Windows 8.1 computer?

**Answer:** You can download and install RSAT for Windows 8.1. RSAT includes the management tools found on Windows Server 2012.

**Question:** You have configured a public-use computer in the lobby for visiting clients. This computer is not part of the AD DS domain. How can you secure this computer to prevent visiting clients from making changes to it and still allow administrators to have full access?

**Answer:** As a first step, visiting clients should sign in with a standard user account. Then you can use a local Group Policy to restrict the standard user account further. To allow administrators to have full access, you can create a local Group Policy that removes restrictions from the items that are restricted for standard users.

# Lab Review Questions and Answers

## Lab: Using Management Tools to Configure Windows 8.1 Settings

### Questions and Answers

**Question:** Why was Windows PowerShell remoting not enabled for LON-CL2?

**Answer:** Setting Block Inheritance on the MachineFloor organizational unit (OU) ensured that any GPOs applied to the domain will not be applied to computers in the MachineFloor OU unless a policy at the domain level is enforced. LON-CL2 was in the MachineFloor OU.

**Question:** What are the two ways in which you can enable Windows PowerShell remoting?

**Answer:** You can enable Windows PowerShell remoting by running **Enable-PSRemoting** or by using Group Policy.

# Module 4

## Managing Profiles and User State in Windows® 8.1

### Contents:

Lesson 1: Managing User Profiles	2
Lesson 2: Configuring User State Virtualization	5
Lesson 3: Migrating User State and Settings	8
Module Review and Takeaways	10
Lab Review Questions and Answers	11

## Lesson 1

# Managing User Profiles

### Contents:

Questions and Answers	3
Demonstration: Configuring Roaming User Profiles and Folder Redirection	3

## Questions and Answers

### User Profiles in Windows 8.1

**Question:** By default, where is the local user profile stored in Windows 8.1?

**Answer:** By default, the local user profile is stored in the Users folder on the same volume as the Windows operating system.

### User Profile Types

**Question:** When would you configure users with roaming user profiles?

**Answer:** If a user uses multiple computers and you want to make the user's documents and settings available on the computer on which he or she signs in, then you should configure the user with a roaming user profile. Another option is to configure Folder Redirection.

### Managing User Profiles by Using Group Policy

**Question:** What is the main difference between roaming user profiles and redirected folders?

**Answer:** Roaming user profiles are copied locally when a user signs in, and modifications are copied back to a network location when a user signs out. Redirected folders are on a network location all the time and are not copied locally.

### Using the Primary Computer Setting to Control Profiles

**Question:** Do you need Windows Server 2012 or newer domain controllers in your network to limit where Folder Redirection and roaming user profiles will be available?

**Answer:** No. You do not need a Windows Server 2012 or newer domain controller to configure and use the Primary Computer feature. The only requirements are that the Active Directory Domain Services (AD DS) schema is extended to at least the Windows Server 2012 level and that the user must sign in to a computer that runs Windows 8, Windows Server 2012, or a newer Windows operating system.

## Demonstration: Configuring Roaming User Profiles and Folder Redirection

### Demonstration Steps

1. On LON-DC1, in Active Directory® Users and Computers, expand **Adatum.com** in the navigation pane, and then click the **Marketing** organizational unit (OU).
2. In the details pane, right-click **Adam Barr**, click **Properties**, click the **Profile** tab, and then show the **Profile Path** value.
3. Close the **Adam Barr Properties** dialog box, and then minimize **Active Directory Users and Computers**.
4. On LON-DC1, in Group Policy Management, expand **Adatum.com** in the navigation pane, expand the **Marketing** OU, right-click **Folder Redirection**, and then click **Edit**.
5. In the Group Policy Management Editor window, under User Configuration, expand **Policies**, **Windows Settings**, and **Folder Redirection**, right-click **Documents**, and then click **Properties**.
6. In the **Documents Properties** dialog box, show how the Documents folder is redirected to \\LON-DC1\Redirected.
7. Close the **Documents Properties** dialog box, close the Group Policy Management Editor window, and then close the Group Policy Management Console (GPMC).
8. On LON-DC1, in File Explorer, verify that the Profiles and Redirected folders are empty.

9. Sign in to LON-CL1 as **Adatum\Adam** with password **Pa\$\$w0rd**.
10. On the Start screen, click **Desktop**. Right-click anywhere on the desktop, point to **New**, click **Folder**, type **Presentations**, and then press Enter.
11. On the desktop, right-click anywhere, and then click **Personalize**.
12. In the **Personalization** dialog box, click **Change desktop icons**, and in the Desktop icons section, select the **Computer** check box. Click **OK**, and then close the **Personalization** dialog box.
13. On the desktop, right-click anywhere, point to **New**, and then click **Shortcut**.
14. In the Create Shortcut window, click **Browse**, expand **This PC**, click **Local Disk (C:)**, click **OK**, click **Next**, and then click **Finish**. A shortcut to Local Disk (C:) is added to the desktop.
15. On the Start screen, type **Notepad**, press Enter, and then type your name in the Notepad file.
16. On the **File** menu, click **Save As**, type your name in the **File Name** box, click **Save**, and then close Notepad.
17. On the taskbar, click **File Explorer**, and then in the navigation pane, click **Documents**.
18. In the details pane, right-click the file with your name, and then click **Properties**. Verify that the location of that file points to the network, to **\\LON-DC1\Redirected\Adam\Documents** and that is not stored inside the **Adam Barr** local profile. Click **OK**.
19. Sign out from LON-CL1.
20. On LON-DC1, in File Explorer, verify that the Profiles and Redirected folders are no longer empty. The Profiles folder contains the Adam Barr roaming user profile (adam.V2), while the Redirected folder contains Adam Barr's redirected Documents folder.
21. Sign in to LON-CL2 as **Adatum\Adam** with password **Pa\$\$w0rd**.
22. On the Start screen, click **Desktop**. Verify that the This PC icon is on the desktop, as well as the Presentations folder and the Local Disk (C:) shortcut.
23. On the Start screen, type **Notepad**, and then press Enter.
24. On the **File** menu, click **Open**.
25. In the **Open** dialog box, click the file with your name, and then click **Open**. You verified that you can access files transparently that were created on another computer and saved in the redirected folder.
26. Sign out from LON-CL2.

## Lesson 2

# Configuring User State Virtualization

### Contents:

Questions and Answers

6

## Questions and Answers

### Overview of UE-V

**Question:** Can you synchronize user documents between computers by using UE-V?

**Answer:** No. UE-V can synchronize settings only, not data files, which include user documents. If you want to make user documents roam to the computer on which a user signs in, you should use Folder Redirection or roaming user profiles.

### How UE-V Works

**Question:** How often is the settings template catalog checked for changes?

**Answer:** Each UE-V client contains a scheduled task named Template Auto Update that checks the settings template catalog for updates once daily at 3:30 A.M. by default.

### How UE-V Synchronizes Settings

**Question:** Does a user have to sign out to synchronize application settings when using UE-V?

**Answer:** No. If UE-V is deployed and configured properly, and if you have a settings location template for the application and that template is enabled, then the user only has to close the application. As soon as the user closes the application, the application settings will be stored to the network location, settings storage location, and they can be applied on any other computer.

### Comparing Roaming User Profiles, Microsoft Account, and UE-V

**Question:** Can you use Microsoft account to synchronize settings between Windows 7 computers and Windows 8.1 computers?

**Answer:** You can use Microsoft account to sign in to a Windows 8.1 computer, but you cannot use it to sign in to a Windows 7 computer. Therefore, you cannot use Microsoft account to synchronize settings between computers that are running Windows 8.1 and Windows 7.

### Preparing the Environment for Deploying UE-V

**Question:** What must you do before you can use Group Policy to configure UE-V?

**Answer:** Before you can use Group Policy to configure UE-V, you must obtain UE-V administrative templates and add them either to the central store or to the local PolicyDefinitions folder. After you do this, the Microsoft User Experience Virtualization node appears under Policies\Administrative Templates\Windows Components in the computer and user parts of the Group Policy settings, where you can configure UE-V settings.

### Deploying UE-V

**Question:** Where can users see UE-V synchronization status and manually trigger UE-V synchronization?

**Answer:** Users can see UE-V synchronization status and manually trigger UE-V synchronization in the Company Settings Center, which is installed during the UE-V agent installation. You can access the Company Settings Center from Control Panel, the Start menu, the Start screen, and from the UE-V tray icon.

### Managing UE-V by Using Group Policy

**Question:** When will a UE-V setting that is configured through Group Policy be effective on a UE-V client?

**Answer:** The UE-V setting will be effective when Group Policy is applied on the UE-V client. This can be at logon, after background Group Policy refresh, or if you run **gpupdate /force** on the

client. The Group Policy Update option also is available in the GPMC, and you can use this option to update Group Policy settings on multiple clients.

## Creating and Editing UE-V Templates

**Question:** How can you use UE-V to synchronize the settings of third-party applications?

**Answer:** First, you either need to obtain settings location templates for the third-party application, or you need to create the template by using UE-V Generator. Then, you can copy the template to the settings template catalog and register the template manually with UE-V, or you can wait until the new settings location template is registered automatically.

## Lesson 3

# Migrating User State and Settings

### Contents:

Questions and Answers

9

## Questions and Answers

### Tools for Migrating User Data and Settings

**Question:** You have been asked to upgrade 10 computers in a small branch office from Windows 7 to Windows 8.1. You also have been asked to perform a clean installation of Windows 8.1 and to show the local manager how to migrate user files and other data after installing Windows 8.1. The manager will perform the Windows 8.1 installation and user state migration for the rest of the computers. Which tool should you demonstrate to the manager?

**Answer:** Windows Easy Transfer is the best option in this scenario. A nontechnical user can perform the migration on a small number of computers, so the wizard-based interface of Windows Easy Transfer is more familiar and easy to use.

### Migrating User Settings by Using Windows Easy Transfer

**Question:** Can you use Windows Easy Transfer to migrate user settings and data between two Windows 8.1 computers?

**Answer:** No. Windows Easy Transfer can migrate settings and data from source computers that have older Windows operating systems installed to computers that run Windows 8.1. A Windows 8.1 computer cannot be a source computer for Windows Easy Transfer because you cannot use Windows Easy Transfer in Windows 8.1 for capturing settings and data.

### Migrating User Settings and Data by Using USMT

**Question:** Do you need to install Windows ADK on the source computer from which you plan to migrate user settings?

**Answer:** ScanState.exe and XML files that are used during the capture process must be available on the source computer, but you do not need to install Windows ADK on the source computer. USMT can be available on a network share, and from there, you can run it on a source computer.

### Capturing User State by Using ScanState

**Question:** Why would you use additional XML configuration files with ScanState.exe?

**Answer:** When you want to include additional settings and data in a migration—for example, custom registry keys or folder structure—you can specify them in additional XML configuration files. You should be aware that if data is not captured on the source computer, it cannot be restored on the destination computer.

### Restoring User State by Using LoadState

**Question:** How can you ensure that user data is safe during a migration?

**Answer:** You can use encryption during a migration process. ScanState.exe can encrypt data during the capture process, and LoadState.exe can decrypt it during the restoration process.

## Module Review and Takeaways

**Question:** After you created a user account in AD DS, you noticed that the domain user does not have a user profile yet. Why?

**Answer:** The domain user has never signed in, so his profile has not been created yet. The user profile will be created when the user signs in for the first time.

**Question:** Can you use UE-V to synchronize application settings for a user who is configured with Folder Redirection already?

**Answer:** Yes. UE-V and Folder Redirection can be configured for the same user. This is the recommended method when you want to roam settings and user data between computers.

**Question:** You have been asked to retain user settings for 200 users who are having their Windows 7 desktop computers replaced with new Windows 8.1 computers. Which tool should you use to migrate user settings?

**Answer:** USMT is the best option in this scenario. Migrating user states for 200 computers by using Windows Easy Transfer would be too time-consuming. The command-line tools for USMT can be used in a script that can be run on each computer.

# Lab Review Questions and Answers

## Lab A: Configuring Profiles and User State Virtualization

### Question and Answers

**Question:** What steps must you take to ensure that the settings that UE-V synchronizes are applied from the settings storage location and not from the local cache?

**Answer:** UE-V applies settings from the local cache by default. If you want UE-V to apply changes directly from the settings storage location and not from the local cache, you must change the synchronization method to **none**. You can configure the synchronization method by using the **SyncMethod** parameter when installing the UE-V agent, or by using the **Set-UevConfiguration** cmdlet.

**Question:** After you copy the settings location template to the settings location catalog, how long does it take for UE-V clients to be updated with it?

**Answer:** UE-V clients are updated with the settings from the settings location catalog once daily at 3:30 A.M., which is when the scheduled task is triggered by default. If you want to update a UE-V client immediately with a new settings location template, then you should run `ApplySettingsTemplateCatalog.exe`.

**Question:** Which tool can you use to create a UE-V settings location template?

**Answer:** You can use the UE-V Generator to create a UE-V settings location template.

## Lab B: Migrating User State by Using USMT

### Question and Answers

**Question:** Why did you need to create and customize a Config.xml file?

**Answer:** A custom Config.xml file is used to include or exclude additional settings and files in a migration. One of your manager's requirements was that several default folders should not be migrated, so you had to create and customize the Config.xml file.

**Question:** Why did you use XML files with the ScanState.exe command?

**Answer:** XML files configure which settings and data to capture and what data to include in the capture. Without specifying the XML configuration files, only default data would be captured.

# Module 5

## Managing Disks and Device Drivers

### Contents:

Lesson 1: Managing Disks, Partitions, and Volumes	2
Lesson 2: Maintaining Disks, Partitions, and Volumes	7
Lesson 4: Installing and Configuring Device Drivers	10
Module Review and Takeaways	13
Lab Review Questions and Answers	16

## Lesson 1

# Managing Disks, Partitions, and Volumes

### Contents:

Question and Answers	3
Demonstration: Creating a Simple Volume	3
Demonstration: Creating Spanned and Striped Volumes	4
Demonstration: Resizing a Volume	5

## Question and Answers

**Question:** When might you need to reduce the system partition's size?

**Answer:** Answers will vary. Typically, a default installation will use the whole disk as the system partition. A user might need to split the disk into other workable areas, such as system, data, and archive. By using the **shrink** command on the system partition, users can reduce the size of the system partition so that they can create their desired partitions.

To enable BitLocker® Drive Encryption, an unencrypted partition must be available. However, in some circumstances, an unencrypted partition might not be available on a computer, so reducing the system volume size might prove useful.

It might be worth mentioning that fragmentation and the placement of certain types of files on disks, such as the master file table, can prevent you from realizing all the available free space as a new volume.

## Creating a Simple Volume

**Question:** In what circumstances will you use less than all of the available space on a new volume's disk?

**Answer:** Answers will vary, but one of the circumstances in which this is true is when you are partitioning a disk to support dual-boot scenarios.

## What Are Mirrored, Spanned, and Striped Volumes?

**Question:** How will the emergence of solid-state drives (SSDs) in enterprise workstations, devices, and enterprise storage arrays change the storage landscape?

**Answer:** Answers will vary. Students could suggest extreme transfer speeds, cost, shortened mean time between failures (MTBF), and energy and weight savings.

## Creating Spanned and Striped Volumes

**Question:** What is the advantage of using striped volumes, and conversely, what is the major disadvantage?

**Answer:** Performance is the advantage, while the potential disadvantage is reduced fault tolerance.

## Overview of Storage Spaces

**Question:** Discuss scenarios when you would use Storage Spaces in a client workstation environment.

**Answer:** Answers might vary. A small business or SOHO environment might use the Storage Spaces feature to provide users with cheap, easy to set up, and readily available redundant storage.

## Demonstration: Creating a Simple Volume

### Demonstration Steps

#### Using Disk Management

1. Sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Open the Start screen, type **diskmgmt.msc**, and then press Enter.
3. If the Initialize Disk screen appears, click **OK**.
4. Right-click the unallocated space on Disk 2, and then click **New Simple Volume**.

5. In the New Simple Volume Wizard, on the **Welcome to the New Simple Volume Wizard** page, click **Next**.
6. On the **Specify Volume Size** page, change the **Simple volume size in MB** value to **5103**, and then click **Next**.
7. On the **Assign Drive Letter or Path** page, click **Next**.
8. On the **Format Partition** page, in the **Volume label** text box, type **Simple1**, and then click **Next**.
9. On the **Completing the New Simple Volume Wizard** page, click **Finish**.
10. When the New Simple Volume Wizard is complete, close Disk Management and File Explorer and Microsoft Windows dialog box.

### Using Windows PowerShell

1. Open the Start screen, type **pow**, right-click **Windows PowerShell**, and then click **Run as administrator**.
2. In the Administrator: Windows PowerShell window, type **Get-Disk**, and then press Enter.
3. In the Administrator: Windows PowerShell window, type **Get-Disk -Number 3 | New-Partition -size 5350879232 | Format-Volume -Confirm:\$false -FileSystem NTFS -NewFileSystemLabel Simple2**, and then press Enter.
4. In the Administrator: Windows PowerShell window, type **Get-Partition**, and then press Enter. Make note of the PartitionNumber of the volume you just created on Disk Number 3. You will use this information in the next step.
5. In the Administrator: Windows PowerShell window, type **Set-Partition -DiskNumber 3 -PartitionNumber x -NewDriveLetter G** (where **x** is the results of the previous step), and then press Enter.
6. Minimize the Administrator: Windows PowerShell window.
7. In File Explorer, verify the visibility of the volumes that you created.
8. Close File Explorer and the Administrator: Windows PowerShell window.

## Demonstration: Creating Spanned and Striped Volumes

### Demonstration Steps

#### Creating a spanned volume

1. If necessary, sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Open the Start screen, type **diskmgmt.msc**, and then press Enter.
3. Right-click the unallocated space on Disk 2, and then click **New Spanned Volume**.
4. In the New Spanned Volume Wizard, on the **Welcome to the New Spanned Volume Wizard** page, click **Next**.
5. On the **Select Disks** page, select **Disk 3**. Hold down the Shift key, select **Disk 4**, and then click **Add**.
6. On the **Select Disks** page, select **Disk 2**. In the **Select the amount of space in MB** text box, type **2000**.
7. On the **Select Disks** page, select **Disk 3**. In the **Select the amount of space in MB** text box, type **1500**.
8. On the **Select Disks** page, with **Disk 4** selected, in the **Select the amount of space in MB** text box, type **4000**, and then click **Next**.

9. On the **Assign Drive Letter or Path** page, click **Next**.
10. On the **Format Volume** page, in the **Volume label** text box, type **SpanVol**.
11. Select the **Perform a quick format** check box, and then click **Next**.
12. On the **Completing the New Spanned Volume Wizard** page, click **Finish**.
13. Review the Disk Management warning, and then click **Yes**.
14. Close File Explorer.

### Creating a striped volume

1. Right-click the unallocated space on Disk 2, and then click **New Striped Volume**.
2. In the New Striped Volume Wizard, on the **Welcome to the New Striped Volume Wizard** page, click **Next**.
3. On the **Select Disks** page, select **Disk 3**. Hold down the Shift key, select **Disk 4**, and then click **Add**.
4. On the **Select Disks** page, in the **Select the amount of space in MB** text box, type **2000**, and then click **Next**.
5. On the **Assign Drive Letter or Path** page, click **Next**.
6. On the **Format Volume** page, in the **Volume label** text box, type **StripedVol**.
7. Select the **Perform a quick format** check box, and then click **Next**.
8. On the **Completing the New Striped Volume Wizard** page, click **Finish**.
9. Close Disk Management and any other open windows on LON-CL2.

## Demonstration: Resizing a Volume

### Demonstration Steps

#### Using DiskPart

1. If necessary, sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Open the Start screen, type **com**, and then click **Command Prompt**.
3. At the command prompt, type **DiskPart**, and then press Enter.
4. At the DiskPart command prompt, type **list volume**, and then press Enter.
5. Take note of the Volume ### associated with Simple2.
6. At the DiskPart command prompt, type **select volume <n>** (where *n* is the number noted in step 5), and then press Enter.
7. At the DiskPart command prompt, type **shrink desired=50**, and then press Enter.
8. When the shrink command has completed, at the DiskPart command prompt, type **list volume**, and then press Enter.
9. Type **exit**, then type **DiskPart**, and then press Enter to reopen DiskPart. Compare the reported size of the Simple2 volume as reported now with the value from the previous **list volume** command.
10. Close the Command Prompt window.

#### Using Disk Management

1. Point to the lower-right corner of the screen, and then click the Start menu.
2. Type **diskmgmt.msc**, and then press Enter.

3. Right-click the spanned volume on Disk 3, and then click **Extend Volume**.
4. In the Extend Volume Wizard, on the **Welcome to the Extend Volume Wizard** page, click **Next**.
5. On the **Select Disks** page, select **Disk 3**. In the **Select the amount of space in MB** text box, type **50**, and then click **Next**.
6. On the **Completing the Extend Volume Wizard** page, click **Finish**.
7. When the Extend Volume Wizard is complete, close Disk Management.

## Lesson 2

# Maintaining Disks, Partitions, and Volumes

### Contents:

Question and Answers	8
Demonstration: Configuring Disk Maintenance Tasks	8

## Question and Answers

**Question:** How does the increasing storage capacity of HDDs affect file fragmentation?

**Answer:** Answers will vary. Larger HDDs provide more contiguous space, resulting in less fragmentation. Fragmentation typically becomes a performance-related issue when disk drives become full. A large capacity HDD could take a long time for a typical enterprise user to fill up.

## Checking for Disk Errors

**Question:** In addition to the automatic scheduled maintenance that the Windows operating system performs, what other options could be considered to prevent unexpected data loss?

**Answer:** Answers will vary. Expect to guide students along the thought process of preventative measures rather than post data loss scenarios. Answers could include making regular backups, using an uninterruptible power supply, using a storage space or redundant disk array, adopting cloud storage such as Microsoft OneDrive™ (formerly known as SkyDrive) for storing data, or a combination of one or more of these measures.

## What Are Disk Quotas?

**Question:** Will quota management be useful in your organization?

**Answer:** Answers will vary. In most cases, there is no need to limit disk usage on Windows 8.1 computers. However, it might be useful when multiple users share the same computer or when users perform peer-to-peer networking in a workgroup. It is more common to implement disk quotas on servers.

## Demonstration: Configuring Disk Maintenance Tasks

### Demonstration Steps

#### Configure drive defragmentation

1. If necessary, sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Open the Start screen, type **pow**, right click **Windows PowerShell**, and then select **Run as administrator**.
3. At the Windows PowerShell command prompt, type **Defrag I: /A**, and then press Enter.
4. View the results of the drive analysis.
5. Using the Optimize Drives tool, defragment drive I.
6. At the Windows PowerShell command prompt, type **Defrag I: /H /U /V**, and then press Enter.
7. View the verbose results of the defragmentation operation.

#### Check a volume for errors

1. At the Windows PowerShell command prompt, type **Chkdsk /scan I:**, and then press Enter.
2. View the results of the scan. If errors are found, you can attempt to repair them.
3. Type **Chkdsk /spotfix I:**, and then press Enter.
4. View the results of the scan.
5. Close the Windows PowerShell Command Prompt window.

#### Create a disk quota

1. Click the **File Explorer** icon on the taskbar.

2. In the Libraries window, click **This PC**.
3. Right-click **StripedVol (I:)**, and then click **Properties**.
4. In the **StripedVol (I:) Properties** dialog box, click the **Quota** tab.
5. On the **Quota** tab, select the **Enable quota management** check box, and then select the **Deny disk space to users exceeding quota limit** check box.
6. Click **Limit disk space to**, in the adjacent box, type **6**, and then in the **KB** list, click **MB**.
7. In the **Set warning level to** box, type **4**, and then in the **KB** list, click **MB**.
8. Select the **Log event when a user exceeds their warning level** check box, and then click **OK**.
9. In the **Disk Quota** dialog box, review the message, and then click **OK**.
10. Close all open windows and sign out.
11. Sign in to LON-CL2 as **Adatum\Alan** with password **Pa\$\$w0rd**.
12. Select **Command Prompt** from the **Administrative** menu by pressing the Windows logo key+X. At the command prompt, type **I:**, and then press Enter.
13. At the command prompt, type **fsutil file createnew 4mb-file 4194304**, and then press Enter.
14. At the command prompt, type **fsutil file createnew 3mb-file 3145728**, and then press Enter.
15. The command prompt displays an error, indicating that there is not enough space on the disk to save the additional user file.
16. Close the Command Prompt window.

## Lesson 4

# Installing and Configuring Device Drivers

### Contents:

Question and Answers	11
Demonstration: Managing Drivers	11

## Question and Answers

### Managing Drivers

**Question:** If your computer does not start normally because of a device driver issue, what options are there for performing a driver roll back?

**Answer:** Try starting in safe mode and then rolling the driver back.

### Demonstration: Managing Drivers

#### Demonstration Steps

##### Update a device driver

1. If necessary, sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Select **Device Manager** from the Administrative menu by pressing the Windows logo key+X.
3. In Device Manager, expand **Keyboards**, right-click **Standard PS/2 Keyboard**, and then click **Update Driver Software**.
4. In the **Update Driver Software – Standard PS/2 Keyboard** dialog box, click **Browse my computer for driver software**.
5. On the **Browse for driver software on your computer** page, click **Let me pick from a list of device drivers on my computer**.
6. In the **Show compatible hardware** list, click **PC/AT Enhanced PS/2 Keyboard (101/102 Key)**, click **Next**, and then click **Close**.
7. In the **System Settings Change** dialog box, click **Yes** to restart the computer.

##### Roll back a device driver

1. Sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Select **Device Manager** from the Administrative menu by pressing the Windows logo key+X.
3. In Device Manager, expand **Keyboards**, right-click **PC/AT Enhanced PS/2 Keyboard (101/102 Key)**, and then click **Properties**.
4. In the **PC/AT Enhanced PS/2 Keyboard (101/102 Key) Properties** dialog box, click the **Driver** tab, and then click **Roll Back Driver**.
5. In the **Driver Package rollback** dialog box, click **Yes**, and then click **Close**.
6. When prompted to restart the computer, click **Yes**.
7. Sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
8. Select **Device Manager** from the Administrative menu by pressing the Windows logo key+X.
9. In Device Manager, expand **Keyboards**, right-click **Standard PS/2 Keyboard**, and then click **Properties**.
10. In the **Standard PS/2 Keyboard Properties** dialog box, click the **Driver** tab, and then verify that the driver has been rolled back to the **Standard PS/2 Keyboard** version.
11. Close Device Manager.

##### Install a driver into the driver store

1. Open the Start screen, type **com**, in the Everywhere search screen, right-click **Command Prompt**, and then click **Run as administrator**.

2. At the command prompt, type **pnputil -a** “E:\Labfiles\Mod05\Intellipoint\ipoint\setup64\files\driver\point64\point64.inf”, and then press Enter.
3. At the command prompt, type **pnputil -e**, and then press Enter. Take note of the published name for the driver that you just installed into the store.
4. Close the Command Prompt window.

When you have finished the demonstration, revert all virtual machines back to their initial state:

1. On the host computer, start Hyper-V Manager.
2. In the **Virtual Machines** list, right-click **20687D-LON-CL2**, and then click **Revert**.
3. In the **Revert Virtual Machines** dialog box, click Revert.
4. Repeat steps 2 and 3 for 20687D-LON-DC1.

## Module Review and Takeaways

**Question:** You are implementing 64-bit Windows 8.1 and need to partition the disk to support 25 volumes, some of which will be larger than 2 terabytes (TB). Can you implement this configuration by using a single hard disk?

**Answer:** Yes. You can format the disk for GPT rather than MBR. A GPT disk supports up to 128 volumes, each much larger than 2 TB. Additionally, you can start 64-bit Windows 8.1 from a GPT disk.

**Question:** You have created a volume on a newly installed hard disk by using DiskPart. Now, you want to continue using DiskPart to perform the following tasks:

- Format the volume for NTFS.
- Assign the next available drive letter.
- Assign a volume label of sales-data.

What two commands must you use for these tasks?

**Answer:** The two commands are as follows:

```
format fs=ntfs label=sales-data
```

```
assign
```

**Question:** You recently upgraded to Windows 8.1 and are experiencing occasional problems with the shortcut keys on your keyboard. Describe the first action you might take to resolve the issue, and then list the steps to perform the action.

**Answer:** Update the keyboard driver. To update the keyboard driver manually, follow this procedure in Device Manager:

1. Double-click the **Keyboard** category of devices.
2. Right-click the device, and then click **Update Driver Software**.
3. Follow the instructions in the Update Driver Software Wizard.

## Tools

The following table lists some of the tools that are available for managing hard disks and devices.

Tool	Used for	Where to find it
Defrag.exe	Performing disk defragmentation tasks from the command-line.	Command prompt
Device Manager	Viewing and updating hardware settings and driver software for devices, such as internal hard drives, disk drives, sound cards, video or graphics cards, memory, processors, and other internal computer components.	Devmgmt.msc or Embedded in Computer Management
Windows 8.1 device apps	Helps users interact with devices and use the full functionality of devices.	Start screen or Taskbar
Devices and Printers	Provides users a single location to find and manage all the devices that are	Control Panel

Tool	Used for	Where to find it
	connected to their Windows 8.1–based computers. Also, provides quick access to device status, product information, and key functions such as faxing and scanning to enhance and simplify the customer experience with a Windows 8.1–connected device.	
The Optimize Drives tool	Rearranging fragmented data so that disks and drives can work more efficiently.	In File Explorer, right-click a volume, click Properties, click the Tools tab, and then click Optimize.
Disk Management	Managing disks and volumes, both basic and dynamic, locally or on remote computers.	Diskmgmt.msc
DiskPart	Managing disks, volumes, and partitions from the command line or from the Windows Preinstallation Environment.	At a command prompt, type <b>DiskPart</b> .
Fsutil.exe	Performing tasks that relate to FAT and NTFS, such as managing reparse points, managing sparse files, or dismounting a volume.	Elevated command prompt
Pnputil.exe	Adding drivers to and managing drivers in the protected device store.	Elevated command prompt

## Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Configuring disk quotas on multiple volumes	After you create a quota, you can export it and then import it for a different volume. In addition to establishing quota settings on an individual computer by using this method, you also can use Group Policy settings to configure quotas. This lets administrators configure multiple computers with the same quota settings.
Exceeding the quota allowance	To increase free disk space after exceeding the quota allowance, the user can try the following: Delete unnecessary files Have another user claim ownership of files that are not user-specific Additionally, an administrator could increase the quota allowance as volume size and policy permits.
If you have a hardware problem, the hardware or a device driver might be causing it. Troubleshooting hardware problems often starts by troubleshooting device drivers.	To identify a device driver problem, answer these questions: Did you recently upgrade a device driver or other software related to the hardware? If so, roll back the device driver to the previous version. Are you experiencing occasional problems, or is the

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Common Issue	Troubleshooting Tip
	<p>device not compatible with the current version of the Windows operating system? If so, upgrade the device driver.</p> <p>Did the hardware suddenly stop working? If so, upgrade the device driver. If that does not solve the problem, reinstall the device driver. If the problem continues, try troubleshooting the hardware problem.</p>

## Lab Review Questions and Answers

### Lab A: Managing Disks

#### Question and Answers

**Question:** When would you use a spanned volume instead of a simple volume?

**Answer:** Spanned volumes allow you to combine space from multiple drives. You would use a spanned volume to present several drives as a single drive to an operating system.

**Question:** In your environment, where would you use disk quotas?

**Answer:** Answers will vary based on students' experience. One possible answer is that you would do this on a shared system to minimize the effect of users saving files on the shared system.

**Question:** When would you use a virtual hard disk on a workstation computer?

**Answer:** Answers will vary based on students' experience. One possible answer is that you can use virtual hard disks to support multiple operating systems.

### Lab B: Configuring Device Drivers

#### Question and Answers

**Question:** When and why would you preinstall drivers on workstation computers?

**Answer:** Answers will vary based on students' experience. One possible answer is that you plan to use specific devices for which you have device drivers, and you are not planning to give your users local administrative rights.

**Question:** When would you uninstall a device driver?

**Answer:** Answers will vary based on students' experience. One possible answer is that a recently installed driver is causing issues on a client system.

# Module 6

## Configuring Network Connectivity

### Contents:

Lesson 1: Configuring IPv4 Network Connectivity	2
Lesson 3: Implementing Automatic IP Address Allocation	4
Module Review and Takeaways	6
Lab Review Questions and Answers	8

## Lesson 1

# Configuring IPv4 Network Connectivity

### Contents:

Question and Answers	3
Demonstration: Configuring an IPv4 Address	3

## Question and Answers

### Public vs. Private IPv4 Addresses

**Question:** Which of the following is not a private IP address?

- a. 171.16.16.254
- b. 192.16.18.5
- c. 192.168.1.1
- d. 10.255.255.254

**Answer:** A and B. C and D are private IP addresses. C falls in the range of 192.168.0.1 to 192.168.255.254, and D falls in the range of 10.0.0.1 to 10.255.255.254.

### Configuring an IPv4 Address

**Question:** When might you need to change a computer's IPv4 address?

**Answer:** You must ensure that all computers on your network have a unique IPv4 address. If two computers have the same IPv4 address, then you must change the address on one of them.

### Demonstration: Configuring an IPv4 Address

#### Demonstration Steps

##### View the current network connection configuration

1. Sign in to LON-CL1 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
2. On the Start screen, type **CMD**, and then click **Command Prompt**.
3. At the command prompt, type **ipconfig /all**, and then press Enter. This displays the configuration for all network connections on the computer.
4. Close the Command Prompt window.

##### View the IPv4 configuration

1. Right-click the **Start** charm, and then click **Control Panel**.
2. In Control Panel, click **Network and Internet**.
3. In Network and Internet, click **View network status and tasks**.
4. In Network and Sharing Center, to the right of the Adatum.com Domain network, click **Ethernet**.
5. In the Ethernet Status window, click **Details**. This window shows the same configuration information for this adapter as the **IPConfig** command.
6. In the Network Connection Details window, click **Close**.
7. In the Ethernet Status window, click **Properties**. You can configure protocols in this window.
8. Click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**. You can configure the **IP address, subnet mask, default gateway**, and **Domain Name System (DNS) servers** in this window.
9. Click **Advanced**. In the Advanced TCP/IP Settings window, you can configure additional settings, such as **additional IP addresses, DNS settings**, and **Windows Internet Name Service (WINS) servers** for NetBIOS name resolution.
10. Close all open windows without modifying any settings.

## Lesson 3

# Implementing Automatic IP Address Allocation

### Contents:

Demonstration: Configuring a Windows 8.1 Computer to Obtain an IPv4  
Configuration Automatically

5

## Demonstration: Configuring a Windows 8.1 Computer to Obtain an IPv4 Configuration Automatically

### Demonstration Steps

#### View the current IPv4 configuration

1. If necessary, sign in to LON-CL1 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
2. If necessary, click the **Start** charm to return to the Start screen.
3. On the Start screen, type **PowerShell**, and then click **Windows PowerShell**.
4. At the Windows PowerShell® prompt, type **Get-NetIPConfiguration -Detailed**, and then press Enter. This displays the configuration for all network connections on the computer.
5. Close the Windows PowerShell window.

#### Reconfigure the IPv4 configuration

1. Right-click the **Start** charm, and then click **Network Connections**.
2. In the Network Connections window, right-click **Ethernet** and click **Properties**.
3. Click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
4. Click **Obtain an IP address automatically**. Notice that the **Alternate Configuration** tab becomes available when you do this.
5. Click **Obtain DNS server address automatically**.
6. Click the **Alternate Configuration** tab. Configuration information on this tab is used when no DHCP server is available.
7. Click **OK** to save the changes.
8. In the Ethernet Properties window, click **Close**.
9. Right-click **Ethernet** and click **Status**, and then click **Details**. Notice that DHCP is enabled and the IP address of the DHCP server is displayed.
10. Close all open windows.
11. When you have finished the demo, revert the virtual machines to their initial state.
  1. On the host computer, start Hyper-V® Manager.
  2. In the **Virtual Machines** list, right-click **20687D-LON-CL1**, and then click **Revert**.
  3. In the **Revert Virtual Machine** dialog box, click **Revert**.
  4. Repeat steps b and c for 20687D-LON-DC1.

## Module Review and Takeaways

### Review Question(s)

**Question:** After starting her computer, Amy notices that she is unable to access her normal resources. What tool can she use to determine if she has a valid IP address?

**Answer:** Amy can run **ipconfig /all** or **Ping** her domain controller's IP address.

**Question:** When transmitting accounts receivable updates to a billing partner in China, Amy notices that the files are transmitting slowly. What tool can she use to determine the network path and latency of the network?

**Answer:** Amy can use Windows Diagnostics to identify the problem or use Pathping.exe to check for latency.

**Question:** Amy notices that she cannot access normal enterprise websites. She knows that she has a valid IP address but wants to troubleshoot the DNS access of her computer. What tool must she use?

**Answer:** Amy can use NSlookup.exe to troubleshoot DNS access issues.

**Question:** What is the IPv6 equivalent of an IPv4 APIPA address?

**Answer:** The IPv6 equivalent of IPv4 APIPA addresses are IPv6 link-local addresses.

**Question:** You are troubleshooting a network-related problem, and you suspect a name-resolution issue. Before conducting tests, you want to purge the DNS resolver cache. How do you do that?

**Answer:** Use **ipconfig /flushdns** to clear the DNS resolver cache.

**Question:** You are troubleshooting a network-related problem. The IP address of the host you are troubleshooting is 169.254.16.17. What is a possible cause of the problem?

**Answer:** The DHCP server is unavailable.

### Tools

You can use the following tools to troubleshoot network connectivity issues.

Tool	Description
Network and Sharing Center	The Network and Sharing Center informs you about your network and verifies whether your computer can access the Internet successfully. Then, it summarizes this information in the form of a network map.
Netsh.exe	Netsh.exe is a command-line tool that you can use to configure network properties.
Pathping.exe	Pathping.exe is a command-line tool that combines the functionality of Ping and Tracert, which you can use to troubleshoot network latency and provide information about path data.
NSlookup.exe	NSlookup.exe is a command-line tool that you can use to test and troubleshoot DNS and name-resolution issues.
IPConfig.exe	IPConfig.exe is a general IP configuration and troubleshooting tool.
Ping.exe	Ping.exe is a basic command-line tool that you can use for verifying IP connectivity.
Tracert.exe	Tracert.exe is similar to Pathping, which provides information about network

Tool	Description
	routes.
Windows PowerShell	Windows PowerShell is a command-line shell and scripting language that provides cmdlets to view and configure network settings.

## Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Windows 8.1 host cannot connect to a Microsoft SharePoint® 2010 site.	Use Windows Diagnostics to identify the problem.
Windows 8.1 host cannot access the database server.	Use the <b>IPConfig</b> tool to view, renew, or release an IP address.
Windows 8.1 host cannot connect to the Internet.	Use <b>Ping</b> to test the connectivity to the DNS server.
DNS server is not resolving FQDNs correctly.	Use the <b>flushdns</b> option with <b>IPConfig</b> .

# Lab Review Questions and Answers

## Lab A: Configuring a Network Connection

### Question and Answers

**Question:** How are APIPA addresses for IPv4 similar to link-local addresses in IPv6?

**Answer:** Both APIPA IPv4 and IPv6 addresses allow computers to communicate on a local network automatically, without the use of a DHCP server or any other IP address configuration. However, an APIPA address only is used when a DHCPv4 server is unavailable. An IPv6 link-local address is always generated for a host by using IPv6. You can obtain additional IPv6 addresses for communication outside a local network.

**Question:** How can you update a Windows 8.1 computer to use the correct information after a host record is updated in DNS, but the Windows 8.1 computer is still resolving the name to the previous IP address?

**Answer:** When a computer resolves a name to an IP address by using DNS, the name and IP address are cached locally. You can clear this cache at a command prompt with the **ipconfig /flushdns** command.

## Lab B: Resolving Network Connectivity Issues

### Question and Answers

**Question:** In the lab, what were the two problems that you encountered on the user's computer?

**Answer:** The first problem was the IPv4 configuration; specifically, the subnet mask was incorrect. The second problem was the DNS configuration on the client was referencing an incorrect DNS server address, preventing name resolution.

**Question:** How did you resolve these two problems?

**Answer:** Answers might vary, but students should have reconfigured the subnet mask and DNS server address manually.

# Module 7

## Configuring File Access and Printers on Windows® 8.1 Clients

### Contents:

Lesson 1: Managing File Access	2
Lesson 2: Managing Shared Folders	5
Lesson 3: Configuring File Compression	7
Lesson 5: Managing Printers	10
Module Review and Takeaways	12
Lab Review Questions and Answers	14

## Lesson 1

# Managing File Access

### Contents:

Question and Answers	3
Demonstration: Configuring Local Security Permissions for Files and Folders	3

## Question and Answers

### Discussion: Determining Effective Permissions

**Question:** The Users group has Write permission, and the Sales group has Read permission for Folder1. What permissions does User1 have for Folder1?

**Answer:** User1 has Write and Read permissions for Folder1 because User1 is a member of the Users group, which has Write permission, and the Sales group, which has Read permission.

**Question:** The Users group has Read permission for Folder1. The Sales group has Write permission for Folder2. What permissions does User1 have for File2?

**Answer:** User1 has Read and Write permissions for File2 because User1 is a member of the Users group, which has Read permission for Folder1, and the Sales group, which has Write permission for Folder2. File2 inherits permissions from both Folder2 and Folder1.

**Question:** The Users group has Modify permission for Folder1. The files in Folder 2 should only be accessible to the Sales group, and they should only have read permissions to the files. What do you need to do to ensure that the members of the Sales group only have Read permission to the files in Folder 2?

**Answer:** Prevent permission inheritance for Folder2. Remove the permissions for Folder2 that were inherited from Folder1. Grant only Read permission for Folder2 to the Sales group.

## Demonstration: Configuring Local Security Permissions for Files and Folders

### Demonstration Steps

#### Create a new folder

1. On LON-CL1, on the Start screen, click the **Desktop** tile.
2. On the taskbar, click **File Explorer**.
3. In the File Explorer navigation pane, click the **Allfiles (E:)** drive.
4. Double-click the **Labfiles** folder, and then double-click the **Mod09** folder.
5. In the Mod09 window, right-click, point to **New**, and then click **Folder**.
6. Name the folder **Adatum**.

#### Disable inherited permissions on the Adatum folder

1. With the **Adatum** folder selected, click the **Share** menu, in the ribbon, click **Advanced security**, and then click **Disable inheritance**.
2. In the Block Inheritance dialog box, select **Convert inherited permissions into explicit permissions on this object**, and then click **Apply**.
3. Point out the change in the Inherited From column. Point out the contents of the Applies To column.
4. Click **OK** to close the **Advanced Security Settings for Adatum** dialog box.

#### Create a file in the Adatum folder

1. Double-click the **Adatum** folder.
2. Click the **Home** menu, in the ribbon, click **New item**, select **Text Document**, and then name the file **PermissionsTest.txt**.

### **Examine the permissions on the PermissionsTest file**

1. Ensure that the PermissionsTest file is selected, click the **Share** menu, and then in the ribbon, click **Advanced security**.
2. Review the permissions on the PermissionsTest file. Point out that there is no Applies To column.

### **Grant managers Modify permissions on the PermissionsTest file**

1. Click the **Add** button.
2. In the **Permission Entry for PermissionsTest.txt** dialog box, click the **Select a principal** link.
3. In the **Enter the object name to select** field, type **Managers**, click **Check Names**, and then click **OK**.
4. Leave the Type set to Allow, and then in the **Permissions** list, select the **Modify** check box.
5. In the **Permission Entry for PermissionsTest.txt** dialog box, click **OK**.
6. Point out the Managers permission and from where it is inherited, and then click **OK**.
7. Close all open windows.
8. Keep the virtual machines running for the next demonstration.

## Lesson 2

# Managing Shared Folders

### Contents:

Question and Answers

6

## Question and Answers

### Discussion: Combining NTFS and Share Permissions

**Question:** If you assign a user Full Control NTFS permission to a file, but the user accesses the file through a share with Read permission, what will be the effective permissions that the user will have on the file?

**Answer:** The user will have only Read access to the file when accessing it over a network through the share because Read access is more restrictive than Full Control. If the user is logged on to the computer that is storing the file and accessing it locally, then the user has Full Control.

**Question:** If you want a user to be able to view all files in a shared folder but only be able to modify certain files in that folder, what permissions do you give the user?

**Answer:** The share permissions will have to allow the user to modify all files, which opens the folder window wide, but it will get locked down with NTFS permissions. You must set the NTFS permissions for the folder to allow the user Read access only, which flows to all the files. Then, on the individual files in the folder that you want the user to modify, assign the Modify NTFS permission.

**Question:** Identify a scenario at your organization where it might be necessary to combine NTFS and share permissions. What is the reason for combining permissions?

**Answer:** Answers will vary, based on the experiences of each student.

## Lesson 3

# Configuring File Compression

### Contents:

Question and Answers	8
Demonstration: Compressing Files and Folders	8

## Question and Answers

### Discussion: What Is the Impact of Moving and Copying Compressed Files and Folders?

**Question:** What happens to the compression state of a file or folder when you copy it within an NTFS partition?

**Answer:** When you copy a file or folder within an NTFS partition, the file or folder inherits the compression state of the target folder. For example, if you copy a compressed file or folder to an uncompressed folder, the file or folder is uncompressed automatically.

**Question:** What happens to the compression state of a file or folder when you move it within an NTFS partition?

**Answer:** When you move a file or folder within an NTFS partition, the file or folder retains its original compression state. For example, if you move a compressed file or folder to an uncompressed folder, the file remains compressed.

**Question:** What happens to the compression state of a file or folder when you copy or move it between NTFS partitions?

**Answer:** When you move a file or folder between NTFS partitions, the file or folder inherits the target folder's compression state. Because Windows 8.1 treats a move between partitions as a copy followed by a delete operation, the files inherit the target folder's compression state.

When you copy a file to a folder that already contains a file of the same name, the copied file takes on the compression attribute of the target file, regardless of the compression state of the folder.

**Question:** What happens to the compression state of a file that you copy or move between FAT32 and NTFS volumes?

**Answer:** Compressed files that you copy to a FAT partition are uncompressed because FAT volumes do not support compression. However, when you copy or move files from a FAT partition to an NTFS partition, they inherit the compression attribute of the folder into which you copy them. Because Windows 8.1 treats a move between partitions as a copy followed by a delete operation, the files inherit the compression state of the target folder. When you copy files, NTFS calculates disk space based on the uncompressed file's size. This is important because files are uncompressed during the copy process, and the system must ensure there is enough space. If you copy a compressed file to an NTFS partition that does not have enough space for the uncompressed file, an error message notifies you that there is not enough disk space.

## Demonstration: Compressing Files and Folders

### Demonstration Steps

#### Compress a file

1. On the Start screen, click the **Desktop** tile.
2. On the taskbar, click **File Explorer**.
3. In the File Explorer navigation pane, click the **Allfiles (E:)** drive.
4. Double-click the **Labfiles** folder, double-click the **Mod09** folder, and then double-click the **Windows8Docs** folder.
5. In File Explorer, click the **Size** column header until the largest file is at the top.
6. Point out the size of the largest file in the folder.

7. Right-click the file, and then select **Properties**.
8. On the **General** tab, click the **Advanced** button.
9. Select the **Compress contents to save disk space** check box.
10. In the **Advanced Attributes** dialog box, click **OK**.
11. In the file **Properties** dialog box, click **OK**.
12. Point out the color of the file.
13. Point out that the other files are not changed.
14. Point out the displayed file size.
15. Right-click the file, and then select **Properties**.
16. Point out the **Size on disk** attribute.
17. In the file **Properties** dialog box, click **OK**.

### **Compress a folder**

1. In the Address bar, click **Mod09**.
2. Right-click the **Windows8Docs** folder, and then select **Properties**.
3. Point out the **Size** and **Size on disk** attributes.
4. On the **General** tab, click the **Advanced** button.
5. Select the **Compress contents to save disk space** check box.
6. In the **Advanced Attributes** dialog box, click **OK**.
7. In the **Windows8Docs Properties** dialog box, click **Apply**.
8. In the **Confirm Attribute Changes** dialog box, ensure that the **Apply changes to this folder, subfolders and files** option is selected, and then click **OK**.
9. Point out the change in the **Size on disk** attribute.
10. Click **OK** to close the **Windows8Docs Properties** dialog box.
11. Point out that the Windows8Docs folder has changed colors.
12. Double-click the **Windows8Docs** folder.
13. Point out that all the files are now blue.
14. Close all open windows.

## Lesson 5

# Managing Printers

### Contents:

Demonstration: Installing and Sharing a Printer

11

## Demonstration: Installing and Sharing a Printer

### Demonstration Steps

1. On LON-CL1, on the Start screen, type **control**, and then click **Control Panel** in the Apps search results.
2. In Control Panel, click the **View devices and printers** link.
3. In Devices and Printers, click the **Add a printer** link.
4. In the Add Printer Wizard, click **The printer that I want isn't listed**.
5. On the **Find a printer by other options** page, select the **Add a local printer or network printer with manual settings** option, and then click **Next**.
6. On the **Choose a printer port** page, select the drop-down list for **Use an existing port**, select **nul: (Local Port)**, and then click **Next**.
7. On the **Install the printer driver** page, in the **Manufacturer** list, select **Microsoft**.
8. In the **Printers** list, select **Microsoft OpenXPS Class Driver**, and then click **Next**.
9. On the **Type a printer name** page, in the **Printer name** field, type **AdatumPrinter**, and then click **Next**.
10. Review the **Printer Sharing** page, and then click **Next**.
11. Review the **You've successfully added AdatumPrinter** page, and then click **Finish**.

When you have finished the demo, revert all virtual machines back to their initial state:

1. On the host computer, start Hyper-V® Manager.
2. In the **Virtual Machines** list, right-click **20687D-LON-CL1**, and then click **Revert**.
3. In the **Revert Virtual Machines** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for **20687D-LON-DC1**.

## Module Review and Takeaways

### Best Practice

#### NTFS Permissions

Supplement or modify the following best practices for your own work situations:

To simplify the assignment of permissions, you can grant the Everyone group Full Control share permission to all shares and use only NTFS permissions to control access. Restrict share permissions to the minimum required to provide an extra layer of security in case NTFS permissions are configured incorrectly.

When permission inheritance is blocked, you have the option to copy existing permissions or begin with blank permissions. If you only want to restrict a particular group or user, then copy existing permissions to simplify the configuration process.

### Best Practice

#### Managing Shared Folders

Supplement or modify the following best practices for your own work situations:

If the guest user account is enabled on your computer, the Everyone group includes anyone. In practice, remove the Everyone group from any permission lists and replace it with the Authenticated Users group.

Using a firewall other than that supplied with Windows 8.1 can interfere with the network discovery and file sharing features.

### Review Question(s)

**Question:** A. Datum is installing Microsoft Dynamics® GP and has contracted with a vendor to provide some custom programming work. Joseph, a senior IT desktop specialist at A. Datum, has been asked to configure the NTFS permissions for the GP planning files that the company will be accumulating. A. Datum has asked that all IT users be assigned Modify permissions to the GP Implementation Planning folder. However, A. Datum only wants the subfolder titled Vendor Contracts to be available for viewing by a select group of managers. How can Joseph accomplish this by taking into account permission inheritance?

**Answer:** Joseph could take a three-step approach. First, he can assign the IT user group Modify permission for the GP Implementation Planning folder. Next, he can block inherited permissions on the Vendor Contracts subfolder. Third, he can restrict access to the subfolder by providing Read access to the selected list of managers identified by A. Datum.

**Question:** Robin recently created a spreadsheet in which she explicitly assigned it NTFS file permissions that restricted file access to herself only. Following the system reorganization, the file moved to a folder on another NTFS partition, and Robin discovered that other users were able to access the spreadsheet. What is the probable cause of this situation?

**Answer:** Because this was a move across partitions, NTFS permissions are inherited from the new parent, which would not have included any special permissions that Robin had configured.

### Tools

Use the following command-line tools to manage file and printer sharing.

Tool	Description
Net share	Share folders at the command prompt.

Tool	Description
Net use	Connect to shared resources at the command prompt.
Icacls.exe	Configure NTFS file and folder permissions at the command prompt.
Compact.exe	Compress NTFS files and folders at the command prompt.
Pnputil.exe	Preinstall printer drivers in the driver store.

## Lab Review Questions and Answers

### Lab A: Configuring File Access

#### Question and Answers

**Question:** What types of files do not compress well?

**Answer:** Files that are compressed already, such as pictures, music, PDFs, and executables are some type of files that will not compress very much.

**Question:** Why was Adam able to create a file, whereas Ed was not?

**Answer:** Adam is in the Marketing group, and Ed is not.

**Question:** What other ways could you share a folder?

**Answer:** You could use the folder Properties or the Advanced Security Settings dialog box.

### Lab B: Configuring Printers

#### Question and Answers

**Question:** When creating a printer, what must you specify?

**Answer:** You must specify the driver that it is using and the port on which it is communicating.

# Module 8

## Implementing Network Security

### Contents:

Lesson 2: Configuring Windows Firewall	2
Lesson 3: Securing Network Traffic by Using IPsec	5
Module Review and Takeaways	8
Lab Review Questions and Answers	10

## Lesson 2

# Configuring Windows Firewall

### Contents:

Demonstration: Configuring Inbound and Outbound Rules

3

## Demonstration: Configuring Inbound and Outbound Rules

### Demonstration Steps

#### Test Remote Desktop connectivity

1. Sign in to LON-CL2 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, type **Remote**, and then click **Remote Desktop Connection**.
3. In the **Computer** field, type **LON-CL1**, and then press Enter.
4. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
5. Open the Start screen on LON-CL1, click **Administrator**, and then click **Sign out**.

#### Configure an inbound rule

1. Switch to LON-CL1.
2. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
3. On the Start screen, click the **Desktop** tile.
4. Open the **Settings** charm, and then click **Control Panel**.
5. Click **System and Security**, and then click **Windows Firewall**.
6. In the left pane, click **Advanced settings**, right-click **Inbound Rules**, and then click **New Rule**.
7. In the New Inbound Rule Wizard window, select **Predefined**, click the drop-down list, click **Remote Desktop**, and then click **Next**.
8. On the **Predefined Rules** page, select all available rules, and then click **Next**.
9. On the **Action** page, select **Block the connection**, and then click **Finish**.
10. Minimize the **Windows Firewall with Advanced Security** window.

#### Test the inbound rule

1. Switch to LON-CL2.
2. From the Start screen, type **Remote**, and then click **Remote Desktop Connection**.
3. In the **Computer** field, type **LON-CL1**, and then press Enter.
4. Verify that the connection attempt fails, and then click **OK**.

#### Test outbound Remote Desktop connectivity

1. Switch to LON-CL1.
2. On the Start screen, type **Remote**, and then click **Remote Desktop Connection**.
3. In the **Computer** field, type **LON-DC1**, and then press Enter.
4. Sign in to LON-DC1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
5. Open the Start screen on LON-DC1, click **Administrator**, and then click **Sign out**.

#### Configure an outbound rule

1. On LON-CL1, on the taskbar, click the **Windows Firewall with Advanced Security** window, and then click **Outbound Rules**.
2. In the Actions pane, click **New Rule**.
3. On the **Rule Type** page, verify that you are creating a **Program** rule, and then click **Next**.

4. On the **Program** page, click **This program path**, type **C:\Windows\System32\mstsc.exe**, and then click **Next**.
5. On the **Action** page, verify that the action is **Block the Connection**, and then click **Next**.
6. On the **Profile** page, verify that all profiles are selected, and then click **Next**.
7. On the **Name** page, type **Block Outbound RDP to LON-DC1** in the **Name** field, and then click **Finish**.
8. In the Windows Advanced Firewall with Advanced Security window, click the **Block Outbound RDP to LON-DC1** rule, and then in the Actions pane, click **Properties**.
9. Click the **Scope** tab, and then under the Remote IP address heading, select the **These IP addresses** option.
10. Under the Remote IP address heading, click **Add**, in the **This IP address or subnet** field, type **172.16.0.10**, and then click **OK**.
11. In the **Block Outbound RDP to LON-DC1 Properties** dialog box, click **OK**.

### **Test outbound Remote Desktop connectivity**

1. On LON-CL1, from the Start screen, type **Remote**, and then click **Remote Desktop Connection**.
2. In the **Computer** field, type **LON-DC1**, and then press Enter.
3. In the **Remote Desktop Connection** dialog box, click **OK**.
4. Close all open windows.

## Lesson 3

# Securing Network Traffic by Using IPsec

### Contents:

Demonstration: Configuring an IPsec Rule

6

## Demonstration: Configuring an IPsec Rule

### Demonstration Steps

#### Create a connection rule

1. Switch to LON-CL1.
2. Open the **Settings** charm, click **Control Panel**, click **System and Security**, and then click **Windows Firewall**.
3. In the left pane, click **Advanced settings**, and then click **Connection Security Rules**.
4. In the Actions pane, click **New Rule**.
5. On the **Rule Type** page, verify that **Isolation** is selected, and then click **Next**.
6. On the **Requirements** page, select **Require authentication for inbound connections and request authentication for outbound connections**, and then click **Next**.
7. On the **Authentication Method** page, select **Computer and user (Kerberos V5)**, and then click **Next**.
8. On the **Profile** page, click **Next**.
9. On the **Name** page, in the **Name** text box, type **Authenticate all inbound connections**, and then click **Finish**.
10. Close the Windows Firewall with Advanced Security window.

#### Test connectivity between LON-CL2 and LON-CL1

1. In the host system, click the **20687D-LON-CL2** window.
2. At a command prompt, type **ping LON-CL1**, and then press Enter.
3. Verify that the ping generated four "Request timed out" messages.
4. Close the Command Prompt window.

#### Create a connection rule by using Windows PowerShell®

1. From the Start screen, type **Power**, right-click **Windows PowerShell**, and then click **Run as administrator**.
2. In the Administrator: Windows PowerShell window, type the following, and then Press Enter:



**Note:** The **-ComputerKerberos** and **-UserKerberos** switches used in the following cmdlet are case sensitive. Please type the command as written, including case.

```
New-NetIPsecRule -DisplayName "Authenticate all inbound connections" -InboundSecurity
Require -OutboundSecurity Request -Phase1AuthSet ComputerKerberos -Phase2AuthSet
UserKerberos
```

#### Test connectivity between LON-CL2 and LON-CL1

1. In the Administrator: Windows PowerShell window, type **ping LON-CL1**, and then press Enter.
2. Verify that the ping generated four "Reply from 172.16.0.50: bytes=32 time=xms TTL=128" messages (your times might vary).
3. Open the **Settings** charm, click **Control Panel**, click **System and Security**, and then click **Windows Firewall**.

4. In the left pane, click **Advanced settings**.
5. In the left pane, expand **Monitoring**, and then expand **Security Associations**.
6. Click **Main Mode**, and then examine the information in the center pane.
7. Click **Quick Mode**, and then examine the information in the center pane.
8. Close all open windows.

### **Examine the security associations on LON-CL1 by using Windows PowerShell**

1. In the host system, click the **20687D-LON-CL1** window.
2. From the Start screen, type **Power**, right-click **Windows PowerShell**, and then click **Run as administrator**.
3. To examine the Main Mode Security Associations, run the following cmdlet:

```
Get-NetIPsecMainModeSA
```

4. To examine the Quick Mode Security Associations, run the following cmdlet:

```
Get-NetIPsecQuickModeSA
```

5. Revert the LON-DC1, LON-CL1, and LON-CL2 virtual machines to prepare for the next lab.

## Module Review and Takeaways

### Best Practice

#### ***Configuration Guidelines for Windows Firewall with Advanced Security***

You can configure Windows Firewall with Advanced Security in the following ways:

Configure a local or remote computer by using either the Windows Firewall with Advanced Security snap-in to the MMC or the cmdlets in the NetSecurity module for Windows PowerShell.

Configure Windows Firewall with Advanced Security settings by using the Group Policy Management Console or the cmdlets in the NetSecurity module.

If you configure the firewall by using Group Policy, you need to ensure that the Windows Firewall service has explicit write access by its service security identifier to the location that you specify.

If you deploy Windows Firewall with Advanced Security by using Group Policy and then block outbound connections, ensure that you enable the Group Policy outbound rules, and do full testing in a test environment before deploying. Otherwise, you might prevent all of the computers that receive the policy from updating the policy in the future, unless you intervene manually.

### Best Practice

#### ***Implementing Defense-in-Depth***

Supplement or modify the following best practices for your own work situation:

- Create specific rules that help prevent social engineering, and educate users on these rules and their relevance.
- Restrict physical access to servers by locking doors, and then monitor server room access.
- Implement antivirus and antispymware software.
- Implement host-based firewalls.

### Best Practice

#### ***Windows Defender***

Supplement or modify the following best practices for your own work situation:

When you use Windows Defender, you must have current definitions.

To help keep your definitions current, Windows Defender automatically installs new definitions as they are released. You also can set Windows Defender to check online for updated definitions before scanning.

When you scan your computer, before applying actions to detected items, you should select the advanced option to Create a system restore point. Because you can set Windows Defender to remove detected items automatically, selecting this option allows you to restore system settings in case you want to use software that you did not intend to remove.

### Review Question(s)

**Question:** You need to ensure that traffic passing between a computer in the perimeter network and one that is deployed in the internal network is encrypted and authenticated. The computer in the perimeter is not a member of your Active Directory® Domain Services (AD DS) forest. What authentication methods could you use if you attempted to establish an IPsec rule between these two computers?

**Answer:** You could not use Kerberos authentication because the perimeter computer is not in the forest. As an alternative, you could use certificates or a preshared key.

**Question:** If you want to ensure that only domain computers can communicate with other domain computers, how can you achieve this with Windows Firewall?

**Answer:** Windows Firewall with Advanced Security supports the use of IPsec rules. One of these rule types is a domain isolation rule. Only computers that have configured domain membership can communicate.

**Question:** What does Windows Defender do to software that it quarantines?

**Answer:** It immediately moves the file to a quarantine area. After the scan is complete, you can choose to restore or delete quarantined files. You also can view and manage the quarantined files at any time. Finally, you can configure an option to remove quarantined items automatically after a set period.

## Lab Review Questions and Answers

### Lab A: Configuring Inbound and Outbound Firewall Rules

#### Question and Answers

**Question:** In your environment, where do you use client-based firewalls?

**Answer:** Answers will vary based on students' experience, but one possible answer is on computers with sensitive financial data.

### Lab B: Configuring IPsec Rules

#### Question and Answers

**Question:** In your environment, where do you use authenticated connections between workstation computers?

**Answer:** Answers will vary based on students' experience, although one possible answer is when computers are on a segment that users who are not employees can access.

### Lab C: Configuring Malware Protection

#### Question and Answers

**Question:** In your environment, how often are client computers infected with malware?

**Answer:** Answers will vary based on students' experience, so use this question as a discussion starter on the importance of using malware protection.

# Module 9

## Configuring Resource Access for Domain-Joined Devices and Devices That Are Not Domain Members

### Contents:

Lesson 1: Configuring Domain Access for Windows 8.1 Devices	2
Lesson 2: Configuring Resource Access for Devices That Are Not Domain Members	5
Lesson 3: Configuring Workplace Join	7
Lesson 4: Configuring Work Folders	10
Module Review and Takeaways	13
Lab Review Questions and Answers	14

## Lesson 1

# Configuring Domain Access for Windows 8.1 Devices

### Contents:

Question and Answers	3
Demonstration: Adding a Computer to a Domain	3

## Question and Answers

### Local Accounts vs. Domain Accounts

**Question:** Can you create a domain account on a Windows 8.1 computer?

**Answer:** You create and store domain accounts on domain controllers. Domain controllers run on the Windows Server operating system and a Windows 8.1 computer cannot be a domain controller. If you join a Windows 8.1 computer to a domain, you can install and run Active Directory administrative tools on it. You will still be creating domain accounts on the domain controller, but you will create them from a Windows 8.1 computer.

### Benefits of a Domain-Based Environment

**Question:** How can you enable help desk employees to reset user passwords in a domain environment? Which tool should you use?

**Answer:** You must delegate user rights to the help desk employees so that they can reset user passwords in the domain. You can delegate the required rights for all the employees or for employees in certain departments or locations. You can delegate user rights by using various tools, such as Active Directory Users and Computers or Active Directory Administrative Center.

### Methods Used to Add a Computer to a Domain

**Question:** Can a local administrator add a Windows 8.1 computer to a domain?

**Answer:** If all other prerequisites are met, a local administrator can add a Windows 8.1 computer to a domain. However, you should be aware that a local administrator has permissions only on the Windows 8.1 computer, not in the domain. The local administrator also needs to know the domain user name and account, and have sufficient permissions to add or modify the computer account in a domain.

### Using a Microsoft Account in Windows 8.1

**Question:** Can you sign in to a Windows 8.1 computer by using a Microsoft account if the computer does not have Internet connectivity?

**Answer:** If you have connected a Microsoft account with your Windows account, and have used it to sign in, you can sign in by using that Microsoft account even without Internet connectivity. This is because the system will use your cached credentials. You cannot sign in to Windows 8.1 by using a Microsoft account that has not yet signed in to that computer if you do not have Internet connectivity.

## Demonstration: Adding a Computer to a Domain

### Demonstration Steps

#### Join a computer to a domain by using the UI

1. On LON-DC1, on the Start screen, type **active**, and then run **Active Directory Users and Computers**.
2. In Active Directory Users and Computers, in the navigation pane, expand **Adatum.com**, and then click **Computers**. Point out that in the details pane, there is no LON-CL1 computer account.
3. Sign in to LON-CL1 as **Admin** with the password **Pa\$\$w0rd**.
4. On the Start screen, click the **Desktop** tile, and then on the taskbar, click **File Explorer**.
5. In File Explorer, right-click **This PC**, and then click **Properties**.

6. On the **System** page, click **Change settings** in the Computer name, domain, and workgroup settings section.
7. In the **System Properties** dialog box, click **Change**.
8. In the **Computer Name/Domain Changes** dialog box, in the Member of section, click **Domain**, type **Adatum.com**, and then click **OK**.
9. In the **Windows Security** dialog box, type **Adatum\Administrator** in the **Name** field and **Pa\$\$w0rd** in the **Password** field, and then click **OK**.
10. In the Welcome to the Adatum.com domain pop-up window, click **OK**, and then in the Computer Name/Domain Changes pop-up window, click **OK**. Close the **System Properties** dialog box.
11. In the You must restart your computer to apply these changes pop-up window, click **Restart Now**.
12. After restart, sign in to LON-CL1 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
13. On 20687D-LON-DC1, in Active Directory Users and Computers, press F5 to refresh the view, and then point out that the LON-CL1 computer account is added.

### **Join a computer to a domain by using Windows PowerShell®**

1. Sign in to LON-CL2 as **Admin** with the password **Pa\$\$w0rd**.
2. On the Start screen, type **PowerShell**. Right-click **Windows PowerShell**, and then select **Run as administrator**. In the **User Account Control** dialog box, click **Yes**.
3. In the Windows PowerShell Command Prompt window, type the following and then press Enter:  
Add-Computer -Credential adatum\Administrator -DomainName adatum.com -OUPath "OU=NewComputerOU,DC=adatum,DC=com"
4. In the Windows PowerShell Credential pop-up window, in the **Password** field, type **Pa\$\$w0rd**, and then click **OK**.
5. Note the message: "Warning: The changes will take effect after you restart the computer LON-CL2." You must restart the computer. In the Windows PowerShell Command Prompt window, type the following and then press Enter:

Restart-Computer

6. After LON-CL2 restarts, sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
7. On LON-DC1, in Active Directory Users and Computers, in the navigation pane, click the **NewComputerOU** organizational unit. Press F5 to refresh the view, and then point out that the LON-CL2 computer account is added.

## Lesson 2

# Configuring Resource Access for Devices That Are Not Domain Members

### Contents:

Question and Answers

6

## Question and Answers

### Challenges of Managing Devices That Are Not Domain Members

**Question:** Your company uses a client/server-based accounting app that you cannot install on the third-party operating system that is running on a user's device. How can the user still use the company accounting app from his device?

**Answer:** Because you cannot install an accounting app locally on users' devices, they can use their devices to connect to some other system and use the app from there. They also could use Remote Desktop to connect to their company computer. Alternatively, if their company has deployed a Virtual Desktop Infrastructure (VDI) environment, they could connect to their virtual desktop and use the accounting app from there.

### Managing Data and Settings on Devices That Are Not Domain Members

**Question:** How does the Remote Business Data Removal feature enable you to comply with a company security policy?

**Answer:** The Remote Business Data Removal feature enables you to remotely remove, or *wipe*, the local copy of company data from a user device, while ensuring that the device's user data remains intact. This feature enables you to remove company data from a lost device or from the device of an employee who has left the company.

### Overview of Open Mobile Alliance Device Management

**Question:** Which Windows 8.1 feature is based on the Open MDM protocol? How can you benefit from the Open MDM implementation in Windows 8.1?

**Answer:** Workplace Join is a Windows 8.1 feature that is based on the Open MDM protocol. If you have a third-party management system that has implemented the Open MDM protocol, you can enroll and manage your Windows 8.1 computer by using that third-party management system.

### Remote Business Data Removal

**Question:**

Can you use Remote Business Data Removal to wipe company data selectively and remotely from a lost Windows 8 device that you are managing by using Windows Intune?

**Answer:** If you are managing a Windows 8 device by using Windows Intune, you can wipe it remotely, and delete all the data on the device. However, on a Windows 8 device, you cannot selectively wipe only company data and leave user data intact because Windows 8 does not include the Remote Business Data Removal feature.

### Managing Devices That Are Not Domain Members by Using Windows Intune and Configuration Manager

**Question:** What must you first do before you can manage a Windows 8.1 device by using Windows Intune?

**Answer:** Before you can manage a Windows 8.1 device by using Windows Intune, you must install the Windows Intune agent.

## Lesson 3

# Configuring Workplace Join

### Contents:

Question and Answers	8
Demonstration: Demonstration: Enrolling Devices	8

## Question and Answers

### Overview of Workplace Join

**Question:** What is the difference in accessing company resources from domain-joined devices and devices that you enable for Workplace Join?

**Answer:** If you are using domain-joined devices, you have an SSO experience when accessing domain resources, and you can access all domain resources to which you have permissions. If you are using devices that are joined to a workplace, you have an SSO experience when accessing company resources that support claims-based authentication only. For example, you can access internal company web apps with SSO, but you cannot access network shares on a company file server.

### Scenarios for Using Workplace Join

**Question:** Can you enable the Workplace Join feature for a Windows 8 tablet?

**Answer:** No. Workplace Join is a Windows 8.1 feature, and it is not possible to enable this feature for devices that are running older versions of the Windows operating system.

### Workplace Join Components

**Question:** What must you configure on a device before you can enable the Workplace Join feature on it?

**Answer:** You must configure the device with network settings to resolve company server names. You also must configure the device to trust a company CA.

### Registering and Enrolling Devices

**Question:** What information must you enter when you want to enable the Workplace Join feature on a device?

**Answer:** When you want to enable the Workplace Join feature on a device, you need to enter the user ID, which looks like an email address, but actually is a user principal name (UPN).

### Demonstration: Demonstration: Enrolling Devices

#### Demonstration Steps

1. On LON-CL4, on the taskbar, click the **Internet Explorer** icon.
2. In Internet Explorer, in the address box, type **https://lon-svr2.adatum.com/claimapp**, and then press Enter to access the internal company web app.
3. In the **Windows Security** dialog box, in the **User name** field, type **Adatum\adam**, and in the **Password** field, type **Pa\$\$w0rd**, and then click **OK**. Confirm that the webpage opens, and that Adam's claims are displayed.
4. Close Internet Explorer®.
5. On the taskbar, click the **Internet Explorer** icon. In Internet Explorer, in the address box, type **https://lon-svr2.adatum.com/claimapp**, and then press Enter.
6. Verify that the **Windows Security** dialog box opens again. In the **Windows Security** dialog box, in the **User name** field, type **adatum\adam**, and in the **Password** field, type **Pa\$\$w0rd**, and then click **OK**. This confirms that you are asked for credentials each time you access a company web app from a device that is not a domain member.
7. Close Internet Explorer.
8. On the Start screen, type **settings**, and then click **PC settings**. The **PC settings** page opens.

9. On the **PC settings** pane, click **Network**.
10. On the Network pane, click **Workplace**. In the **Enter your user ID to get workplace access or turn on device management** field, type **adam@adatum.com**, and then click **Join**.
11. On the **Connecting to Adatum** page, verify that **adam@adatum.com** is in the first textbox. Type **Pa\$\$w0rd** in the second textbox, and then click **Sign in**. Verify that the device has joined your workplace network and that the button label changed from **Join** to **Leave**.
12. Move the pointer to the upper-left edge of LON-CL4, and then click **desktop**.
13. On LON-DC1, on **Start** screen, type **active**, and then click **Active Directory Users and Computers**.
14. In Active Directory Users and Computers, in **View** menu, click **Advanced Features**. In the navigation pane, click **RegisteredDevices** node. Confirm that one object of type **msDS-Device** is listed in the details pane. This object represents the LON-CL4 computer that you enabled for Workplace Join. Make note of the name of the **msDS-Device** object.
15. On LON-CL4, on the taskbar, click the **Internet Explorer** icon.
16. In Internet Explorer, press the Alt key, and then on the **Tools** menu, select **Internet options**.
17. In the **Internet Options** dialog box, click the **Content** tab, and then in the Certificates section, click **Certificates**.
18. In the **Certificates** dialog box, on the **Personal** tab, verify that one certificate is listed and that it has globally unique identifier (GUID) in the **Issued To** field. This is the certificate that the Device Registration Service provided to the user when the device was enabled for Workplace Join. Verify that the GUID is the same as the name of the **msDS-Device** object from Active Directory Users and Computers. Click **Close**, and then click **OK** in the **Internet Options** dialog box.
19. In Internet Explorer, in the address box, type **https://lon-svr2.adatum.com/claimapp**, and then press Enter to access the internal company web app.
20. In the **Windows Security** dialog box, in the **User name** field, type **adatum\adam**, and in the **Password** field, type **Pa\$\$w0rd**, and then verify that the **Remember my credentials** check box is not selected, and click **OK**. Confirm that a webpage opens and that Adam's claims are displayed.
21. Verify that Claim Type **http://schemas.microsoft.com/2012/01/devicecontext/claims/identifier** has the same value as the name of the **msDS-Device** object from Active Directory Users and Computers.
22. Close Internet Explorer.
23. Open Internet Explorer, and then access the same company app at the **https://lon-svr2.adatum.com/claimapp** URL.
24. Verify that this times a webpage opens without asking you for credentials. You were not asked for credentials because you accessed it from the device that was enabled for Workplace Join. Close Internet Explorer.

## Lesson 4

# Configuring Work Folders

### Contents:

Question and Answers	11
Demonstration: Configuring Work Folders	12

## Question and Answers

### Overview of Work Folders

**Question:** Can you share your Work Folders content with your coworkers?

**Answer:** By default, single users can access their individual Work Folders from multiple devices. You cannot share your Work Folder, but you can make a copy of Work Folders data and share the copy with coworkers. You must be aware that the copy is static and does not synchronize with the content of your Work Folders.

### Work Folders Components

**Question:** Can users access multiple Work Folders?

**Answer:** No. In Windows 8.1, a user can access only his subfolder in Work Folders hierarchy. Users can have sync access to multiple Work Folders, but only a single Work Folder will be used. They will not be able to synchronize other Work Folders, even if they have sync access permissions for them.

### Configuring Work Folders

**Question:** Can you use Group Policy to deploy Work Folders centrally to devices that are not domain-joined?

**Answer:** You can deploy Work Folders centrally by using Group Policy only to domain-joined devices. If devices are not domain-joined, you still can use local Group Policy on each device that is not a domain member to deploy Work Folders, but you cannot deploy Work Folders centrally.

### Integrating Workplace Join and Work Folders

**Question:** Is it required to enable a device for the Workplace Join feature before you can set up Work Folders on that device?

**Answer:** No. Workplace Join and Work Folders are two independent features. If you enable a device for Workplace Join, it is a bit easier to set up Work Folders because it already trusts a company CA. However, you can set up Work Folders on a device regardless of whether it is set up for Workplace Join or not.

### Using GPOs to Manage Work Folders

**Question:** Can you configure Work Folders settings in the user or computer part of Group Policy?

**Answer:** Work Folders settings are in both parts of Group Policy. In the user part of Group Policy, you can configure Work Folders settings, while in the computer part of Group Policy, you can configure Work Folders to be configured automatically for all users on a computer.

### Troubleshooting Work Folders

**Question:** Can you use the Work Folders Windows PowerShell cmdlets or Server Manager on Windows 8.1 by default?

**Answer:** Neither Server Manager nor Work Folders cmdlets are part of Windows 8.1. If you want to use them on a Windows 8.1 computer, you need to install Remote Server Administration Tools.

### Comparing Work Folders with Other File Synchronization Technologies

**Question:** A user has three Windows 8.1 devices and needs to keep files synchronized among all three devices. Two devices are domain-joined Windows 8.1 computers. Additionally, the user has a Windows 8.1 tablet, which is enabled for Workplace Join. The user's company has deployed two Windows Server 2012 R2 file servers. Which synchronization technology should the user use?

**Answer:** Because some of the user's devices are domain-joined while others are not, the user cannot use Folder Redirection. The user can use OneDrive for Business only if the user's company has deployed Microsoft Office SharePoint 2013. The user could use either OneDrive or Work Folders. If the user needs to synchronize work-related data, Work Folders is the recommended option.

## Demonstration: Configuring Work Folders

### Demonstration Steps

1. On LON-CL1, sign out, and then sign in as user **adatum\adam** with the password **Pa\$\$w0rd**.
2. On the Start screen, click the **Desktop** tile.
3. On the toolbar, click the **File Explorer**.
4. In **This PC**, in the navigation pane, click **Work Folders**. Right-click in the details pane, select **New**, select **Text Document**, and then name the file **On LON-CL1**.
5. On LON-CL4, on the taskbar, right-click the **Start** button, and then select **Control Panel**.
6. In Control Panel, in the **Search Control Panel** field, type **work**, and then click **Work Folders**.
7. On the **Manage Work Folders** page, click **Set up Work Folders**, and then on the **Enter your work email address** page, click **Enter a Work Folders URL instead**.
8. On the **Enter Work Folders URL** page, in **Work Folders URL** box, type **https://lon-dc1.adatum.com**, and then click **Next**.
9. In the **Windows Security** dialog box, in the **User name** field, type **adatum\adam**, and in the **Password** field, type **Pa\$\$w0rd**, and then click **OK**.
10. On the **Introducing Work Folders** page, review the local Work Folders location, and then click **Next**.
11. On the **Security policies** page, select the **I accept these policies on my PC** check box, and then click **Set up Work Folders**.
12. On the **Work Folders has started syncing with this PC** page, click **Close**.
13. In the **WorkFolders** window, verify that the On LON-CL1.txt file is displayed.

## Module Review and Takeaways

**Question:** Do you need to grant domain users additional permissions to enable Workplace Join on their devices?

**Answer:** No. You do not need to grant domain users any additional permissions. Domain users have sufficient permissions to enable the Workplace Join feature on their devices.

**Question:** Can you access Work Folders content on a computer without network connectivity?

**Answer:** A computer that supports Work Folders creates a local copy of Work Folders content. If network connectivity is not available, you will still be able to access and modify a local copy. When network connectivity is restored, local changes will synchronize transparently with the Work Folder content on a file server.

## Lab Review Questions and Answers

### Lab: Configuring Resource Access for Devices That Are Not Domain Members

#### Question and Answers

**Question:** How can you verify if a device is enabled for Workplace Join?

**Answer:** You can open the PC Settings page, navigate to Network, select Workplace, and then verify if a PC is enabled for Workplace Join. You also can verify if a user has a digital certificate that was issued by the Device Registration Service, and the domain administrator can look into the RegisteredDevices AD DS container.

**Question:** Can you enable Workplace Join on a device that a coworker previously enabled for Workplace Join?

**Answer:** Yes. If you have a domain account, you can enable Workplace Join on a device, even if it was already domain-joined by another user. Workplace Join occurs per user, per device, and associates a domain user account with the device. This means that each user who is using the device can enable it for Workplace Join. Enabling a device for Workplace Join is different than joining a device to a domain, which is system-wide configuration.

**Question:** Can a user access the same Work Folders from domain devices and from workgroup devices?

**Answer:** Yes. Users can access the same Work Folders from all devices, regardless of their domain membership. User account is the most important factor. If users access Work Folders by using the same domain credentials from their devices, they will access the same content.

**Question:** Can you access Work Folders content from a device that does not support Work Folders?

**Answer:** You can connect to Work Folders only from devices that support Work Folders. However, you can create an SMB share that points to the same folder on a Windows Server 2012 R2 file server. This would enable users to access the content from any device from which you can connect to a shared folder.

# Module 10

## Securing Windows® 8.1 Devices

### Contents:

Lesson 1: Authentication and Authorization in Windows 8.1	2
Lesson 2: Applying Security Settings by Using Group Policy	4
Lesson 3: Securing Data with EFS and BitLocker	6
Lesson 4: Configuring UAC	10
Module Review and Takeaways	13
Lab Review Questions and Answers	15

## Lesson 1

# Authentication and Authorization in Windows 8.1

### Contents:

Question and Answers	3
Demonstration: Configuring a Picture Password or PIN for Authentication	3

## Question and Answers

### The Process of Authentication and Authorization

**Question:** Which authentication method is used when a Windows 8.1 client computer logs on to Active Directory® Domain Services (AD DS)?

**Answer:** Windows operating systems use the Kerberos protocol unless an enterprise is using smart cards. In such cases, a Windows operating system uses the certificate mapping method for authentication.

### Demonstration: Configuring a Picture Password or PIN for Authentication

#### Demonstration Steps

##### Create a picture password to sign in with gestures

1. Sign in to LON-CL4 as **Admin** with password **Pa\$\$w0rd**.
2. On the Start screen, type **Picture Password**, and then click **Set up picture password**.
3. On the **Sign-in options** page, under the Picture password option, click **Add**.
4. In the **Create a picture password** dialog box, type the password **Pa\$\$w0rd** to verify your account information, and then click **OK**.
5. In the Welcome to picture password window, click **Choose picture**.
6. Once you have selected a picture, click **Open**.
7. Drag the picture to the correct position, and then click **Use this picture**.
8. Follow the on-screen instructions, and then draw three gestures on your picture.
9. Repeat the pattern to confirm, and then click **Finish**.
10. Swipe down from the top middle of the app to close the Sign-in account app.

##### Create a PIN password to sign in

1. On the Start screen, type **PIN**, and then click **Set up PIN sign-in**.
2. In the Sign-in options window, under the PIN option, click **Add**.
3. Type the password **Pa\$\$w0rd** to verify your account information, and then click **OK**.
4. On the **Create a PIN** page, follow the on-screen instructions, type a numerical four-digit PIN password, and then click **Finish**.
5. Swipe down from the top middle of the app to close the Sign-in account app.
6. On the host computer, start Hyper-V Manager.
7. In the **Virtual Machines** list, right-click **20687D-LON-CL4**, and then click **Revert**.
8. In the **Revert Virtual Machines** dialog box, click **Revert**.

## Lesson 2

# Applying Security Settings by Using Group Policy

### Contents:

Question and Answers

5

## Question and Answers

### Configuring Account Policy Settings

**Question:** What setting must you configure to ensure that users are allowed only three invalid sign-in attempts?

**Answer:** The Account Lockout Threshold setting ensures that users are allowed only three invalid sign-in attempts.

### Microsoft Security Compliance Manager

**Question:** Discuss scenarios where you would use Security Compliance Manager in an organization.

**Answer:** Responses might vary and could include the following answers:

- For a medium or large organization, there normally is a team of information technology (IT) professionals who work on security compliance and deployment and would use the Security Compliance Manager tool.
- Within a smaller organization, typically the creation of policies is configured manually by administrators and distributed after deployment via Group Policy.
- Even smaller organizations might have a compliance requirement to ensure that each device is configured with exactly the same set of security policies. It would be advantageous to use Security Compliance Manager in this scenario.

**Question:** Your organization creates operations manuals for customers and uses several versions of Microsoft Word to produce the manuals, depending on client requirements. What tool would you recommend for creating and maintaining baseline security configurations for your organization if there is a requirement to ensure that all Microsoft Office applications are configured with the latest security baseline?

**Answer:** Security Compliance Manager can view, update, import, export, compare, and duplicate security and compliance baselines for the different versions of Microsoft Office on your devices.

## Lesson 3

# Securing Data with EFS and BitLocker

### Contents:

Question and Answers	7
Demonstration: Encrypting Files and Folders with EFS	7

## Question and Answers

### What Is EFS?

**Question:** Why is it not possible to encrypt system files with EFS?

**Answer:** EFS keys are not available during the startup process. Therefore, if system files are encrypted, the system file cannot start.

### BitLocker Modes

**Question:** What is a disadvantage of running BitLocker on a computer that does not contain TPM 1.2?

**Answer:** Computers without TPMs will not be able to use the system-integrity verification during startup that BitLocker also can provide.

### Group Policy Settings for BitLocker

**Question:** How can you use Microsoft BitLocker Administration and Monitoring 2.0 to reduce the amount of time that the help desk is required to spend recovering a BitLocker unlock key for a remote user?

**Answer:** Administrators can enable the Microsoft BitLocker Administration and Monitoring 2.0 Self-Service Portal to allow users to recover a BitLocker recovery password by themselves without calling the help desk.

### Configuring BitLocker

**Question:** When turning on BitLocker on a computer with TPM 1.2, what is the purpose of saving the recovery password?

**Answer:** If the TPM ever changes or cannot be accessed, if there are changes to key system files, or if someone tries to start the computer from a product CD or DVD to circumvent the operating system, the computer will switch to recovery mode and will remain there until the user provides the recovery password. Storing the recovery password so that it is accessible to the user allows the user to complete the startup process.

### Configuring BitLocker To Go

**Question:** How do you enable BitLocker To Go for a USB flash drive?

**Answer:** Insert a USB flash drive into a computer, and in File Explorer, right-click the drive, and then click Turn On BitLocker.

### Recovering BitLocker-Encrypted Drives

**Question:** What is the difference between the recovery password and the password ID?

**Answer:** The recovery password is a 48-digit password that unlocks a system in recovery mode. The recovery password is unique to a particular BitLocker encryption, and you can store it in AD DS. A computer's password ID is a 32-character password that is unique to a computer name. You can find the password ID under a computer's properties, which you can use to locate recovery passwords that are stored in AD DS.

## Demonstration: Encrypting Files and Folders with EFS

### Demonstration Steps

#### Create a new Microsoft Word document

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, click the **Desktop** tile, and then on the taskbar, click **File Explorer**.

3. In the navigation pane, click **This PC**, and then in the results pane, double-click **Local Disk (C:)**.
4. In the Name column, right-click an empty space, point to **New**, and then click **Folder**.
5. Type **Encrypted** as the folder name, and then press Enter.
6. Double-click **Encrypted**, and then right-click an empty space in the Name column, point to **New**, and then click **Microsoft Word Document**.
7. Name the document **Private.docx**, and then press Enter.
8. In the menu bar, click the Left Arrow to return to Local Disk (C:).

### Encrypt the folder

1. Right-click the **Encrypted** folder, and then click **Properties**.
2. On the **General** tab, click **Advanced**.
3. Select the **Encrypt contents to secure data** check box, and then click **OK**.
4. In the **Encrypted Properties** dialog box, click **OK**, in the **Confirm Attribute Changes** dialog box, click **Apply changes to this folder, subfolders and files**, and then click **OK**.
5. Sign out.

### Confirm that the file and folder have been encrypted

1. Sign in to LON-CL1 as **Adatum\Holly** with password **Pa\$\$w0rd**.
2. On the Start screen, click the **Desktop** tile, and then on the taskbar, click **File Explorer**.
3. In the navigation pane, click **This PC**, and then in the results pane, double-click **Local Disk (C:)**. Open the **Encrypted** folder, and then double-click **Private**. Click **OK** to close the **Microsoft Word** dialog box.
4. In the **First things first** dialog box, click **Ask me later**, and then click **Accept**.
5. Sign out.

### Decrypt the folder

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, click the **Desktop** tile, and then on the taskbar, click **File Explorer**.
3. In the navigation pane, click **This PC**, in the results pane, double-click **Local Disk (C:)**, right-click the **Encrypted** folder, and then click **Properties**.
4. On the **General** tab, click **Advanced**.
5. Clear the **Encrypt contents to secure data** check box, and then click **OK**.
6. Close the **Encrypted Properties** dialog box by clicking **OK**.
7. In the **Confirm Attribute Changes** dialog box, click **OK**.
8. Sign out.

### Confirm that the file and folder have been decrypted

1. Sign in to LON-CL1 as **Adatum\Holly** with password **Pa\$\$w0rd**.
2. On the Start screen, click the **Desktop** tile, and then on the taskbar, click **File Explorer**.
3. In the navigation pane, click **This PC**, in the results pane, double-click **Local Disk (C:)**, double-click the **Encrypted** folder, double-click **Private**, and then type **Decrypted** in the file.
4. Press Ctrl+S, and then close Microsoft Word.

5. Sign out.

## Lesson 4

# Configuring UAC

### Contents:

Question and Answers	11
Demonstration: Configuring UAC with GPOs	11

## Question and Answers

### How UAC Works

**Question:** What are the differences between a consent prompt and a credential prompt?

**Answer:** A consent prompt is displayed to administrators in Admin Approval Mode when a user attempts to perform an administrative task. It requests approval from the user to continue performing the task. A credential prompt is displayed to standard users when they attempt to perform an administrative task.

### Configuring UAC Notification Settings

**Question:** Which two configuration options are combined to produce the end-user elevation experience?

**Answer:** UAC security settings configured in Local Security Policy and in the Action Center in Control Panel are the two configuration options that combine to produce the end-user elevation experience.

### Configuring UAC with GPOs

**Question:** Which UAC feature detects when an application is being installed in Windows 8.1?

**Answer:** The GPO **User Account Control: Detect application installations and prompt for elevation** policy setting controls the behavior of application installation detection for the computer.

## Demonstration: Configuring UAC with GPOs

### Demonstration Steps

#### View the current UAC settings

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, type **gpedit.msc**, and then press Enter.
3. In the Local Group Policy Editor, expand **Computer Configuration**, expand **Windows Settings**, expand **Security Settings**, expand **Local Policies**, and then click **Security Options**.

#### Configure the UAC settings

1. In the results pane, double-click **User Account Control: Behavior of the elevation prompt for standard users**.
2. In the **User Account Control: Behavior of the elevation prompt for standard users** dialog box, click **Automatically deny elevation requests**, and then click **OK**.
3. Close the Local Group Policy Editor.
4. Sign out.

#### Test the UAC settings

1. Sign in to LON-CL1 as **Adatum\Holly** with password **Pa\$\$w0rd**.
2. On the Start screen, type **gpedit.msc**, and then press Enter.
3. The Windows operating system does not display the Local Group Policy Editor snap-in.
4. Sign out.

#### Reconfigure the UAC settings

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.

2. On the Start screen, type **gpedit.msc**, and then press Enter.
3. In the Local Group Policy Editor, expand **Computer Configuration**, expand **Windows Settings**, expand **Security Settings**, expand **Local Policies**, and then click **Security Options**.
4. In the results pane, double-click **User Account Control: Behavior of the elevation prompt for standard users**.
5. In the **User Account Control: Behavior of the elevation prompt for standard users** dialog box, click **Prompt for credentials**, and then click **OK**.
6. Close the Local Group Policy Editor.
7. Sign out.

### Test the UAC settings

1. Sign in to LON-CL1 as **Adatum\Holly** with password **Pa\$\$w0rd**.
2. On the Start screen, click the **Desktop** tile.
3. Select **Command Prompt (Admin)** from the Administrative menu by pressing the Windows logo key+X.
4. The Windows operating system displays the User Account Control prompt.
5. In the **User Account Control** dialog box, type **Administrator** in the **User name** field, type **Pa\$\$w0rd** in the **Password** field, and then click **Yes**.
6. Close the Administrator: Command Prompt window.
7. Sign out.
8. On the host computer, start Hyper V Manager.
9. In the **Virtual Machines** list, right-click **20687D-LON-DC1** and then click **Revert**.
10. In the **Revert Virtual Machines** dialog box, click **Revert**.
11. Repeat for 20687D-LON-CL1.

# Module Review and Takeaways

## Best Practice

### EFS

The following is a list of standard best practices for EFS users:

Users should export their certificates and private keys to removable media, and then store the media securely when it is not in use. For the greatest possible security, you must remove a private key from a computer whenever the computer is not in use. This protects against attackers who physically obtain a computer and try to access the private key. When you must access encrypted files, you can import the private key easily from the removable media.

Encrypt the My Documents folder for all users (*User\_profile\My Documents*). This ensures that the personal folder, where most documents are stored, is encrypted by default.

Users should encrypt folders rather than individual files. Programs work on files in various ways. Encrypting files consistently at the folder level ensures that files are not decrypted unexpectedly.

Private keys that are associated with recovery certificates are extremely sensitive. You must generate these keys either on a computer that is physically secure, or you must export their certificates to a .pfx file, protect them with a strong password, and then save them on a disk that is in a physically secure location.

You must assign recovery agent certificates to user accounts that you do not use for any other purpose.

Do not destroy recovery certificates or private keys when recovery agents are changed (agents are changed periodically). Keep them all until all files that might have been encrypted with them are updated.

Designate two or more recovery agent accounts per organizational unit (OU), depending on the size of the OU. Designate two or more computers for recovery: one for each designated recovery agent account. Grant permissions to appropriate administrators who use the recovery agent accounts. It is a good idea to have two recovery agent accounts. Having two computers that hold these keys provides more redundancy for the recovery of lost data.

Implement a recovery agent archive program to ensure that you can recover encrypted files by using obsolete recovery keys. You must export and store recovery certificates and private keys in a controlled and secure manner. Ideally, as with all secure data, archives must be stored in a controlled-access vault, and you must have two archives: a master and a backup. The master is kept on-site, while the backup is located in a secure, off-site location.

Avoid using print spool files in your print server architecture, or make sure that print spool files are generated in an encrypted folder.

EFS does take some CPU overhead every time a user encrypts and decrypts a file. Plan your server usage wisely. Load balance your servers when many clients use EFS.

## Best Practice

### UAC

UAC security settings are configurable in the local Security Policy Manager (Secpol.msc) or the Local Group Policy Editor (Gpedit.msc). However, in most corporate environments, Group Policy is preferred because it can be managed and controlled centrally. You can configure nine GPO settings for UAC.

Because the user experience can be configured with Group Policy, there can be different user experiences depending on policy settings. The configuration choices made in your environment affect the prompts and dialog boxes that standard users, administrators, or both can view.

For example, you might require administrative permissions to change the UAC setting to Always notify me or Always notify me and wait for my response. With this type of configuration, a yellow notification appears at the bottom of the User Account Control Settings page, indicating the requirement.

Although UAC enables you to sign in with an administrative user account to perform everyday user tasks, it is still a good practice to sign in by using a standard user account for these everyday tasks. Sign in as an administrator only when necessary.

## Best Practice

### BitLocker

BitLocker stores its own encryption and decryption key in a hardware device that is separate from the hard disk, so you must have one of the following:

- A computer with TPM.
- A removable USB storage device, such as a USB flash drive. If your computer does not have TPM 1.2 or newer, BitLocker stores its key on a memory device.

The most secure implementation of BitLocker takes advantage of the enhanced security capabilities of TPM 1.2.

On computers that do not have TPM 1.2, you can still use BitLocker to encrypt the Windows operating system volume. However, this implementation will require a user to insert a USB startup key to start the computer or resume from hibernation and does not provide the prestartup system-integrity verification that BitLocker offers when it works with a TPM.

## Review Question(s)

**Question:** When you implement UAC, what happens to standard users and administrative users when they perform a task that requires administrative permissions?

**Answer:** For standard users, UAC prompts the user for the credentials of a user with administrative permissions. For administrative users, UAC prompts the user for permission to complete the task.

**Question:** What are the requirements for BitLocker to store its own encryption and decryption key in a hardware device that is separate from a hard disk?

**Answer:** A computer with TPM or a removable USB memory device, such as a USB flash drive. If your computer does not have TPM 1.2 or newer, BitLocker stores its key on a memory device.

**Question:** An administrator configures Group Policy to require that data can be saved only on data volumes that are protected by BitLocker. Specifically, the administrator enables the **Deny write access to removable drives not protected by BitLocker** policy setting and deploys it to the domain. Meanwhile, an end user inserts a USB flash drive that is not protected with BitLocker. What will happen, and how can the user resolve the situation?

**Answer:** Because the USB flash drive is not protected with BitLocker, Windows 8.1 displays an informational dialog box indicating that the device must be encrypted with BitLocker. From this dialog box, the user can choose to launch the BitLocker wizard to encrypt the volume or continue working with the device as read-only.

# Lab Review Questions and Answers

## Lab A: Implementing Local GPOs

### Question and Answers

**Question:** Can you create multiple local Group Policy settings and apply them to different users?

**Answer:** Yes. In addition to the computer policy, you can create and configure multiple local Group Policies for different types of users, such as administrative and non-administrative users. You also can do this for individual local user accounts.

## Lab B: Securing Data by Using BitLocker

### Question and Answers

**Question:** What are some ways to protect sensitive data in Windows 8.1?

**Answer:** You can protect sensitive data in Windows 8.1 by encrypting it with BitLocker, BitLocker To Go, or EFS.

## Lab C: Configuring and Testing UAC

### Question and Answers

**Question:** How can you suppress notifications about changes to a computer?

**Answer:** You can use UAC settings in the Action Center to turn off UAC so that you are never notified about changes to your computer.

# Module 11

## Configuring Applications for Windows® 8.1

### Contents:

Lesson 2: Managing Windows Store Apps	2
Lesson 3: Configuring Internet Explorer Settings	5
Lesson 4: Configuring Application Restrictions	8
Module Review and Takeaways	12
Lab Review Questions and Answers	14

## Lesson 2

# Managing Windows Store Apps

### Contents:

Demonstration: Sideloaded Windows Store Apps

3

## Demonstration: Sideloading Windows Store Apps

### Demonstration Steps

#### Enable sideloading

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, type **gpedit.msc**, and then press Enter.
3. Under Local Computer Policy in the navigation pane, expand **Computer Configuration**, expand **Administrative Templates**, expand **Windows Components**, and then click **App Package Deployment**.
4. In the results pane, double-click **Allow all trusted apps to install**.
5. In the **Allow all trusted apps to install** dialog box, click **Enabled**, and then click **OK**.
6. Close the Local Group Policy Editor.
7. Click **Windows PowerShell** on the Administrative menu by pressing Windows logo key+X.
8. Type **gpupdate /force**, and then press Enter
9. Remain signed in to LON-CL1.

#### Install the root certificate



**Note:** To be able to sideload an app, the Windows operating system must trust the app. For testing purposes, the app is using a self-signed certificate. You need to install the root certificate on the client.

1. On LON-CL1, click **File Explorer** on the taskbar.
2. Right-click the file **E:\Labfiles\Mod11\LeXProductsGrid81\_1.1.0.2\_AnyCPU.cer**, and then click **Install Certificate**.
3. On the **Certificate Import Wizard** page, click **Local Machine**, and then click **Next**.
4. On the **Certificate Store** page, click **Place all certificates in the following store**, click **Browse**, click **Trusted Root Certification Authorities**, click **OK**, click **Next**, and then click **Finish**.
5. In the **Certificate Import Wizard** dialog box, confirm that the import was successful, and then click **OK**.



**Note:** Your Windows Store apps must be digitally signed and can be installed only on computers that trust the certification authority that provided the apps' signing certificate.

#### Install a Windows Store app

1. Sign in to LON-CL1 as **Adatum\Dan** with password **Pa\$\$w0rd**.
2. On LON-CL1, type **PowerShell** on the Start screen, and then press Enter.
3. To install the package, at the Windows PowerShell® command prompt, type **add-appxpackage E:\Labfiles\Mod11\ LeXProductsGrid81\_1.1.0.2\_AnyCPU.appx**, and then press Enter.
4. On the Start screen, type **TestAppTKL1**, and then press Enter. Verify that the six groups of tiles are present in the TestAppTKL1 app.

### **Remove an installed Windows Store app**

1. On LON-CL1, type **TestApp** on the Start screen.
2. Right-click the **TestAppTKL1** tile, and then click **Uninstall**.
3. Sign out of LON-CL1.

## Lesson 3

# Configuring Internet Explorer Settings

### Contents:

Question and Answers	6
Demonstration: Configuring Internet Explorer	6

## Question and Answers

### Other Security Features

**Question:** What is the Cross-Site Scripting Filter?

**Answer:** The Cross-Site Scripting Filter tries to intercept cross-site scripting attempts by preventing unwanted scripts from executing.

## Demonstration: Configuring Internet Explorer

### Demonstration Steps

#### Configure Compatibility View

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, click the **Desktop** tile.
3. On the taskbar, click **Internet Explorer**.
4. In the Address bar, type **http://LON-DC1**, and then press Enter.
5. Right-click the home symbol, and then click **Menu bar**.
6. On the menu bar, click **Tools**, and then click **Compatibility View settings**.
7. In the **Compatibility View Settings** dialog box, click **Add** to add the LON-DC1 website to Compatibility View, and then click **Close**.

#### Delete browsing history

1. On LON-CL1, click the **Internet Explorer** icon on the taskbar.
2. In the Address bar, type **http://LON-DC1**, and then press Enter.
3. Click the Down Arrow next to the Address bar to confirm that the address that you typed is stored.
4. In Internet Explorer, on the **Tools** menu, click **Internet options**.
5. Click the **General** tab. Under Browsing history, click **Delete**.
6. In the **Delete Browsing History** dialog box, clear the **Preserve Favorites website data** check box, select the **Temporary Internet files and website files**, **Cookies and website data**, and **History** check boxes, and then click **Delete**.
7. Click **OK** to close the **Internet Options** dialog box.
8. Confirm that there are no addresses stored in the Address bar by clicking on the Down Arrow next to the Address bar.

#### Configure InPrivate Browsing

1. On the **Tools** menu, click **InPrivate Browsing**.
2. In the Address bar, type **http:// LON-DC1**, and then press Enter.
3. Confirm that the address you entered is not stored by clicking on the Down Arrow next to the Address bar.
4. Close the InPrivate® Browsing window.

#### View the add-on management interface

1. On the **Tools** menu, click **Manage add-ons**.
2. In the left navigation pane, click **Search Providers**.

3. In the right navigation pane, click **Bing**.
4. In the left navigation pane, click **Accelerators**.
5. In the left navigation pane, click **Tracking Protection**.
6. Click **Close**.

### **Download a file**

1. In the Address bar, type **http://LON-DC1**, and then press Enter.
2. In the browser window, click **Download Current Projects**.
3. In the **Internet Explorer** dialog box, click **Save**.
4. In the banner, click **View downloads**.
5. Click **Open**.
6. The file opens in Microsoft Office Excel®.
7. Close Excel and Internet Explorer, and then sign out of LON-CL1.

## Lesson 4

# Configuring Application Restrictions

### Contents:

Question and Answers	9
Demonstration: Configuring AppLocker Rules	9
Demonstration: Enforcing AppLocker Rules	10

## Question and Answers

### What Is AppLocker?

**Question:** What are some applications that are good candidates for you to apply an AppLocker rule?

**Answer:** Answers will vary based on students' experience.

### AppLocker Rules

**Question:** When testing AppLocker, you must consider carefully how you will organize rules between linked Group Policy Objects (GPOs). What do you do if a GPO does not contain the default AppLocker rules?

**Answer:** If a GPO does not contain the default rules, either add the rules directly to the GPO or add them to a GPO that links to it.

### Enforcing AppLocker Rules

**Question:** What is the command to update a computer's policy, and where is it run?

**Answer:** The command **gpupdate /force** will refresh local and GPO settings, including security settings. The command should be run as an administrator at a command prompt or in an elevated Windows PowerShell Command Prompt window.

## Demonstration: Configuring AppLocker Rules

### Demonstration Steps

#### Create a custom AppLocker rule

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, type **gpedit.msc**, and then press Enter.
3. In the Local Group Policy Editor, expand **Computer Configuration**, expand **Windows Settings**, expand **Security Settings**, expand **Application Control Policies**, and then double-click **AppLocker**.
4. Right-click **Executable Rules**, click **Create New Rule** to open the Create Executable Rules Wizard, and then click **Next**.
5. On the **Permissions** page, click **Deny**, and then click **Select**.
6. In the **Select User or Group** dialog box, in the **Enter the object names to select (examples)** box, type **Marketing**, click **Check Names**, click **OK**, and then click **Next**.
7. On the **Conditions** page, click **Path**, and then click **Next**.
8. Click **Browse Files**, in the **File name** box, type **C:\Windows\Regedit.exe**, and then click **Open**.
9. Click **Next** twice, and then click **Create**.
10. Click **Yes** when prompted to create default rules.

#### Automatically generate the script rules

1. Right-click **Script Rules**, and then click the **Automatically Generate Rules** option.
2. In the Automatically Generate Script Rules Wizard, on the **Folder and Permissions** page, click **Next**.
3. Click **Next** again, and then click **Create**.
4. Click **Yes** when prompted to create default rules.
5. Close the Local Group Policy Editor.

## Demonstration: Enforcing AppLocker Rules

### Demonstration Steps

#### Enforce AppLocker rules

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, type **gpedit.msc**, and then press Enter.
3. In the Local Group Policy Editor, expand **Computer Configuration**, expand **Windows Settings**, expand **Security Settings**, expand **Application Control Policies**, and then double-click **AppLocker**.
4. In the Local Group Policy Editor, right-click **AppLocker**, and then click **Properties**.
5. On the **Enforcement** tab, under Executable rules, select the **Configured** check box, and then click **Enforce rules** from the drop-down list.
6. On the **Enforcement** tab, under Script rules, click the **Configured** check box, click **Audit only** from the drop-down list, and then click **OK**.
7. Close the Local Group Policy Editor.

#### Confirm the executable rule enforcement

1. Select **Run** from the Administrative menu by pressing the Windows logo key+X, type **cmd.exe**, and then press Enter.
2. At the command prompt, type **gpupdate /force**, and then press Enter. Wait for the policy to update.
3. Select **Computer Management** from the Administrative menu by pressing the Windows logo key+X.
4. Expand **Event Viewer**, expand **Windows Logs**, and then click **System**.
5. In the results pane, locate and click the latest event with Event ID 1502.
6. Review event message details under the **General** tab.
7. Expand **Services and Applications**, and then click **Services**.
8. Right-click the **Application Identity** service in the main window pane, and then click **Start**.
9. Sign out of LON-CL1.

#### Test the executable rule enforcement

1. Sign in as **Adatum\Adam** with password **Pa\$\$w0rd**.
2. On the Start screen, type **cmd**, and then press Enter.
3. At the command prompt, type **Regedit.exe**, and then press Enter.
4. Close the Command Prompt window.
5. Sign in as **Adatum\Administrator** with password **Pa\$\$w0rd**.
6. Select **Computer Management** from the Administrative menu by pressing the Windows logo key+X.
7. Expand **Event Viewer**, expand **Application and Services Logs**, expand **Microsoft**, expand **Windows**, expand **AppLocker**, and then click **EXE and DLL**.
8. Review the entries in the results pane. Locate Event ID 8004. This shows Adam's attempt to run Regedit.exe.

9. Close Computer Management.
10. Close the Registry Editor.
11. Sign out of LON-CL1.

## Module Review and Takeaways

### Best Practice

#### Best Practices for AppLocker

Before you manually create new rules or automatically generate rules for a specific folder, you should create the default AppLocker rules. The default rules ensure that key operating system files are allowed to run for all users.

When testing AppLocker, carefully consider how you will organize rules between linked GPOs. If a GPO does not contain default rules, then add the rules directly to the GPO or add them to a GPO that links to it.

After creating new rules, you must configure enforcement for the rule collections and then refresh the computer's policy.

By default, AppLocker rules do not allow users to open or run any files that are not specifically allowed. Administrators must maintain a current list of allowed applications.

If AppLocker rules are defined in a GPO, only those rules are applied. To ensure interoperability between software restriction policy rules and AppLocker rules, define software restriction policy rules and AppLocker rules in different GPOs.

When you set an AppLocker rule to Audit only, the rule is not enforced. When a user runs an application that is included in the rule, the application opens and runs normally, and information about that application is added to the AppLocker event log.

### Review Question(s)

**Question:** What are some of the privacy features in Internet Explorer?

**Answer:** InPrivate Browsing and Tracking Protection.

**Question:** Trevor has implemented AppLocker. Before he created the default rules, he created a custom rule that allowed all Windows processes to run except for Regedit.exe. Because he did not create the default rules first, he is blocked from performing administrative tasks. What does he need to do to resolve the issue?

**Answer:** Trevor must restart the computer in safe mode, add the default rules, delete any Deny rules that are preventing access, and then refresh the computer policy.

### Tools

Tool	Use for	Where to find it
Windows PowerShell	Command-line management tool	Windows 8.1
Dism.exe	Servicing and managing Windows images	Windows 8.1
Msiexec.exe	Managing installations	Command line
Gpupdate	Managing policy application	Command line

### Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
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Common Issue	Troubleshooting Tip
AppLocker policies do not work correctly.	Before you can enforce AppLocker policies, you must start the Application Identity service.

## Lab Review Questions and Answers

### Lab A: Configuring Internet Explorer Security

#### Question and Answers

**Question:** What does Internet Explorer 11 display when a browser detects that a website does not adhere to HTML5 or CSS3 standards?

**Answer:** Internet Explorer 11 will display the webpage in compatibility mode, which enables the browser to continue to attempt to display the webpage correctly.

**Question:** In the lab, you added the local intranet home page to the Trusted sites zone. How else could you have ensured that required ActiveX controls could have run?

**Answer:** The required ActiveX controls could have run by adjusting the security level for the appropriate security zone rather than adding the site to a new zone.

**Question:** InPrivate Browsing deletes all the history of your browsing activity, passwords entered in websites, and collected cookies. Suggest some situations where this could be useful in an enterprise environment.

**Answer:** Answers will vary. We recommend InPrivate Browsing when using a publicly accessible computer to browse the Internet. This is useful in scenarios where a user browses the Internet on a device that has an unknown level of security, such as a loaned machine at a client's premises, or at a trade show, or when a user does not want to leave behind a trace of visited websites.

### Lab B: Configuring AppLocker

#### Question and Answers

**Question:** In the lab, you configured an executable path for the executable rule. What could you do if you wanted to allow users to run an older version of Windows Media® Player?

**Answer:** You could create a Publisher executable rule and specify the version to be restricted as version 12.0.0.0, citing Wmplayer.exe as the reference file. Different versions then could run.

# Module 12

## Optimizing and Maintaining Windows 8.1 Computers

### Contents:

Lesson 1: Optimizing Performance in Windows 8.1	2
Module Review and Takeaways	6
Lab Review Questions and Answers	7

## Lesson 1

# Optimizing Performance in Windows 8.1

### Contents:

Question and Answers	3
Demonstration: Using Resource Monitor	3
Demonstration: Analyzing System Performance by Using Performance Monitor and Data Collector Sets	4

## Question and Answers

### Discussion: Common Issues with Performance and Reliability

**Question:** What factors can influence computer system performance?

**Answer:** Answer will vary, but might include the:

- Access speed of the physical hard disks.
- Memory available for all running processes.
- Fastest speed of the processor.
- Maximum throughput of the network interfaces.
- Resources that individual apps consume.
- Faulty or poor configuration of components, which leads to the unnecessary consumption of resources.

**Question:** What factors might contribute to reliability issues in a computer system?

**Answer:** Answers will vary, but might include:

- App failures.
- Services become unresponsive and restart.
- Driver-initialization failures.
- Operating system failures.
- Hardware failures.

### Demonstration: Using Resource Monitor

#### Demonstration Steps

1. Sign in to LON-CL1 as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. On the Start screen, click **Desktop**, right-click the taskbar, and then click **Task Manager**.
3. In Task Manager, click **More details**, click the **Performance** tab, and then click **Open Resource Monitor**.
4. The **Overview** tab shows central processing unit (CPU) usage, disk I/O, network usage, and memory usage information for each process. A bar above each section provides summary information.
5. Click the Down Arrow button in the Disk section to expand it.
6. Click the **Views** drop-down list, and then click **Medium**. This controls the size of the graphs that display CPU usage, disk I/O, network usage, and memory activity.
7. Click the **CPU** tab. This tab has more detailed CPU information that you can filter and is based on processes.
8. In the Processes area, select the check box for a process, and then expand the **Associated Handles** area. This shows the files that a specific process is using, and also keeps the selected process at the top of the list to provide you with simplified monitoring.
9. Click the **Memory** tab. This tab provides detailed information about memory usage for each process. Notice that the process that you selected previously remains selected so you can review multiple kinds of information about a process as you switch between tabs.
10. Click the **Disk** tab. This tab shows processes with recent disk activity.

11. Expand the **Disk Activity** area. The Disk Activity area provides detailed information about the files that are in use. The Storage area provides general information about each logical disk.
12. Click the **Network** tab. This tab provides information about all processes with current network activity.
13. Expand the **TCP Connections** area. This shows current TCP connections and information about those connections.
14. Expand the **Listening Ports** area. This shows the processes that are listening for network connections and the ports on which they are listening. The firewall status for those ports also is shown.
15. Close Resource Monitor.

## Demonstration: Analyzing System Performance by Using Performance Monitor and Data Collector Sets

### Demonstration Steps

#### Open Performance Monitor

1. On LON-CL1, from the Start screen, type **perfmon**, and then click **perfmon.exe**.
2. In the Performance Monitor window, click the **Performance Monitor** node. Notice that only % Processor Time is displayed by default.

#### Add new values to the chart

1. Click the Plus Sign (+) in the toolbar to add an additional counter.
2. In the Available counters section, expand **PhysicalDisk**, and then click **% Idle Time**.
3. In the **Instances of selected object** box, click **0 C:**; click **Add**, and then click **OK**.
4. Right-click **% Idle Time**, and then click **Properties**.
5. In the **Color** drop-down list, select **green**, and then click **OK**.

#### Create a data collector set

1. In the navigation pane, expand **Data Collector Sets**, and then click **User Defined**.
2. Right-click **User Defined**, point to **New**, and then click **Data Collector Set**.
3. In the **Name** field, type **CPU and Disk Activity**, and then click **Next**.
4. In the **Template Data Collector Set** box, click **Basic**, and then click **Next**. We recommend that you use a template.
5. Click **Next** to accept the default storage location for the data.
6. Click **Open properties for this data collector set**, and then click **Finish**. On the **General** tab, you can configure general information about the data collector set and the credentials that the data collector set uses when it is running.
7. Click the **Directory** tab. This tab lets you define information on how the collected data is stored.
8. Click the **Security** tab. This tab lets you configure which users can change this data collector set.
9. Click the **Schedule** tab. This tab lets you define when the data collector set is active and collecting data.
10. Click the **Stop Condition** tab. This tab lets you define when data collection is stopped, based on time or data that is collected.

11. Click the **Task** tab. This tab lets you run a scheduled task when the data collector set stops. You can use this to process the collected data.
12. Click **Cancel**. Notice that there are three kinds of logs in the results pane:
  - Performance Counter collects data that you can view in the Performance Monitor.
  - Kernel Trace collects detailed information about system events and activities.
  - Configuration records changes to registry keys.
13. In the results pane, double-click **Performance Counter**. Notice that all Processor counters are collected by default. Click **Add**.
14. In the Available counters area, click **PhysicalDisk**, click **Add**, and then click **OK**. All the counters for the PhysicalDisk object are now added. Click **OK**.
15. In the navigation pane, right-click **CPU and Disk Activity**, and then click **Start**.

### **Examine a report**

1. Wait a few moments, and the data collector set will stop automatically.
2. Right-click **CPU and Disk Activity**, and then click **Latest Report**. This report shows the data that is collected by the data collector set.
3. Close Performance Monitor.
4. Revert all virtual machines.

## Module Review and Takeaways

### Review Question(s)

**Question:** You are having problems with your computer's performance. How can you create a data collector set to analyze a performance problem?

**Answer:** You can create a data collector set from counters in Performance Monitor, use a template, or do it manually.

**Question:** What are the benefits of creating a data collector set?

**Answer:** When you configure a data collector set, you can customize the information that will be included in the data collector set, and you can customize when the data will be collected. This is useful if you need to analyze a specific computer performance issue at a specific time.

# Lab Review Questions and Answers

## Lab A: Optimizing Windows 8.1 Performance

### Question and Answers

**Question:** What are the benefits of creating a user-defined data collector set?

**Answer:** When you configure a data collector set, you can customize the information that it will include, and you can customize when data collection occurs. This is useful if you need to analyze a specific computer's performance issues at a given time.

## Lab B: Maintaining Windows Updates

### Question and Answers

**Question:** In the lab, you configured LON-CL1 to receive automatic updates from the Microsoft Update website. What component can you add to the update process to enable greater control over the approval and installation of updates for LON-CL1?

**Answer:** You can configure LON-CL1 to use a WSUS server to download updates. You can then configure update approval and installation on the WSUS server for LON-CL1 and any other computers that use the WSUS server for updates.

# Module 13

## Configuring Mobile Computing and Remote Access

### Contents:

Lesson 1: Configuring Mobile Computers and Device Settings	2
Lesson 2: Overview of DirectAccess	4
Lesson 3: Configuring VPN Access	7
Lesson 4: Configuring Remote Desktop and Remote Assistance	10
Module Review and Takeaways	13
Lab Review Questions and Answers	14

## Lesson 1

# Configuring Mobile Computers and Device Settings

### Contents:

Demonstration: Configuring Power Plans

3

## Demonstration: Configuring Power Plans

### Demonstration Steps

#### Create a power plan for Adam's laptop

1. Sign in to LON-CL1 as **Adatum\Adam** with password **Pa\$\$w0rd**.
2. On the Start screen, click **Desktop**.
3. Pause the pointer in the lower-right corner of the display, and then click **Settings**.
4. Click **Control Panel**.
5. Click **System and Security**, click **Power Options**, and then on the left, click **Create a power plan**.
6. On the **Create a power plan** page, click **Power saver**.
7. In the **Plan name** box, type **Adam's plan**, and then click **Next**.

#### Configure the power plan

1. On the **Change settings for the plan: Adam's plan** page, click **Create**.
2. In **Power Options**, next to **Adam's plan**, click **Change plan settings**.
3. On the **Change settings for the plan: Adam's plan** page, click **Change advanced power settings**.
4. Configure the following properties for the plan, and then click **OK**:
  - o Turn off hard disk after: **10 minutes**
  - o Wireless Adapter Settings, Power Saving Mode: **Maximum Power Saving**
  - o Power buttons and lid, Power button action: **Shut down**
5. On the **Change settings for the plan: Adam's plan** page, click **Cancel**.
6. Close the Power Options window.
7. Sign out from LON-CL1.

## Lesson 2

# Overview of DirectAccess

### Contents:

Demonstration: Configuring DirectAccess by Running the Getting Started Wizard	5
Demonstration: Identifying the Getting Started Wizard Settings	5

## Demonstration: Configuring DirectAccess by Running the Getting Started Wizard

### Demonstration Steps

1. Switch to LON-SVR2.
2. In Server Manager, click **Tools**, and then select **Remote Access Management**.
3. In the Remote Access Management console, under Configuration, click **DirectAccess and VPN**.
4. Click **Run the Getting Started Wizard**.
5. On the **Configure Remote Access** page, click **Deploy DirectAccess only**.
6. Verify that **Edge** is selected, and in the **Type the public name or IPv4 address used by clients to connect to the Remote Access server** box, type **131.107.0.2**, and then click **Next**.
7. On the **Configure Remote Access** page, click the **here** link.
8. On the **Remote Access Review** page, verify that two Group Policy Objects (GPOs) have been created: DirectAccess Server Settings and DirectAccess Client Settings.
9. Next to Remote Clients, click **Change**.
10. In the Remote Access Setup window, click **Domain Computers (ADATUM\Domain Computers)**, and then click **Remove**.
11. Click **Add**.
12. In the Select Groups window, type **DA\_Clients**, and then click **OK**.
13. Clear the **Enable DirectAccess for mobile computers only** check box, and then click **Next**.
14. On the **DirectAccess Client Setup** page, click **Finish**.
15. On the **Remote Access Review** page, click **OK**.
16. On the **Configure Remote Access** page, click **Finish** to finish the DirectAccess wizard.
17. In the **Applying Getting Started Wizard Settings** dialog box, click **Close**.
18. Restart LON-SVR2.

## Demonstration: Identifying the Getting Started Wizard Settings

### Demonstration Steps

1. On LON-SVR2, switch to Server Manager, click **Tools**, and then click **Remote Access Management**.
2. In the Remote Access Management console, in the left pane, click **DirectAccess and VPN**.
3. In the Remote Access Setup window, under the image of the client computer labeled as Step 1 Remote Clients, click **Edit**.
4. In the DirectAccess Client Setup window, click **Deployment Scenario**, and then review the default settings; click **Select Groups**, and then review the default settings; click **Network Connectivity Assistant**, and then review the default settings.
5. Click **Cancel**, and then click **OK**.
6. In the Remote Access Setup window, under the image of the client computer labeled as Step 2 Remote Access Server, click **Edit**.
7. In the Remote Access Server Setup window, click **Network Topology**, and then review the default settings; click **Network Adapters**, and then review the default settings; click **Authentication**, and then review the default settings.

8. Click **Cancel**, and then click **OK**.
9. In the Remote Access Setup window, under the image of the client computer labeled as Step 3 Infrastructure Servers, click **Edit**.
10. In the Infrastructure Server Setup window, click **Network Location Server**, and then review the default settings; click **DNS**, and then review the default settings; click **DNS Suffix Search List**, and then review the default settings; click **Management**, and then review the default settings.
11. Click **Cancel**, and then click **OK**.
12. In the Remote Access Setup window, under the image of the client computer labeled as Step 4 Application Servers, click **Edit**.
13. In the DirectAccess Application Server Setup window, review the default settings, click **Cancel**, and then click **OK**.
14. Close all open windows.
15. Revert virtual machines in preparation for the next demonstration.

## Lesson 3

# Configuring VPN Access

### Contents:

Demonstration: Configuring a VPN	8
Demonstration: Creating a Connection Profile	8

## Demonstration: Configuring a VPN

### Demonstration Steps

#### Create a new VPN connection

1. Switch to LON-CL1, and then sign in as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Open Control Panel.
3. In the Control Panel window, under Network and Internet, click **View network status and tasks**.
4. In the Network and Sharing Center window, under Change your networking settings, click **Set up a new connection or network**.
5. In the **Choose a connection option** dialog box, click **Connect to a workplace**, and then click **Next**.
6. In the **Connect to a Workplace** dialog box, click **Use my Internet connection (VPN)**, and when prompted, select **I'll set up an Internet connection later**.
7. In the **Type the Internet address to connect to** dialog box, specify an **Internet address** of **172.16.0.10** and a **Destination name** of **HQ**, and then click **Create**.

#### Configure the VPN connection

1. In the Network and Sharing Center window, click **Change adapter settings**.
2. On the **Network Connections** page, right-click **HQ**, and then click **Properties**.
3. In the **HQ Properties** dialog box, click the **Security** tab, and then click **Allow these protocols**.
4. In the **Type of VPN** list, click **Point to Point Tunneling Protocol (PPTP)**, and then click **OK**.
5. On the **Network Connections** page, right-click **HQ**, and then click **Connect/Disconnect**.

#### Test the connection

1. In the **Networks** list on the right side, click **HQ**, and then click **Connect**.
2. Enter the following information in the **Network Authentication** boxes, and then click **OK**:
  - o User name: Adatum\Administrator
  - o Password: Pa\$\$w0rd
3. The VPN connects. Right-click **HQ**, and then click **Connect/Disconnect**.
4. Click **HQ**, and then click **Disconnect**.

## Demonstration: Creating a Connection Profile

### Demonstration Steps

#### Install the CMAK feature

1. If necessary, on LON-CL1, sign in as **Adatum\Administrator** with password **Pa\$\$w0rd**.
2. Open Control Panel.
3. Click **Programs**, and in Programs, click **Turn Windows features on or off**.
4. In the **Windows Features** dialog box, select the **RAS Connection Manager Administration Kit (CMAK)** check box, click **OK**, and then click **Close**.

#### Create a connection profile

1. In Control Panel, click **Control Panel Home**.

2. In the **View by** list, click **Large icons**.
3. Click **Administrative Tools**, and then double-click **Connection Manager Administration Kit**.
4. In the Connection Manager Administration Kit Wizard, click **Next**.
5. On the **Select the Target Operating System** page, click **Windows Vista or above**, and then click **Next**.
6. On the **Create or Modify a Connection Manager profile** page, click **New profile**, and then click **Next**.
7. On the **Specify the Service Name and the File Name** page, in the **Service name** box, type **Adatum HQ**, in the **File name** box, type **Adatum**, and then click **Next**.
8. On the **Specify a Realm Name** page, click **Do not add a realm name to the user name**, and then click **Next**.
9. On the **Merge Information from Other Profiles** page, click **Next**.
10. On the **Add Support for VPN Connections** page, select the **Phone book from this profile** check box.
11. In the **VPN server name or IP address** box, type **172.16.0.10**, and then click **Next**.
12. On the **Create or Modify a VPN Entry** page, click **Next**.
13. On the **Add a Custom Phone Book** page, clear the **Automatically download phone book updates** check box, and then click **Next**.
14. On the **Configure Dial-up Networking Entries** page, click **Next**.
15. On the **Specify Routing Table Updates** page, click **Next**.
16. On the **Configure Proxy Settings for Internet Explorer** page, click **Next**.
17. On the **Add Custom Actions** page, click **Next**.
18. On the **Display a Custom Logon Bitmap** page, click **Next**.
19. On the **Display a Custom Phone Book Bitmap** page, click **Next**.
20. On the **Display Custom Icons** page, click **Next**.
21. On the **Include a Custom Help File** page, click **Next**.
22. On the **Display Custom Support Information** page, click **Next**.
23. On the **Display a Custom License Agreement** page, click **Next**.
24. On the **Install Additional Files with the Connection Manager profile** page, click **Next**.
25. On the **Build the Connection Manager Profile and Its Installation Program** page, click **Next**.
26. On the **Your Connection Manager Profile is Complete and Ready to Distribute** page, click **Finish**.

### **Examine the created profile**

1. Open File Explorer.
2. Navigate to **C:\Program Files\CMAK\Profiles\Windows Vista and above\Adatum**. You must distribute these files.
3. Close all open windows, and then sign out of LON-CL1.

## Lesson 4

# Configuring Remote Desktop and Remote Assistance

### Contents:

Demonstration: Configuring Remote Assistance

11

## Demonstration: Configuring Remote Assistance

### Demonstration Steps

#### Create a Microsoft Word 2013 Document

1. Sign in to LON-CL1 as **Adatum\Adam** with password **Pa\$\$w0rd**.
2. On the Start screen, type **Word**, and then click **Microsoft Word 2013**.
3. In the Microsoft Activation Wizard window, click **Close**.
4. In the First things first window, click **Ask me later**, and then click **Accept**.
5. Close the Welcome to your new Office window.
6. In Word 2013, click **Blank Document**.
7. In the Document window, type **This is my document**.

#### Enable and then request Remote Assistance

1. Pause the pointer in the lower right of the display, and then click **Start**.
2. On the Start screen, type **This PC**, right-click **This PC**, and then click **Properties**.
3. In the System windows, click **Remote settings**.
4. In the **User Account Control** dialog box, in the **User name** box, type **administrator**.
5. In the **Password** box, type **Pa\$\$w0rd**, and then click **Yes**.
6. Verify that the **Allow Remote Assistance connections to this computer** check box is selected, and then click **OK**.
7. Close the System window.
8. Pause the pointer in the lower right of the display, and then click **Start**.
9. Type **msra**, and then in the **Apps** list, click **msra**.
10. In the Windows Remote Assistance Wizard, click **Invite someone you trust to help you**.
11. On the **How do you want to invite your trusted helper?** page, click **Save this invitation as a file**.
12. On the **Save as** page, in the **File name** box, type **\\LON-dc1\data\Adam's-Invite**, and then click **Save**.
13. Note the password.

#### Provide Remote Assistance

1. Switch to the LON-CL2 virtual machine, and then sign in as **Adatum\Holly** with password **Pa\$\$w0rd**.
2. On the Start screen, click **Desktop**, click **File Explorer**, navigate to **\\LON-DC1\data**, and then double-click **Adam's-Invite**.
3. In the **Remote Assistance** dialog box, in the **Enter password** box, type the password that you noted in the previous task, and then click **OK**.
4. Switch to the LON-CL1 virtual machine.
5. In the **Windows Remote Assistance** dialog box, click **Yes**.
6. Switch to the LON-CL2 virtual machine.
7. On the menu, click **Request control**.
8. Switch to the LON-CL1 virtual machine.

9. In the **Windows Remote Assistance** dialog box, click **Yes**.
10. Switch to the LON-CL2 virtual machine.
11. In Word 2013, click the **Review** menu, and then select the text in the document window.
12. In the menu, click **New Comment**, and then type **This is how you place a comment in a document**.
13. Click the cursor elsewhere in the document window.
14. In the **Windows Remote Assistance – Helping Adam** menu, click **Chat**.
15. In the Chat window, type **Does that help?**, and then press Enter.
16. Switch to the LON-CL1 virtual machine.
17. Observe the message.
18. Type **Yes, thanks**, press Enter, and then in the **Menu**, click **Stop sharing**.
19. Close all open windows.
20. Discard the file changes, and then sign out of LON-CL1.
21. Switch to the LON-CL2 virtual machine.
22. Close all open windows, and then sign out of LON-CL2.

## Module Review and Takeaways

**Question:** You have some important files on your desktop computer at work that you need to retrieve when you are at a client's location with your laptop computer. What do you need to do on your desktop computer to ensure that you can download your files when at a customer site?

**Answer:** You need to configure Remote Access on your desktop computer. Select one of the access options in the Remote tab of System from System and Security in Control Panel.

## Lab Review Questions and Answers

### Lab A: Configuring a Power Plan

#### Question and Answers

**Question:** In the lab, you configured a power plan to optimize the battery life of Adam's laptop computer. What are the compromises that arise from this?

**Answer:** Enabling some power-saving features can affect performance so that programs might take longer to perform typical tasks. Often, you must strike a balance between battery life and performance.

### Lab B: Implementing DirectAccess by Using the Getting Started Wizard

#### Question and Answers

**Question:** How will you configure IPv6 addresses for Windows 8.1 client computers to use DirectAccess?

**Answer:** Global unicast IPv6 addresses are generated automatically based on the network infrastructure. As a result, Windows 8.1 clients can connect to an organization's intranet and the Internet by using DirectAccess, without requiring you to configure IPv6 addresses.

### Lab C: Implementing Remote Desktop

#### Question and Answers

**Question:** In the lab, you enabled the Remote Desktop feature through the firewall by editing the local firewall settings. Is there an alternative way in which you can make this change?

**Answer:** Yes. You can configure the settings through Group Policy on a domain controller. This enables you to apply the settings to a larger group of computers in a single administrative step.

**Question:** If attempting to connect to a remote computer with Remote Desktop from an Internet-connected computer, what other possible configuration changes might you need to make?

**Answer:** It is likely that in addition to a user's computer firewall settings, you will need to configure or request the configuration of the corporate firewall. You will need to enable TCP port 3389 to support Remote Desktop. It is possible to use different ports over which to connect by using Remote Desktop, but this must be configured at the computer to which you want to connect.

# Module 14

## Recovering Windows® 8.1

### Contents:

Lesson 1: Backing Up and Restoring Files in Windows 8.1	2
Lesson 2: Recovery Options in Windows 8.1	4
Module Review and Takeaways	8
Lab Review Questions and Answers	10

## Lesson 1

# Backing Up and Restoring Files in Windows 8.1

### Contents:

Question and Answers	3
Demonstration: Configuring and Using File History	3

## Question and Answers

### Discussion: The Need for Data Backup

**Question:** Does Windows 8.1 include a backup tool?

**Answer:** Yes, Windows 8.1 includes Wbadmin.exe, which is a backup command-line tool. However, the traditional graphical backup and restore app was removed from Windows 8.1, because the emphasis is on the more modern File History model for multidevice scenarios.

### What Is File History?

**Question:** Is File History turned on by default?

**Answer:** No. Before you can use File History, you must configure it with a local drive, a removable drive, or a network location, and then turn on File History.

**Question:** Can you protect additional folders by using File History?

**Answer:** Yes. You can add additional folders to one of the libraries that File History is protecting. When you do so, File History also will protect those folders.

## Demonstration: Configuring and Using File History

### Demonstration Steps

1. On LON-CL1, on the Start screen, type **file**, and then click **File Explorer**.
2. In File Explorer, in the navigation pane, expand **This PC**, and then click **Documents**.
3. Right-click in the details pane, point to **New**, click **Microsoft Word Document**, and then name the new document **Recovery file**.
4. Double-click **Recovery file.docx**. In the **First things first**. dialog box, select the **Ask me later** check box, and then click **Accept**.
5. Close the Welcome to your new Office window.
6. In Recovery file.docx, type **This document is modified**, save the file by pressing Ctrl+S, and then close Microsoft® Word 2013.
7. On the desktop, right-click the **Start** icon, and then click **Control Panel**.
8. In Control Panel, in the **Search Control Panel** field, type **history**, and then click **File History**.
9. In the **File History** dialog box, in the navigation pane, click **Select drive**.
10. Click **Add network location**, in the **Folder** field, type **\\LON-DC1\FileHistory**, click **Select Folder**, and then click **OK**.
11. In the **File History** dialog box, in the details pane, click **Turn on**. In the navigation pane, click **Advanced settings**. Review the options, and then click **Cancel**.
12. In File Explorer, in the navigation pane, click **Documents**, right-click **Recovery file.docx**, and then click **Delete**.
13. In File Explorer, click the **Home** tab, and then click **History**.
14. In the Documents – File History window, right-click **Recovery file.docx**, and then click **Restore**.
15. In File Explorer, notice that the Word document has been recovered.
16. Double-click **Recovery file.docx**, and then verify that it has the content that you typed earlier.

# Recovery Options in Windows 8.1

## Contents:

Question and Answers	5
Demonstration: Resolving Startup-Related Problems	6

## Question and Answers

### Windows Startup and Recovery Options

**Question:** How can you access Windows RE if your computer cannot start from a hard disk because of damaged startup information?

**Answer:** You can start the computer from Windows 8.1 media, such as a DVD or a universal serial bus (USB) flash drive, and then select the option to repair the computer.

### Overview of System Restore

**Question:** How can you configure Windows 8.1 to create restore points automatically more often than every seven days?

**Answer:** System protection creates a scheduled task named SR that can schedule the creation of restore points automatically. You can add a new trigger to the task and configure the frequency for creating restore points.

### What Is the BCD Store?

**Question:** One of your coworkers would like to modify Windows 8.1 startup settings, but he is not able to find the Boot.ini file. How can you help him?

**Answer:** Windows 8.1 does not use the Boot.ini file. Instead, Windows 8.1 stores startup options in BCD. Your coworker could use tools such as BCDEdit.exe to edit the BCD store, and he also could use Change advanced startup options in Windows 8.1 for some BCD modifications.

### Understanding BCD Configuration Settings

**Question:** Your coworker has a dual-boot computer and would like to configure the computer to start Windows 8.1 automatically without showing the list of installed operating systems for 30 seconds first. Is BCDEdit.exe the only tool your coworker can use to achieve this goal?

**Answer:** Although BCDEdit.exe has many options for editing the BCD store, it is a command-line tool, and only advanced users should utilize it. Your coworker can use Startup and Recovery settings, or Change advanced startup options to modify the setting from the GUI.

### Advanced Startup Settings

**Question:** Can you access Startup Setting options by pressing F8 during computer startup?

**Answer:** No. You cannot use keyboard shortcuts during the Windows 8.1 startup process, and you cannot access Startup Settings options by pressing any key during computer startup. You can access startup options by:

- Changing advanced startup options in Windows 8.1.
- Pressing the Shift key while selecting the Restart option in the Settings charm.
- Restarting the computer by running the **shutdown.exe /r /o** command.

### Tools Available in Windows RE

**Question:** Can you use System Image Recovery without any previous preparation?

**Answer:** No. System Image Recovery restores a system image on your computer. To be able to use this option, you first must create the system image while Windows 8.1 is running.

**Question:** What is the main difference between the Refresh your PC and Reset your PC options?

**Answer:** If you use the Refresh your PC option, Windows 8.1 will be reinstalled, but your Windows Store apps and data will be preserved. If you use the Reset your PC option,

Windows 8.1 will be reinstalled, and all your apps and local copies of the data on the computer will be deleted.

## Configuring a Recovery Drive

**Question:** Can you create a recovery drive on a DVD?

**Answer:** No. You can create a recovery drive only on a USB flash drive with at least 256 MB of space. You cannot create a recovery drive on a DVD.

**Question:** Which recovery tasks can you perform when you start a computer from a recovery drive?

**Answer:** A recovery drive includes Windows RE, and you can start all Windows RE tools from a recovery drive. This includes the following recovery tasks: Refresh your PC, Reset your PC, System Restore, System Image Recovery, Startup Repair, and Command Prompt.

## Demonstration: Resolving Startup-Related Problems

### Demonstration Steps

1. On your host computer, in the **20687D-LON-CL1 on localhost – Virtual Machine Connection** dialog box, on the **Media** menu, point to **DVD Drive**, and then click **Insert Disk**.
2. In the **Open** dialog box, in the **File name** box, type **D:\Program Files\Microsoft Learning\20687\Drives\Win81Ent\_Eval.iso**, and then click **Open**.
3. On the **Action** menu, click **Start**.
4. When you see the “Press any key to boot from CD or DVD” message, press Spacebar, and then Setup loads.
5. When prompted, in the **Windows Setup** dialog box, click **Next**.
6. On the **Windows Setup** page, click **Repair your computer**.
7. On the **Choose an option** page, click **Troubleshoot**.
8. On the **Troubleshoot** page, click **Advanced options**.
9. On the **Advanced options** page, click **Command Prompt**.
10. At the command prompt, type **bcdedit /enum**, and then press Enter.
11. At the command prompt, type **Bootrec /scanos**, and then press Enter.
12. At the command prompt, type **diskpart**, and then press Enter.
13. At the command prompt, type **list disk**, and then press Enter.
14. At the command prompt, type **list volume**, and then press Enter.
15. At the command prompt, type **exit**, and then press Enter.
16. At the command prompt, type **exit**, and then press Enter.
17. On the **Choose an option** page, click **Troubleshoot**.
18. On the **Troubleshoot** page, click **Advanced options**.
19. On the **Advanced options** page, click **Startup Repair**.
20. On the **Choose a target operating system** page, click **Windows 8.1**. Startup Repair starts.
21. After a few seconds, the **Startup Repair couldn't repair your PC** page appears. This is because there is nothing wrong with your computer. Click **Advanced options**.
22. On the **Choose an option** page, click **Continue**. Windows starts normally.

23. On LON-CL1, sign in as **Adatum\Administrator** with password **Pa\$\$w0rd**.
24. On the Start screen, type **cmd**, right-click **Command Prompt**, and then click **Run as administrator**.
25. At the command prompt, type **bcdedit /copy {current} /d "Duplicate boot entry"**, and then press Enter.
26. At the command prompt, type **bcdedit /enum**, and then press Enter.
27. At the command prompt, type **shutdown /r**, press Enter and then click **Close** to restart LON-CL1.
28. When the Windows operating system restarts, wait until the **Choose an operating system** menu appears, and then click **Change defaults or choose other options**.
29. On the **Options** page, click **Choose other options**.
30. On the **Choose an option** page, click **Troubleshoot**.
31. On the **Troubleshoot** page, click **Advanced options**.
32. On the **Advanced options** page, click **Startup Settings**.
33. On the **Startup Settings** page, click **Restart**.
34. In the **Startup Settings** menu, type **4** to select and enable **Safe Mode**.
35. On LON-CL1, sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**.

## Module Review and Takeaways

**Question:** After installing a new video driver, your user's computer becomes unstable, and it will not start correctly. What would you try first to resolve this problem?

**Answer:** You can use various options to resolve the problem. You should try the easiest approach first. If you can still see the desktop, you should attempt a driver rollback first. If the desktop is not visible, you can restart the computer in low-resolution video and then use driver rollback. You also can start the computer in safe mode and then use System Restore.

**Question:** The boot environment of a user's computer is corrupted, and you suspect a virus. Before you can run virus removal tools, you must repair the boot configuration. What command-line tool or tools could you use?

**Answer:** You can repair the boot configuration by using the **bootrec.exe** command with the **fixmbr** and **fixboot** switches.

**Question:** You add a new hard disk to the computer, which changes the computer's partition numbering. To enable the computer to start, you need to change the BCD. What tool can you use to change the BCD?

**Answer:** You can use **BCDEdit /enum** to view the entries in the store. Then, you can use **BCDEdit** to edit the store to reflect the changes in the computer configuration.

**Question:** A user has reported a problem to the help desk. The user is experiencing problems with starting a computer after a new device driver was added. You decide to start the computer by using a minimal boot, but you want to configure that from the Windows operating system before restarting. What tool could you use?

**Answer:** You can use the System Configuration (MSConfig.exe) tool to configure advanced startup options, including various minimal startup environments.

**Question:** A system service is causing startup problems, and your help-desk user has started the problematic computer in Windows RE. What command-line tool can you use to modify service startup type?

**Answer:** You can use **Sc.exe** to view and configure system services within Windows RE. You also can modify service startup type by using this command.

**Question:** The help desk recently installed a new device driver on a computer. A stop code is generated, and a blue screen is shown during computer startup. What recovery mechanism would you try first?

**Answer:** You could try starting the computer in safe mode and use a driver rollback if the computer is able to start from the hard drive. Alternatively, you can use Windows 8.1 media and Windows RE to apply a system restore point. You also could use Refresh your PC as one of the last recovery steps.

### Tools

Tool	Use for	Where to find it
BCDEdit.exe	Viewing and configuring the BCD store	Command-line
Sc.exe	Managing services	Command-line
MSConfig.exe	Managing services and the startup environment	Windows operating system
Windows RE	Troubleshooting Windows 8.1 computers	Elements available on hard disk (automatic failover) and the product

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Tool	Use for	Where to find it
		installation DVD
Safe Mode	Troubleshooting startup	Accessible from the Startup Settings page
BootRec.exe	Managing the boot environment	Command-line

## Lab Review Questions and Answers

### Lab: Recovering Windows 8.1

#### Question and Answers

**Question:** Why did LON-CL1 not start successfully in the lab?

**Answer:** LON-CL1 had a corrupted BCD. Because of this, it failed to start successfully.

**Question:** How did you resolve the problem with LON-CL1?

**Answer:** Because the BCD store on LON-CL1 was corrupt, you were not able to start the computer from the hard disk. You started LON-CL1 by using Windows 8.1 media and Windows RE to repair the BCD store.

# Module 15

## Configuring Client Hyper-V

### Contents:

Lesson 1: Overview of Client Hyper-V	2
Lesson 2: Creating Virtual Machines	4
Lesson 3: Managing Virtual Hard Disks	6
Lesson 4: Managing Checkpoints	8
Module Review and Takeaways	10
Lab Review Questions and Answers	11

## Lesson 1

# Overview of Client Hyper-V

### Contents:

Question and Answers

3

## Question and Answers

### Purpose and Functionality of Client Hyper-V

**Question:** What must you do to enable administration of Client Hyper-V by using Windows PowerShell?

**Answer:** If you want to administer Client Hyper-V locally, you can use the Hyper-V module for Windows PowerShell, which is installed automatically when you turn on Client Hyper-V on a Windows 8.1 computer. If you want to administer Client Hyper-V on a remote computer, you first must turn on the Hyper-V module for Windows PowerShell feature.

### Scenarios for Using Client Hyper-V

**Question:** Can you run two virtual machines with the same name and TCP/IP network settings in the same Client Hyper-V environment?

**Answer:** Yes. You can run multiple virtual machines with the same name and same TCP/IP settings in the same Client Hyper-V environment without a conflict. Each virtual machine is isolated from others and from the Windows 8.1 computer by default, so there will not be any conflict if operating systems in virtual machines are configured with the same settings.

## Lesson 2

# Creating Virtual Machines

### Contents:

Question and Answers

5

## Question and Answers

### Creating a Virtual Machine

**Question:** Can you convert a Generation 1 virtual machine that has Windows Server 2012 R2 installed to a Generation 2 virtual machine?

**Answer:** No. You can select the generation of a virtual machine only when you create the virtual machine, and you cannot change it later. If you already have a Generation 1 virtual machine, you cannot convert it to a Generation 2 virtual machine, regardless of the operating system that is installed on that virtual machine.

### Configuring Virtual Machine Settings

**Question:** Can you modify virtual machine memory settings while a virtual machine is running?

**Answer:** No. You cannot modify most virtual machine settings while a virtual machine is running. If a virtual machine has Dynamic Memory enabled, you can decrease the minimum random access memory (RAM) and increase the maximum RAM while a virtual machine is running, and you can always modify memory weight.

### Running Virtual Machines

**Question:** Why would you rather import a virtual machine into Client Hyper-V than create new virtual machine and configure it to use existing virtual hard disks?

**Answer:** When you import a virtual machine, its configuration, such as the number of processors and memory settings, is preserved. The import process also preserves checkpoints and TCP/IP settings of the network adapter. These settings are not preserved when you create a new virtual machine and configure it with an existing virtual hard disk.

**Question:** Can you use Enhanced Session Mode to start a virtual machine from a USB device?

**Answer:** Enhanced Session Mode is available only after a supported operating system already is running on the virtual machine. When a virtual machine starts, Enhanced Session Mode is not available, so you cannot use USB device redirection to start the virtual machine from a USB device.

## Lesson 3

# Managing Virtual Hard Disks

### Contents:

Question and Answers

7

## Question and Answers

### Overview of Virtual Hard Disks

**Question:** Is there any difference between connecting a virtual hard disk to a virtual machine by using an IDE or SCSI virtual controller?

**Answer:** Virtual hard disks have the same format, whether you connect them to a virtual machine by using an IDE or SCSI virtual controller. The only difference is in the way the virtual machine accesses those virtual hard disks and the options the controller offers. For example, you can add or remove virtual hard disks to a virtual SCSI controller while the virtual machine is running, but you first must turn off a virtual machine if you want to add or remove a virtual hard disk to a virtual IDE controller.

**Question:** Can Client Hyper-V allocate more storage space to a differencing virtual hard disk than to the parent disk to which it links?

**Answer:** A differencing virtual hard disk always links to a parent disk, which can be fixed-size, dynamically expanding, or another differencing virtual hard disk. When you link a differencing virtual hard disk to a dynamically expanding or differencing virtual hard disk, Client Hyper-V can allocate the differencing virtual hard disk more space than the parent disk to which it links.

### Configuring a Virtual Hard Disk

**Question:** When would you use shared virtual hard disks?

**Answer:** You can use shared virtual hard disks when you want to provide shared storage in a virtual machine, most likely to configure failover clustering.

### Moving Virtual Hard Disk Storage

**Question:** Can you use storage migration to move only virtual hard disks?

**Answer:** No. You can use storage migration to move any virtual machine data files. Virtual hard disks usually are the largest virtual machine data files, but you also can use storage migration to move checkpoints, current configurations, and Smart Paging files.

**Question:** Do you need to be a local administrator to use the Move Wizard?

**Answer:** No. You do not need to be a local administrator. You only need to be a member of the Hyper-V Administrators group to use the Move Wizard.

## Lesson 4

# Managing Checkpoints

### Contents:

Question and Answers

9

## Question and Answers

### What Are Checkpoints?

**Question:** Which checkpoint requires more space: a checkpoint of a running virtual machine, or a checkpoint of a virtual machine that is turned off?

**Answer:** You can create checkpoints of both virtual machines. However, the checkpoint of a running virtual machine includes memory content, whereas there is no memory content if a virtual machine is turned off. When comparing checkpoint size, the checkpoint of a virtual machine that is turned off will be smaller than the checkpoint of a running virtual machine.

### Creating and Managing Checkpoints

**Question:** Can you modify the configuration of a virtual machine checkpoint if you created that checkpoint when the virtual machine was turned off?

**Answer:** The virtual machine must be turned off for you to configure most of the virtual machine settings. However, you can never modify a virtual machine configuration in a checkpoint, regardless of whether the virtual machine was running or turned off when you created the checkpoint. Checkpoints contain virtual machine configurations from the past, which you cannot modify.

**Question:** How are multiple branches created in a checkpoint tree?

**Answer:** If you create two checkpoints, one after another, and if you never apply a previous checkpoint, you will have a tree with one branch. If you apply the first checkpoint and then create a new checkpoint, you will have another branch in the checkpoint tree.

### Considerations for Working with Checkpoints

**Question:** Can you prevent checkpoint creation from inside a virtual machine?

**Answer:** No. A virtual machine has no awareness of checkpoints, and there is no way to prevent checkpoint creation from inside a virtual machine.

## Module Review and Takeaways

### Review Question(s)

**Question:** Why would you deploy Client Hyper-V to a Windows client computer in a corporate environment?

**Answer:** Users can use Client Hyper-V to work with Hyper-V-based virtual machines for troubleshooting and testing purposes. You also can use it as an isolated test environment or for running multiple operating systems on the same computer.

**Question:** Why should you not use virtual machine checkpoints for backup and disaster recovery?

**Answer:** Checkpoints enable you to apply older point-in-time snapshots to a virtual machine. However, checkpoints depend on virtual machine files, and if those files are not available, you cannot use checkpoints even if checkpoint files are still available. Therefore, if the physical disk on which a virtual machine stores files fails, you will not be able to recover the virtual machine only by using checkpoint files.

**Question:** Can you create a checkpoint of a virtual machine that is turned off?

**Answer:** Yes. You can create a checkpoint of a virtual machine as long as it is not in a paused state. If you create a checkpoint of a virtual machine that is in the off state, it will be smaller than the checkpoint of a running virtual machine because the checkpoint will not contain virtual machine memory.

**Question:** When you open Windows PowerShell and run the **New-VM** cmdlet to create a new virtual machine, you get an error that **New-VM** is not recognized as the name of a cmdlet. What could be the most probable reason for such an error?

**Answer:** **New-VM** is one of the cmdlets in the Hyper-V module for Windows PowerShell. The most probable reason for the error is that the Hyper-V module is not available on the computer. If you want to use the cmdlet, you should turn on the Hyper-V module for Windows PowerShell feature.

### Tools

Tool	Description	Where to find it
Hyper-V Manager	Management console for Client Hyper-V	Start screen
Hyper-V Virtual Machine Connection tool	Connect directly to local or remote virtual machines without opening Hyper-V Manager	Start screen

# Lab Review Questions and Answers

## Lab: Configuring Client Hyper-V

### Question and Answers

**Question:** Why did you have to use a native boot from a Windows 8.1 virtual hard disk to complete this lab?

**Answer:** An operating system that performs virtualization has to run directly on the computer's hardware. You cannot turn on the Hyper-V feature if Windows 8.1 is running on a virtual machine. Therefore, you had to use native boot from a Windows 8.1 virtual hard disk for this lab.

**Question:** In the lab, you created a private virtual switch to connect to the virtual machine. Would a private virtual switch be the logical choice if you were using the virtual machine for testing Windows Updates? Why or why not?

**Answer:** A private virtual switch would limit the virtual machine to connectivity with other virtual machines that are running on the same Windows 8.1 Client Hyper-V. This would not be a good choice for Windows Updates because the computer will need Internet connectivity to download the updates. The external virtual switch would be best suited for a virtual machine that you are using to test Windows Updates.