

OFFICIAL MICROSOFT LEARNING PRODUCT

# 20697-2B

**Deploying and Managing Windows 10  
Using Enterprise Services**

*Companion Content*

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Revised July 2013

# Module 1

## Managing Desktops and Devices in an Enterprise Environment

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## Lesson 1

# Managing Windows 10 in the Enterprise

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## Resources

### Overview of Windows 10

 **Additional Reading:** For more information about the new features in Windows 10, refer to What's new in Windows 10 at <http://aka.ms/sfakvk>.

### Demonstration: Exploring Windows 10 Features

#### Demonstration Steps

1. Sign in to LON-CL1 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
2. Right-click on the Start hint, and then discuss each of the following options as a way of quickly accessing Windows 10 settings:
  - Programs and Features
  - Power Options
  - Event Viewer
  - System
  - Device Manager
  - Network Connections
  - Disk Management
  - Computer Management
  - Command Prompt
  - Command Prompt (Admin)
  - Task Manager
  - Control Panel
  - File Explorer
  - Search
  - Run
  - Shut down or sign out
  - Desktop
3. Right-click on the taskbar, and then click **Properties**.
4. Click **Navigation**.
5. On the **Navigation** tab, select the **Replace Command Prompt with Windows PowerShell in the menu when I right-click the lower-left corner or press Windows key+X** check box, and then click **OK**.
6. Right-click on the Start hint, and then verify that Windows PowerShell and Windows PowerShell (Admin) display.
7. Click **Windows PowerShell (Admin)**.
8. In the top left corner of the Administrator: Windows PowerShell window, click the **Windows PowerShell** icon, and then click **Properties**.

9. On the **Options** page, verify that **Enable Ctrl Key Shortcuts** is enabled, and then click **OK**.
10. In the Administrator: Windows PowerShell window, type the following command, and then press Enter:

```
Get-NetIPConfiguration
```

11. Use the mouse cursor to select the output of the command, and then to copy the output, press the **CTRL+C** keys.
12. In the search taskbar, type **Notepad**, and then click **Notepad**.
13. In Notepad, press **CTRL+V** to paste the output copied from Windows PowerShell into Notepad.
14. Right-click on the Start hint, and then click **Programs and Features**.
15. In the Programs and Features window, click **Turn Windows features on or off**.
16. In the Turn Windows features on or off window, click **Isolated User Mode**, and then click **OK**.
17. On the **Windows Features** page, click **Restart Now**.
18. If prompted, click **Restart anyway**.
19. After completing the demonstration, revert 20697-2B-LON-DC1 and 20697-2B-LON-CL1

## Lesson 2

# Managing a Mobile Workforce

### Contents:

Question and Answers

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## Question and Answers

### Discussion: What Challenges Exist when Managing Mobile Users?

**Question:** How many users in your organization use laptop computers, tablets, or convertible devices?

**Answer:** Answers will vary depending on the student's organization.

**Question:** What is the biggest challenge you have faced in managing laptop computers, tablets, or convertible devices in your organization?

**Answer:** Answers will vary depending on the student's organization.

**Question:** How often do remote users connect their computers to the organizational network?

**Answer:** Answers will vary depending on the student's organization.

**Question:** Which technologies do you use to manage remote users?

**Answer:** Answers will vary depending on the student's organization.

## Lesson 3

# Supporting Devices in the Enterprise

### Contents:

Question and Answers

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## Question and Answers

### Discussion: How Are You Currently Managing Mobile Devices?

**Question:** Is there a policy in place at your organization that lists approved mobile devices?

**Answer:** Answers will vary depending on the student's organization.

**Question:** What operating systems are mobile device users at your organization using?

**Answer:** Answers will vary depending on the student's organization.

**Question:** Do you allow mobile device users at your organization to access sensitive internal organizational data and applications?

**Answer:** Answers will vary depending on the student's organization.

**Question:** What mobile device management technologies do you use to ensure that mobile devices are free of malware and can be wiped remotely if the user loses the device or leaves the organization?

**Answer:** Answers will vary depending on the student's organization.

# Lab Review Questions and Answers

## Lab: Planning for Windows 10 and Device Management in the Enterprise

### Question and Answers

**Question:** Which technology should you use to ensure that documents created by users at A. Datum can only be opened by other users A. Datum, and not by anyone outside the organization?

**Answer:** Azure RMS enables organizations to control dissemination of information. You can use Azure RMS to stop anyone outside the organization from opening a protected document.

**Question:** Which type of cloud service should you use to host the organization's virtual machines after the on-premises virtualized environment is decommissioned?

**Answer:** You should use an IaaS cloud service to host its virtual machines.

**Question:** What technology can you leverage to allow users of iOS and Android-based tablets access to applications that run only on computers running Windows operating systems?

**Answer:** You can leverage Azure RemoteApp. This technology allows users of devices with the iOS and Android operating systems to use applications that run on Windows operating systems. This is accomplished by streaming the presentation of the application from servers hosted in Microsoft datacenters to devices with the Azure RemoteApp client installed.

**Question:** Which cloud-based technology could you use to deploy applications to the sales team laptops that are running Windows 10?

**Answer:** You could use Intune to deploy applications to the laptops.

**Question:** Which cloud-based technology could you use to perform software and hardware inventory on the sales team laptops that are running Windows 10?

**Answer:** You could use Intune to perform software and hardware inventory on the laptops.

# Module 2

## Deploying Windows 10 Enterprise Desktops

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## Lesson 1

# Overview of Windows 10 Enterprise Deployment

### Contents:

Question and Answers

3

## Question and Answers

### Question:

Categorize each item in the appropriate category. Indicate your answer by writing the category number to the right of each item.

Items	
1	Existing Windows 8.1 installation
2	Computer without a recently purchased operating system
3	Existing Windows Vista installation
4	Existing Windows 7 installation
5	Computer turned in for reissue and a mandatory wipe of media
6	User has an old computer that is being replaced with a newer model
7	Local installation and users want to keep their apps, data, and settings on the same computer

Category 1	Category 2	Category 3
In-place upgrade	New deployment	Desktop migration

### Answer:

Category 1	Category 2	Category 3
In-place upgrade	New deployment	Desktop migration
Existing Windows 8.1 installation Existing Windows 7 installation Local installation and users want to keep their apps, data, and settings on the same computer	Computer without a recently purchased operating system Computer turned in for reissue and a mandatory wipe of media	Existing Windows Vista installation User has an old computer that is being replaced with a newer model

Lesson 2

## Customizing Enterprise Desktop Deployments

### Contents:

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Demonstration: Customizing Windows PE	5
Demonstration: Creating Answer Files by Using Windows SIM	6
Demonstration: How to Use Sysprep to Prepare Reference Computers	7

## Question and Answers

**Question:** You used Windows PowerShell to add various .cab packages to the Windows PE image. What other tool could you use to perform the same function?

- ( ) Copyype.cmd
- ( ) DISM
- ( ) Sysprep
- ( ) Windows SIM
- ( ) An answer file

**Answer:**

- ( ) Copyype.cmd
- (√) DISM
- ( ) Sysprep
- ( ) Windows SIM
- ( ) An answer file

## Demonstration: Customizing Windows PE

### Demonstration Steps

#### Create the directory structure to support building a Windows PE image

1. On LON-CL1, open the **Start** menu, click **All apps**, scroll down, select and expand **Windows Kits**, right-click **Deployment and Imaging Tools Environment**, and then click **Run as administrator**.
2. In the Administrator: Deployment and Imaging Tools Environment window, create the directory structure for 64-bit architecture by typing the following command, and then pressing Enter:

```
Copyype amd64 E:\Winpe64
```

3. On the taskbar, click **File Explorer**.
4. In the navigation pane, expand **Allfiles (E:)**, expand **WinPE64**, expand **Media**, and then click **Sources**.
5. Note the size of the Boot.wim file. It will be 212,277 kilobytes (KB).
6. Close File Explorer.
7. On the taskbar, in the **Search the web and Windows** text box, type **PowerShell**, and then in the returned list, right-click **PowerShell**, and then select **Run as Administrator**.
8. In the Administrator: Windows PowerShell window, mount the Boot.wim image by typing the following command, and then pressing Enter:

```
Mount-WindowsImage -ImagePath E:\Winpe64\Media\Sources\Boot.wim -Index 1 -Path E:\Winpe64\Mount
```

9. To add Hyper-V drivers to the Windows PE image, type the following command, and then press Enter:

```
Add-WindowsDriver -Path E:\winpe64\mount -Driver E:\Labfiles\Mod02\HyperVx64 - Recurse -ForceUnsigned
```

10. The non-Microsoft drivers that you injected into the image are listed. Confirm the last one on the list has a published name of "oem9.inf".
11. To add support for the Windows PowerShell command-line interface to the Windows PE image, type the following commands, pressing Enter after each:

```
CD "C:\Program Files (x86)\Windows Kits\10\Assessment and deployment kit\Windows
preInstallation Environment\amd64\WinPE_OCs"
Add-WindowsPackage -Path E:\winpe64\mount -PackagePath .\WinPE-NetFX.cab
Add-WindowsPackage -Path E:\winpe64\mount -PackagePath .\WinPE-Scripting.cab
Add-WindowsPackage -Path E:\winpe64\mount -PackagePath .\WinPE-WMI.cab
Add-WindowsPackage -Path E:\winpe64\mount -PackagePath .\WinPE-PowerShell.cab
```

 **Note:** After each cmdlet, ensure that the operation completes successfully. Additionally, note that each .cab file can take several minutes to be added. Additionally, note that the results return False for Online and RestartNeeded. This is expected and does not mean the operation failed in any way.

### Dismount and save the Windows PE image

1. Commit the changes to the Windows PE image by typing the following command, and then pressing Enter:

```
Dismount-WindowsImage -Path E:\winpe64\mount -Save
```

 **Note:** To avoid syntax errors, copy and paste the commands into the Windows PowerShell command prompt from the E:\Labfiles\Mod02\Mod02\_DISM\_Powershell.txt file.

2. Close all open windows. Leave the virtual machines running for the next demonstration.

## Demonstration: Creating Answer Files by Using Windows SIM

### Demonstration Steps

#### Create an answer file by using Windows SIM

1. Open the **Start** menu, click **All apps**, and then scroll down to and expand **Windows Kits**. In the list, locate and then click **Windows System Image Manager**.
2. In Windows System Image Manager (SIM), click **File**, and then click **Select Windows Image**.
3. In the **Select a Windows Image** dialog box, browse to the **E:\Labfiles\ISO\Sources** folder, click **Install\_Windows 10 Enterprise Evaluation.clg**, and then click **Open**.
4. In the Answer File pane, right-click **Create or open an answer file**, and then click **Open Answer File**.
5. In the **Open** dialog box, browse to the **C:\Program Files (x86)\Windows Kits\10\Assessment and Deployment Kit\Deployment Tools\Samples\Unattend** folder, select **Autounattend\_x64\_BIOS\_sample.xml**, and then click **Open**.

 **Note:** Explain that you are using the sample file as a starting point and that you will be customizing it soon.

6. To associate the answer file with the image, in the Windows SIM pop-up window, click **Yes**.
7. In Windows SIM, click **File**, and then click **Save Answer File As**.

8. In the **Save As** dialog box, click **Desktop**, in the **File name** text box, type **Autounattend**, and then click **Save**.

### Add and configure components and packages

1. In the Answer File pane, under the Components node, explain the settings that import with the sample file as listed in the following three steps.
2. Expand **1 WindowsPE**, expand the **amd64\_Microsoft-Windows-Setup\_neutral** component, and then click **UserData**.
3. In the **FullName** text box, type *your name*, and then in the **Organization** text box, type **Adatum**.
4. Expand **UserData**, and then click **ProductKey**. In the ProductKey Properties pane, right-click **Key**, and then click **Help**. The Windows Unattended Setup Reference window displays. Point out how the help file shows the format of the values that you can enter. Close the window.
5. In the Windows Image pane, under Components, expand **amd64\_Microsoft-Windows-Shell-Setup\_10.0.10240.16384\_neutral**. You might want to maximize the Windows SIM window to read the contents of the Component area.
6. Right-click **OEMInformation**, and then select **Add Setting to Pass 7 oobeSystem**.
7. In the Answer File pane, select **OEMInformation**, and then in the **Manufacturer** text box, type **A. Datum Corporation**.
8. In the **SupportURL** text box, type **http://www.adatum.com**.
9. In the **Support Hours** text box, type **6 am to 8 pm**.
10. In the **SupportPhone** text box, type **555-555-5555**.
11. In the Windows Image pane, expand **Packages**, expand **Foundation**, right-click **amd64\_Microsoft-Windows-Foundation-Package\_10.0.10240.16384\_**, and then select **Add to Answer File**.
12. In the Answer File pane, select **amd64\_Microsoft-Windows-Foundation-Package\_10.0.10240.16384\_**.
13. In the Microsoft-Windows-Foundation-Package Properties pane, click **Microsoft-Hyper-V-All**, click the drop-down arrow, and then select **Enabled**.

### Validate and save the answer file

1. In Windows SIM, click **Tools**, and then click **Validate Answer File**.
2. In Windows SIM, click **File**, and then click **Save Answer File**.
3. Leave the Windows SIM window open.
4. On the desktop, open the **Autounattend.xml** file with Notepad, and then examine the entries.



**Note:** Leave the virtual machine running for the next demonstration.

## Demonstration: How to Use Sysprep to Prepare Reference Computers

### Demonstration Steps

1. On LON-CL4, on the taskbar, in the **Search the web and Windows** text box, type **cmd**, right-click **Command Prompt**, and then click **Run as administrator**. In the **User Account Control** dialog box, click **Yes**.
2. In the Administrator: Command Prompt window, type the following command, and then press Enter.

```
CD C:\Windows\System32\Sysprep
```

3. In the Administrator: Command Prompt window, type the following command, and then press Enter.

```
Sysprep /audit /reboot
```

4. After the restart, the System Preparation Tool 3.14 will reopen. Select the **Generalize** check box, in the **System Cleanup Action** drop-down list, select **Enter System Out-of-box Experience (OOBE)**, in the **Shutdown Options** drop-down list, select **Shutdown**, and then click **OK**.

## Lesson 3

# Deploying Windows 10 by Using MDT

### Contents:

Question and Answers	10
Demonstration: Configuring the MDT Deployment Share	10
Demonstration: Configuring a Task Sequence and Updating the Deployment Share	12

## Question and Answers

**Question:** In the CustomSettings.ini file that you incorporated into your deployment share, what did the [DefaultGateway] section do?

- ( ) It set the default gateway for the target computer.
- ( ) It added the IP address to the gateway.
- ( ) It gathered the target computer's default gateway address, which is used to locate the computer.
- ( ) It opened a command prompt.
- ( ) It added Internet Protocol version 4 (IPv4) to the target computer

**Answer:**

- ( ) It set the default gateway for the target computer.
- ( ) It added the IP address to the gateway.
- (√) It gathered the target computer's default gateway address, which is used to locate the computer.
- ( ) It opened a command prompt.
- ( ) It added Internet Protocol version 4 (IPv4) to the target computer

## Demonstration: Configuring the MDT Deployment Share

### Demonstration Steps

#### Create an MDT deployment share

1. If necessary, on 20697-2B-LON-CL1, in the localhost Virtual Machine Connection window, click **Media**, point to **DVD Drive**, and then click **Insert Disk**.
2. In the **Open** dialog box, browse to **C:\Program files\Microsoft Learning\20697-2\Drives**, click **Win10Ent\_Eval.iso**, and then click **Open**.
3. On LON-CL1, open the **Start** menu, click **All apps**, scroll down to and expand the **Microsoft Deployment Toolkit**, and then click **Deployment Workbench**.
4. In the Deployment Workbench, click the **Deployment Shares** node, right-click the **Deployment Shares** node, and then click **New Deployment Share**.
5. In the New Deployment Share Wizard, on the **Path** page, in the **Deployment share path** field, ensure that C:\DeploymentShare is listed, and then click **Next**.
6. On the **Share** page, click **Next**.
7. On the **Descriptive Name** page, note that this name, not the path, will appear in the Deployment Workbench, and then click **Next**.
8. Review the **Options** page with the class, explaining what each option does. Ensure that the **Ask for a product key** and **Ask to set the local Administrator password** check boxes are cleared, and then click **Next**.
9. On the **Summary** page, click **Next**.
10. On the **Confirmation** page, click **View Script**. Notepad opens with the Microsoft PowerShell cmdlets to perform the action just completed in a script named NewDP.ps1. Explain that because the MDT 2013 console uses a provider written in Windows PowerShell, the corresponding script for each completed action is generally available. You can save these scripts for documentation purposes or for repeating similar actions on other systems by changing real value names.

11. Close Notepad without saving the script, and then click **Finish**.

### Examine the deployment share properties

1. In the Deployment Workbench, expand the **Deployment Shares** node, and then expand **MDT Deployment Share**.
2. Briefly discuss each item shown.
3. Right-click **MDT Deployment Share**, and then click **Properties**.
4. Review the **General** tab, discuss the settings that were configured through the wizard, and then point out that the **Platforms Supported** settings are selected by default.
5. Click the **Rules** tab, and then explain that the rules are stored in the CustomSettings.ini file in the Control folder, which is based directly on the options that you choose during share creation.
6. Click **Edit Bootstrap.ini**. Explain that this file also is in the Control folder.
7. Close Notepad.
8. Click the **Windows PE** tab. Explain that these settings control the boot media's creation. Note the **Platform** drop-down list at the top. Selecting different architectures here affects the file names below. Review the **Features** tab and the **Drivers and Patches** tab. Explain that you need to configure the settings separately for both platform types.
9. Click the **Monitoring** tab. Explain that turning on monitoring opens up ports 9800 and 9801 that can be used to send update information back to a management system, such as System Center 2012 Configuration Manager.
10. Click **OK** to close the **MDT Deployment Share Properties** dialog box.

### Import operating system files into the deployment share

1. Right-click the **Operating Systems** node, and then click **Import Operating System**.
2. In the Import Operating System Wizard, on the **OS Type** page, select the **Full set of source files** option, and then click **Next**.
3. On the **Source** page, in the **Source directory** text box, type **D:\**, and then click **Next**.
4. On the **Destination** page, click **Next**.
5. On the **Summary** page, click **Next**. It takes a few minutes to copy the files.
6. On the **Confirmation** page, once again note the **View Script** button, but do not click it. Click **Finish**.

### Create a subfolder in the Out-of-Box Drivers folder

1. Right-click the **Out-of-Box Drivers** node, and then click **New Folder**.
2. In the New Folder Wizard, on the **General Settings** page, in the **Folder name** text box, type **Intellipoint Drivers**, and then click **Next**.
3. On the **Summary** page, click **Next**.
4. On the **Confirmation** page, click **Finish**.

### Import device drivers into the deployment share

1. Expand **Out-of-Box Drivers**, right-click the **Intellipoint Drivers** folder, and then click **Import Drivers**.
2. In the Import Driver Wizard, on the **Specify Directory** page, in the **Driver source directory** text box, type **\\LON-DC1\E\$\Labfiles\Mod02\Drivers\point64**, and then click **Next**.
3. On the **Summary** page, click **Next**.

4. On the **Confirmation** page, click **Finish**.

## Demonstration: Configuring a Task Sequence and Updating the Deployment Share

### Demonstration Steps

#### Create a standard client task sequence

1. On LON-CL1, in the Deployment Workbench, in the MDT Deployment Share, right-click the **Task Sequences** node, and then click **New Task Sequence**.
2. In the New Task Sequence Wizard, on the **General Settings** page, in the **Task sequence ID** text box, type **LON-001**.
3. In the **Task sequence name** text box, type **Deploy Windows 10 Enterprise**, and then in the **Task sequence comments** text box, type **Demonstration of a Windows 10 Enterprise task sequence deployment**. Click **Next**.
4. On the **Select Template** page, from the task sequence templates drop-down list, select the **Standard Client Task Sequence** (which is the default), and then click **Next**.
5. On the **Select OS** page, click **Windows 10 Enterprise Evaluation in Windows 10 Enterprise Evaluation x64 install.wim**, and then click **Next**.
6. On the **Specify Product Key** page, select the **Do not specify a product key at this time** option, and then click **Next**.
7. On the **OS Settings** page, in the **Full Name** text box, type **Administrator**. In the **Organization** text box, type **Adatum**, and then click **Next**.
8. On the **Admin Password** page, in the **Administrator Password** and **Please confirm Administrator Password** text boxes, type **Pa\$\$w0rd**, and then click **Next**.
9. On the **Summary** page, click **Next**.
10. On the **Confirmation** page, click **Finish**.

#### Edit the standard client task sequence

1. In the navigation pane, click the **Task Sequences** node, right-click the **Deploy Windows 10 Enterprise** task sequence, and then click **Properties**.
2. Discuss the properties on the **General** tab.
3. Click the **Task Sequence** tab, and then briefly discuss the task steps in the task sequence.
4. Expand **Preinstall**, and then click **Inject Drivers**. In the **Choose a selection profile** drop-down list, select **Nothing**.
5. Click the **OS Info** tab, and then briefly discuss the information on the **OS Info** tab.
6. To close the Deploy Windows 10 Enterprise Properties window, click **OK**.

#### Update a deployment share

1. Right-click **MDT Deployment Share**, and then click **Update Deployment Share**.
2. In the Update Deployment Share Wizard, on the **Options** page, click **Next**.
3. On the **Summary** page, click **Next**.
4. On the **Progress** page, discuss the events being shown. This task could run for up to 15 minutes.
5. On the **Confirmation** page, click **Finish**.

## Lesson 4

# Maintaining a Windows 10 Installation

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## Question and Answers

### Question:

Put the following steps in order by numbering each.

	Steps
	Open Windows ICD.
	Click New provisioning package.
	Enter project details information.
	Choose which settings to view and configure.
	Import a provisioning package (optional).
	Click Finish.
	Add available customizations.
	Save the project.
	Deploy or execute the provisioning package.

### Answer:

	Steps
1	Open Windows ICD.
2	Click New provisioning package.
3	Enter project details information.
4	Choose which settings to view and configure.
5	Import a provisioning package (optional).
6	Click Finish.
7	Add available customizations.
8	Save the project.
9	Deploy or execute the provisioning package.

## Resources

### Using DISM for Installation and Image Maintenance



**Additional Reading:** A complete reference for the various DISM command-line options can be found at <http://go.microsoft.com/fwlink/?LinkId=378215&clcid=0x409>.

## Demonstration: Using Windows ICD to Create Provisioning Packages

### Demonstration Steps

#### Create a provisioning package

1. On LON-CL1, click **Start**, and then click **All Apps**. Scroll down the list, select and expand **Windows Kits**, scroll down within **Windows Kits**, and then click **Windows Imaging and Configuration Designer**.
2. After the Windows ICD console loads, click the **New provisioning package** icon. The New Project Wizard will start.
3. On the **Enter project details** page, in the **Name** text box, type **DemoProvPackage**, in the **Description** text box, type **Demonstration of a Provisioning Package**, and then click **Next**.
4. On the **Choose which settings to view and configure** page, select **Common to all Windows editions**. Take a moment to discuss the other choices on this page, and then click **Next**.
5. On the **Import a provisioning package** page, note that you can perform this action by typing the name of a package in the text box and then clicking **Browse**. However, explain that because this the first time you are running the New Project Wizard, there are no previous packages to import. Explain that you could import one from another computer that is running Windows ICD and that had created one. Click **Finish**.
6. The DemoProvPackage window appears, and in the **Available customizations** list, note the **View** drop-down list. There are three items within it: **All settings**, **Common OEM settings**, and **Common IT Pro settings**. The default is **All settings**. Ensure that **All settings** is selected.
7. Two nodes will be available below **View**: **Deployment assets** and **Runtime settings**. Refer to the table in the previous topic for details about the items found in these nodes. Expand **Runtime settings**.
8. Scroll down, expand **ConnectivityProfiles**, and then select **WiFiSense**.
9. In the details pane, under the ConnectivityProfiles/WifiSense/FirstBoot section, in the WiFiSenseAllowed item, note the drop-down list. It has three settings: **NOT CONFIGURED**, **Enabled**, and **Disabled**. Select **Disabled**.
 

 **Note:** Below the details pane is a section that loads a Microsoft webpage that explains the above section and the item being selected. Additionally, note that when an item is selected and a change is made to its default setting, the Selected customizations area on the right-hand side of the console will get an expandable Runtime settings item in it, with only the items that you changed in the expandable view.
10. In the Runtime settings console tree, select and expand **Policies**, and then select **Defender**.
11. In the sub-items under the Defender node, select **Excluded paths**. In the details pane, in the **Excluded paths** text box, type **E:\Labfiles**.
12. Collapse the **Defender** node, and then below it, expand the **WiFi** node. Select the first sub-item, **AllowAutoConnectToWiFiSenseHotspots**, and in the details pane, select the **NOT CONFIGURED** drop-down list item, and then change it to **No**.
13. On the menu bar above, in the **Export** drop-down list, select **Provisioning package**.
14. In the Build window, under Owner, in the **OEM** drop-down list, change the value to **IT Admin**, and then click **Next**.
15. On the **Select security details for the provisioning package** page, click **Next**.

16. On the **Select where to save the provisioning package** page, click **Next**.
17. On the **Build the provisioning package** page, click the **Build** button, and then click **Finish**.

### **Create a Windows image customization**

1. On the menu bar, click **Start page**.
2. In the Create area, click the **New Windows image customization** tile.
3. In the New Project Wizard, in the **Name** text box, type **DemoWinImageCust**, in the **Description** text box, type **Demonstration of creating a Windows image customization**, and then click **Next**.
4. On the **Select imaging source format** page, select **The Windows image is based on a Windows image (WIM) file**, and then click **Next**.
5. On the **Select image** page, click **Browse**, in the Open window, in the console tree, select **Allfiles (E:\)**, expand **Labfiles**, and then select **Mod02**. In the details pane, select **install.wim**, click **Open**, and then click **Next**.
6. On the **Import a provisioning package (optional)** page, click **Browse**, in the Open window, in the details pane, double-click **DemoProvPackage**, select **DemoProvPackage.ppkg**, click **Open**, and then click **Finish**.
7. In the Import successful window, click **OK**.
8. On the **DemoWinImageCust** project page, on the menu bar, click the **Create** drop-down list, and then select **Clean install media**.
9. On the **Select the image format to build** page, select **WIM**, and then click **Next**.
10. On the **Deployment media** page, select **Save to a folder**, and then click **Next**.
11. On the **Select where to save the files** page, click **Browse**.
12. In the Browse for folder window, expand **E:\Labfiles**, click **Make New Folder**, name the folder **WICD1**, click **OK**, and then click **Next**.
13. On the **Build the Windows image** page, click **Build**.
14. When the **All done!** page appears, click **Finish**.
15. Close all open windows, and then sign out.

### **Revert virtual machines**

When you finish the demonstration, revert the virtual machines to their initial state. To do this, perform the following steps:

1. On the host computer, start Hyper-V Manager.
2. In the **Virtual Machines** list, right-click **20697-2B-LON-DC1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for 20697-2B-LON-CL1 and 20697-2B-LON-CL4.

## Lesson 5

# Volume License Activation for Windows 10

### Contents:

Question and Answers

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## Question and Answers

### Question:

Categorize each item in the appropriate category. Indicate your answer by writing the category number to the right of each item.

Items	
1	Computers belonging to a domain automatically activated
2	Needs 25 clients to request activation before granting any activation
3	You can see problems with license activation
4	Enterprise administrator adds product key to domain controller
5	Needs five servers to request activation before granting activation
6	Maintains database of activated products
7	Cannot activate Windows 7 computers
8	Can activate workgroup and stand-alone computers
9	Discovers products and operating systems that need activation

Category 1	Category 2	Category 3
Active Directory-based activation	KMS activation	VAMT

### Answer:

Category 1	Category 2	Category 3
Active Directory-based activation	KMS activation	VAMT

Category 1	Category 2	Category 3
<p>Computers belonging to a domain automatically activated</p> <p>Enterprise administrator adds product key to domain controller</p> <p>Cannot activate Windows 7 computers</p>	<p>Needs 25 clients to request activation before granting any activation</p> <p>Needs five servers to request activation before granting activation</p> <p>Can activate workgroup and stand-alone computers</p>	<p>You can see problems with license activation</p> <p>Maintains database of activated products</p> <p>Discovers products and operating systems that need activation</p>

## Module Review and Takeaways

### Review Question(s)

**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 their old Windows 7 computer transferred to their new computer. How should you perform the Windows 10 installation?

**Answer:** In this scenario, you should perform a side-by-side migration because a new computer and a new set of apps are being used. After installing Windows 10 on the new computer and installing the new apps, you need to migrate the user's documents and settings that are on the Windows 7 computer to the new computer.

**Question:** Why do you need to install Windows ADK along with MDT 2013 Update 1?

**Answer:** Windows ADK provides a number of important subcomponents that you can use with MDT 2013 Update 1, including USMT, Windows PE, DISM, Windows ICD, and Windows SIM.

### Real-world Issues and Scenarios

Windows ICD is a new tool that lets you further finesse images and deployable resources. However, because it is new, many organizations will not know about it. Those organizations need to learn about how Windows ICD can benefit them.

### Tools

Tool	What it Does	Where Found
Deployment and Imaging tools	Create and capture Windows image files, create Windows PE media, use DISM	Part of Windows ADK
Windows SIM	Create and edit answer files	Part of Windows ADK
Windows ICD	Create and edit provisioning packages, and customize Windows images	Part of Windows ADK
Volume Activation Services	Manage volume license activation	Installable role on Windows Server 2012

### Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Cannot find LTI boot media in the Boot folder of the deployment share	You first must run the Update Deployment Share Wizard. It will create all the items in the various deployment share folders.
Sysprep fails when trying to capture the reference image	Remove the system from the domain before trying to run Sysprep.
KMS has been properly set up, but it has not activated any clients	You must meet the threshold requirement before KMS starts activating any clients. The thresholds are Windows Server 2008 and Windows Server

Common Issue	Troubleshooting Tip
	2012: 5; Office 2013: 5; and Windows 7, Windows 8, and Windows 10: 25.

## Lab Review Questions and Answers

### Lab A: Building a Reference Image by Using Windows Assessment and Deployment Kit (ADK) Tools

#### Question and Answers

**Question:** You started the reference computer creation by using a virtual floppy disk. If you are deploying to a physical computer that does not have a floppy disk drive, what is one way you can still start the installation from a DVD and still use an answer file?

**Answer:** If the physical computer can start from a USB drive, you can save the answer file to a USB flash drive instead of a floppy disk. You then put the USB flash drive into a USB port before starting from the installation DVD.

**Question:** When you ran the image capture task in the lab, why did you use drive D instead of drive C for the *CaptureDir* parameter?

**Answer:** By default, Windows PE creates a random access memory (RAM) disk that is labeled as drive X during the Windows PE startup process. The other drive letters on a system's hard drives are exposed to Windows PE, but the drive letters are often remapped with new letters. For example, the reserved 350-megabyte (MB) system recovery drive is mapped as drive C, while the boot drive, which is normally drive C, is mapped as drive D.

### Lab B: Using MDT to Deploy Windows 10 Desktops

#### Question and Answers

**Question:** When you add an operating system to the Operating System node, you could have used the image that you created in Lab A: "Building a Reference Image by Using Windows Assessment and Deployment Kit (ADK) Tools." Why then did you still need to add the ISO image from the DVD?

**Answer:** If you had selected the Win10.wim that you made in Lab A, you would note that it did not have the setup files that are normally associated with an ISO image. You then would need to select the **Copy Windows 7, Windows Server 2008 R2, or later setup files from the specified path** option, which imports setup files from the ISO image to add to the Win10.wim that you created earlier.

**Question:** What is the default task sequence template that is used to create a task sequence?

**Answer:** Standard Client Task Sequence is the default task sequence template.

### Lab C: Maintaining a Windows 10 Installation by Using Windows ICD

#### Question and Answers

**Question:** The last step of the lab created the WICD1 folder, which contains what would normally be in an ISO image file. What step would you have to do next to use this folder to deploy an actual image?

**Answer:** You would need software that can create an ISO image file out of the contents of the folder.

**Question:** What two types of projects can you create in Windows ICD?

**Answer:** You can create a provisioning package or a Windows image customization.

# Module 3

## Managing User Profiles and User State Virtualization

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## Lesson 1

# Managing User Profiles and User State

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## Question and Answers

**Question:** You can configure user profile settings only in the user part of Group Policy.

- True
- False

**Answer:**

- True
- False

**Question:** Which of the following elements are included in user state? Select all that apply.

- Font and font size selection in Notepad
- Wordpad.exe
- HKEY\_CURRENT\_CONFIG registry hive
- Shortcuts on the desktop
- Restore point

**Answer:**

- Font and font size selection in Notepad
- Wordpad.exe
- HKEY\_CURRENT\_CONFIG registry hive
- Shortcuts on the desktop
- Restore point

**Question:** An administrator can configure the user profile type that users will have when they sign in to a Windows 10 computer.

- True
- False

**Answer:**

- True
- False

## What Is User State?

**Question:** Does user state include installed applications?

**Answer:** No. User state includes user settings, Windows 10 operating system settings, and user data files. Installed applications are not part of user state, but they should be available on the computer on which a user signs in to be able to view the content of data files.

**Question:** Is user state contained in a single file?

**Answer:** No. User state is not contained in a single file. User state defines the user environment and is composed of many files, which include user settings, user registry, app settings, and application data.

## How a User Profile Maintains User State

**Question:** How can you configure Windows 10 to utilize user profiles?

**Answer:** By default, the Windows 10 operating system utilizes user profiles without any additional configuration. In fact, you cannot configure Windows 10 not to use user profiles for storing user state.

**Question:** Where are local user profiles stored in Windows 10?

**Answer:** Local user profiles are stored as subfolders in the C:\Users folder. Each subfolder is created when a user signs in for the first time and has the same name as the user's sign-in name.

## User Profile Types

**Question:** Can administrators change the user profile type locally on a Windows 10 computer?

**Answer:** If a user is not signed in, an administrator can locally select to use a cached local copy of the roaming user profile instead of the roaming profile for the user on this particular Windows 10 computer. Any other change must be made in Active Directory Domain Services (AD DS), where an administrator can modify user properties, or on a file server, where an administrator can rename Ntuser.dat to Ntuser.man.

**Question:** Can you configure a domain user with a mandatory user profile only by modifying user properties in AD DS?

**Answer:** No. You can configure a user with a roaming user profile by modifying user properties in AD DS. However, to configure a user with a mandatory user profile instead of a roaming user profile, you need to rename the Ntuser.dat file to Ntuser.man.

## Options for Minimizing the Size of a Profile

**Question:** How can you enforce size limits on local user profiles in Windows 10?

**Answer:** You can enforce size limits on local user profiles only by configuring disk quotas on the local Windows 10 volume where user profiles are stored. If you use any other option, for example, redirecting folders or limiting profile sizes by using Group Policy, limits are not enforced and local user profiles can grow larger than configured.

**Question:** What is the most transparent way to reduce user profile sizes?

**Answer:** The most transparent way to reduce user profile sizes is to use Folder Redirection. Users save their files to redirected folders in the same way; however, files are no longer stored in their user profiles, but are instead saved in folders that are outside of their user profiles.

## Group Policy Settings for Managing Profiles

**Question:** Can you synchronize the local copy of a roaming user profile with the network copy without the user signing out?

**Answer:** No. The local copy of a roaming user profile synchronizes with the network copy only when the user signs in or out. If needed, you can configure the Group Policy setting to **Set the schedule for background upload of a roaming user profile's registry file while user is logged on**. In this case, a local copy of the user's registry hive, Ntuser.dat, can synchronize with the network copy without the user signing out.

**Question:** What are the two ways to prevent synchronization of user changes with the server copy of the profile if the user is configured with a roaming profile?

**Answer:** If you want to prevent user changes from synchronizing with the server copy of a profile, you can configure the user with a mandatory user profile, or you can set the Group Policy setting to **Prevent Roaming Profile changes from propagating to the server**.

## Lesson 2

# Implementing User State Virtualization by Using Group Policy

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## Question and Answers

**Question:** You can use Folder Redirection for Windows 10 computers that are joined to Microsoft Azure Active Directory.

- True
- False

**Answer:**

- True
- False

**Question:** Which of the following four features or products enables users to access their files transparently while minimizing network traffic?

- Folder Redirection
- Roaming user profiles
- Primary Computer
- UE-V

**Answer:**

- Folder Redirection
- Roaming user profiles
- Primary Computer
- UE-V

**Question:** Which two limitations can you apply to a computer that is not a user's primary computer?

- The user cannot sign in.
- A roaming profile is not used.
- Redirected folders are not available.
- The user can sign in only during a limited time.
- The user cannot connect to the Internet.

**Answer:**

- The user cannot sign in.
- A roaming profile is not used.
- Redirected folders are not available.
- The user can sign in only during a limited time.
- The user cannot connect to the Internet.

## What Is User State Virtualization?

**Question:** What must you configure in Windows 10 to isolate user state from the operating system?

**Answer:** Windows 10 utilizes user profiles to isolate user state from the operating system, and you do not need to configure anything to use them.

**Question:** By default, can you use virtualized user state in Windows 10 on multiple domain computers to which a user signs in?

**Answer:** No. By default, virtualized user state in Windows 10 is stored locally and is available only on the Windows 10 computer on which it was created. If you want to duplicate virtualized user state on other domain computers, you must use roaming user profiles or Folder Redirection.

## Folder Redirection with Group Policy

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

**Answer:** Roaming user profiles copy locally when users sign in, and modifications copy back to a network location when they sign out. Redirected folders are on a network location all the time and do not copy locally.

**Question:** Can you use Folder Redirection on a Windows 10 computer that is not a member of AD DS?

**Answer:** No. Folder Redirection is configured in domain Group Policy, and domain Group Policy applies only to computers that are AD DS members.

## Using Primary Computer Settings to Control Profiles

**Question:** Can you configure a user's primary computers list from a Windows 10 computer?

**Answer:** A user's primary computers list is stored in Active Directory in the **msDS-PrimaryComputer** attribute of the user account. By default, you cannot configure a user's primary computer list from a Windows 10 computer. You first must install Remote Server Administration Tools or the Windows PowerShell module for Active Directory.

**Question:** Can you use the Primary Computer setting to control if roaming user profiles and redirected folders are available on all user devices?

**Answer:** No. Primary Computer settings apply only to user devices that are running a Windows 8 or newer operating system and that are members of an AD DS domain.

## Resources

### Folder Redirection with Group Policy



**Additional Reading:** For more about Folder Redirection, refer to Folder Redirection Overview at <http://go.microsoft.com/fwlink/?LinkId=378224>.

### Using Primary Computer Settings to Control Profiles



**Additional Reading:** To learn more about primary computers and Folder Redirection, refer to Deploy Primary Computers for Folder Redirection and Roaming User Profiles at <http://go.microsoft.com/fwlink/?LinkID=291264>.

## Demonstration: Configuring Folder Redirection

### Demonstration Steps

1. On LON-CL1, on the taskbar, click **File Explorer**.
2. In File Explorer, in the navigation pane, right-click **Desktop**, select **Properties**, verify that the Desktop location is C:\Users\adam, and then click **OK**.
3. In the navigation pane, right-click **Documents**, select **Properties**, verify that the Documents location is C:\Users\adam, and then click **OK**.

4. On LON-DC1, on the taskbar, click **Server Manager**. In Server Manager, on the **Tools** menu, click **Group Policy Management**.
5. In the Group Policy Management Console (GPMC), in the navigation pane, expand **Forest:Adatum.com**, expand **Domains**, expand **Adatum.com**, expand the **Marketing** organizational unit (OU), right-click **Marketing**, select **Create a GPO in this domain, and Link it here**, in the **Name** text box, type **Folder Redirection**, and then click **OK**.
6. Right-click **Folder Redirection**, and then click **Edit**.
7. In the Group Policy Management Editor window, under User Configuration, expand **Policies**, expand **Windows Settings**, expand **Folder Redirection**, right-click **Documents**, and then click **Properties**.
8. In the **Documents Properties** dialog box, in the **Setting** drop-down box, select **Basic – Redirect everyone's folder to the same location**.
9. In the **Root Path** text box, type **\\LON-DC1\Folders**, point out how the folder redirects for user Clair, select the **Settings** tab, and then discuss the options that are available on the tab.
10. In the **Documents Properties** dialog box, click **OK**, click **Yes**, close the Group Policy Management Editor window, and then close the GPMC.
11. On the taskbar, click the **File Explorer** icon.
12. In File Explorer, click the **Down Arrow** to the right of the address bar, type **\\LON-DC1**, and then press Enter.
13. In the details pane, double-click **Folders**, and then point out that the share is empty.
14. On LON-CL1, right-click the **Start** icon, select **Command Prompt**, type **gpupdate /force**, press Enter, and then press Y and Enter to sign out.
15. Sign in to LON-CL1 as **Adatum\Adam** with password **Pa\$\$w0rd**. Mention that Adam's user account is in the Marketing OU.
16. On LON-CL1, on the taskbar, click **File Explorer**.
17. In File Explorer, in the navigation pane, right-click **Desktop**, and then select **Properties**. Show that the Desktop location is still C:\Users\adam. Explain that you did not redirect this folder, and then click **OK**.
18. In the navigation pane, right-click **Documents**, and then select **Properties**. Point out that the Documents location is now \\lon-dc1\Folders\Adam. Explain that the location is different because you redirected the folder, and then click **OK**.
19. In the navigation pane, click **Documents**. Right-click anywhere in details pane, select **New**, select **Text Document**, and then type **Demo Document** as the name of the file.
20. Double-click **Demo Document**. The document opens in Notepad. Type your name, close Notepad, and then click **Save**.
21. On LON-DC1, in File Explorer, point out that the Folders share is no longer empty; it has a subfolder named Adam.
22. Sign in to LON-CL2 as **Adatum\Adam** with the password **Pa\$\$w0rd**.
23. On LON-CL2, on the taskbar, click **File Explorer**.
24. In File Explorer, in the navigation pane, right-click **Desktop**, and then select **Properties**. Point out that the Desktop location is C:\Users\adam. Explain that you did not redirect this folder. Point out that there is no **Offline Files** tab, and then click **OK**.

25. In the navigation pane, right-click **Documents**, and then select **Properties**. Point out that the Documents location is \\lon-dc1\Folders\Adam. Explain that the location is on the server because you redirected the folder.
26. Select **Offline Files**. Explain that redirected folders are automatically available offline, and then click **OK**.
27. In the navigation pane, click **Documents**, and then double-click **Demo Document**. Notepad opens the file. Point out that it contains your name, and then close Notepad.

## Lesson 3

# Configuring UE-V

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## Question and Answers

**Question:** UE-V agents are part of the Windows 10 Enterprise operating system.

- True
- False

**Answer:**

- True
- False

**Question:** UE-V can synchronize non-Microsoft application settings as soon as you install them.

- True
- False

**Answer:**

- True
- False

**Question:** Which UE-V component specifies the location in which an application stores its settings?

- UE-V agent
- Settings storage location
- Settings location template
- Settings template catalog
- Settings packages

**Answer:**

- UE-V agent
- Settings storage location
- Settings location template
- Settings template catalog
- Settings packages

## 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.

**Question:** What is the difference between using roaming user profiles and UE-V?

**Answer:** With roaming user profiles, all user settings and data follow users to any computer on which they sign in within an AD DS environment. You cannot control what is included in roaming user profiles, and locally cached copies of roaming user profiles synchronize only during sign-in and sign-out.

With UE-V, you can control which settings synchronize between specified AD DS computers.

Synchronization happens as soon as users close an application, and sign-out is not needed. However, UE-V synchronizes settings only—it does not synchronize data.

## UE-V Components

**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. and at system startup by default.

**Question:** If you use UE-V 2.1 SP1, do you need to use UE-V Generator to synchronize Microsoft Office 2013 application settings?

**Answer:** UE-V Generator is used for creating custom settings templates. Because Office 2013 templates are already included with UE-V 2.1 SP1, you do not need to use UE-V Generator to create them.

## Preparing the UE-V Synchronization Environment

**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 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.

**Question:** Is Group Policy the only way to configure a UE-V agent with the settings storage location?

**Answer:** No. You can configure a UE-V agent with the settings storage location in several different ways. If you install the UE-V agent manually, you must specify the settings storage location on one of the wizard pages during installation. You can also use the *SettingsStoragePath* installation parameter or the **Set-UevConfiguration** cmdlet in the Windows PowerShell command-line interface.

## 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 installs with the UE-V agent. You can access the Company Settings Center from Control Panel, the Start menu, from the UE-V icon in the notification area, and at a command prompt.

**Question:** Can you deploy the UE-V 2.1 agent on Windows 10 computers?

**Answer:** The UE-V 2.1 agent does not support Windows 10 and does not synchronize settings from Windows 10 computers. You need to deploy UE-V 2.1 SP1 on Windows 10 computers.

## 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 is effective when Group Policy is applied on the UE-V client. This can be at sign-in, 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.

**Question:** Can you use local Group Policy to configure UE-V?

**Answer:** You would normally not use local Group Policy to configure UE-V. Local Group Policy applies only to a single computer, but domain Group Policy can apply to multiple or to all domain computers. However, you technically could configure UE-V by using local Group Policy.

## Overview of UE-V Templates

**Question:** Why does the UE-V agent need a UE-V template?

**Answer:** A UE-V agent must know where the settings that should be synchronized are stored. Settings can be stored in the registry or on a file server. A UE-V template specifies where settings are stored, and without it, a UE-V agent would not be able to locate and synchronize them.

**Question:** How can you view the list of UE-V templates that are available to a UE-V agent?

**Answer:** You can view the list of available UE-V templates in the Company Settings Center, by running the **Get-UevTemplates** cmdlet, or by examining the content of the Templates subfolder in the location where the UE-V agent is installed.

## What Is the UE-V Generator?

**Question:** Can UE-V synchronize an application's settings for which it does not have a registered settings location template?

**Answer:** No. A UE-V agent can only synchronize settings of an application for which it has a registered settings location template. If you want to synchronize applications for which UE-V does not have UE-V templates, you can create them on your own by using UE-V Generator.

**Question:** Do you need to copy a custom UE-V settings location template to each computer where a UE-V agent is running to be able to use it?

**Answer:** No. A UE-V agent does use local copies of default UE-V templates, but you can copy custom UE-V templates to a network share, and UE-V agents use it from there. UE-V agents register new UE-V templates from the settings location catalog daily.

## Resources

### Overview of UE-V

 **Additional Reading:** To learn more about MDOP, refer to Microsoft Desktop Optimization Pack at <http://go.microsoft.com/fwlink/?LinkId=392419>.

### Preparing the UE-V Synchronization Environment

 **Additional Reading:** To download the MDOP administrative templates, refer to the Microsoft Desktop Optimization Pack Administrative Templates download page at <http://aka.ms/ppjc2k>.

### Deploying UE-V

 **Additional Reading:** To read more about UE-V, refer to Microsoft User Experience Virtualization (UE-V) 2.x at <http://aka.ms/g2zyjs>.

### Overview of UE-V Templates

 **Additional Reading:** To learn more about the UE-V template gallery, go to <http://go.microsoft.com/fwlink/p/?LinkId=246589>.

## Lesson 4

# Managing User State Migration

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## Question and Answers

**Question:** If you want to use USMT to migrate settings or data that do not migrate by default, you should edit the XML configuration files.

- True
- False

**Answer:**

- True
- False

**Question:** Where can you get USMT?

- In the Support folder on Windows 10 installation media
- In the Sources folder on Windows 10 installation media
- It is included in the default Windows 10 installation
- In Windows ADK
- The MDT

**Answer:**

- In the Support folder on Windows 10 installation media
- In the Sources folder on Windows 10 installation media
- It is included in the default Windows 10 installation
- In Windows ADK
- The MDT

## Overview of User State Migration

**Question:** Does user state always migrate to Windows 10 automatically if you perform an in-place upgrade from a supported operating system?

**Answer:** If you perform an in-place upgrade from a supported operating system to Windows 10, you are prompted, and you have to choose what to keep: personal files, applications and Windows settings, personal files only, or nothing at all. Based on the selection, user state can migrate to Windows 10 automatically or not at all.

**Question:** What is the difference between the PC replace and refresh scenarios?

**Answer:** In the PC replace scenario, you have two different computers, and you need to migrate user settings from one computer to another. In the PC refresh scenario, you have a single computer, and you want to migrate user state from the old operating system on that computer to the new operating system on the same computer, which must be installed in the meantime.

## Determining What to Migrate

**Question:** Your users are utilizing an application that stores data in files with the .xyz extension. Will that data migrate automatically if you use USMT?

**Answer:** If that data is in a location from which all data is migrated by default, for example, in user profiles, then data files with the .xyz extension will migrate automatically. If you store them somewhere else, you need to customize the USMT settings to specify the locations that you want to include in the migration or the .xyz file name extension that should be included in the migration.

**Question:** Do you need to migrate settings and data that are stored in roaming user profiles or that are redirected by using Folder Redirection?

**Answer:** No. You do not need to migrate those settings and data. You only need to identify and migrate settings for locally stored data. Roaming user profiles and redirected folders are not stored locally; they are stored on a file server.

## Overview of the USMT Toolset

**Question:** Do you need to install the Windows Assessment and Deployment Kit (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.

**Question:** What is the easiest way to exclude from a migration some of the settings that USMT migrates by default?

**Answer:** The easiest way to exclude some of the settings that USMT migrates by default is to create a custom XML file. For the settings that you want to exclude from the migration, specify **migrate="no"**.

## Resources

### Determining What to Migrate



**Additional Reading:** For more information about migrations with USMT, refer to What Does USMT Migrate? at <http://go.microsoft.com/fwlink/?LinkId=378229>.

## Module Review and Takeaways

### Review Question(s)

**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 or her profile has not been created yet. A user profile is created when a 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. We recommend this method when you want settings and user data to roam 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 10 computers. What should you use to migrate user settings?

**Answer:** USMT is the best option in this scenario. Migrating user states for 200 computers manually would be too time-consuming. USMT command-line tools can be scripted to automate the migration process.

# Lab Review Questions and Answers

## Lab A: Configuring User Profiles and User State Virtualization

### Question and Answers

**Question:** Which 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 update with it?

**Answer:** UE-V clients update with the settings from the settings location catalog once daily at 3:30 A.M., which is when the scheduled task triggers 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 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 includes or excludes 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 a *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 a capture. Without specifying the XML configuration files, only default data would be captured.

# Module 4

## Managing Desktop and Application Settings by Using Group Policy

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## Lesson 1

# Managing Group Policy Objects

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## Question and Answers

**Question:** To which types of Active Directory objects can you link a GPO? Select all that apply.

- User
- Domain
- Security group
- Site
- OU

**Answer:**

- User
- Domain
- Security group
- Site
- OU

**Question:** Which of the following tools can you use for Group Policy troubleshooting? Select all that apply.

- GPrefresh
- GPOupdate
- GPREport
- GPREsult
- RSoP.msc

**Answer:**

- GPrefresh
- GPOupdate
- GPREport
- GPREsult
- RSoP.msc

## Resources

### Managing Group Policy Inheritance



**Additional Reading:** The only way to configure password policies in a domain is in the GPO with the highest link order in the domain. To learn more about password policies, visit <http://aka.ms/wtsi9c>.

### Demonstration: Configuring GPOs

#### Demonstration Steps

##### Start the Group Policy Management Console (GPMC)

1. In the Server Manager window, click **Tools**, and then click **Group Policy Management**.

2. Switch to the Group Policy Management window.

### Create a GPO

1. In the Group Policy Management window, expand **Forest: Adatum.com**, expand **Domains**, expand **Adatum.com**, right-click the **Group Policy Objects** node, and then click **New**.
2. In the New GPO dialog box, in the **Name** text box, type **Desktop Settings GPO**, and then press Enter.

### Link a GPO

1. Right-click the **Research OU**, and then click **Link an existing GPO**.
2. In the **Select GPO** dialog box, click **Desktop Settings GPO**, and then click **OK**.
3. Click the **Research OU**, and then click the **Group Policy Inheritance** tab.



**Note:** Notice that both the Desktop Settings GPO and the Default Domain Policy apply to the Research OU.

### Configure Block Inheritance

- Right-click the **Research OU**, and then click **Block Inheritance**.



**Note:** Notice the exclamation mark, which denotes that inheritance has been blocked on the Research OU. Notice that only the Desktop Settings GPO displays on the **Group Policy Inheritance** tab.

### Configure security filtering

1. Click the **Group Policy Objects** node, and then double-click the **Desktop Settings GPO**.
2. Click the **Delegation** tab, and then click the **Advanced** button.
3. In the **Desktop Settings GPO Security Settings** dialog box, click **Add**.
4. In the **Select Users, Computers, Service Accounts, or Groups** dialog box, type **IT**, and then click **OK**.
5. In the **Desktop Settings GPO Security Settings** dialog box, next to **Apply group policy**, select the **Deny** check box, and then click **OK**.
6. In the **Windows Security** dialog box, click **Yes**.

### Create an RSoP report

1. Right-click the **Group Policy Results** node, and then click **Group Policy Results wizard**.
2. In the Group Policy Results Wizard window, click **Next**.
3. On the **Computer Selection** page, click **Next**.
4. On the **User Selection** page, click **Next**.
5. On the **Summary of Selections** page, click **Next**.
6. On the **Completing the Group Policy Results Wizard** page, click **Finish**.
7. Examine the **Summary**, **Details** and **Policy Events** tabs. On the **Details** tab, click **show all**.
8. Right-click somewhere in the text of the **Details** tab, and then click **Save Report**.

9. In the **Save GPO Report** dialog box, click **Documents**, and then click **Save**.
10. On the desktop, on the taskbar, click the **File Explorer** icon.
11. In File Explorer, double-click the **Documents** folder.
12. Double-click the **Administrator on LON-DC1.htm** file.
13. In the warning message, click **Allow Blocked Content**.
14. Click **show all**.



**Note:** Notice that the contents of the file are the same as the report shown in the GPMC.

15. Close Internet Explorer.
16. Close File Explorer.

## Lesson 2

# Configuring Enterprise Desktops by Using Group Policy

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## Question and Answers

**Question:** Which of the following are new settings that you can configure in Windows 10 Administrative Templates? (Select all that apply.)

- Microsoft Edge
- Microsoft Passport
- Windows Insider
- Storage Sense
- Command Prompt

**Answer:**

- Microsoft Edge
- Microsoft Passport
- Windows Insider
- Storage Sense
- Command Prompt

**Question:** What are the different methods that you can use to deploy software via Group Policy? (Select all that apply.)

- Assign to a computer
- Assign to a user
- Publish to a user via Programs and Features
- Publish to a computer via Programs and Features
- Publish to a user via Extension activation

**Answer:**

- Assign to a computer
- Assign to a user
- Publish to a user via Programs and Features
- Publish to a computer via Programs and Features
- Publish to a user via Extension activation

## Resources

### New Administrative Template Settings in Windows 10

 **Reference Links:** When Microsoft releases a new version of Windows, a Microsoft Excel spreadsheet with all the settings that you can configure in administrative templates is also released. The spreadsheet for Windows 10 has currently been released. To download this spreadsheet and the spreadsheet for previous versions, go to <http://aka.ms/vk84hh>

## Demonstration: Configuring Group Policy Settings

### Demonstration Steps

1. On LON-DC1, in the Group Policy Management window, click the **Group Policy Objects** node, right-click **Desktop Settings GPO**, and then click **Edit**.
2. In the Group Policy Management Editor window, under User Configuration, expand **Policies**, expand **Administrative Templates**, expand **System**, and then click **Logon**.
3. In the content pane, double-click **Run these programs at user logon**.
4. In the **Run these programs at user logon** dialog box, select the **Enabled** option.
5. Click the **Show** button.
6. In the **Show Contents** dialog box, in the **Value** column, type **notepad.exe**, and then click **OK**.
7. In **Run these programs at user logon** dialog box, click **OK**.
8. Close the Group Policy Management Editor window.
9. In the Group Policy Management window, right-click the **Group Policy Objects** node, and then click **New**.
10. In the **New GPO** dialog box, type **Computer Settings GPO**, and then press Enter.
11. Click the **Group Policy Objects** node, right-click **Computer Settings GPO**, and then click **Edit**.
12. In the Group Policy Management Editor window, under Computer Configuration, expand **Policies**, expand **Administrative Templates**, and then click **System**.
13. In the content pane, double-click **Display highly detailed status messages**.
14. In the **Display highly detailed status messages** dialog box, select the **Enabled** option, and then click **OK**.
15. 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**.
16. In the content pane, double-click **Interactive logon: Message title for users attempting to log on**.
17. Select the **Define this policy setting** check box, in the text box, type **Welcome to the Adatum corporate domain**, and then click **OK**.
18. In the content pane, double-click **Interactive logon: Message text for users attempting to log on**.
19. Select the **Define this policy setting in the template** check box, in the text box, type **You are not allowed to use this computer for inappropriate behavior**, and then click **OK**.
20. Close the Group Policy Management Editor window.
21. In the tree pane, right-click the **Adatum.com** domain, and then click **Link an Existing GPO**.
22. In the **Select GPO** dialog box, click **Computer Settings GPO**, and then click **OK**.
23. On the host computer, in **Hyper-V Manager**, start and connect to the 20697-2B-LON-CL1 computer.
24. On LON-CL1, click **OK** to accept the message, and then click the **Other user** icon.
25. Sign in as **Adatum\Allie** with the password **Pa\$\$w0rd**.
26. Notice the terms and conditions you had to accept before signing in.



**Note:** Because this is the first time Allie signs in, her profile is being created. Instead of the welcome message, different texts referring to the different actions the Group Policy client is performing display.

27. Notice that Notepad opens.

28. Sign out of LON-CL1.

## Lesson 3

# Overview of Group Policy Preferences

### Contents:

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Demonstration: Configuring Group Policy Preferences	11

## Question and Answers

**Question:** Group Policy preferences disable the user interface for the settings that you configure.

- True  
 False

**Answer:**

- True  
 False

**Question:** Which of the following are preferences that you can configure? Select all that apply.

- Drive Maps  
 Printers  
 Display  
 Microsoft Office  
 Registry

**Answer:**

- Drive Maps  
 Printers  
 Display  
 Microsoft Office  
 Registry

## Demonstration: Configuring Group Policy Preferences

### Demonstration Steps

#### Create a GPO

1. On LON-DC1, in the Group Policy Management window, expand **Domains**, expand **Adatum.com**, right-click **Group Policy Objects**, and then click **New**.
2. In the **New GPO** dialog box, type **Adatum Power Plans GPO**, and then click **OK**.
3. Click the **Group Policy Objects** node, right-click **Adatum Power Plans GPO**, and then click **Edit**.
4. In the Group Policy Management Editor window, under **Computer Configuration**, expand **Preferences**, expand **Control Panel Settings**, and then click **Power Options**.
5. Right-click **Power Options**, hover over **New**, and then click **Power Plan (At least Windows 7)**.
6. In the **New Power Plan (At least Windows 7) Properties** dialog box, use the following values on the **Advanced settings** tab:
  - Change **Balanced** to **Power saver**
  - Set as the active power plan: Selected
  - Sleep\Sleep after\On battery (minutes): **30**
  - Sleep\Sleep after\Plugged in (minutes): **120**
  - Display\Turn off display after\On battery (minutes): **15**

- Display\Turn off display after\Plugged in (minutes): **60**
7. On the **Common** tab, ensure that **Item-level targeting** is selected, and then click **Targeting**.
  8. In the **Targeting Editor** dialog box, in the **New Item** drop-down list box, click **IP Address Range**.
  9. In both the **between** and **and** text boxes, type **172.16.0.40**, and then click **OK**.
  10. In the **New power plan(At least Windows 7) Properties** dialog box, click **OK**.
  11. Close the Group Policy Management Editor window.

### Verify that the settings apply

1. In the Group Policy Management window, right-click **Adatum.com**, and then click **Link an existing GPO**.
2. In the **Select GPO** dialog box, click **Adatum Power Plans GPO**, and then click **OK**.
3. Switch to the LON-CL1 computer, and then click **OK** to accept the message.
4. Sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
5. Click **Start**, type **cmd**, and then press Enter.
6. In the Command Prompt window, type the following two commands, pressing Enter after each command:

```
gpupdate  
gpresult /r
```

7. In the results from the command, verify that under Computer Settings, **Adatum Power Plans GPO** is listed.
8. Click **Start**, type **Power Options**, and then press Enter.
9. Verify that **Power saver** is the active power plan.

# Module Review and Takeaways

## Best Practices

### Best Practices Related to Group Policy Management

- Include comments on GPO settings to document settings and make it easier to find configured settings later.
- Use a central store for administrative templates.
- Use Group Policy preferences to eliminate settings configured in logon scripts.

## Review Question(s)

**Question:** What is the benefit of having a central store?

**Answer:** A central store is a single folder in SYSVOL that holds all the ADMX and ADML files that are required for administering Group Policy. After you have set up the central store, the Group Policy Management Editor recognizes it, and then loads all administrative templates from the central store instead of from the local machine. This is beneficial if you edit GPOs from several computers. By using a central store, you only need to update ADMX and ADML files in one location.

**Question:** Have you extended the set of administrative templates in your organization? If yes, did you download them from the Internet, or did you develop them in your organization?

**Answer:** Answers will vary. You can download ADMX files for software including Microsoft Office, Skype, Adobe Reader, Mozilla Firefox, 7-Zip, and Java.

## Tools

### Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Group Policy settings are not applying to all users or computers in an OU where a GPO is applied.	Check security filtering on the GPO. Check WMI filters on the GPO.
Group Policy preferences are not being applied.	Check the preference settings for item-level targeting.

## Lab Review Questions and Answers

### Lab A: Configuring Group Policy Objects and Settings

#### Question and Answers

**Question:** Which policy settings do you deploy using Group Policy in your organization?

**Answer:** Answers will vary.

**Question:** Many organizations rely heavily on security group filtering to scope GPOs, rather than linking GPOs to specific OUs. In these organizations, GPOs typically are linked high in the Active Directory logical structure—usually either to the domain itself or to a first-level OU. What advantages do you gain by using security group filtering rather than GPO links to manage a GPO's scope?

**Answer:** The fundamental problems of relying on organizational units (OUs) to scope the application of GPOs is that an OU is a fixed, inflexible structure within AD DS, and a single user or computer can only exist within one OU. As organizations grow larger and more complex, configuration requirements are difficult to match in a one-to-one relationship with any container structure. With security groups, a user or computer can exist in as many groups as necessary, and you can add or remove them easily without affecting the security or management of the user or computer account.

### Lab B: Using Group Policy Preferences to Manage Desktop Settings

#### Question and Answers

**Question:** You have created Group Policy preferences to configure new power options. How can you configure Group Policy so they apply only to laptop computers?

**Answer:** You can use item-level targeting to apply the preferences to laptops. The preference will apply only if the hardware profile of the computer identifies itself as a laptop.

**Question:** When would you use the IP Address Range category in item-level targeting?

**Answer:** Answers will vary, but could include configuring preferences:

- For different locations or buildings.
- When the user is connected from a virtual private network (VPN) connection.

# Module 5

## Managing Windows 10 Sign-In and Identity

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Lab Review Questions and Answers	7

## Lesson 1

# Overview of Enterprise Identity

### Contents:

Question and Answers

3

## Question and Answers

**Question:** When you sign in to a Windows 10 computer by using a Microsoft account, you can access domain resources in your corporate network in the same way as with domain account.

True

False

**Answer:**

True

False

**Question:** Windows Hello provides native support for biometric authentication.

True

False

**Answer:**

True

False

## Lesson 2

# Planning for Cloud Identity Integration

### Contents:

Question and Answers

5

## Question and Answers

**Question:** AD FS is a cloud-based authentication mechanism.

True

False

**Answer:**

True

False

**Question:** Which of the following services use Azure AD?

Office 365

Intune

AD FS

Azure RMS

AD DS

**Answer:**

Office 365

Intune

AD FS

Azure RMS

AD DS

## Module Review and Takeaways

### Best Practices

- Use synchronized identities in the cloud, if possible, so you can utilize an SSO experience for your users.
- Manage synchronization settings for Microsoft accounts by using Group Policy.
- Use the Azure AD join feature in Windows 10 if you have several resources in the cloud.
- Ensure that you have a management mechanism available for computers joined to Azure AD.

### Review Question(s)

**Question:** What service do you need to use if you want to access cloud services with your on-premises accounts, but still perform authentication locally?

**Answer:** You must use AD FS.

### Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
You cannot add a Microsoft account to a domain-joined computer	Ensure that the ability to add a Microsoft account is not disabled in Group Policy.
You cannot find an option for Azure AD join in Windows 8	Upgrade to Windows 10, because it is the first operating system to support Azure AD join.
You cannot access Azure AD from the Office 365 dashboard	You must have an active Azure subscription to manage the Azure AD instance used by Office 365.

# Lab Review Questions and Answers

## Lab A: Integrating a Microsoft Account with a Domain Account

### Question and Answers

**Question:** What is the main benefit of adding the Microsoft account to the Windows 10 computer?

**Answer:** By adding the Microsoft account to the Windows 10 computer, you get a single sign-on experience on applications such as Windows Store, OneDrive, Skype, and Outlook.com.

**Question:** What should you do to prevent your users from synchronizing Wi-Fi passwords to their Microsoft accounts?

**Answer:** You should use Group Policy to prevent using this sync setting.

## Lab B: Joining Windows 10 to Azure Active Directory

### Question and Answers

**Question:** What should you do before you add a Windows 10 device to Azure AD?

**Answer:** You should configure your Azure AD instance to accept a device join from users.

**Question:** When you create an Office 365 subscription, will you get an Azure AD instance?

**Answer:** Yes, but you cannot manage this instance directly until you activate the Azure subscription.

# Module 6

## Managing Data Access for Windows-based Devices

### Contents:

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Lesson 3: Implementing Work Folders	6
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## Lesson 1

# Overview of Data Access Solutions

### Contents:

Question and Answers

3

## Question and Answers

**Question:** Your company uses an accounting app based on client/server architecture, which you cannot install on another company's operating system that is running on a user's device. How can users still use the company accounting app from their devices?

**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 that system. They also could use Remote Desktop to connect to their company computer. Alternatively, if their company has deployed a VDI environment, they could connect to their virtual desktop and use the accounting app from the VDI environment.

## Lesson 2

# Implementing Device Registration

### Contents:

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Resources	5

## Question and Answers

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

- UPN
- Email address
- Password
- Microsoft account
- Security identifier (SID)

**Answer:**

- UPN
- Email address
- Password
- Microsoft account
- Security identifier (SID)

## Resources

### Infrastructure Requirements to Support Device Registration



**Additional Reading:** For additional information on Device Registration, visit <http://aka.ms/en89rh>

## Lesson 3

# Implementing Work Folders

### Contents:

Question and Answers

7

## Question and Answers

**Question:** You can share the content of your Work Folders with your coworkers.

True

False

**Answer:**

True

False

## Lesson 4

# Managing Online Data Using Cloud-Based Storage Solutions

### Contents:

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Demonstration: Configuring OneDrive	9

## Question and Answers

**Question:** Administrators can manage the content stored in both OneDrive and OneDrive for Business, providing the computer is domain joined.

( ) True

( ) False

**Answer:**

( ) True

(v) False

## Demonstration: Configuring OneDrive

### Demonstration Steps

1. Ensure that you are signed in to LON-CL4 with your Microsoft account that you created earlier in Module 5.
2. Open a Microsoft Edge browser, in the address bar, type **onedrive.com**, and then press Enter.
3. On the OneDrive webpage, open the menu on the left.
4. Review the pre-created folders, and check the free space. You should have 14.9 gigabytes (GB) of available storage.
5. On LON-CL4, in the notification area of the taskbar, right-click the **OneDrive** icon, and then click **Settings**.
6. Click **Account** tab.
7. Click **Choose folders**.
8. In the Sync your OneDrive files to this PC window, ensure that **Sync all files and folders in my OneDrive** is selected. Also, verify that you see the same folders as in the online version of OneDrive. (You should see folders named Documents and Pictures folders.)
9. Click **Cancel**.
10. Click **Settings** tab, and then review the available options.
11. Sign in to LON-DC1 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
12. Open the Server Manager console, click **Tools**, and then click **Group Policy Management**.
13. In the Group Policy Management Console, expand **Forest: Adatum.com**, expand **Domains**, expand **Adatum.com**, right-click **Default Domain Policy**, and then click **Edit**.
14. In the Group Policy Management Editor, expand **Computer Configuration**, expand **Policies**, expand **Administrative Templates**, expand **Windows Components**, and then click **SkyDrive**. (Note that Windows Server 2012 R2 still uses old branding).
15. In the right pane, review available options. Double-click each option, and read the description.
16. Close the Group Policy Management Editor.
17. Close the Group Policy Management Console.
18. Revert all running VMs.

## Module Review and Takeaways

### Best Practices

- Consider using cloud-based storage solutions to reduce your storage and maintenance costs.
- Configure Device Registration for non-domain joined devices that your users use for business purposes.
- Allow use of Work Folders to users who need on-premises data synchronization.
- Explain to your users that they should not store business data in OneDrive.
- Use Web Application Proxy to publish Device Registration and Work Folders.

### Review Question(s)

**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 still will 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 the file server.

### Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Work Folders sync cannot be configured on client computers	Verify that the certificate on server side is valid and trusted. Verify whether the user is in the group that is allowed to use Work Folders. Verify that the Work Folders server is available.

# Lab Review Questions and Answers

## Lab A: Configuring Data Access for Non-Domain Joined Devices

### Question and Answers

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

**Answer:** Yes. Users can access the same Work Folders from all devices, regardless of their domain membership. The 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:** No, 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.

## Lab B: Managing Data Access by Using OneDrive

### Question and Answers

**Question:** What is the easiest way to share a file from your OneDrive?

**Answer:** You can right-click the file and generate a link to the file. You then can send this link to the person with whom you want to share the file.

# Module 7

## Managing Remote Access Solutions

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## Lesson 1

# Overview of Remote Access Solutions

### Contents:

Question and Answers

3

## Question and Answers

**Question:** What is the main benefit from using DirectAccess over a VPN? (Choose two answers)

- Faster.
- A user does not have to initiate a connection.
- DirectAccess requires more user configuration.
- DirectAccess provides internal and external connectivity. A user does not have to remember one connection for an internal connection and another for an external connection.
- VPNs provide internal and external connectivity.

**Answer:**

- Faster.
- A user does not have to initiate a connection.
- DirectAccess requires more user configuration.
- DirectAccess provides internal and external connectivity. A user does not have to remember one connection for an internal connection and another for an external connection.
- VPNs provide internal and external connectivity.

## Lesson 2

# Supporting DirectAccess with Windows 10

### Contents:

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Demonstration: Configuring DirectAccess by Using the Getting Started Wizard	5

## Question and Answers

**Question:** DirectAccess needs two GPOs in AD DS to ensure that clients and servers are set up properly. Where do you apply these GPOs?

- In the Group Policy Management Console on the domain controller.
- In the Gpedit.msc console.
- You do not. When you run the Getting Started Wizard, the GPOs are automatically created.
- From the Create GPO button in the Remote Management console.
- This is not done for DirectAccess.

**Answer:**

- In the Group Policy Management Console on the domain controller.
- In the Gpedit.msc console.
- You do not. When you run the Getting Started Wizard, the GPOs are automatically created.
- From the Create GPO button in the Remote Management console.
- This is not done for DirectAccess.

## Resources

### DirectAccess Components

 **Additional Reading:** For more information, refer to Networking and Access Technologies at <http://aka.ms/rs7i82>.

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

### Demonstration Steps

 **Note:** Before beginning, explain that a number of steps that you would normally need to do before you run the DirectAccess Getting Started Wizard in this demonstration have already been done to save time and to make the demonstration less complex. Explain that you will point these out as you encounter them.

1. Switch to LON-RTR, and in Server Manager, go to the **Tools** drop-down menu, and then select **Remote Access Management**. Point out that normally you would have to install the Remote Access role on the server, but this has already occurred.
2. In the Remote Access Management console, under Configuration, click **DirectAccess and VPN**, and then click the **Run the Getting Started Wizard** link.
3. On the **Configure Remote Access** page, click **Deploy DirectAccess only**.
4. 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** text box, type **131.107.0.2**, and then click **Next**.
5. On the **Configure Remote Access** page, click the **here** link.
6. On the **Remote Access Review** page, verify that two Group Policy Objects (GPOs) have been created: DirectAccess Server Settings and DirectAccess Client Settings.

7. Next to Remote Clients, click **Change**. Point out that the GPOs will appear on the domain controller after LON-RTR restarts.
8. In the Remote Access Setup window, click **Domain Computers (ADATUM\Domain Computers)**, click **Remove**, and then click **Add**.
9. In the Select Groups window, type **DA\_Clients**, and then click **OK**. Point out that this group has already been created in AD DS and that the LON-CL1 client computer account has been put in the group.
10. Clear the **Enable DirectAccess for mobile computers only** check box, and then click **Next**. Explain that LON-CL1 is not a mobile device, so this ensures that it will be able to use DirectAccess.
11. On the **DirectAccess Client Setup** page, in the **DirectAccess connection name** text box, add **Windows 10** to the existing phrase so that it says **Windows 10 Workplace Connection**, and then click **Finish**. You do this to see it later on LON-CL1.
12. On the **Remote Access Review** page, click **OK**.
13. On the **Configure Remote Access** page, to finish the DirectAccess wizard, click **Finish**.
14. In the **Applying Getting Started Wizard Settings** dialog box, click **Close**.
15. Revert all virtual machines.

## Lesson 3

# Configuring VPN Access to Remote Networks

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## Question and Answers

### Question:

Categorize each item in the appropriate category. Indicate your answer by writing the category number to the right of each item.

Items	
1	Oldest tunneling protocol in use
2	Relies on IPsec
3	Uses SSL or TLS
4	Uses Microsoft Point-to-Point Encryption
5	Built-in on Windows Vista and later
6	Used on Windows 7 and later
7	Uses TCP to manage headers
8	Combination of PPTP and L2F
9	Uses HTTPS

Category 1	Category 2	Category 3
PPTP	L2TP	SSTP

### Answer:

Category 1	Category 2	Category 3
PPTP	L2TP	SSTP

Category 1	Category 2	Category 3
<p>Oldest tunneling protocol in use</p> <p>Uses Microsoft Point-to-Point Encryption</p> <p>Uses TCP to manage headers</p>	<p>Relies on IPsec</p> <p>Built-in on Windows Vista and later</p> <p>Combination of PPTP and L2F</p>	<p>Uses SSL or TLS</p> <p>Used on Windows 7 and later</p> <p>Uses HTTPS</p>

## Demonstration: Configuring a VPN Connection on Windows 10

### Demonstration Steps

#### Configure the VPN server role

1. On LON-RTR, in Server Manager, click the **Tools** menu, and then select **Remote Access Management**.
2. In the Configuration pane, click **DirectAccess and VPN**.
3. In the details pane, under Configure Remote Access, click the **Run the Getting Started Wizard** link.
4. On the **Configure Remote Access** page, click **Deploy VPN only**. This will bring up a separate Routing and Remote Access console.
5. In the Routing and Remote Access console, right-click **LON-RTR**, and then select **Configure and Enable Routing and Remote Access**.
6. In the Routing and Remote Access Server Setup Wizard, click **Next**.
7. On the **Configuration** page, ensure that **Remote access (dial-up or VPN)** is selected, and then click **Next**.
8. On the **Remote Access** page, click the **VPN** check box, and then click **Next**.
9. On the **VPN Connection** page, highlight the Network Interface value that has the 131.107.0.2 address, and then click **Next**.
10. On the **IP Address Assignment** page, click **Next**.
11. On the **Managing Multiple Remote Access Servers** page, click **Next**, and then click **Finish**.
12. In the Routing and Remote Access window, click **OK**.
13. From Server Manager, click the **Tools** menu item, and then open the **Network Policy Server**.
14. Expand **Policies**, and then click **Network Policies**.
15. Right-click **Connections to Microsoft Routing and Remote Access server**, and then click **Properties**.
16. In the Access permission section, click **Grant access**, and then click **OK**.
17. Close all open windows.
18. On the taskbar, click the **Windows PowerShell** icon.

19. At the command prompt in the Windows PowerShell command-line interface, type the following cmdlet, and then press Enter:

**Restart-Computer**



**Note:** You must restart the server to ensure that all new services are correctly configured and running.

### Move the client from the intranet to the public network

1. Switch to LON-CL1, right-click **Start**, and then select **Network Connections**.
2. Right-click **Ethernet**, and then click **Disable**.
3. Right-click **Ethernet 2**, and then click **Enable**.
4. Right-click **Ethernet 2**, and then click **Properties**.
5. In the **Networks** dialog box, click **Yes**.
6. In the **Ethernet 2 Properties** dialog box, double-click **Internet Protocol Version 4 (TCP/IPv4)**.
7. In the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, ensure that the following displays, and then click **OK**:
  - IP address: **131.107.0.20**
  - Subnet mask: **255.255.255.0**

If no changes are required, then in the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, click **Cancel**.

8. In the **Ethernet 2 Properties** dialog box, click **OK**.
9. Close Network Connections.

### Create and test a new VPN connection

1. On LON-CL1, on the **Start** menu, select **Settings**.
2. In the Settings app, click the **Network & Internet** category.
3. In the Network & Internet console tree, select **VPN**.
4. In the details pane, click the **Add a VPN Connection** plus sign (+).
5. In the Add a VPN connection window, provide the following values, and then click **Save**:
  - VPN Provider: **Windows (built-in)**
  - Connection name: **Adatum HQ VPN**
  - Server name or address: **131.107.0.2**
6. In the Network & Internet Settings app, click **Adatum HQ VPN**, and then click **Connect**.
7. Sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**, and then click **OK**.
8. In the Network & Internet Settings app, the Adatum HQ VPN should show a status of Connected.

### Verify that the VPN server can monitor and manage the client VPN connection

1. Return to LON-RTR, and then sign in as **Adatum\Administrator** with the password **Pa\$\$word**.
2. In Server Manager, click the **Tools** menu, and then select **Remote Access Management**.

3. In the console tree, select **Remote Client Status**.
4. Verify that the details pane shows the **Adatum\Administrator** connection. Review the **Access Details** and **Connection Details** boxes below the details pane.
5. In the console tree, select **VPN**.
6. In the Tasks section on the right, select **Open RRAS Management**.
7. In the Routing and Remote Access window, expand **LON-RTR**, and then select **Remote Access Clients**.



**Note:** Less information is provided in the details pane here than in the Remote Access Management console, Remote Client Status window. Explain that the Routing and Remote Access console has not changed much over the past several version of Windows Server, whereas the Remote Access Management console is new to Windows Server 2012 R2, and it provides much more information. However, also note that in creating a VPN rather than DirectAccess connection, you must use the older console to do the initial VPN configuration.

8. In the console tree, select **Ports**, and then in the details pane, click the **Status** column name once. This should show the Active connection. Right-click it, and then select **Status**.
9. Explain the Port Status window. Note how it provides much of the information we saw previously in the Remote Access Management console, Remote Client Status window.
10. In the Port Status window, click **Close**.
11. Close the Routing and Remote Access console.
12. In the Remote Access Management console tree, click **Remote Client Status**.
13. In the Tasks pane on the far right, click **Disconnect VPN Clients**, and then click **OK** twice.



**Note:** Normally you would not do this, because the user on the remote connection might have not saved their work, and the disconnect that you perform is immediate. Because you made the connection to begin with and are testing it, disconnecting is safe in this case.

14. Switch to LON-CL1, right-click **Start**, and then select **Network Connections**.
15. Note the new connection object titled Adatum HQ VPN, but also note that it is disconnected.
16. Close the Network Connections window.
17. Close all open windows on LON-RTR and LON-CL1, and then sign out of both.
18. Revert all virtual machines.

## Lesson 4

# Supporting RemoteApp

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## Question and Answers

### Question:

Create a RemoteApp collection. Number each of the following steps to indicate the correct order.

	Steps
	Select an image to use for your collection.
	Set up your virtual network.
	Create a RemoteApp collection.
	Link your collection to your virtual network.
	Add a template image to your collection.
	Configure directory synchronization.
	Publish RemoteApp apps.
	Configure user access.

### Answer:

	Steps
1	Select an image to use for your collection.
2	Set up your virtual network.
3	Create a RemoteApp collection.
4	Link your collection to your virtual network.
5	Add a template image to your collection.
6	Configure directory synchronization.
7	Publish RemoteApp apps.
8	Configure user access.

## Resources

### Overview of Session Collections for Publishing RemoteApp

 **Additional Reading:** To check what mode the server is currently in, you can use the **change user /query** command. You can read additional information about the **change user** command at <http://aka.ms/rb5k8n>.

 **Additional Reading:** You can use Microsoft Application Virtualization (App-V) with RDS to deploy virtualized applications as RemoteApp programs. You can read additional information on integrating App-V and RDS at <http://go.microsoft.com/fwlink/?LinkID=510044&clcid=0x409>.

## Overview of Azure RemoteApp



**Additional Reading:** For more information about Azure RemoteApp requirements, refer to <http://aka.ms/ey4r65>.

## Demonstration: Publishing an Application for Remote Desktop Services RemoteApp

### Demonstration Steps

#### Publish an application in RemoteApp Web Access

1. On LON-SVR2, in File Explorer, open drive C, expand **RemoteAppSoftware**, double-click **XmlNotepad.msi**, and then accept all defaults in the XML Notepad 2007 Setup Wizard. Close when finished.
2. Close the Internet Explorer **Welcome to XML Notepad 2007** webpage when it opens, and then close Windows Explorer.
3. Open Server Manager, and then in the console tree to the left, click the **Remote Desktop Services** link.
4. In the RDS console tree, click the **QuickSessionCollection** link.
5. In the details pane, note the REMOTEAPP PROGRAMS pane. Explain that the apps in the pane are published as part of a Quick Start deployment. In the REMOTEAPP PROGRAMS pane, click the **TASKS** drop-down arrow, and then select **Publish RemoteApp Programs**.
6. In the Publish RemoteApp Programs window, note all the different programs that are available to deploy with RemoteApp. Explain that by default, these are all the executable files that are found on a server. Normally, we would not deploy any of these as RemoteApp programs because they are already included in other Windows operating systems. Because of this, you will deploy a unique app, XML Notepad.
7. In the Select RemoteApp Programs window, click **Add**.
8. In the Open window, double-click **Program Files (X86)**, click **XML Notepad 2007**, select **XmlNotepad.exe**, and then click **Open**.
9. In the Select RemoteApp Programs window, click **Next**.
10. On the **Confirmation** page, click **Publish**.
11. On the **Completion** page, click **Close**.

#### Validate the published RemoteApp program on a client

1. On LON-CL1, in the **Search the web and Windows** text box, type **ieexplore.exe**, and then press Enter.
2. In the address bar, type **https://lon-svr2.adatum.com/RDWeb**, and then press Enter. The **RD Web Access** webpage for LON-SVR2 appears.



**Note:** If a message asking you to deploy the Lync web browser helper opens, click **Don't enable**, and if the Internet Explorer setup windows opens, select **Use Recommended security and compatibility settings**, and then click **OK**. Then close the tab waiting to go to Microsoft.com.

3. If a message asking to run the Microsoft Remote Desktop Services Web Access add-on appears, click **Allow**.
4. In the **Domain\User name** text box, type **Adatum\Administrator**, and in the **Password** text box, type **Pa\$\$w0rd**, and then click **Sign in**.
5. The **Work Resources** page shows the RemoteApp programs that are available. You should see Calculator, Paint, WordPad, and XmlNotePad. Click **XmlNotePad**.
6. In the RemoteApp security window, click **Connect**. It might take a few moments to appear.
7. When the XML Notepad window appears, click the **Open** icon (it looks like a folder), and then note that it is not the directory structure on LON-CL1 that you see, but rather LON-SVR2. Because you are signed in as an administrator, you can browse up the directory tree to confirm this if you wish.
8. Close all open windows, and then sign out.

### Revert virtual machines

When you finish the demonstration, revert the virtual machines to their initial state. To do this, perform the following steps:

1. On the host computer, start Hyper-V Manager.
2. In the **Virtual Machines** list, right-click **20697-2B-LON-DC1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for 20697-2B-LON-SVR2 and 20697-2B-LON-CL1.

## Module Review and Takeaways

### Review Question(s)

**Question:** In which tools can you modify the RD Web Access portal?

**Answer:** You can use Server Manager to modify a limited set of RD Web Access settings. You can use IIS Manager to modify additional settings.

**Question:** DirectAccess relies on two GPOs to configure client and server settings. How are these GPOs created?

**Answer:** The DirectAccess Getting Started Wizard of the Remote Access Management console creates the GPOs automatically.

**Question:** The Point-to-Point Protocol (PPP) encapsulates IP packets within PPP frames and then transmits the encapsulated PPP packets across a point-to-point link. What was PPP designed for?

**Answer:** PPP originally was defined as the protocol to use between a dial-up client and a network access server.

### Tools

Tool	Used to	Where to find it
Remote Access Management	Configure DirectAccess and VPNs, monitor connections and clients, disconnect clients	Server Manager, in Tools, after installing the Remote Access role
DirectAccess Getting Started Wizard	Establish a DirectAccess infrastructure	Remote Access Management, which is found in Server Manager, in Tools, after installing the Remote Access role
Routing and Remote Access	Configure VPN and network routing, monitor connections and clients	Server Manager, in Tools, after installing the Remote Access role
Azure portal	Manage Azure, including adding users to Azure AD, and creating Azure RemoteApp programs	<a href="http://aka.ms/n3ni6x">http://aka.ms/n3ni6x</a>
Azure Remote Desktop client download	Adds the RemoteApp folder to the <b>Start</b> menu and all apps on Windows 10	<a href="http://aka.ms/ivcv8x">http://aka.ms/ivcv8x</a>

### Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
You configure a VPN within the Routing and Remote Access console, and then immediately after on a Windows 10 client, create a VPN connection in the Settings app. However, when you try to connect, the VPN connection fails. You review all actions and find that they have been properly configured.	Ensure that you restart the VPN server after configuring the VPN connection.
You have established DirectAccess as an organization-wide resource for all Windows 10 laptops. However, employees at a branch location say it often fails.	It is critical that the network location server be available from each organizational location because the behavior of a DirectAccess client depends on the response from the network location server. Branch locations might need a

Common Issue	Troubleshooting Tip
	separate network location server at each branch location to ensure that the network location server remains accessible even when a link failure occurs between branches.
You need to deploy a line-of-business (LOB) app via Azure RemoteApp. You use the Quick Create option to provide the RemoteApp; however, you find that your LOB app is not on the image.	You cannot publish LOB apps by using the Quick Create option. Rather than clicking <b>Quick Create</b> , you start by clicking <b>Create with VPN</b> . You can also deploy the App by using an Azure virtual machine that has been set up with the RDS server role. Azure has a preset Windows Server 2012 R2 virtual machine template with the RDS role already installed.

# Lab Review Questions and Answers

## Lab A: Implementing DirectAccess

### Question and Answers

**Question:** What account was in the DA\_Clients group, and what did the group do?

**Answer:** LON-CL1. The DA\_Clients group allowed the application of DirectAccess security settings to the computers that are members of this security group, which was LON-CL1.

**Question:** How do you configure IPv6 addresses for Windows 10 client computers to use DirectAccess?

**Answer:** You do not have to. Global unicast IPv6 addresses are automatically generated based on the network infrastructure. As a result, Windows 10 clients can connect to an organizational intranet and the Internet by using DirectAccess without requiring you to configure IPv6 addresses.

## Lab B: Configuring Microsoft Azure RemoteApp

### Question and Answers

**Question:** When you created the User1 account, you were allowed to copy the temporary password, and there is an area to put in email addresses to forward the temporary password. What is the danger in doing so?

**Answer:** The emails are sent as plaintext. Anyone who intercepts these emails will know the temporary password, and they can change it before the user does.

**Question:** After downloading the Remote Desktop client and authenticating in the Azure RemoteApp sign-in window, where can you return to launch the RemoteApp program again?

**Answer:** The Azure RemoteApp folder appears in the All apps section of the **Start** menu. You could even pin it to the **Start** menu as a tile or pin it to the taskbar.

# Module 8

## Managing Windows 10 Devices by Using Enterprise Mobility Solutions

### Contents:

Lesson 1: Overview of the Enterprise Mobility Suite	2
Lesson 2: Overview of Azure Active Directory Premium	4
Lesson 3: Overview of Azure RMS	7
Module Review and Takeaways	9
Lab Review Questions and Answers	10

## Lesson 1

# Overview of the Enterprise Mobility Suite

### Contents:

Question and Answers	3
Resources	3

## Question and Answers

**Question:** The Enterprise Mobility Suite is a product that you can install on your server.

True

False

**Answer:**

True

False

## Resources

### What Is the Enterprise Mobility Suite?



**Additional Reading:** For more information about Microsoft enterprise mobility, visit:  
<http://aka.ms/rtdftv>

## Lesson 2

# Overview of Azure Active Directory Premium

### Contents:

Question and Answers	5
Resources	5
Demonstration: Accessing SaaS Applications	5

## Question and Answers

**Question:** Which edition of Azure AD will you need to implement multi-factor authentication? Select all that apply.

- Basic
- Free
- Premium

**Answer:**

- Basic
- Free
- Premium

## Resources

### What Is Azure Active Directory Premium?



**Additional Reading:** For more information on Azure AD, visit: <http://aka.ms/x5ugmp>

## Demonstration: Accessing SaaS Applications

### Demonstration Steps

1. On LON-CL1, open Microsoft Edge, browse to <https://manage.windowsazure.com/>, and then sign in to your Azure AD tenant by using the credentials that you created in Module 5.
2. In the left pane, click **ACTIVE DIRECTORY**.
3. In the right pane, click your Azure AD instance.
4. On the dashboard of your Azure AD instance, click the **APPLICATIONS** tab, and then click **ADD**.
5. In the What do you want to do? window, click **Add an application from the gallery**.
6. In the APPLICATION GALLERY window, in the left navigation pane, click **SOCIAL**.
7. In the middle pane, browse through the list of social network services, and then choose the one in which you already have an account (for example, Facebook, Twitter, or Instagram). Click that service, and then click the check mark in the lower-right corner.
8. On the dashboard of your application, ensure that SSO is enabled (you should have a check mark beside the **Configure single sign on** option), and then click the **USERS** tab.
9. In the list of users, select your user account, and then click **ASSIGN**.
10. In the Assign Users window, select the **I want to enter credentials on behalf of the user** option, and then enter your credentials for the social network service that you selected in step 7. Also, explain to students that if you do not select this option, each user who is assigned this application will be able to enter his or her credentials manually. Click the check mark.
11. Wait until the application is assigned, and then close the Microsoft Edge window.
12. Open Internet Explorer, and then browse to <https://account.activedirectory.windowsazure.com/applications/>.
13. Type your account name in the Microsoft Azure window, and then click **Continue**.
14. Type your password, and then click **Sign in**.

15. Click **Your apps have been updated, click here to refresh** if it appears. Ensure that you see the application that you configured.
16. Click the application's icon. If the Install Now window appears, follow the window direction to install and configure software first, and then return to step 12.
17. Ensure that the application opens and signs in to your account without typing any credentials.
18. Revert all running virtual machines.

## Lesson 3

# Overview of Azure RMS

### Contents:

Question and Answers

8

## Question and Answers

**Question:** You can deploy Azure RMS as a local service on Windows Server 2012 R2.

True

False

**Answer:**

True

False

## Module Review and Takeaways

### Best Practices

- If you need at least two products from the Enterprise Mobility Suite, consider buying the Enterprise Mobility Suite instead of separate products.
- Synchronize your AD DS with Azure AD to achieve SSO.
- Implement the RMS sharing app for your computers and mobile devices to achieve additional functionality.
- Implement self-service password management.
- Protect security-critical accounts in your AD DS with multi-factor authentication.

### Review Question(s)

**Question:** What are the key benefits of purchasing the Enterprise Mobility Suite?

**Answer:** The Enterprise Mobility Suite provides critical functionalities for device management, data protection, and identity management in one package for a price that is significantly lower than buying separate products.

**Question:** If you need to have SSO for both cloud-based and on-premises applications, what must you do first?

**Answer:** You must synchronize your AD DS and Azure AD.

### Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
You cannot set custom RMS permissions on PDF documents.	You must install a supported non-Microsoft application to have additional RMS functionality on PDF files.

## Lab Review Questions and Answers

### Lab: Implementing a Microsoft Intune Subscription

#### Question and Answers

**Question:** What must you do first before buying Intune licenses?

**Answer:** You must first create a trial tenant.

**Question:** What is the purpose of the \*.onmicrosoft.com domain?

**Answer:** This domain serves as a default domain before you add your personal domain to the Intune tenant.

# Module 9

## Managing Desktop and Mobile Clients by Using Microsoft Intune

### Contents:

Lesson 1: Deploying the Intune Client Software	2
Lesson 2: Overview of Microsoft Intune Policies	5
Lesson 3: Mobile Device Management by Using Intune	8
Module Review and Takeaways	10
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## Lesson 1

# Deploying the Intune Client Software

### Contents:

Question and Answers	3
Resources	3
Demonstration: Creating Groups in Microsoft Intune	4

## Question and Answers

**Question:** You need to install the Microsoft Intune client software to a group of x64 computers. You attempt to deploy Microsoft\_Intune\_Setup.exe by using Group Policy. However, you discover that you need an .msi file to perform the deployment. What should you do first?

- You should rename the Microsoft\_Intune\_Setup.exe file to Microsoft\_Intune\_x64.msi.
- You should rename the MicrosoftIntune.accountcert file to Microsoft\_Intune\_x64.msi.
- You should extract the Microsoft\_Intune\_Setup.exe file.
- You should delete the MicrosoftIntune.accountcert file.

**Answer:**

- You should rename the Microsoft\_Intune\_Setup.exe file to Microsoft\_Intune\_x64.msi.
- You should rename the MicrosoftIntune.accountcert file to Microsoft\_Intune\_x64.msi.
- You should extract the Microsoft\_Intune\_Setup.exe file.
- You should delete the MicrosoftIntune.accountcert file.

**Question:** The Microsoft Intune administrator is the one that must always perform user-device linking.

- True
- False

**Answer:**

- True
- False

## Resources

### Methods to Deploy the Intune Client Software



**Additional Reading:** You can also install the Microsoft Intune client software as part of an image. For more information, visit <http://aka.ms/cixrch>.

## Demonstration: Creating Groups in Microsoft Intune

### Demonstration Steps

#### Sign in

1. On LON-CL1, in the search text box, type iexplore. Right-click Internet Explorer, and then click **Pin to taskbar**. On the taskbar, click Internet Explorer.
2. Browse to **<http://manage.microsoft.com>**.
3. Provide credentials to access the Microsoft Intune Administrator console.

#### Create a user group

1. In the Microsoft Intune Administrator console, click the **Groups** workspace. Show the students the default groups that are created already. Click each group and point out the default membership.
2. Right-click **All Users**, and then click **Create Group**.

3. In the **Create Group** dialog box, on the **General** page, in the **Group name** text box, type **Marketing Users**. Point out the parent group that is being used as the foundation for this new group, and then click **Next**.
4. On the **Criteria Membership** page, discuss how to define the membership criteria. Explain that you can create security groups in Intune, or synchronize them from Active Directory Domain Services (AD DS). After you finish explaining this, click **Next**.
5. On the **Direct Membership** page, describe how to add specific members to the group, and then click **Next**.
6. On the **Summary** page, click **Finish**.

### **Create a device group**

1. In the Microsoft Intune Administrator console, click the **Groups** workspace.
2. Right-click **All Devices**, and then click **Create Group**.
3. In the **Create Group** dialog box, on the **General** page, in the **Group name** text box, type **Marketing Computers**. Point out the parent group that is being used as the foundation for this new group, and then click **Next**.
4. On the **Criteria Membership** page, discuss how to define the membership criteria. Explain the device type, explain how computers can be included or excluded, and then click **Next**.
5. On the **Direct Membership** page, describe how to add specific members to the group, and then click **Next**.
6. On the **Summary** page, click **Finish**.

### **Assign groups to service administrators**

1. In the Microsoft Intune Administrator console, click the **Admin** workspace.
2. Under Administrator Management, click **Service Administrators**.
3. Click **Add**, and then add a test user to the **Service Administrators** group. Select **Full access** for the user ID.
4. Select the user that you just added, and then click **Manage Groups**.
5. Remove the **All Devices** and **All Users** groups.
6. Add the **Marketing Computers** group, and then click **OK**.

## Lesson 2

# Overview of Microsoft Intune Policies

### Contents:

Question and Answers	6
Resources	6
Demonstration: Configuring Intune Policy	7

## Question and Answers

**Question:** You have been asked to create a new policy and configure the update and application detection frequency for client computers. Upon which template should you base your policy?

- Microsoft Intune Center Settings
- Microsoft Intune Agent Settings
- Configuration policy
- Windows Custom policy

**Answer:**

- Microsoft Intune Center Settings
- Microsoft Intune Agent Settings
- Configuration policy
- Windows Custom policy

**Question:** You can use a Conditional Access policy to quarantine VPN clients to ensure that they receive the latest software updates and malware definitions.

- True
- False

**Answer:**

- True
- False

## Resources

### Compliance Settings and Conditional Access Policies

 **Additional Reading:** You can learn more about mobile device management with Exchange ActiveSync and Microsoft Intune at <http://aka.ms/ct3ytp>.

### Demonstration: Configuring Intune Policy

#### Demonstration Steps

##### Sign in

1. Switch to LON-CL1.
2. Open Microsoft Internet Explorer.
3. In the Internet Explorer Address bar, type **http://manage.microsoft.com**, and then press Enter.
4. Provide the credentials to access the Microsoft Intune Administrator console.

##### View the policy workspace

- In the Microsoft Intune Administrator console, click the **Policy** workspace. Show students the nodes under the Policy heading. Click each node, and briefly discuss to what they refer.

### **Create a Configuration policy**

1. In the Microsoft Intune Administrator console, click the **Policy** workspace, and then click **Configuration Policies**.
2. Click **Add**.
3. In the **Create a New Policy** dialog box, expand **Computer Management**, and then click **Microsoft Intune Agent Settings**.
4. Select **Create and Deploy a Policy with the Recommended Settings**. Discuss the difference between this option and the **Create and Deploy a Custom Policy** option.
5. Click **Create Policy**.
6. In the **Select the groups to which you want to deploy this policy** dialog box, click **Marketing Computers**, and then click **Add**.
7. Explain that with this policy you can target specific groups or all devices, and then click **OK**.

### **Edit a policy**

1. Make sure that the **Microsoft Intune Agent Settings** policy is selected, and then click **Edit**.
2. Browse through and discuss the main points of the Endpoint Protection, Updates, User-Device Linking, and Network bandwidth sections. Make any changes as you feel necessary.
3. Click **Save Policy**.

## Lesson 3

# Mobile Device Management by Using Intune

### Contents:

Question and Answers	9
Resources	9

## Question and Answers

**Question:** Which of the following are platform prerequisites for MDM? (Choose all that apply.)

- APNs Certificate for Windows
- APNs Certificate for iOS
- DNS CNAME for Windows
- Group Policy settings in AD DS

**Answer:**

- APNs Certificate for Windows
- APNs Certificate for iOS
- DNS CNAME for Windows
- Group Policy settings in AD DS

**Question:** Microsoft Intune supports Windows RT devices.

- True
- False

**Answer:**

- True
- False

## Resources

### Prerequisites for Managing Mobile Devices

 **Additional Reading:** For more information on setting up device enrollment in Intune, or for specific device requirements, visit <http://aka.ms/czh7cq>.

### Managing Mobile Devices

 **Additional Reading:** To find out more about using Intune to help protect your data with remote wipe, remote lock, or passcode reset, visit <http://aka.ms/ohr5my>.

## Module Review and Takeaways

### Review Question(s)

**Question:** What is the difference between the Intune client software and managing a device using OMA-URI?

**Answer:** When you use the Intune client software, the computer is managed as a computer device. OMA-URI assumes that the device is managed as a mobile device with no client agent installed.

**Question:** Which types of mobile devices can you manage by using Microsoft Intune?

**Answer:** You can manage the following mobile devices by using Microsoft Intune:

- Apple iOS 6.0 and later
- Android 4.0 and later, including Samsung KNOX
- Windows Phone 8 and later
- Windows 8.1 RT and Windows RT
- Windows 8.1 and later computers

# Lab Review Questions and Answers

## Lab A: Installing the Intune Client Software and Configuring a Policy

### Question and Answers

**Question:** In the lab, you manually downloaded and installed the Intune client software. What are some methods that you can use to deploy the software to a large number of computers?

**Answer:** One common method is to use Group Policy. This will allow you to deploy the client without requiring the user to have local administrative rights on their computers. Another method is to share the software on a network share and have each user install the client manually.

**Question:** In the lab, you configured the Microsoft Intune Agent Settings template. When you look at the Microsoft Intune Agent Settings policy, what is the main difference between managing Endpoint Protection for Windows 10 and managing Endpoint Protection for Windows 8.1?

**Answer:** Unlike Windows 8.1, Windows 10 does not have the Endpoint Protection client installed by the client software. Intune uses the built-in Windows Defender client to manage malware settings.

## Lab B: Managing Mobile Devices Using Microsoft Intune

### Question and Answers

**Question:** In the lab, you had to configure MDM authority. What other options do you have for configuring authority?

**Answer:** Other options include System Center 2012 R2 Configuration Manager and Office 365.

**Question:** In the lab, you connected LON-CL2 to Intune using the Work Access page. Why is Microsoft Intune Center not installed on this device after enrollment?

**Answer:** LON-CL2 is being managed using the Open Mobile Alliance (OMA) Uniform Resource Identifier (URI) (OMA-URI) agentless protocol. Microsoft Intune Center is not installed on the device.

# Module 10

## Managing Updates and Endpoint Protection by Using Microsoft Intune

### Contents:

Lesson 1: Managing Updates by Using Intune	2
Lesson 2: Managing Endpoint Protection	5
Module Review and Takeaways	7
Lab Review Questions and Answers	8

## Lesson 1

# Managing Updates by Using Intune

### Contents:

Question and Answers	3
Demonstration: Configuring and Deploying Updates	3

## Question and Answers

**Question:** You need to configure Intune update classifications to provide only the following types of updates:

- Critical, non-security related issues
- Product-specific security issues
- Outlook's junk email filter

Which update classifications should you select? Choose all that apply.

- Updates
- Critical Updates
- Tools
- Security Updates
- Definition Updates

**Answer:**

- Updates
- Critical Updates
- Tools
- Security Updates
- Definition Updates

**Question:** If an update is approved and deploys to a group that contains child groups, the approval also applies to the child groups.

- True
- False

**Answer:**

- True
- False

## Demonstration: Configuring and Deploying Updates

### Demonstration Steps

#### Sign in

1. Switch to LON-CL1, and then open Internet Explorer.
2. Browse to **<http://manage.microsoft.com>**.
3. Provide credentials to access the Intune administrator console.

#### Configure Product Category and Update Classifications

1. In the Intune administrator console, click the **Updates** workspace. Show the students the **Update Status**, which lists the number of new updates to approve. Explain that if you click the **New to approve** link, you can get an automatic filtered view of the updates that are needed.
2. Click the **All Updates** node. Explain that these are all of the updates that have been released based on the product and update classifications that you selected. You will now modify the product and update classification list.

3. Click the **Admin** workspace.
4. In the Administration pane, click **Updates**.
5. In the **Service Settings: Updates** list, under Product Category, click the **All Categories** check box, and then clear the **All Categories** check box. Explain that you do this to remove all of the default selections.
6. Scroll down, and then select the check boxes for the following products:
  - **Office 2013**
  - **Windows 10**
7. Under Update Classification, select the check box to enable the following:
  - **Critical Updates** (remove all other selections)
8. Click **Save**.

### **Approve and deploy updates**

1. In the Microsoft Intune Admin portal, click the **Updates** workspace.
2. In the Updates pane, click **Critical Updates**.
3. Next to **Filters**, click the drop-down menu, and then select **New updates to approve**.
4. Select the first update, and then click **View Properties**. Explain that you can view information about the update and how many computers have reported to need the update. It might take some time for the updates to appear. You can perform a remote policy refresh on LON-CL1 to try to speed up the process.
5. Click the **Computers** page. Explain that this provides a list of the computers that require the update.
6. Click the **General** page.
7. On the **Tasks** list, click the **Approve** link.
8. On the **Select Groups** page, click **All Computers**, click **Add**, and then click **Next**.
9. On the **Deployment Action** page, under Approval, click **Required Install**.
10. Scroll right, and then under Deadline, click **One week**.
11. Click **Finish**. Notice that the update status changes to the number of computers that are pending installation.
12. In the Updates pane, click the **Overview** node. Notice that the update status shows how many computer are pending installation.

## Lesson 2

# Managing Endpoint Protection

### Contents:

Question and Answers

6

## Question and Answers

**Question:** Which of the following Intune workspaces provides Malware status, Top Malware Instances, and Device Status?

- Apps
- Policy
- Reports
- Protection

**Answer:**

- Apps
- Policy
- Reports
- Protection

**Question:** Intune installs an Endpoint Protection client on all Windows 10 workstations.

- True
- False

**Answer:**

- True
- False

## Module Review and Takeaways

**Question:** You need to deploy non-Microsoft updates by using Intune. What are two main considerations in deploying non-Microsoft updates successfully?

**Answer:** The update file needs to be in .exe, .msi, or an .msp file format. You also need to deploy the update in such a way that it does not require user intervention.

**Question:** You need to ensure that you are notified whenever a new type of malware is detected. What can you do?

**Answer:** Configure an alert to notify you when a new type of malware is detected.

## Lab Review Questions and Answers

### Lab: Managing Updates and Endpoint Protection by Using Microsoft Intune

#### Question and Answers

**Question:** In the lab, what was the type of malware that was discovered? Was it automatically resolved?

**Answer:** The type of malware was DOS/EICAR\_Test\_File. Yes, it was removed automatically.

**Question:** You configured the automatic approval rules in the lab, and you noticed that all existing updates did not approve and deploy automatically. What should you do?

**Answer:** You need to click **Run Selected** to run the rule against existing updates that are in the list. By default, approval rules apply only to new updates.

# Module 11

## Application and Resource Access by Using Microsoft Intune

### Contents:

Lesson 1: Application Management by Using Intune	2
Lesson 2: The Application Deployment Process	5
Lesson 3: Managing Access to Organizational Resources	9
Module Review and Takeaways	11
Lab Review Questions and Answers	12

## Lesson 1

# Application Management by Using Intune

### Contents:

Question and Answers

3

## Question and Answers

**Question:** Before you can deploy an application by using Intune, you first need to convert the application to a proprietary Intune-based installation package.

True

False

**Answer:**

True

False

**Question:** You need to identify which installation type is related to each operating system platform.

Categorize each item into the appropriate category. Indicate your answer by writing the category number to the right of each item.

Items	
1	.exe
2	.ipa
3	.apk
4	.msi
5	.appx

Category 1	Category 2	Category 3
Windows 8.1 or later computer	iOS device	Android device

**Answer:**

Category 1	Category 2	Category 3
Windows 8.1 or later computer	iOS device	Android device

Category 1	Category 2	Category 3
.exe .msi .appx	.ipa	.apk

## Lesson 2

# The Application Deployment Process

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## Question and Answers

**Question:** Which of the following tools would you use to upload an application to Intune cloud storage?

- Intune App Wrapping Tool
- Microsoft Office Upload Center
- Intune Software Publisher
- Microsoft OneDrive synchronization

**Answer:**

- Intune App Wrapping Tool
- Microsoft Office Upload Center
- Intune Software Publisher
- Microsoft OneDrive synchronization

**Question:** Work Folders can be controlled on iOS devices by using MAM policies.

- True
- False

**Answer:**

- True
- False

## Resources

### Managing App Deployments

 **Additional Reading:** For more information on the actions available per platform, refer to the "Understand app deployment actions" section at <http://aka.ms/plynvq>.

### Mobile Application Management by Using Intune

 **Additional Reading:** For a recent list of apps and services that support MAM policies, refer to <http://aka.ms/v34ohc>.

 **Additional Reading:** For more information about using the Intune App Wrapping Tool, refer to <http://aka.ms/vnkbd6> for iOS apps or <http://aka.ms/hfqmel> for Android apps.

## Demonstration: Publishing Apps by Using the Intune Software Publisher

### Demonstration Steps

#### Sign in

1. Switch to LON-DC1, and then open Internet Explorer.
2. Browse to **<http://manage.microsoft.com>**.
3. Provide credentials to access the Intune Admin portal.

## Publish apps

1. In the Intune Admin portal, click the **Apps** workspace. Show students the **Apps Status**, which lists issues that relate to app deployments.
2. Click the **Detected Computer Software** node. Explain that this node shows an inventory of software that has been detected on clients. You can also use this node to add license agreements for applications.
3. Click the **Apps** node. Explain that this is where you see all apps that you have published and deployed.
4. In the Apps pane, click **Add App**. At the security warning, click **Run**. The Intune Software Publisher downloads. Click **Run**.
5. On the **Before you begin** page, click **Next**.
6. On the **Software setup** page, next to **Software installer**, click the drop-down arrow. Describe the **Software installer**, **External link**, and **Managed iOS App** from the **App Store** options.
7. On the **Software setup** page, configure the following, and then click **Next**:
  - **Software installer**
  - **Windows Installer (\*.exe, \*.msi)**
  - Location: **E:\Labfiles\Mod11\XmlNotepad.msi**
8. On the **Software description** page, under **Publisher**, type **Microsoft**, and then click **Next**.
9. On the **Requirements** page, explain the **Architecture** and **Operating System** requirements. Configure the following, and then click **Next**:
  - Architecture: **64-bit**
  - Operating System: **From Windows 8.1 to All newer operating systems**
10. On the **Command line arguments** page, click **Next**.
11. On the **Summary** page, click **Upload**.
12. After the file uploads, click **Close**.
13. To see the published application, refresh the Apps node.

## Demonstration: Deploying Apps by Using Intune

### Demonstration Steps

#### Sign in

1. Switch to LON-DC1, and then open Internet Explorer.
2. Browse to **http://manage.microsoft.com**.
3. Provide credentials to access the Intune Admin portal.

#### Deploy apps

1. In the Intune Admin portal, click the **Apps** workspace, and then click the **Apps** node.
2. In the Apps pane, right-click **XML Notepad 2007**, and then click **Manage Deployment**.
3. On the **Select Groups** page, click the **All Computers** group, click **Add**, and then click **Next**.
4. On the **Deployment Action** page, under **Deployment**, click the drop-down menu, and then select **Required Install**.

5. Under **Deadline**, click the drop-down menu, select **As soon as possible**, and then click **Finish**.
6. Click the **Groups** workspace.
7. In the Groups pane, click **All Devices**.
8. In the All Devices pane, right-click **LON-CL1.Adatum.com**, and then click **Refresh Policies**. At the message, click **Close**.

## Lesson 3

# Managing Access to Organizational Resources

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## Question and Answers

**Question:** Which of the following services do you use to provide automatic request and renewal of certificates?

- Network Access Protection
- Web Application Proxy server
- Active Directory Domain Services
- NDES

**Answer:**

- Network Access Protection
- Web Application Proxy server
- Active Directory Domain Services
- NDES

**Question:** Intune conditional access controls which devices can connect to an organization's network by using VPN profiles.

- True
- False

**Answer:**

- True
- False

## Resources

### Deploying Certificate Profiles by Using Intune



**Additional Reading:** For more information on configuring an infrastructure to support certificate profiles, refer to <http://aka.ms/xh6t2e>.

## Module Review and Takeaways

**Question:** You need to deploy a VPN connection setting for a Windows 10 workstation. You do not use any of the built-in VPN connection solutions that are listed in the policy setting. What can you do to support the Windows 10 computer?

**Answer:** You can configure a Windows Custom Policy that defines the OMA-URI settings that relate to VPN connections.

**Question:** Your organization has developed a modern application to deploy by using Intune. You need to suggest a method to control specific features within the application based on different departments. What should you do?

**Answer:** You can use the Intune App Wrapping Tool and configure the application to support MAM policy settings.

# Lab Review Questions and Answers

## Lab A: Deploying Applications by Using Microsoft Intune

### Question and Answers

**Question:** In the lab, you published and deployed an application to a group. If the application was part of a volume license agreement, what should you do next?

**Answer:** You should add your volume license agreement to Intune. This enables you to generate reports to show license compliance and usage.

**Question:** Before you can deploy apps to Android or iOS devices, what do you need to do first?

**Answer:** You need to configure the mobile device management authority to Intune. After you complete this task, you can then configure app deployment for mobile devices.

## Lab B: Managing Resource Access by Using Intune

### Question and Answers

**Question:** In the lab, you configured a trusted certificate profile and a Simple Certificate Enrollment Protocol (SCEP) certificate profile. What else might you need to do to ensure that the Network Device Enrollment Service (NDES) responds to requests from Intune clients?

**Answer:** During infrastructure configuration, you need to download and then install the NDES connector on the NDES server. This can be performed from the Admin workspace.

**Question:** In the lab, you configured the Microsoft Exchange Online policy immediately after the compliance policy was enabled. In a production environment, what might you want to do first before enabling the Exchange Online policy?

**Answer:** You should monitor the mobile device inventory reports to view the effect of the compliance policy. After you are satisfied with the effect the policy has on clients, you can then restrict the devices by using the Exchange Online policy.

# Module 12

## Configuring and Managing Client Hyper-V

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## Lesson 1

# Installing and Configuring Client Hyper-V

### Contents:

Question and Answers

3

## Question and Answers

**Question:** In which Windows 10 editions can you use Client Hyper-V? Select all that apply.

- Windows 10 Home
- Windows 10 Pro
- Windows 10 Enterprise
- Windows 10 Education
- Windows 10 Mobile Enterprise

**Answer:**

- Windows 10 Home
- Windows 10 Pro
- Windows 10 Enterprise
- Windows 10 Education
- Windows 10 Mobile Enterprise

**Question:** You can use Client Hyper-V for running Windows Server 2012 R2.

- True
- False

**Answer:**

- True
- False

**Question:** You can install Client Hyper-V by using the **Install-WindowsFeature** Windows PowerShell cmdlet.

- True
- False

**Answer:**

- True
- False

## Overview of Client Hyper-V

**Question:** How can you use multiple operating systems on a Windows 10 computer simultaneously?

**Answer:** You can use multiple operating systems on a Windows 10 computer simultaneously by installing the Client Hyper-V feature. With this feature, you can create multiple virtual machines, install a different operating system in each virtual machine, and then use them all at the same time.

**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 conflict. Each virtual machine is isolated from others and from the Windows 10 computer. Therefore, no conflict will exist if operating systems in virtual machines are configured with the same settings.

## How to Install Client Hyper-V

**Question:** Can members of the Hyper-V Administrators group install the Client Hyper-V feature on a Windows 10 computer?

**Answer:** Yes, members of the Hyper-V Administrators group can manage Client Hyper-V, but they cannot install the feature itself. Administrative permissions are required in Windows 10 to be able to install the Client Hyper-V feature.

**Question:** Which Windows PowerShell cmdlet can you use to install the Client Hyper-V feature in Windows 10?

**Answer:** You use the **Enable-WindowsOptionalFeature** cmdlet to install Client Hyper-V in Windows 10.

## Client Hyper-V Settings

**Question:** How many virtual machines that are running on Windows 10 Enterprise can you move simultaneously by default without any downtime?

**Answer:** Windows 10 does not support live migration, which means that you cannot move any running virtual machines from or onto a Windows 10 computer.

**Question:** You want Adam to be able to manage virtual machines that are running on Windows 10. However, you also want to grant him minimal required permissions. In which group should you add him?

**Answer:** If you want to grant a user the ability to manage virtual machines on Windows 10 but you do not want to give him any unnecessary permissions, you should add him to the Hyper-V Administrators group.

## Lesson 2

# Configuring Virtual Switches

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## Question and Answers

**Question:** When you create an internal virtual switch, you will get an additional network connection in Windows 10.

- True  
 False

**Answer:**

- True  
 False

**Question:** You can connect an external virtual switch only to an Ethernet network adapter.

- True  
 False

**Answer:**

- True  
 False

## Types of Virtual Switches

**Question:** You have a Windows 10 laptop with one Ethernet adapter and one wireless adapter. How many external virtual switches can you create on the laptop after you install the Client Hyper-V role?

**Answer:** Each external virtual switch must be connected to a different Ethernet or wireless adapter. Because you have a laptop with two such adapters, you can create two external virtual switches.

**Question:** You have a Windows 10 laptop with one Ethernet adapter and one wireless adapter. How many internal virtual switches can you create on the laptop after you install the Client Hyper-V role?

**Answer:** Internal virtual switches do not require any network adapter on Windows 10 computer and you can create as many internal virtual switches as you want.

## Advanced Settings for Virtual Switches

**Question:** Where can you configure advanced virtual switch settings?

**Answer:** You can configure several advanced virtual switch settings in the Advanced Features settings section for the virtual machine network adapter. Some advanced settings you only can configure by using Windows PowerShell.

**Question:** Should you enable DHCP guard protection on each virtual machine that you want to protect from obtaining TCP/IP configuration from the unauthorized DHCP server?

**Answer:** No. You should enable DHCP guard protection only on virtual machines in which the (potentially) unauthorized DHCP server is installed. When you enable DHCP guard protection on a virtual machine, DHCP in the virtual machine cannot provide TCP/IP settings to other systems on the network. DHCP guard protection settings have no effect on whether the virtual machine can obtain TCP/IP settings.

## Demonstration: Configuring Virtual Switches

### Demonstration Steps

1. On LON-CL6, right-click the **Start** icon, and then click **Network Connections**.

2. In the Network Connections window, point out that only one network connection, **Ethernet 2**, displays.
3. On the taskbar, in the **Search the web and Windows** text box, type **hyper-v**, and then click **Hyper-V Manager**. If Hyper-V Manager does not appear, click the **Start** menu, and in the **Windows Administrative Tools** folder, start **Hyper-V Manager**.
4. In Hyper-V Manager, in the Actions pane, click **Virtual Switch Manager**.
5. In Virtual Switch Manager, in the Create Virtual Switch section, click **Private**, and then click **Create Virtual Switch**.
6. In the **Name** text box, type **Private Switch**. Point out that the **VLAN ID** section is not available, and then click **OK**.
7. In the Network Connections window, point out that still only one network connection displays. Explain that no additional connection is added in Windows 10 when you create a private virtual switch.
8. In Hyper-V Manager, in the Actions pane, click **Virtual Switch Manager**.
9. In Virtual Switch Manager, in the **Create Virtual Switch** section, click **Internal**, and then click **Create Virtual Switch**.
10. In the **Name** text box, type **Internal Switch**. Point out that the VLAN ID section is now available, and then click **OK**.
11. In the Network Connections window, point out that now there are two network connections that display. Explain that the additional connection was added when you created the internal virtual switch.
12. Repeat steps 8–11, and use **Internal Switch 2** as the name of the switch. Explain that you can create many internal switches, if needed.
13. In Hyper-V Manager, in the Actions pane, click **Virtual Switch Manager**.
14. In Virtual Switch Manager, in the Create Virtual Switch section, click **External**, and then click **Create Virtual Switch**.
15. In the **Name** text box, type **External Switch**. Point out that **VLAN ID** section is available, and that one network adapter is listed in the **External network** drop-down list box.
16. After reviewing the information, click **OK**, and then click **Yes**.
17. In the Network Connections window, point out that now there are four network connections, and one of them is named **vEthernet (External Switch)**.
18. Repeat steps 13–16 and use **External Switch 2** as the name of the switch. Explain that this time an error occurs, because in Windows 10 you can only have as many external virtual switches as there are network adapters.
19. Click **Close**, click **Cancel**, and then close Hyper-V Manager.

## Lesson 3

# Creating and Managing Virtual Hard Disks

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## Question and Answers

**Question:** You can convert between the .vhd, .vhdx, and .vhds virtual hard disk formats.

True

False

**Answer:**

True

False

**Question:** If you want to increase the size of a .vhd virtual hard disk from 1 TB to 3 TB, you first must convert it to .vhdx format.

True

False

**Answer:**

True

False

**Question:** You have a virtual hard disk that contains several files. You need to access those files. Which of the following must you run first? (Select all answers that apply.)

Hyper-V Manager

Diskpart.exe

Format.exe

Disk Management

Test-VHD cmdlet

**Answer:**

Hyper-V Manager

Diskpart.exe

Format.exe

Disk Management

Test-VHD cmdlet

## Overview of Disk Formats

**Question:** Can you convert a 2,000 GB virtual hard disk that is in .vhds format to .vhdx format?

**Answer:** No. You can convert only between .vhd and .vhdx formats. You cannot convert from or to the .vhds format.

**Question:** Can you use a virtual hard disk in .vhd format in Windows 10 if it was created in Client Hyper-V on Windows 8? In addition, can you use a virtual hard disk in the .vhds format in Windows 8 if it was created in Client Hyper-V on Windows 10?

**Answer:** Yes, you can use a virtual hard disk in .vhd format in Windows 10. However, you cannot use a virtual hard disk in .vhds format on Windows 8.

## Overview of Disk Types

**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 a differencing virtual hard disk, Client Hyper-V can allocate the differencing virtual hard disk more space than the parent disk to which it links.

**Question:** Can you create a differencing virtual hard disk in .vhdx format, which has as its parent a virtual hard disk in the .vhd format?

**Answer:** No. A differencing virtual hard disk and its parent must be in the same format, either .vhd or .vhdx.

## Inspecting and Editing a Virtual Hard Disk

**Question:** Can you compact the virtual hard disk of a running virtual machine?

**Answer:** You can compact a virtual hard disk of a running virtual machine, but only if it is in .vhdx format and if it is connected to SCSI controller. If these requirements are not met, you cannot compact the virtual hard disk of the running virtual machine.

**Question:** Can you use Edit Disk to edit a virtual hard disk in the .vhds format?

**Answer:** Yes, you can use Edit Disk to edit a virtual hard disk in the .vhds format. In this case, Compact and Expand are the available options.

## Demonstration: Creating a Virtual Hard Disk

### Demonstration Steps

1. In LON-CL6, on the taskbar, in the **Search the web and Windows** text box, type **hyper-v**, and then click **Hyper-V Manager**. If Hyper-V Manager does not appear, click the **Start** menu and in the **Windows Administrative Tools** folder, start **Hyper-V Manager**.
2. In Hyper-V Manager, in the Actions pane, click **New**, and then click **Hard disk**.
3. In the New Virtual Hard Disk Wizard, on the **Before You Begin** page, click **Next**.
4. On the **Choose Disk Format** page, confirm that **VHDX** is selected, and then click **Next**.
5. On the **Choose Disk Type** page, confirm that the default disk type for VHDX hard disk is set to **Dynamically expanding**, and then click **Next**.
6. On the **Specify Name and Location** page, in the **Name** text box, type **Dynamic.vhdx**. In the **Location** text box, type **C:\VMs**, and then click **Next**.
7. On the **Configure Disk** page, confirm that **Create a new blank virtual hard disk** is selected. In the **Size** text box, type **100**, and then click **Next**.
8. On the **Completing the New Virtual Hard Disk Wizard** page, click **Finish**.
9. In LON-CL6, in Hyper-V Manager, in the Actions pane, click **New**, and then click **Hard disk**.
10. In the New Virtual Hard Disk Wizard, on the **Before You Begin** page, click **Next**.
11. On the **Choose Disk Format** page, click the **VHD** disk format, and then click **Next**.
12. On the **Choose Disk Type** page, click **Differencing**, and then click **Next**.
13. On the **Specify Name and Location** page, in the **Name** text box, type **Differencing.vhd**. In the **Location** text box, type **C:\VMs**, and then click **Next**.

14. On the **Configure Disk** page, click **Browse**. Browse to **D:\Program Files\Microsoft Learning\base\Base15A-W10.vhd**, click **Open**, and then click **Next**.



**Note:** The actual drive letter on which base images are stored could be different depending on the physical computer configuration. Drive D is used in the instructions, but you should use the drive on which base images are stored in your environment.

15. On the **Completing the New Virtual Hard Disk Wizard** page, click **Finish**.
16. In LON-CL6, on the taskbar, in the **Search the web and Windows** text box, type **powershell**. Right-click **Windows PowerShell**, click **Run as administrator**, and then click **Yes**.
17. In Windows PowerShell, create a fixed-size virtual hard disk by typing the following cmdlet, and then press Enter:

```
New-VHD -Path C:\VMs\Fixed.vhdx -SizeBytes 1GB -Fixed
```

18. In LON-CL6, on the taskbar, click the **File Explorer** icon.
19. In File Explorer, in the navigation pane, expand **Local Drive (C:)**, and then click **VMs**. In the details pane, point out that all the three virtual hard disks that you created display.
20. Right-click **Fixed.vhdx**, and then click **Properties**. Point out that its size on disk is 1.00 gigabytes (GB), and then click **OK**.
21. Point out that **Dynamic.vhdx** and **Differencing.vhd** are allocated less space on the disk, even though you configured **Dynamic.vhdx** with 100 GB.



**Note:** You can extend the demonstration by mounting all three virtual hard disks and creating partitions on both fixed size and dynamically expanding disks. Then, you can copy several megabytes of data to all three volumes and show how the sizes of **Dynamic.vhdx** and **Differencing.vhd** are increasing, while the size of **Fixed.vhdx** remains the same.

## Lesson 4

# Creating and Managing Virtual Machines

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## Question and Answers

**Question:** Which of the following hardware components can you use in Generation 2 virtual machines?

- BIOS
- IDE controller
- Network adapter
- Fibre Channel adapter
- COM 1

**Answer:**

- BIOS
- IDE controller
- Network adapter
- Fibre Channel adapter
- COM 1

**Question:** Which of the following modifications can you perform on a running virtual machine in Client Hyper-V on Windows 10?

- Rename the virtual machine
- Move virtual hard disk from volume C: to volume D:
- Increase startup RAM
- Decrease startup RAM
- Connect the network adapter to a different virtual switch

**Answer:**

- Rename the virtual machine
- Move virtual hard disk from volume C: to volume D:
- Increase startup RAM
- Decrease startup RAM
- Connect the network adapter to a different virtual switch

## Types of Virtual Machines

**Question:** Can you convert a Generation 1 virtual machine that has Windows 10 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 in that virtual machine.

**Question:** Can you add a DVD drive to Generation 2 virtual machine?

**Answer:** In a Generation 1 virtual machine, the DVD drive is connected to an IDE controller by default. Generation 2 virtual machines do not support IDE controllers, and therefore a DVD drive is not available in Generation 2 virtual machines by default. If you need a DVD drive, you can add it to a SCSI controller in the Generation 2 virtual machine.

## Modifying 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 RAM and increase the maximum RAM while a virtual machine is running, and you always can modify memory weight.

**Question:** Do you always need to turn off a virtual machine to be able to modify its settings?

**Answer:** It depends on the modification that you want to perform. For example, if you want to rename a virtual machine, connect it to a different virtual switch, or add a virtual hard disk to the SCSI controller, you can complete these actions while the virtual machine is running. However, if you want to add a virtual hard disk to an IDE controller or increase the memory that is available to the virtual machine, you must first shut down the virtual machine.

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

**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 a virtual machine configuration from the past, which you cannot modify.

## Resources

### Types of Virtual Machines



**Additional Reading:** To learn more about Generation 2 virtual machines, visit <http://go.microsoft.com/fwlink/?LinkID=386690>

## Demonstration: Creating a Virtual Machine

### Demonstration Steps

1. In LON-CL6, on the taskbar, in the **Search the web and Windows** text box, type **hyper-v**, and then click **Hyper-V Manager**.
2. In Hyper-V Manager, in the Actions pane, click **New**, and then click **Virtual Machine**.
3. In the New Virtual Machine Wizard, on the **Before You Begin** page, click **Next**.
4. On the **Specify Name and Location** page, in the **Name** text box, type **LON-VM2**, and then click **Next**.
5. On the **Specify Generation** page, click **Generation 2**, and then click **Next**.

6. On the **Assign Memory** page, point out that **Startup Memory** is **1024 MB**, and that the check box **Use Dynamic Memory for this virtual machine** is selected, and then click **Next** four times.
7. On the **Completing the Virtual Machine Wizard** page, click **Finish**. Point out that the virtual machine named LON-VM2 has been created and displays.
8. On LON-CL6, on the taskbar, in the **Search the web and Windows** text box, type **powershell**. Right-click **Windows PowerShell**, click **Run as administrator**, and then click **Yes**.
9. In Windows PowerShell, to create a virtual machine, type the following two cmdlets, pressing Enter at the end of each line.

```
New-VM -Name LON-VM1 -MemoryStartupBytes 1GB -Generation 1 -BootDevice IDE  
Add-VMHardDiskDrive -VMName LON-VM1 -ControllerType IDE -Path C:\VMs\Differencing.vhd
```

10. On LON-CL6, in Hyper-V Manager, right-click **LON-VM2**, and then click **Settings**.
11. In Settings for LON-VM2, in the details pane, in the Add Hardware section, point out that three types of hardware display. Show that in the left pane, in the Hardware section, no BIOS, IDE Controllers, COM ports, or Diskette Drive display, but that Firmware is listed, and then click **OK**.
12. In Hyper-V Manager, right-click **LON-VM1**, and then click **Settings**.
13. Under Settings for LON-VM1, in the details pane, in the Add Hardware section, point out that four types of hardware are listed. Point out that in the left pane, in the Hardware section, BIOS, IDE Controllers, COM ports, and Diskette Drive now display, but that Firmware does not, and then click **OK**.

## Module Review and Takeaways

**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 virtual machines based on Hyper-V 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 will you not be able to 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 the 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 in size 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 the Windows PowerShell feature.

# Lab Review Questions and Answers

## Lab: Configuring Virtual Machines by Using Client Hyper-V

### Question and Answers

**Question:** Why did you have to use native boot from a Windows 10 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 10 is running on a virtual machine. Therefore, you had to use native boot from a Windows 10 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 virtual machine connectivity with other virtual machines that are running on the same Windows 10 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.