Lesson 2: Understanding Operating System Configurations

# Learning Objectives

Students will learn to:

* Understand user accounts
* Configure and optimize User Account Control (UAC)
* Configure Windows 10
* Configure Hyper-V

# Objective Domain Skills

* Configuring User Account Control (UAC) 3.2
* Configuring Control Panel options 1.1
* Configuring desktop settings 1.2
* Understanding libraries 4.4

# Lesson Summary — Lecture Notes

Begin Lesson 2 with a discussion of user accounts and User Account Control (UAC). A user account is a collection of information that defines the actions that can be taken on a computer and which files and folders can be accessed (rights, policies, and permissions). The three types of default accounts in Windows 10 are Administrator, Standard user, and Guest. Describe the differences, and when each is appropriate for use. Also discuss elevated permissions.

User Account Control (UAC) is a technology used with Windows Vista, 7, 8/8.1, and 10 to enhance system security by detecting and preventing unauthorized changes to the system. Some applications might not run properly using a standard user credential if the application needs to access restricted files or registry locations. Also cover UAC prompts and levels:

* Always notify me
* Notify me only when programs try to make changes to my computer
* Notify me only when programs try to make changes to my computer (do not dim my desktop)
* Never notify me

Windows 10 is a robust and flexible operating system that is made to work on and support a wide range of hardware. For example, Windows 10 can work on a tablet, a laptop, or a desktop computer. Windows 10 also supports mobile devices so that you can take your computer or device with you while accessing your files and programs.

Next, discuss the desktop—the main screen area that you see when you first start the computer and log on to Windows. Like the top of an actual desk, it is where you perform your work by opening and running one or more applications. Introduce the Recycle Bin, which is used to recover files that have been previously deleted.

In Windows 10, many of the Windows configurations are done within the Settings application. These settings can be accessed by clicking the Start button and clicking Settings.

The next section introduces Control Panel, which prior to Windows 10 was the primary graphical utility to configure the Windows environment and hardware devices. In Windows 10, it can be accessed by right-clicking the Start button and choosing Control Panel. Eight categories are listed in Control Panel; each category includes a top-level link, and under this link are several of the most frequently performed tasks for the category.

Some of the most important configuration settings for a user are the system settings within Control Panel. These include gathering generation information about your system, changing the computer name, adding the computer to a domain, accessing the Device Manager, configuring remote settings, configuring startup and recovery options, and configuring overall performance settings.

Next, you'll cover changing the date and time. One of the easiest but most essential Windows tasks is making sure that the computer has the correct date and time, which is essential for logging purposes and for security. If a secure packet is sent with the wrong date or time, the packet may be automatically denied because the date and time are used to determine whether the packet is legitimate.

Then you'll configure the desktop and taskbar settings. Windows desktop settings is a broad term that refers to many different settings you can configure to personalize Windows, such as the Windows theme, the desktop background, mouse clicks and pointer speeds, gadgets, shortcuts, and more. All settings are customizable—choosing the right mix will make your Windows experience more enjoyable and more productive.

In the next section, students will learn how to configure the Start menu. Windows 10 uses the Modern UI style that includes the Start menu. The Start menu contains a list of applications and desktop programs along with pinned tiles. The pinned tiles have different sizes and colors. In addition, you can pin folders to the new Start screen.

File Explorer, previously known as Windows Explorer, is the file manager that is included with Windows operating systems. It provides a graphical user interface to access and manage the file system, including opening files, moving and copying files, and deleting files.

Next, you'll configure user profiles. When a user logs on to Windows, the user has a user state that is captured in the user’s profile. A user state is the collection of data and settings that pertain to each user. It describes settings and data that determine the user environment. The user state separates the user environment, files, and settings from the files and settings that are specific to the installed operating system and those that belong to installed applications. When a user logs on, the user state is kept separate from other users on the same computer. The user state includes users’ data and their application or operating system configuration settings.

You can change the location of your personal folders, such as Documents, Music, or Pictures, by specifying a different folder location. Therefore, if one or more of these personal folders grow or the primary drive becomes filled up, you can move the location to another drive or a shared network folder.

Libraries were introduced in Windows 7. A library looks like an ordinary folder, but is a virtual folder that simply points to files and folders in different locations on a hard disk, network drive, or external drive. In Windows 10, a library is a virtual folder that can display content from different locations (folders, for example) on your computer or an external drive. You access libraries in File Explorer, just like you do files and folders.

Next, you'll configure display settings. Windows 10 has several display settings. The settings you’ll most likely modify include the resolution, color depth, and font size. You can modify each setting to suit a particular application.

In Windows 10, simple power management settings can be accessed by opening Settings and clicking System > Power & Sleep, as shown in Figure 2-22. The screen settings allow you to specify how long the screen will remain on if you are not actively using your computer when the computer is using battery power or when it is using AC power (plugged in). The sleep settings will specify how long the computer will operate before going into sleep mode when the computer is using battery power or when it is using AC power.

Microsoft has built many features into Windows 10 that work with assistive technologies or as stand-alone features that improve the user experience for people who are deaf or visually impaired. Most accessibility features can be configured in the Ease of Access Center.

Next, students will learn that shortcuts are icons you can click to start a program or go to a location without requiring any extra steps. Shortcuts save time because you don’t have to use several keystrokes or click several menus or commands.

In the last part of the lesson, students will learn how to configure Hyper-V. Client Hyper-V enables you to create and manage virtual machines (VMs) using a virtual switch. These VMs can be used to test your applications for compatibility with new operating systems, allow you to run applications written for older versions of Windows, or isolate an application. The physical machine that Hyper-V and the virtual machines run on is often referred to as the host.

A virtual machine (VM) is a self-contained, isolated unit that can be easily moved from one physical computer to another, runs its own operating system, and includes its own virtual hardware configuration. Next, you will explain that in order to set up a test network that includes multiple systems, you need to configure a virtual switch using the Virtual Switch Manager. This enables your VMs to communicate with each other and access your physical network for internet access.

You'll close out the lesson by explaining that a virtual disk is a file that represents a physical disk drive to a guest operating system running on a virtual machine. The user can install a new operating system onto the virtual disk without repartitioning the physical disk or rebooting the host machine. In Hyper-V, a checkpointis a captured image of the state, data, and hardware configuration of a VM at a particular moment in time.

TAKE NOTE: In the OneNote portion of this course, we include a blank space between the backward slashes that indicate the beginning of a network path (\\) and a server address (such as server\share\folder), to prevent them from becoming live links. In actual usage, there would be no space after the slashes.

# Key Terms

**accessibility options** – Options that help users who are deaf or visually impaired use Windows more easily and efficiently. The primary tools include Magnifier, Narrator, On-Screen Keyboard, and High Contrast.

**Administrative Tools** **–** A folder in Control Panel that contains tools for system administrators and advanced users.

**Administrator** **account** **–** An account that provides the broadest permissions and, therefore, the most control over the computer.

**checkpoint** **–** A captured image of the state, data, and hardware configuration of a VM at a particular moment in time.

**Control Panel –** A Windows feature that provides access to the primary tools and utilities used to manage devices, settings, and system behaviors. Control Panel includes items used for system administration, Windows Update, displays, and more.

**desktop –** The main screen area that you see when you first start the computer and log on to Windows.

**differencing virtual disk** **–** A virtual disk that is associated with another virtual hard disk in a parent-child relationship.

**Documents library –** A library that stores word-processing documents, spreadsheets, and similar files.

**domain –** A logical unit of computers that define a security boundary, and it is usually associated with Microsoft’s Active Directory Domain Services (AD DS).

**Dynamic Memory** **–** A type of memory that reallocates memory automatically to the VM from a shared memory pool as its demands change. If a virtualized server needs more memory, Hyper-V can increase the memory allocated to the system, and then reduce it when the traffic subsides.

**Ease of Access Center –** A feature in Windows that enables users to configure accessibility options; also provides access to the speech recognition feature.

**elevated permissions –** In Windows, generally refers to administrative-level permissions.

**File Explorer** **–** Previously known as Windows Explorer, the file manager that is included with Windows operating systems. It provides a graphical user interface to access and manage the file system, including opening files, moving and copying files, and deleting files.

**Guest account –** An account with few permissions and no password that allows a user to access a computer without requiring a unique user account. The Guest account is disabled by default and, when enabled, is intended for a user who needs temporary access to a computer.

**hibernate mode –** A mode that saves all computer operational data on the hard disk to a hibernation file (Hiberfil.sys) before turning the computer completely off.

**host** **–** The physical machine that Hyper-V and the virtual machines run on.

**hybrid mode –** A combination of sleep mode and hibernate mode. Hybrid mode writes information to the hibernation file when the computer enters a sleep state, which allows for a fast wake time. If the system loses power completely and suddenly, you can restore operations from the hibernation file.

**Hyper-V Manager** **–** The management console for creating and managing your VMs and setting up your test network.

**Hyper-V Virtual Machine Connection** **–** Used when working with a single VM that you have already created. It is very similar to the Remote Desktop Connection utility.

**hypervisor** **–**Sometimes called a virtual machine monitor (VMM), the software or hardware that is responsible for managing the computer’s physical hardware and creating multiple virtualized hardware environments, called virtual machines.

**Jump List** **–** The thumbnail preview that appears when you point to an icon in the taskbar to see a thumbnail preview of the window.

**library** **–** A virtual folder that can display content from different locations (folders, for example) on your computer or an external drive. A library looks like an ordinary folder but simply points to files and folders that are located elsewhere.

**live preview –** A view that appears when youpress and hold the Alt key and then press the Tab key. Pressing Tab repeatedly switches between windows for each open program.

**live tile –** A tile in Windows 10 that contains dynamic content.

**Microsoft Management Console (MMC**) **–** One of the primary administrative tools used to manage Windows and many of the network services provided by Windows. It provides a standard method to create, save, and open the various administrative tools provided by Windows. When you open Administrative Tools, most of these programs are MMC.

**Music library –** A library that stores audio files, such as those you’ve downloaded from the web, transferred from a portable device (music player), or ripped from a CD.

**Pictures library** **–** A library that stores digital image files.

**pin** **–** To display the icon for a program on the taskbar even when the program isn’t running. This provides you with quick access to your frequently used programs.

**power plan** **–** A collection of hardware and system settings that manage how a computer uses power.

**Recycle Bin –** A folder used to recover files that have been previously deleted.

**resolution –** A value that refers to the number of pixels that create an image; that is, everything you see on the screen. Resolution has a horizontal value and a vertical value, such as 1200 × 768 or 1600 × 900.

**shortcut** **–** An icon or link that gives you quick access to an original resource.

**sleep mode –** A low-power mode for computers that uses a minimum amount of power so that the system can be quickly restored back to the previous state without rebooting the computer.

**sleep settings** **–** Settings that specify how long the computer will operate before going into sleep mode when the computer is using battery power or when it is using AC power.

**Standard user account –** An account that has fewer permissions than an Administrator account, but enough permissions to be productive.

**startup RAM –** A value that specifies the amount of memory that you want to allocate to the VM when it starts. When you are using Dynamic Memory, this value can be the minimum amount of memory needed to boot the system.

**user account –** A collection of information that defines the actions that can be taken on a computer and which files and folders can be accessed (rights, policies, and permissions).

**User Account Control (UAC) –** A technology used with Windows Vista, 7, 8/8.1, and 10 to enhance system security by detecting and preventing unauthorized changes to the system. Some applications might not run properly using a standard user credential if the application needs to access restricted files or registry locations.

**user profile –** A series of folders, associated with a specific user account that contains personal documents, user-specific registry settings, desktop theme, internet favorites, and other personalized information—everything that provides a user’s familiar working environment.

**user state** **–** The collection of data and settings that pertain to each user. It describes settings and data that determine the user environment.

**Videos library –** A library that stores video files.

**virtual disk –** A file that represents a physical disk drive to a guest operating system running on a virtual machine. The user can install a new operating system onto the virtual disk without repartitioning the physical disk or rebooting the host machine.

**workgroup –**A group of computers usually associated with a peer-to-peer network in which user accounts are decentralized and stored on each individual computer. By default, a computer is part of a workgroup.

# Knowledge Assessment

## Multiple Choice

**Select the correct answer(s) for each of the following questions.**

1. Which of the following is *not* an account type in Windows 10?

a. Guest

b. Limited user

c. Standard user

d. Administrator

2. Which power mode first goes into a low-power mode for computers, and then to Hibernate mode when the system is almost out of power?

a. Balanced mode

b. Power mode

c. Zip mode

d. Hybrid mode

3. Which of the following actions is most likely to trigger a User Account Control dialog box?

a. Uninstalling a program

b. Creating a shortcut

c. Changing resolution

d. Adding a gadget

4. Which of the following can be used to directly access Event Viewer?

a. Gadgets window

b. Programs in Control Panel

c. Administrative Tools

d. User Account Control dialog box

5. Which of the following is *not* a UAC notification level?

a. Always notify me

b. Notify me only when users try to access my files

c. Notify me only when programs try to make changes to my computer

d. Never notify me of installations or changes

6. Which feature allows you to quickly minimize all open windows except the active one?

a. Shake

b. Snap

c. Peek

d. Show Desktop

7. Which of the following settings is not configurable from the Screen Resolution window?

a. Orientation

b. Font size

c. Display

d. Windows theme

8. Which of the following allows you to manage programs that run when Windows starts or when you log on?

a. Task Scheduler

b. Performance Monitor

c. Programs in Control Panel

d. System Configuration

9. Which versions of Windows 10 support Windows XP Mode? (Choose all that apply.)

a. Mobile

b. Professional

c. Education

d. Enterprise

10. Which of the following correctly explains the abbreviation VHD?

a. Variable Hex Determinant

b. Virtual Home Directory

c. Virtual Hard Disk

d. Virtual Hard Drive

## Fill in the Blank

**Complete the following sentences by writing the correct word or words in the blanks provided.**

1. A user account is a collection of information that defines the actions you can take on a computer and which files and folders you can access.

2. The standard user account type is best for everyday use.

3. User Account Controls (UAC) is used to prevent unauthorized changes to your system without your knowledge.

4. To configure accessibility options, open the Ease of Access Center.

5. To minimize all open windows at once, click the Show Desktop button.

6. Control Panel includes several items, including System and Security, Programs, User Accounts and Ease of Access.

7. Use Administrative Tools to troubleshoot and resolve computer problems, and to keep your system running optimally.

8. The Windows 10 Screen Resolution window allows you to configure several display-related settings.

9. Client Hyper-V can be used to run older applications made for Windows XP, for example, on a computer running Windows 10.

10. File Explorer is used to manage files and folders on a drive.

## True / False

**Circle T if the statement is true or F if the statement is false.**

**T F** 1.A User Account Control dialog box opens when you open your data files.

**T F** 2.You cannot change the desktop resolution setting because it’s a fixed value.

**T F** 3. Deleting a shortcut does not delete the resource it represents.

**T F** 4. A user account and a user profile are the same thing.

**T F** 5. Windows 10 Settings replaced Windows Control Panel.

# Business Case Scenarios

## Scenario 2-1: Getting Administrative-Level Privileges

As an IT technician, you need to perform some maintenance tasks on an employee’s computer that will require elevated privileges. When you go to the Manage Accounts window in Control Panel on that employee’s computer, you see only the employee’s standard user account. Describe how to log on as a user with administrative-level privileges.

You may use the default Administrator account to perform maintenance tasks on the computer, but the account is currently hidden (disabled). To use the default Administrator account, open a command prompt window in administrator mode: click Start, type cmd in the Ask me anything search box, right-click cmd.exe in the resulting list and choose Run as administrator. In the command prompt window, type net user administrator /active:yes and then press Enter. Perform the maintenance tasks, and then disable the account when you’re finished: open a command prompt window and type net user administrator /active:no.

## Scenario 2-2: Configuring Accessibility Features

Alexandra, an employee at your company, is visually impaired. Which features can be configured in Windows 10 to help her perform her work more efficiently?

Programs that accommodate the visually impaired are found in the Ease of Access Center. You could enable Magnifier, Narrator, On-Screen Keyboard, and High Contrast as a start. Be sure to train Alexandra on how to use each feature that you enable.

## Scenario 2-3: Running a Legacy Application

Oscar is the warehouse manager for an auto parts business. Although the business standardized on Windows 10 Professional, Oscar needs to run a legacy parts lookup program that does not run in Windows 10. You provide technical support to the business. Describe your recommended solution.

You should install client Hyper-V, which will allow you to run a virtual machine running Windows XP. To run client Hyper-V, you will need to have a 64-bit Windows system running on a 64-bit computer. Of course, you should test the application to ensure that it runs as expected.

## Scenario 2-4: Creating a Better User Experience

Oscar would like to use his Windows 10 Professional computer more efficiently. He would also like to be able to quickly launch Microsoft Excel each time he logs on to his computer, and he does not want the Windows Media Player to be present on the taskbar. Describe your recommended solution.

To enable Oscar to start Microsoft Excel quickly, pin the program to the taskbar. You should also unpin Windows Media Player from the taskbar per his request.