

OFFICIAL MICROSOFT LEARNING PRODUCT

20695C

Deploying Windows Desktops and Enterprise Applications

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Revised July 2013

Module 1

Assessing the network environment for supporting operating system and application deployment

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Lesson 1

Overview of the enterprise desktop life cycle

Contents:

Question and Answers

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Question and Answers

Question: Which of the following is NOT part of the enterprise desktop deployment life cycle?

- () Demand forecasting
- () Imaging
- () Training
- () Virtualizing Windows sessions with Terminal Services
- () Virtualizing applications with App-V

Answer:

- () Demand forecasting
- () Imaging
- () Training
- (√) Virtualizing Windows sessions with Terminal Services
- () Virtualizing applications with App-V

Feedback: All of the options provided, except virtualizing Windows sessions with Terminal Services, are part of the desktop deployment life cycle. Although virtualizing Windows sessions with Terminal Services is a valid option, it is not part of the enterprise desktop deployment life cycle.

Question: What are the considerations when you retire systems?

Answer: Answers will vary, but might include:

- Ensuring data security, and removing all sensitive data from systems before reselling.
- Arranging computer pickup, retrieval, and replacement to avoid work interruptions.
- Establishing residual value, and selling or donating systems at the end of their useful life.
- Evaluating the licensing options to avoid compliance issues.

Categorize Activity

Question: Categorize each item into the appropriate phase of enterprise desktop life cycle. Indicate your answer by writing the category number to the right of each item.

Items	
1	Streamlining the deployment process
2	Using ACT for testing and understanding application compatibility
3	Ensuring computer security
4	Developing and testing the deployment process
5	Using MDOP to mitigate application compatibility issues
6	Deploying software updates
7	Configuring standardized images

Items	
8	Virtualizing applications
9	Protecting data
10	Managing logistics
11	Using Windows Store to deploy applications
12	Providing IT support
13	Baselining images
14	Using Windows Store for Business to deploy applications
15	Training the end users

Category 1		Category 2		Category 3
Desktop deployment		Application deployment planning		Operation and support

Answer:

Category 1		Category 2		Category 3
Desktop deployment		Application deployment planning		Operation and support
Streamlining the deployment process Developing and testing the deployment process Configuring standardized images Managing logistics Baselining images		Using ACT for testing and understanding application compatibility Using MDOP to mitigate application compatibility issues Virtualizing applications Using Windows Store to deploy applications Using Windows Store for Business to deploy applications		Ensuring computer security Deploying software updates Protecting data Providing IT support Training the end users

Lesson 2

Assessing readiness for a desktop deployment by using Configuration Manager

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Question and Answers

Question: You are the IT manager for the Adatum company. Your organization consists of multiple locations connected through an MPLS network. Over the previous decade, the company has made several different computer purchases, and the application portfolio has grown to include commercial and in-house developed applications. The chief information officer (CIO) has decided that it is time for a hardware update. You have been asked to develop a cost-effective plan to upgrade or replace all the client systems so that every user will be using Windows 10. While looking through the data you previously collected, you decide that you want to use Configuration Manager to assist with the assessment of your environment. Which features of Configuration Manager do you think would be most helpful with your assessment?

Answer: Answers will vary. However, they should include some or all of the features discussed.

For example:

- Asset Intelligence – can be used to find systems that are or are not capable of running specific applications.
- Hardware Inventory – can be used to determine the average age of the systems deployed at Adatum, which might affect upgrade/replacement plans.
- Software metering – can be used to determine which applications are not being used or how frequently/infrequently certain applications are used.

Discussion: Assessing your current environment

Question: What are the key factors to include when you assess your current environment?

Answer: You should consider several items related to your current environment, including:

- Business needs.
- Organizational goals.
- Inventory (if it exists).
- The kinds of user devices your environment supports, and their impact, including smart phones, tablets, and laptops that users utilize as desktops.
- Diagrams, maps, building plans, and other written documents.
- Bandwidth.
- Fast local area network (LAN) speeds versus wide area network (WAN) speeds.
- BYOD.

Question: What tools do you use to assess your environment?

Answer: Answers will vary, but could include the tools discussed previously:

- ACT
- Configuration Manager

Question: What should be the output of an environment assessment?

Answer: The assessment output should be an actionable report that includes facts such as:

- Capabilities of the existing infrastructure.
- Capabilities of the existing systems that will be reused.
- Requirements for existing applications and planned applications.

Tools for assessing your current environment

Question: You are the IT manager for A. Datum Corporation. Your organization consists of multiple locations connected to each other through a Multiprotocol Label Switching (MPLS) network. Over the previous decade, the company has made several different computer purchases, and the application portfolio has grown to include commercial and in-house developed applications. The chief information officer (CIO) has decided that it is time for a hardware update. You have been asked to develop a cost-effective plan to upgrade or replace all the client systems so that every user will be using Windows 10. Which tools can help you develop this plan?

- ☐ Windows ADK – Deployment tools
- ☐ Windows ADK – Windows Assessment Services
- ☐ MAP
- ☐ Endpoint Protection
- ☐ MDOP

Answer:

- ☐ Windows ADK – Deployment tools
- ☒ Windows ADK – Windows Assessment Services
- ☒ MAP
- ☐ Endpoint Protection
- ☐ MDOP

Feedback: Deployment tools, Endpoint Protection, and MDOP are useful tools for deploying or managing desktop operating systems. However, they do not have functionality that is used as part of the assessment process.

Resources

Configuration Manager features that facilitate infrastructure assessment



Additional Reading: For more information on assets and compliance in Configuration Manager, refer to Assets and Compliance in System Center 2012 Configuration Manager: <http://aka.ms/Cs7vn8>

Demonstration: Assessing hardware inventory by using Configuration Manager

Demonstration Steps

Configure and run a hardware inventory

1. Sign in to LON-CFG as **Adatum\administrator** with the password **Pa\$\$w0rd**.
2. On the taskbar, click **Configuration Manager Console**.
3. In the Configuration Manager console, click the **Administration** workspace.
4. In the **Administration** workspace, click **Client Settings**, and then click **Default Client Settings**.
5. On the **Home** tab, in the **Properties** group, click **Properties**.
6. In the **Default Settings** dialog box, click **Hardware Inventory**.

7. In the **Device Settings** list, configure the following:
 - a. Enable hardware inventory on clients: **Yes**.
 - b. Hardware inventory schedule: Specify the interval at which clients submit hardware inventory. Use the default value of **7 days**. Click **Schedule** to show how to set a custom interval.
8. Click **Cancel** to return to the **Hardware Inventory** page.
9. Click **Set Classes** to open the Hardware Inventory Classes window.
10. Verify **Installed Software – Asset Intelligence (SMS_InstalledSoftware)** and **Software Tag – Asset Intelligence (SMS_SoftwareTag)** are selected.
11. Click **OK** to close the **Hardware Inventory Classes** dialog box.



Note: Review the different classes listed. Explain some of them to students. Note that the classes are in Windows Management Instrumentation (WMI) namespaces. Point out the buttons below the list of classes: **Import**, **Export**, and **Add**. You can use all of these functions. However, to import, you must have access to a Managed Object Format (MOF) file. When you export, you create a MOF file for the hardware classes listed and checked here.

12. When you are finished, click **Cancel**.
13. Sign in to LON-CL1 as **Adatum\administrator** with the password **Pa\$\$w0rd**.
14. Right-click the Start button, and then click **Control Panel**.
15. In the Control Panel, click the **System and Security** hyperlink.
16. Scroll to the bottom, and then click **Configuration Manager**.
17. In the **Configuration Manager Properties** box, click the **Actions** tab.
18. Click **Hardware Inventory Cycle**, and then click **Run Now**.
19. A message displays that states that the selected cycle will run and might take several minutes to finish. Click **OK**, and then click **OK** again to close the Configuration Manager Properties window.
20. Close the **System and Security** window.

View hardware inventory data

1. On LON-CFG, in the Configuration Manager console, click **Assets and Compliance**.
2. In the **Assets and Compliance** workspace, click **Devices**.
3. Click **LON-CL1** in the details pane, and on the **Home** tab, in the **Device** group, click **Start**, and then click **Resource Explorer**. The Resource Explorer window opens.
4. Expand the **Hardware** node in the console tree. You can select any hardware item in the console tree, right-click any item in the details pane of the Resource Explorer window, and then click **Properties** to open the **Properties** dialog box. This provides a list of the collected inventory information in a more readable format.
5. Close the Resource Explorer window when you are finished.

View Asset Intelligence reports

1. On LON-CFG, in the **Configuration Manager** console, click **Monitoring**.
2. In the **Monitoring** workspace, expand **Reporting**, and then expand **Reports**.
3. Select the **Asset Intelligence** folder.

4. In the results pane, briefly review the report titles, right-click **Hardware 08A – Hardware that is not ready for a software upgrade**, and then click **Run**.
5. Configure the Hardware 08A – Hardware that is not ready for a software upgrade report as follows:
 - a. For the **Collection** field, click **Values**, click **All Systems**, and then click **OK**.
 - b. For the **Product** field, click **Values**, click **Microsoft SQL Server 2008 R2 Enterprise (64-bit) x64**, and then click **OK**.
6. Click **View Report**.
7. Examine the results, and then close the **Hardware 08A – Hardware that is not ready for a software upgrade** report.
8. Close the Configuration Manager console.

Lesson 3

Assessing deployment readiness by using MAP

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Question and Answers

Question: You are the IT manager for the Adatum company. Your organization consists of multiple locations connected to each other through an MPLS network. Over the previous decade, the company has made several different computer purchases, and the application portfolio has grown to include commercial and in-house developed applications. The CIO has decided that it is time for a hardware update. You have been asked to develop a cost-effective plan to upgrade or replace all the client systems so that every user will be using Windows 10. As part of the planning phase, you have been gathering comments from the user base about the environment. You are seeing frequent complaints about performance. How could you use the MAP toolkit to assist with the migration planning, and to explore and assess the complaints, and address performance issues, as necessary?

Answer: Answers will vary. However, they should include a discussion of the Windows 10 readiness assessment and the collection of performance metrics.

Demonstration: Using MAP for infrastructure and deployment readiness

Demonstration Steps

Create an inventory database

1. Sign in to LON-CL1 as **adatum\administrator** with the password **Pa\$\$w0rd**.
2. Click **Start**, click **All apps**, scroll down and click the **Microsoft Assessment and Planning Toolkit** folder, and then click **Microsoft Assessment and Planning Toolkit** to start MAP. You might want to resize the application to full screen.
3. In the **Microsoft Assessment and Planning Toolkit** dialog box, click **Create an inventory database**, type **Demo** as a new database name, and then click **OK**.
4. Click **File**, and then click **Manage Databases** to open the **Microsoft Assessment and Planning Toolkit** dialog box.
5. Select the **Demo** database, and then click **Export**.
6. Type **Demo** as the file name, and then click **Save**.
7. After successfully exporting the database, click **OK**.
8. In the **Microsoft Assessment and Planning Toolkit** dialog box, click **Import**.
9. In the **Microsoft Assessment and Planning Toolkit** dialog box, click **Browse**, select the **MAP_SampleDB** demonstration database from the **DatabaseBackups** folder (**C:\Program Files\Microsoft Assessment and Planning Toolkit**), and then click **Open**.
10. In the **Microsoft Assessment and Planning Toolkit** dialog box, in the **Database Name** box, type **MAP_SampleDB**, and then click **OK**.
11. If a message displays starting with **The imported database needs to be upgraded**, select **Yes**. In a few moments, a **Microsoft Assessment and Planning Toolkit** dialog box appears stating "Successfully imported and upgraded the database". If the database did not need to be upgraded, a **Microsoft Assessment and Planning Toolkit** dialog box appears stating "Successfully imported the database. Database name: MAP_SampleDB". In the **Microsoft Assessment and Planning Toolkit** dialog box, click **OK**.
12. Observe that the database is present as a selection in the **Microsoft Assessment and Planning Toolkit** dialog box.
13. When finished, click **Close** in the **Microsoft Assessment and Planning Toolkit** dialog box.

View inventory data

1. Click **File**, and then click **Create/Select Database**.
2. Select the **MAP_SampleDB** database, and then click **OK**.
3. Click the **Desktop** node, and then select the **Windows 10 Readiness** scenario after the database is ready.
4. Under **Options**, click **Generate Windows 10 Readiness Report**.
5. When the **Report Generation Status** dialog box displays **Reports Generated 1 of 1**, click **Close**.
6. Open the **Windows10Assessment-xxxx.xlsx** report.
7. Review the Windows10Assessment-xxxx.xlsx report. Close the report when complete.
8. Perform a similar report generation on the **Environment** node for the **Inventory Results** scenario. Review the generated Excel report.
9. Close the report when complete.
10. Close the console.

Revert virtual machines

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

1. On the host computer, start Hyper-V Manager.
2. In the **Virtual Machines** list, right-click **20695C-LON-DC1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for 20695C-LON-CFG.
5. Repeat steps 2 and 3 for 20695C-LON-CL1.

Module Review and Takeaways

Real-world Issues and Scenarios

The tools this module describes are used to discover issues in pre-production and production environments. You should consider some of the limitations of these tools when you decide where to use them.

- Windows ADK
 - ACT fixes should be considered short-term solutions while the applications are being re-developed to work with Windows 10 natively. Using an older application with a compatibility fix can leave an application or system with security vulnerabilities.
 - The Windows Performance Toolkit that ships with the Windows 10 ADK/SDK is not compatible with Windows 7 SP1 or Windows Server 2008 R2 SP1.
 - Before you use the Windows Assessment Services to assess production systems, you should consider the implications carefully. Many of the tests modify the target system in undesirable ways, such as altering local user accounts or automatic logons, and can take hours to complete. Generally, only nondomain, nonproduction systems should be used to perform assessments.
 - Keep checking the Microsoft Deployment Toolkit Team Blog at <http://aka.ms/E43xvk> for updates and changes.
- MAP
 - The MAP inventory might not include all the applications installed on a system. The application collection process queries WMI directly to find all applications that are installed through a Microsoft Windows Installer (MSI). MAP does not discover applications that are not installed using an MSI. Configuration Manager software inventory can collect information about applications on a system that might not be visible to MAP.
 - Keep checking the MAP Blog at <http://aka.ms/MII3el> and MAP Toolkit Content Index (en-US) at <http://aka.ms/Nd394p> for updates and changes, especially after new versions of MAP are released.

Review Question(s)

Question: Which Microsoft products, features, or tools can you use to retrieve your network's hardware and software inventory?

Answer: You can use the Asset Intelligence, Software Inventory, and Hardware Inventory features in Configuration Manager and MAP to retrieve your network's hardware and software inventory.

Lab Review Questions and Answers

Lab: Assessing the network environment for supporting operating system and application deployment

Question and Answers

Question: What are the differences between MAP and Configuration Manager when you use them to assess operating system deployment readiness?

Answer: MAP does not require an agent or a server infrastructure, and it contains predefined reports for operating system deployment readiness. Configuration Manager requires a server infrastructure and an agent on the clients, and it does not contain predefined readiness reports. However, you can use the data gathered through Configuration Manager to plan and perform the upgrade process.

Module 2

Determining operating system deployment strategies

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Lesson 1

Understanding tools and strategies you can use for operating system deployment

Contents:

Question and Answers	3
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Demonstration: Windows 10 In-Place Upgrade	3

Question and Answers

Question: In your environment, will you use the Windows 10 in-place upgrade?

Answer: Answers will vary, for many organizations the in-place upgrade will be part of an overall strategy that encompasses multiple ways to migrate to Windows 10.

Resources

Using the Windows 10 in-place upgrade



Additional Reading: For more information, refer to:

- Upgrading to Windows 10: In Depth: <http://aka.ms/Afti1z>
- Windows 10 deployment scenarios: <http://aka.ms/Jmgu7u>

Demonstration: Windows 10 In-Place Upgrade

Demonstration Steps

Each numbered step corresponds to the screenshots as play in the presentation. Right-click the presentation to pause at a specific screen.

1. The initial screenshot shows a Windows 7 desktop.
2. You can access the installation files by inserting a DVD or connecting to a network share.
3. Run setup.exe to begin the in-place upgrade process.
4. The Windows 10 setup wizard starts and you have the option to download and install updates.
5. Regardless of whether you download updates, the setup process has background work to complete, but a status bar displays so you are aware of the progress.
6. You must accept the license agreement before you continue the update process.
7. The setup wizard will complete several background tasks before restarting the system, including checking how much disk space is available.
8. Once the setup wizard verified that the system can be upgraded to Windows 10, you are asked to specify what, you want to migrate, and you can click the **Choose what to keep** link.
9. If you click the **Choose what to keep** link, the wizard presents you with several options. If you click **Next**, the system will reboot.
10. After the system restarts, the installation process begins.
11. Note that the counter details the entire installation process, not just this phase of the process.
12. The installation process transitions to the Installing features and drivers phase, and you should note that:
 - a. The Copying files label is blue because the Copying files phase is complete.
 - b. The percentage of progress for the Installing features and drivers phase is next to the label.
 - c. The overall completion percentage is in the center of the screen.
13. Point out that when the overall completion percentage is at 75, the installing features and drivers completion percentage is at 100.
14. Note that between phases, the system restarts.

15. Point out that the first two phases now have blue labels and the process has moved onto the Configuring Settings phase.
16. The Configuring settings phase is nearly complete.
17. The system restarts again, and the final out-of-box experience (OOBE) phase has begun.
18. You then are asked to use Express settings, or you can click the **Customize settings** link.
19. You are introduced to Cortana.
20. Some of the new Windows 10 apps are introduced.
21. The installation process is almost complete.
22. After the final restart, you can sign in to Windows 10.
23. The new Windows sign-in screen is presented.
24. You are welcomed for the first time.
25. You will receive several messages as the background tasks are completed.
26. Finally, you will be at the Windows 10 desktop and ready to work.

Lesson 2

Using the High Touch with Retail Media deployment strategy

Contents:

Question and Answers	6
Resources	6

Question and Answers

Question: In your environment, will you be using the High Touch with Retail Media deployment strategy?

Answer: Answers will vary. Students who do not use volume license media might find this strategy attractive.

Resources

Requirements for Using the High Touch with Retail Media strategy



Additional Reading: To download the Windows ADK for Windows 10 update, refer to <http://aka.ms/J8vq9g>

Lesson 3

Using the High Touch with a Standard Image deployment strategy

Contents:

Question and Answers

8

Question and Answers

Question: In your environment, will you use the High Touch with a Standard Image method for migrating to Windows 10?

Answer: Answers will vary. Many organizations have used, and will continue to use, the high touch strategy for deployments.

Lesson 4

Using a lite touch deployment strategy

Contents:

Question and Answers

10

Question and Answers

Question: In your environment, will you use a lite touch deployment strategy?

Answer: Answers will vary, depending on the methods that the students currently use.

Lesson 5

Using a zero touch deployment strategy

Contents:

Question and Answers

12

Question and Answers

Question: How do you use DISM in zero touch deployments?

Answer: Configuration Manager task sequences use DISM to apply and capture images.

Lesson 6

Alternative deployment strategies for Windows desktops

Contents:

Question and Answers	14
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Demonstration: Configuring virtual hard disk with native boot	14

Question and Answers

Question: Do you plan to use any of the alternative methods for deploying Windows 10 in your environment?

Answer: Answers will vary. It is likely that students will have uses for each of the methods that you discussed.

Resources

Using Windows ICD to provision a device



Additional Reading: For more information, direct the students to Getting started with Windows ICD: <http://aka.ms/K7dekj>

Demonstration: Configuring virtual hard disk with native boot

Demonstration Steps

Each numbered step corresponds to the screenshots as play in the presentation. Right-click the presentation to pause at a particular screen:

1. The initial screenshot shows signing in to the LON-CL1 desktop. Note the user name.
2. After signing in, you can see the LON-CL1 desktop.
3. Point out the commands that you can use to mount the virtual hard disk:
 - a. **Diskpart**
 - b. **Select vdisk file=e:\Windows10.vhd**
 - c. **Attach vdisk**
 - d. **Select disk 2**
 - e. **Online disk**
4. Point out the commands that you can use to make the virtual hard disk drive bootable:
 - a. **Bcdboot g:\Windows**
 - b. **Bcdedit /set {default} Description Win10VHD**
5. Explain that you can use BCDEdit /v to verify the virtual hard disk has been added to the boot menu:
 - a. Point out the Windows Boot Loader section with the **vhd=** entry.
6. Explain that the system to test the new .vhd file.
7. After you restart, you will see a menu with the operating system options. Note the description from the BCDEdit command.
8. Please note the new login screen and that it has a different user.
9. Please note that the desktop now has a different label.
10. You can use BCDEdit to verify the virtual hard disk drive information. You should copy the Identifier to use in the command to remove the .vhd drive from the start menu.
11. Note that you use the BCDEdit command to remove the virtual hard disk drive from the boot menu.
 - a. **Bcdedit /delete {identifier}**
12. The system is being restarted into the original operating system.
13. Note that the sign-in name matches the original sign-in name.
14. You now have restarted back into the original desktop.

Module Review and Takeaways

Best Practices

- Create your reference machine as a VM, so that you can take snapshots of the reference system at various stages of development. This is useful if you need to recover your reference system quickly. You can use MDT and Configuration Manager to maintain and service the reference image.
- If you are using Configuration Manager to deploy your images, consider using thin images and adding applications through application deployment in Configuration Manager.
- Avoid using high touch strategies as much as possible. They leave a lot of room for human error and are harder to maintain in larger environments.

Real-world Issues and Scenarios

Some organizations might have a lot of time, money, and effort invested into sector-based imaging products, and might be reluctant to move to image-based deployments. There is an initial investment into training and planning for new ways of deployment, but the return on investment will occur over time. Microsoft provides most of the image-based deployment tools free of charge, and these tools typically require less time and effort with respect to image creation and maintenance.

Tools

The following table includes the tools that are needed for this module.

Tool	Used to	Where to find it
Windows ADK	Assess your environment, and deploy Windows operating systems.	To download the Windows Assessment and Deployment Kit (Windows ADK) for Windows 10, refer to http://aka.ms/C7o0nj
MDT 2013 Update 1	Deploy Windows by using the lite touch and zero touch strategies.	To download the Microsoft Deployment Toolkit (MDT) 2013 Update 1, refer to http://aka.ms/Kplg7k

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Sysprep fails when trying to capture the reference image.	Disjoin the system from the domain before trying to run Sysprep.
The Pre-Boot EXecution Environment (PXE) start is terminated.	Ensure a boot image is associated with Windows Deployment Services or Configuration Manager task sequences. Also, ensure the boot image is distributed in Configuration Manager.

Lab Review Questions and Answers

Lab: Determining operating system deployment strategies

Question and Answers

Question: What type of deployment would you use for an organization that has 200 user devices in a single location, with five Windows Server 2012 R2 servers that are running Internet Information Services (IIS), SQL Server, and file services only, without having to purchase new software?

Answer: You would use the lite touch strategy.

Question: What type of deployment would you suggest for the same company if it had deployed Configuration Manager?

Answer: You would suggest the zero touch or lite touch deployment strategy.

Module 3

Assessing application compatibility

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Lesson 2: Mitigating application compatibility issues	4
Lesson 3: Using ACT to address application compatibility issues	7
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Lesson 1

Diagnosing application compatibility issues

Contents:

Question and Answers	3
Resources	3

Question and Answers

Question: What is the biggest concern that the Microsoft Edge browser brings to application compatibility?

- () People are not used to Microsoft Edge and do not know how it works.
- () It does not use third-party add-ins or other programmatic features, such as ActiveX controls, browser helper objects, or VBScript.
- () It only works with 64-bit versions of Windows 10.
- () The Internet Explorer browser has been removed from Windows 10.
- () There are no options available to configure the use of Microsoft Edge.


Answer:

- () People are not used to Microsoft Edge and do not know how it works.
- (v) It does not use third-party add-ins or other programmatic features, such as ActiveX controls, browser helper objects, or VBScript.
- () It only works with 64-bit versions of Windows 10.
- () The Internet Explorer browser has been removed from Windows 10.
- () There are no options available to configure the use of Microsoft Edge.


Feedback: Microsoft Edge implements a new web-based extension model that does not use third-party add-ins or other programmatic features and does not support ActiveX controls, browser helper objects, or VBScript. However, many enterprise organizations have LOB services and web apps that depend on Internet Explorer and various third-party add-ins and programmatic features.


Resources

Common application compatibility issues

 **Additional Reading:** For more information about importing the site list, refer to Import your Enterprise Mode site list to the Enterprise Mode Site List Manager: <http://aka.ms/O5qdm2>

Tools for diagnosing application compatibility issues

 **Additional Reading:** The Windows Sysinternals Suite includes the process monitor tool along with many other tools and is available as a free download. To download the Windows Sysinternals Suite, go to <http://aka.ms/P1dc88>

 **Additional Reading:** To download Windows ADK for Windows 10, which includes ACT, refer to the Microsoft website at <http://aka.ms/Miad4n>

Lesson 2

Mitigating application compatibility issues

Contents:

Question and Answers

5

Question and Answers

Categorize Activity

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

Items	
1	Isolate an app from the host operating system.
2	Centralize application environments in a server-based solution.
3	Inventory your portfolio of apps, ActiveX controls, and computers.
4	Run apps in other versions of Windows.
5	Deliver full desktop environments.
6	Support pilot deployments of Windows 10 by gathering compatibility data.
7	Control system resources available to an app within a virtual machine.
8	Deploy new apps rapidly across an enterprise.
9	Gather compatibility information with runtime analysis packages.
10	Test an app within a virtual machine before deploying the virtual machine to your production Hyper-V environment.
11	Provision apps that are difficult to maintain or used infrequently.
12	Prioritize and categorize app and computer inventory.

Category 1		Category 2		Category 3
Client Hyper-V		RDS		ACT

Answer:

Category 1		Category 2		Category 3
Client Hyper-V		RDS		ACT
Isolate an app from the host operating system. Run apps in other versions of Windows. Control system resources available to an app within a virtual machine. Test an app within a virtual machine before deploying the virtual machine to your production Hyper-V environment.		Centralize application environments in a server-based solution. Deliver full desktop environments. Deploy new apps rapidly across an enterprise. Provision apps that are difficult to maintain or used infrequently.		Inventory your portfolio of apps, ActiveX controls, and computers. Support pilot deployments of Windows 10 by gathering compatibility data. Gather compatibility information with runtime analysis packages. Prioritize and categorize app and computer inventory.

Lesson 3

Using ACT to address application compatibility issues

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Question and Answers

Question: What is the primary reason to use DCPs?

- () To provide guidance, based on your environmental variables, about potential compatibility issues.
- () To upload the gathered data to the ACT Logs Processor.
- () To provide a web service that propagates application compatibility issues from the server to the client.
- () To configure, collect, and analyze data to fix any issues before deploying a new operating system or deploying a Windows update in your organization.
- () To collect app information from client computers in your environment.

Answer:

- () To provide guidance, based on your environmental variables, about potential compatibility issues.
- () To upload the gathered data to the ACT Logs Processor.
- () To provide a web service that propagates application compatibility issues from the server to the client.
- () To configure, collect, and analyze data to fix any issues before deploying a new operating system or deploying a Windows update in your organization.
- (√) To collect app information from client computers in your environment.

Feedback: The primary purpose of a DCP is to collect app information from client computers in your environment. You do not use a DCP specifically for guidance on compatibility issues or to deploy updates or operating systems. The DCP Logs Processor does not store app information but logs activity. Moreover, a DCP is not a web service.

Demonstration: Configuring ACT

Demonstration Steps

Configure ACT

1. Switch to LON-DC1.
2. On the taskbar, click **File Explorer**.
3. In File Explorer, in the details pane, double-click **Local Disk (C:)**.
4. On the toolbar, click **Home**, and then click **New folder**.
5. Type **ACTLogs**, and then press Enter.
6. Close File Explorer.
7. Point to the lower-left corner of the screen, and then click the **Start** charm.
8. On the Start screen, click **Application Compatibility Manager**.
9. On the **Welcome to the ACT Configuration Wizard** page, click **Next**.
10. On the **Do you want to use this computer to run an ACT Log Processing Service** page, ensure that **Yes** is selected, and then click **Next**.
11. On the **Configure Your ACT Database Settings** page, next to **SQL Server**, select **(local)\ADK**, and then click **Connect**.
12. On the **Configure Your ACT Database Settings** page, next to **Database**, type **ACTDB**, and then click **Next**.

13. On the **Configure Your ACT Database Settings** page, click **Next**.
14. On the **Configure Your Log File Location** page, next to **Path**, type **C:\ACTLogs**.
15. On the **Configure Your Log File Location** page, next to **Share as**, ensure that **ACTLogs** is entered, and then click **Next**.
16. On the **Configure Your ACT Log Processing Service Account** page, ensure that **Local System** is selected, and then click **Next**.
17. On the **Congratulations** page, clear all check boxes, and then click **Finish**. The Microsoft Application Compatibility Manager console opens.
18. On the **Tools** menu, click **Settings**.
19. In the **Settings** window, on the **Settings** page, verify that **LON-DC1\ADK** is configured as the **SQL Server**, and that **ACTDB** is configured as the **Database**.
20. Under **Log Processing Settings**, verify that the **This computer is configured as a Log Processing Service** check box is selected.
21. Verify that the **Log Processing Service Account** is configured as a **Local System Account**.
22. Verify that the **Log Share** is configured to be **\\LON-DC1\ACTLogs**.
23. Click the **Preferences** tab.
24. Under **Community Settings**, verify that the **Yes, I want to join the ACT Community** check box is selected.
25. To close the Settings window, click **OK**.
26. Right-click the taskbar, and then click **Task Manager**.
27. In the Task Manager window, click **More details**, click the **Services** tab, and then locate the **ACTLogProcessor** service.
28. Verify that the ACT Log Processing Service has a **Status** of **Running**. If it does not, right-click the service, and then click **Start**.
29. Close the Task Manager window.

Create DCPs for deployment

1. On LON-DC1, in the Microsoft Application Compatibility Manager, in the navigation pane, click **Data Collection Packages**.
2. On the **File** menu, click **New** to create a new Data Collection Package.
3. In the Create a data collection package window, click **Inventory collection package**.
4. On the **Set up your inventory package** page, in the **Package Name** section, in the **Name** box, type **SalesInventoryPKG**.
5. On the **Set up your inventory package** page, in the **Label** box, type **Sales Inventory**, and then click **Create**.
6. In the Save Data Collection Package window, delete the text in the **address** box, type **\\LON-DC1\Labfiles**, press Enter, and then click **Save**.
7. On the **Next steps for your inventory collection package** page, click **Finish**.
8. In the Microsoft Application Compatibility Manager, on the **File** menu, click **New** to create a new data collection package.
9. In the Create a data collection package window, click **Runtime analysis package**.

10. On the **Set up your runtime analysis package** page, in the **Package Name** section, in the **Name** box, type **SalesRuntimePKG**.
11. On the **Set up your runtime analysis package** page, in the **Label** box, type **Sales Runtime**, and then click **Create**.
12. In the Save Data Collection Package window, delete the text in the **address** box, type **\\LON-DC1\Labfiles**, press Enter, and then click **Save**.
13. On the **Next steps for your runtime analysis collection package** page, click **Finish**.

Install DCPs on a Windows 10 computer

1. Sign in to LON-CL1 as **Adatum\Alan** with the password **Pa\$\$w0rd**.
2. On the Start screen, type **File Explorer**, and then press Enter.
3. In File Explorer, in the **address** box, type **\\LON-DC1\Labfiles**, and then press Enter.
4. Double-click **SalesInventoryPKG**.
5. In the User Account Control window, in the **User name** box, type **adatum\Administrator**. In the **Password** box, type **Pa\$\$w0rd**, and then click **Yes**.
6. In File Explorer, double-click **SalesRuntimePKG**.
7. In the User Account Control window, in the **User name** box, type **adatum\Administrator**. In the **Password** box, type **Pa\$\$w0rd**, and then click **Yes**.

Module Review and Takeaways

Review Question(s)

Question: What are some examples of common application categories or considerations to use when organizing your application inventory?

Answer: Answers can vary. However, consider the following:

- Determine whether apps specific to particular departments or geographies exist.
- Analyze the hardware platforms that your environment uses, and determine whether there are dependencies.
- Determine whether any apps require special hardware devices or peripherals.
- Calculate the percentage of independent software vendor (ISV) apps versus custom line-of-business (LOB) apps.

Question: You have just installed ACT and configured the initial settings. What final task must you complete to ensure that inventory collection occurs?

Answer: You must open the Services console to ensure that the Log Processing Service has started.

Tools

Tool	Used to	Where to find it
Enterprise Mode Site List Manager for Windows 10	Create and update the Enterprise Mode Site List in the version 2.0 (v.2) XML schema and import an existing site list.	http://aka.ms/Wn7yay
Microsoft Assessment and Planning Toolkit (MAP) 9.3	Provides application compatibility assessment reports for Microsoft Office, Office 365, and other Microsoft products. You also can use it to obtain general information about your apps and environment.	http://aka.ms/Drnn9f
Application Compatibility Toolkit (ACT)	A set of tools that you can use during the inventory, analyze, and mitigate phases of the application compatibility testing process. IT professionals use ACT in corporate environments to determine whether apps are compatible with a new version of the Windows operating system before deploying the apps. They also use ACT to determine how an update to the new version might affect their apps.	Downloaded as part of the Windows Assessment and Deployment Kit (Windows ADK), available at http://aka.ms/Miad4n

Lab Review Questions and Answers

Lab: Assessing application compatibility

Question and Answers

Question: Provide a summary of the issues that you discovered when you ran StockViewer.

Answer: Issues include standard permission errors, unhandled exception errors, and an unsupported version error.

Question: Why did some app features work when you elevated the privileges?

Answer: The app seems to require administrative permissions to specific file and registry locations.

Module 4

Planning and implementing user state migration

Contents:

Lesson 1: Overview of user state migration	2
Lesson 2: Overview of USMT 10.0	4
Lesson 3: Planning user state migration	6
Lesson 4: Migrating user state by using USMT	8
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Lesson 1

Overview of user state migration

Contents:

Question and Answers

3

Question and Answers

What is the User State Migration Tool?

Question: What is the difference between a replace scenario and a refresh scenario?

Answer: A typical replace scenario refers to replacing a user's current system with new hardware and migrating their current user settings from old hardware to a temporary location and then to the new hardware. A refresh scenario refers to migrating the user's settings to a temporary location, installing a new operating system on the user's existing hardware and then migrating their profile back to the new operating system. This is sometimes referred to as 'wipe and load'.

Question: Which registry hive stores the user settings?

Answer: The registry hive HKEY_CURRENT_USER (HKCU) stores settings that are specific to the currently signed-in user. The HKCU registry key is a link to the HKEY_USERS subkey that corresponds to the user.

Lesson 2

Overview of USMT 10.0

Contents:

Question and Answers

5

Question and Answers

The USMT Toolset

Question: What are some benefits of the hard-link migration store?

Answer: Because the migration files are stored on the local computer, the speed of deployment is greatly increased because there are no files being copied back and forth across the network. This improves migration performance and reduces hard disk utilization and reduces costs.

Question: Scanstate.exe is used to collect files and settings from a source computer.

☐ True

☐ False

Answer:

☒ True

☐ False

Feedback: Scanstate scans a source computer, collects the files and settings, and then creates a store.

Lesson 3

Planning user state migration

Contents:

Question and Answers

7

Question and Answers

Choosing a migration store and location

Question: What two ways can scanstate.exe perform an offline migration?

Answer: Scanstate.exe can perform an offline migration by running from the Windows PE environment or by running against the Windows.old directory after the upgrade.

Question: The USMT can migrate existing applications as well as application settings.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: USMT does not migrate existing applications and you must reinstall them before running Loadstate in order for application settings to be restored.

Lesson 4

Migrating user state by using USMT

Contents:

Question and Answers

9

Question and Answers

Question: Hard-link migrations can only be performed during online migration scenarios.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: You can use USMT hard-link migration with online and offline migration scenarios.

Security best practices when using the USMT

Question: Which Scanstate parameter creates a config.xml file?

Answer: Config.xml is an optional USMT file that you can create by using the /genconfig option with the ScanState tool.

Module Review and Takeaways

Review Question(s)

Question: You migrated a user account to a new computer by using the /lac option. However, when attempting to sign in, the user receives an error message and cannot sign into the computer. What is the most likely cause of the issue?

Answer: You most likely migrated the account as a disabled account. Use the /lae option to ensure that the account is enabled during the migration.

Tools

Tool	Use for	Where to find it
ScanState.Exe	Collecting user state data for migration	Windows ADK
LoadState.Exe	Restoring user state data to newly installed operating systems	Windows ADK
USMTUtils.Exe	Extracting data from and verifying a migration store.	Windows ADK

Lab Review Questions and Answers

Lab: Planning and implementing user state migration

Question and Answers

Question: Why would you choose to run ScanState and LoadState from the Windows Preinstallation Environment (PE), rather than from within the source operating system?

Answer: There will be no locked files from running applications.

Question: List the three main factors that you should consider when you are planning a user-state migration task.

Answer: Planning considerations may include which settings and features to migrate, how much space is required to store and migrate the data, and how the data will be secure.

Question: You must secure the data store that the USMT generates. What can you do to accomplish this task?

Answer: You can use the ScanState tool to encrypt the store by using the /encrypt option.

Module 5

Determining an image management strategy

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Lesson 1

Overview of the Windows image file format

Contents:

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Resources	3
Demonstration: Using image management tools to view the contents of a .wim file	3

Question and Answers

Discussion: The challenges of maintaining images in your organization

Question: Have you used sector-based imaging products in the past?

Answer: Answers will vary, but most students likely have used sector-based imaging products such as Ghost.

Question: How many different images did you have to maintain?

Answer: Answer will vary. This part of the discussion could focus on the physical equipment challenges that sector-based imaging can cause, including:

- The need for a different hardware abstraction layer (HAL) for different model systems.
- Different driver needs, possibly within the same model.

Question: How did you manage security patches and updates?

Answer: Answers will vary. This discussion can focus on the difficulties of maintaining up-to-date software in images, and the need to create new images to capture software changes.

Question: How do you currently handle the deployment of software to new systems?

Answer: Answers will vary. This part of the discussion can focus on the ability to push application packages during the deployment process by using Microsoft tools.

Resources

Tools that you can use to manage the .wim file format



Additional Reading: To read the available options for DISM for Windows 10, see "DISM Image Management Command-Line Options": <http://aka.ms/Ee69eb>



Additional Reading: To view the available Windows PowerShell cmdlets for DISM, see "DISM Cmdlets": <http://aka.ms/Jjtaes>

Demonstration: Using image management tools to view the contents of a .wim file

Demonstration Steps

Use the DISM PowerShell module to view the information about a .wim file

1. On the taskbar, click the **Windows PowerShell** icon.
2. Run the following cmdlet:
`Get-WindowsImage -ImagePath D:\sources\Boot.wim`
3. Review the results of the command.

Use the DISM PowerShell module to mount an image to a directory for servicing

1. Type **MD C:\Service**, and then press Enter.
2. Run the following cmdlet:
`Mount-WindowsImage -ImagePath D:\Sources\Boot.wim -Index 1 -Path c:\Service -ReadOnly`
3. On the taskbar, click **File Explorer**, and then open the C:\Service folder. Discuss the files and folders that have been mounted to the directory.

4. Close File Explorer.

Use the DISM PowerShell module to unmount the image back to a .wim file

1. Run the following cmdlet:
`Dismount-WindowsImage -Path C:\Service -Discard`
2. Close the Windows PowerShell command window.

Use the DISM command-line tool to view the contents of a .wim file

1. Click the Windows logo in the bottom left corner to open the Start screen.
2. Type **CMD**, and then press Enter.
3. In the Administrator: Command Prompt window, type the following command, and then press Enter:
`Dism /Get-ImageInfo /ImageFile:D:\Sources\Install.wim`
4. Review the results of the command, and then close the command prompt.
5. When you finish the demonstration, revert the virtual machine to its initial state. On the host computer, in Hyper-V Manager, right-click the **20695C-LON-DC1** virtual machine, and then click **Revert**.
6. In the Revert Virtual Machine window, click **Revert**.

Lesson 2

Overview of image management

Contents:

Question and Answers

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Question and Answers

Managing device drivers for images

Question: An image can contain both 32-bit and 64-bit images.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: You must have separate images for each architecture.

Question: You must name your image file Install.wim.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: The default image that the Windows media includes is named Install.wim, but you can name your image files anything you want.

Module Review and Takeaways

Best Practices

- Create your reference machine as a virtual machine, so that you can take snapshots of the reference system at various stages of development. This is useful if you need to recover your reference system quickly.
- If you are using a physical computer as your reference machine, wipe the disk, and then perform a clean installation.
- Perform a clean installation on your reference image. Do not use a system that you have upgraded or used in production as your reference image.

Real-world Issues and Scenarios

Some organizations might have invested a lot of time, money, and effort into sector-based imaging products, and might be reluctant to move to image-based deployments. Although there will be an initial investment into training and planning for new ways of deployment, the return on investment will pay off over time. Most of the image-based deployment tools are free offerings from Microsoft, and require less time and effort for the creation and maintenance of images.

Tools

This table shows tools that were mentioned in this module.

Tool	Used to	Where to find it
PnPUtl	Add, remove, and enumerate drivers	Included with the Windows 10 operating system in %windir%\system32. Launch from an elevated command prompt.
Wusa.exe	Add service packs or other .msu files	Included with the Windows 10 operating system in %windir%\system32. Launch from an elevated command prompt.
LPKSetup	Add or remove language packs	Included with the Windows 10 operating system in %windir%\system32. Launch from an elevated command prompt.
Windows Driver Kit (WDK) 10	Develop drivers for Windows operating systems	Download from http://aka.ms/Drbal2

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Some hardware devices are not functioning properly after image deployment.	Ensure that you obtain all of the correct drivers from the vendor, and inject them into your image driver store.
Application packages are not installing correctly.	Ensure that you have the proper command-line syntax to perform a silent install of the application.

Lab Review Questions and Answers

Lab: Determining an image management strategy

Question and Answers

Question: How did you determine your current imaging strategy in your company?

Answer: Answers will vary, but should provide a good basis for discussion.

Question: What additional factors might you include in your image strategy?

Answer: Answers will vary, but you could employ tools such as the Microsoft Deployment Toolkit, Windows Deployment Services, or Microsoft System Center 2012.

Module 6

Preparing for deployments by using the Windows ADK

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Lesson 1

Overview of the Windows Setup and installation process

Contents:

Question and Answers

3

Question and Answers

Question: Deployment tools such as Windows Deployment Services and MDT no longer use Windows Setup.exe. What tool do they use instead?

- ☐ () The ImageX.exe command-line tool
- ☐ () The Setup.cmd command-line program.
- ☐ () The DISM command-line tool.
- ☐ () The sysprep.exe command-line tool.
- ☐ () The Unattend.xml configuration file.

Answer:

- ☐ () The ImageX.exe command-line tool
- ☐ () The Setup.cmd command-line program.
- ☒ (√) The DISM command-line tool.
- ☐ () The sysprep.exe command-line tool.
- ☐ () The Unattend.xml configuration file.

Feedback: While ImageX.exe can still be used, MDT, Configuration Manager, and Windows Deployment Services all use the Deployment Image Servicing and Management (DISM) command-line tool by default. The ImageX.exe command-line tool is deprecated.

Lesson 2

Preparing boot images by using Windows PE

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Demonstration: Customizing a Windows PE image	6

Question and Answers

Categorize Activity

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

Items	
1	Installation DVD
2	Cotype
3	WinPE-DismCmdlets
4	USB flash drive
5	BCDBoot
6	WinPE-Scripting
7	Network share
8	Lpksetup
9	WinPE-SecureStartup

Category 1		Category 2		Category 3
Windows PE media types		Windows PE tools		Windows PE optional components

Answer:

Category 1		Category 2		Category 3
Windows PE media types		Windows PE tools		Windows PE optional components
Installation DVD USB flash drive Network share		Cotype BCDBoot Lpksetup		WinPE-DismCmdlets WinPE-Scripting WinPE-SecureStartup

Resources

What is Windows PE?



Additional Reading: For more information, refer to What's New in Windows PE:
<http://aka.ms/Jrbdg8>

Creating Windows PE media



Additional Reading: For information on downloading Windows PE and installing it to an internal or external hard drive, refer to WinPE: Install on a Hard Drive (Flat Boot or Non-RAM):
<http://aka.ms/D8l76e>

Demonstration: Customizing a Windows PE image

Demonstration Steps

Create the directory structure to support building a Windows PE image

1. On LON-CFG, open the Start screen, type **Deployment**, 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:

```
Copype amd64 E:\Winpe64
```

3. Click **File Explorer** on the taskbar.
4. In the navigation pane, expand **Allfiles (E:)**, expand **WinPE64**, expand **media**, and then click **Sources**.



Note: Note the size of the Boot.wim file. It will be 212,277 kilobytes (KB).

5. Close File Explorer.

Mount the default Windows PE image from the Boot.wim file

1. On the taskbar, double click the **Windows PowerShell** icon.



Note: The version of DISM installed with Windows ADK for Windows 10 is not the same as the version in the default Windows PowerShell console (version: 6.3.9600.16384). You must add the correct DISM module for the current version of Windows ADK. The reason this is so is the version that is in Windows PowerShell is for Windows Server 2012 R2, while the version in the latest Windows ADK is for Windows 10.

2. In the Administrator: Windows PowerShell window, type the following cmdlet, and then press Enter:
Import-Module "C:\Program Files (x86)\Windows Kits\10\Assessment and Deployment Kit\Deployment Tools\amd64\DISM"
3. 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
```

Add drivers and packages to the Windows PE image

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

```
Add-WindowsDriver -Path E:\winpe64\mount -Driver E:\Software\Drivers\HyperVx64 -Recurse -
ForceUnsigned
```

The third-party drivers you injected into the image will be listed. Confirm that the last one on the list has a Published Name of oem9.inf.

2. 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_OC's"
```

```
Add-WindowsPackage -Path E:\winpe64\mount -PackagePath .\WinPE-Scripting.cab
```



Note: After each Windows PowerShell cmdlet, ensure that the operation completes successfully.

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\Mod06\Mod06_DISM_Powershell_New.txt file.

2. Click **File Explorer** on the taskbar.
3. In the navigation pane, expand **Allfiles (E:)**, expand **WinPE64**, expand **media**, and then click **Sources**.



Note: Note that the size of the Boot.wim file is larger than when first checked. It will be approximately 240,841 KB in size.

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

Lesson 3

Using Windows SIM and Sysprep to automate and prepare an image installation

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Demonstration: Creating answer files by using Windows SIM	9
Demonstration: Using Sysprep to prepare a reference computer	10

Question and Answers

Question: In which configuration pass would you add packages in an answer file?

- () During the oobeSystem configuration pass
- () During the offlineServicing configuration pass
- () During the windowsPE configuration pass
- () During the auditUser configuration pass
- () During the specialize configuration pass

Answer:

- () During the oobeSystem configuration pass
- (v) During the offlineServicing configuration pass
- () During the windowsPE configuration pass
- () During the auditUser configuration pass
- () During the specialize configuration pass

Resources

Using answer files with Sysprep



Additional Reading: For more information, refer to Sysprep, SkipRearm, and Image Build Best Practices: <http://aka.ms/Txojm2>

Demonstration: Creating answer files by using Windows SIM

Demonstration Steps

Create an answer file by using Windows SIM

1. On LON-CFG, open the Start screen, and then type **Windows**. In the list, locate and click **Windows System Image Manager**.
2. In the Windows System Image Manager, click **File**, and then click **Select Windows Image**.
3. In the **Select a Windows Image** dialog box, browse to the **E:\sources** folder, click **Install.wim**, and then click **Open**.
4. In the **Windows System Image Manager** message box, click **Yes**.



Note: The catalog creation will take a few minutes.

5. In the Answer File pane, right-click **Create or open an answer file**, and then click **Open Answer File**.
6. In the **Open** dialog box, browse to the **E:\Labfiles\Mod06** folder, select **Autounattend_x64_BIOS_sample.xml**, and then click **Open**.



Note: Explain that you are using this XML file as a starting point and that you will be customizing it soon.

7. In the Windows System Image Manager pop-up window, click **Yes** to associate the answer file with the image.
8. In the Windows System Image Manager, click **File**, and then click **Save Answer File As**.
9. In the **Save As** dialog box, click **Desktop**, in the **File name** field, 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 imported 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** field, type *your name*, and then in the **Organization** field, type *your company*.
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 will open. 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_10.0.10586.0_neutral**.
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** field, type *your company*.
8. In the **SupportHours** field, type **6 am to 8 pm**.
9. In the **SupportPhone** field, type **555-555-5555**.
10. In the **SupportURL** field, type *your company url*.
11. In the Windows Image pane, expand **Packages**, expand **Foundation**, right-click **amd64_Microsoft-Windows-Foundation-Package_10.0.10586.0_**, and then select **Add to Answer File**.
12. In the Answer File pane, select **amd64_Microsoft-Windows-Foundation-Package_10.0.10586.0_**.
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 the Windows System Image Manager, click **Tools**, and then click **Validate Answer File**.
2. In the Windows System Image Manager, click **File**, and then click **Save Answer File**.
3. Leave the Windows System Image Manager open.
4. On the desktop, open the **Autounattend.xml** file with Notepad, and then examine the entries.



Note: Leave the virtual machines running for the next demonstration.

Demonstration: Using Sysprep to prepare a reference computer

Demonstration Steps



Note: Ensure the steps to build LON-REF1 in the Instructor Note are accomplished before starting the demonstration.

1. On LON-REF1, right-click the **Start** button, and then select **Command Prompt (admin)**.
2. In the User Account Control window, click **Yes**.
3. At the Administrator: Command Prompt window, type the following command, and then press Enter:

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

4. At the Administrator: Command Prompt window, type the following command, and then press Enter:

```
Sysprep /generalize /oobe /shutdown
```



Note: Leave the virtual machines running for the next demonstration.

Lesson 4

Capturing and servicing a reference image by using DISM

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Demonstration: Mounting and servicing an image by using DISM	13

Question and Answers

Question: You have mounted an image for offline servicing. You have added a couple of Windows feature packages, added a new device driver, and put a custom folder structure onto the system drive. You now need to dismount the image and save the changes. Which DISM command do you use?

- () Dismount-WindowsImage –Path E:\Service –Save
- () DISM /Commit-Image /MountDir:C:\images\offline
- () DISM /Unmount-Image /MountDir:C:\images\offline /commit
- () DISM /Image:E:\Service /Add-Package Appx1
- () DISM /Mount-Image /ImageFile:C:\images\image.wim /index:1 /MountDir:C:\images\offline

Answer:

- () Dismount-WindowsImage –Path E:\Service –Save
- () DISM /Commit-Image /MountDir:C:\images\offline
- (v) DISM /Unmount-Image /MountDir:C:\images\offline /commit
- () DISM /Image:E:\Service /Add-Package Appx1
- () DISM /Mount-Image /ImageFile:C:\images\image.wim /index:1 /MountDir:C:\images\offline

Feedback: Option 1 would work, but it is a Windows PowerShell cmdlet, not a direct DISM command. Option 2 saves the changes but does not dismount the image. Option 3 saves the image, commits the changes, and is the correct answer. Option 4 adds a package and does not commit changes or dismount the image. Option 5 mounts the image and opens it for offline servicing.

Demonstration: Mounting and servicing an image by using DISM

Demonstration Steps

Use Windows PowerShell DISM cmdlets to mount an image

1. On LON-CFG, click **File Explorer** on the taskbar.
2. Click the **Allfiles (E:)** drive, right-click in the results pane, point to **New**, and then click **Folder**. Name the new folder **Service**.
3. On the taskbar, click **Windows PowerShell**.
4. In the Administrator: Windows PowerShell window, type the following cmdlet, and then press Enter:

```
Import-Module "C:\Program Files (x86)\Windows Kits\10\Assessment and Deployment Kit\Deployment Tools\amd64\DISM"
```
5. In the Administrator: Windows PowerShell window, type the following command, and then press Enter:

```
Get-WindowsImage -ImagePath E:\Sources\install.wim
```

6. Discuss the results of the command.
7. Type the following command, and then press Enter:

```
Mount-WindowsImage -ImagePath E:\sources\install.wim -Index 1 -Path E:\Service
```

8. Open the **E:\service** folder, and then show the mounted image.

Get detailed information about a package, and service an image with Windows PowerShell DISM cmdlets

1. Run the following command.



Note: Press **Enter** on the keyboard after each command is typed.

```
Get-WindowsPackage -Path E:\Service
```

2. Discuss the results.
3. Get detailed information about the Microsoft Windows Foundation Package by running the following command:

```
Get-WindowsPackage -Path E:\Service -PackageName Microsoft-Windows-Foundation-  
Package~31bf3856ad364e35~amd64~~10.0.10586.0
```



Note: Hint: Copy and paste the package name from the previous command in the Windows PowerShell window.

4. To enable the TelnetClient feature, and any parent features, run the following command:

```
Enable-WindowsOptionalFeature -Path E:\Service -FeatureName TelnetClient -All
```

5. To check that the feature is enabled, run the following command:

```
Get-WindowsOptionalFeature -Path E:\Service
```

6. Ensure the TelnetClient service state is **Enabled**.
7. Click **File Explorer** on the taskbar, and then browse to **E:\Service**. Right-click in the results pane, point to **New**, and then click **Folder**.
8. Name the new folder **ImportantDocs**.
9. Close the File Explorer window.
10. Dismount and save the changes by running the following command:

```
Dismount-WindowsImage -Path E:\Service -Save
```

11. Leave the virtual machines running for the next demonstration.

Lesson 5

Using the Windows ICD

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Question and Answers

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

Items	
1	Primarily designed for OEMs/ODMs, system integrators, and IT departments.
2	Used to configure the Windows user interface, to adjust connectivity settings, to meet mobile network requirements, to comply with security policies and directives, or to fit markets and regions where you ship devices.
3	Must use an install.wim file as input.
4	Displays created projects on the start page of the console.
5	You can put it on a USB flash drive or SD card.
6	Used to create images for new Windows 10 for desktop editions, including Home, Pro, Enterprise, and Education editions.
7	Installed as part of Windows ADK.
8	Includes the Available customizations page.
9	Can only use one provisioning package as image build.

Category 1		Category 2		Category 3
Windows ICD		Provisioning package		Windows image customization

Answer:

Category 1		Category 2		Category 3
Windows ICD		Provisioning package		Windows image customization
Primarily designed for OEMs/ODMs, system integrators, and IT departments. Displays created projects on the start page of the console. Installed as part of Windows ADK.		Used to configure the Windows user interface, to adjust connectivity settings, to meet mobile network requirements, to comply with security policies and directives, or to fit markets and regions where you ship devices. You can put it on a USB flash drive or SD card. Includes the Available customizations page.		Must use an install.wim file as input. Used to create images for new Windows 10 for desktop editions, including Home, Pro, Enterprise, and Education editions. Can only use one provisioning package as image build.

Demonstration: Building and applying a provisioning package**Demonstration Steps****Build a Windows ICD provisioning package**

1. On LON-CFG, click **Start**, type **Windows** in the search box, and then click **Windows Imaging and Configuration Designer** from the search results list.
2. On the Windows ICD **Start** page, click the **New provisioning package** icon.
3. In the New Project Wizard, on the **Enter project details** page, in the **Name** field, type **Demo1**.
4. In the **Project folder** field, click **Browse**.
5. In the **Browse for Folder** dialog box, select the **Allfiles (E:)** drive, and then select **Images**.
6. Click **Make New Folder**, and then in the text box, type **WICD**.
7. Ensure that **WICD** is selected, and then click **OK**.
8. In the **Description** text box, type **A demonstration on building and applying a provisioning package**, and then click **Next**.
9. On the **Choose which settings to view and configure** page, click **Common to all Windows desktop editions**, and then click **Next**.
10. On the **Import a provisioning package (optional)** page, click **Finish**. This creates the new **Demo1** project and the **Demo1** customization page will open.
11. In the Available customization pane, note the **View** drop-down list. Ensure that **All settings** is selected.
12. In the Runtime settings console tree, select and expand **Policies**, and then select **Defender**.
13. Under the Defender node, select **Excludedpaths**.
14. In the details pane, in the **Excluded paths** text box, type **C:\WICD**.
15. Collapse the Defender node, and then below it, expand the System node.
16. Select **AllowTelemetry**.

17. In the details pane, select the **NOT CONFIGURED** drop-down list item, and then change it to **Disabled [Enterprise SKU only]**.
18. On the menu bar above the drop-down list item from the previous step, in the **Export** drop-down list, select **Provisioning package**.
19. In the Build window, under Owner, in the **OEM** drop-down list, change the value to **IT Admin**, and then click **Next**.
20. On the **Select security details for the provisioning package** page, click **Next**.
21. On the **Select where to save the provisioning package** page, click **Next**.
22. On the **Build the provisioning package** page, click **Build**, and then click **Finish**.
23. In the Windows Imaging and Configuration Designer console, click the **File** menu item, select **Close project** in the context menu, and then in the **Save project(s)?** dialog box, click **Save all**.
24. On the taskbar, open File Explorer.
25. In the File Explorer console tree, expand to **Allfiles (E:)\Images\ WICD**.
26. Note the file named Demo1.ppkg. You can distribute this file to devices as a provisioning package.

Apply the Demo1 Windows ICD provisioning package

1. If you have not already done so, sign in to LON-CL2 as **lon-cl2\admin** with the password **Pa\$\$w0rd**.
2. Click the **Start** menu and select **Settings**.
3. In the **Settings** app, select the **Privacy** icon.
4. In the **Privacy** page, scroll down and select **Feedback & diagnostics**. Under the **Diagnostics and usage data** area, note that the pull down item is set to **Full (Recommended)**.
5. Click the back arrow at the top upper left of the **Privacy** settings page.
6. Select the **Update & security** icon.
7. In the **Update & security** page, select **Windows Defender**.
8. In the Windows Defender details pane, scroll down to the **Exclusions** area and select **Add an exclusion**.
9. In the **Exclusions** settings page, note that there are no exclusions listed. Close the Settings app.
10. On the taskbar, open File Explorer.
11. In the File Explorer address bar, type **\\lon-cfg\e\$\images**, and then press Enter.
12. On the **Windows Security** page, under **Enter network credentials** page, in the **Name** field, type **adatum\administrator**, in the **Password** field, type **Pa\$\$w0rd**, and then click **OK**.
13. In File Explorer, right-click **WICD**, and then select **Copy**.
14. In the File Explorer console tree, select **Local Disk (C:)**.
15. Right-click in the empty space of the C:\ details pane and select **Paste**.
16. Double-click **WICD** and then double-click **Demo1.ppkg**.
17. In the **User Account Control** dialog box, click **Yes**.
18. In the **Is this package from a source you trust?** dialog box, select **Yes, add it**.
19. Close File Explorer.
20. Click the **Start** menu and select **Settings**.

21. In the **Settings** app, select the **Privacy** node.
22. In the **Privacy** settings page, scroll down and select **Feedback & diagnostics**. Under the **Diagnostics and usage data** area, note that the pull down item is set to **Security** and that it appears dimmed and is not adjustable.
23. Click the back arrow at the top upper left of the **Privacy** settings page.
24. Select the **Update & security** node.
25. On the **Update & security** settings page, select **Windows Defender**.
26. In the Windows Defender details pane, scroll down to the **Exclusions** area, and then select **Add an exclusion**.
27. On the **Exclusions** settings page, note that the C:\WICD folder is now listed. Close the Settings app.
28. Close all open windows and sign out of LON-CL2.

Demonstration: Building and deploying an image for Windows 10 for desktops

Demonstration Steps

1. On LON-CFG, click **Start**, type **Windows** in the search box, and then click **Windows Imaging and Configuration Designer** from the search results list.
2. On the Windows ICD **Start** page, click the **New Windows image customization** icon.
3. In the New Project Wizard, on the **Enter project details** page, in the **Name** field, type **Build Demo**.
4. In the **Project folder** section, click **Browse**.
5. In the **Browse for Folder** dialog box, select the **Allfiles (E:)** drive, select **Images**, and **WICD**.
6. Click **Make New Folder**, in the text box, type **BuildIMG**, ensure that **WICD** is selected, and then click **OK**.
7. In the **Description** text box, type **A demonstration of creating a Windows 10 Desktop image**, and then click **Next**.
8. On the **Select image source format** page, note that the only selection available is **The Windows image is based on a Windows image (WIM) file**, which is already selected. Click **Next**.
9. On the **Select image** page, click **Browse**, and in the **Open** dialog box, select **Allfiles (E:)\Sources**. Select the **Install.wim** file, and then click **Open**.
10. Note that there is only one available image on install.wim. Click **Next**.
11. On the **Import a provisioning package (optional)** page, click **Browse**. In the **Open** dialog box, navigate to **Allfiles (E:)\Images\WICD**, select the **Demo1.ppkg** file that you created earlier, click **Open**, and then click **Finish**.
12. In the **Import Successful** dialog box, click **OK**.
13. In the Windows ICD console, from the ribbon, click the **Create** menu, and then select **Clean install media**.
14. This will open the **Build** wizard. On the **Select the image format to build** page, select **WIM**, and then click **Next**.
15. On the **Deployment media** page, in the **Choose where to store the deployment files** area, select **Save to a folder**, and then click **Next**.
16. On the **Select where to save the files** page, click **Browse**.

17. In the **Browse For Folder** dialog box, navigate to **Allfiles (E:)\Images\WICD**.
18. Click **Make a New Folder**, type **BuildImage**, select **BuildImage**, click **OK**, and then click **Next**.
19. On the **Build the Windows image** page, make note of the selected options, and then click **Build**.
20. The build step begins. Note the progress bar on the **Build the Windows image** page. It will take several minutes to build the deployment media folder.
21. On the **All done!** page, click **Finish**.
22. While still on LON-CFG, open File Explorer.
23. Navigate to **Allfiles (E:)\Images\WICD\BuildImage**.
24. Examine the folder structure. It is the same as a mounted installation .iso file.



Note: In order to use the created image to deploy to another computer, you would need to create an .iso file from the folder. Unfortunately, Windows Server 2012 R2 does not come with a tool to do this.

Prepare for next module

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

1. On the host computer, start Microsoft Hyper-V Manager.
2. In the **Virtual Machines** list, right-click **20695C-LON-DC1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for 20695C-20695C-LON-CFG, 20695C-LON-REF1, and 20695C-LON-CL2.

Module Review and Takeaways

Best Practices

- Ensure that there is enough space for Windows Setup temporary files. You might require up to 500 MB of free space.
- Always back up your data before performing an upgrade.
- Prior to capturing an image of your reference machine, remove any null drivers (indicated by yellow icons in Device Manager) by uninstalling them from Device Manager.
- Ensure that you are capturing the correct partition. Use Diskpart to assign drive letters.
- Always validate answer files in Windows SIM. Using Windows SIM to create and validate your answer files will reduce the chance that you will create invalid answer files.
- Avoid creating empty elements in answer files. You can use Windows SIM to create empty values. However, not all settings will work with empty elements, and this might cause deployment issues.

Review Question(s)

Question: How would your company benefit from moving to image-based deployments?

Answer: This will be a good time to summarize and get student feedback on their ideas about the toolset available for image-based deployments.

Real-world Issues and Scenarios

As an organization moves from sector-based deployment tools and images, they will see a decrease in:

- The number of images that they must maintain.
- The time required to maintain those images.
- The amount of disk space necessary to store images.

Considering that the Microsoft tools to implement image-based deployments are free, and most sector-based deployment tools are expensive, the return on investment could be large.

Tools

Tool	Location
DISM	Install Windows ADK. Accessible from the Deployment and Imaging Tools Environment command prompt.
Windows SIM	Windows ADK.
Windows PowerShell	Native to Windows. Accessible from the taskbar or Start screen.
Sysprep	%WinDir%\System32\Sysprep

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Commands such as Copype are not being recognized.	Ensure that you are running the command from the Deployment and Imaging Tools Environment command prompt.
The system will not boot from a USB flash drive with Windows PE.	Ensure that the system BIOS supports booting from a USB device and that it is enabled as a boot option.

Common Issue	Troubleshooting Tip
	Try a different USB port. Avoid using USB hubs. Avoid using USB 3.0 ports. Wipe the USB flash drive and re-install Windows PE.
Sysprep is failing to start.	Ensure that you are running Sysprep from an elevated command prompt.
DISM cmdlets fail within Windows PowerShell.	The version of DISM installed with Windows ADK for Windows 10 <i>is not the same</i> as the version in the default Windows PowerShell console (version: 6.3.9600.16384). You must add the correct DISM module for the current version of Windows ADK. Run the following cmdlet in Windows PowerShell: Import-Module "C:\Program Files (x86)\Windows Kits\10\Assessment and Deployment Kit\Deployment Tools\amd64\DISM"

Lab Review Questions and Answers

Lab A: Preparing the imaging and Windows PE environment

Question and Answers

Question: Besides Windows PowerShell, how else would you add files to the Windows PE image?

Answer: You can add drivers by using the DISM command-line tool with the **/Add-Driver** parameter, and then add packages with the **/Add-Package** parameter. However, to add files and folders to a Windows PE image that is mounted, you can copy them to the location in the mounted file structure in which you would like to store them. You also can use the Drvload command-line tool to load drivers dynamically to a booted Windows PE image. These drivers do not persist in the image.

Question: What additional files or components might you add to a Windows PE image?

Answer: Answers will vary, but could include log-file readers, such as CMTrace.exe, or any of the additional components that you discuss in class.

Lab B: Building a reference image by using Windows SIM and Sysprep

Question and Answers

Question: When working in audit mode, what kind of changes can you make? How could the **CopyProfile** setting help?

Answer: You can make changes such as adding applications, creating shortcuts, making changes to the administrator profile, and adding documents. When you capture an image, you capture any programs or files added to the image. However, you cannot capture profile changes unless you use the **CopyProfile** setting.

Question: Why would you create a local administrative account in an image that will join a domain when you deploy it?

Answer: One reason to create a local account is to provide support personnel with an administrative account that they can use to sign in if the computer cannot communicate with the domain. Additionally, it often is useful to have a local account with administrative rights on the computer (but not in the domain) available to perform local administrative tasks.

Lab C: Capturing and servicing a reference image

Question and Answers

Question: What else might you add to an offline image?

Answer: Answers will vary, but could include device or print drivers, operating system updates, patches, folders, and data files.

Question: What would you do if you made a mistake while editing an image with DISM?

Answer: You could dismount the image by using the **-Discard** parameter instead of the **-Save** parameter.

Lab D: Using the Windows ICD

Question and Answers

Question: How can you provide provisioning package security when storing and sending provisioning packages?

Answer: You can use certificates in the **Select security details for the provisioning package** page when exporting the provisioning package.

Question: When creating a build image, what can you use for the selected image input?

Answer: You must use install.wim. No other file is acceptable.

Module 7

Supporting PXE-initiated and multicast operating system deployments

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Lesson 1

Overview of PXE-initiated and multicast operating system deployments

Contents:

Question and Answers

3

Question and Answers

Question: Network boot referrals are the preferred method for the client computer to discover the PXE boot server.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: P Helper Address is the preferred method for the client computer to discover the PXE boot server.

Question: Which DHCP option identifies the client as being a PXE-enabled client?

☐ Option 66

☐ Option 67

☐ Option 44

☐ Option 60

☐ Option 3

Answer:

☐ Option 66

☐ Option 67

☐ Option 44

☒ Option 60

☐ Option 3

Feedback: The first time a new PXE remote boot-enabled client computer is turned on, it uses an extended DHCPDISCOVER broadcast which adds DHCP option 60 to identify that the client is PXE-enabled.

Lesson 2

Installing and configuring the Windows DS environment

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Question and Answers

Question: The PXE provider is part of the Transport Server role.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: The PXE provider is not part of the Transport Server role. The Transport Server role only provides a PXE listener.

Question: Windows DS can be installed on Windows Server Core.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: Windows DS is not supported on Windows Server Core.

Resources

Installation options for the Windows DS server role



Additional Reading: For more information, refer to Windows Deployment Services Cmdlets in Windows PowerShell: <http://aka.ms/R1ng0w>

Designing a Windows DS environment



Additional Reading: For more information, refer to Storing and Replicating Images Using DFS: <http://aka.ms/Qrnzn5>

Deploying virtual hard disks by using Windows DS



Additional Reading: For more information, refer to Deciding On When To Use VHDX or VHD files with Hyper-V: <http://aka.ms/Et466u>

Demonstration: Installing and configuring Windows DS

Demonstration Steps

Install the Windows DS server role

1. Sign in to LON-DC1 as **Adatum\Administrator** using the password **Pa\$\$w0rd**.
2. Open Windows PowerShell .
3. Run the following command:

```
Install-WindowsFeature -Name WDS -IncludeManagementTools
```

4. Close the Windows PowerShell windows

Run the Windows DS server role configuration wizard

1. In **Server Manager**, in the **Tools** menu, click **Windows Deployment Services**.
2. In the Windows Deployment Services console, expand **Servers**, right-click **LON-DC1.Adatum.com**, and then click **Configure Server**.
3. Click **Next**.
4. Ensure **Integrated with Active Directory** is selected, and then click **Next**.
5. Type **E:\RemoteInstall** as the path, and then click **Next**.
6. Ensure that both checkboxes are selected for Proxy DHCP Server, and then click **Next**.



Note: You would not see this screen if DHCP is not installed on the server.

7. Click the **Respond to all client computers (known and unknown)** option, and then click **Next**.
8. Notice if an error message appears before you click **Finish**. If you receive a message stating "The service did not respond to the start or control request in a timely fashion", right-click **LON-DC1.Adatum.com**, click **All Tasks**, and then click **Start**. Click **OK**.

Configure the Windows DS server role

1. Right-click **LON-DC1.Adatum.com**, and then click **Properties**.
2. Click the **AD DS** tab, and then click the **The following location** option. Click **Browse**, and then browse to the **London Clients** organizational unit (OU). Click **OK**.
3. Click the **Multicast** tab, and then in the Transfer settings area, click the **Separate clients into three sessions (slow, medium, fast)** option.
4. Click **OK**.

Add a Windows 10 install image to Windows DS

1. Expand **LON-DC1.Adatum.com**.
2. Right-click **Install images**, and then click **Add Install image**.
3. On the **Image Group** page, type **London Clients - Windows 10**, and then click **Next**.
4. On the **Image File** page, click **Browse**, and then click the **D:\sources\install.wim** file. Click **Open**, and then click **Next**.
5. On the **Available Images** page, click **Next**.
6. On the **Summary** page, click **Next**.
7. After the image has been added, click **Finish**.

Add a Windows 10 boot image to Windows DS

1. Expand **LON-DC1.Adatum.com**.
2. Right-click **Boot images**, and then click **Add Boot image**.
3. On the **Image File** page, click **Browse**, and then click the **D:\sources\boot.wim** file. Click **Open**, and then click **Next**.

4. On the **Image Metadata** page, click **Next**.
5. On the **Summary** page, click **Next**.
6. After the image is added, click **Finish**

Change the DHCP options to support PXE with multiple subnets

1. In Server Manager, in the **Tools** menu, click **DHCP**.
2. Expand **lon-dc1.adatum.com**.
3. Expand **IPv4**.
4. Click the **Server Options** node to select it, right-click and then click **Configure Options**.
5. Click option **066 Boot Server Host Name**, and then type **LON-DC1.Adatum.com** as the **String value**.
6. Click option **067 Bootfile Name**, and then type **boot\x64\pxeboot.com** as the **String value**.
7. Click **OK**.
8. Close the Dynamic Host Configuration Protocol (DHCP) console.

Module Review and Takeaways

Best Practices

- In environments with multiple subnets, use IP Helpers. Some UEFI computers do not support PXE booting with DHCP options 66 and 67.
- Move the client computer and the Windows DS server as close to each other as possible on the network.
- Have sufficient bandwidth on the network. You may have to upgrade your network infrastructure to support greater bandwidth and higher throughput. For instance, you may have to upgrade from 100 Mb to 1 Gb, upgrade cabling, use routers or switches instead of hubs, or lower the number of clients that are able to concurrently access a particular network segment.
- Reduce image size: Because larger images mean longer installation times and greater network strain, consider creating images that contain minimum customization, drivers, and applications; or consider creating specialized images for each department, hardware type, or function.
- Use Performance Monitor to identify resource issues on Windows DS servers. The following are useful counters for diagnosing Windows DS performance:
 - Network Interface (Bytes Sent/sec)
 - PhysicalDisk (Avg. Disk sec/Read, Avg. Disk sec/Write, and Current Disk Queue Length)
 - Process (Page Faults/sec)
 - Processor (% Processor Time)
 - WDS Multicast Server (all counters)
 - WDS TFTP Server (all counters)
 - WDS Server (all counters)
- Use Dynamic Driver Provisioning. It is not necessary to update images when you introduce new hardware into the environment. By storing drivers centrally on deployment servers, separate from images, you can install drivers dynamically.
- Reduce the number of drivers on individual PCs to reduce the number of potential driver conflicts. This ultimately streamlines installation and setup times, and improves the reliability of the PC.
- Partition network segments to distribute the load across multiple servers.
- Ensure that the disk that contains the remote install folder has enough throughput to meet the client demand.
- Ensure that there is sufficient memory on the server to handle the demands.
- Use Windows DS together with software deployment tools such as Microsoft Deployment Toolkit or System Center 2012 R2 Configuration Manager.

Real-world Issues and Scenarios

Outdated driver and BIOS versions can affect the success of PXE booting for client computers. If you encounter issues trying to start computers from PXE boot, ensure that network interface card (NIC) drivers and BIOS firmware are up to date. Consult the vendor sites if necessary.

Tools

Tool	Used for	Where to find it
Windows Deployment Services console	Configuration of Windows DS	Installed with the Windows DS role
WDSUtil.exe	Command-line configuration of the Windows DS server	Installed with the Windows DS role
Windows PowerShell	Command line configuration	Installed with the Windows DS role on

Tool	Used for	Where to find it
cmdlets	of the Windows DS server	Windows Server 2012 R2
WDSMCast.exe	Connect to a multicast transmission from Windows DS	Windows Assessment and Deployment Kit (Windows ADK)
DISM.exe	Capture or apply a Windows image from the command line	Built into the Windows operating system
Windows System Image Manager	Create unattend files to automate deployment	Windows ADK

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Multicast transmissions are running slow.	Identify and remove the slowest multicast clients, or segment multicast traffic into slow, medium, and fast.
After enabling multicast traffic, you notice excessive traffic on the network.	You can use the same multicast addresses on more than one Windows DS server. You may need to create extra network subnets to isolate multicast traffic to necessary subnets.
PXE client boot performance takes a long time in a branch office.	Assuming that the branch office already has a local Windows DS server, you can add a local domain controller to validate request in the branch office to avoid wide area network (WAN) traffic.

Lab Review Questions and Answers

Lab: Configuring Windows DS to support PXE and multicast operating system deployments

Question and Answers

Question: Which DHCP option is set if you install Windows DS on a server that has the DHCP server role installed?

Answer: The DHCP option is Option 60 – PXEClient.

Question: What name will the first client computer get if a user named Josh installs the computer from Windows DS?

Answer: Josh1. The default computer name format is %61Username%#, which will take up to 61 characters from the username of the user who deploys the computer, and then a number starting with one, which increments each time the same user deploys a new computer.

Module 8

Implementing operating system deployment by using the MDT

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Lesson 1

Planning for the MDT environment

Contents:

Question and Answers

3

Question and Answers

Question: Which of the following operating systems can MDT 2013 Update 2 deploy? Choose all that apply.

- ☐ Windows Server 2008
- ☐ Windows 10
- ☐ Windows 7
- ☐ Windows Vista
- ☐ Windows Server 2012

Answer:

- ☐ Windows Server 2008
- ☒ Windows 10
- ☒ Windows 7
- ☐ Windows Vista
- ☒ Windows Server 2012

Feedback: MDT 2013 Update 2 cannot deploy Windows Server 2008 or Windows Vista operating systems.

Question: You can install only MDT 2013 Update 2 on client computers running Windows 8 or newer operating systems.

- ☐ True
- ☐ False

Answer:

- ☐ True
- ☒ False

Feedback: You also can install MDT 2013 Update 2 on Windows 7.

Lesson 2

Implementing MDT 2013 Update 2

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Demonstration: Configuring a task sequence, and updating the deployment share	8

Question and Answers

Question: The Bootstrap.ini file can be used to provide credentials to allow connections to the deployment share.

() True

() False

Answer:

(v) True

() False

Feedback: When the computer first starts, the MDT processes Bootstrap.ini, and then uses the information to connect to the deployment share.

Question: What do you have to do to allow the addition of language packs by using the deployment wizard?

Answer: You need to add the language packs to the **Packages** node in the Deployment Workbench. The Add Language Packs screen will display automatically, and the user performing the deployment can choose the language pack (or packs) they wish to add.

Resources



Additional Reading: For more information, refer to Get started with the Microsoft Deployment Toolkit (MDT): <http://aka.ms/Ruvrsi>

Overview of the MDT configuration files and database option



Additional Reading: For more information, refer to Microsoft Deployment Toolkit (MDT): <http://aka.ms/N4twrh>

MDT troubleshooting and monitoring options



Additional Reading: For more information, refer to Troubleshooting Methodology: <http://aka.ms/Stjx6x>

Demonstration: Configuring the deployment share

Demonstration Steps

Install MDT 2013

1. On LON-SVR1, on the taskbar, click **File Explorer**.
2. In the File Explorer address bar, type **\\LON-DC1\Labfiles\MDT2013**, and then press Enter.
3. Right-click **MicrosoftDeploymentToolkit2013_x64.msi**, and then click **Install**.
4. In the Microsoft Deployment Toolkit 2013 (6. 3.8330.1000) Setup Wizard, on the **Welcome** page, click **Next**.
5. On the **End-User License Agreement** page, select the **I accept the terms in the License Agreement** check box, and then click **Next**.

6. On the **Custom Setup** page, click **Next**.
7. On the **Customer Experience Improvement Program** page, ensure the **I don't want to join the program at this time** option is selected, and then click **Next**.
8. On the **Ready to Install Microsoft Deployment Toolkit 2013 Update 2 (6.3.8330.1000)** page, click **Install**.
9. On the **Completed the Microsoft Deployment Toolkit 2013 Update 2 (6.3.8330.1000) Setup Wizard** page, click **Finish**.

Add the Windows ADK prerequisite files

1. In the File Explorer address bar, type `\\LON-DC1\Labfiles\WADK`, and then press Enter.
2. Right-click **adksetup.exe**, and then click **Run as administrator**. When prompted to add or remove features, click **Continue**.
3. On the **Select the features you want to change** page, select the check boxes next to **Deployment Tools**, **Windows Preinstallation Environment (Windows PE)** and **User State Migration Tool (USMT)**. Clear the **Volume Activation Management Tool (VAMT)** check box, and then click **Change**.



Note: This process takes approximately five minutes.

4. When the installation is complete, on the **Welcome to the Assessment and Deployment Kit - Windows 10!** page, click **Close**.
5. Close File Explorer.

Create an MDT deployment share

1. On LON-SVR1, 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 `D:\Program files\Microsoft Learning\20695\Drives`.
3. Click **Win10TH2Ent_EVAL.ISO** file, and then click **Open**.
4. On LON-SVR1, click the **Start** button, click the circled **Down Arrow** key, and then click the **Deployment Workbench New** tile.
5. In the Deployment Workbench console, click the **Deployment Shares** node.
6. Right-click the **Deployment Shares** node, and then click **New Deployment Share**.
7. In the New Deployment Share Wizard, on the **Path** page, in the **Deployment share path** field, ensure that `C:\DeploymentShare` is listed in the **Deployment share path** text box. If it is not, type it into the text box, and then click **Next**.
8. On the **Share** page, notice the name of the deployment share (it is a hidden share), and then click **Next**.
9. On the **Descriptive Name** page, note that this name, and not the path, will appear in the Deployment Workbench, and then click **Next**.
10. Review the **Options** page, explaining what each option does.
11. Ensure that the **Ask for a product key** and **Ask to set the local Administrator password** check boxes are cleared, and then click **Next**.
12. On the **Summary** page, click **Next**.

13. On the **Confirmation** page, click **View Script**. Explain that Notepad opens with the Windows PowerShell cmdlets, to perform the action in a script named **NewDP.ps1**.
14. Explain that because the MDT 2013 Update 2 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 to repeat similar actions on other systems, by changing real value names.
15. Close Notepad without saving the script, and then click **Finish**.

Examine the deployment share properties

1. In the Deployment Workbench, expand the **Deployment Share** node, and then expand **MDT Deployment Share (C:\DeploymentShare)**.
2. Briefly discuss each item shown.
3. Right-click **MDT Deployment Share (C:\DeploymentShare)**, and then click **Properties**.
4. In the **Properties** dialog box, review the **General** tab, discuss the settings that you configured by using the wizard. 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 from the Control folder, which is based directly on the options that you choose during the 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. Review the **Features** tab and the **Drivers and Patches** tab. Explain that you need to configure the settings separately for both platform types.
9. Close the **MDT Deployment Share (C:\DeploymentShare) Properties** dialog box.

Import operating system files into the deployment share

1. Right-click the **Operating Systems** folder, 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, in the **Destination directory name** text box, type **Windows10x64**, and then click **Next**.
5. On the **Summary** page, click **Next**.
6. On the **Confirmation** page, once again note the View Script button, but do not click it.
7. 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**, and 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\Labfiles\Drivers\point64**, and then click **Next**.
3. On the **Summary** page, click **Next**.
4. On the **Confirmation** page, click **Finish**.
5. After completing all demonstration steps, leave the virtual machines running for the next demonstration.

Demonstration: Configuring a task sequence, and updating the deployment share

Demonstration Steps

Create a standard client upgrade task sequence

1. On LON-SVR1, in the Deployment Workbench, the **MDT Deployment Share (C:\DeploymentShare)**, right-click the **Task Sequences** item, 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 **Upgrade to Windows 10**, and then click **Next**.
4. On the **Select Template** page, select **Standard Client Upgrade Task Sequence** from the task sequence templates drop-down list box, and then click **Next**.
5. On the **Select OS** page, in **Windows10x64 install.wim**, click **Windows 10 Enterprise Evaluation Technical Preview in Windows10x64 install.wim**, and then click **Next**.
6. On the **Specify Product Key** page, select the **Do not specify a product key at this time** check box, 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 upgrade task sequence

1. In the navigation pane, click the **Task Sequences** node.
2. Right-click the **Upgrade to Windows 10** task sequence, and then click **Properties**.
3. In the **Properties** dialog box, on the **General** tab, discuss the properties.
4. Click the **Task Sequence** tab, and then briefly discuss the task steps in the task sequence.
5. Expand **Upgrade the Operating System**, and then click **Inject Drivers**. From the **Choose a selection profile** drop-down list box, select the **Nothing** option.
6. Click the **OS Info** tab, and then briefly discuss the information this tab.
7. Click **OK** to close the Upgrade to Windows 10 Properties window.

Update the deployment share

1. Right-click the **MDT Deployment Share (C:\DeploymentShare)**, 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 that display.



Note: The task should run for about five minutes.

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

Lesson 3

Integrating Windows DS with MDT

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Question and Answers

11

Question and Answers

Question: Boot images are created automatically by updating the deployment share.

☐ True

☐ False

Answer:

☒ True

☐ False

Feedback: Boot images are created based on the settings of the deployment share when it is updated. Anytime you make any changes to the settings of the deployment share the share must be updated again in order for those settings to take effect.

Question: You must install Windows DS on a computer running Windows Server 2008 R2 or newer.

☐ True

☐ False

Answer:

☒ True

☐ False

Feedback: You must install Windows DS on a computer running Windows Server 2008 R2 or newer.

Module Review and Takeaways

Best Practices

- Build your reference system using a virtual machine. This will avoid having an image with any hardware-specific configurations embedded.
- Create folders in the Out-of-Box-Drivers node to organize all your vendor or model-specific drivers.
- Use Profile Selections to deploy only the required drivers to a given hardware configuration
- Build thin images and apply applications on demand through the applications node. This will allow you to keep the application current as updates and patches are released, without having to rebuild the image.

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
Mismatch between versions of MDT and Windows AIK or Windows ADK	Ensure when you install MDT 2013 Update 2 that you also install the version of Windows ADK for Windows 10. You do not have to uninstall the earlier version. Running the ADK setup will update the existing components of the ADK installation.
Language packs are not deploying properly	The language pack version must match the operating system version.
Cannot find lite-touch 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.
Deployments are ending prematurely with errors	Consult the logs on the deployment client, specifically the BDD.log and smts.log files.

Lab Review Questions and Answers

Lab: Operating system deployment using the MDT

Question and Answers

Question: What could you do to bypass having to enter credentials to connect to the deployment share?

Answer: You could edit the Bootstrap.ini file to specify the path to the deployment share, and to provide the proper credentials.

Question: How can you modify the behavior of the deployment wizard?

Answer: You can modify the behavior by editing the CustomSettings.ini file to skip or show specific deployment pages, provide data such as time zone and region.

Module 9

Managing operating system deployment

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Lesson 1

Overview of operating system deployment

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Question and Answers

Question: When creating a Servicing Plan for Windows 10, which kinds of software updates are included in the software update group created by the Servicing Plan rule?

Answer: Only updates from the Upgrade classification is included in the created software update group.

Question: Which operating system deployment scenarios does Configuration Manager support?

Answer: Configuration Manager supports the following four operating system deployment scenarios are supported by Configuration Manager:

- Operating system refresh
- Bare-metal installation
- In-place upgrade
- Side-by-migration

Deploying operating systems by using Configuration Manager

Question: What is the difference between a reference computer and a destination computer?

Answer: You can use a reference computer to build an operating system for capture. A destination computer is the computer to which that you deploy an image to.

Overview of operating system deployment scenarios

Question: What is the difference between a bootable media deployment and a standalone media deployment?

Answer: A bootable media deployment connects to the site-server distribution point to procure the deployment files. The standalone media method requires that the media include all installation files, including drivers

Resources

Deploying operating systems by using Configuration Manager



Additional Reading: For more information about how to manage enterprise operating systems with Configuration Manager, refer to Manage enterprise operating systems with System Center Configuration Manager: <http://aka.ms/Xz0qx9>

Operating system deployment terminology



Additional Reading: For more information, refer to Introduction to operating system deployment in System Center Configuration Manager: <http://aka.ms/Bfdbr0>

Overview of operating system deployment scenarios



Additional Reading: For more information about Windows To Go, refer to Windows To Go: Feature Overview: <http://aka.ms/Qtkylp>
For more information about how to deploy Windows To Go by using Configuration Manager, refer to Deploy Windows to Go with System Center Configuration Manager: <http://aka.ms/Ti75o6>

For more information, refer to Methods to deploy enterprise operating systems using System Center Configuration Manager: <http://aka.ms/Xp2gon>

Server roles for the operating system deployment process



Additional Reading: For more information, refer to Manage enterprise operating system with System Center Configuration Manager: <http://aka.ms/Xz0qx9>

Lesson 2

Preparing a site for operating system deployment

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Question and Answers

Question: What kinds of drivers must you add to your boot images, and which operating system should they be for?

Answer: You should add only network and mass storage drivers to your boot image, if they are needed. The drivers you add must be Windows 10 drivers, either 32-bit or 64-bit depending on the architecture of your boot image.

Question: How do you enable the Windows PE peer cache in a task sequence?

Answer: You must specify the task sequence variable **SMSTSPeerDownload** in your task sequence and set it to **TRUE**.

Similar to BranchCache, this could be useful with small, remote sites separated by a slow WAN Link.

Question: You can add only one Network Access account in Configuration Manager.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: You can add multiple Network Access accounts in Configuration Manager.

Enabling PXE and multicast support on a distribution point

Question: What is the difference between autocast mode and scheduled multicast mode?

Answer: With autocast mode, the multicast session starts immediately after the first client requests an image. With scheduled multicast mode, the multicast session starts when the designated number of client devices make a request or when the designated time elapses after the first client device makes a request.

Configuring the Network Access account

Question: What permissions does the Network Access account require for use with the operating system deployment process?

Answer: The Network Access account requires read permission to all content that distribution points host.

Managing device drivers

Question: Why do you want to add only the necessary drivers to a boot image?

Answer: When using a PXE boot scenario, the boot image is transferred to the destination computer by using Trivial File Transfer Protocol. Adding unnecessary drivers increases the image size and might lead to issues with downloading the boot image over the connectionless protocol TFTP.

Question: When importing drivers into Configuration Manager, should you use one package for all the drivers or divide them into multiple packages?

Answer: Answers will vary. Configuration Manager distributes all driver packages as a unit. Therefore, the deployment process can use large packages with numerous drivers or several smaller packages.

Preparing boot images

Question: In your work environment, is there a need to customize any of the boot images?

Answer: Answers will vary. Boot images used for PXE boot on virtual machines require the Hyper-V in Windows Server 2012 network drivers. Other boot images for computers that use a nonstandard input device, such as a touchscreen monitor, also require supporting drivers.


Managing the default boot images

Question: Why do you include only the network driver when modifying the package?


Answer: Although you might also need to include storage or bus drivers depending on the hardware, the other drivers, such as video and chipset drivers, will not add any needed support to the image. They will increase the size of the boot image and slow the download time.

Resources

Prerequisites for operating system deployment

 **Additional Reading:** For more information, refer to Prepare site system roles for operating system deployments with System Center Configuration Manager: <http://aka.ms/Uojhnf>

Managing the additional packages used by operating system deployment

 **Additional Reading:** For more information, about how to Plan for operating system deployment in System Center Configuration Manager, refer to: <http://aka.ms/R8e4ej>

Demonstration: Enabling PXE and multicast support on a distribution point

Demonstration Steps

1. On LON-CFG, on the taskbar, click **Configuration Manager Console**.
2. Click the **Administration** workspace, expand the **Site Configuration** folder, and then click the **Servers and Site System Roles** node.
3. In the details pane, select **\\LON-CFG.adatum.com**. In the preview pane, right-click the **Distribution point** role, and then click **Properties**.
4. In the **Distribution point Properties** dialog box, on the **PXE** tab, select the **Enable PXE support for clients** check box.
5. In the **Review Required ports for PXE** dialog box, click **Yes**.
6. Select the **Allow this distribution point to respond to incoming PXE requests** check box.
7. Select the **Enable unknown computer support** check box.
8. In the **Configuration Manager** message box, click **OK**.
9. In the **Password** and **Confirm password** boxes under **Require a password when computers use PXE**, type **Pa\$\$w0rd**.
10. Click the **Multicast** tab, but do not configure anything.



Note: Tell the students that they enable multicasting by selecting the **Enable multicast to simultaneously send data to multiple clients** check box. Also tell them that they can configure additional settings for multicasting on this page.

11. In the **Distribution point Properties** dialog box, click **OK**.
12. Click the **Monitoring** workspace, expand **Distribution Status**, and then click **Distribution Point Configuration Status**.
13. Right-click **\\LON-CFG.Adatum.com**, and then click **Refresh**. Repeat periodically until the **PXE** column display **Yes**.

Demonstration: Configuring the Network Access account

Demonstration Steps

1. In the Configuration Manager console, click the **Administration** workspace, expand **Site Configuration**, and then click the **Sites** node.
2. In the results pane, right-click **S01-Adatum Site**, select **Configure Site Components**, and then click **Software Distribution**.
3. In the **Software Distribution Components Properties** dialog box, on the **Network Access Account** tab, click the **Specify the account that accesses network locations** option.
4. Click **new** (sun icon), and then click **New Account**. Provide the following information as the credentials for the Network Access account:
 - User name: **Adatum\NetworkAccess**
 - Password: **Pa\$\$w0rd**
 - Confirm password: **Pa\$\$w0rd**



Note: Tell the students that they must create the Network Access account themselves. It should just be a normal domain user account, and they should never use a Domain Administrator account.

5. Click **Verify**.
6. In the **Network share** box, type **\\LON-CFG\SMS_S01**, and then click **Test connection**.
7. Ensure that you receive a message stating that the connection was verified successfully, and then click **OK**.
8. Click **OK** to close the **Windows User Account** dialog box.
9. Click **OK** to close the **Software Distribution Component Properties** dialog box.

Demonstration: Managing device drivers

Demonstration Steps

1. On LON-CFG, click the **Software Library** workspace, expand the **Operating Systems** folder, and then click the **Drivers** node.
2. Right-click the **Drivers** node, and then click **Import Driver**.
3. On the **Locate Driver** page, click **Browse**.

4. In the **Select Folder** dialog box, in the **Folder** box, type `\\LON-CFG\Software\Drivers\HypervX64`, and then click **Select Folder**.
5. On the **Locate Driver** page, click **Next**. Wait for the driver information to be validated.
6. On the **Driver Details** page, remove the check mark next to **Hide drivers that are not digitally signed**.
7. In the **Filter** box, type **display**, and then explain that you can use this functionality to filter drivers on the **File Name**, the **Class**, the **Architecture**, the **Version** and whether they are signed. Click **Select All**.



Note: Remember to clear the filter before you continue by clicking the red **X**.

8. Click **Categories**, and then in the **Manage Administrative Categories** dialog box, click **Create**.
9. In the **Create Administrative Category** box, type **64-bit Drivers**, and then click **OK**.
10. In the **Manage Administrative Categories** dialog box, click **Create**.
11. In the **Create Administrative Category** box, type **Hyper-V Drivers**, and then click **OK**.
12. In the **Manage Administrative Categories** dialog box, click **OK**, and then on the **Driver Details** page, click **Next**.
13. On the **Add Driver to Packages** page, click **New Package**.
14. In the **Create Driver Package** dialog box, in the **Name** box, type **Hyper-V Drivers**, and in the **Path** box, type `\\LON-CFG\E$\Source\Drivers`, and then click **OK**.
15. On the **Add Driver to Packages** page, click **Next**.
16. On the **Add Driver to Boot Images** page, click **Next**.
17. On the **Summary** page, click **Next**, and then on the **Completion** page, click **Close**.
18. Click the **Driver Packages** node.
19. Right-click the **Hyper-V Drivers** package, and then click **Distribute Content**.
20. In the **Distribute Content Wizard**, on the **General** page, click **Next**.
21. On the **Content Destination** page, click **Add**, and then click **Distribution Point**.
22. In the **Add Distribution Points** dialog box, select the **LON-CFG.ADATUM.COM** check box, and then click **OK**.
23. On the **Content Destination** page, click **Next**.
24. On the **Summary** page, click **Next**, and then on the **Completion** page, click **Close**.
25. Right-click the **Hyper-V Drivers** package, and then click **Refresh**. Repeat this step until the status shows **Success**.




Note: This should take about one minute.

Demonstration: Managing the default boot images

Demonstration Steps

1. On LON-CFG, in the Configuration Manager console, click the **Software Library** workspace.
2. Expand **Operating Systems**, and then click the **Boot Images** node.

3. In the results pane, right-click **Boot Image (x64)**, and then click **Properties**.
 4. Click the **Drivers** tab, and then click **New**.
 5. In the **Select a driver** dialog box, remove the check mark from **Hide drivers that are not digitally signed**, select **Microsoft Hyper-V Network Adapter**, and then click **OK**.
-  **Note:** Remove the driver again by selecting it and then clicking the red **X**. Tell the students that Hyper-V drivers are not needed to do the demonstrations and labs in this module.
6. Click the **Customization** tab, and then select the **Enable command support (testing only)** check box.
 7. Click the **Optional Components** tab, and then in the **Components** section, click **new** (sun icon).
 8. In the Select optional components window, select **Windows PowerShell (WinPE-PowerShell)**, and click **OK** twice.
 9. Click the **Data Source** tab, and then verify that the **Deploy this boot image from the PXE-enabled distribution point** check box is selected.
 10. In the **Boot Image (x64) Properties** dialog box, click **OK**.
 11. In the **Configuration Manager** dialog box, click **Yes**.
 12. In the Update Distribution Points Wizard, on the **Summary** page, click **Next**. Wait for the wizard to complete.
 13. In the Update Distribution Points Wizard, on the **Completion** page, click **Close**.
 14. Right-click **Boot Image (x86)**, and then click **Properties**.
 15. Click the **Customization** tab, and then select the **Enable command support (testing only)** check box.
 16. Click the **Data Source** tab, and then verify that the **Deploy this boot image from the PXE-enabled distribution point** check box is selected.
 17. Click the **Optional Components** tab, and then in the **Components** section, click **new** (sun icon).
 18. In the Select optional components window, select **Windows PowerShell (WinPE-PowerShell)**, and click **OK** twice.
 19. In the **Boot Image (x86) Properties** dialog box, click **OK**.
 20. In the **Configuration Manager** dialog box, click **Yes**.
 21. In the Update Distribution Points Wizard, on the **Summary** page, click **Next**.
 22. In the Update Distribution Points Wizard, on the **Completion** page, click **Close**.
 23. Click **Boot Image (x64)**, Ctrl+click **Boot Image (x86)**, right-click **Boot Image (x64)**, and then click **Distribute Content**.
 24. In the Distribute Content Wizard, on the **General** page, click **Next**.
 25. On the **Content Destination** page, click **Add**, and then click **Distribution Point**.
 26. In the **Add Distribution Points** dialog box, select **LON-CFG.ADATUM.COM**, and then click **OK**.
 27. On the **Content Destination** page, click **Next**.
 28. On the **Summary** page, click **Next**.
 29. On the **Completion** page, click **Close**.

Right-click one of the packages, and then click **Refresh**. Repeat this step for the other package to check its status. Repeat periodically until both show a status of **Success**. This should take about one minute

Demonstration: Managing operating system deployment packages

Demonstration Steps

Verify that the USMT and Configuration Manager client packages are ready for use

1. In the Software Library workspace, expand Application Management and then click Packages.
2. Verify that the following packages exist:
 - **Configuration Manager Client Package**
 - **User State Migration Tool for Windows 10**
3. Right-click Configuration Manager Client Package and then click Properties.
4. In the **Configuration Manager Client Package Properties** dialog box, click **Content Locations**, notice that the package is distributed to **LON-CGF.Adatum.com**, and then click **OK**.
5. Right-click User State Migration Tool for Windows 10, and then click Properties.
6. In the **User State Migration Tool for Windows 10 Properties** dialog box, click **Content Locations**, notice that the package is not distributed, and then click **OK**.
7. Right-click User State Migration Tool for Windows 10, and then click Distribute Content.
8. In the Distribute Content Wizard, on the **General** page, click **Next**.
9. On the Content Destination page, click Add, and then click Distribution point.
10. In the **Add Distribution Points** dialog box, select **LON-CFG.ADATUM.COM**, and then click **OK**.
11. On the Content Destination page, click Next.
12. On the **Summary** page, click **Next**, and then on the **Completion** page, click **Close**.

Lesson 3

Deploying an operating system

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Question and Answers

Question: You have enabled unknown computer support on your PXE-enabled distribution point.

You have a task sequence that deploys Windows 10 Enterprise (x64), and you want to deploy it to a newly purchased computer that is not known by Configuration Manager. What should you do next?

Answer: You must deploy the Windows 10 task sequence to the All Unknown Computers collection.

Question: You have created a task sequence that will install Windows 10 Enterprise, and you want to deploy it on a few computers while minimizing the impact on your network. Which deployment method is best suited to accomplish this task?

Answer: You should create standalone media by using a USB flash drive that includes the boot image, the operating system image, applications, packages, and potentially, scripts. No network connection is needed or used during the deployment.

Importing and distributing an operating system image

Question: If you plan to use operating system deployment to deploy Windows 10 to two brands of laptops and three models of desktop computers, how many operating system images will you have to import?

Answer: Answers will vary. If you use a general image, including only applications that will run on all laptops and desktop computers, you can use a single image. If you will create more customized images, you can create more of them. Hardware differences do not present a concern, as long as the Drivers node has all the drivers that it requires.

Overview of task sequences

Question: In your environment, how can you use task sequence variables?

Answer: Answers will vary, but possible answers include:

- To configure settings for a task sequence action, such as specifying the proper domain to join based on a collection membership.
- To supply command-line arguments for a task sequence step, such as specifying the location to store files for USMT.
- To evaluate a condition that determines if a task sequence step or group will run, such as determining the available space before installing software.

Methods for running an installation task sequence

Question: In your work environment, which deployment scenario and method are you most likely to use?

Answer: Answers will vary. However, when deploying a dozen new laptops that include an operating system, you might choose to perform an in-place upgrade. When performing a hardware refresh, you might use a side-by-side migration.

Resources

Process for deploying an operating system image



Additional Reading: For more information, about How to Deploy Operating Systems in Configuration Manager, refer to: <http://aka.ms/F6tt75>

Adding an operating system image to Configuration Manager



Additional Reading: For more information, about how to Customize operating system images with System Center Configuration Manager, refer to: <http://aka.ms/Dknlyp>
For more information, about an Introduction to operating system deployment in System Center Configuration Manager, refer to: <http://aka.ms/Bfdbr0>

Creating and deploying a task sequence to install an existing image



Additional Reading: For more information about task sequence steps, including those for enabling BitLocker, configuring UEFI settings, and partitioning disks, refer to Task Sequence Steps in Configuration Manager: <http://aka.ms/fjamr0>

Demonstration: Importing and distributing an operating system image

Demonstration Steps

1. On LON-CFG, in the Configuration Manager console, click the **Software Library** workspace, expand **Operating Systems**, and then click **Operating System Images**.
2. On the ribbon, in the **Create** group, click **Add Operating System Image**.
3. In the Add Operating System Image Wizard, on the **Data Source** page, in the **Path** box, type **\\LON-CFG\e\$\Sources\Install.wim**, and then click **Next**.
4. On the **General** page, in the **Name** box, type **Windows 10 Enterprise (x64) Evaluation**, and then click **Next**.
5. On the **Summary** page, click **Next**, and then on the **Completion** page, click **Close**.
6. Right-click the **Windows 10 Enterprise (x64) Evaluation** image, and then select **Distribute Content**.
7. In the Distribute Content Wizard, on the **General** page, click **Next**.
8. On the **Content Destination** page, click **Add**, and then select **Distribution Point**.
9. In the **Add Distribution Points** dialog box, select the **LON-CFG.ADATUM.COM** check box, and then click **OK**.
10. On the **Content Destination** page, click **Next**.
11. On the **Summary** page, click **Next**, and then on the **Completion** page, click **Close**.
12. Right-click the **Windows 10 Enterprise (x64) Evaluation** image, and then click **Refresh**. Repeat periodically until the status shows **Success**. This should take around five minutes.

Module Review and Takeaways

Best Practices

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

- Implement access controls to protect bootable media. When you create bootable media, you should always assign a password and control physical access to the media.
- Always install the most-recent security updates on a reference computer. Starting with an up-to-date reference computer helps to decrease the window of vulnerability for newly deployed computers.
- If you are deploying operating systems to unknown computers, implement access controls to prevent unauthorized computers from connecting to the network. Although deploying operating systems to unknown computers can be a convenient way to deploy multiple computers on demand, it can also allow a malicious hacker to add a trusted computer on your network. It also can deploy an operating system image to computers that have not yet been discovered by Configuration Manager by mistake.

Review Question(s)

Question: How can operating system deployment assist in managing your organization's systems?

Answer: Answers will vary but might include standardization and ease of deployment.

Question: What packages can you use for operating system deployment?

Answer: The packages for operating system deployment include the operating system installer package, device driver packages, the Configuration Manager client upgrade package, application packages, and the USMT package.

Question: Why would you use a task sequence outside of operating system deployment?

Answer: You use a task sequence to run any series of commands on multiple client computers, such as installing a set of related applications on multiple computers.

Question: Why should you import computer information into the Configuration Manager database before deployment?

Answer: You should import computer information into the Configuration Manager database before deployment to prevent accidentally sending a task sequence to unknown computers. To do this, you should use the Import Computer Information Wizard. In the wizard, add the new computers to an appropriate target collection, and then target the task sequences accordingly.

Question: You are creating a new image for a new corporate standard laptop. You discover that the accelerometer driver is not automatically installed during operating system deployment. What can you do to install the accelerometer driver without user intervention?

Answer: Answers will vary. One possible solution is to create a package for the driver and add a task sequence step to install the driver after the operating system is installed.

Tools

Tool	Use for	Where to find it
MDT 2013 Update 2	Managing deployment images	http://aka.ms/V6gnxw

Lab Review Questions and Answers

Lab A: Preparing the site for operating system deployment

Question and Answers

Question: In your work environment, would you enable unknown computer support for PXE boot?

Answer: Answers will vary. Discuss the advantages, such as ease of deployment, and the disadvantages, such as accidental deployment, of enabling unknown computer support for PXE boot. Also, discuss the use of a password for PXE boot support.

Question: Apart from the packages deployed in the lab, what packages would you include as part of the operating system deployment process?

Answer: Answers will vary.

Lab B: Deploying operating system images for bare-metal installations

Question and Answers

Question: When would you include an application in the install an existing image task sequence rather than in the build and capture task sequence?

Answer: You include applications in the build and capture task sequence in situations where all computers should have the same applications, such as Office. In the install an existing image task sequence, you add applications that should be installed only on certain computers.

Question: In your work environment, will you use USMT for state migration?

Answer: Answers will vary. If you use roaming profiles, state migration might not be necessary.

Module 10

Integrating MDT and Configuration Manager for operating system deployment

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Lesson 1

Integrating deployment tools with Configuration Manager

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Question and Answers

Question: What are the benefits of integrating MDT 2013 Update 2 with Configuration Manager?

Answer: Answers may vary, but possible answers are:

- Real-time monitoring of task sequences.
- Dynamic deployments.
- UDI deployments.
- Access to scripts.

Question: To create a database for MDT 2013 Update 2, is it required to use MDT 2013 Update 2 with Configuration Manager?

Answer: No, it is not required to create a database. However, if you want to control deployments by using roles, you must create a database for MDT 2013 Update 2.

Demonstration: Enabling Configuration Manager integration

Demonstration Steps

Install MDT 2013 Update 2 and run the ConfigMgr Integration app

1. On LON-CFG, ensure that the Configuration Manager console is closed.
2. On the taskbar, click **File Explorer**. In the console tree, select **E:\Software\MDT2013**, right-click **MicrosoftDeploymentToolkit2013_x64.msi**, and then select **Install**.
3. In the **Microsoft Deployment Toolkit 2013 Update 2 (6.3.8330.1000) Setup** wizard, on the **Welcome** page, click **Next**.
4. On the **End-User License Agreement** page, select **I accept the terms in the License Agreement**, and then click **Next**.
5. On the **Custom Setup** page, click **Next**.
6. On the **Customer Experience Improvement Program** page, ensure that **I don't want to join the program at this time** is selected, and then click **Next**.
7. On the **Ready to Install Microsoft Deployment Toolkit 2013 Update 2 (6.3.8330.1000)** page, click **Install**.
8. On the **Completed the Microsoft Deployment Toolkit 2013 Update 2 (6.3.8330.1000) Setup Wizard** page, click **Finish**.



Note: Typically, you would next install the Windows Assessment and Deployment Kit (Windows ADK). However, this is installed on LON-CFG. For more information about the procedures for installing Windows ADK, refer to Module 8, "Implementing Operating System Deployment by Using the Microsoft Deployment Toolkit."

9. Go to the **Start** screen, click the circled down arrow, right-click **Configure ConfigMgr Integration**, and then select **Run as Administrator**.
10. On the **Options** page of the **Configure ConfigMgr Integration** window, ensure that the following settings are selected, and then click **Next**:
 - **Install the MDT extensions for Configuration Manager**
 - **Install the MDT console extensions for System Center Configuration Manager**

- **Add the MDT task sequence actions to a System Center Configuration Manager server**
- Site Server Name: **LON-CFG.Adatum.com**
- Site code: **S01**

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

Set up the Deployment Workbench console for monitoring

1. On LON-CFG, on the **Start** screen, click the circled down arrow, and then click **Deployment Workbench**.
2. In the Deployment Workbench console, right-click **Deployment Shares**, and then click **New Deployment Share**.
3. In the **New Deployment Share Wizard**, on the **Path** page, click **Next**.
4. On the **Share** page, click **Next**.
5. On the **Descriptive Name** page, click **Next**.
6. Review the **Options** page, and then click **Next**.
7. On the **Summary** page, click **Next**.
8. On the **Confirmation** page, click **Finish**.
9. Under the **Deployment Shares** node in the Deployment Workbench console, right-click **MDT Deployment Share (c:\DeploymentShare)**, and then select **Properties**.
10. In the Deployment Share (C:\DeploymentShare), properties window, click the **Monitoring** tab.
11. Select **Enable monitoring for this deployment share**, and then click **OK**.



Note: Module 8 provides additional information on the MDT database. Inform students that as an alternative to using the CustomSettings.ini text file, they can prestage their Windows 10 deployment information in a Microsoft SQL Server database. However, this is not required when integrating MDT with Configuration Manager. Mention that the students will get an opportunity to do this in the lab.

Create a new database for MDT

1. On LON-CFG, in the Deployment Workbench console, expand **MDT Deployment Share (c:\DeploymentShare)**, expand **Advanced Configuration**, and then select **Database**.
2. In the Actions pane, select **New Database**.
3. In the **New DB Wizard**, on the **SQL Server Details** page, type **LON-CFG** in the **SQL Server name** text box, and then click **Next**.
4. On the **Database** page, select **Create a new database**, and in the **Database** text box, type **MDT_DB**, and then select **Next**.
5. On the **SQL Share** page, in the **SQL Share** text box, type **DeploymentShare\$**, and then click **Next**.
6. On the **Summary** page, click **Next**.
7. On the **Confirmation** page, click **Finish**.



Note: You can use the MDT Workbench to monitor an operating system deployment and to store task sequences and other deployment settings in the MDT database. The rest of the actions will occur in the Configuration Manager console.

Verify the MDT integration in Configuration Manager

1. On LON-CFG, on the taskbar, click the **Configuration Manager Console**.
2. Select the **Software Library** workspace.
3. In the **Software Library** workspace, expand **Operating Systems**, and then select the **Task Sequences** node.
4. Right-click **Task Sequences**. You should see a new **Create MDT Task Sequence** item in the list. This confirms that the integration was successful.

Lesson 2

Integrating MDT with Configuration Manager

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Question and Answers

Question: What is the name of the variable used to automate the selection of full format of the target machine's hard disk? What value would you assign to it to enable this?

Answer: The *OSDDiskPart* variable is used to automate the selection of a full format of the target machine's hard disk. You should configure the variable *OSDDiskPart* with a value of **True** to enable it.

Question: How can you add a computer to the Configuration Manager database?

Answer: You add a computer to the Configuration Manager database by using the **Import Computer Information Wizard**. You can either import information for a single computer or use a .csv file and import information for multiple computers.

Question: Which file do you use to control the behavior of MDT?


Answer: You use the CustomSettings.ini file to control the behavior of MDT.


Question: What is the name of the file in which the UDI Wizard Designer saves most of its information?

Answer: UDIWizard_Config.xml


Resources

Overview of the MDT-integrated boot-disk options

 **Additional Reading:** For a complete list of the optional feature packages (Optional Components) that you can add to Windows PE, refer to WinPE: Add packages (Optional Components Reference): <http://aka.ms/C6maq3>

 **Additional Reading:** For information on how to create a script to use for the prestart command, distribute the content associated with the prestart command, or configure the prestart command in media, refer to Prestart Commands for Task Sequence Media in Configuration Manager: <http://aka.ms/X8kzz4>

Working with UDI deployments

 **Reference Links:** For more information about UDI development, refer to User Driven Installation – Developers Guide: <http://aka.ms/Ywvmct>

Demonstration: Importing computers by using the Import Computer Information Wizard

Demonstration Steps

1. On LON-CFG, open the Configuration Manager console.
2. Click the **Assets and Compliance** workspace, right-click the **Devices** node, and then select **Import Computer Information**.
3. On the **Select Source** page of the **Import Computer Information Wizard**, select **Import single computer**, and then click **Next**.
4. On the **Single Computer** page, enter the following information, and then click **Next**:
 - Computer Name: **LON-CL12**
 - MAC address: **112233AABBCC**

5. On the **Data Preview** page, verify the name and MAC address, and then click **Next**.
6. On the **Choose Target Collection** page, select **Add computers to the following collection**, and then click **Browse**.
7. In the **Select Collection** window, select the **All Workstations** collection, and then click **OK**.
8. On the **Choose Target Collection** page, click **Next**.
9. On the **Summary** page, verify your selections, and then click **Next**.
10. On the **Confirmation** page, click **Close**.
11. Click the **Device Collections** node, right-click the **All Systems** collection, and then select **Update Membership**. When prompted, click **Yes**.
12. Click the **All Systems** collection, and then press F5 after 20 seconds.
13. Right-click the **All Workstations** collection, and then select **Update Membership**. When prompted, click **Yes**.
14. Click the **All Workstations** collection, and then press F5 after 20 seconds.
15. When the **Member count** column changes to **1**, right-click the **All Workstations** collection, and then select **Show Members**. You should now be able to see the computer you have added.
16. Open Notepad, and then create a file with the following information:
 - **LON-CL6,25:12:15:A0:B9:A1**
 - **LON-CL7,25:12:15:A0:B9:A2**
 - **LON-CL8,25:12:15:A0:B9:A3**
 - **LON-CL9,25:12:15:A0:B9:A4**
 - **LON-CL10,25:12:15:A0:B9:A5**Each entry must be one line.
17. In Notepad, click **File**, click **Save As** and then in the **Save as type** field, select **All Files (*.*)**. In the **File name** text box, type **Computers.csv**, and then click **Save**.
18. Close Notepad.
19. In the Configuration Manager console, click the **Assets and Compliance** workspace, right-click the **Devices** node, and then select **Import Computer Information**.
20. On the **Select Source** page of the **Import Computer Information** wizard, select **Import computers using a file**, and then click **Next**.
21. On the **Choose Mapping** page, click **Browse**, select the **Computers.csv** file you created earlier, and then click **Open**.
22. On the **Choose Mapping** page, in the **File preview** section, verify that **Column1** has a value of **Name** under the **Assign As** column.
23. Click **Column2**, next to the **Assign as** field, click the down arrow, select **MAC address**, and then click **Next**.
24. On the **Data Preview** page, verify the names and MAC addresses, and then click **Next**.
25. On the **Choose Target Collection** page, select **Add computers to the following collection**, and then click **Browse**.
26. In the **Select Collection** window, select **All Workstations** collection, and then click **OK**.

27. On the **Choose Target Collection** page, click **Next**.
28. On the **Summary** page, verify your selections, and then click **Next**.
29. On the **Confirmation** page, click **Close**.
30. Click the **Device Collections** node, right-click the **All Systems** collection, and then select **Update Membership**. When prompted, click **Yes**.
31. Click the **All Systems** collection, and then press F5 after 20 seconds.
32. Right-click the **All Workstations** collection, and then select **Update Membership**. When prompted, click **Yes**.
33. Click the **All Workstations** collection, and then press F5 after 20 seconds.
34. When the **Member count** column changes to **6**, right-click the **All Workstations** collection, and then select **Show Members**. You should see the computers you have imported.

Module Review and Takeaways

Review Question(s)

Question: Can you use the UDI Wizard Designer to make changes to a task sequence?

Answer: No. The UDI Wizard Designer lets you make changes to the deployment wizard pages that a user might see, but it cannot change a task sequence that creates the original need for the page.

Question: You have made changes to the CustomSettings.ini file in the MDT Deployment Workbench. What is it important for you to do next?

Answer: You need to copy the changed .ini file to the appropriate package source location and update the content for the package on the distribution points.

Question: Where can you find a new, bare-metal computer's SMSBIOS globally unique identifier (GUID) and media access control (MAC) address?

Answer:

If the computer has a PXE-enabled network adapter, simply turn it on, and observe its attempt to find an operating system over the network. It will display both the values.

Tools

Tool	Used to	Where to find it
Microsoft Deployment Toolkit 2013 Update 2	A Solution Accelerator for operating system and application deployment. MDT 2013 supports deployment of Windows 10, Windows 8.1, Windows 8, Windows 7, Windows Server 2012 R2, Windows Server 2012, and Windows Server 2008 R2.	http://aka.ms/V6gnxw
Windows ADK for Windows 10	Windows ADK is a collection of tools that you can use to customize, assess, and deploy Windows operating systems to new computers.	http://aka.ms/Jjdlao (direct download link)
DaRT Remote Control	Use to connect remotely into the Windows PE preinstall task sequence during a deployment.	Included with the MDOP, only available from a Microsoft Software Assurance subscription. More information about the MDOP can be found here: http://aka.ms/Wdqu3p
UDI Wizard Designer	A graphically oriented program that lets you create custom pages that a user sees when you deploy a system.	Installed as part of MDT 2013 Update 2. It can be downloaded from here: http://aka.ms/V6gnxw

Lab Review Questions and Answers

Lab A: Integrating MDT and Configuration Manager for operating system deployment

Question and Answers

Question: What is the purpose of creating the Clients to Upgrade collection, and how would you use it?

Answer: If you have several computers that you want to upgrade at once, you can query for them and then place them in the Clients to Upgrade collection.

Question: Why did you install DaRT before you started the MDT boot image?

Answer: To see the **DaRT** in the **Components** page of the **Create Boot Image using MDT** wizard, you must copy the cabinet files into the MDT deployment share. The quickest way to get access to these files is to install DaRT.

Lab B: Configuring UDI

Question and Answers

Question: Why did you have to update the distribution points with the MDT 2013 Update 2 toolkit package after you made the changes to UDI wizard xml files?

Answer: The MDT 2013 Update 2 toolkit Package must be updated on the distribution points whenever a change is made to the files. Any failure to do so will result in the task sequence using the old copy of the files.

Question: What must you do to integrate MDT 2013 Update 2 with Configuration Manager?

Answer: You must run the Configure ConfigMgr Integration app, which is installed when you install MDT 2013 Update 2.

Module 11

Activating clients and managing additional configuration settings

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Lesson 1

Solutions for volume license activation

Contents:

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Question and Answers

Question: You have installed the Volume Activation Services role and configured Active Directory-based activation. You join a Windows 7 Enterprise computer to the domain, but it will not activate. What is the problem?

Answer: The computer must run Windows 8 or later or Windows Server 2012 or later and be joined to the domain to activate by using Active Directory-based activation.

Question: If you configure your KMS host to not publish DNS records to DNS, what must you do for the KMS client to be able to find the KMS host?

Answer: You must run the following command on the KMS client:

```
slmgr.vbs /skms <Name of KMS host>:<Port>
```

Resources

Technologies for volume activation



Additional Reading: For more information, refer to Volume Activation for Windows 10: <http://aka.ms/T5383c>

How KMS activation works



Additional Reading: You must update installations of KMS that run on Windows 8.1, Windows 8, Windows Server 2012 R2, and Windows Server 2012 to activate Windows 10 by installing the hotfix at <http://aka.ms/E34ryg>

VAMT activation management



Additional Reading: For more information, refer to Import and Export VAMT Data: <http://aka.ms/Dzwia6>

Demonstration: Install the Volume Activation Services role

Demonstration Steps

1. On LON-SVR2, click the **Server Manager** icon on the taskbar.
2. In Server Manager, click **Manage** on the menu, and then select the **Add Roles and Features** option.
3. On the **Before you begin** page of the Add Roles and Features Wizard, click **Next**.
4. On the **Select installation type** page, click **Next**.
5. On the **Select destination server** page, click **Next**.
6. On the **Select server roles** page, scroll down and select the **Volume Activation Services** check box. When prompted, click **Add Features**, and then click **Next**.
7. On the **Select features** page, click **Next**.
8. On the **Volume Activation Services** page, click **Next**.
9. On the **Confirm installation selections** page, click **Install**. Wait for the installation to complete.
10. On the **Installation progress** page, click **Close**.

11. Click **Notifications**, which is the flag with the yellow exclamation point (!). In the **Post-deployment Configuration** section, click **Volume Activation Tools**. The Volume Activation Tools Wizard opens. Click **Close** and then in the **Volume Activation Tools** dialog box, click **Yes**.



Note: Because of the configuration of the virtual machines, the activation of the KMS server cannot be demonstrated.

Lesson 2

Determining additional client configuration settings

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Question and Answers

Question: What is the name of the Windows PowerShell cmdlet that is used to export a custom Start menu from a reference computer?

Answer: You use the **Export-StartLayout** cmdlet on a reference computer to export a custom Start menu.

Question: What is the Powercfg.exe command-line tool used for?

Answer: You use the Powercfg.exe command-line tool to export a computer's active power plan.

Question: Group Policy preferences are enforced just like Group Policy settings.

() True

() False

Answer:

() True

(√) False

Feedback: Group Policy preferences, unlike Group Policy settings, are not enforced. Therefore, any users to whom the preferences are applied can typically change them if they have the correct permissions.

Resources

Discussion: Using proven customization solutions



Additional Reading: For more information, refer to Sticking with Well-Known and Proven Solutions: <http://aka.ms/Bjieyd>



Additional Reading: For more information, refer to Unintended Consequences of Security Lockdowns: <http://aka.ms/Gxtdhi>

Demonstration: Configuring the Windows 10 Start menu

Demonstration Steps

Create a custom Windows 10 Start menu

1. On LON-CL1, in the lower-left corner of the desktop, click **Start** to open the Start menu.
2. Right-click the **Mail** tile, and then on the context menu, click **Resize, Large**.
3. Right-click the **Calendar** tile, and then on the context menu, click **Resize, Wide**.
4. Drag the **Microsoft Edge** tile and place it next to the **Calendar** tile.
5. Drag the **Store** tile and place it under the **Calendar** tile.
6. Drag the **Weather** tile and place it under the **Store** tile.
7. Drag the **Skype video** tile and place it under the **Weather** tile.
8. Drag the **Phone Companion** tile and place it next to the **OneNote** tile in the second column.
9. Right-click the **Money** tile, and then on the context menu, click **Unpin from Start**.
10. Right-click each tile that has a small icon and no text on it, and then click **Unpin from Start**. Five of these should exist.

11. On the Start menu, click **All apps**. Scroll down to the **Windows Accessories** group, expand it, right-click **Notepad**, and then on the context menu, click **Pin to Start**.
12. Drag the **Notepad** tile next to **OneNote** tile in the second column.
13. Click the text **Life at a glance**, delete it, and then type **Online apps**.
14. Click the text **Play and explore**, delete it, type **Adatum apps**, and then press **Enter**.

Export the Start menu layout .xml file

1. On the Start menu, type **Windows PowerShell**. The Search window opens.
2. Right-click **Windows PowerShell**, and then on the context menu, click **Run as administrator**.
3. In Windows PowerShell, type the following command, and then press Enter.

```
Export-StartLayout -path \\LON-DC1\E$\Labfiles\AdatumLayout.xml
```

4. On LON-DC1, on the taskbar, click **File Explorer**.
5. In File Explorer, navigate to E:\Labfiles\, and then verify that you can see the AdatumLayout.xml file.
6. Close File Explorer.

Import the Start menu layout into a GPO

1. On LON-DC1, in Server Manager, on the **Tools** menu, click **Group Policy Management**.
2. In the Group Policy Management Console (GPMC), in the console tree, expand **Forest: Adatum.com**, expand **Domains**, right-click **Adatum.com**, and then on the context menu, click **Create a GPO in this domain, and Link it here**.
3. In the New GPO window, in the **Name** box, type **Adatum W10 Start menu**, and then click **OK**.
4. In the console tree, under **Adatum.com**, you should see a new **Adatum W10 Start menu** GPO. Right-click the object, and then on the context menu, click **Edit**. The Group Policy Management Editor opens. Maximize it by clicking the square icon in the upper-right corner of the console.
5. In the console tree, expand **User Configuration**, expand **Polices**, expand **Administrative Templates**, and then select **Start Menu and Taskbar**.
6. In the details pane, click the **Setting** heading bar to alphabetize the settings.
7. Scroll down and double-click **Start Screen Layout**. This opens the configuration pane for the Start screen layout.
8. In the configuration pane, click **Enabled**, and then in the **Start Layout File** box below it, type **\\LON-DC1\E\$\Labfiles\AdatumLayout.xml**. In the **Comment** box, type **A custom Start menu developed on LON-CL1 with Notepad**, and then at the bottom of the configuration pane, click **OK**.



Note: The file location must be a location to which all user accounts have read access.

9. Close the Group Policy Management Editor and the GPMC.

Apply the GPO, and test the results

1. On LON-CL2, on the desktop, click **Start** in the lower-left corner. Note the tiles and their positions on the Start menu of LON-CL2.
2. Click the **Administrator** icon at the top of the Start menu, and then click **Sign out**.

3. After the sign-out is complete, sign back in to LON-CL2 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
4. On the desktop, click **Start**. Examine the Start menu. It should have the custom Start menu applied.
5. Attempt to drag and unpin some of the tiles. You should be unable to do so.

Demonstration: Configuring Group Policy settings and preferences

Demonstration Steps

Create two drive mappings to the same share but for different groups

1. On LON-DC1, in Server Manager, on the **Tools** menu, click **Group Policy Management**.



Note: If you see a **Group Policy Management** dialog box, when you open the GPMC, close the dialog box by clicking the red X. Then close the GPMC and reopen it.

2. In the GPMC, in the console tree, expand, **Forest: Adatum.com**, expand **Domains**, right-click **Adatum.com**, and then click **Create a GPO in this domain, and Link it here**.
3. In the New GPO window, in the **Name** box, type **ClientUserPreferences**, and then click **OK**.



Note: In the console tree, under the Adatum.com node, you should see a new ClientUserPreferences GPO.

4. Right-click the ClientUserPreferences GPO, and then click **Edit**. This opens the Group Policy Management Editor. Maximize it by clicking the square icon in the upper-right corner of the console.
5. In the console tree, expand **User Configuration**, expand **Preferences**, and then click **Windows Settings**.
6. Click the **Drive Maps** node. This opens the configuration pane for the drive maps.
7. Right-click in the empty details pane, point to **New**, and then click **Mapped Drive**.
8. In the **New Drive Properties** dialog box, in the **Action** list, select **Update**.
9. In the **Location** box, type **\\LON-DC1\Labfiles**.
10. In the **Label as** box, type **IT Department Labfiles**.
11. In the **Drive letter** section, ensure that the **Use** option is selected, and then in the list, select the drive letter **L**.
12. In the **Hide/show this drive** section, click **Show this drive**.
13. Click the **Common** tab.
14. In the **Options common to all items** section, select the **Item-level Targeting** check box, and then click **Targeting**. The Targeting Editor opens.
15. In the **Targeting Editor**, click the **New Item** list, and then on the context menu, click **Security Group**.
16. Next to the **Group** box, click the ellipsis button (...).
17. In the Select Group window, in the **Enter the object name to select** box, type **IT**, and then click **OK**.
18. Verify that the **User in group** option is selected, and then click **OK** twice.

19. Right-click in the empty details pane, point to **New**, and then click **Mapped Drive**.
20. In the **New Drive Properties** dialog box, in the **Action** list, select **Update**.
21. In the **Location** box, type **\\LON-DC1\Labfiles**.
22. In the **Label as** box, type **Marketing Group Labfiles**.
23. In the **Drive letter** section, ensure that the **Use** option is selected, and then in the list, select the drive letter **L**.
24. In the **Hide/show this drive** section, click **Show this drive**.
25. Click the **Common** tab. In the **Options common to all items** section, select the **Item-level Targeting** check box, and then click **Targeting**. The Targeting Editor opens.
26. In the Targeting Editor, click the **New Item** list, and then on the context menu, click **Security Group**.
27. Next to the **Group** box, click the ellipsis button (...).
28. In the Select Group window, in the **Enter the object name to select** box, type **Marketing**, and then click **OK**.
29. Verify that the **User in group** option is selected, and then click **OK** twice.

Create power preferences

1. In the Group Policy Management Editor, for the ClientUserPreferences GPO, in **User Configuration**, expand **Preferences**, expand **Control Panel Settings**, and then click **Power Options**.
2. Right-click in the empty Power Options details pane, point to **New**, and then click **Power Plan (At least Windows 7)**.
3. In the New Power Plan (At least Windows 7) Properties window, in the **Action** list, ensure that **Update** is selected, select **High performance**, and then select the **Set as the active power plan** check box.
4. In the list of items that appears below it, click the plus sign (+) beside **Display**, and then click the plus sign (+) beside **Turn off display after**.
5. In the list that appears, click **Plugged in (minutes)**, and then change the value from **15** to **0**. Click **OK**.
6. Close the Group Policy Management Editor.



Note: If you see a **Group Policy Management** dialog box, when you close the GPMC, close the dialog box by clicking the red X. Then close the GPMC.

Test the Client User Preferences Group Policy setting

1. If you are not already signed in to LON-CL1 as an administrator, sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
2. On LON-CL1, on the taskbar, click the **File Explorer** icon.
3. Examine the folders. You should not have the mapped drive.
4. Close all open windows, and then sign out of LON-CL1.
5. Sign in to LON-CL1 as **Adatum\Holly** with the password **Pa\$\$w0rd**.
6. On LON-CL1, on the taskbar, click the **File Explorer** icon.
7. Examine the folders. You should have a mapped drive labeled **IT Department Labfiles (L:)**.

8. Right-click **Start** in the lower left of the taskbar, and then click **Control Panel**.
9. In Control Panel, click **Hardware and Sound**, and then click **Power Options**.
10. Ensure that the **High performance** power option is selected. Click **Change plan settings**.
11. Note that the **Turn off the display** list is set to **Never**. This configuration is applied from the zero minutes that you specified in the GPO.
12. Close all open windows, and then sign out of LON-CL1.
13. Sign in to LON-CL1 as **Adatum\Kari** with the password **Pa\$\$w0rd**.
14. On the taskbar, click the **File Explorer** icon.
15. Examine the folders. You should have a mapped drive labeled **Marketing Group Labfiles (L:)**.
16. Right-click **Start** in the lower left of the taskbar, and then click **Control Panel**.
17. In Control Panel, click **Hardware and Sound**, and then click **Power Options**.
18. Ensure that the **High Performance** power option is selected. Click **Change plan settings**.
19. Note that the **Turn off the display** list is set to **Never**. This configuration is applied from the zero minutes that you specified in the GPO.
20. Close all open windows, and then sign out of LON-CL1.

Module Review and Takeaways

Review Question(s)

Question: What does item-level targeting enable you to configure in a Group Policy preference?

Answer: Item-level targeting lets you set the scope for a particular Group Policy preference, including selecting which user, security group, or computer you want to apply a preference to. You can also have multiple item-level targets and then link them with an AND or an OR operator. When you use the AND operator, all the item-level targets must be true. When you use the OR operator, only one of the item-level targets must be true. For example, you can have two targets with an AND operator, as follows: the user is a member of the security group ADATUM\Research AND the NetBIOS computer name is LON-CL1. In this case, both conditions must be met: the user must be in the Research group, and the computer name must be LON-CL1. If either condition is not met, such as the user being in the Marketing group or the computer being LON-CL2, the preference will not be available. With an OR operator instead of an AND operator, the user can be in the Marketing group, or the computer can be LON-CL2, but not both.

Question: How do you activate a Windows Server 2012 R2 Standard Edition virtual machine that is running on an activated Windows Server 2012 R2 Datacenter Edition computer?


Answer: You do not need to activate the virtual machine. Windows automatically activates all virtual machines that are running a version of Windows Server 2012 R2 on this host.

Question: What is the tool you can use to import and export a customized power plan?

Answer: Powercfg.exe. You use the `/export` parameter to generate an export file, which will be uniquely identified with a GUID. You then can use the exported file by running Powercfg.exe with the `/import` parameter, by using the same GUID, or by generating a new GUID. Depending on the GUID that you use, you then can use a Group Policy setting to download the customized power plan to all computers in the linked container. However, you first need to import the file with the specified GUID to all of the computers.

Tools

The following table describes the tools used in this module.

Tool	Used to	Where to find it
Windows ADK for Windows 10	Customize, assess, and deploy Windows operating systems to new computers. This collection of tools contains VAMT 3.1, which you cannot download separately.	 Additional Reading: For more information, refer to Windows 10 ADK download (direct download link): http://aka.ms/Flsuee
Microsoft SQL Server 2012 Express	Function as the default database installed with the Windows ADK. VAMT also needs access to this database. You can use a separate SQL Server database. However, you will have to manually provide connections to the database.	Included with the Windows ADK for Windows 10
Powercfg.exe	Let you create, export, import, and manage custom power plans. This is a command-line utility.	Included in Windows operating systems

Lab Review Questions and Answers

Lab: Configuring additional settings for computer clients

Question and Answers

Question: In the **PowerSettings** GPO, why did you disable the **Show hibernate in the power options menu** setting?

Answer: You do not want the computer to hibernate, whether through inactivity or user intervention. This particular setting prohibits the **Hibernation** option from appearing on the **Shutdown** menu.

Question: In Exercise 2, why did the administrator restart LON-CL2? What could you have done to achieve the same outcome without a restart?

Answer: A Group Policy setting exists in the Administrative Template in the Computer Configuration container, so the computer will load those Group Policy settings in the Computer Configuration container at startup. However, you can load all the Computer Configuration settings in the targeted GPOs by opening a command prompt and then typing **gpupdate /force**.

Module 12

Deploying Office 2016

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Lesson 1

Methods for deploying Microsoft Office 2016 editions

Contents:

Question and Answers

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Question and Answers

Using a standard desktop image

Question: You cannot upgrade a 32-bit version of Office to a 64-bit version.

☐ True

☐ False

Answer:

☒ True

☐ False

Feedback: If you are upgrading from an earlier Office version (such as Office 2013), the new Office version must match the architecture of the previous version that you are upgrading. Therefore, you cannot upgrade 32-bit Office 2013 to 64-bit Office 2016.

Question: How often does a computer with Office 365 ProPlus installed have to communicate with the Activation and Validation Service?

Answer: The computer needs to communicate at least once every 30 days. If more than 30 days go by without this check, Office 365 ProPlus goes into reduced functionality mode until it can contact the Activation and Validation Service.

Lesson 2

Customizing Office deployments

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Question and Answers

Using the OCT and the Config.xml file

Question: The OCT is available to for both retail and volume-license versions of Office.

() True

() False

Answer:

() True

(√) False

Feedback: The OCT is available only in the Office volume-license versions. You will not find it in the retail versions.

Question: If conflicting settings are configured in both the Config.xml and the OCT, which will have precedence?

Answer: The Config.xml settings will take precedence over the OCT if you configure them to apply to the same items.

Demonstration: Using the OCT and the Config.xml file

Demonstration Steps

Run the OCT

1. On LON-DC1, on the taskbar, click the **Windows** icon to open the Start screen.
2. On the Start screen, type **Cmd**.
3. In the Search column, right-click the **Command Prompt** item, and then click **Run as administrator**.
4. In the Administrator: Command Prompt window, type **E:**, and then press Enter.
5. In the Administrator: Command Prompt window, type the following command, and then press Enter:

```
cd e:\labfiles\Office_Professional_2016
```

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

```
setup.exe /admin
```

7. When the OCT opens, in the **Select Product** window, ensure that the default **Create a new Setup customization file for the following product** option is selected, and that the Product name window lists **Microsoft Office Professional Plus 2016 (64-bit)**.



Note: Explain to the class that you also could use the OCT to customize an existing setup customization file.

8. Click the **OK** button.
9. When the **Welcome** page opens, point out the console tree, and the various nodes and subnodes within it. All nodes are expanded, and you cannot collapse them.
10. Select the **Setup** node. Note that doing so automatically drops down to the subnode entitled **Install location and organization name**.

11. In the **Organization name** text box, type **Adatum**. Note that the OCT is not a wizard, so there is no Next button. To go to other areas, click them in the console tree.
12. In the console tree, select the **Licensing and user interface** subnode.
13. In the details pane, note that the **Use KMS client key** radio button is selected. This is the default setting. There is an **Enter another product key** radio button, and it has a subordinate text box to **Add a 25 character MAK product key**. Accept the default.
14. Below this area, select the **I accept the terms in the License Agreement** check box. In the **Display level** drop-down list box, select **None**. Note that the **Suppress modal** check box now is selected automatically.
15. Go through all of the other nodes and subnodes, using "Using the OCT" topic from this lesson to explain the functions of each node. Make no other changes.
16. In the **File** drop-down list box, click **Save**.
17. In the **Save as** dialog box, in the **File name** text box, type **E:\Labfiles\Office_Professional_2016\Updates\AdatumOffice.msp**, and then click **Save**.
18. In the **File** drop-down list box, click **Exit**.
19. In the pop-up window that asks "Do you really want to quit now", click **Yes**.
20. Open Microsoft File Explorer. Browse to **E:\Labfiles\Office_Professional_2016\Updates**, and verify that the **AdatumOffice.msp** file displays.

Customize the Config.xml installation file

1. In File Explorer, browse to the **E:\Labfiles\Office_Professional_2016\proplusr.www** folder. Right-click **config.xml**, and then click **Edit**.



Note: Except for the **<Configuration Product="ProPlus">** and the **</Configuration>** elements, all other elements are commented out with the **<!-- >** delimiters. For the purposes of this demonstration, we will turn on logging, and then supply a user and company name.

2. Change the second element to:

```
<!-- <Logging Type="standard" Path="%temp%" Template="Microsoft Office Professional
Plus Setup(*) .txt" /> --> to <Logging Type="standard" Path="%temp%"
Template="Microsoft Office Professional Plus Setup(*) .txt" />.
```



Note: Essentially, you are removing the beginning **<!--** and ending **-->** delimiters.

3. Edit the third element by removing the comment delimiters as you did in the previous step. Change **"Customer"** to **"Student"**. The element should now appear as **<USERNAME Value="Student" />**.
4. Edit the fourth element by removing the comment delimiters as you did in the previous steps. Change **"MyCompany"** to **"A. Datum"**. The element should now appear as **<COMPANYNAME Value="A. Datum" />**.
5. Explain that students will make no other changes, and that any changes made in the Config.xml file that conflict with settings already made in the OCT will supersede OCT changes. For example, the **<DistributionPoint Location=" path " />** element would override the Install location in the AdatumOffice.msp file.

6. Go through the other elements commented out in the Config.xml file, and explain what they would do and the values they can contain. Additionally, explain that you could use the **AddLanguage** element as detailed in this module's "Adding additional language support" topic.
7. In the **File** drop-down list box, click **Save**, and then click **Exit** in the File menu.

Revert the virtual machines

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

1. On the host computer, start Microsoft Hyper-V Manager.
2. In the Virtual Machines list, right-click **20695C-LON-DC1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.

Lesson 3

Deploy Office 2016 by using Office 365

Contents:

Question and Answers

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Question and Answers

Question: Office 365 ProPlus requires that you enter a product key before it can be downloaded and installed.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: One of the key differences between Office 2016 volume-license products and Office 365 ProPlus is that ProPlus uses a subscription service to activate rather than a key. Office 365 ProPlus is linked to the user's subscription, and not to a product key.

Question: How are updates applied to Office 365 ProPlus?

Answer: Every month, Microsoft provides a new build of Office 365 ProPlus at the Office 365 website. When a device that is running Office 365 ProPlus detects that a new build is available, the difference (or *delta*), between the new and the existing build, streams in the background. Office 365 then installs the deltas when Office processes are not running. Therefore, with the default Office 365 ProPlus configuration, users always are up-to-date.

Lesson 4

Managing Office settings

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Question and Answers

Question: How can you prevent users from using Click-to-Run from the Office 365 portal?

Answer: In the Office 365 admin center, on the **Active Users** page, you can select and edit an individual user by clicking their hyperlinked name. When their property page opens, click the licenses node in the console tree. To prevent users from using Click-to-Run from the Office 365 portal, clear the **Office 365 ProPlus** check box, which will make Office 365 ProPlus unavailable to that user.

Question: You must download and add the Office 2016 Administrative Templates to the Group Policy Management Editor.

☐ True

☐ False

Answer:

☒ True

☐ False

Feedback: To use the Office 2016 Administrative Templates, you first must download them from the Microsoft Download Center. You then must add them to the Administrative Templates node in the Group Policy Management Editor.

Resources

Using GPOs to manage Office 2016



Additional Reading: For more information about New Group Policy and OTC settings, refer to: <http://aka.ms/K5doui>

Lesson 5

Introducing Windows Store for Business

Contents:

Question and Answers

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Question and Answers

Question: Users must have a valid Azure AD account to access the Windows Store for Business

☐ True

☐ False

Answer:

☒ True

☐ False

Feedback: End users can sign in using their valid Azure organizational ID and credentials to register and access the store.

Question: Universal app for Windows 10 will run on any Windows 10 device.

☐ True

☐ False

Answer:

☒ True

☐ False

Feedback: Universal Windows apps for Windows 10 are apps that use a common set of application programming interfaces (APIs) to allow non-Microsoft developers or independent software vendors (ISVs) to write apps using one set of business logic and a single, consistent user interface (UI) that will run on all Windows 10 devices.

Lesson 6

Distributing apps using the Windows Store for Business

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Question and Answers

Question: The global administrator must create the private store for your organization.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: The private store is created automatically by the act of the global administrator signing up for the Windows Store for Business.

Question: Valid users can install offline apps directly from the Windows Store for Business.

☐ True

☐ False

Answer:

☐ True

☒ False

Feedback: Users can download offline apps only from the inventory of the Windows Store for Business. Installation is performed after the app is downloaded.

Resources

Distributing apps using a mobile device management tool



Reference Links: For more information about management tools for Windows Store for Business, refer to: <http://aka.ms/Weegwq>

Module Review and Takeaways

Review Question(s)

Question: What are the key differences between the OCT and the Office Deployment Tool?

Answer: The OCT allows you to customize an Office 2016 volume-license installation, and it comes with the volume-license versions in the /admin folder. The Office Deployment Tool is a free download from the Microsoft Download Center, and you use it to customize Office 365 ProPlus–subscription Click-to-Run installations.

Real-world Issues and Scenarios

Remember that the user performing the Office 2016 installation needs to have administrative rights on the local machine to install the program successfully.

Tools

Tool	Used to	Where to find it
Office Customization Tool	Use to make customizations to volume-license versions of Office 2016 installation settings.	Volume license versions of the Office 2016 installation files. Setup.exe in the /admin folder launches the OCT.
Office Deployment Tool for Click-to-Run	Use to make customized installation settings for the Office 365 ProPlus and associated subscription products.	Free download from the Microsoft Download Center at: http://aka.ms/C9la91
Group Policy Administrative Templates for Office 2016	Use to enforce a wide variety of settings for Office 2016 and associated products.	Free download from the Microsoft Download Center at: http://aka.ms/ln42dp

Common Issues and Troubleshooting Tips

Common Issue	Troubleshooting Tip
The customizations that you configured in the .msp file are not being applied.	The .msp file must be placed in the Updates folder of the installation source.
Office 365 users are receiving activation errors.	Verify that the users have a valid license assigned. Ensure that the computer has contacted the activation server in the past 30 days.

Lab Review Questions and Answers

Lab: Deploying Microsoft Office 2016 by using the Office Customization Tool

Question and Answers

Question: In the lab, you altered settings in the OCT and saved them as an .msp file. You then altered settings in the Config.xml file. What would be the result of the installation if the Config.xml settings that you specified differ from the settings that you saved in the .msp file?

Answer: The Config.xml file settings that are the same as the .msp setting will override and be applied. Therefore, you should be careful that you do not duplicate settings saved in the .msp with those in the Config.xml file.

Question: Why did you copy the AdatumOffice.msp file to the Updates directory in the second exercise?

Answer: Setup.exe reads any .msp files from this directory and applies those .msp customized settings.