

OFFICIAL MICROSOFT LEARNING PRODUCT

# 10982B

**Supporting and Troubleshooting  
Windows 10**

*Companion Content*

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Revised July 2013

# Module 1

## Implementing a Troubleshooting Methodology

### Contents:

Lesson 1: Overview of Windows 10	2
Lesson 2: Introduction to the EDST Job Role	5
Lesson 3: Overview of Troubleshooting Steps	7
Lesson 4: Troubleshooting Tools	9
Module Review and Takeaways	11
Lab Review Questions and Answers	12

## Lesson 1

# Overview of Windows 10

### Contents:

Question and Answers

3

## Question and Answers

**Question:** Which of the following features is available only in Windows 10 Enterprise edition? (Choose all that apply)

- BitLocker
- AppLocker
- DirectAccess
- Cortana
- Client Hyper-V

**Answer:**

- BitLocker
- AppLocker
- DirectAccess
- Cortana
- Client Hyper-V

## Discussion: Windows 10 Editions and Features

**Question:** Which edition of Windows 10 would you select for your organization and why?

**Answer:** Answer will vary based on students' experiences and their organizational needs.

## Discussion: Considerations When Troubleshooting Windows 10 Devices

**Question:** What are some of the common troubleshooting issues that you have encountered?

**Answer:** Answers will vary based on students' experiences, and might include:

- Startup:
  - Device does not start up
  - Device starts up with problems
- Sign in:
  - Password issues
  - Network connectivity issues, such as you cannot locate domain controllers
- Desktop settings:
  - Missing icons and files on the desktop, or tiles on Start
- Loading an application:
  - Compatibility issues
  - Group Policy issues, such as application restrictions
- Using an application:
  - Compatibility issues
  - User knowledge issue
- Hardware:
  - Physical connections

- Device drivers
- Printing:
  - Printer driver
  - Printer location
- Locating files:
  - Mapping network drives
  - Synchronizing with online content
  - Desktop issues (see above)
- Deleting files:
  - Accidental deletions
  - File corruptions

## Discussion: Additional Considerations for Troubleshooting Mobile Devices

**Question:** What are the additional considerations for troubleshooting mobile devices?

**Answer:** Answer will vary based on students' experiences. Some possible answers might include:

- Power:
  - Most mobile devices work for extended periods of time when disconnected from a power source, so managing power becomes critical.
- Storage:
  - Most mobile devices have significantly less storage capacity than traditional desktop or laptop computers
- Additional sensors:
  - Many mobile devices are equipped with sensors that are not provided in desktop or laptop computers, such as global positioning system (GPS), compass, gyroscopic, accelerometer, and light.
- Water damage:
  - Due to the portable nature of mobile devices and the places in which they are used, damage from exposure to water is a common problem.
- Loss of device:
  - Loss can occur through carelessness on the part of the user, or malicious intent (such as theft) on the part of someone else.
  - Since the mobile device could contain sensitive data, then loss of the device means potential security problems for support staff.
- Apps:
  - You might need to adjust the display and functionality of apps that are designed for other platforms, to work on a mobile device. Using a version of Office on a mobile device that has the same functionality as on the desktop version of Office would be challenging in many ways, so a tailored version of Office apps, such as Microsoft Word, is available for Android and iOS devices.

## Lesson 2

# Introduction to the EDST Job Role

### Contents:

Question and Answers

6

## Question and Answers

**Question:** In a troubleshooting methodology, there are many common stages. Put the following stages into the most suitable order: report, test, escalate, classify.

**Answer:** The precise steps involved in a troubleshooting methodology vary, but tend to include variations on these four key stages. The most suitable order in which to approach these is classify, test, escalate, and report.

## Lesson 3

# Overview of Troubleshooting Steps

### Contents:

Question and Answers

8

## Question and Answers

### Discussion: Common Components of Troubleshooting Methodologies

**Question:** How do the components of a troubleshooting methodology benefit you?

**Answer:** Answers will vary based on students' experiences and their organizations' requirements.

### Discussion: The Benefits of Applying Troubleshooting Stages by Using a Methodology

**Question:** What are the benefits of applying troubleshooting stages by using a methodology?

**Answer:** Answers will vary based on students' experiences and their organizations' requirements.

## Lesson 4

# Troubleshooting Tools

### Contents:

Question and Answers

10

## Question and Answers

**Question:** To establish event subscriptions, you must run the **winrm quickconfig** command on the collector computer to configure firewall rules.

True

False

**Answer:**

True

False

## Module Review and Takeaways

### Review Question(s)

**Question:** Considering the various devices that support Windows 10, which types of devices do you expect your organization's users to implement?

**Answer:** Answers will vary, based on the students' experiences and their organization's preferences and policies. However, answers could include tablets, convertible laptops, desktops, and laptops.

**Question:** What are the two approaches that you commonly take to resolve technical problems, and what do they involve?

**Answer:** The two approaches are:

- The linear approach, which is a methodology that quickly reveals a problem's root cause by taking you through a logical series of steps. Start with the problem statement, and then proceed in a methodical manner until you uncover the problem's source.
- The subtractive approach, which is a methodology in which you form a mental picture of the computer's system components. Separate the components into two halves along a testable line. For example, you might ask yourself whether a hardware component or a network component is causing the problem. You then would perform tests to determine on which side of the line the problem falls, and then continue in the same manner until you isolate the problem component.

## Lab Review Questions and Answers

### Lab A: Implementing a Troubleshooting Methodology

#### Question and Answers

**Question:** How did your plan of action differ from those that other students suggested?

**Answer:** Answers will vary.

**Question:** After speaking with a user, what else should you consider when troubleshooting a problem?

**Answer:** The process might vary, but typical steps in a troubleshooting methodology include:

- Report the problem.
- Gather information.
- Develop an action plan.
- Implement the action plan.
- Document the resolution.

After speaking with the user, additional steps could include:

- Gather any additional information.
- Develop an action plan.
- Implement the action plan.
- Document the resolution.

### Lab B: Using Troubleshooting Tools

#### Question and Answers

**Question:** In the lab, you used the Task Manager tool to view processes. Which other tools can you use to view processes that are running?

**Answer:** Answers might vary, but should include Process Explorer and Process Monitor.

# Module 2

## Troubleshooting Startup Issues

### Contents:

<b>Lesson 1:</b> Overview of the Windows 10 Startup Recovery Environment	2
<b>Lesson 2:</b> Troubleshooting Startup Settings	6
<b>Lesson 3:</b> Troubleshooting Operating System Service Issues	9
<b>Lesson 4:</b> Recovering BitLocker-Protected Drives	11
Module Review and Takeaways	14
Lab Review Questions and Answers	15

## Lesson 1

# Overview of the Windows 10 Startup Recovery Environment

### Contents:

Question and Answers	3
Practice: Using the Windows RE Tools	3
Practice: Using System Restore	4

## Question and Answers

**Question:** During the Windows 10 startup process, which file reads the boot configuration data from the system volume?

- Winload.exe
- NTLDR
- Winresume.exe
- BOOTMGR
- Boot.ini

**Answer:**

- Winload.exe
- NTLDR
- Winresume.exe
- BOOTMGR
- Boot.ini

## Practice: Using the Windows RE Tools

### Steps

#### Launch Windows RE

1. Start 10982B-LON-CL1.
2. When prompted to **Press any key to boot from CD or DVD**, press the spacebar. The computer starts into Windows Setup.
3. In the Windows Setup Wizard, click **Next**.
4. On the **Install now** page, click **Repair your computer**.
5. On the **Choose an option** page, click **Troubleshoot**.
6. On the **Troubleshoot** page, click **Advanced options**.
7. On the **Advanced options** page, notice the five tools that are available.

#### Use the Command Prompt tool

1. Click **Command Prompt**.
2. At the command prompt, type **diskpart**, and then press Enter.
3. At the command prompt, type **list disk**, and then press Enter.
4. At the command prompt, type **list volume**, and then press Enter.
5. At the command prompt, type **exit**, and then press Enter.
6. At the command prompt, type **e:**, and then press Enter.



**Note:** While in Windows RE, your drive letters might be reassigned. Drive E is, in fact, the system drive.

7. At the command prompt, type **dir**, and then press Enter. This is the system drive.

8. At the command prompt, type **cd\windows\system32**, and then press Enter.
9. At the command prompt, type **net start**, and then press Enter. A list of running services is returned.
10. At the command prompt, type **sc query**, and then press Enter. A list of services and their current status is returned.
11. At the command prompt, type **regedit**, and then press Enter. The Registry Editor opens.
12. Close the Registry Editor.
13. At the command prompt, type **exit**, and then press Enter.

### Perform Startup Repair

1. On the **Choose an option** page, click **Troubleshoot**.
2. On the **Troubleshoot** page, click **Advanced options**.
3. On the **Advanced options** page, click **Startup Repair**.
4. On the **Startup Repair** page, click **Windows 10**. Automatic startup repair begins.
5. On the **Startup Repair** page, notice the log file (**E:\Windows\System32\Logfiles\Srt\SrtTrail.txt**) mentioned in the message.
6. Click **Advanced options**.

### Start Windows normally

1. On the **Choose an option** page, click **Continue**.
2. Sign in as **Adatum\administrator** with the password **Pa\$\$w0rd**.

### Examine the Startup Repair log file

1. On the taskbar, click the **File Explorer** icon.
2. In File Explorer, navigate to **C:\Windows\System32\Logfiles\Srt\**.
3. In the Srt folder, double-click **SrtTrail.txt**.
4. Examine the file for any errors. There should be none.
5. Close the file, and then close File Explorer.

### Completion steps

- After you have completed the practice session, leave the virtual machines running for the next practice session.

## Practice: Using System Restore

### Steps

#### Create a restore point

1. On LON-CL1, on the taskbar, click **File Explorer**.
2. Right-click **This PC**, and then click **Properties**.
3. In the **System** dialog box, click **Advanced system settings**.
4. In the **System Properties** dialog box, click the **System Protection** tab, and then click **Create**.
5. In the **System Protection** dialog box, in the text box, type **Initial System Restore Point**, and then click **Create**.
6. Click **Close**, and then click **OK**.

## Start a computer in Windows RE

1. Right-click **Start**, point to **Shut down or sign out**, and then click **Restart**.
2. When prompted to **Press any key to boot from CD or DVD**, press the spacebar.
3. In the Windows Setup Wizard, click **Next**.
4. On the **Install now** page, click **Repair your computer**.
5. On the **Choose an option** page, click **Troubleshoot**.
6. On the **Troubleshoot** page, click **Advanced options**.

## Launch System Restore

1. On the **Advanced options** page, click **System Restore**.
2. On the **System Restore** page, click **Windows 10**.
3. In the System Restore Wizard, click **Next**.
4. On the **Restore your computer to the state it was in before the selected event** page, in the unnamed list, click **Initial System Restore Point**, and then click **Next**.
5. On the **Confirm your restore point** page, click **Finish**.
6. In the **Once started, System Restore cannot be interrupted. Do you want to continue?** dialog box, click **Yes**. The system restore process begins.



**Note:** System Restore can take an extended period of time.

7. When prompted, click **Restart**.
8. After your computer restarts, sign in as **Adatum\administrator** with the password **Pa\$\$w0rd**.
9. In the **System Restore** dialog box, click **Close**.

## Completion steps

- After you have completed the practice session, leave the virtual machines running for the next practice session.

## Lesson 2

# Troubleshooting Startup Settings

### Contents:

Question and Answers	7
Practice: Using Command-Line Tools to Access the BCD Store	7
Practice: Using Advanced Startup Options	8

## Question and Answers

**Question:** Changes made to the startup environment of a Windows 10 computer by using System Configuration are always persistent.

- ( ) True  
( ) False

**Answer:**

- ( ) True  
(v) False

## Practice: Using Command-Line Tools to Access the BCD Store

### Steps

#### Access advanced startup options

1. On LON-CL1, click **Start**, and then click **Settings**.
2. In **Settings**, click **Update & security**.
3. Click **Recovery**.
4. In the results pane, under **Advanced startup**, click **Restart now**.
5. On the **Choose an option** page, click **Troubleshoot**.
6. On the **Troubleshoot** page, click **Advanced options**.

#### Open the Command Prompt tool

1. On the **Advanced options** page, click **Command Prompt**. Your computer restarts into the Command Prompt mode.
2. On the **Command Prompt** page, click **Admin**. This is the local administrator account.
3. In the **Password** box, type **Pa\$\$w0rd**, and then click **Continue**.

#### Work with the boot store

1. At the command prompt, type **bcdedit /enum**, and then press Enter. This lists the available boot options in the store.
2. At the command prompt, type **bootrec /scanos**, and then press Enter. This command scans the partitions for viable operating systems.
3. At the command prompt, type **bootrec /rebuildbcd**, and then press Enter. This command rebuilds the boot store automatically.
4. At the command prompt, type **exit**, and then press Enter.

#### Restart the Windows operating system normally

1. On the **Choose an option** page, click **Continue**.
2. Sign in as **Adatum\administrator** with the password **Pa\$\$w0rd**.

#### Completion steps

- After you have completed the practice session, leave the virtual machines running for the next practice session.

## Practice: Using Advanced Startup Options

### Steps

#### Load the System Configuration tool

1. On LON-CL1, in Search, type **msconfig.exe**, and then press Enter.
2. In the **System Configuration** dialog box, click the **Boot** tab.

#### Enable Safe boot, and then restart

1. On the **Boot** tab, select the **Safe boot** check box, and then click **OK**.
2. In the **System Configuration** dialog box, click **Restart**.

#### Sign in to Safe Mode

- When the computer restarts, sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**. Notice that the desktop now displays Safe Mode in each corner.

#### Revert to normal startup

1. Press the **Windows+R** keys.
2. In the **Run** box, type **msconfig.exe**, and then press Enter.
3. In the **System Configuration** dialog box, on the **General** tab, click **Normal startup**, and then click **OK**.
4. In the **System Configuration** dialog box, click **Restart**.
5. When the computer restarts, sign in as **Adatum\Administrator** with the password of **Pa\$\$w0rd**. Notice that the Windows operating system starts normally.

#### Access startup settings

1. On LON-CL1, click **Start**, and then click **Settings**.
2. In **Settings**, click **Update & security**.
3. Click **Recovery**.
4. In the results pane, under **Advanced startup**, click **Restart now**.
5. On the **Choose an option** page, click **Troubleshoot**.
6. On the **Troubleshoot** page, click **Advanced options**.
7. On the **Advanced options** page, click **Startup Settings**.
8. On the **Startup Settings** page, click **Restart**.
9. When the computer restarts, on the **Startup Settings** page, press Enter to start normally. You will not use any of the Startup Settings during this practice.

#### Completion steps

1. On the host computer, start Hyper-V Manager.
2. In the Virtual Machines list, right-click **10982B-LON-CL1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for **10982B-LON-DC1**.

## Lesson 3

# Troubleshooting Operating System Service Issues

### Contents:

Question and Answers

10

## Question and Answers

**Question:** Which of the following command-line tools can you use to manage services from the Command Prompt recovery tool? Choose all that apply.

- Net.exe
- Msconfig.exe
- Sc.exe
- Services.msc
- Regedit.exe

**Answer:**

- Net.exe
- Msconfig.exe
- Sc.exe
- Services.msc
- Regedit.exe

## Lesson 4

# Recovering BitLocker-Protected Drives

### Contents:

Question and Answers	12
Practice: Encrypting a Partition by Using BitLocker	12

## Question and Answers

**Question:** In order to use BitLocker, your computer must be equipped with a TPM of at least version 1.2.

( ) True

( ) False

**Answer:**

( ) True

(√) False

## Practice: Encrypting a Partition by Using BitLocker

### Steps

#### Configure required GPO settings

1. On LON-CL1, press the **Windows+R** keys.
2. In the **Run** box, type **gpedit.msc**, and then press Enter.
3. In the Local Group Policy Editor, expand **Computer Configuration**, expand **Administrative Templates**, expand **Windows Components**, and then expand **BitLocker Drive Encryption**.
4. Click **Operating System Drives**.
5. Double-click **Require additional authentication at startup**.
6. In the **Require additional authentication at startup** dialog box, click **Enabled**, and then click **OK**.
7. Close the Local Group Policy Editor.
8. Right-click **Start**, and then click **Command Prompt**.
9. At the command prompt, type **gpupdate /force**, and then press Enter.



**Note:** This configuration change is made to enable BitLocker without a TPM. This is a necessary step with virtual machines, but would not be typical on most Windows 10 devices.

#### Enable BitLocker

1. On LON-CL1, on taskbar, click the **File Explorer** icon.
2. In the navigation pane, click **This PC**.
3. Right-click **Floppy Disk Drive (A:)**, and then click **Format**.
4. In the **Format Floppy Disk Drive (A:)** dialog box, click **Start**, and then click **OK**.
5. Click **OK** again, and then click **Close**.
6. In the navigation pane, click **This PC**.
7. In the results pane, right-click **Local Disk (C:)**, and then click **Turn on BitLocker**.
8. In the **BitLocker Drive Encryption (C:)** dialog box, click **Enter a password**. This step is necessary because the virtual machine does not support USB flash drives.
9. On the **Create a password to unlock this drive** page, in the **Enter your password** and **Reenter your password** text boxes, type **Pa\$\$w0rd**, and then click **Next**.
10. On the **How do you want to back up your recovery key?** page, click **Save to a file**.

11. In the **Save BitLocker recovery key as** dialog box, click **Floppy Disk Drive (A:)**.
12. Click **Open**, and then click **Save**.



**Note:** If you receive an error message saying that “Disk A: is write protected” at this point, use this procedure to resolve the problem:

1. On your host computer, in the **10982B-LON-CL1 on hostname – Virtual Machine Connection** dialog box, click the **Media** menu.
  2. Point to **Diskette Drive**, and then click **Eject floppydisk.vfd**.
  3. Click **Media**, point to **Diskette Drive**, and then click **Insert Disk**.
  4. In the **Open** dialog box, type **C:\Program Files\Microsoft Learning\10982\Drives\FloppyDisk.vfd**, and then click **Open**.
  5. On the 10982B-LON-CL1 virtual machine, in the **Save BitLocker recovery key as** error message dialog box, click **OK**.
  6. In the **Save BitLocker recovery key as** dialog box, click **Save**.
  7. Continue on to step 13.
13. Click **Next**.
  14. On the **Choose which encryption mode to use** page, click **Next**.
  15. On the **Are you ready to encrypt this drive?** page, click **Continue**.
  16. Right-click **Start**, point to **Shut down or sign out**, and then click **Restart**.

### Complete the process of configuring BitLocker

1. During the restart sequence, when the **BitLocker** screen displays, in the **Enter the password to unlock this drive** box, type **Pa\$\$w0rd**, and then press Enter.
2. Sign in to LON-CL1 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
3. On the taskbar, click the **File Explorer** icon.
4. In the navigation pane, click **This PC**.
5. Right-click **Local Disk (C:)**, and then click **Manage BitLocker**. Notice that the drive is now being encrypted.
6. Close the BitLocker Drive Encryption window.
7. In **This PC**, double-click **Floppy Disk Drive (A:)**, and then double-click the file that starts **BitLocker Recovery Key**.
8. Write down the recovery key that displays in the file. You will need this for the lab, so write carefully.
9. Close all open windows.

### Completion steps

- After you have completed the practice session, leave the virtual machines running for the lab.

## Module Review and Takeaways

### Review Question(s)

**Question:** The startup environment of a user's computer is corrupt, and you suspect a virus. Before you can run virus removal tools, first you must recover the startup environment. What command-line tools could you use?

**Answer:** You can use Bootrec.exe with the fixmbr and fixboot switches.

**Question:** Your user adds a new hard disk to the computer, which changes the computer's partition numbering. To enable the computer to start, the user needs you to change the BCD. What tool would you use?

**Answer:** You can use BCDEdit /enum to view the entries in the BCD store, and then use BCDEdit to edit the BCD store to reflect the changes in the computer.

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

**Answer:** You would use System Restore, and then roll back the configuration to a previous point. If System Restore is unavailable, attempt a driver rollback.

# Lab Review Questions and Answers

## Lab A: Troubleshooting Startup Issues

### Question and Answers

**Question:** What was your approach to the first scenario? How did your approach differ from the class?

**Answer:** Answers will vary.

**Question:** What was your approach to the second scenario? How did your approach differ from the class?

**Answer:** Answers will vary.

## Lab B: Recovering BitLocker-Encrypted Drives

### Question and Answers

**Question:** What was your approach to the first scenario? How did your approach differ from the class?

**Answer:** Answers will vary.

# Module 3

## Troubleshooting Hardware and Device Drivers

### Contents:

Lesson 1: Troubleshooting Device Drivers Failures	2
Lesson 2: Overview of Hardware Troubleshooting	7
Lesson 3: Troubleshooting Physical Failures	11
Lesson 4: Monitoring Reliability	15
Lesson 5: Configuring the Registry	18
Module Review and Takeaways	22
Lab Review Questions and Answers	23

## Lesson 1

# Troubleshooting Device Drivers Failures

### Contents:

Question and Answers	3
Demonstration: Managing Device Drivers	4
Practice: Using Group Policy to Restrict Installation of Device Drivers	5

## Question and Answers

**Question:** Is it true or false that users with administrative permissions can install device drivers?

True

False

**Answer:**

True

False

**Question:** Is it true or false that you can roll back any device driver in Windows 10?

True

False

**Answer:**

True

False

**Question:** Is it true or false that you can restrict installation of a device driver by using local Group Policy?

True

False

**Answer:**

True

False

**Question:** Which extension does an information file for device setup have?

.dll

.sys

.cat

.xml

.inf

**Answer:**

.dll

.sys

.cat

.xml

.inf

**Question:** You can stage a device driver by copying a driver package to the **C:\Windows\System32\DriverStore\FileRepository** folder.

True

False

**Answer:**

( ) True

(√) False

## Understanding the Role of Device Drivers, and the Driver Package and Driver Store

**Question:** Can you restrict device drivers from monitoring user actions on a Windows computer?

**Answer:** Once you install a device driver, you cannot restrict it because it is running in the kernel mode and has system-wide privileges. Therefore, it is very important that you install only device drivers that you trust.

## Tools for Managing and Troubleshooting Device Drivers

**Question:** How can you recognize a device without the appropriate device driver in Device Manager?

**Answer:** If the device does not have appropriate device driver, Device Manager lists the device's icon under the Other Devices node, and it will have an exclamation mark (!) in a yellow triangle next to it.

## Managing Signed Drivers

**Question:** Which tool can you use to verify, in one view, that on a Windows 10 computer, all of the device drivers are signed?

**Answer:** You can use the SigVerif.exe tool or driverquery.exe with /si switch to verify in one location that all of the device drivers are signed digitally.

## Staging Device Drivers

**Question:** Can you add a driver package that requires user interaction during installation to the driver store?

**Answer:** No. During the staging process, you perform several tests, including one that determines whether the installation of a device driver requires user interaction. If it does, you would not add the driver package to the driver store.

## Demonstration: Managing Device Drivers

### Demonstration Steps

1. On LON-CL1, on the taskbar, right-click the **Start** icon, and then click **Device Manager**.
2. In Device Manager, expand **Keyboards**, right-click **Standard PS/2 Keyboard**, and then click **Properties**.
3. In the **Standard PS/2 Keyboard Properties** dialog box, click the **Driver** tab.



**Note:** The **Roll Back Driver** button is not available.

4. Click **Update Driver**.
5. In the **Update Driver Software – Standard PS/2 Keyboard** dialog box, click **Browse my computer for driver software**.
6. On the **Browse for driver software on your computer** page, click **Let me pick from a list of device drivers on my computer**.

7. On the **Select the device driver you want to install for this hardware** page, in the **Show compatible hardware** list, click **PC/AT Enhanced PS/2 Keyboard (101/102 Key)**, click **Next**, and then click **Close**.
8. In the **PC/AT Enhanced PS/2 Keyboard (101/102 Key) Properties** dialog box, click **Roll Back Driver**, and then click **Yes**.



**Note:** Emphasize that after the rollback operation, the name of the dialog box changes to **Standard PS/2 Keyboard Properties**, and the Roll Back Driver is not available. This is because driver rollback can go back by one version only.

9. Click **Close**, click **No**, and then close **Device Manager**.
10. On the taskbar, click **File Explorer**.
11. In File Explorer, in the navigation pane, expand **This PC**, expand **Local Disk (C:)**, expand **Windows**, expand **System32**, expand **DriverStore**, and then click **FileRepository**.
12. In the details pane, click the **Date modified** column, and note that the top folder was created most recently.
13. Right-click the **Start** icon, and then click **Command Prompt (Admin)**.
14. At the command prompt, type the following command, and then press Enter:

```
PnPutil.exe -a D:\Labfiles\Mod03\dc3dh\*.inf
```

15. In File Explorer, in the details pane, point out that the top folder was created when you installed the driver package, and that its name starts with **dc3dh**, as was the name of the .inf file. Double-click the folder, and then point out that it contains driver package files.
16. Close File Explorer and the command prompt.

## Practice: Using Group Policy to Restrict Installation of Device Drivers

### Steps

1. On LON-CL1, right-click **Start**, and then select **Disk Management**. In **Disk Management**, verify that **Disk 2** and **Disk 3** are shown.
2. Right-click **Start**, and then select **Device Manager**. In Device Manager, expand **Disk Drives**, and then verify that two instances of **Microsoft Virtual Disk** are listed.
3. Verify that you can add an additional device. In this instance, you should be able to add a disk drive, to LON-CL1. In the 10982B-LON-CL1 window, click **File**, and then select **Settings**. In the Hardware pane, select **SCSI Controller**, and in the details pane, click **Hard Drive**, click **Add**, click **Browse**, and then navigate to the **C:\Program Files\Microsoft Learning\10982\Drives\10982B-LON-CL1\Virtual Hard Disks** folder. Select **Disk3.vhd**, click **Open**, and then click **OK**.
4. In Disk Management, verify that **Disk 4** is added.
5. In Device Manager, verify that three instances of **Microsoft Virtual Disk** are listed under the **Disk drives** node.
6. On LON-CL1, on the taskbar, in the **Search the web and Windows** text box, type **gpedit.msc**, and then press Enter.



**Note:** Although in this practice you will be editing local Group Policy, in an Active Directory Domain Services (AD DS) environment, it would be more typical to use domain Group Policy for restricting device installation.

7. In Local Group Policy Editor, under **Computer Configuration**, expand **Administrative Templates**, expand **System**, expand **Device Installation**, and then click **Device Installation Restrictions**.
8. In the details pane, double-click **Allow installation of devices using drivers that match these device setup classes**.
9. In the **Allow installation of devices using drivers that match these device setup classes** dialog box, click **Enabled**, and then click **Show**. Leave the Show Contents window open.
10. On the taskbar, click **File Explorer**.
11. In File Explorer, in the navigation pane, expand **Allfiles (D:)**, expand **Labfiles**, expand **Mod03**, and then click **point64**. In the details pane, double-click **point64.inf**, and then close File Explorer.
12. In Notepad, locate the line that starts with **ClassGUID**. Select and right-click the GUID, including the opening and closing brackets {}, select **Copy**, and then close **Notepad**.
13. Switch to the Local Group Policy Editor. In the **Show Contents** dialog box, in the **Value** text box, first double click, then right-click, select **Paste** and then click **OK** twice.
14. In Local Group Policy Editor, double-click **Prevent installation of devices not described by other policy settings**.
15. In **Prevent installation of devices not described by other policy settings**, select **Enabled**, click **OK**, and then close Local Group Policy Editor.
16. Verify that Group Policy now restricts installation of additional devices, unless they are explicitly allowed. In the 10982B-LON-CL1 window, click **File**, and then select **Settings**. In the Hardware pane, select **SCSI Controller**, and in the details pane, click **Hard Drive**, click **Add**, click **Browse**, and then navigate to the **C:\Program Files\Microsoft Learning\10982\Drives\10982B-LON-CL1\Virtual Hard Disks** folder. Select **Disk4.vhd** folder, click **Open**, and then click **OK**.
17. In Disk Management, verify that no new disk is added.
18. In Device Manager, verify that there are still three instances of **Microsoft Virtual Disk** listed under the **Disk drives** node. Also verify that **Msft Virtual Disk SCSI Disk Device** has been added to the **Other devices** node.
19. Double-click **Msft Virtual Disk SCSI Disk Device**, and then read the device status on the **General** tab.

### Prepare for the lab

After you have completed the practice session, revert the virtual machines in preparation for the next lab:

1. On the host computer, start Hyper-V Manager.
2. In the Virtual Machines list, right-click **10982B-LON-CL1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for 10982B-LON-DC1.

## Lesson 2

# Overview of Hardware Troubleshooting

### Contents:

Question and Answers

8

## Question and Answers

**Question:** Which of the following tools cannot be used to view information from a remote Windows 10 computer? Select all correct answers.

- Event Viewer
- System Information
- Device Manager
- Performance Monitor
- Reliability Monitor

**Answer:**

- Event Viewer
- System Information
- Device Manager
- Performance Monitor
- Reliability Monitor

**Question:** Is it true or false that Wi-Fi and Bluetooth devices are the most common types of wireless devices that you can use with Windows 10?

- True
- False

**Answer:**

- True
- False

**Question:** If a user connects a USB device that has a device driver in the driver store to a Windows 10 computer, he will always be able to use the device.

- True
- False

**Answer:**

- True
- False

## Hardware-Related Problems

**Question:** You are considering buying a hard disk drive that has a one-year warranty. Does this mean that you are assured of being able to use it for one year without any issues?

**Answer:** No. A product's warranty specifies the time during which a manufacturer will repair or replace the device if it quits working. You might consider purchasing a longer warranty time, if possible, or purchasing products that have longer warranties. However, warranties are based on statistics, average values, and specific devices can fail quickly, even if they have a long warranty.

## Understanding USB Devices

**Question:** How can you identify a USB device that is connected to a Windows 10 computer? Which tool can you use to identify the device?

**Answer:** You can identify a connected USB device by its device identification string or device setup class. You can use various tools to identify the device, such as Device Manager.

**Question:** How can you prevent a user from using an unapproved USB device on a corporate-issued Windows 10 computer?

**Answer:** You can configure device installation restrictions by using Group Policy. If you configure restrictions on device installation, users will not be able to use USB devices, even if they connect the devices physically to their devices.

## Understanding Wireless Devices

**Question:** Which two wireless technologies are used most commonly with Windows 10 devices?

**Answer:** Bluetooth and Wi-Fi wireless technologies are used most commonly with Windows 10 devices.

## Gathering Hardware Information

**Question:** Can you use the System Information tool to view hardware configuration of the remote Windows 10 computer?

**Answer:** Yes, you can view the System Information tool from the remote Windows 10 computer. To connect to the remote computer, you can select Remote Computer from the View menu in the System Information tool.

**Question:** Is there any tool in Windows 10 that you can use to gather information centrally about your network's computers?

**Answer:** Some tools in Windows 10 enable you to connect to remote computers and store their configuration, such as the System Information tool. However, if you want to gather and analyze that information from multiple computers, you should use solutions such as Microsoft Intune or System Center 2012 R2 Configuration Manager Service Pack 1 (SP1).

## Discussion: Approaches to Troubleshooting Hardware

**Question:** A user is unable to connect his wireless mouse to his laptop computer. What would you check first?

**Answer:** Check to see if the Bluetooth module in his laptop is enabled in the BIOS. Additionally, verify that the wireless connection On/Off switch is turned on, if the computer features this, and that the wireless mouse is paired with the laptop computer in the Bluetooth section in the Settings app.

**Question:** You just added a new video display to a user's computer. The resolution of the display is very low, despite being capable of displaying at 1680x1050. What would you check?

**Answer:** Use Device Manager to ensure that the driver is installed correctly. Also, verify that the device driver is not conflicting with any other device in the system.

**Question:** The user connected a new webcam to the Windows 10 computer. When she tries to use the webcam in the app, Windows 10 cannot locate a webcam. How could you troubleshoot the issue?

**Answer:** You should first verify that webcam is connected properly to the computer, and then use Device Manager to verify that the device is recognized, and a driver was found and installed. You also should verify that the device driver for the webcam does not conflict with other devices.

**Question:** The user reports that he cannot use a personal USB webcam with the company Windows 10 computer. He states that he can use the same USB webcam with his home Windows 10 computer without any issue. How would you troubleshoot the issue?

**Answer:** Because the user can use the USB webcam with his Windows 10 computer at home, the device driver is probably available in the operating system. You should review the Event Viewer tool for the events that relate to the USB webcam detection, and verify if Group Policy is preventing the device's installation.

## Lesson 3

# Troubleshooting Physical Failures

### Contents:

Question and Answers	12
Demonstration: Troubleshooting Mirrored Volumes	13

## Question and Answers

**Question:** Is it true or false that if you use several devices that are connecting to a Windows 10 computer, the device with the highest mean time between failures (MTBF) will have the longest lifetime and that it will be the last to fail.

True

False

**Answer:**

True

False

**Question:** Can you use the Windows Memory Diagnostic tool to diagnose a problem with memory from a Windows 10 operating system?

True

False

**Answer:**

True

False

**Question:** Files that are stored on a mirrored volume are available even if one hard disk drive fails.

True

False

**Answer:**

True

False

## Replacing Devices

**Question:** What should you do if a user needs his computer working sooner than your estimated recovery time?

**Answer:** If the estimated recovery time is longer than what you or your SLA deems acceptable, it likely is faster and more efficient to replace failed components or devices.

**Question:** Why do many organizations require that a failed hard-disk drive be destroyed after it is replaced?

**Answer:** Hard-disk drives contain data. Even if a disk fails, you likely can recover some of the data. If a hard-disk drive contains sensitive or confidential information, it is probably against organization's policy to discard the drive, in case data is accessed by malicious users. Rather, you should destroy it, so that malicious users cannot recover data if you simply discard it.

## Vulnerable Hardware Devices

**Question:** Which hardware devices are most vulnerable and fail most often?

**Answer:** Devices with moving parts, such as cooling fans, optical drives, and hard disk drives, are most vulnerable to failure.

## Guidelines for Replacing Hardware

**Question:** Should you replace a failed solid-state drive (SSD) in a user tablet device?

**Answer:** It is uncommon to replace components in devices such as tablets or mobile phones. You should check your warranty and the SLA agreement with the organization that sold the device, but you should not replace the failed SSD in the tablet. The hardware vendor should replace the device.

## Diagnosing Memory Problems

**Question:** A user's computer freezes repeatedly. When this occurs, the computer accepts no input from the keyboard or mouse, and all processing stops. What do you suspect is the problem? What steps would you take to troubleshoot the issue?

**Answer:** There could be a problem with the computer's memory. Run a memory diagnostics test to verify this. Also, if you or the user introduced new hardware recently, determine whether this is causing a conflict. If neither of these issues appears to be causing the problem, it might be an issue with the computer's software or device drivers. However, memory is the most likely cause.

**Question:** Why do you need to restart a Windows 10 computer if you want to use the Windows Memory Diagnostics tool to test the computer's memory?

**Answer:** While Windows 10 is running, it prevents direct access to computer memory. The Windows Memory Diagnostics tool must read and write values from each memory location, so it can run only if Windows is not running. If you start it while you are running Windows 10, you can select to restart the computer and run Windows Memory Diagnostics immediately, or you can schedule it to run the next time that the computer restarts.

## Demonstration: Troubleshooting Mirrored Volumes

### Demonstration Steps

1. On LON-CL1, right-click **Start**, and then select **Disk Management**.
2. In Disk Management, point out that **Disk 2** and **Disk 3** are **Basic**. Right-click the unallocated space on Disk 2, and then select **New Mirrored Volume**.
3. On **Welcome to the New Mirrored Volume Wizard** page, click **Next**.
4. On **Select Disks** page, in the **Available** section, select **Disk 3**, click **Add**, and then click **Next** twice.
5. On the **Format Volume** page, in the **Volume Label** text box, type **Mirror**, select the **Perform a quick format** check box, click **Next**, and then click **Finish**.
6. Explain that you can create a mirrored volume only on a dynamic disk, but not on a basic disk. Click **Yes**. After a few seconds, File Explorer opens.
7. In Disk Management, point out that **Disk 2** and **Disk 3** now have a status of **Dynamic**. Also, point out that both disks are part of the drive E mirrored volume.
8. In File Explorer, in the navigation pane, point out that **Mirror (E:)** is selected. Right-click in the details pane, select **New**, select **Text Document**, type **Report**, and then press Enter.
9. Double-click **Report.txt**, type **This is a report**, close Notepad, and then click **Save**.
10. Explain that you now will simulate hard disk failure. In the 10982B-LON-CL1 window, click **File**, and then select **Settings**. In the Hardware pane, select the second **Hard Drive** below **SCSI Controller** (the name should start with **Disk2**), and in the details pane, click **Remove**, click **OK**, and then click **Continue**.

11. In Disk Management, point out that **Disk 3** is **Missing** and **Mirror (E:)** has a status of **Failed Redundancy**. Explain that this occurs if one of the disks in the mirrored volume fails.
12. In File Explorer, in the details pane, double-click **Report.txt**. Point out that you can access the files on the mirrored volume even if one disk fails. Close Notepad.
13. Explain that you now will replace the failed disk with a new one. In the 10982B-LON-CL1 window, click **File**, and then select **Settings**. In the Hardware pane, select **SCSI Controller**, and in the details pane, click **Hard Drive**, click **Add**, click **Browse**, navigate to the **C:\Program Files\Microsoft Learning\10982\Drives\10982B-LON-CL1\Virtual Hard Disks** folder, select **Disk3.vhd**, click **Open**, and then click **OK**.
14. In Disk Management, right-click **Disk 3**, select **Initialize Disk**, and then click **OK**.
15. On the **Missing** disk status, right-click **Mirror (E:)**, and then select **Remove Mirror**. Verify that in the **Disks** section, **Missing** is selected, click **Remove Mirror**, and then click **Yes**.
16. Point out that **Disk 2** now has **Simple Volume**, and its status is **Healthy**.
17. Right-click **Mirror (E:)** on **Disk 2**, select **Add Mirror**, select **Disk 3**, click **Add Mirror**, and then click **Yes**.
18. Point out that **Disk 3** changed to **Dynamic, Mirror (E:)** mirrored volume is automatically created on **Disk 3**, and that the volume status is **Resynching**. Explain that during the resynching process, all content of **Disk 2** is synchronized to the new disk in the mirrored volume.
19. In File Explorer, double-click **Report.txt**, explain that content of the mirrored volume is available, and then close Notepad.

## Lesson 4

# Monitoring Reliability

### Contents:

Question and Answers

16

## Question and Answers

**Question:** Is it true that you can use the Reliability Monitor to view the stability index of a remote Windows 10 computer?

- True
- False

**Answer:**

- True
- False

**Question:** Is it true that you can view resource utilization and unresponsive apps on a Windows 10 computer when you use the Resource Monitor?

- True
- False

**Answer:**

- True
- False

**Question:** Which of the following tabs do not display in Task Manager? Select all correct answers that apply.

- Performance
- Reliability
- Users
- Security
- Services

**Answer:**

- Performance
- Reliability
- Users
- Security
- Services

## The Reliability Monitor Tool

**Question:** Which scale does the Reliability Monitor use for the stability index?

**Answer:** The Reliability Monitor uses the scale of 0 to 10 for the stability index, with 0 indicating significant unreliability and 10 indicating the most stable operating system possible.

**Question:** What happens with the value of the stability index if a Windows 10 computer runs without an issue for several days?

**Answer:** If a Windows 10 computer runs without an issue for several days, the stability index's value increases. The stability index can have a maximum value of 10, and it remains at 10 until an event affects the system stability.

## The Task Manager Tool

**Question:** Which types of reliability issues can the Task Manager show?

**Answer:** The Task Manager can show processes, their statuses, and the resources that they are utilizing, among other items. If a process has a status classified as Not responding, this can cause system reliability to decrease. Additionally, an application bug can utilize extensive resources, which decreases system reliability.

## The Resource Monitor Tool

**Question:** Which four resources can you monitor when you use the Resource Monitor?

**Answer:** You can use the Resource Monitor to monitor CPU, disk, network, and memory usage for a computer.

## Lesson 5

# Configuring the Registry

### Contents:

Question and Answers	19
Resources	20
Practice: Editing the Registry	21

## Question and Answers

**Question:** Which Registry hives can you access remotely from the Registry Editor? Select all correct answers.

- HKEY\_CLASSES\_ROOT
- HKEY\_CURRENT\_USER
- HKEY\_LOCAL\_MACHINE
- HKEY\_USERS
- HKEY\_CURRENT\_CONFIG

**Answer:**

- HKEY\_CLASSES\_ROOT
- HKEY\_CURRENT\_USER
- HKEY\_LOCAL\_MACHINE
- HKEY\_USERS
- HKEY\_CURRENT\_CONFIG

**Question:** Can any user can use the Registry Editor?

- True
- False

**Answer:**

- True
- False

**Question:** Can you add a key to the registry by using configuring Group Policy Preferences in the local GPO?

- True
- False

**Answer:**

- True
- False

## Overview of the Registry

**Question:** How many hives or subtrees does the Windows 10 registry have?

**Answer:** Windows 10 registry has five hives: **HKEY\_CLASSES\_ROOT**, **HKEY\_CURRENT\_USER**, **HKEY\_LOCAL\_MACHINE**, **HKEY\_USERS** and **HKEY\_CURRENT\_CONFIG**.

**Question:** Do you need to use a registry-editing tool if you want to modify value in the **HKEY\_CURRENT\_USER** registry hive?

**Answer:** It depends on the type of change you want to make, and the value that you plan to modify. You can modify many values in the **HKEY\_CURRENT\_USER** registry hive when you configure the user environment by using the Settings app or Control Panel applets. If you want to add a new subkey to the **HKEY\_CURRENT\_USER** registry hive, or modify the values that you cannot configure in any other way, you must use a registry-editing tool, such as Registry Editor.

## Working with the Registry

**Question:** What permissions do you need to be able to modify the **HKEY\_LOCAL\_MACHINE** registry hive?

**Answer:** The **HKEY\_LOCAL\_MACHINE** registry hive stores computer-related configuration settings. You need administrative permissions to be modify values in this registry hive.

**Question:** How can you create a .reg file?

**Answer:** The easiest way to create a .reg file is to use the Registry Editor to export a registry key or subkey, and then modify it, as necessary. A .reg file is a text file with a specific format, so you can edit it or create it in any text editor.

## Resources

### Overview of the Registry



**Additional Reading:** For more information about Windows registry information for advanced users, refer to: <http://go.microsoft.com/fwlink/?LinkId=335915>.

### Working with the Registry



**Additional Reading:** For more information about working with registry keys, refer to: <http://go.microsoft.com/fwlink/?LinkId=335918>.

## Practice: Editing the Registry

### Steps

1. On LON-CL1, on the taskbar, in the **Search the web and Windows** text box, enter **regedit**, and then press Enter.
2. In the Registry Editor, in the navigation pane, click **HKEY\_LOCAL\_MACHINE**, click **SOFTWARE**, click **Microsoft**, click **Windows NT**, click **CurrentVersion**, and then click **Winlogon**.
3. In the details pane, verify that **DisableCAD** has value of **1**.



**Note:** DisableCAD controls whether users must press the Ctrl+Alt+Del key sequence to sign in to Windows.

4. In the navigation pane, right-click **Winlogon**, and then click **Export**.
5. In the **Export Registry File** dialog box, click **Desktop**.
6. In the **File name** text box, verify that **Registration Files (\*.reg)** is selected in the **Save as type** drop-down list box and **Selected branch** is selected in the **Export range** section. In the **File name** text box, type **Winlogon**, and then click **Save**.
7. Minimize the Registry Editor.
8. On the desktop, right-click **Winlogon**, and then click **Edit**.
9. In Notepad, verify that the first line includes information about the Registry Editor version and the third line includes the registry path for the **Winlogon** subkey that you exported.
10. Scroll down and locate the line that begins with **DisableCAD**.

11. Verify that **DisableCAD** has the **dword** value of **00000001**, which is equal to 1 and then verify it is the value that you saw in the Registry Editor.
12. Change the **DisableCAD** value from **00000001** to **00000000**.
13. Close Notepad, and then click **Save**.
14. On the taskbar, right-click **Start**, select **Shutdown or sign out**, and then select **Sign out**.
15. Verify that the lock screen appears, and that includes a graphical background, and the date and time. Click the lock screen, and then sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
16. On the desktop, right-click **Winlogon**, select **Merge**, and then in the **Registry Editor** dialog box, click **Yes**.
17. In the **Registry Editor** error dialog box, click **OK**. An error is expected, as some of the settings are in use.
18. On the taskbar, in the **Search the web and Windows** text box, type **regedit**, and then press Enter.
19. In the Registry Editor, in the navigation pane, click **HKEY\_LOCAL\_MACHINE**, click **SOFTWARE**, click **Microsoft**, click **Windows NT**, click **CurrentVersion**, and then click **Winlogon**.
20. In the details pane, verify that **DisableCAD** now has a value of **0**.
21. On the taskbar, right-click **Start**, select **Shutdown or sign out**, and then select **Sign out**.
22. Verify that the lock screen now is different, and that there is no graphical background and that nothing happens when you click the lock screen.
23. In the 20697-1A-LON-CL1 window, click **Actions**, and then select **Ctrl+Alt+Delete**. Verify that the sign-in screen appears.

### Prepare for the next module

1. On the host computer, start Hyper-V Manager.
2. In the Virtual Machines list, right-click **10982B-LON-CL1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for 10982B-LON-DC1.

## Module Review and Takeaways

### Review Question(s)

**Question:** Can you use the Windows Memory Diagnostic tool from Windows 10 to test the memory of a computer on which Windows 8.1 is installed?

**Answer:** Yes, Windows Memory Diagnostic is not operating system dependent. You can run it on any computer, regardless of the installed operating system. However, Windows Memory Diagnostic cannot diagnose memory when the Windows operating system is running. If you run it from Windows, the testing will occur after you restart the computer, but before Windows loads.

**Question:** Do you need to add a device driver for each device that you want to use with Windows 10?

**Answer:** No. Windows 10 includes device drivers for tens of thousands of devices. It is very likely that Windows 10 includes the device driver for any device that you want to use. Of course, you can add additional device drivers and update existing device drivers with newer versions.

**Question:** What is self-monitoring, analysis, and reporting technology (SMART), and does Windows 10 support SMART?

**Answer:** SMART is a monitoring technology that is built into many disk drives and SSDs. SMART detects potential issues with disk drives, and determines how reliable disks are and provides advanced notification if disks are becoming unreliable or are close to failure. Windows 10 supports SMART, and it can read SMART data from the disk drives and then provide notification when disk failure is imminent.

**Question:** Can you use a device driver that is not signed digitally with Windows 10?

**Answer:** 64-bit editions of Windows 10 require that device drivers are signed digitally, and you cannot use device drivers if they are unsigned. The only exception is if you restart the computer and select the Disable driver signature enforcement advanced startup option that does not enforce this limitation. All 32-bit editions of Windows 10 will warn you if you try to add drivers that are not signed digitally, but they will use the drivers if you select them.

# Lab Review Questions and Answers

## Lab A: Troubleshooting Device Driver Issues

### Question and Answers

**Question:** Why did you have to configure picture password as a sign-in option?

**Answer:** In the exercise, you simulated a keyboard problem. The keyboard was not working, so you could not sign in by typing user credentials. You could sign in only by using the mouse with a picture password.

**Question:** Why did you not use a driver rollback to resolve the hardware problem in second exercise?

**Answer:** The mouse was not working, so it was not possible to open Device Manager and perform a driver rollback. However, even if it was possible to access that feature, the driver rollback would be available only if the mouse's device driver was updated previously, which did not occur.

## Lab B: Troubleshooting Hardware Issues

### Question and Answers

**Question:** Why does the Windows Memory Diagnostic tool take considerably longer on some computers, while working fairly quickly on other computers?

**Answer:** Windows Memory Diagnostic tests the memory when it writes and reads data to each memory location. If one computer has more memory than another, memory testing takes longer to complete. Memory testing also can take longer if you configure it to run multiple times or if you select the Standard or Extended testing options.

**Question:** When a Windows 10 computer's motherboard fails, and it has two basic hard disks, do you need to connect both hard disks to your computer if you want to access data that was stored on a second computer?

**Answer:** No, you can access the data that was stored on the second hard disk only when you connect to it. Basic disks cannot be part of multidisk volumes, and you do not need to import a basic disk to access its data.

**Question:** Can you have a mirrored volume from more than two disk drives in Windows 10?

**Answer:** You can create a mirrored volume in Disk Management from two hard disks only. However, if you use the Storage Spaces feature in Windows 10, you can create a three-way mirror, which you build by using five hard disks.

# Module 4

## Troubleshooting Remote Computers

### Contents:

Lesson 3: Remoting with Windows PowerShell	2
Module Review and Takeaways	5
Lab Review Questions and Answers	6

## Lesson 3

# Remoting with Windows PowerShell

### Contents:

Demonstration: Using Windows PowerShell Remoting

3

## Demonstration: Using Windows PowerShell Remoting

### Demonstration Steps

1. Switch to LON-CL1.
2. Sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
3. Right-click on the taskbar, and then click **Properties**.
4. On the **Navigation** tab, select the **Replace Command Prompt with Windows PowerShell in the menu when I right-click the lower-left corner or press Windows key+X**, check box, and then click **OK**.
5. Right-click **Start**, and then click **Windows PowerShell (Admin)**.
6. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Winrm quickconfig
```

7. When prompted, press **Y**, and then press Enter.
8. Press **Y**, and then press Enter again.
9. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Enable-PSRemoting -Force
```

10. Switch to LON-CL3.
11. Repeat steps 2 through 9.
12. Switch to LON-DC1.
13. On the taskbar, click the **Windows PowerShell** icon.
14. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Invoke-Command -ComputerName LON-CL1 -ScriptBlock {Get-EventLog -log system}
```

15. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
$s = New-PSWorkflowSession -ComputerName LON-CL1
```

16. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Enter-PSSession $s
```

17. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Get-Command
```

18. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
exit
```

19. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Invoke-Command -Session $s -ScriptBlock {$c = Get-command}
```

20. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Invoke-Command -Session $s -ScriptBlock {$c.count}
```

21. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Invoke-Command -ComputerName LON-CL1, LON-CL3 -ScriptBlock {Get-Culture}
```

22. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
$s = New-PSWorkflowSession -ComputerName LON-CL1, LON-CL3
```

23. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Invoke-Command -Session $s -ScriptBlock {$c = Get-command}
```

24. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Invoke-Command -Session $s -ScriptBlock {$c.count}
```

25. On LON-DC1, on the taskbar, right-click the **Windows PowerShell** icon, and then click **Run ISE as Administrator**.

26. In the Administrator: Windows PowerShell ISE window, click **File**, and then click **New Remote PowerShell Tab**.

27. In the New Remote PowerShell Tab window, after Computer, enter LON-CL1, and then click **Connect**.

28. In the LON-CL1 window, type the following command, and then press Enter:

```
Get-Service | Where-Object {$_.Status -eq "Running"}
```

29. In the LON-CL1 window, type the following command, and then press Enter:

```
Get-NetIPConfiguration
```

30. In the LON-CL1 window, type the following command, and then press Enter:

```
Restart-Computer -Force
```

31. Verify that LON-CL1 has restarted.

## Module Review and Takeaways

### Review Question(s)

**Question:** You need to forcibly restart a user's computer remotely. The user is not currently in front of the computer. What methods can you use to do this?

**Answer:** You can restart the user's computer remotely using a remote Windows PowerShell session. You also could connect using Remote Desktop and then restart the computer.

## Lab Review Questions and Answers

### Lab A: Troubleshooting Remote Computers Through Remote Desktop and Remote Assistance

#### Question and Answers

**Question:** What is the difference between solicited and offered Remote Assistance?

**Answer:** With solicited Remote Assistance, the computer user forwards an invitation to the helper. With offered Remote Assistance, an authorized user offers Remote Assistance to the user.

**Question:** What are some of the differences between Remote Desktop and Remote Assistance?

**Answer:** Remote Assistance allows invitations to be sent to a remote user, and a remote user to interact with the signed-on user's session. Remote Desktop connections require membership of the Administrators or Remote Desktop Users group.

### Lab B: Troubleshooting a Remote Computer By Using Windows PowerShell

#### Question and Answers

**Question:** Which cmdlets can you run against a remote computer if the computer has not been configured to support remoting?

**Answer:** You can run cmdlets that support the `-ComputerName` parameter.

**Question:** What cmdlet can you use from a remote Windows PowerShell session to view the IP address configuration of the remote computer?

**Answer:** You can use the **Get-NetIPConfig** cmdlet to view the IP address configuration of the remote computer.

# Module 5

## Resolving Issues with Network Connectivity

### Contents:

Lesson 1: Determining Network Settings	2
Lesson 2: Troubleshooting Network Connectivity	5
Lesson 3: Troubleshooting Name Resolution	9
Module Review and Takeaways	12
Lab Review Questions and Answers	13

## Lesson 1

# Determining Network Settings

### Contents:

Question and Answers	3
Practice: Determining Network Settings	3

## Question and Answers

**Question:** Is it true or false that the Windows PowerShell **Test-Connection** cmdlet has the same functionality as the **Ping** command that you enter at a command prompt?

- ( ) True  
( ) False

**Answer:**

- (√) True  
( ) False

## Practice: Determining Network Settings

### Steps

#### View IPv4 configuration from a GUI

1. Switch to LON-CL1.
2. Click Start **and then type Network and sharing.**
3. Click **Network and Sharing Center.**
4. In the Network and Sharing Center, to the right of the Adatum.com Domain network, click **Ethernet.**
5. In the **Ethernet Status** dialog box, click **Details.** This window displays the same configuration information for this adapter as the **Ipconfig** command would return.
6. In the Network Connection Details window, click **Close.**
7. In the **Ethernet Status** dialog box, click **Properties.** You can configure protocols in this window.
8. Click **Internet Protocol Version 4 (TCP/IPv4),** and then click **Properties.** You can configure the IP address, subnet mask, default gateway, and Domain Name System (DNS) servers in this window.
9. Click **Advanced.** In the Advanced TCP/IP Settings window, you can configure additional settings, such as additional IP addresses, DNS settings, and Windows Internet Name Service (WINS) servers for NetBIOS name resolution.
10. Close all open windows without modifying any settings.

#### View IPv4 configuration from a command line

1. Right-click **Start,** and then click **Command Prompt (Admin).**
2. Type **PowerShell,** and then press Enter.
3. At the Windows PowerShell command prompt, , type the following command, and then press Enter:

```
Get-NetIPAddress
```

4. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Get-NetIPv4Protocol
```

5. At the command prompt, type the following command, and then press Enter:

```
netsh interface ipv4 show config
```

The current IPv4 configuration displays.

6. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
ipconfig /all
```

### **Completion steps**

- After you complete the practice session, leave the virtual machines running for the next practice session.

## Lesson 2

# Troubleshooting Network Connectivity

### Contents:

Question and Answers	6
Practice: Testing Network Connectivity	6
Practice: Using Microsoft Message Analyzer to Capture Network Traffic	7

## Question and Answers

**Question:** Which of the following commands enables you to view the current Internet Protocol version 4 (IPv4) configuration? (Choose all that apply)

- ( ) Ping
- ( ) Netstat
- ( ) IPConfig
- ( ) Get-NetIPAddress
- ( ) Netsh

**Answer:**

- ( ) Ping
- ( ) Netstat
- (√) IPConfig
- (√) Get-NetIPAddress
- (√) Netsh

## Practice: Testing Network Connectivity

### Steps

#### Test connectivity

1. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
test-connection LON-DC1
```

2. At the command prompt, type the following command, and then press Enter:

```
netstat -n
```

Observe and describe the active connections to 172.16.0.10. Most connections to services are transient.

3. If no connections appear, create a connection. To create a connection, in the **Search** box, type **\\LON-DC1**, and then press Enter:
4. In File Explorer, double-click **NETLOGON**.
5. At the command prompt, type the following command, and then press Enter:

```
netstat -n
```

Identify the services to which LON-CL1 had connections on LON-DC1.

#### Check Windows Firewall configuration

1. Click Start **and then type Network and sharing**.
2. Click **Network and Sharing Center**.
3. Click **Windows Firewall**.
4. In Windows Firewall, click **Advanced settings**.
5. In Windows Firewall with Advanced Security, expand **Monitoring**, and then click **Firewall**. These are the active firewall rules.

6. Switch back to Windows PowerShell.
7. At the command prompt, type the following command, and then press Enter:

```
netsh advfirewall firewall show rule name=all dir=in
```

8. Review the results, which display all inbound rules.
9. Close all open windows, except for the Command Prompt window.

### Reconfigure the IPv4 configuration

1. Click Start **and then type Network and sharing**.
2. Click **Network and Sharing Center**.
3. In Network and Sharing Center, to the right of the Adatum.com Domain network, click **Ethernet**.
4. In the **Ethernet Status** dialog box, click **Properties**. In this window, you can configure protocols.
5. Click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
6. In the **Properties** dialog box, click **Obtain an IP address automatically**. Notice that when you click this, the **Alternate Configuration** tab becomes available.
7. Click **Obtain DNS server address automatically**.
8. Click the **Alternate Configuration** tab. Configuration information on this tab is used when no DHCP server is available.
9. Click **OK** to save the changes.
10. In the **Ethernet Properties** dialog box, click **Close**.
11. In the **Ethernet Status** dialog box, click **Details**.



**Note:** Notice that DHCP is enabled, and that the IP address of the DHCP server displays.

12. Switch to the command prompt.
13. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Get-NetIPAddress
```

14. Close all open windows except Windows PowerShell.

### Completion steps

- After you complete this practice session, leave the virtual machines running for the next practice session.

## Practice: Using Microsoft Message Analyzer to Capture Network Traffic

### Steps

#### Capture network traffic with Microsoft Message Analyzer

1. On LON-CL1, switch to the Administrator: Command Prompt – PowerShell window.
2. At the Windows PowerShell prompt, type the following command, and then press Enter:

```
Clear-DnsClientCache
```

3. Click **Start**, click **All apps**, expand **Microsoft Message Analyzer** and then click **Microsoft Message Analyzer**.
4. In the Microsoft Message Analyzer Wizard, on the **Welcome to Microsoft Message Analyzer** page, click **Do not update items**, click **No, I do not want to participate**, and then click **OK**.
5. In the navigation pane, click **Start Local Trace**. Wait until a new session is created.
6. At the Windows PowerShell prompt, type the following command, and then press Enter:

```
ping LON-DC1.adatum.com
```

7. In Microsoft Message Analyzer, on the toolbar, click **Stop**.

### Analyze the captured network traffic

1. In Microsoft Message Analyzer, in the results pane, select the first **ICMP** packet group.



**Note:** Scroll up and down until you see ICMP in the Module column. If you do not see any ICMP packets, restart the trace and repeat steps 2 and 6 from the preceding section. Then stop the trace again.

2. In the result pane, click the plus (+) sign beside the selected packet group. Verify that it includes both **Echo Request** and **Echo Reply** packets. This is a **ping** request.
3. View the source and destination IP addresses for each packet.

### Filter the network traffic

1. On the Microsoft Message Analyzer toolbar, in the **View Filter** section, type the following, and then press Enter:

```
*DestinationAddress == 172.16.0.10
```

2. In the **View Filter** section, click **Apply**. Verify that the packets are filtered and display only packets that match the filter.
3. Close Microsoft Message Analyzer.
4. Click **Close without saving**.

### Completion steps

- After you complete the practice session, leave the virtual machines running for the next practice session.

## Lesson 3

# Troubleshooting Name Resolution

### Contents:

Question and Answers	10
Practice: Troubleshooting Name Resolution	10

## Question and Answers

**Question:** Is it true or false that the Windows 10 client always checks its configured Domain Name System (DNS) server before checking the local HOSTS file?

- ( ) True  
( ) False

**Answer:**

- ( ) True  
(√) False

## Practice: Troubleshooting Name Resolution

### Steps

#### Verify the IPv4 configuration

1. Switch to LON-CL1.
2. Click Start **and then type Network and sharing**.
3. Click **Network and Sharing Center**.
4. In Network and Sharing Center, to the right of the Adatum.com Domain network, click **Ethernet**.
5. In the **Ethernet Status** dialog box, click **Details**.
6. Notice that DHCP is enabled, and that the IP address of the DHCP server displays. Notice the DNS server address.
7. In the **Network Connection Details** dialog box, click **Close**.
8. In the **Ethernet Status** dialog box, click **Close**.

#### View and clear the name cache

1. Switch to Windows PowerShell.
2. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
ipconfig /displaydns
```

3. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Get-DnsClientCache
```

4. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
ipconfig /flushdns
```

5. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Clear-DnsClientCache
```

6. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
ipconfig /displaydns
```

#### Test name resolution to LON-DC1

1. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
test-connection lon-dc1
```

2. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Get-DnsClientCache | fl
```

3. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
ipconfig /displaydns
```

### Create a record in the hosts file

1. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
notepad C:\windows\system32\drivers\etc\hosts
```

2. Scroll to the end of the file, type **172.16.0.10 intranet**, and then press Enter.
3. Click **File**, and then click **Save**.
4. Close Notepad.

### Test the new record

1. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
test-connection intranet
```

2. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Get-DnsClientCache | fl
```

3. View the intranet record in the cache.

### Test name resolution

1. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
nslookup LON-DC1
```

2. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
Resolve-Dnsname LON-DC1 | fl
```

3. At the Windows PowerShell command prompt, type the following command, and then press Enter:

```
nslookup -d1 LON-DC1 > file.txt
```

4. At the command prompt, type the following command, and then press Enter:

```
notepad file.txt
```

5. Review the information, and then close Notepad. Note that you must scroll to the section that begins with "Got answer".
6. Close Windows PowerShell.

### Completion steps

- After you have completed the practice session, leave the virtual machines running for the lab.

## Module Review and Takeaways

### Review Question(s)

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

**Answer:** Amy can run the IPConfig /All command or use the Ping command to verify her domain controller's IP address.

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

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

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

**Answer:** To clear the DNS resolver cache, you can use the Windows PowerShell Clear-DnsClientCache cmdlet. You also can use the IPConfig /flushdns command.

# Lab Review Questions and Answers

## Lab: Resolving Network Connectivity Issues

### Question and Answers

**Question:** What was your approach to the first scenario? How did your approach differ from the class?

**Answer:** Answers will vary.

**Question:** What was your approach to the second scenario? How did your approach differ from the class?

**Answer:** Answers will vary.

**Question:** What was your approach to the third scenario? How did your approach differ from the class?

**Answer:** Answers will vary.

# Module 6

## Troubleshooting Group Policy

### Contents:

Lesson 1: Overview of Group Policy Application	2
Lesson 2: Resolving Client-Configuration Failures and GPO Application Issues	6
Module Review and Takeaways	10
Lab Review Questions and Answers	11

## Lesson 1

# Overview of Group Policy Application

### Contents:

Question and Answers	3
Practice Session: Using the GPMC	4

## Question and Answers

### Discussion: Group Policy Application

**Question:** How would you use a GPO to distribute an application only to users in a single region?

**Answer:** You should link the GPO that distributes the application to the region that requires the application. You can create a GPO with various computer and user settings, so that you can standardize a region's settings.

**Question:** You link the GPO to an OU that hosts computer accounts. Which settings does Windows 10 apply?

**Answer:** When you link a GPO to an OU that contains only computer accounts, Windows 10 applies only the computer settings to computers. Windows 10 would apply user settings only if user accounts existed in that OU. If you link the GPO to the Region OU, Windows applies computer *and* user settings in the region.

**Question:** Why might roaming users benefit from linking printer distribution to a site rather than to a specific OU?

**Answer:** If a GPO links to a site, then it applies to all users and computers in that site. The site corresponds to a physical location, and printers are specific to a physical location. As users roam, local printers are installed on their mobile computers based on their location.

**Question:** How can you configure a collection of security settings in a GPO and ensure that they apply to all regions?

**Answer:** You should link the GPO that includes the security settings to the domain, and then configure the GPO link to be enforced. This ensures that no GPOs that apply to OUs can override the domain-wide security settings.

**Question:** A GPO that links to the domain defines the home page for users. The home page points to the company intranet. The managers have a new web-based application that they want to define as their home page. You decide to distribute this setting via a GPO. How can you do this?

**Answer:** You create a new GPO that defines the home page for managers, and then link it to the Managers OU in each region. The GPO that links to the Managers OU in each region overrides the setting that you define at the domain.

**Question:** If the administrator of the Region 1 OU configured the Block Inheritance option on his or her OU, what would the affect be on any GPOs configured at the domain level?

**Answer:** They all would be blocked. The Block Inheritance option blocks all GPOs from all higher-level container objects.

**Question:** If the domain administrator applied the Enforced value to the Default Domain Policy, how would this affect the answer to the previous question?

**Answer:** The Default Domain Policy settings would now apply to the Region 1 OU and its subcontainers. Lower-level GPOs would not override these settings. However, all other GPOs linked to the domain would be blocked as before.

## Practice Session: Using the GPMC

### Steps

#### Use the Group Policy Management Console (GPMC) to create a new Group Policy Object (GPO)

1. On LON-DC1, in the Server Manager console, click the **Tools** menu, and then click **Group Policy Management**.
2. Expand **Forest: Adatum.com**, expand **Domains**, and then click **Adatum.com**.
3. Click the **Linked Group Policy Objects** tab. Notice that the Default Domain Policy and Marketing GPOs link to the root of the Adatum.com domain.
4. Right-click **Adatum.com**, and then click **Create a GPO in this domain, and Link it here**.
5. In the **New GPO** dialog box, in the **Name** text box, type **Preferences**, and then click **OK**.

#### Configure a new GPO to create a desktop shortcut

1. In the left pane, expand **Adatum.com**.
2. Click **Preferences**.
3. Click **OK** to close the warning pop-up window.
4. On the **Scope** tab, verify that no WMI filters are applied.
5. On the **Settings** tab, verify that no settings are defined in this GPO.
6. In the left pane, right-click **Preferences**. Notice in the context menu that the link is enabled but not enforced.
7. In the context menu, click **Edit**.
8. In the Group Policy Management Editor window, review the available information. Notice that there are two categories of settings, User Configuration and Computer Configuration, which are divided further into Policies and Preferences.
9. Under User Configuration, expand **Preferences**, click **Windows Settings**, and then click **Shortcuts**.
10. Right-click **Shortcuts**, point to **New**, and then click **Shortcut**.
11. In the **New Shortcut Properties** dialog box, enter the following information, and then click **OK**:
  - o Action: **Create**
  - o Name: **Notepad**
  - o Target type: **File System Object**
  - o Location: **Desktop**
  - o Target Path: **C:\Windows\System32\notepad.exe**
12. Close the Group Policy Management Editor.
13. Close the GPMC.

#### Update Group Policy on LON-CL1

1. Switch to LON-CL1.
2. Right-click **Start**, and then click **Command Prompt**.
3. In the Command Prompt window, at the command prompt, type the following command, and then press Enter:

```
gpupdate /force
```

The **/force** option ensures that all policies are applied, and not just updates.

4. When the Group Policy update completes, close the Command Prompt window.
5. Notice that the Notepad shortcut now displays on the desktop.

### **Completion steps**

After you complete the practice session, leave the virtual machines running.

## Lesson 2

# Resolving Client-Configuration Failures and GPO Application Issues

### Contents:

Question and Answers	7
Practice: Using Tools to Troubleshoot GPO Application	7

## Question and Answers

### Discussion: Reasons for GPO Application Issues

**Question:** What are some of the reasons that GPO settings might not apply as you think they should?

**Answer:** Possible reasons that GPO settings might not apply as intended include:

- A GPO with user settings is not linked to a location where the user account resides.
- A GPO with computer settings is not linked to a location where the computer account resides.
- A computer is not able to communicate with a domain controller to download the GPO due to any of the following reasons:
  - Network communication problems
  - Incorrect time settings on the client computer
  - Corrupted computer accounts
  - Group Policy client-side extension problems
- A GPO was not properly tested and/or is configured incorrectly.
- Active Directory replication or SYSVOL replication is not functioning between the domain controllers that are distributing the GPOs to client computers.
- Processing exceptions are preventing the GPO from processing, including:
  - Blocked Inheritance
  - Enforcement
  - Link Order
  - WMI Filtering

### Practice: Using Tools to Troubleshoot GPO Application

#### Steps

#### Use `gpresult.exe` to create a report

1. On LON-CL1, in the Command Prompt window, at a command prompt, type the following command, and then press Enter:

```
Gpresult /r
```

2. Review the output in the Command Prompt window.
3. At the command prompt, type the following command, and then press Enter:

```
GPRresult /h d:\results.html
```

4. Close the Command Prompt window.
5. Click **File Explorer**, and then navigate to drive **D:\**.
6. In the details pane, double-click the **results.html** file.
7. View the report results and then close Internet Explorer.

### Use the Group Policy Reporting Wizard to create a report

1. Switch to LON-DC1.
2. In the Server Manager console, on the Tools menu, click **Group Policy Management**. If the Group Policy Management dialog box with the message Group Policy Management is loading appears, click the Close (X) button, close and then reopen the Group Policy Management Console.
3. In the Group Policy Management window, right-click **Group Policy Results**, and then click **Group Policy Results Wizard**.
4. In the Group Policy Results Wizard, click **Next**.
5. On the **Computer Selection** page, click **Another Computer**, type **LON-CL1**, and then click **Next**.
6. On the **User Selection** page, select **Adatum\Administrator**, and then click **Next**.
7. On the **Summary of Selections** page, click **Next**.
8. On the **Completing the Group Policy Results Wizard** page, click **Finish**.
9. Review the Group Policy results.
10. Under the **Group Policy Results** folder, right-click the **Administrator on LON-CL1** report, and then click **Save Report**.
11. In the **Save GPO Report** dialog box, click **Desktop**, and then click **Save**.

### Use the Group Policy Modeling Wizard to create a report

1. Right-click the **Group Policy Modeling** folder, and then click **Group Policy Modeling Wizard**.
2. In the Group Policy Modeling Wizard, click **Next**.
3. On the **Domain Controller Selection** page, click **Next**.
4. On the **User and Computer Selection** page, under **User information**, click **User**, and then click **Browse**.
5. In the **Select User** dialog box, type **Ed Meadows**, and then click **OK**.
6. Under Computer information, click **Browse**.
7. In the **Choose Computer Container** dialog box, expand **Adatum**, click **IT**, and then click **OK**.
8. On the **User and Computer Selection** page, click **Next**.
9. On the **Advanced Simulation Options** page, click **Next**.
10. On the **Alternate Active Directory Paths** page, click **Next**.
11. On the **User Security Groups** page, click **Next**.
12. On the **Computer Security Groups** page, click **Next**.
13. On the **WMI Filters for Users** page, click **Next**.
14. On the **WMI Filters for Computers** page, click **Next**.
15. On the **Summary of Selections** page, click **Next**.
16. On the **Completing Group Policy Modeling Wizard** page, click **Finish**.
17. Review the report.

### Review GPO events in the event log

1. Under Group Policy Results, click **Administrator on LON-CL1**.
2. In the details pane, click the **Policy Events** tab, and then review the events.

3. Close all open windows.
4. On the start menu, right-click and then click **Event Viewer**.
5. In the console tree, expand **Windows Logs**, and then click the **System** log.
6. Sort the System log by **Source**.
7. Locate events with Group Policy as the Source.
8. Review the information associated with Group Policy events.
9. In the console tree, expand **Applications and Services Logs**, expand **Microsoft**, expand **Windows**, expand **GroupPolicy**, and then click **Operational**.
10. Review the events, and then close all open windows.

## Module Review and Takeaways

### Review Question(s)

**Question:** What tools can you use for linking GPOs to OUs?

**Answer:** You can use the Group Policy Management Console or Windows PowerShell to link GPOs to OUs.

# Lab Review Questions and Answers

## Lab A: Troubleshooting Issues with Group Policy Application

### Question and Answers

**Question:** A GPO linked to an OU that hosts a user account does not appear to have had settings applied. What are possible reasons for this?

**Answer:** Loopback processing might be configured. Additionally, security or WMI filtering might be configured so that the GPO does not apply, or a CPO that you apply with the Enforced settings at the domain or site level might be overriding other settings.

**Question:** You want to alter a GPO, but want to ensure that you can roll back to the original configuration if the modifications cause problems. What steps can you take to accomplish this goal?

**Answer:** You can back up the GPO before changing it. If you have Advanced Group Policy Management, you can use GPO version control.

# Module 7

## Troubleshooting User Settings

### Contents:

Lesson 1: Troubleshooting Sign-In Issues	2
Lesson 2: Troubleshooting the Application of User Settings	5
Module Review and Takeaways	9
Lab Review Questions and Answers	10

## Lesson 1

# Troubleshooting Sign-In Issues

### Contents:

Question and Answers

3

## Question and Answers

**Question:** By default, Windows 10 allows five cached sign ins.

True

False

**Answer:**

True

False

## Discussion: What Are the Possible Causes of Sign-In Issues?

**Question:** What are the possible causes of sign-in issues?

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

- Incorrect password. Many users accidentally type in the wrong password or forget their password. For example, users commonly forget their password after changing it. In this scenario, you might need to reset the user password.
- Locked account. If a user attempts to sign in with an incorrect password too often, their account is locked for a specific period. When the account is locked, the user is unable to sign in even with the correct password. An administrator with appropriate Active Directory permissions can unlock it, or the user can wait until the account unlocks automatically, which is typically after 15 to 30 minutes.
- Expired account. Organizations often configure user accounts for contract workers to expire on the date when the contract ends. Sometimes contracts are renewed, but network administrators do not update the account's expiration date. After the expiration date, the users cannot sign in. Therefore, you must change the expiration date of the user account.
- Deleted account. You must undelete user accounts that network administrators delete accidentally (if the feature has been configured from the Active Directory Recycle Bin), or you must restore them from a backup or recreate them.
- Signing in with a local account. Ensure that users with domain user accounts log on to the domain.
- Using a Microsoft account. As when using a local account, ensure that if users have a domain account, they use the domain account rather than a Microsoft account.
- Corrupted computer account. When a computer account is no longer valid for a domain, users cannot use that computer account to access domain resources because the computer is not trusted by the domain. To resolve this issue, reset the computer account to rejoin the computer to the domain.
- Incorrect DNS settings. When you configure a computer to use an incorrect DNS server, the computer cannot find domain controllers to perform the sign-in process. To resolve this issue, configure the computer to use an appropriate DNS server.
- General networking issues. Network connectivity issues can make domain controllers unavailable to service user sign-in requests.

- Biometric issues. Possible issues with the hardware required to enable biometric sign in.

## Lesson 2

# Troubleshooting the Application of User Settings

**Contents:**

Question and Answers	6
Resources	6
Practice: Configuring Roaming User Profiles	6
Practice: Configuring Folder Redirection	7

## Question and Answers

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

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

## Resources

### Potential Issues with Roaming User Profile

 **Additional Reading:** For more information, refer to Incompatibility between Windows 8.1 roaming user profiles and those in earlier versions of Windows: <http://aka.ms/y66zpl>

## Practice: Configuring Roaming User Profiles

### Steps

#### Create a shared folder

1. Switch to LON-DC1.
2. On the taskbar, click **File Explorer**.
3. In File Explorer, double-click **Allfiles (E:)**.
4. Click the **Home** tab, and then click **New folder**.
5. Type **Profiles**, and then press Enter.
6. Right-click **Profiles**, point to **Share with**, and then click **Specific people**.
7. In the **File Sharing** dialog box, in the text box, type **Authenticated Users**, and then click **Add**.
8. In the **Read** drop-down list next to **Authenticated Users**, click **Read/Write**, and then click **Share**.
9. Click **Done**.

#### Enable a roaming profile

1. Switch to Server Manager.
2. From Server Manager, click **Tools**, and then click **Active Directory Users and Computers**.
3. In **Active Directory Users and Computers**, expand **Adatum.com**, and then click **Marketing**.
4. Double-click **Adam Barr**, and in the **Adam Barr Properties** dialog box, click the **Profile** tab.
5. In the **Profile path** box, type `\\LON-DC1\Profiles\%username%` click **Apply**, and then click **OK**.

#### Test the profile

1. Switch to LON-CL1.
2. Sign in as **Adatum\Adam** with the password **Pa\$\$w0rd**.
3. On the taskbar, click **File Explorer**.
4. In the navigation pane, right-click **This PC**, and then click **Map network drive**.
5. In the **Map Network Drive** dialog box, in the **Folder** box, type `\\LON-DC1\Profiles`, and then click **Finish**.
6. In File Explorer, notice the **Adam.V5** folder. This is the location of the user's desktop profile.

7. Sign out.
8. Switch to LON-CL2.
9. Sign in as **Adatum\Adam** with the password **Pa\$\$w0rd**.
10. On the taskbar, click **File Explorer**, and then click **This PC**.
11. Verify that the drive mapping that you configured is available on this computer.
12. On LON-CL1, sign in as **Adatum\Administrator** with the password **Pa\$\$w0rd**.

### Completion steps

1. On the host computer, start Hyper-V Manager.
2. In the **Virtual Machines** list, right-click **10982B-LON-CL2**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. **Important:** Leave the other virtual machines running for the next practice session.

## Practice: Configuring Folder Redirection

### Steps

#### Create the folder structure on the server

1. Switch to LON-CL1.
2. Run the **D:\Labfiles\Mod07\Scenario3.vbs** script. Wait until the script completes.
3. In the **Windows Script Host** dialog box, click **OK** to the Script complete.

#### Create a new GPO

1. Switch to LON-DC1.
2. In Server Manager, click **Tools**, and then click **Group Policy Management**.
3. In Group Policy Management, expand **Forest: Adatum.com**, expand **Domains**, expand **Adatum.com**, and then right-click **Adatum.com**.
4. Click **Create a GPO in this domain, and Link it here**.
5. In the **New GPO** dialog box, in the **Name** text box, type **Folder Redirection**, and then click **OK**.

#### Edit the GPO settings

1. Right-click **Folder Redirection**, and then click **Edit**.
2. In the **Group Policy Management Editor**, under **User Configuration**, expand **Policies**, expand **Windows Settings**, expand **Folder Redirection**, and then click **Folder Redirection**.
3. Right-click **Documents**, and then click **Properties**.
4. In the **Documents Properties** dialog box, in the **Setting** list, click **Advanced – Specify locations for various user groups**.
5. Click **Add**.
6. In the **Specify Group and Location** dialog box, in the **Security Group Membership** text box, type **Marketing**.
7. Press the Tab key.
8. In the **Target Folder Location** list, click **Create a folder for each user under the root path**.
9. In the **Root Path** text box, type **\\lon-dc1\Departments\Marketing** and then click **OK**.

10. In the **Documents Properties** dialog box, click **OK**.
11. In the **Warning** dialog box, click **Yes**.
12. Close the Group Policy Management Editor.



**Note:** You will configure only the Marketing department for this lab.

### Refresh GPOs on the client computer

1. Switch to LON-CL1.
2. Right-click **Start**, and then click **Command Prompt (Admin)**.
3. At the command prompt, type **gpupdate /force**, and then press Enter.
4. When prompted, press **Y**, and then press Enter to close the command prompt and sign out.

### Verify that Folder Redirection is working

1. Sign in as **Adatum\Boris** with the password **Pa\$\$w0rd**. Boris is a member of the Marketing department.



**Note:** This is Boris's first sign in at this computer, so Windows will build his desktop profile and Windows settings. This can take a few moments.

2. On the taskbar, click **File Explorer**.
3. Under Frequent folders, right-click **Documents**, and then click **Properties**. Notice that the folder is redirected, and then click **OK**.
4. Sign out.
5. Sign in by using the following credentials:
  - User name: **Adatum\Administrator**
  - Password: **Pa\$\$w0rd**

### Completion steps

- After you complete the practice session, leave the virtual machines running for the lab.

# Module Review and Takeaways

## Review Question(s)

**Question:** You are distributing new laptop computers to executives in your organization. Will you need to perform any additional configured so that they can sign in by using their domain user account name and password when they are out of the office?

**Answer:** No. Cached credentials are enabled by default.

**Question:** What common reasons cause users to have sign-in issues?

**Answer:** Answers might include:

- Incorrect password
- Locked account
- Expired account
- Deleted account
- Signing in with a local account
- Using a Microsoft account
- Corrupted computer account
- Incorrect DNS settings
- General networking issues

**Question:** What is the difference between using Roaming User Profiles and UE-V?

**Answer:** When you use Roaming User Profiles, all user settings and data is available on any computer on which users sign in within an AD DS environment. However, you cannot control what is included in Roaming User Profiles, and locally cached copies of Roaming User Profiles synchronize only during sign-in and sign-out.

When you use UE-V, you can control which settings synchronize between specified AD DS computers. Synchronization happens as soon as users close an application. They do not have to sign out to trigger synchronization. However, UE-V synchronizes settings only. It does not synchronize data.

## Lab Review Questions and Answers

### Lab A: Troubleshooting Sign-In Issues

#### Question and Answers

**Question:** What was your approach to the first scenario? How did your approach differ from the class-guided approach?

**Answer:** Answers will vary.

**Question:** What was your approach to the second scenario? How did your approach differ from the class-guided approach?

**Answer:** Answers will vary.

### Lab B: Troubleshooting the Application of User Settings

#### Question and Answers

**Question:** What was your approach to the scenario? How did your approach differ from the class-guided approach?

**Answer:** Answers will vary.

# Module 8

## Troubleshooting Remote Connectivity

### Contents:

Lesson 1: Troubleshooting Issues with VPN Connectivity	2
Lab Review Questions and Answers	5

## Lesson 1

# Troubleshooting Issues with VPN Connectivity

### Contents:

Demonstration: Troubleshooting VPN Connections

3

## Demonstration: Troubleshooting VPN Connections

### Demonstration Steps

1. Sign in to LON-RTR as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
2. On the desktop, on the taskbar, click the **Windows PowerShell** icon.
3. In the Windows PowerShell window, type the following command, and then press Enter:

```
Install-RemoteAccess -VPNTYPE VPN -IPADDRESSRANGE 172.16.0.220,172.16.0.230
```

4. Switch to LON-CL2.
5. Sign in to LON-CL2 as **Adatum\Holly** with the password **Pa\$\$w0rd**.
6. On the taskbar, right-click the **Network** icon, and then click **Open Network and Sharing Center**.
7. In the Network and Sharing Center, click **Set up a new connection or network**.
8. In **Choose a connection option** click **Connect to a workplace**, and then click **Next**.
9. On the **Connect to a Workplace** page, click **Use my Internet connection (VPN)**.
10. On the **Connect to a Workplace** page, click **I'll set up an Internet connection later**.
11. On the **Connect to a Workplace** page, in the **Internet Address** box, type **131.107.0.200**, and then click **Create**.
12. On the desktop, on the taskbar, click the **Network** icon, and then click **VPN Connection**.
13. On the **NETWORK & INTERNET** page, click **VPN Connection**, and then click **Connect**.
14. On the **Sign-in** page, provide the following credentials, and then click **OK**:
  - Username: **Adatum\Holly**
  - Password: **Pa\$\$w0rd**
15. Verify that the VPN Connection shows as Connected.
16. Sign out of LON-CL2.
17. Sign in to LON-CL2 as **Adatum\Brad** with the password **Pa\$\$w0rd**.
18. On the taskbar, right-click the **Network** icon, and then click **Open Network and Sharing Center**.
19. In the Network and Sharing Center, click **Set up a new connection or network**.
20. In the **Choose a connection option**, click **Connect to a workplace**, and then click **Next**.
21. On the **Connect to a Workplace** page, click **Use my Internet connection (VPN)**.
22. On the **Connect to a Workplace** page, click **I'll set up an Internet connection later**.
23. On the **Connect to a Workplace** page, in the **Internet Address** box, type **131.107.0.200**, and then click **Create**.
24. On the desktop, on the taskbar, click the **Network** icon, and then click **VPN Connection**.
25. On the **NETWORK & INTERNET** page, click **VPN Connection**, and then click **Connect**.
26. On the **Sign-in** page, provide the following credentials, and then click **OK**:
  - Username: **Adatum\Brad**
  - Password: **Pa\$\$w0rd**
27. Verify that a connection cannot be established.

28. Review the error message, and then click **Close**.
29. Switch to LON-DC1.
30. In the Server Manager console, on the **Tools** menu, click **Active Directory Users and Computers**.
31. In Active Directory Users and Computers, expand the **Adatum.com** domain, and then navigate to the **IT** OU.
32. Right-click on the **Brad Sutton** user account, and then click **Properties**.
33. In the **Brad Sutton Properties** dialog box, click the **Dial-In** tab.
34. In the Network Access Permission area, click **Allow access**, and then click **OK**.
35. Switch to LON-CL2.
36. Under VPN Connection, click **Connect**.
37. On the **Sign-in** page, provide the following credentials, and then click **OK**:
  - Username: **Adatum\Brad**
  - Password: **Pa\$\$w0rd**
38. Verify that the VPN Connection displays as connected.
39. Sign out of LON-CL2.

# Lab Review Questions and Answers

## Lab A: Troubleshooting VPN Connectivity

### Question and Answers

**Question:** What other method could you use to troubleshoot the VPN connectivity problem in the second lab exercise?

**Answer:** Answers will vary, but could include re-enabling Extensible Authentication Protocol (EAP) as an authentication method on the VPN server.

**Question:** How can you determine which VPN protocol the connections that you established in this lab exercise are using?

**Answer:** You can view a list of used ports in the Routing and Remote Access console on the VPN server, which will list the VPN protocol. Additionally, you can look at the adapter settings on the client computer, which also display the VPN protocol that is in use currently.

# Module 9

## Troubleshooting Resource Access within a Domain

### Contents:

Lesson 1: Troubleshooting File Permissions Issues	2
Lesson 2: Recovering Files Encrypted by EFS	8
Lesson 3: Troubleshooting Issues with Printer Access	11
Module Review and Takeaways	15
Lab Review Questions and Answers	16

## Lesson 1

# Troubleshooting File Permissions Issues

### Contents:

Question and Answers	3
Resources	5
Demonstration: Determining Effective Permissions	5

## Question and Answers

**Question:** Is it true or false that you can configure advanced permissions for a shared folder.?

- True
- False

**Answer:**

- True
- False

**Question:** Is it true or false that you cannot configure access-based enumeration for shares on a Windows 10 computer?

- True
- False

**Answer:**

- True
- False

**Question:** What is the minimum file-system permission required to allow a user to take ownership of a file?

- Read
- Write
- Read & execute
- Modify
- Full control

**Answer:**

- Read
- Write
- Read & execute
- Modify
- Full control

## Discussion: File and Folder Permissions

**Question:** What file permissions would a user have if the user's permissions are shown as Special permissions?

**Answer:** The Special permissions designation is given to a user's permissions if he or she has a combination of advanced file permissions that cannot be listed as basic file permissions.

**Question:** What type of permissions does the user actually have if she has Read permission on a file, but is a member of a group that has Write permissions?

**Answer:** The user has cumulative permissions, which apply to the user and to the group in which the user is a member. Therefore, in this scenario, she has both Read and Write permissions to the file.

## File System Permission Inheritance

**Question:** If permissions on a file are inherited from a folder, can you modify them on a file?

**Answer:** No, you cannot modify inherited permissions. You can modify them on the folder, where they were set explicitly, and then your modified permissions will be inherited with a file. Conversely, you can disable inheritance on a file, select or convert inherited permissions to explicit permissions, and then modify explicit permissions on it.

## Implementing Conditions to Limit File and Folder Access

**Question:** What would be the most probable reason that you cannot use the user's department as a condition when limiting access on an NTFS file system?

**Answer:** The most probable reason that you cannot use a user's department as a condition when limiting access on an NTFS file system would be that the domain administrator did not add the department as a claim type. No user claim is defined in Active Directory Domain System (AD DS), by default. Additionally, before you can use claims as conditions, the domain administrator must add them as new claim types.

## Discussion: Troubleshooting File-Access Permissions

**Question:** Does the Deny permission always have higher precedence than Allow permission?

**Answer:** No. The Deny permission has a higher precedence only if it is set as the same level as the Allow permission. If the Deny permission was set at higher level than the Allow permission, then the Allow permission will have higher precedence, and it will be effective.

## File Sharing in Windows 10

**Question:** Can any user connect to any shared folder?

**Answer:** No. Only users with the appropriate permissions can connect to share folders. You configure permissions on shared folders when you share a folder, and you can modify permissions.

## Methods for Sharing Folders

**Question:** What is the main difference between sharing a folder by using **Network File and Folder Sharing** and by using the **Advanced Sharing** option?

**Answer:** If you share a folder by using **Network File and Folder Sharing**, you can set share and file permissions in a single step. If you share a folder by using the **Advanced Sharing** option, you can set only share folder permissions. You cannot modify file permissions by using the **Advanced Sharing** option in a single step.

**Question:** A user attempted to connect to a share on a Windows 10 computer, but received an error stating that "No more connections can be made to this remote computer at this time". How could you resolve the issue?

**Answer:** Each Windows 10 share has a limit of how many users can connect to a share simultaneously. When the limit is reached, each additional user who tries to connect to the share will receive an error. You can increase the value of users who can connect to the share simultaneously, and additional users will be able to connect. The maximum value that can be set on Windows 10 is 20 simultaneous connections.

**Question:** What could be a reason that a user does not have the **Always available offline** option when they right-click on a file in the share, but when they right-click on a file in another share, the **Always available offline** option is available?

**Answer:** The most probable reason for such behavior is that the share does not allow offline files, and it has been configured with the **No files or Programs from the shared folder are available offline** option.

## Discussion: Combining Shared Folder and File Permissions

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

**Answer:** The share permissions must allow the user to modify all of the files. You can configure more specific permissions by using file-system permissions. You must set the file-system permissions for the folder that is shared to allow the user Read-only access. The Read-only permissions are inherited by all files within the folder. Assign the Modify file system permission on the folder's individual files that you want the user to be able to modify.

**Question:** If a user has Full control file-system permissions to a file, but is accessing the file through a share with Read permission, what effective permission will the user have on the file?

**Answer:** The user will have Read-only access to the file when accessing it over the network through the share. The reason is that Read access is more restrictive than Full control. If the user is signed in to the computer that is storing the file and is accessing the file locally, then the user has Full control.

**Question:** Can users who have the Read permission on a share always open files in the share when they access them via the network?

**Answer:** It depends on the file-system permissions of those files. If users also have file-system permissions that allow them to read files, they can open the files on the network. However, if file-system permissions do not allow them to read files, they will not be able to open the files on the network.

## Resources

### Implementing Conditions to Limit File and Folder Access



**Additional Reading:** In many environments, you do not configure conditions individually. You configure them by using DAC. For more information about DAC, refer to <http://aka.ms/epbpbm>.

## Demonstration: Determining Effective Permissions

### Demonstration Steps



**Note:** Explain to the students that in this demonstration, they will be reviewing the effective permissions for Adam Barr. Point out that Adam is a member of the Marketing group only.

1. On LON-CL1, on the taskbar, click the **File Explorer** icon.
2. In File Explorer, navigate to D:\Folder1, right-click **File1.txt**, select **Properties**, select **Security** tab, and then click **Advanced**.



**Note:** Notice that the Sales group has Deny write permission access, the Marketing group has Allow Full control permission access, and both permissions are inherited from the folder.

3. Click the **Effective Access** tab.
4. Click **Select a user**, and in the **Enter the object name to select** text box, type **Adam**. Click **OK**, and then click **View effective access**.



**Note:** Notice that **Adam** has Full control effective permission, as he is a member of the Marketing group, and he is not member of the Sales group.

5. In the User/Group section, click **Add items**. In the **Enter the object name to select** text box, type **Sales**, and then click **OK**. Explain that this produces a result as if Adam is also member of the Sales group.
6. Click **View effective access**, and point out that if Adam also was in the Sales group, he would not be able to write to the file, but he would have all other permissions.
7. Click the **Permissions** tab.
8. Click **Add**, click **Select a principal**, type **Adam**, and then click **OK**. Uncheck **Read**, select **Write**, click **OK**, and then click **Apply**.



**Note:** Notice that Adam's Allow write permission is the first in the permission entries list, and is before the inherited Deny write access for the Sales group.

9. On the **Permissions** tab, point out that the Allow write access for **Adam Barr** is set at the file, while the Deny write for the **Sales** group is inherited. Therefore, Adam's Allow write permission is first in the permission entries list and comes before inherited Deny write access for the Sales group.
10. Click the **Effective Access** tab and point out that Adam has Full control permissions again.
11. Click the **Permissions** tab.
12. Click **Disable inheritance**, click **Convert inherited permissions into explicit permissions on this object**, and then click **Apply**.



**Note:** Notice that now all permissions are set on the file, and no permission is inherited. The Deny write permission is now higher on the list and it takes precedence over the Allow write permission.

13. Click the **Effective Access** tab, and then point out that Adam is not allowed to write to the file, but he has all other permissions.
14. In the User/Group section, select the down arrow in the **Include group membership** drop-down list box, clear the **Sales (ADATUM\Sales)** check box, and then click **View effective access**. Point out that if Adam is not in Sales group, he has full control access to the file.
15. Click the **Permissions** tab.
16. Select the **Marketing** group, and then click **Edit**.
17. Click **Add a condition**, and then type the following expression: **User city Equals Value Seattle**. (Note that you must type **Seattle** in the last field). Click **OK**, and then click **Apply**.



**Note:** When you select this condition, the Full control permission applies only to members of the Marketing group who have their city set to Seattle in AD DS.

18. Click the **Effective Access** tab.



**Note:** Notice that Adam can only write to the file and he does not have any other permissions. Explain that Adam does not have the city set to Seattle in AD DS, and therefore full control does not apply for him.

19. Click **Include a user claim**, from the drop-down list box, select **city**, and then in the **Enter value here** text box, type **Seattle**, and then click **View effective access**. Explain that you are doing this because you want to see the effective access if Adam would have his city set to Seattle in AD DS.

20. Point out that if Adam would have his city set to Seattle, he would have Full control permissions, and then click **OK** twice.

## Lesson 2

# Recovering Files Encrypted by EFS

### Contents:

Question and Answers

9

## Question and Answers

**Question:** Is it true or false that you need a public key to decrypt an EFS-encrypted file?

True

False

**Answer:**

True

False

**Question:** Is it true or false that if user has an appropriate private key, they can decrypt an EFS-encrypted file?

True

False

**Answer:**

True

False

**Question:** Is it true or false that you need a CA in your network to encrypt files by using EFS?

True

False

**Answer:**

True

False

## Overview of EFS

**Question:** Is EFS using symmetric encryption or public key encryption?

**Answer:** EFS uses a combination of both encryption methods. It uses symmetric encryption to encrypt the file's contents, and it uses public key encryption to encrypt and protect the symmetric key that is used for file encryption.

**Question:** Who can open a file that is encrypted by using EFS?

**Answer:** To open an EFS-encrypted file, the user must have file permissions to access the file. However, the user also must have the appropriate private key, with which they decrypt the symmetric key. The user then uses the symmetric key to decrypt and open the encrypted file. If the user has an appropriate private key, this process is transparent, and they can open the file as if it were not encrypted. If the user does not have the appropriate private key, the user will see an Access denied error.

## EFS and Certificates

**Question:** Why must users have certificates before they can encrypt files by using EFS?

**Answer:** EFS uses the user's public key to encrypt the symmetric key that is randomly generated for encrypting each file. If a user does not have a public key, EFS is not able to encrypt and protect the symmetric key. In this scenario, EFS will obtain the user certificate and then perform encryption.

**Question:** Can you share EFS-encrypted files with other users?

**Answer:** Yes, you can share EFS-encrypted files with other users. To do this, however, the user's public key must be available. This is because EFS uses their public key to encrypt the symmetric key.

## Recovering EFS-Encrypted Files

**Question:** How is it possible for the data recovery agent to decrypt any EFS-encrypted file?

**Answer:** If you configure the data recovery agent in the environment, EFS encrypts a copy of the symmetric key with the public key of the recovery agent and adds it to the file during encryption. The data recovery agent can use their private key to decrypt their copy of the symmetric key and use it to decrypt the file.

**Question:** If you do not have the appropriate private key to decrypt the file, can you copy an EFS-encrypted file from the computer on which it was encrypted to the dedicated workstation of the data recovery agent?

**Answer:** No. If you do not have the appropriate private key to decrypt the file, you cannot copy the EFS-encrypted file between the workstations. The copy operation includes a read operation of the original file. If you do not have the appropriate private key, you cannot open and read the file. You should back up the encrypted files and restore them on the dedicated workstation of the data recovery agent.

## Resolving Common EFS Issues

**Question:** How can a user who lost their private key transfer EFS-encrypted files to the dedicated workstation of the data recovery agent?

**Answer:** The user does not have the appropriate private key, so they cannot copy encrypted files. However, the user can back up encrypted files and then transfer them to the dedicated workstation of the data recovery agent.

**Question:** How long after you add the new data recovery agent will they need to wait before they will be able to decrypt files?

**Answer:** The data recovery field (DRF) of the already encrypted files does not update automatically. The DRF of the encrypted files is updated when a user with the appropriate private key views their properties or runs the **cipher /U** command.

## Lesson 3

# Troubleshooting Issues with Printer Access

### Contents:

Question and Answers	12
Demonstration: Using Print Management	13

## Question and Answers

**Question:** Which tool would you use to troubleshoot printers on multiple Windows 10 computers in the AD DS environment?

- Device Manager
- Printers & Scanners
- Print Management
- Computer Management
- Connected Devices

**Answer:**

- Device Manager
- Printers & Scanners
- Print Management
- Computer Management
- Connected Devices

**Question:** Is it true or false that you can add multiple printers in Windows 10 for a single printing device that is connected to your computer?

- True
- False

**Answer:**

- True
- False

## Methods for Installing Printers

**Question:** Can you add multiple printers in Windows 10 while they are all using the same physical printing device?

**Answer:** Yes, you can add multiple printers in Windows 10, while they are all using the same physical printing device. You would add multiple printers if you want to configure them with different settings, such as priority, security, or availability.

**Question:** Can you use the Devices and Printers tool to manage printers that are connected to a remote Windows 10 computer?

**Answer:** No. You only can use the Devices and Printers tool to manage printers that are connected to a local Windows 10 computer.

## Installing Printer Drivers on Clients

**Question:** Which tool can you use to prestage a printer driver to the driver store?

**Answer:** You can use the Pnputil.exe command-line tool to add any device driver, including printer drivers, to the driver store. To prestage the driver, you need administrative permissions.

## Managing Printer Properties

**Question:** Can you use the Print Management tool for managing printers only on Windows 10 and Windows 8.1 computers?

**Answer:** No. You can use the Print Management tool for managing printers on any Windows computer on which you have sufficient permissions. This includes Windows 10, Windows Server 2012 R2, and older Microsoft operating systems.

## Demonstration: Using Print Management

### Demonstration Steps

1. On LON-CL1, in the **I'm Cortana. Ask me anything.** text box, type **administrative**, and then click **Administrative Tools**.
2. In the Administrative Tools windows, double-click **Print Management**.
3. Close the Administrative Tools window.
4. In Print Management, in the navigation pane, point out the number of printers in the **All Printers** filter. Expand **Print Servers** and point out that **LON-CL1** is the only print server listed.
5. Right-click on **Print Servers**, and then select **Add/Remove Servers**.
6. In the **Add/Remove Servers** dialog box, in the **Add servers** field, type **LON-DC1**, click **Add to List**, and then click **OK**. Point out that the two print servers, LON-CL1 and LON-DC1, are listed in the navigation pane and that the number of all printers in the **All Printers** filter is larger.
7. In Print Management, in the navigation pane, expand **LON-DC1**, and then select **Printers**. In the details node, point out that all the printers on LON-DC1 are listed.
8. Right-click **Printer1**, and then select **Properties**. View the settings on different tabs, and then click **OK**.
9. Right-click **Printer1**, and then select **Deploy with Group Policy**. Point out that you can deploy the printer by using Group Policy, and then click **Cancel**.
10. In the navigation pane, click **All Printers**, and then point out that the printers from LON-CL1 and LON-DC1 are listed.
11. Right-click **Custom Filters**, and then select **Add New Printer Filter**.
12. On the **Filter Name and Description** page, in the **Name** text box, type **Paused printers**. Select **Display the total number of items next to the name of the filter** check box, and then click **Next**.
13. On the **Define a filter** page, expand the **Field** drop-down list box, and point out some of the available options, especially the Queue Status and Jobs In Queue option. Students should understand how those options could be helpful in troubleshooting scenario.
14. Select **Queue Status**.
15. In the **Condition** drop-down list box, select **is exactly**. Expand the **Value** drop-down list box, and discuss some of the available options. Select **Paused**, and then click **Next**.
16. On the **Set Notifications (Optional)** page, explain the two notification options, and then click **Finish**.
17. In Print Management, in the navigation pane, select **Paused printers**. Point out the list of the paused printers that display in the **Details** pane, and the number of paused printers. Currently, only **Printer1** and **Printer3** should be paused.
18. In the navigation pane, click **All Printers**, right-click **Printer4**, and then select **Pause Printing**.

19. In the navigation pane, select **Paused printers**, and then point out that **Printer4** was added to the list after you paused it.

## Module Review and Takeaways

### Review Question(s)

**Question:** Can you set permissions only on files on NTFS volumes?

**Answer:** No. You can set permissions on folders and entire volumes, including the root folder. Permissions that you set on folders or volumes are inherited to all content on that volume or in that folder, by default. You can set permissions on NTFS volumes and on ReFS volumes.

**Question:** What could be a reason that a user cannot open files on a share?

**Answer:** There can be many reasons why a user cannot open files on a share, including network connectivity issues, authentication problems, and issues with share and file permissions.

**Question:** In addition to group membership, can you include other user properties in a condition when you are limiting access to files and folders in Windows 10?

**Answer:** No. You can only use group information in conditions when limiting access to files and folders, by default. However, if the domain is configured with additional claims, you can use those claims when you create conditions to limit access.

**Question:** What could be a reason that a user's default printer does not change on the user's laptop when they move between company offices?

**Answer:** The most probable reason is that printers are not deployed by using Group Policy or that there are some issues in Group Policy processing on the user's laptop.

# Lab Review Questions and Answers

## Lab A: Troubleshooting File-Access Issues

### Question and Answers

**Question:** Why was Don able to access the Marketing share, even though he is not member of the Marketing group? How did you resolve the issue?

**Answer:** Don was able to access the share because file permissions were not configured correctly. Permissions were inherited from the E:\ folder, and all users had Read access. You resolved the issue by disabling the inheritance for the E:\Marketing folder, and removing permissions for the Users group.

**Question:** In the second exercise, why were several Marketing users not able to access the Materials subfolder in the Marketing share? How did you resolve the issue?

**Answer:** In the second exercise, file permissions were set to Deny Traverse folder and List folder access. Therefore, the Marketing users were not able to access the folder from File Explorer, because they could not see the folder content. Marketing users could access the folder and work with files at a command prompt, but only if they knew the file names. This is because they could not see the list of the folder's files. You resolved the issue by removing the Deny Traverse folder/Execute file and List folder/read data permissions.

**Question:** In the third exercise, what was the reason that some of the Marketing group users were able to modify the file, yet others could not? How did you resolve the issue?

**Answer:** In the third exercise, you used conditions to limit file access. If users had the user claim **city** with a value of **Seattle**, they were able to modify the file. Otherwise, they could not. You modified the condition by extending it, and you allowed users with user claim **city** with a value of **London** to modify the file.

## Lab B: Troubleshooting Access to Encrypted files

### Question and Answers

**Question:** Why was Adam not able to provide Don with access to his encrypted file in the first exercise?

**Answer:** Users can provide other users with access to their encrypted files only if they already have their public key. Adam was not able to provide Don with access to the encrypted files, because Don did not have his public key in the first exercise.

**Question:** Where can you add a data recovery agent? Additionally, do you need a user's private key to add them as a data recovery agent?

**Answer:** You define data recovery agents in Group Policy. You can add data recovery agents in the domain or local Group Policy. To add a user as a data recovery agent, you only need their public key. However, remember that you should never share a private key should with others.

**Question:** Why was the administrator unable to copy the encrypted files to another computer?

**Answer:** The administrator did not have the appropriate private key to decrypt the files. Therefore, the administrator was not able to copy the encrypted files anywhere, including to another computer.

## Lab C: Troubleshooting Printer Issues

### Question and Answers

**Question:** After you added Don to the Print Users group, why did he have to sign out and sign back in to be able to connect to Printer1?

**Answer:** Information about group membership in the user's security token is updated when a user signs in. After you added Don to a new group, he needed to sign out and sign back in to update his security token and to reflect his membership in the new group.

**Question:** Why were you not able to find a shared color printer in the directory in the first exercise?

**Answer:** In the first exercise, the printer was shared, but it was not listed in the directory. This is the default configuration when you add a printer in Devices and Printers. As soon as you selected the option to list it in the directory, you were able to find it.

**Question:** Why did print jobs that you sent to Printer2 in the second exercise stay in the print queue for a long time?

**Answer:** Printer2 was configured to be available only during 12:00AM and 12:01AM. If you sent print jobs to Printer2 outside of this time, the print job remained waiting in the queue.

**Question:** How did you redirect Printer2 to Printer3 in the second exercise?

**Answer:** You added a new local port to Printer2, and then you pointed it to the Printer3 share, at \\LON-DC1\Printer3.

# Module 10

## **Troubleshooting Resource Access for Clients That Are Not Domain Members**

### **Contents:**

Lesson 2: Configuring and Troubleshooting Work Folders	2
Lab Review Questions and Answers	6

## Lesson 2

# Configuring and Troubleshooting Work Folders

### Contents:

Demonstration: Resolving Synchronization Conflicts with Work Folders	3
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## Demonstration: Resolving Synchronization Conflicts with Work Folders

### Demonstration Steps

1. On LON-DC1, on the taskbar, click the **Windows PowerShell** icon.
2. In Windows PowerShell, type the following cmdlet, and then press Enter:

```
Install-WindowsFeature FS-SyncShareService
```



**Note:** After the feature installs, a warning will display, because Windows automatic updating is not enabled. For the purposes of this lab, ignore the warning.

3. Minimize the Windows PowerShell window.
4. In Server Manager, in the navigation pane, click **File and Storage Services**, and then click **Work Folders**.
5. In the **WORK FOLDERS** section, click **TASKS**, and then click **Refresh**.
6. In the **WORK FOLDERS** section, click **TASKS**, and then select **New Sync Share**.
7. In the New Sync Share Wizard, on the **Before you begin** page, click **Next**.
8. On the **Select the server and path** page, in the **Enter a local path** text box, type **C:\syncshare1**, click **Next**, and then click **OK**.



**Note:** If **LON-DC1** is not listed in the **Servers** section, click **Cancel**. In Server Manager, click **Refresh**, and then repeat this task, beginning with step 5 and completing the remaining steps.

9. On the **Specify the structure for user folders** page, verify that **User alias** is selected, and then click **Next**.
10. On the **Enter the sync share name** page, click **Next** to accept the default sync share name.
11. On the **Grant sync access to groups** page, click **Add**, and in the **Enter the object name to select** text box, type **Marketing**. Click **OK**, and then click **Next**.
12. On the **Specify device policies** page, verify the two available options. Clear the **Automatically lock screen, and require a password** check box, and then click **Next**.
13. On the **Confirm selections** page, click **Create**.
14. On the **View Results** page, click **Close**.
15. In Server Manager, in the **WORK FOLDERS** section, verify that **syncshare1** is listed, and that in the **USERS** section, the user **Adam Barr** is listed.
16. On LON-DC1, on the Start screen, type **iis**, and then click **Internet Information Services (IIS) Manager**.
17. In the Microsoft Internet Information Services (IIS) Manager, in the navigation pane, expand **LON-DC1 (ADATUM\Administrator)**. If a popup window appears, click **No**. Expand **Sites**, right-click **Default Web Site**, and then select **Edit Bindings**.
18. In the **Site Bindings** dialog box, click **Add**.
19. In the **Add Site Binding** dialog box, in the **Type** box, click **https**. In the **SSL certificate** box, click **LON-DC1.adatum.com**, click **OK**, and then click **Close**.
20. Close the IIS Manager.

21. On LON-DC1, in Server Manager, click the **Tools** menu, and then click **Group Policy Management**.
22. In the Group Policy Management Console, in the navigation pane, expand **Forest: Adatum.com**, expand **Domains**, expand **Adatum.com**, and then select the **Marketing** organizational unit (OU).
23. Right-click **Marketing**, and then select **Create a GPO in this domain, and Link it here**. In the **Name** text box, type **Deploy Work Folders**, and then click **OK**.
24. Right-click **Deploy Work Folders**, and then click **Edit**.
25. In the Group Policy Management Editor, under **User Configuration**, in the navigation pane, expand **Policies**, expand **Administrative Templates**, expand **Windows Components**, and then click the **Work Folders** node.
26. In the details pane, right-click **Specify Work Folder settings**, and then click **Edit**.
27. In the **Specify Work Folder settings** dialog box, click **Enabled**. In the **Work Folders URL** text box, type **https://lon-dc1.adatum.com**, select the **Force automatic setup** check box, and then click **OK**.
28. Close the Group Policy Management Editor.
29. Switch to LON-CL1
30. Sign out of LON-CL1.
31. Sign in as **adatum\adam** with the password **Pa\$\$w0rd**.
32. On the toolbar, click the **File Explorer** icon.
33. In the navigation pane, click **Work Folders**. Right-click in the details pane, click **New**, click **Text Document**, and then name the file **On LON-CL1**.
34. Switch to LON-CL4.
35. On LON-CL4, on the taskbar, right-click the **Start** icon and click **Run**.
36. In the Run dialog box, type **\\lon-dc1.adatum.com\certenroll**
37. In the Enter Network credentials dialog box, enter the user name as **administrator@adatum.com** and the password as **Pa\$\$w0rd**. Click **OK**.
38. In the certenroll window, double click on **LON-DC1.Adatum.com\_AdatumCA.crt**
39. On the Open File - Security Warning dialog box, click **Open**
40. On the Certificate dialog box, click **Install Certificate**
41. On the Certificate Import Wizard, click **Local Machine** and click **Next**.
42. On the User Account Control dialog box, click **Yes**.
43. On the Certificate Store page click **Place all certificates in the following store** and click **Browse**.
44. On the Select Certificate Store page, click **Trusted Root Certification Authorities** and click **OK**.
45. On the Certificate Store page click **Next**.
46. On the Certificate Import Wizard page, click **Finish**.
47. Restart LON-CL4
48. Sign in to LON-CL4 as Admin with the password Pa\$\$w0rd.
49. On LON-CL4, on the taskbar, right-click the **Start** icon, and then click **Control Panel**.
50. In Control Panel, in the **Search Control Panel** text box, type **work**, and then click **Work Folders**.
51. On the **Manage Work Folders** page, click **Set up Work Folders**.

52. On the **Enter your work email address** page, click **Enter a Work Folders URL instead**.
53. On the **Enter a Work Folders URL** page, in the **Work Folders URL** text box, type **https://lon-dc1.adatum.com**, and then click **Next**.
54. In the **Windows Security** dialog box, in the **User name** text box, type **adatum\adam**, and in the **Password** text box, type **Pa\$\$w0rd**, and then click **OK**.
55. On the **Introducing Work Folders** page, review the local Work Folders location, and then click **Next**.
56. On the **Security policies** page, select the **I accept these policies on my PC** check box, and then click **Set up Work Folders**.
57. On the **Work Folders has started syncing with this PC** page, click **Close**.
58. On the **Work Folders** page, verify that the **On LON-CL1.txt** file displays.
59. On LON-CL4, in Work Folders, right-click in the details pane, click **New**, click **Text Document**, and then in the **Name** text box, type **On LON-CL4**.
60. Switch to LON-CL1.
61. On LON-CL1, in **Work Folders**, verify that only the **On LON-CL1** file displays.



**Note:** Work Folders synchronizes every 10 minutes by default. However, you also can trigger synchronization manually.

62. In the File Explorer window, in the navigation pane, right-click **Work Folders**, and then click **Sync Now**.
63. Press F5 to refresh the view, and then verify that both files, **On LON-CL1.txt** and **On LON-CL4.txt**, display in the details pane.
64. On the taskbar, right-click the **Start** button, and then click **Network Connections**.
65. Right-click **Ethernet**, and then click **Disable**. In the **User Account Control** dialog box, in the **User name** text box, type **Administrator**. In the **Password** text box, type **Pa\$\$w0rd**, and then click **Yes**.
66. On LON-CL1, in **Work Folders**, double-click the **On LON-CL1.txt** file. The file opens in Notepad.
67. In Notepad, type **Modified offline**.
68. Close Notepad, and then click **Save**.
69. In **Work Folders**, right-click in the details pane, click **New**, click **Text Document**, and then name the file **Offline LON-CL1**.
70. On LON-CL4, in **Work Folders**, double-click the **On LON-CL1.txt** file. The file opens in Notepad.
71. In Notepad, type **Online modification** close Notepad, and then click **Save**.
72. On LON-CL1, in the Network Connections window, right-click **Ethernet**, and then click **Enable**.
73. In the **User Account Control** dialog box, in the **User name** text box, type **Administrator**, and in the **Password** text box, type **Pa\$\$w0rd**, and then click **Yes**.
74. Switch to **Work Folders**, and then verify that files display in the details pane, including **On LON-CL1** and **On LON-CL1-LON-CL1**.



**Note:** Because you modified the file at two locations, a conflict occurred, and one of the copies was renamed.

## Lab Review Questions and Answers

### Lab: Troubleshooting Resource Access for Clients That Are Not Domain Members

#### Question and Answers

**Question:** You are configuring Device Registration for adatum.com. What is the FQDN of the address that devices connect to when performing registration?

**Answer:** The device connects to deviceregistration.adatum.com when performing device registration.

**Question:** Users at A. Datum have UPNs that differ from their email address. Which should the user provide when performing Device Registration?

**Answer:** Users should provide their UPN when performing Device Registration. However, when you remember, particularly when troubleshooting Device Registration, that users may be confused and use their email address instead. This will cause issues with Device Registration.

# Module 11

## Troubleshooting Applications

### Contents:

Lesson 1: Troubleshooting Desktop App Installation Issues	2
Lesson 2: Troubleshooting Desktop Apps	5
Lesson 3: Managing Universal Windows Apps	9
Lesson 4: Troubleshooting Access to Company Web Applications	11
Lab Review Questions and Answers	13

## Lesson 1

# Troubleshooting Desktop App Installation Issues

### Contents:

Question and Answers	3
Resources	4
Demonstration: Controlling Desktop App Installation by Using AppLocker	4

## Question and Answers

**Question:** Which tool in the Windows Assessment and Deployment Kit can you use to generate an inventory of installed applications in your company?

- User State Migration Tool (USMT)
- Volume Activation Management Tool (VAMT)
- Windows Assessment Toolkit
- Windows Preinstallation Environment (Windows PE)
- ACT

**Answer:**

- User State Migration Tool (USMT)
- Volume Activation Management Tool (VAMT)
- Windows Assessment Toolkit
- Windows Preinstallation Environment (Windows PE)
- ACT

**Question:** Which method do you use in your company to deploy software?

**Answer:** Answers will vary. However, they should include the methods discussed in the lesson, including Group Policy, Microsoft System Center Configuration Manager, Microsoft Intune, virtualized applications, remote applications, and inclusion in the Windows operating system image.

## Discussion: Desktop App Deployment Issues

**Question:** What are some of reasons that a desktop app deployment or installation might fail?

**Answer:** Some of reasons that a desktop app deployment or installation might fail include:

- Insufficient permissions. Standard users are unable to perform manual installations of applications, because they do not have the necessary permissions to modify system files. Automated installations avoid this problem by installing applications on the local system with administrative permissions.
- Missing dependencies. Many applications require additional software—such as operating system features—to function. For example, many applications need to run on a specific version of Microsoft .NET Framework.
- Application is not compliant with UAC. UAC in Windows 10 runs all processes with standard user permissions, even for administrative users. Applications must request elevation to administrative permissions. Earlier applications designed for the Microsoft Windows XP operating system were developed prior to UAC, and do not request the elevated permissions required for installation. In some cases, UAC recognizes the problem and elevates permissions automatically, but not in all cases.
- AppLocker rules prevent installation. *AppLocker* is a Windows feature that is designed to help control software installation and execution in Windows 10. You can configure AppLocker to enable only specific applications to install.
- Licensing issues. Most desktop apps require a user license. You might encounter problems that result in installation failure with the licensing process, or with the required license keys.

## Resources

### What Is Office 365?

 **Additional Reading:** For more information, refer to Office 365: Office when and where you need it: <http://aka.ms/r7rbkl>

 **Additional Reading:** For more information, refer to Download the Office 2016 Deployment Tool: <http://aka.ms/eu2jro>

 **Additional Reading:** For more information refer to Office 365: Office when and where you need it: <http://aka.ms/r7rbkl>

### Troubleshooting Windows Installer Issues

 **Additional Reading:** For more information, refer to Released Versions of Windows Installer: <http://aka.ms/bp60pk>

## Demonstration: Controlling Desktop App Installation by Using AppLocker

### Demonstration Steps

#### Create a new Windows Installer rule

1. On LON-CL1, click the **Windows** button, type **gpedit.msc**, and then press **Enter**.
2. In the Local Group Policy Editor window, expand **Computer Configuration**, expand **Windows Settings**, and then expand **Security Settings**.
3. Expand **Application Control Policies**, and then double-click **AppLocker**.
4. Click **Windows Installer Rules**, right-click **Windows Installer Rules**, click **Create New Rule**, and then click **Next**.
5. On the **Permissions** page, click **Deny**, and then click the **Select** button.
6. In the **Select User or Group** dialog box, in the **Enter the object names to select (examples)** text box, type **Sales**. Click **Check Names**, click **OK**, and then click **Next**.
7. On the **Conditions** page, click **Path**, and then click **Next**.
8. On the **Path** page, click **Browse Files**.
9. In the **Open** dialog box, in the **File name** text box, type **\\lon-dc1\apps\XmlNotepad.msi**, and then click **Open**.
10. On the **Path** page, click **Next**.
11. On the **Exceptions** page, click **Next** again.
12. On the **Name and Description** page, click **Create**.
13. When prompted to create default rules, click **Yes**.
14. Close Local Group Policy Editor.

#### Completion steps

- After you have completed the practice session, leave the virtual machines running for the next practice session.

## Lesson 2

# Troubleshooting Desktop Apps

### Contents:

Question and Answers	6
Demonstration: Resolving a Desktop App Compatibility Issue By Using ACT	6

## Question and Answers

**Question:** How can you troubleshoot Office 365 issues? (Select all that apply)

- Ensure the correct Office product is installed.
- Ensure that the Active Directory Domain Services (AD DS) user has been issued a license.
- Ensure that the Azure AD user has been issued a license.
- Run the ospp.vbs script to check for Internet connectivity.
- Run the ospp.vbs script to check for licensing information.

**Answer:**

- Ensure the correct Office product is installed.
- Ensure that the Active Directory Domain Services (AD DS) user has been issued a license.
- Ensure that the Azure AD user has been issued a license.
- Run the ospp.vbs script to check for Internet connectivity.
- Run the ospp.vbs script to check for licensing information.

**Question:** Have you used the Compatibility Administrator or Standard User Analyzer tools to create application compatibility fixes?

**Answer:** Answers will vary.

## Demonstration: Resolving a Desktop App Compatibility Issue By Using ACT

### Demonstration Steps

#### Identify compatibility issues

1. Sign out of LON-CL1.
2. Sign back in to LON-CL1 as **Adatum\Alan** with the password **Pa\$\$w0rd**.
3. On the desktop, on the taskbar, click the **File Explorer** icon.
4. Navigate to **C:\Program Files (x86)\StockViewer** and then double-click **StockViewer**.
5. In the **Permission denied** dialog box, click **OK**.
6. On the **Stock Viewer** toolbar, click **Trends**.
7. In the **Error** dialog box, click **OK**.
8. On the **Tools** menu, click **Options**.
9. In the **Stock Viewer** dialog box, click **Continue**.
10. On the **Tools** menu, click **Show Me a Star**.
11. In the **Unsupported Version** dialog box, click **OK**.
12. Close **Stock Viewer**.
13. If a Program Compatibility Assistant dialog box opens, click **This program ran correctly**.
14. In **File Explorer**, right-click **StockViewer**, and then click **Run as administrator**.
15. In the **User Account Control** dialog box, provide the following credentials, and then click **Yes**:
  - User name: **Adatum\Administrator**

- Password: **Pa\$\$w0rd**
16. On the **Stock Viewer** toolbar, click **Trends**.
  17. On the **Tools** menu, click **Options**, and then click **OK**.
  18. On the **Tools** menu, click **Show Me a Star**, and then click **OK**.
  19. Close **Stock Viewer**, and then sign out of LON-CL1.

### Create a compatibility fix

1. Sign in to LON-CL1 as **Adatum\Administrator** with the password **Pa\$\$w0rd**.
2. Click the **Windows** button, and then click **All apps**.
3. Click **Windows Kits**, and then click **Compatibility Administrator (32-bit)**.
4. In the **Compatibility Administrator (32-bit) – New Database (1) [Untitled\_1]\*** dialog box, right-click **New Database(1) [Untitled\_1]\***, and then click **Rename**.
5. Type **AdatumACT**, and then press Enter.
6. In the **Compatibility Administrator** window, right-click **AdatumACT [Untitled\_1]\***, click **Create New**, and then click **Application Fix**.
7. In the Create New Application Fix Wizard, in the **Name of the program to be fixed** text box, type **StockViewer**, and then click **Browse**.
8. In the Find Binary window, browse to **C:\Program Files (x86)\StockViewer\StockViewer.exe**, and then click **Open**.
9. In the Create New Application Fix Window, click **Next**.
10. On the **Compatibility Modes** page, select the **Run this program in compatibility mode for** check box, click the drop-down list box, and then click **Windows XP**.
11. In the **Additional compatibility modes** section, scroll down, select the **RunAsAdmin** check box, and then click **Next**.
12. On the **Compatibility Fixes** page, click **Next**.
13. On the **Matching Information** page, click **Finish**.
14. In the Compatibility Administrator window, click **Save**.
15. In the Save Database window, browse to **c:\**.
16. In the **File name** text box, type **AdatumACT**, and then click **Save**.
17. Close the Compatibility Administrator window.
18. Sign out of LON-CL1.

### Test the fix

1. Sign in to LON-CL1 as **Adatum\Alan** with the password **Pa\$\$w0rd**.
2. Click the **Windows** button, type **cmd**, right-click **Command Prompt**, and then click **Run as administrator**.
3. In the **User Account Control** dialog box, enter the following credentials, and then click **Yes**:
  - User name: **Adatum\administrator**
  - Password: **Pa\$\$w0rd**
4. At the command prompt, type the following command, and then press Enter:

```
Sdbinst C:\AdatumACT.sdb
```

5. On the desktop, on the taskbar, click the **File Explorer** icon.
6. Navigate to **C:\Program Files (x86)\StockViewer**, and then double-click **StockViewer**.
7. In the **User Account Control** dialog box, enter the following credentials, and then click **Yes**:
  - User name: **Adatum\administrator**
  - Password: **Pa\$\$w0rd**
8. On the **Stock Viewer** toolbar, click **Trends**.
9. On the **Tools** menu, click **Options**.
10. Click **OK** to close the message box.
11. On the **Tools** menu, click **Show Me a Star**, and then click the star.
12. Close the Stock Viewer application.
13. If the Program Compatibility Assistant window opens, click **Yes, this program worked correctly**.

### **Completion steps**

After you have completed the practice session, revert the virtual machines in preparation for the lab:

1. On the host computer, start Hyper-V Manager.
2. In the **Virtual Machines** list, right-click **10982B-LON-CL1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for 10982B -LON-DC1.

## Lesson 3

# Managing Universal Windows Apps

### Contents:

Question and Answers	10
Resources	10

## Question and Answers

**Question:** What is sideloading?

**Answer:** Sideloading is installing Universal Windows apps but not by downloading them from the Windows Store. You install them from an .appx file on the local computer or network.

**Question:** In Windows 10, is there an alternative to sideloading to install Universal Windows apps?

**Answer:** In the Windows 10 Pro, Enterprise, and Education editions, you can access the Windows Store for Business as an alternative to sideloading.

## Resources

### Resolving Issues Related to Universal Windows Apps



**Additional Reading:** For more information, refer to the Apps Troubleshooter Download:  
<http://aka.ms/w0hpmh>

## Lesson 4

# Troubleshooting Access to Company Web Applications

### Contents:

Question and Answers	12
Resources	12

## Question and Answers

**Question:** True or False: Internet Explorer 11 is the default browser in Windows 10 Enterprise.

True

False

**Answer:**

True

False

## Resources

### Internet Explorer Enterprise Mode



**Additional Reading:** For more information refer to Enterprise Mode Site List Manager for Windows 10 download: <http://aka.ms/ugm8g0>

### Troubleshooting Common Microsoft Edge Issues



**Additional Reading:** For more information, refer to Issues that occur when you use the Edge browser with Office 365: <http://aka.ms/ubh8uv>



**Additional Reading:** For more information, refer to Microsoft Edge: <http://aka.ms/qw6aep>

# Lab Review Questions and Answers

## Lab A: Troubleshooting Desktop Apps

### Question and Answers

**Question:** Why did you configure the Application Identity service to start automatically?

**Answer:** If the service is not started, AppLocker policies are not enforced.

**Question:** In the lab, what was the difference between running the application as an administrator and applying the compatibility fix, and why? Discuss the answer in class with the other students.

**Answer:** The compatibility fix changes the compatibility mode to Windows XP, which is required for the application to function correctly in the Windows XP operating system.

**Question:** What are your experiences, if any, with ACT? Discuss your answer in class.

**Answer:** Answers will vary.

## Lab B: Troubleshooting Access to Company Web Applications

### Question and Answers

**Question:** What is a requirement for implementing Windows Store for Business?

**Answer:** Answers might vary, but can include an Azure AD user account, and Windows 10 Pro, Enterprise, or Education editions.

**Question:** How can you create the XML file used for Internet Explorer Enterprise Mode?

**Answer:** Answers might vary, but might include XML Notepad or another XML editor, and the Enterprise Mode Site List Manager that is available from the Microsoft Download Center.

# Module 12

## Maintaining Windows 10

### Contents:

Lesson 1: Managing and Troubleshooting Windows Activation	2
Lesson 2: Monitoring and Troubleshooting Computer Performance	4
Lesson 3: Applying Applications and Windows Updates	7
Module Review and Takeaways	9
Lab Review Questions and Answers	10

## Lesson 1

# Managing and Troubleshooting Windows Activation

### Contents:

Question and Answers	3
Resources	3

## Question and Answers

**Question:** What are some considerations for KMS activation? (Select all that apply)

- ( ) The activation threshold for Windows 10 is 25.
- ( ) The activation threshold for Windows 10 is 10.
- ( ) Windows 10 computers connect to the KMS host by using port 1433.
- ( ) Windows 10 computers connect to the KMS host by using port 1688.
- ( ) The Active Directory schema must be a Windows Server 2012 or newer level to use KMS activation.

**Answer:**

- (√) The activation threshold for Windows 10 is 25.
- ( ) The activation threshold for Windows 10 is 10.
- ( ) Windows 10 computers connect to the KMS host by using port 1433.
- (√) Windows 10 computers connect to the KMS host by using port 1688.
- ( ) The Active Directory schema must be a Windows Server 2012 or newer level to use KMS activation.

## Resources

### Discussion: What Is Activation?



**Additional Reading:** For more information, refer to Windows 10 Enterprise Evaluation  
Download: <http://aka.ms/kb8aoy>

### Troubleshooting Volume Activation



**Additional Reading:** For more information, refer to Slmgr.vbs Options for Volume  
Activation: <http://aka.ms/uoujp3>

## Lesson 2

# Monitoring and Troubleshooting Computer Performance

### Contents:

Question and Answers	5
Resources	5
Practice: Using Performance Monitor	5

## Question and Answers

**Question:** What are the default data collector set templates in Windows 10? (Select all that apply)

- Basic
- Advanced
- System Diagnostics
- System Performance
- WDAC Diagnostics

**Answer:**

- Basic
- Advanced
- System Diagnostics
- System Performance
- WDAC Diagnostics

## Resources

### Performance Monitoring Tools



**Additional Reading:** For more information, refer to Sysinternals Suite: <http://aka.ms/frah6v>



**Additional Reading:** For more information, refer to SQLIO Disk Subsystem Benchmark

Tool: <http://aka.ms/ofoesl>

## Practice: Using Performance Monitor

### Steps

#### Open the Performance Monitor

1. On LON-CL1, click the **Windows** button, type **perfmon**, and then press Enter.
2. In the Performance Monitor window, in the left pane click the **Performance Monitor** node. Point out that only % Processor Time displays by default.

#### Add new values to the chart

1. On the toolbar, click the **plus (+)** symbol to add an additional counter.
2. In the Available counters area, expand **PhysicalDisk**, and then click **% Idle Time**.
3. In the **Instances of selected object** box, click **0 C:**, click **Add**, and then click **OK**.
4. Right-click **% Idle Time**, and then click **Properties**.
5. In the **Color** box, click **green**, and then click **OK**.

#### Create a data collector set

1. In the left pane, expand **Data Collector Sets**, and then click **User Defined**.
2. Right-click **User Defined**, hover over **New**, and then click **Data Collector Set**.
3. In the **Name** text box, type **CPU and Disk Activity**, and then click **Next**.

4. In the **Template Data Collector Set** box, click **Basic**, and then click **Next**.



**Note:** We recommend that you use a template to create a data collector set.

5. Click **Next** to accept the default storage location for the data.
6. Select the **Open properties for this data collector set** option, and then click **Finish**.
7. In the **CPU and Disk Activity Properties** dialog box, on the **General** tab, explain to students that you can configure general information about the data collector set and the credentials that the data collector set uses when it runs.
8. Click the **Directory** tab. Explain that this tab enables you to define information on how the collected data is stored.
9. Click the **Security** tab. Point out that this tab enables you to configure which users can change this data collector set.
10. Click the **Schedule** tab. Show students how this tab enables you to define when the data collector set is active and collecting data.
11. Click the **Stop Condition** tab. Explain to students that this tab enables you to define when data collection stops, based on time or data that is collected. In the **Overall duration** text box, type **30**, and then in the **Units** drop-down list box, click **Seconds**.
12. Click the **Task** tab. Point out that this tab enables you to run a scheduled task when the data collector set stops. You can use this to process the collected data. After reviewing the tab, click **OK**.
13. In the right pane, double-click **CPU and Disk Activity**. Notice that there are three kinds of logs in the right pane:
  - Performance Counter collects data that you can view in Performance Monitor.
  - Configuration records changes to registry keys.
  - Kernel Trace collects detailed information about system events and activities.
14. In the right pane, double-click **Performance Counter**. Notice that all Processor counters are collected, by default.
15. Click **Add**.
16. In the **Available counters** area, click **PhysicalDisk**, click **Add**, and then click **OK**. Notice that all the counters for the PhysicalDisk object are now added, and then click **OK**.
17. In the left pane, right-click **CPU and Disk Activity**, and then click **Start**. Notice the icon for CPU and Disk Activity changes to a play icon.

### Examine a report

1. When the play icon no longer displays, right-click **CPU and Disk Activity**, and then click **Latest Report**.
2. Review the report, which shows the data collected by the data collector set.
3. Leave the Performance Monitor running.

### Completion Steps

- After you have completed the practice session, leave the virtual machines running for the lab.

## Lesson 3

# Applying Applications and Windows Updates

### Contents:

Question and Answers	8
Resources	8

## Question and Answers

**Question:** What servicing option (or options) will you use in your environment? Discuss your answer in class with your fellow students.

**Answer:** Answers will vary. However, most enterprises will use a variety of Current Branch, Current Branch for Business and LTSB. Some might even register as Windows Insiders to gain access to and test upgrades early on in the upgrade process.

**Question:** What servicing options exist in Windows 10? (Select three)

- Current Branch
- Current Branch for Consumers
- Current Branch for Business
- Short-Term Servicing Branch
- LTSB

**Answer:**

- Current Branch
- Current Branch for Consumers
- Current Branch for Business
- Short-Term Servicing Branch
- LTSB

## Resources

### Discussion: Issues with Windows Update



**Additional Reading:** For more information, refer to How to temporarily prevent a Windows or driver update from reinstalling in Windows 10: <http://aka.ms/dbmmuk>

## Module Review and Takeaways

### Review Question(s)

**Question:** If you have problems with your computer's performance, what are three ways to create a data collector set to analyze a performance problem?

**Answer:** You can create a data collector set manually, from counters in the Performance Monitor display, or by using a template.

**Question:** What is the benefit of configuring Windows Update by using Group Policy rather than by using the Settings app?

**Answer:** You can configure more settings through Group Policy than the Settings app. Using Group Policy enables you to apply configuration settings to multiple computers by performing a single action. It also prevents users from overriding the settings.

### Tools

Tool	Use to	Where to find
Slmgr.vbs	Manage and troubleshoot activation.	C:\Windows\System32
Task Manager	View open apps and resource usage.	Windows 10
Resource Monitor	View detailed resource usage.	Windows 10
Performance Monitor	Create alerts and data collector sets to review performance.	Windows 10
Sysinternals tools	Suite of tools for different purposes including troubleshooting.	<a href="http://aka.ms/frah6v">http://aka.ms/frah6v</a>
SQLIO.exe	Tool to test disk performance.	<a href="http://aka.ms/foesl">http://aka.ms/foesl</a>
Microsoft Intune	Manage devices with a cloud-based management tool.	<a href="http://aka.ms/vnb8f6">http://aka.ms/vnb8f6</a>
"Show or hide updates" troubleshooter	Hide unwanted updates.	<a href="http://aka.ms/dbmmuk">http://aka.ms/dbmmuk</a>

## Lab Review Questions and Answers

### Lab: Monitoring and Troubleshooting Performance

#### Question and Answers

**Question:** What was your approach to the scenarios? How did your approach differ from the class?

**Answer:** Answers will vary.

**Question:** In which scenario did you experience the most loss in performance? Which bottleneck has the most influence on a Windows 10 computer? Discuss your answers with the other students.

**Answer:** Answers will vary, but should include scenario 3—memory, and disk.

# Module 13

## Recovering Data and Operating Systems

### Contents:

Lesson 1: File Recovery in Windows 10	2
Lesson 2: Recovering an Operating System	10
Module Review and Takeaways	15
Lab Review Questions and Answers	16

## Lesson 1

# File Recovery in Windows 10

### Contents:

Question and Answers	3
Demonstration: Configuring and Using File History	5
Practice: Using Previous Versions to Recover Files	7

## Question and Answers

**Question:** Which location can File History use to store backup data?

- C:\
- D:\Backup
- E:\
- \\172.16.10.256\Share1
- https://azure.microsoft.com/backup

**Answer:**

- C:\
- D:\Backup
- E:\
- \\172.16.10.256\Share1
- https://azure.microsoft.com/backup

**Question:** You can use the Backup and Restore (Windows 7) tool to retrieve previous versions of files that are stored on an ReFS volume.

- True
- False

**Answer:**

- True
- False

**Question:** You can use the Previous Versions feature only with files that are stored on an NTFS volume.

- True
- False

**Answer:**

- True
- False

## The Importance of File Recovery

**Question:** What would be the simplest way to recover a locally stored document that a user deleted accidentally in Windows 10?

**Answer:** The Previous Versions or File History features are the easiest and most user-friendly methods that you can use to restore previous versions of files.

**Question:** Does Windows 10 include a backup tool?

**Answer:** Yes, Windows 10 includes two backup tools:

- Wbadmin.exe, which is a backup command line tool.
- Backup and Restore (Windows 7), which you can use to schedule backups of individual folders, users' libraries, and a complete Windows 10-based computer.

## What Is File History?

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

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

**Question:** Can you use File History to protect additional folders?

**Answer:** Yes, you can add folders to one of the libraries that File History protects, or create a new library and then add the folders to the new library. Alternatively, you can use Backup options in the Update & Security section in the Settings app. When you do so, File History also protects the folders that you add.

## What Is the Backup and Restore (Windows 7) Tool?

**Question:** Will the Backup and Restore (Windows 7) tool back up a single file automatically in a folder that has multiple documents?

**Answer:** No. You can use the Backup and Restore (Windows 7) tool to perform automatic backups. However, you only can define which folders to include in the backup. You cannot specify individual files.

**Question:** If the backup schedule performs a backup every Sunday at 7:00 P.M., by default, how can you modify the default backup schedule with the Backup and Restore (Windows 7) tool?

**Answer:** You can use the Backup and Restore (Windows 7) tool in Control Panel to configure a simple backup schedule. However, you can be more specific when you edit the triggers property for the AutomaticBackup task in the Task Scheduler tool. For example, you can specify a backup schedule of multiple times per day, or you can provide the precise time to run a backup.

## The Previous Versions Tab

**Question:** What must you configure if you want the Previous Versions tab in File Explorer to list previous versions of files?

**Answer:** You must configure File History, restore points, or both, if you want to populate the Previous Versions tab to list previous versions of files, you must protect those files by using File History or including them in the backup that the Backup and Restore (Windows 7) tool creates.

**Question:** When does the Previous Versions tab include the previous versions of a file that the Backup and Restore (Windows 7) tool backs up?

**Answer:** As soon as the Backup and Restore (Windows 7) tool creates a backup, the previous version is available on the Previous Versions tab. The same is true if File History protects the file. When File History runs, the previous versions of the file become available on the Previous Versions tab.

## Comparing File Recovery Options

**Question:** Can File History create a backup of the protected files and folders if they are stored on a FAT volume?

**Answer:** Yes. Only File History can create backups of protected files that are stored on FAT volumes. The other two tools, the Backup and Restore (Windows 7) tool and Azure Backup, can create backups only if files are stored on an NTFS volume.

**Question:** What are some of the differences between using Azure Backup and File History to recover files in Windows 10?

**Answer:** Windows 10 includes File History, and you must configure it to create backups of protected content. To use the Azure Backup agent, you first must install and configure it on

Windows 10 before you can use it for creating file backups. File History can store backups locally or to a shared folder, while Azure Backup can store backups only to Microsoft Azure. File History can store backups every 10 minutes, while Azure Backup cannot create a backup more often than three times per day.

## Troubleshooting File Recovery Options

**Question:** What is the most probable reason that Previous Versions does not display any previous versions of a file?

**Answer:** Previous Versions only lists available previous versions of a file. If you have not created a backup, no previous version of the file will exist. You first must configure either File History or the Backup and Restore (Windows 7) tool to create a backup. Then Previous Versions will populate with the available file versions.

If backups are created and the file is not protected, the Previous Versions tab for that file will be empty.

**Question:** Can you recover files by using Azure Backup on a Windows 10 computer that does not have Internet connectivity?

**Answer:** No. Azure Backup can recover files only from the backup that is stored in Microsoft Azure. If a computer does not have Internet connectivity, you will not be able to connect to Microsoft Azure and access your backup.

## Demonstration: Configuring and Using File History

### Demonstration Steps

1. In LON-CL1, on the taskbar, click the **File Explorer** icon.
2. In File Explorer, in the navigation pane, expand **This PC**, and then click **Documents**.
3. In the details pane, right-click an empty space, point to **New**, and then click **Text Document**.
4. Name the new text document **Report**.
5. Double-click **Report.txt**, and then in Notepad, in the text document, type **This is a report**.
6. Close Notepad, and then click **Save** to save the changes.
7. On the taskbar, right-click **Start** icon and then click **Control Panel**.
8. In Control Panel window, in **Search Control Panel** text box, type **file**, and then click **File History**.
9. In the **File History** dialog box, in the navigation pane, click **Select drive**.
10. In the **Select Drive** dialog box, click **Add network location**. In the **Folder** box, type **\\LON-DC1\Backup**, click **Select Folder**, and then click **OK**.
11. In the **File History** dialog box, in the details pane, click **Turn on**. In the navigation pane, click **Advanced settings**.



**Note:** Point out the default values.

12. Click **Cancel**.
13. In File Explorer, in the navigation pane, click **Documents**, right-click **Report.txt**, hold the Shift key, click **Delete**, and then click **Yes** to delete the file permanently.
14. In File Explorer, click the **Home** tab, and then click **History**.

15. In the Documents – File History window, right-click **Report.txt**, and then click **Preview**.



**Note:** Point out that you can see the text that you typed earlier.

16. Click the green round button with the arrow to restore the file to the original location.

17. When File Explorer opens, double-click **Report.txt**.



**Note:** Point out that the file has the content that you typed earlier.

18. Close Notepad, and then close File Explorer.

19. In the Report.txt – File History window, to the left of the address box, click the upward-pointing arrow twice.



**Note:** Point out the folders and libraries that **File History** is protecting, and verify that the **Data** folder is currently not among the protected folders.

20. Close the Home – File History window.

21. In File Explorer, in the navigation pane, expand **Local Disk (C:)**, and then click **Data**.

22. In the details pane, right-click **Sales.txt**, click **Properties**, and then click the **Previous Versions** tab.



**Note:** Point out that there are no previous versions available.

23. After reviewing the properties, click **OK**.

24. On the taskbar, in the **I'm Cortana. Ask me anything.** box, type **file**, and then click **File History settings**.

25. In the **Settings** dialog box, in the **Back up using File History** section, click **More options**.

26. In the Backup options window, in the **Back up these folders** section, click **Add a folder**.

27. In the **Folder** box, type **C:\Data**, and then click **Choose this folder**.



**Note:** Point out that the C:\Data folder is added. Show and discuss the other settings, such as backup frequency, how long to keep files, and which folders are excluded.

28. Close the Backup options window.

29. In the **File History** dialog box, click **Run now**.

30. In File Explorer, in the details pane, right-click **Sales.txt**, click **Properties**, and then and then click the **Previous Versions** tab.



**Note:** Notice that there is now one previous version available, which was created when you ran File History.

31. After reviewing the Previous Versions tab, click **OK**.

32. In File Explorer, click the **Home** tab, and then click **History**.
33. In the Sales.txt – File History window, on the left of the address box, click the upward-pointing arrow until the window title changes to **Home – File History**.



**Note:** Point out that the **Data** folder is now among the folders and libraries that **File History** is protecting.

34. Close both the Home – File History and File History windows.

## Practice: Using Previous Versions to Recover Files

### Steps

1. In LON-CL1, on the taskbar, click the **File Explorer**.
2. In File Explorer, in the navigation pane, expand **This PC**. Expand **Allfiles (D:)**, expand **Labfiles**, click **Mod13**, and then in the details pane, double-click **Mod13.bat**.
3. On the taskbar, right-click **Start** icon and then click **Control Panel**.
4. In Control Panel window, in **Search Control Panel** text box, type **file**, and then click **File History**.
5. In the **File History** dialog box, in the navigation pane, click **Select drive**.
6. In the **Select Drive** dialog box, click **Add network location**.
7. In the **Folder** box, type **\\LON-DC1.Adatum.com\Backup**, click **Select Folder**, and then click **OK**.
8. In the **File History** dialog box, in the details pane, click **Turn on**.
9. In File Explorer, in the navigation pane, click **C:\Data**. In the details pane, right-click **Sales.txt**, click **Properties**, click the **Previous Versions** tab, confirm that there are no previous versions available, and then click **OK**.
10. In the navigation pane, right-click **Data**, select **Include in library**, and then select **Documents**.



**Note:** File History now is protecting the Data folder because it protects the Documents library, to which you added the Data folder.

11. In File Explorer, in the navigation pane, click **C:\Reports**. In the details pane, right-click **Report.txt**, click **Properties**, click the **Previous Versions** tab, confirm that there are no previous versions available, and then click **OK**.
12. On the taskbar, in the **I'm Cortana. Ask me anything.** box, type **file**, and then click **File History settings**.
13. In the **Settings** dialog box, in the **Back up using File History** section, click **More options**.
14. In the Backup options window, in the **Back up these folders** section, click **Add a folder**. In the **Folder** box, type **C:\Reports**, click **Choose this folder**, and then close the Backup options window.
15. In the **File History** dialog box, in the File History is on section, click **Run now**.
16. In File Explorer, in the details pane, right-click **Report.txt**, and then click **Properties**, click the **Previous Versions** tab, verify that there is now one previous version, and then click **OK**.
17. In the navigation pane, click **Data**. In the details pane, right-click **Sales.txt**, hold the **Shift** key, select **Delete**, and then click **Yes** to permanently delete the file.

18. In the navigation pane, right-click **Data**, click **Properties**, click the **Previous Versions** tab, and then in the Folder versions section, select **Data**.
19. Click the arrow near the **Restore** button, and then verify that you can restore the previous version either to the original location or to a custom location. Click **Restore**, click **OK**, and then close the File Explorer window that opened.
20. In File Explorer, in the details pane, double-click **Sales.txt**. In Notepad, type **Before restore point** in a new line.
21. Close Notepad, and then click **Save** to save the changes.
22. In File Explorer, in the details pane, right-click **Sales.txt**, click **Properties**, and then click the **Previous Versions** tab. Confirm that there is one previous version, and then click **OK**.
23. On the taskbar, in the **I'm Cortana. Ask me anything.** box, type **backup**, and then click **Backup and Restore (Windows 7)**.
24. In the Backup and Restore (Windows 7) window, click **Set up backup**.
25. In the Set up backup window, click **Save on a network**. In the **Network location** box, type **\\LON-DC1.Adatum.com\Backup**. In the **Username** box, type **Adatum\Administrator**, and in the **Password** box, type **Pa\$\$w0rd**, and then click **OK**, and then click **Next**.
26. On the **What do you want to back up?** page, click **Let me choose**, and then click **Next**.
27. Clear the **Include a system image of drives: System Reserved, (C:)** check box, expand **Local Disk (C:)**, select **Data**, verify that the **Misc** folder is not selected, and then click **Next**.
28. On the **Review your backup settings** page, click **Save settings and run backup**, and then wait until the backup finishes.
29. In LON-CL1, in File Explorer, right-click **Sales.txt**, click **Properties**, click the **Previous Versions** tab, verify that there now are two previous versions, and then click **OK**.



**Note:** The second version was added when the backup was created.

30. Right-click **Sales.txt**, hold the **Shift** key, select **Delete**, and then click **Yes** to permanently delete the file.
31. In the details pane, right-click an empty space, click **Properties**, and then click the **Previous Versions** tab.
32. Click the bottom folder named **Data**, click **Restore**, and then click **OK**.
33. Close the File Explorer window.
34. In File Explorer, in the details pane, double-click **Sales.txt**. Verify that it does not include the text **Before restore point**, since you restored an older version of the file, and then close Notepad.
35. Right-click **Sales.txt**, click **Properties**, and then click the **Previous Versions** tab.
36. On the **Previous Versions** tab, select the top version of **Sales.txt**, click **Restore**, click **Copy and Replace**, click **Finish**, and then click **OK**.



**Note:** If File History runs in the meantime, in step 36 after you click **Restore**, you will need to click **Restore** again and then click **OK** twice.

37. In File Explorer, in the details pane, double-click **Sales.txt**. Verify that it does include the text **Before restore point**, since you restored the version of the file that was created after you added the text, and then close Notepad.
38. In File Explorer, in the navigation pane, click **Misc**.
39. In the details pane, right-click **Temp.txt**, click **Properties**, click the **Previous Versions** tab, confirm that no previous versions are available because the backup did not include the C:\Misc folder, in which the Temp.txt file is located, and then click **OK**.
40. Close File Explorer, close the Backup and Restore (Windows 7) tool, and then close the File History window.

## Lesson 2

# Recovering an Operating System

### Contents:

Question and Answers	11
Demonstration: Exploring Recovery Options	12
Demonstration: Applying a Provisioning Package	13

## Question and Answers

**Question:** Which of the following tools should you not use if you want to recover a Windows 10 computer and preserve the user's data that is stored on drive C?

- Reset this PC
- System Image Recovery
- Startup Repair
- Diskpart.exe
- Go back to the previous build

**Answer:**

- Reset this PC
- System Image Recovery
- Startup Repair
- Diskpart.exe
- Go back to the previous build

**Question:** The System Image Recovery tool is the easiest and fastest tool for repairing startup problems in Windows 10.

- True
- False

**Answer:**

- True
- False

**Question:** Which of the following Windows ADK features are prerequisites for Windows ICD? Keep in mind that more than one answer might be correct. Select all correct answers.

- Deployment Tools
- Windows PE
- User State Migration Tool (USMT)
- Volume Activation Management Tool (VAMT)
- Microsoft SQL Server 2012 Express

**Answer:**

- Deployment Tools
- Windows PE
- User State Migration Tool (USMT)
- Volume Activation Management Tool (VAMT)
- Microsoft SQL Server 2012 Express

## Using the Reset This PC Feature

**Question:** What are the available options for the Reset this PC tool?

**Answer:** If you start the Reset this PC tool, you can choose between **the Keep my files** and **Remove everything** options. If you select **Remove everything**, you can choose between the **Just remove my files** and **Fully clean the drive** options. If a computer has multiple partitions, and you opt to remove everything, you also must select whether you want to remove all files from all drives or remove all files only from the drive on which Windows 10 is installed.

**Question:** Can you access the Reset this PC option on a Windows 10 computer that does not start?

**Answer:** Yes. In this scenario, you can start the computer from Windows 10 media, select the **Repair my computer** option, and access the **Reset this PC** option from Windows RE.

## Using the System Image Recovery Option

**Question:** What is a prerequisite to be able to use the System Image Recovery tool?

**Answer:** The System Image Recovery tool uses a system image to recover a Windows 10 computer. To be able to use this tool, you must have created a system image and it must be available if you want to use it for recovery.

**Question:** How can you create a system image?

**Answer:** You can create a system image by clicking the **Create system image** option in the Windows Backup and Restore (Windows 10) tool.

**Question:** Can you perform a system image recovery by using a system image that is stored on a network share?

**Answer:** Yes, you can use a system image from a network share to perform a system image recovery. If necessary, you can add a network adapter driver to the Re-image your computer wizard so that you can access a network share.

## Demonstration: Exploring Recovery Options

### Demonstration Steps

1. In LON-CL1, on the taskbar, in the **I'm Cortana. Ask me anything.** box, type **service**, and then click **View local services**.
2. In the Services window, click the **Status** column to sort the services. Scroll down while pointing out that many (more than 70) services are running, and then close Services.
3. On the taskbar, in the **I'm Cortana. Ask me anything.** box, type **advanced**, and then click **Change advanced startup options**.
4. On the **UPDATE & SECURITY** page, in the **Advanced startup** section, click **Restart now**, and then wait a few seconds.
5. On the **Choose an option** page, discuss the available options, and then click **Troubleshoot**.
6. On the **Troubleshoot** page, point out that the **Reset this PC** option is available, and then click **Advanced options**.
7. On the **Advanced options** page, discuss the available options, click **Startup Settings**, and then click **Restart**.
8. Discuss the available **Startup** options, and then press **4** to select **Enable Safe Mode**.
9. When the computer starts, type **Pa\$\$w0rd** as the password for **Adatum\Administrator**, and then press Enter.
10. In This app can't open dialog, click Close.

11. Point out that the words “Safe Mode” display in all four corners of the desktop. Right-click the **Start** icon, and then click **Device Manager**.
12. In Device Manager, right-click **Generic PnP Monitor**, and then click **Properties**. Point out that the status of the device is not available when running in safe mode.
13. Click the **Driver** tab, and then point out that you can still update or uninstall drivers while running in safe mode. Mention that you also can perform a driver roll back, if a previous version of the driver exists, and then click **OK**.
14. Right-click the **Start** icon, and then click **Computer Management**.
15. In Computer Management, in the navigation pane, expand **Services and Applications**, and then click **Services**.
16. In the details pane, click the **Status** column to sort the services. Scroll down, and point out that only a few services (less than 30) are running when you are in Safe Mode. Recall that more than 70 services were running in normal mode.
17. In 10982B-LON-CL1, on localhost – Virtual Machine Connection window, on the **Media** menu, point to **DVD Drive**, and then click **Insert Disk**.
18. In the **Open** dialog box, in the **File name** box, type **C:\Program Files\Microsoft Learning\10982\Drives\Win10Ent\_Eval.iso**, and then click **Open**. If virtual machines are extracted to a drive other than drive C, use that drive letter instead.
19. On the taskbar, right-click **Start** icon, select **Shut down or sign out** and then click **Restart**.
20. When you see the **Press any key to boot from CD or DVD** message, press the spacebar, and then wait while Windows Setup loads.
21. When prompted, in the **Windows Setup** dialog box, click **Next**.
22. On the next **Windows Setup** page, click **Repair your computer**.
23. On the **Choose an option** page, click **Troubleshoot**.
24. On the **Troubleshoot** page, click **Reset this PC**, click **Keep my files**, and then click **Windows 10**. Point out that you are not asked for user credentials, because you started computer from DVD.
25. The Reset this PC option takes considerable time to finish. Therefore, you do not choose this option, and click **Cancel**.
26. On the **Choose an option** page, click **Troubleshoot**.
27. On the **Troubleshoot** page, click **Advanced options**.
28. On the **Advanced options** page, click **System Restore**, and then click **Windows 10**.
29. In the System Restore window, click **Next**. Point out that you can view and use restore points in System Restore, even when you start the computer from the installation media.

## Demonstration: Applying a Provisioning Package

### Demonstration Steps

1. On LON-CL2, click **Start**, and then click **All Apps**. Scroll down the list, select and expand **Windows Kits**, scroll down within **Windows Kits**, and then click **Windows Imaging and Configuration Designer**.
2. In Windows Imaging and Configuration Designer, click the **Open** icon.
3. In the **Open** dialog box, in the navigation pane, click **This PC**. In the details pane, double-click **Floppy Disk Drive (A:)**, click **Provisioning Package.icdproj.xml**, and then click **Open**.

4. In Windows Imaging and Configuration Designer, in the navigation pane, expand **Deployment assets**, and then point out some of the assets that you can add to the deployment.
5. In the navigation pane, expand **Runtime settings**, and then select **Accounts**. In the details pane, point out the values for **ComputerName**, **DomainName**, and **AccountOU**, and then review why you would use these settings.
6. In the navigation pane, expand **Users**, and then click **UserName: LocalUser**. Explain that **LocalUser** will be created on the computer on which the provisioning package runs.
7. Close Imaging and Configuration Designer, and then click **Don't save**.
8. In the 10982B-LON-CL2 window, click **Media**, select **Diskette Drive**, and then click **Eject Transfer.vfd**.
9. In the 10982B-LON-CL4 window, click **Media**, select **Diskette Drive**, and then click **Insert Disk**.
10. In the **Open** dialog box, in the navigation pane, expand **Computer**, and then click **Local Disk (C:)**. In the details pane, double-click **Program Files**, double-click **Microsoft Learning**, double-click **10982**, double-click **Drives**, select **Transfer.vfd**, and then click **Open**.
11. On LON-CL4, on the taskbar, click the **File Explorer** icon.
12. In File Explorer, in the navigation pane, right-click **This PC**, and then click **Properties**. Point out the values for the computer name, domain, and workgroup settings.
13. Close the System window.
14. In File Explorer, in the navigation pane, right-click **This PC**, and then click **Manage**.
15. In Computer Management, in the navigation pane, expand **Local Users and Groups**, and then click **Users**. In the details pane, point out that **LocalUser** is not present.
16. Close Computer Management.
17. In File Manager, in the navigation pane, click **This PC**. In the details pane, double-click **Floppy Disk Drive (A:)**, double-click **Provisioning Package.ppkg**, and then in the **User Account Control** dialog box, click **Yes**.
18. Point out the note on the **Is this package from a source you trust** page, and then click **Yes, add it**. Explain that the provisioning package is applying.
19. Wait until LON-CL4 is restarted, and then sign in as user **Admin** with the password **Pa\$\$wOrd**.
20. On LON-CL4, on the taskbar, click the **File Explorer** icon.
21. In File Explorer, in the navigation pane, right-click **This PC**, and then click **Properties**. Point out the new values for the computer name, domain, and workgroup settings. Verify that the computer name is **MarketingComp**, followed by two numbers, and that the computer is a member of the Adatum.com domain. Remind students that this was defined in the provisioning package.
22. Close the System window.
23. In File Explorer, in the navigation pane, right-click **This PC**, and then click **Manage**.
24. In Computer Management, in the navigation pane, expand **Local Users and Groups**, click **Users**, and then in the details pane, point out that **LocalUser** is present.

## Module Review and Takeaways

**Question:** How can you access Windows RE tools?

**Answer:** There are several different ways to access Windows RE tools. If Windows 10 is running, you can access Windows RE by:

- Changing the advanced startup options in Windows 10.
- Pressing the Shift key while selecting the **Restart** option.
- Restarting the computer by running the **shutdown.exe /r /o** command.

If Windows 10 is not running, you can start the computer from Windows 10 media, and then select the **Repair my Computer** option to access the Windows RE tool.

**Question:** Do you need to configure File History to be able to use the Previous Versions feature in Windows 10?

**Answer:** The Previous Versions feature has two sources for previous versions of files and folders. The first source is File History and the second source is the backups that the Backup and Restore (Windows 7) tool creates. If you do not configure File History, but the Backup and Restore (Windows 7) tool backs up the files and folders, you still will be able to use the Previous Versions feature.

**Question:** What are the prerequisites to be able to use Azure Backup with Windows 10?

**Answer:** To be able to use Azure Backup with Windows 10 you must have a Microsoft Azure subscription, and the Windows 10 computer that you want to back up must have Internet connectivity. You also must install the Azure Backup agent and configure it with a backup vault into which it will store backups.

**Question:** Can you preserve computer configuration and user data if you use the Reset this PC feature?

**Answer:** Yes. Based on the options that you select, the Reset this PC tool can remove all of the settings and data, and perform a clean installation of Windows 10. However, if you select the **Keep my files** option, Reset this PC will preserve the computer configuration and user data, and only reinstall Windows 10.

**Question:** If a user is not an administrator, can they use the System Image Recovery tool from the recovery environment?

**Answer:** If a user starts the recovery environment from a computer that is running Windows 10 in the normal mode by changing the advanced startup options, the user must provide administrative credentials to run the System Image Recovery tool. However, if the user starts the recovery environment from the Windows 10 installation media, they can use the System Image Recovery tool without providing administrative credentials.

# Lab Review Questions and Answers

## Lab A: Recovering Data

### Question and Answers

**Question:** What was the reason that you were not able to restore a previous version of the Sales.txt document?

**Answer:** The previous version of the Sales.txt document was created, but it was stored on the network share. You could not restore a previous version of the document because the LON-CL1 computer did not have network connectivity.

**Question:** Can network problems cause issues with File History if it stores backups of the protected folders to a second local disk?

**Answer:** No. If you use a second local disk to store File History backups, network connectivity does not affect its functionality. In the lab example, because the File History backup is on a network share, the availability of File History and the Previous Versions feature depends on network connectivity.

**Question:** You have single disk with NTFS volumes C and D on your Windows 10 computer. Can you configure File History to store backups on the D volume?

**Answer:** No. File History cannot store backups of the protected folders to the same disk, even if the disk has multiple volumes. You can configure File History to store backups on different disks, such as on a removable disk or a network share.

## Lab B: Provisioning Computers to Comply with Company Standards

### Question and Answers

**Question:** Is there any other way to configure LON-CL4 to comply with company policy other than using a provisioning package?

**Answer:** Yes. A provisioning package provides an automated way to configure a Windows 10 computer. For example, you can rename the computer and add it to the domain. However, you could perform the same configuration in other ways, including by using scripting or performing it manually.

**Question:** Do you need to install Windows Imaging and Configuration Designer on a computer on which you want to apply a provisioning package?

**Answer:** No. You use Windows ICD to create a provisioning package. After you create a provisioning package, you can run it on any Windows 10 computer, regardless of whether it has Windows ICD installed. For example, in the lab, Windows ICD was not installed on LON-CL4, and you ran a provisioning package on that computer.

**Question:** How did you transfer a provisioning package in the lab from LON-CL2 to LON-CL4?

**Answer:** In the lab, you transferred a provisioning package by using a virtual floppy disk, because the provisioning package was small. You can transfer a provisioning package in different ways, such as by using removable media, a network share, cloud storage, or as an email attachment.