



**MICROSOFT TECHNOLOGY ASSOCIATE**

# Student Study Guide

**EXAM 98-349**

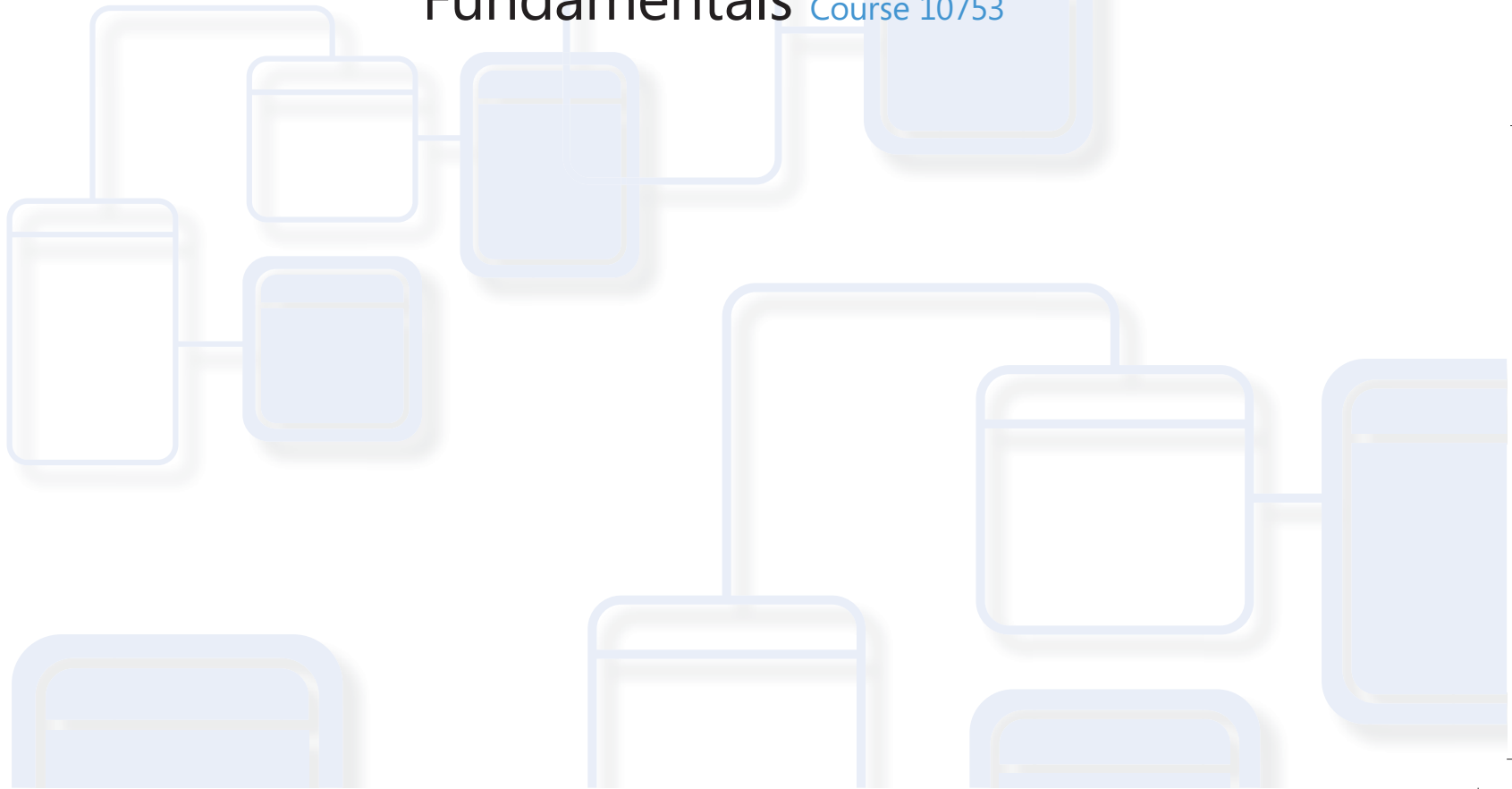
**Windows Operating System Fundamentals**



# *Preparing for MTA Certification*

**MICROSOFT TECHNOLOGY ASSOCIATE (MTA)  
STUDENT STUDY GUIDE IT PROS**

## **98-349** Windows Operating System Fundamentals Course 10753



## Authors

**Michael Teske** (Windows Server® Administration, Security, Windows® Operating System). Michael has been teaching in the Network Specialist Program for 10 years at Northeast Wisconsin Technical College and has been involved as an engineer for 15 years. He has a passion for both teaching and technology and loves helping people find happiness in a career. Mike believes that learning technology should be fun, but he also recognizes that the networking field continually changes and can challenge even the brightest students. Mike also works as an independent consultant for several small businesses in northeast Wisconsin and enjoys bringing that real-world experience in to the classroom on a daily basis. Mike has become known as “the Microsoft Guy” on campus. His goal is to continue to teach network technology with the same enthusiasm and passion for many years to come and to help his students find the same joy and passion that he has found in an amazing industry.

**Patricia Phillips** (Authoring Manager). Patricia taught computer science for 20 years in Janesville, Wisconsin. She served on the Microsoft® National K-12 Faculty Advisory Board and edited the Microsoft MainFunction website for technology teachers for two years. For the past five years, she has worked with Microsoft in a variety of roles related to K-12 curriculum development and pilot programs, such as the MTA Exam Review Kits and Student Study Guides, Expression Studio web design, and XNA® game development. In her role as an author and editor, Patricia has written several articles and a student workbook on topics including computer science, web design, and computational thinking. She is currently the editor of the Computer Science Teachers Association newsletter, the *Voice*.

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# Introduction

**M**TA validates building-block technology concepts and helps students explore, discover and pursue successful careers in Information Technology (IT) in an exciting and rewarding way! As the first step in the Microsoft® Technology Certification Series, this new, entry-level certification provides students with confidence, credibility, and differentiation.

**Explore IT career options without committing a lot of time and resources** MTA exams validate the core technology knowledge that is in demand today by businesses around the world. Whether you want to explore becoming a network administrator, software engineer, web developer, or database analyst, MTA gets you started on the right path.

**Prepare to compete** A little investment in IT can go a long way in today's job market. Becoming MTA certified helps you build a solid foundation to prepare for intermediate technology studies and for Microsoft Certified Technology Specialist (MCTS) certifications. It can also help you compete on college admissions and jumpstart your IT career planning!

**Empower yourself** As the first step toward becoming an MCTS, MTA shows your commitment to technology while connecting you with a community of more than five million Microsoft Certified Professionals. Learn from them and show them what you know by becoming MTA certified!

This MTA Student Study Guide serves as a study tool to help students prepare for their MTA certification exam. Students are challenged with real-life situations for each of the major topics covered in the exam. Although successful completion of the study guide exercises does not guarantee that you will pass your MTA exam, it is an excellent way to gauge your readiness to take the exam and build confidence that you know your stuff on exam day.

I wish you all the best as you prepare for a successful career in technology!

*Victoria Pohto*

Victoria Pohto  
MTA Product Marketing Manager

# Career Planning

Most IT solutions or infrastructure built on Microsoft technologies require proficiency with one or all of the following products, often referred to as “The Microsoft Stack.”

- Microsoft Windows® Server® as the data center or development platform
- Microsoft SQL Server® as the data and business intelligence (BI) platform
- Microsoft Visual Studio® as the suite of application life-cycle management tools

MTA is the starting point of Microsoft technology certifications, providing aspiring technologists with the fundamental knowledge essential to succeed with continued studies and a successful career with technology.

Preparing for and becoming MTA certified helps you explore a variety of career paths in technology without investing a lot of time and money in a specialized career path. When you find a path that is right for you, Microsoft learning products and certification can help you prepare and guide your longer-term career planning.

If you already know that you want to start building a career in technology, MTA preparation and certification is the recommended entry point. Becoming MTA certified shows that you have a firm working

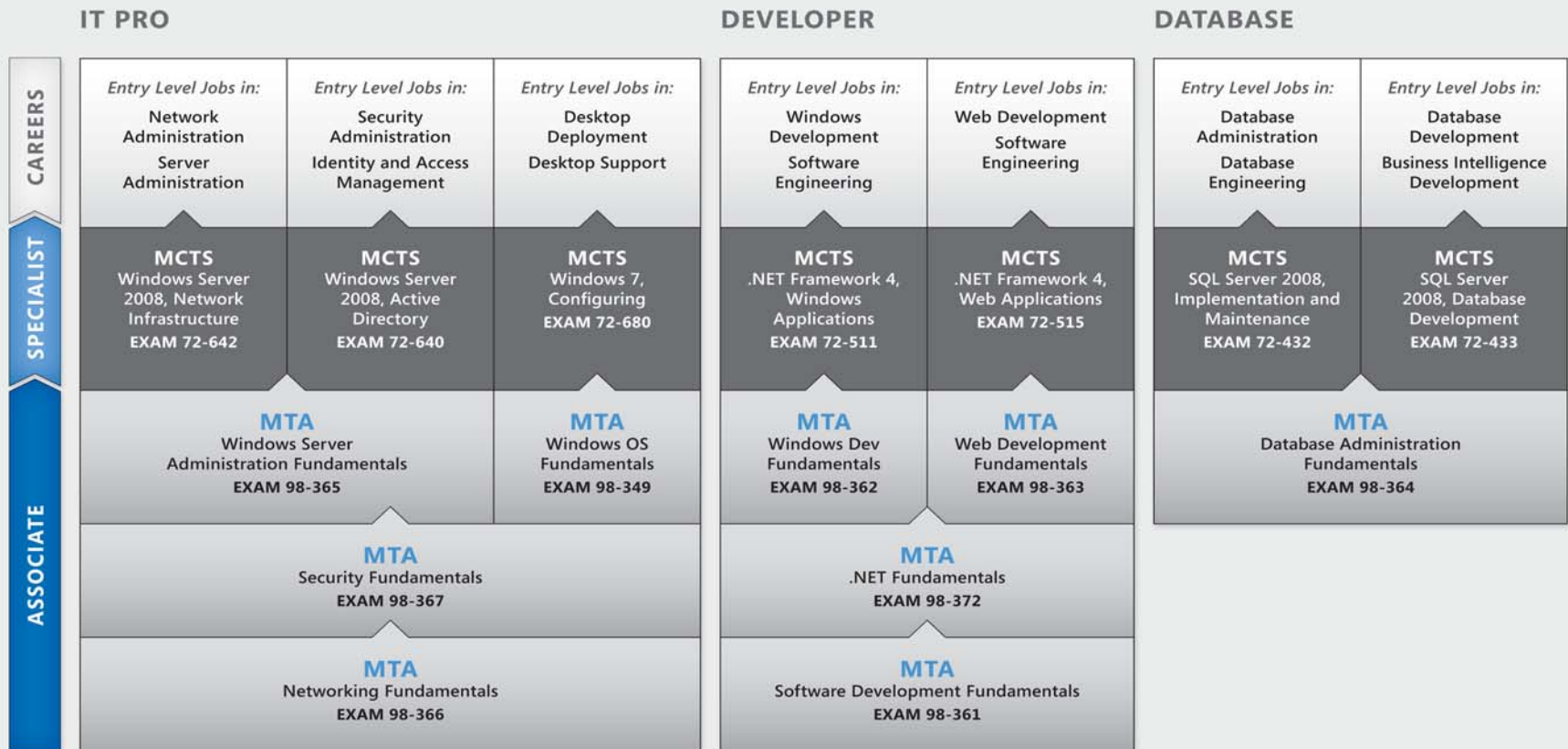
knowledge of the fundamental IT concepts critical for success with intermediate learning and certifications such as Microsoft Certified Technology Specialist (MCTS). Moreover, Microsoft certifications demonstrate an individual’s commitment of self-investment and confidence to take his or her knowledge and skills to the next level with an industry-recognized credential.

MTA is not a “career certification,” meaning that employers recognize you as “job ready,” but it is the first step toward that career goal and can help differentiate you for an internship or to college admissions committees. As you prepare for your first job focusing on technology, be sure that you are equipped with an MCTS credential—the intermediate level certification that validates Microsoft product and technology skills.

The MTA Certification path on the next page shows you the MTA exams that are recommended prior to taking on some of Microsoft’s intermediate technology certification, MCTS.

# Microsoft Technology Associate Certification Paths

MTA is the first step in the Microsoft® Technology Certification Series. MTA is a recommended but not required pre-requisite to MCTS exams. One certification is earned for each exam passed. Free Student Study Guides are available for download at [www.certipoint.com/mta](http://www.certipoint.com/mta).



For full Microsoft Certification roadmaps, visit <http://www.microsoft.com/learning/certification>

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# Exploring Job Roles

Choosing a career path is a big decision and it's not always easy, but you're not alone! Microsoft created a career site to help students understand the options and possibilities of pursuing a career in IT. The site also connects you with learning resources, student techie communities, and much more to help you prepare for a career in technology.

To chart your career with Microsoft technology, visit [www.microsoft.com/learning/career/en/us/career-org-charts.aspx](http://www.microsoft.com/learning/career/en/us/career-org-charts.aspx).

## Database Administrator



As a database administrator, you are in charge of important databases that span multiple platforms and environments. You are a strong team player who thrives in a fast-paced environment. You build complex, highly scalable databases that meet business needs and security requirements. You are an expert in optimizing, maintaining, and troubleshooting databases, but also in designing archival, data distribution, and high-availability solutions.

## Server Administrator



As a server administrator, you are in charge of implementing and managing some of the most important technology in your organization—the servers. You use extensive monitoring and profiling tools to manage the network and tune systems so they perform at optimal levels. You are an expert in Active Directory, and you have an in-depth understanding of network protocols, and file and directory security.

## Computer Support Technician



Consider starting your IT career by becoming a consumer support technician. You don't need any formal work experience, but a company might require that you know how to install, administer, and troubleshoot operating systems in a home network environment that has desktop computers, laptops, and printers. As a consumer support technician, you'll also handle network, virus, malicious software, and hardware support issues. You'll typically find this position in small to medium-sized organizations.

# Exploring Job Roles

## Web Developer



As a web developer, you are an expert in using the dynamic programming tools and languages that fuel the web. You might work independently or be part of a team that builds and integrates interactive web sites, applications, and services for both internal and public sites. Your role is to make it work, which means developing web applications and testing them on various browsers, enhancing and modifying them as necessary to ensure the best experience for the user. As a web developer, you might also architect websites, design data-driven applications, and find efficient client-server solutions. You must have an in-depth understanding of the software development life cycle and be able to communicate project status, issues, and resolutions.

## Windows Developer



As a Windows client developer, knowing how to optimize Windows code and track bugs is a given. But you also know how to use Microsoft Visual Studio and the Microsoft .NET framework to design, develop, test, and deploy Windows-based applications that run on both corporate servers and desktop computers. Your key talents include understanding multiple Windows application models

and n-tier applications, and knowing how to work with object-oriented programming, algorithms, data structures, and multithreading. Windows developers have an in-depth understanding of software engineering principles, software life cycles, and security principles.

Additional Online Resources for New Developers:

<http://msdn.microsoft.com/beginner>

<http://msdn.microsoft.com/rampup>

## Imagine Cup



The Imagine Cup is the world's premier student technology competition where students from around the world can learn new skills, make new friends, and change the world. Competitions include Software Design, Embedded Development, Game Design, Digital Media and Windows Phone 7. The brightest young minds harness the power of technology to take on the world's toughest problems.

[www.imaginecup.com](http://www.imaginecup.com)

# Value of Certification

Technology plays a role in virtually everything we do. In the 20-plus years since Microsoft has been certifying people on its products and technologies, millions of people have gained the knowledge, expertise, and credentials to enhance their careers, optimize business solutions, and create innovation within just about every business and social sector imaginable. Today's Information Technology (IT) hiring managers are more often using professional credentials, such as Microsoft certification, to identify properly skilled IT candidates. Certification becomes a way to easily differentiate qualified candidates in a sea of resumes.

The job outlook for IT professionals, as reported in a study prepared by the U.S. Department of Labor's Bureau of Labor Statistics (BLS), is positive! The BLS indicates an increase that will be "faster than the average for all occupations through 2014" for Computer Support Specialists, Systems Engineers, Database Administrators, and Computer Software Engineers. One significant message resulting from this study is that information and communications

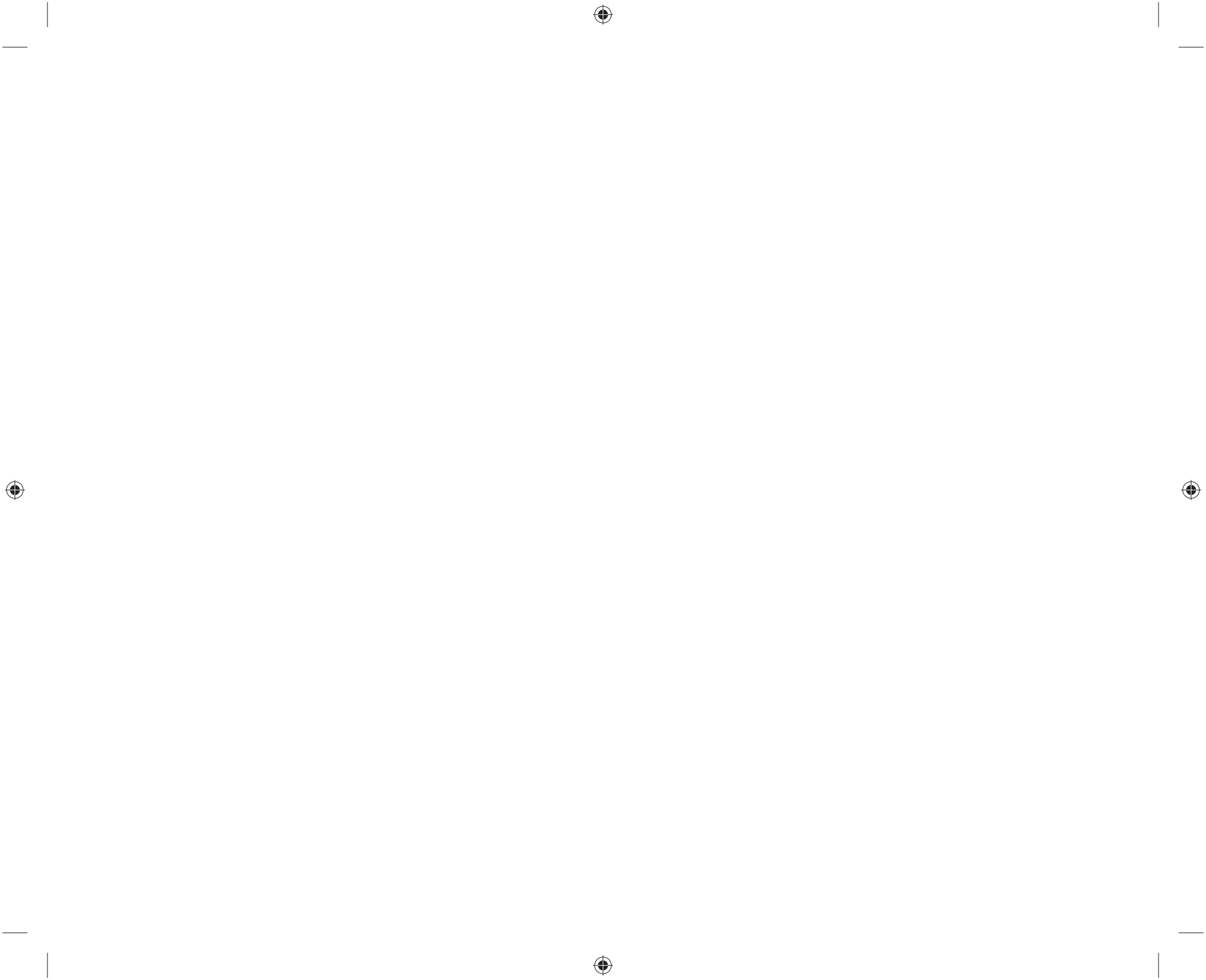
technology (ICT) skills are the entry ticket to the job market, regardless of the country, industry, or job function. Information Technology is clearly an area worth investing time, resources, and education in – and technology certification is a key part of the education process, validating product and technology expertise as a result of their learning experiences.

Microsoft IT Certifications provide objective validation of the ability to perform critical IT functions successfully for worldwide IT professionals, developers, and information workers. Microsoft certifications represent a rich and varied spectrum of knowledge, job roles, and responsibilities. Further, earning a specific certification provides objective validation of the candidate's ability to perform critical IT functions successfully. Embraced by industry professionals worldwide, Microsoft certification remains one of the most effective ways to help reach long-term career goals.

**MTA 98-349**

# WINDOWS OPERATING SYSTEM FUNDAMENTALS





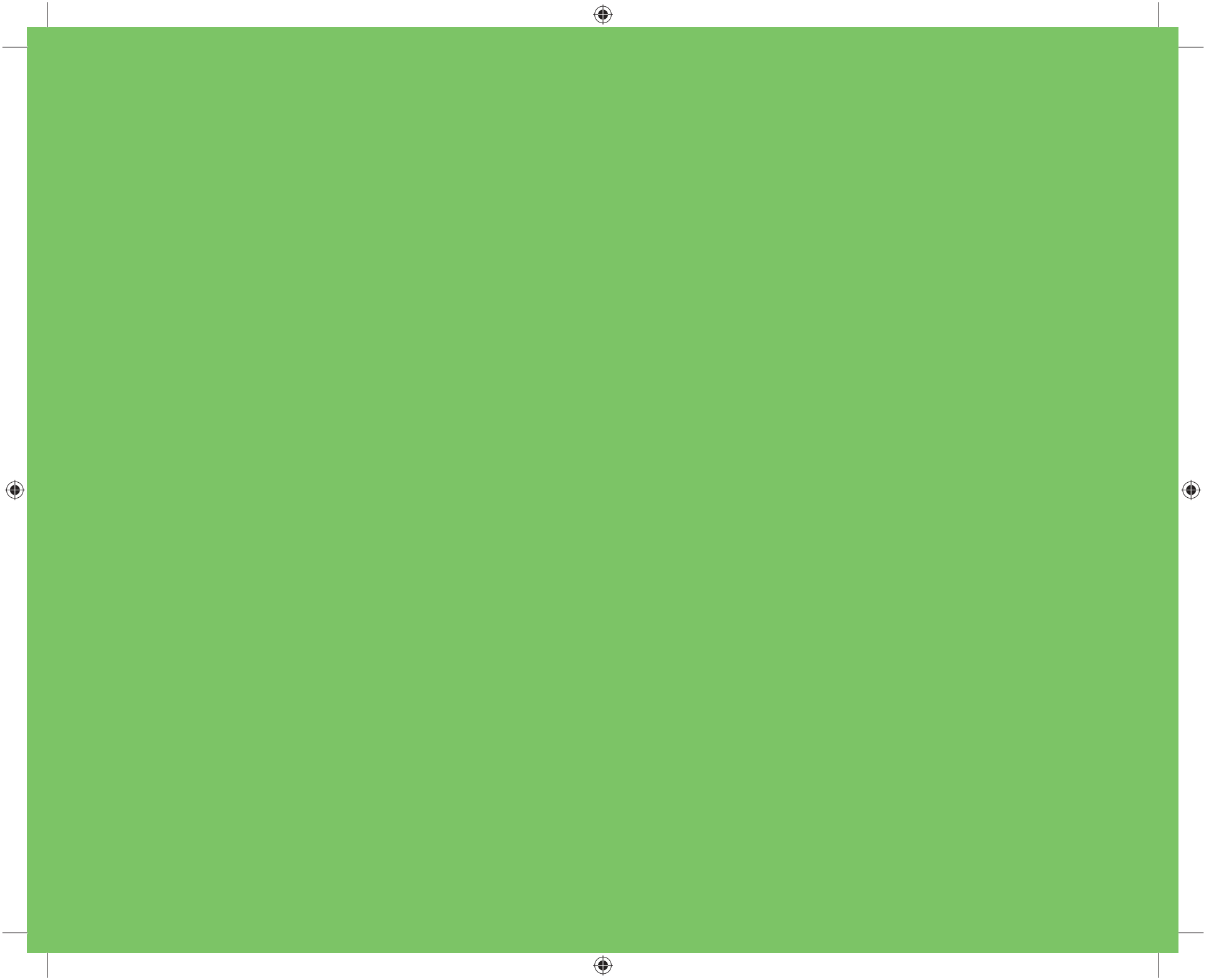
# 1

# Understanding Operating System Configurations

## IN THIS CHAPTER

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- 1.1/1.2 Configure Control Panel options; Configure desktop settings
- 1.3 Understand native applications and tools
- 1.4/1.5 Understand mobility; Understand remote management and assistance



## Configure Control Panel options; Configure desktop settings

**SCENARIO:** Lori Penor is the system administrator for Coho Winery. Coho Winery has just upgraded five of their computers to Windows® 7 Professional; however, the computers need to be configured for optimal performance. They have also purchased three additional computers preloaded with Windows 7 Professional. Lori's task is to create a consistent desktop for the winery staff. In addition, Coho Winery has an employee with vision problems, so Lori must accommodate that worker's needs with an appropriate workstation display. Last but not least, due to the delicate nature of grapes and their dependency on weather, users must have quick access to the forecast so they can schedule harvesting tasks accordingly.

- 1. How can Lori accommodate the employee with special visual needs with Windows 7?**
  - a. Purchase a larger screen.
  - b. Configure the Ease Of Access magnifier and train the worker how to use it.
  - c. Adjust the screen resolution so that it is larger.
- 2. What can Lori do to provide immediate weather forecasts?**
  - a. Place each workstation strategically by a window so users can simply look out the window to see what the weather is like.
  - b. Print out the forecast every day and place it in each employee's in-basket.
  - c. Add to each user's computer display a Weather gadget configured for his or her ZIP code and in large view, which will display a three-day forecast.
- 3. What can Lori do to help optimize the five upgraded workstations without adding more hardware upgrades?**
  - a. Configure the workstations to use the Windows Classic theme, which uses less memory.
  - b. Delete files to free up drive space.
  - c. Encourage her users to take a coffee break while their computers are processing.

### hint

*Gadgets can be configured for local news, time zones, and weather.*



## Answers

1. How can Lori accommodate the employee with special visual needs with Windows 7?
  - a. Configure the Ease Of Access magnifier and train the worker how to use it.** The Magnifier will work better than adjusting the screen resolution, which would degrade the sharpness of the display. Purchasing a larger screen doesn't solve the issue without further configuration.
2. What can Lori do to provide immediate weather forecasts?
  - a. Add to each user's computer display a Weather gadget configured for his or her ZIP code and in large view, which will display a three-day forecast.**
3. What can Lori do to help optimize the five upgraded workstations without adding more hardware upgrades?
  - a. Configure the workstations to use the Windows Classic theme, which uses less memory.** Freeing up drive space does not optimize their systems unless other tools, such as a disk defragmenter, are used.

## Essential details

- A **gadget** is a single-purpose application like news, pictures, or games that can be installed on the Windows 7 desktop.
- **The Aero® desktop** features a translucent glass design with subtle window animations and new window colors.
- The **Control Panel** is a utility that enables users to configure operating system features and perform related tasks such as hardware and software setup and configuration, security, system maintenance, and user account management.

### FAST TRACK HELP

- <http://www.microsoft.com/windows/windows-7/features/gadgets.aspx>
- <http://www.microsoft.com/enable/training/windowsvista/ea.aspx>



## Understand native applications and tools

**SCENARIO:** Michael Patten is the desktop administrator for Tailspin Toys. His job is to help employees to be as efficient as possible with their computer tasks. Members of the sales department have asked Michael to find an easier way for them to access their favorite websites without having to navigate to their Favorites folders. They also would like Michael to help them distribute training videos for new employees on the toy assembly line. Finally, they would like an easier method to access frequently used folders on the company network. Michael's budget does not allow for purchasing additional equipment or software. The good news is that the company recently purchased new workstations running Windows 7 Professional for the entire workforce.

### 1. How can Michael distribute the training videos without purchasing new software?

- Michael can burn the video to a DVD and make sure the employees each sign it out for the weekend.
- Michael can stream the training video across the network using Windows Media® Player.
- Michael can schedule in-person trainings during regular employee meetings.

### 2. What can Michael do to make employees' favorite websites easier to access?

- Michael can create a folder that contains shortcuts for each site on their desktops.
- Michael can assign each website as an additional tabbed Windows Internet Explorer® home page.
- Michael can ensure that all users are running Internet Explorer 9 and train them how to pin their favorite websites to the taskbar.

### 3. What Windows Explorer technology can Michael use to make folders easier to access?

- File and folder compression
- Jump lists
- Folder options

#### hint

*Windows Media Player and Media Center can both share media across a network to other PCs.*

## Answers

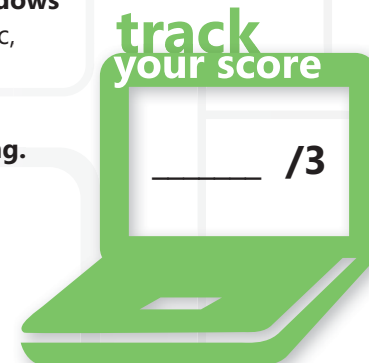
1. How can Michael distribute the training videos without purchasing new software?
  - b. **Michael can stream the training video across the network using Windows Media Player.**  
Windows 7 Professional includes Windows Media Player, which has the ability to share video across networks.
2. What can Michael do to make employees' favorite websites easier to access?
  - c. **Michael can ensure that all users are running Internet Explorer 9 and train them how to pin their favorite websites to the taskbar.** Creating shortcuts in a folder may be more cumbersome, and training the users to pin their own websites allows them to customize their favorites without having to ask Michael for help.
3. What Windows Explorer technology can help Michael make their folders easier to access?
  - b. **Jump lists**

## Essential details

- The **System Configuration utility (MSCONFIG)** helps identify problems with Windows configuration. It does not manage the programs that run when Windows starts.
- **Windows Media Player** is a client/control that receives a stream for playback from a server providing Windows Media files or local content. This is not the same as the **Windows Media Center**, which can show, pause, and record HDTV, show DVDs, play music, display photos, show online shows, and share media from one PC to another.
- A safer Internet browsing experience is possible thanks to security features including **ActiveX® Filter**, a **cross-site scripting filter**, and **InPrivate® Browsing**.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-US/windows7/products/features/windows-media-player-12>
- <http://windows.microsoft.com/en-US/internet-explorer/products/ie-9/features/pinned-sites>



## Understand mobility; Understand remote management and assistance

**SCENARIO:** Dean Halstead is an independent consultant who manages the mobile travel agents for Margie's Travel. All the travel agents have laptops running Windows 7 Professional. Margie has asked Dean to find a solution for managing these laptops while her staff is on the road. Dean jokes that he would be more than happy to travel to Cancun to troubleshoot laptops, but he understands Margie's request. The agents have several complaints that Margie is eager to resolve. The agents need to adjust the screen brightness and power settings to conserve battery life when they are in airports or in flight. They also need access to their files on the company network when they are traveling without having to use external media or copy items back and forth.

### 1. What can Dean do so that the agents can adjust their laptop settings quickly and easily?

- a. Create shortcuts on their desktops for each setting.
- b. Train the agents to use the Windows Mobility Center, which includes tools to modify mobile settings, including screen brightness and power settings.
- c. Suggest that Margie purchase additional batteries for each agent to use when batteries run low.

### 2. How can Dean resolve issues on the agents' laptops when they are traveling?

- a. Call each agent and walk them through troubleshooting steps over the phone.
- b. Ask the agents to ship their laptops back to him in the home office.
- c. Enable Remote Desktop on each laptop and connect remotely to agents' laptops when needed.

### 3. What can Dean do to allow the agents to work on their files when offline?

- a. Configure Offline Files and set up the laptops to use the Sync Center to synchronize files when the agents log off so that files are available when they are away from the network.
- b. Create a batch file that agents can use to copy files back and forth whenever they leave.
- c. Give each agent a universal serial bus (USB) memory stick to use when they need to copy their files.

#### hint

*Offline folders can be configured to make files available in an outage or with mobile users.*

## Answers

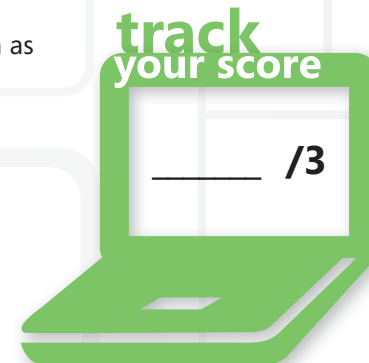
1. What can Dean do so that the agents can adjust their laptop settings quickly and easily?
  - b. Train the agents to use the Windows Mobility Center which includes tools to modify mobile settings including screen brightness and power settings.**
2. How can Dean resolve issues on the agents' laptops when they are traveling?
  - c. Enable Remote Desktop on each laptop and connect remotely to agents' laptops when needed.**  
This would also involve locating each laptop's external IP address or having to negotiate firewall settings. Remote Assistance would be an option as well.
3. What can Dean do to allow the agents to work on their files when offline?
  - a. Configure Offline Files and set up the laptops to use the Sync Center to synchronize files when the agents log off so that files are available when they are away from the network.**

## Essential details

- **Remote Desktop Connection** is a technology that allows a user to sit at a computer (sometimes called the *client*) and connect to a remote computer (sometimes called the *host*) in a different location.
- The **Sync Center** is a feature of Windows that enables the user to keep information and files synchronized between a computer and data stored in folders on network servers and with certain mobile devices that are compatible with Sync Center.
- The **Windows Mobility Center** displays the most commonly used settings, such as brightness, volume, battery status, and wireless network status. Different tiles are displayed depending on the system, and some tiles are added by the laptop manufacturer.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-US/windows-vista/Sync-Center-frequently-asked-questions>
- <http://windows.microsoft.com/en-US/windows7/Using-Windows-Mobility-Center>



# 2

# Installing and Upgrading Client Systems

## IN THIS CHAPTER

---

- 2.1/2.2 Identify Windows operating system editions; Identify upgrade paths
- 2.3 Understand installation types
- 2.4 Understand virtualized clients



## Identify Windows operating system editions; Identify upgrade paths

**SCENARIO:** Aneta Olecka is the desktop support manager for Humongous Insurance. Her supervisor has asked her to determine the viability of upgrading their existing systems running Windows® XP Professional and Windows Vista® Business to Windows 7. This is no easy task for such a large company. The first step for Aneta is to determine whether their existing systems can be upgraded. In addition to meeting the necessary system requirements, she must determine which edition of Windows 7 she can upgrade to from Windows Vista Business and determine if the existing programs and hardware are compatible with Windows 7. And, of course, she needs to transfer any existing data and programs to the upgraded systems.

**1. What is the easiest method to determine the issues that Aneta may run into if she proceeds with the upgrade?**

- Upgrade a system running Windows XP and a system running Windows Vista Business over the weekend to discover what works and what doesn't.
- Assume that Windows 7 will work on the machines running Windows XP and almost guarantee they will run on the ones running Windows Vista Business because upgrades always work without issues.
- Aneta should download the Windows 7 Upgrade Advisor, check each system, and view the report of potential issues.

**2. What editions(s) of Windows 7 would Aneta be able to upgrade to from Windows Vista Business?**

- She can't; there isn't an upgrade path from Windows Vista Business.
- She could upgrade to either Windows 7 Professional or Ultimate edition.
- She can upgrade to any version she chooses.

**3. How can Aneta copy the existing data from the systems running Windows XP to the upgraded systems running Windows 7?**

- Use Windows Easy File Transfer, which is a free download from Microsoft®.
- Copy all data and program settings to universal serial bus (USB) drives and then re-create those directory structures on Windows 7.
- Tell her users to email themselves all their personal data and record all their settings.

### hint

*Windows 7 Upgrade Advisor is a free download that scans the PC for any potential compatibility issues.*



## Answers

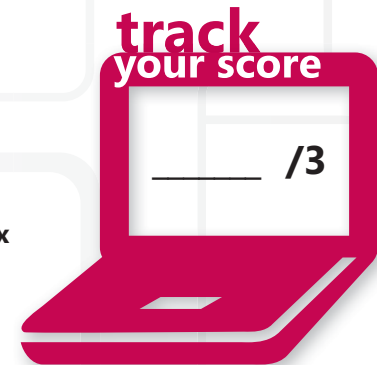
1. What is the easiest method to determine the issues that Aneta may run into if she proceeds with the upgrade?
  - a. **Aneta's should download the Windows 7 Upgrade Advisor, check each system, and view the report of potential issues.**
2. What editions(s) of Windows 7 would Aneta be able to upgrade to from Windows Vista Business?
  - a. **Upgrade to either Windows 7 Professional or Ultimate edition.**
3. How can Aneta copy the existing data from the systems running Windows XP to the upgraded systems running Windows 7?
  - a. **Use Windows Easy File Transfer, which is a free download from Microsoft.**

## Essential details

- Upgrade Advisor scans a PC for potential issues with hardware, devices, and installed programs and recommends remedies before upgrading to Windows 7.
- Computer systems are upgraded to change to a newer, usually more powerful or sophisticated operating system version.
- Windows Easy File Transfer makes it easier to transfer files and settings from older systems to Windows 7.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-US/windows7/products/features/windows-easy-transfer>
- <http://www.microsoft.com/windows/windows-7/get/upgrade-advisor.aspx>
- <http://windows.microsoft.com/en-us/windows7/help/upgrading-from-windows-vista-to-windows-7>
- <http://windows.microsoft.com/en-US/windows7/help/upgrading-from-windows-xp-to-windows-7>



## Understand installation types

**SCENARIO:** Phyllis Harris was recently hired by World Wide Importers as their desktop deployment manager. Phyllis claims that she can save the company thousands of dollars by streamlining their desktop rollout process. Historically, World Wide Importers installed their workstations using the High Touch Installation (HTI) strategy. They had two IT members perform installations all day long when new PCs had to be rolled out. This was fine when they were a small company with only 20 desktops, but now they have 500 computers and roll out more than 150 every six months as they continue to grow. Phyllis plans to use several tools to automate installations with limited user interaction.

- 1. What tool can Phyllis use to deploy Windows 7 installation over the network?**
  - a. Use a bootable floppy disk to connect to the network share and run Setup.exe from the distribution point.
  - b. Use Windows Deployment Services (WDS) to perform multiple installations simultaneously.
  - c. Run Windows Update over the network to make sure all the installed systems are updated.
- 2. What deployment strategy would best suit World Wide Importers?**
  - a. Hire high school interns to perform installations for two months.
  - b. Use Lite Touch Installation (LTI).
  - c. Use Zero Touch Installation (ZTI).
- 3. What can Phyllis create so that the Windows 7 installations will run automatically with preconfigured settings?**
  - a. A batch file that copies all the necessary information and launch it after the installation completes.
  - b. A bootable USB device that contains all the drivers and necessary software to complete the installation.
  - c. An answer file to embed on her installation media or WDS distribution folder.

### hint

*An answer file can be used to configure Windows settings during installation.*

## Answers

1. What tool can Phyllis use to deploy Windows 7 installation over the network?  
**b. Use Windows Deployment Services (WDS) to perform multiple installations simultaneously.**
2. What deployment strategy would best suit World Wide Importers?  
**c. Use Zero Touch Installation (ZTI).** This strategy requires no interaction during deployment. The process is fully automated through System Center Configuration Manager R2.
3. What can Phyllis create so that the Windows 7 installations will run automatically with preconfigured settings?  
**c. An answer file to embed on her installation media or WDS distribution folder.**

## Essential details

- An **answer file** is a file used to configure Windows settings during installation. The answer file contains all the settings that are required for an unattended installation.
- **High Touch Installation (HTI)** is a manual deployment in which Windows is installed on each client using the retail installation DVD and manually configured on each computer.
- **Lite Touch Installation (LTI)** requires limited interaction during deployment. Interaction occurs at the beginning of the installation, but the remainder of the process is automated.
- **Zero Touch Installation (ZTI)** requires no interaction during deployment. The process is fully automated through System Center Configuration Manager R2.

### FAST TRACK HELP

- [http://technet.microsoft.com/en-us/library/ee523216\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/ee523216(WS.10).aspx)
- [http://technet.microsoft.com/en-us/library/dd919179\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd919179(WS.10).aspx)
- [http://technet.microsoft.com/en-us/library/dd919178\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd919178(WS.10).aspx)
- <http://technet.microsoft.com/en-us/windows/dd179859.aspx>



## Understand virtualized clients

**SCENARIO:** Christian Hess is a systems administrator for Woodgrove Bank. The board of directors has asked Christian to check the feasibility of upgrading their desktops to Windows 7. Christian has been anticipating this request since the release of the operating system and has done quite a bit of research on the subject. The banking industry is always one of the last business segments to switch to newer technologies, primarily due to their dependency on older financial software and being governed by stringent regulatory agencies that ensure banks' fiduciary responsibilities. Christian is aware that some of the bank's software will not run on Windows 7 at this time. The board also has asked for an alternative to rolling out new PCs so often and if there is a better way to manage their infrastructure.

### 1. What could Christian use to run applications that run only on Windows XP?

- a. He can have two PCs at each desk and teller window configured with a keyboard-video-mouse (KVM) switch. One PC would run Windows 7 and the supported applications, and the other would run Windows XP and the older applications.
- b. He can have a centralized PC in the middle of the bank lobby running Windows XP with all necessary applications installed. Each user can sign up to use the machine to complete their work.
- c. He can configure each Windows 7 PC with Windows XP Mode and install the older applications in XP Mode.

### 2. What Windows 7 editions can Christian consider using if he wants to use Windows XP Mode?

- a. Home, Millennium, and 98 Second editions
- b. Professional, Enterprise, and Ultimate editions
- c. Business, Professional, and Super Ultimate Premium editions

### 3. What technology can Christian consider as a potential solution to the board's request to reduce the number of PC rollouts?

- a. Christian should consider Virtual Desktop Infrastructure (VDI).
- b. He should tell the board that upgrading PCs is just part of normal business operations and they will have to come to terms with it.
- c. Christian should consider Remote Desktop Services (RDS).

## hint

*Windows 7 Home Premium and Starter do not support XP Mode.*

## Answers

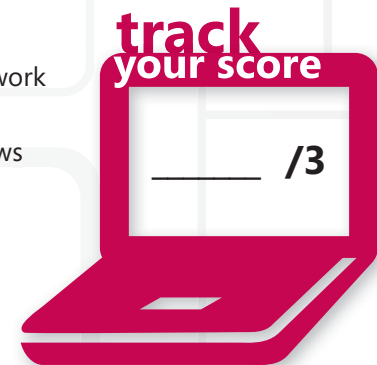
1. What could Christian use to run applications that run only on Windows XP?
  - a. **He can configure each Windows 7 PC with Windows XP Mode and install the older applications in XP Mode.** Christian should verify that the applications will run in XP Mode and comply with any regulatory agencies.
2. What Windows 7 editions can Christian consider using if he wants to use Windows XP Mode?
  - b. **Professional, Enterprise, and Ultimate editions.** XP Mode is not supported on Home Premium or Starter edition.
3. What technology can Christian consider as a potential solution to the board's request to reduce the number of PC rollouts?
  - c. **Christian should consider Virtual Desktop Infrastructure (VDI).** VDI allows an administrator to have a central point of desktop management and recoverability.

## Essential details

- **Microsoft Virtual Desktop Infrastructure (VDI)** is a centralized desktop delivery solution. The concept of VDI is to store and run desktop workloads, including a Windows client, applications, and data in a server-based virtual machine in a data center.
- **Virtual desktop** is a desktop enhancement tool that expands the computer's desktop environment through the use of software.
- A **virtual machine** is a computer within a computer, implemented in software. A virtual machine emulates a complete hardware system, from processor to network card, in a self-contained, isolated software environment.
- **Windows XP Mode** comes as a separate download and works only with Windows 7 Professional, Ultimate, and Enterprise editions.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-us/windows7/products/features/windows-xp-mode>
- <http://www.microsoft.com/virtualization/en/us/products-desktop.aspx>
- <http://technet.microsoft.com/en-us/edge/microsoft-virtual-desktop-infrastructure-vdi-explained.aspx>



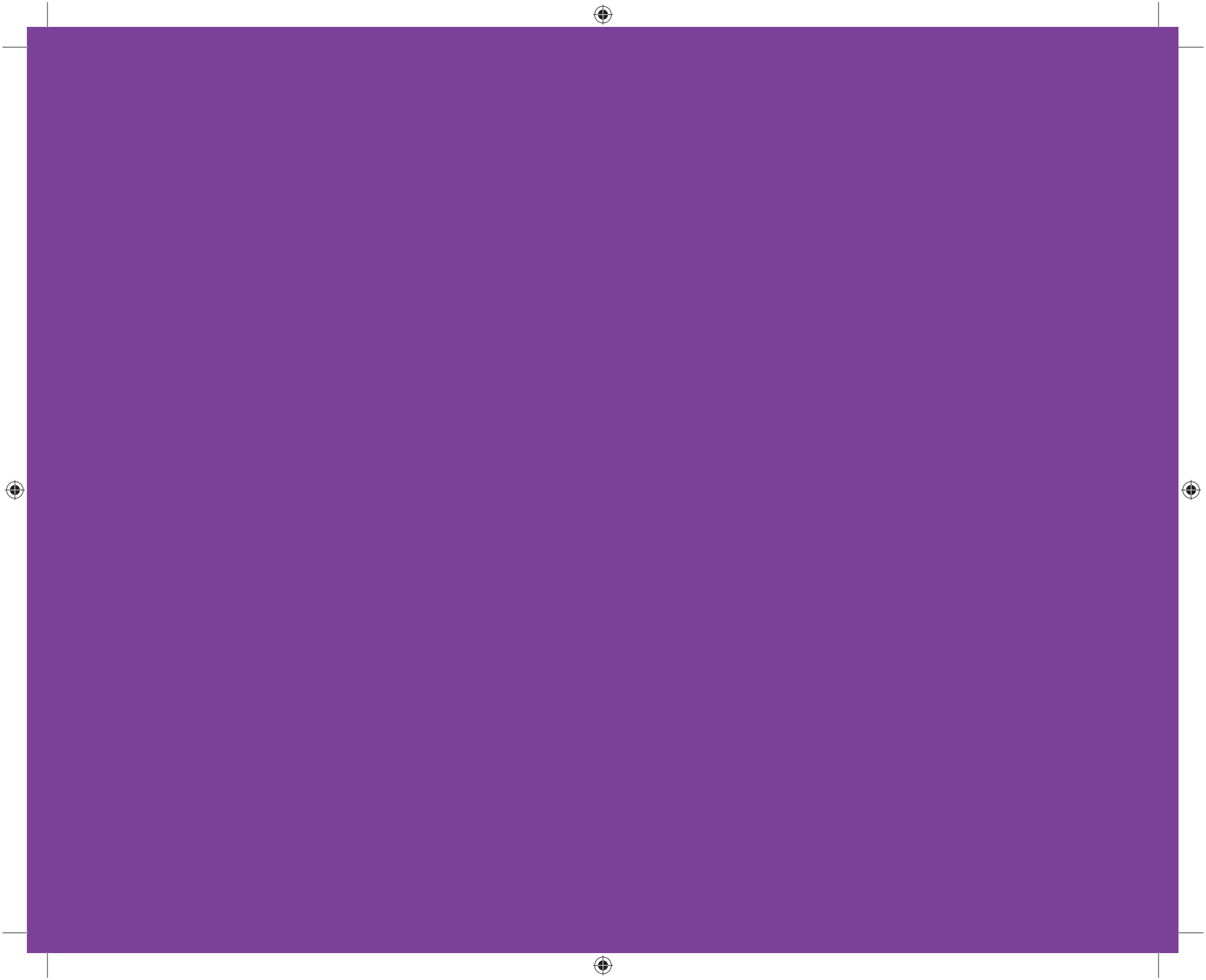
# 3

# Managing Applications

## IN THIS CHAPTER

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- 3.1 Understand application installations
- 3.2 Understand user account control (UAC)
- 3.3 Remove malicious software
- 3.4 Understand services
- 3.5 Understand application virtualization



## Understand application installations

**SCENARIO:** April Reagan works for Tailspin Toys as the desktop administrator in charge of maintaining 35 PCs. Although working in a toy factory sounds like it would be a lot of fun, it's quite a challenge for April to keep up with changing technology and new applications. Recently, she was assigned the task of installing a new toy design application on 20 PCs. Unfortunately employees on several of these computers have had access to this software and it has not been updated recently—a situation that complicates April's installation task. Fortunately her company is using computers that run Microsoft® Windows® 2008 R2 Active Directory® Domain Services (AD DS). April is faced with several options to complete the installation and would like to make it as manageable and efficient as possible. She can perform manual installations, copy the files to a folder on the network, and perform network installations, or she can use Group Policy to complete her tasks.

- 1. What installation method would be the best choice for April?**
  - a. She should do a manual installation at each PC.
  - b. She should perform network installations because this is the easiest method.
  - c. She should use Group Policy so that she can centrally manage, secure, and update all installations.
- 2. If April chooses Group Policy to manage her software, how will she disable it for the users who shouldn't have access to the software?**
  - a. She can run down and uninstall the software between shifts and then rerun Group Policy when the permitted users come back.
  - b. The software can be selected to uninstall when it falls out of scope when another user that is not authorized to run the software logs in.
  - c. She can assume that the users won't possibly search to see what programs are running on the system.
- 3. What is the best way for April to update the software?**
  - a. She can add upgrades to the software within Group Policy.
  - b. She can uninstall the software manually on each PC, recreate the Group Policy package, and then reinstall the software.
  - c. She can create instructions for the users to update the software themselves.

### hint

*Group Policies allow for central management and deployment of software updates and security.*



## Answers

1. What installation method would be the best choice for April?
  - a. **She should use Group Policy so that she can centrally manage, secure, and update all installations.** Group Policy allows the administrator to install software based on user, create consistency through security, and centrally update and deploy applications.
2. If April chooses Group Policy to manage her software, how will she disable it for the users who shouldn't have access to the software?
  - a. **The software can be selected to uninstall when it falls out of scope when another user that is not authorized to run the software logs in.**
3. What is the best way for April to update the software?
  - a. **She can add upgrades to the software within Group Policy.**

## Essential details

- An **application** is a program designed to assist in the performance of a specific task, such as word processing, accounting, or inventory management.
- **Group Policy** is a collection of settings stored within documents created by the Group Policy snap-in, a utility in Windows. These settings are stored at the domain level and affect users and computers contained in sites, domains, and organizational units.
- **User Account Control (UAC)** is a feature in Windows that helps the user stay in control of the computer by issuing notices when a program makes a change that requires administrator-level permission.

### FAST TRACK HELP

- [http://technet.microsoft.com/en-us/library/cc738858\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc738858(WS.10).aspx)
- <http://windows.microsoft.com/en-US/windows7/products/features/user-account-control>
- <http://technet.microsoft.com/en-us/windowsserver/bb310732.aspx>



## Understand user account control (UAC)

**SCENARIO:** Jim Hance works for Alpine Ski House as the system administrator. Jim has had several problems with the computers in the lobby that are available for Alpine Ski House patrons to check weather conditions or use the Internet. These computers are older and run Windows XP. Jim continually has to resolve issues of malware being installed as customers browse various websites. Jim realizes that the users are probably not intentionally installing malicious software, so he has decided that upgrading the computers to Windows 7 will help solve the problems.

- 1. What feature in Windows 7 will help solve Jim's problems?**
  - a. User Account Control (UAC), which prompts users whenever modifications are being made to the operating system
  - b. Aero desktop, which can include gadgets for weather forecasts
  - c. A Microsoft firewall
- 2. Jim has an Administrator account; what can he do to run the Ski Report application on new computers without getting prompted by UAC?**
  - a. Install the program on the old computers running Windows XP to bypass the prompts.
  - b. Set the User Account Control Policy setting to disable Admin Approval.
  - c. Set the Privilege Level to run as Administrator.
- 3. What does UAC help prevent?**
  - a. UAC helps prevent users from unintentionally installing malicious software.
  - b. UAC prevents users from logging in as Administrator.
  - c. UAC prevents users from controlling user accounts.

### hint

*UAC is a feature in Windows that can help the user control the computer.*

## Answers

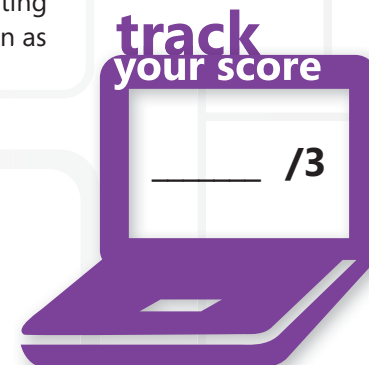
1. What feature in Windows 7 will help solve Jim's problems?
  - a. **User Account Control (UAC), which will prompt users whenever modifications are being made to the operating system**
2. Jim has an Administrator account; what can he do to run the Ski Report application on new computers without getting prompted by UAC?
  - a. **Jim can set the User Account Control Policy setting to disable Admin Approval.**
3. What does UAC help prevent?
  - a. **UAC helps prevent users from unintentionally installing malicious software.**

## Essential details

- **Malicious software** is software created and distributed for harmful purposes, such as invading computer systems with viruses, worms, or innocent-looking plug-ins and extensions that mask other destructive capabilities.
- **User Account Control (UAC)** is a feature in Windows that helps the user stay in control of the computer by issuing notices when a program makes a change that requires administrator-level permission. UAC works by adjusting the permission level of your user account. If you're doing tasks that can be done as a standard user, such as reading email, listening to music, or creating documents, you have the permissions of a standard user, even if you're logged on as an administrator.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-US/windows7/products/features/user-account-control>
- [http://technet.microsoft.com/en-us/library/cc709691\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc709691(WS.10).aspx)
- [http://technet.microsoft.com/en-us/library/ee679793\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/ee679793(WS.10).aspx)



## Remove malicious software

**SCENARIO:** Toni Poe works for Northwind Traders as an IT consultant. Toni's job includes removing malicious software from PCs and laptops, as well as securing the computers. Northwind Traders, a small international clothing business, requires that their two salespeople do a lot of traveling. The salespeople require Internet access while they are on the road and don't always use the safest practices when they are browsing the Internet. Toni is aware of the risks involved with a salesperson browsing the web on an open network while having a cup of coffee, so she has researched tools that she can use to not only remove suspected malware but also prevent it from affecting the laptops running Windows 7 Professional. Toni's budget is pretty small, so she has to make wise decisions when choosing the software.

- 1. What feature of Windows 7 can help protect the laptops from spyware and other threats?**
  - a. Windows Explorer
  - b. Windows Defender
  - c. Windows Proxy 2.0
- 2. Toni was given a laptop to troubleshoot. She suspects that it has become infected with malware. What can she do to remove that malicious software safely?**
  - a. Download and run the Malicious Software Removal Tool.
  - b. Nothing—the laptop is now a large paperweight.
  - c. Browse through each folder and Registry key to look for suspicious files.
- 3. What can Toni install to help prevent viruses from infecting the laptops? She doesn't have any funds to purchase anything at this time.**
  - a. Microsoft Security Essentials, if the company has 10 or fewer computers.
  - b. The Malicious Software Removal Tool.
  - c. Nothing is available; everything that she needs requires purchasing a license.

### hint

*Microsoft Security Essentials is a free antivirus product available for personal and small business use.*

## Answers

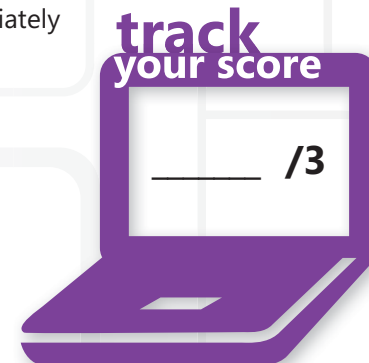
1. What feature of Windows 7 can help protect the laptops from spyware and other threats?
  - b. Windows Defender.** Windows Defender is software that helps protect a computer against pop-ups, slow performance, and security threats caused by spyware and other unwanted software.
2. Toni was given a laptop to troubleshoot. She suspects that it has become infected with malware. What can she do to remove that malicious software safely?
  - a. Download and run the Malicious Software Removal Tool.** The Malicious Software Removal Tool is a free download that scans the system for known malware. It does not prevent malware.
3. What can Toni install to help prevent viruses from infecting her laptops? She doesn't have any funds to purchase anything at this time.
  - a. Microsoft Security Essentials if the company has 10 or fewer computers.**

## Essential details

- **Malicious software** (malware) is software created and distributed for harmful purposes, such as invading computer systems in the form of viruses, worms, or innocent-seeming plug-ins and extensions that mask other destructive capabilities.
- The Registry is a central hierarchical database in Windows used to store information necessary to configure the system for one or more users, applications, and hardware devices.
- **Spyware** is software that performs certain behaviors, generally without appropriately obtaining your consent first.
- A **virus** is a small software program designed to spread from one computer to another and to interfere with computer operations.

### FAST TRACK HELP

- <http://www.microsoft.com/security/pc-security/malware-removal.aspx>
- [http://www.microsoft.com/security\\_essentials/](http://www.microsoft.com/security_essentials/)
- <http://www.microsoft.com/windows/products/winfamily/defender/default.aspx>



## Understand services

**SCENARIO:** Holly Holt is a systems administrator for Lucerne Publishing, a highly recognized publishing company that specializes in barbecue cookbooks. One of the editors was having difficulty printing several chapters of a recent cookbook and contacted Holly to find out what can be done to get the printer to work. This editor also has informed Holly that he is continually getting warnings when he starts his computer in the morning, indicating that his firewall has failed to start, and he is concerned that his computer may be compromised. Holly examines his computer and when she looks at the System Event Log, she notices a Service Control Manager error indicating that the firewall service has failed to start. Holly opens the Services console and starts the Windows Firewall Service without any problem.

### 1. What can Holly do to ensure that the Windows Firewall Service starts as expected?

- Visit the editor's office every morning and manually start the service after the machine has booted.
- Configure the service to have a delayed start temporarily and research why the service isn't starting automatically.
- Ask the editor not to plug into the network until she gets the issue resolved.

### 2. What should Holly do first to troubleshoot the editor's printing issues?

- Verify that the Print Spooler status indicates that it is running.
- Check to be sure the printer has paper.
- Ask the editor to email the chapters to her so she can print a copy.

### 3. After some investigation, Holly notices that the editor attempted to print the same job 20 times after it failed the first time. She cannot delete the print jobs because the queue states that it is Not Responding. What should Holly do to clear the print queue and correct the print issues?

- Reboot the workstation.
- Restart the Print Spooler service from the Services console.
- Unplug the printer, wait several minutes, and plug it back in.

## hint

*The Print Spooler service loads files to memory for later printing.*

## Answers

1. What can Holly do to ensure that the Windows Firewall Service starts as expected?
  - b. **Configure the service to have a delayed start temporarily and research why the service isn't starting automatically.** If the service will start after the other services load, there could be a conflict during startup. The interim solution would be to set the startup type to a delayed startup in an effort to get the system functioning and secured until the issue is corrected.
2. What should Holly do first to troubleshoot the editor's printing issues?
  - a. **Verify that the Print Spooler status indicates that it is running.** Printing services are suspended if the Print Spooler service is stopped.
3. After some investigation, Holly notices that the editor attempted to print the same job 20 times after it failed the first time. She cannot delete the print jobs because the queue states that it is Not Responding. What should Holly do to clear the print queue and correct the print issues?
  - b. **Restart the Print Spooler service from the Services console.** Print jobs can become corrupted. Restarting the Print Spooler service clears all print queues and resets the printer objects.

## Essential details

- A **service** is an application type that runs in the system background without a user interface and is similar to a UNIX daemon process. Services provide core operating system features, such as web serving, event logging, file serving, printing, cryptography, and error reporting.
- The **System Event Log** contains events logged by Windows system components. For example, the failure of a driver or other system component to load during startup is recorded in the system log. The event types logged by system components are predetermined by Windows.

### FAST TRACK HELP

- [http://technet.microsoft.com/en-us/library/cc785922\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc785922(WS.10).aspx)
- [http://technet.microsoft.com/en-us/library/cc739213\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc739213(WS.10).aspx)
- [http://technet.microsoft.com/en-us/library/cc736564\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc736564(WS.10).aspx)



## Understand application virtualization

**SCENARIO:** Walter Harp is a systems administrator for Humongous Insurance (HI). HI is planning to deploy new software, including Microsoft Office 2010. They are also upgrading their desktops to Windows 7 Professional. HI has several third-party applications that are not compatible with Windows 7. Walter has considered running those applications in XP Mode, but he is looking at other options that may make his job easier.

Walter wants to streamline his work and to gain the ability to not only support the older applications, but also manage centrally the new applications that he is planning to deploy. HI has several remote offices that will be involved in this upgrade and deployment. The remote offices have been using Remote Desktop Services (RDS) to gain access to their corporate network.

- 1. What technology or method can Walter use to support the older applications?**
  - a. Stick with using Windows XP Mode on the new workstations running Windows 7 Professional.
  - b. Implement Microsoft Enterprise Desktop Virtualization (MED-V) to help support the older applications by running them in a virtual machine that can be managed centrally.
  - c. Purchase keyboard-video-mouse (KVM) switches and run both desktops side by side.
- 2. How can Walter use RDS to handle his rollout?**
  - a. Have each user connect remotely to the RDS server to run the Office products.
  - b. Use the RemoteApp feature to deploy applications remotely to both internal and mobile users without requiring them to establish an entire desktop session.
  - c. Sell the RDS server and use the additional funds to purchase companion PCs for the remote offices running the older applications.
- 3. What technology can Walter use as an alternative to RDS to deploy Office 2010?**
  - a. Use App-V to virtualize and centrally manage Office 2010.
  - b. Create DVDs of the software and allow his users to install the software themselves.
  - c. Use Group Policies to install Office 2010 for each user.

### hint

*Office 2010 deployment by user configuration is not supported.*



## Answers

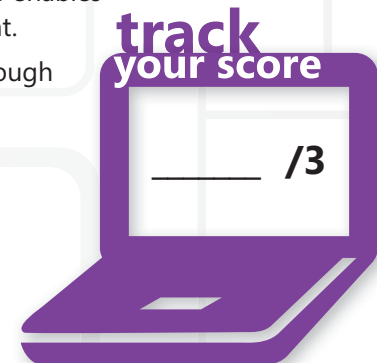
1. What technology or method can Walter use to support the older applications?
  - b. **Implement Microsoft Enterprise Desktop Virtualization (MED-V) to help support the older applications by running them in a virtual machine that can be managed centrally.** MED-V is a centrally managed solution that can eliminate application conflict as well as supports using a virtual machine for older applications.
2. How can Walter use RDS to handle his rollout?
  - b. **Use the RemoteApp feature to deploy applications remotely to both internal and mobile users without requiring them to establish an entire desktop session.** RemoteApp allows for deployment of applications through several interfaces. This would also help their remote users to access applications through a web browser.
3. What technology can Walter use as an alternative to RDS to deploy Office 2010?
  - a. **Use App-V to virtualize and centrally manage Office 2010.** App-V can be used to configure and deploy virtual applications that can be centrally managed and updated.

## Essential details

- **Remote Desktop Services (RDS)** is a server role in Windows Server 2008 R2 that provides technologies that enable users to access Windows-based programs that are installed on a Remote Desktop Session Host (RD Session Host) server, or to access the full Windows desktop. RDS enables the user to deploy and maintain software efficiently in an enterprise environment.
- **RemoteApp** enables the user to make programs that are accessed remotely through RDS appear as if they are running on the user's local computer.
- **A virtual application** is an application that can run in a self-contained, virtual environment. The virtual environment contains the information necessary to run the application on the client without installing the application locally.

### FAST TRACK HELP

- <http://technet.microsoft.com/en-us/library/ee958112.aspx>
- <http://www.microsoft.com/windows/enterprise/products/mdop/med-v.aspx>
- <http://www.microsoft.com/windowsserver2008/en/us/rds-product-home.aspx>



# 4

# Managing Files and Folders

## IN THIS CHAPTER

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- 4.1 Understand file systems
- 4.2 Understand file and print sharing
- 4.3 Understand encryption
- 4.4 Understand libraries



## Understand file systems

**SCENARIO:** Toni Poe is a network administrator for the outdoor sports outfitting company, Adventure Works. Adventure Works is releasing a new snowboard clothing line and anticipates sales to set new records. They have decided to deploy laptops running Windows® 7 Enterprise edition to their existing regional sales staff. Toni has configured the staff laptops to do a daily backup to external hard drives that were purchased with each laptop. Toni is worried that these drives may not be secure and also is concerned that they may run out of space while being used on the road.

- 1. What must Toni do first to secure the external drives?**
  - a. Remind the sales staff of the importance of these drives and that they should never let them out of their sight . . . ever!
  - b. Attach a secure locked cable from the laptop to the drive.
  - c. Verify and convert the drives to NTFS. They most certainly are FAT32 if they were purchased recently.
- 2. Why must Toni convert the drives to NTFS?**
  - a. NTFS will permit her to enable compression on the drives if she needs to free up drive space.
  - b. She doesn't have to convert them to NTFS; she trusts her staff to not lose the drives.
  - c. NTFS has built-in security for file and folder permissions.
- 3. What other advantages does NTFS provide?**
  - a. NTFS supports larger volume sizes and inherent encryption.
  - b. Nothing; NTFS does not offer any advantages over FAT32 volumes.
  - c. NTFS supports only the 8.3 filename format.

### hint

*FAT32 does not support drive compression.*

## Answers

1. What must Toni do first to secure the external drives?
  - c. **Verify and convert the drives to NTFS. They most certainly are FAT32 if they were purchased recently.** Most external drives and USB flash drives are formatted in FAT32 for compatibility reasons.
2. Why must Toni convert the drives to NTFS?
  - a. **NTFS will permit her to enable compression on the drives if she needs to free up drive space.**
3. What other advantages does NTFS provide?
  - a. **NTFS supports larger volume sizes and inherent encryption.** Windows 7 also includes the BitLocker® feature, which is designed for encrypting external and mobile drives.

## Essential details

- **FAT file system** is a file system that has the file allocation table (FAT) located at the beginning of a logical volume. FAT was designed for small disks and simple folder structures. Two copies of the FAT are stored on the volume. If one copy of the FAT is corrupted, the other FAT is used.
- **NT file system (NTFS)** is an advanced filesystem designed for use specifically with Microsoft® Windows NT. It supports long filenames, full security access control, file system recovery, extremely large storagemedia, and various features for the Windows NTPOSIX subsystem.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-US/windows-vista/Comparing-NTFS-and-FAT-file-systems>
- <http://windows.microsoft.com/en-US/windows7/Convert-a-hard-disk-or-partition-to-NTFS-format>



## Understand file and print sharing

**SCENARIO:** Cassie Hicks is a desktop administrator for Fourth Coffee. The company's CIO has asked her to network all the coffee shops' computers so that they can share files and printers. All the computers are running Windows 7 Professional. Cassie accepts the task and begins to investigate the best way to accomplish her assignment. She knows there are files that aren't confidential and can be modified by anyone. She can set up sharing with only one printer at each coffee shop. She wants the shares to be easily accessible and doesn't want the jittery baristas clicking through the file system hunting for the daily specials flyer that they need to print each morning.

- 1. How can Cassie permit network files to be modified by users?**
  - a. Enable public folder access on the computers.
  - b. Save the files to a USB thumb drive and insist that users copy the files to the drive.
  - c. Create email accounts for the users so that they can modify files and send them to one another.
- 2. What can Cassie do to ensure that the baristas can find the flyers they need easily?**
  - a. Ask the baristas to use the `net use` command to map a drive to the shares each morning.
  - b. Map a network drive for each share and select the Reconnect At Logon check box.
  - c. Place detailed instructions on how to locate the files at each computer.
- 3. What can Cassie do to provide printer access to every computer in every shop?**
  - a. Use a USB printer sharing device and cables to connect each computer to the printer.
  - b. Locate the printer with the most central computer and share that printer with all the other computers.
  - c. Purchase inexpensive printers for each computer.

### hint

*A mapped network drive will be displayed in Windows Explorer under Network Locations.*

## Answers

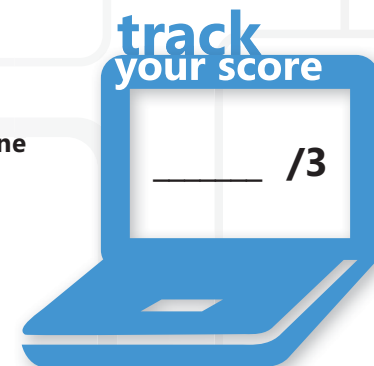
1. How can Cassie permit network files to be modified by users?
  - a. **Enable public folder access on the computers.** Public folders allow all users to have complete access to the contents. The network profile must be modified to allow this feature.
2. What can Cassie do to ensure that the baristas can find the flyersthey need easily?
  - b. **Map a network drive for each share and select the Reconnect At Logon check box.** The Reconnect At Logon setting re-maps the same drive letter when the user logs back on to the system in a later session.
3. What can Cassie do to provide printer access to every computer in every shop?
  - b. **Locate the printer with the most central computer and share that printer with all the other computers.**

## Essential details

- Files and folders (directories) can be made accessible to other users over a network by **sharing**.
- The **permission** settings determine the type of access that a particular user has to a resource (file, folder, or share). Permissions are assigned via the resource's property sheet. Permissions are granted by the system administrator, owner of the resource, or other authorized person.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-us/windows7/File-sharing-essentials>
- <http://windows.microsoft.com/en-US/windows7/Share-files-with-someone>



## Understand encryption

**SCENARIO:** Woodgrove Bank is a small community bank with five branch offices. Their loan officers rotate to each branch as needed. They each have laptops running Windows 7 Professional and also have external mobile drives for data storage and backups. Due to the sensitive nature of banking, it is of high importance to Woodgrove Bank to ensure that their customers' information is secure. Woodgrove Bank has hired Jeff Price, a security consultant, to perform a security audit and submit his findings and recommendations to the board of directors. This information is vital because the bank will be undergoing a security audit from their governing regulatory agency.

- 1. Jeff's initial recommendation is to have the laptops secured with BitLocker. What must be done first to make this change?**
  - a. Purchase BitLocker because Woodgrove Bank does not have licensing for it.
  - b. Upgrade the laptops to Windows 7 Enterprise or Ultimate edition because BitLocker is not available with Windows 7 Professional.
  - c. The bank doesn't have to do anything; it is ready.
- 2. What recommendation can Jeff make for securing the removable storage drives?**
  - a. Secure the drives with Encrypting File System (EFS).
  - b. Secure the drives with BitLocker To Go.
  - c. Make sure that the drives are locked to the desks when they arrive.
- 3. What hardware must the laptops have to provide better security through BitLocker?**
  - a. Security locks on the outside of the laptops, so the loan officers can secure the machine physically.
  - b. Trusted Platform Module (TPM) can be used in addition to BitLocker.
  - c. Smart card readers for authentication.

### hint

*TPM is a hardware feature on most new computers that can be used in conjunction with BitLocker technology.*



## Answers

1. Jeff's initial recommendation is to have the laptops secured with BitLocker. What must be done first to make this change?
  - a. Upgrade their laptops to Windows 7 Enterprise or Ultimate edition because BitLocker is not available with Windows 7 Professional.
2. What recommendation can Jeff make for securing the removable storage drives?
  - a. **Secure the drives with BitLocker To Go.** Bitlocker To Go secures the entire drive. EFS is primarily used for securing file systems.
3. What hardware must the laptops have to provide better security through BitLocker?
  - a. **Trusted Platform Module (TPM) can be used in addition to BitLocker.**

## Essential details

- **Cryptography** is the science of providing security for information. It has been used historically as a means of providing secure communication between individuals, government agencies, and military forces. Today, cryptography is a cornerstone of the modern security technologies used to protect information and resources on both open and closed networks.
- **Encryption** is the process of coding plaintext to create ciphertext.

### FAST TRACK HELP

- <http://technet.microsoft.com/en-us/library/cc700811.aspx>
- <http://technet.microsoft.com/en-us/library/cc732774.aspx>



## Understand libraries

**SCENARIO:** Christian Hess is the desktop administrator for Coho Vineyard. Coho has just purchased 10 computers and 2 laptops configured with Windows 7 Professional that will be networked together. The 2 laptops are for traveling sales representatives.

They need to have access to their files when they are not connected to the company network. In the past, they have had problems maintaining the most recent version of documents because they used the process of copying from the network, making changes, and then later trying to remember to copy the modified files back to the network. They need a more reliable way to maintain the latest versions. They also would like to organize network files more easily into a single repository of different types of files rather than continuing to map to different drives.

- 1. What can Christian do to solve the sales representatives' problems?**
  - a. Configure each laptop to use Offline Folders and mark their network shares to Always Be Available Offline.
  - b. Require that documents have to be checked out and limit modifications.
  - c. Have employees email documents to their inboxes so that they are available outside the network.
- 2. How can Christian use the features of Windows 7 to organize the winery's files better?**
  - a. Create folders labeled for each file type.
  - b. Configure libraries to be the central repositories for multiple network locations.
  - c. Set up each computer to maintain a specific file type and require the users to rotate workstations.
- 3. How can the sales representatives synchronize their documents when they return from a trip?**
  - a. If the files are not configured to synchronize automatically, they can use the Sync Center to synchronize files.
  - b. They can compare their files with the network files and merge the changes manually.
  - c. They can assume the corporate office is too busy with wine tastings to make any changes and just dump their files back to the network.

### hint

*A library can contain files from several locations, both local and network.*

## Answers

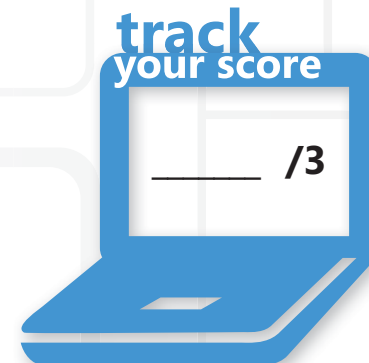
1. What can Christian do to solve the sales representatives' problems?
  - a. **Configure each laptop to use Offline Folders and mark their network shares to Always Be Available Offline.** Offline Folders can be configured through the Sync Center.
2. How can Christian use the features of Windows 7 to organize the winery's files better?
  - b. **Configure libraries to be the central repositories for multiple network locations.** Libraries can be configured to be optimized for different file types. Network locations must be indexed to be made available in the library.
3. How can the sales representatives synchronize their documents when they return from a trip?
  - a. **If the files are not configured to synchronize automatically, they can use the Sync Center to synchronize files.**

## Essential details

- A **cache** is a special memory subsystem in which frequently used data values are duplicated for quick access. A memory cache stores the contents of frequently accessed RAM locations and the addresses where these data items are stored.
- A **library** is a collection of items, such as files and folders that are assembled from various locations. The locations might be on your computer, an external hard drive, or someone else's computer.
- **Synchronization** is a procedure that compares and processes file versions to ensure that they contain the same data.

### FAST TRACK HELP

- <http://technet.microsoft.com/en-us/windows/ee431715.aspx>
- [http://technet.microsoft.com/en-us/library/ee449406\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/ee449406(WS.10).aspx)
- <http://windows.microsoft.com/en-US/windows7/Understanding-offline-files>
- [http://technet.microsoft.com/en-us/library/dd637828\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd637828(WS.10).aspx)
- [http://technet.microsoft.com/en-us/library/ff633429\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/ff633429(WS.10).aspx)



# 5

# Managing Devices

## IN THIS CHAPTER

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- 5.1/5.2 Connect devices; Understand storage
- 5.3 Understand printing devices
- 5.4 Understand system devices





## Connect devices; Understand storage

**SCENARIO:** Kim Abercrombie is a systems consultant for Litware, Inc. One of her major contracts is with the School of Fine Art. Her responsibilities at the school include adding new peripherals to computers and managing the data and file storage needs. The School of Fine Art has only five computers and just upgraded to Windows® 7 Professional. Recently, while Kim was in the school setting up a printer, she was asked for her ideas about providing adequate storage for the school's data and files. Lori Penor, the director of the school, explained to Kim that the staff wants to be able to access their documents while at home, as well as when they are in the office. She was adamant that they do not want to transport files back and forth by using an external drive.

- 1. What can Kim recommend to satisfy the school staff's storage needs so that they can access the data while at home as well as at the school?**
  - a. Store documents using cloud technology.
  - b. Train each employee to email files to their inboxes.
  - c. Purchase a laptop to be shared among the employees that stores all the files.
- 2. Kim wants everyone to have access to the printer. How can she accomplish this?**
  - a. Attach the printer locally using a USB connection to one of the computers and share it.
  - b. Create a system where employees sign up for a specific time to use the printer.
  - c. Place the printer on a movable cart and teach the employees how to connect the printer to their computers.
- 3. After successfully attaching the printer, what can she use to manage the new device?**
  - a. Device Manager
  - b. Devices and Printers
  - c. Windows Registry

### hint

*Printers can be attached locally, directly to the network, or by wireless connection.*

## Answers

1. What can Kim recommend to satisfy the school staff's storage needs so that they can access the data while at home as well as at the school?
  - a. **Store documents using cloud technology.** Microsoft® SkyDrive® or Live Mesh can be used as a solution for small businesses to store their important documents. This also provides a form of business continuity because the documents are stored offsite.
2. Kim wants everyone to have access to the printer. How can she accomplish this?
  - a. **Attach the printer locally using a USB connection to one of the computers and share it.** If the printer has network features, she could also attach it to the network and each user would have access to it.
3. After successfully attaching the printer, what can she use to manage the new device?
  - b. **Devices and Printers.**

## Essential details

- **Plug and Play** technology provides a combination of software and hardware support that enables Windows to detect and configure hardware with little or no user involvement. Plug and Play makes it easier to add and configure hardware on a computer running Windows without special user knowledge of hardware configurations.

### FAST TRACK HELP

- [http://technet.microsoft.com/en-us/library/cc736617\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc736617(WS.10).aspx)
- <http://windows.microsoft.com/en-us/windows7/Install-a-printer>
- <http://explore.live.com/windows-live-mesh?os=other>
- <http://explore.live.com/windows-live-skydrive>



## Understand printing devices

**SCENARIO:** Ben Smith is a network associate with Graphic Design Institute (GDI). GDI has purchased several color laser printers for the classrooms and has asked Ben to set up and configure these print devices to meet a variety of particular needs. GDI would like all the printers set to print the students' graphic designs to landscape orientation by default. All the printers are network-capable; however, GDI's policy is for the classrooms not to be managed by print servers. Each classroom is separate from the Active Directory Domain Services network. GDI wants these printers available for all computers within the classroom and does not want to have to depend upon one computer operating to share the printer.

- 1. How can Ben make these printers available without sharing them from another system?**
  - a. Attach a long USB cable to each computer that can be switched out whenever a student needs to print from his or her computer.
  - b. Add the printer to each computer as a local printer but use the TCP/IP address for the printer port.
  - c. Attach the printer to one computer. Instruct students to save their print jobs to a USB flash drive and take turns using the printing computer.
- 2. How can Ben set the print jobs to landscape orientation so that students do not need to select Landscape for each print job?**
  - a. Navigate to the printing preferences for each computer and set the finishing to Landscape.
  - b. He can't, so he must train each student to select Landscape when they print.
  - c. Load the paper sideways for the document to be printed in landscape orientation.
- 3. Ben has installed and configured all the new printers for GDI successfully. He has received a few emails from an instructor complaining that her print jobs are not printing. She has tried more than 20 times to print and can see all 20 print jobs in the print queue. What can Ben do to resolve this issue?**
  - a. Nothing; when the employee restarts the computer the next day the issue will probably resolve itself.
  - b. Lead the instructor through restarting the Print Spooler service, which will reset her local printers and clear all the print jobs.
  - c. Call in his supervisor to help solve the issue.

### hint

*The Print Spooler service manages all print jobs and print queues.*



## Answers

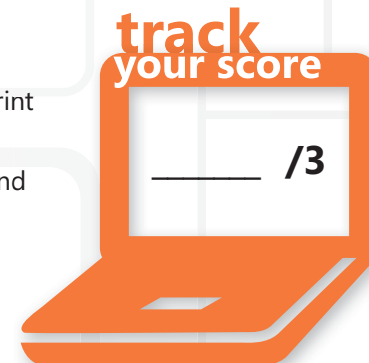
1. How can Ben make these printers available without sharing them from another system?
  - a. **Add the printer to each computer as a local printer but use the TCP/IP address for the printer port.** Network-attached printers can be added as local printers by using a Transmission Control Protocol/Internet Protocol (TCP/IP) port. This treats the printer as a locally attached printer that is not managed by a print server.
2. How can Ben set the print jobs to landscape orientation so that students do not need to select Landscape for each print job?
  - a. **Navigate to the printing preferences for each computer and set the finishing to Landscape.** Setting printing preferences configures the default behavior for printers. Preferences such as orientation, finishing, or paper tray can be configured.
3. Ben has installed and configured all the new printers for GDI successfully. He has received a few emails from an instructor complaining that her print jobs are not printing. She has tried more than 20 times to print and can see all 20 print jobs in the print queue. What can Ben do to resolve this issue?
  - a. **Lead the instructor through restarting the Print Spooler service, which will reset her local printers and clear all the print jobs.** Restarting the Print Spooler service is the most common solution to printers not responding or print jobs being stuck in the print queue. When the Print Spooler service is restarted, all jobs must be resubmitted.

## Essential details

- A **print queue** is a representation of a printing device in Windows. Opening a print queue displays active print jobs and their status.
- A **print spooler** is software that intercepts a print job on its way to the printer and sends it to disk or memory instead, where the print job is held until the printer is ready for it.

### FAST TRACK HELP

- [http://technet.microsoft.com/en-us/library/dd393190\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd393190(WS.10).aspx)
- <http://windows.microsoft.com/en-us/windows7/Install-a-printer>



## Understand system devices

**SCENARIO:** Wingtip Toys has hired Miles Reid, an independent business technology consultant, to help them with their desktop upgrades to Windows 7 Professional. Miles has done some research and asked the right questions regarding their existing peripheral devices. Charlie Herb, the manager for this project, has indicated that there are several input devices that the company would like to use on the new computers, but he is unsure if they are compatible. Wingtip Toys also would like to know if some of the internal devices from the old computers might work on the new computers. The company has already purchased one computer to test some devices, and they have run into some issues after they updated drivers on a couple of the peripherals.

- 1. How can Miles determine if the existing devices at Wingtip Toys will work on the new computers running Windows 7 Professional?**
  - a. Test each device on the new testing computer and mark the items as compatible or not compatible.
  - b. Assume that all devices will work and plow forward with the upgrades.
  - c. Check with Windows 7 Compatibility Center to determine compatibility. He can then provide Wingtip Toys with a list of similar devices that are compatible to replace those that are not.
- 2. What can be done about devices that are no longer working after the device drivers were updated?**
  - a. Throw the devices away because they don't work.
  - b. Keep the old computers so they can use the old devices.
  - c. Because the devices worked prior to the driver update, use Device Manager and choose Roll Back Driver to return to the previous version.
- 3. Miles has determined that a few devices that aren't listed as compatible work on the new workstations running Windows 7. What should he do?**
  - a. Miles shouldn't say a word. They work and that's enough.
  - b. Suggest to Charlie that they should consider upgrading the devices because even though they work, they are not supported under the new operating system.
  - c. Keep the devices as backups and purchase new devices.

### hint

*Devices listed as not compatible may cause problems when new updates are released or other devices are configured.*

## Answers

1. How can Miles determine if the existing devices at Wingtip Toys will work on the new computers running Windows 7 Professional?
  - c. **Check with Window 7 Compatibility Center to determine compatibility. He can then provide Wingtip Toys with a list of similar devices that are compatible to replace those that are not.** Windows 7 Compatibility Center maintains an updated list of devices and software that are compatible and not compatible and it also features news of upcoming updates.
2. What can be done about devices that are no longer working after the device drivers were updated?
  - c. **Because the devices worked prior to the driver update, use Device Manager and choose Roll Back Driver to return to the previous version.** Updating drivers can sometimes cause problems. If the device worked prior to the update, then choosing Rollback driver is an acceptable solution.
3. Miles has determined that a few devices that aren't listed as compatible work on the new workstations running Windows 7. What should he do?
  - b. **Suggest to Charlie that they should consider upgrading the devices because even though they work, they are not supported under the new operating system.**

## Essential details

- A **device** is any piece of equipment that can be attached to a network or computer, such as a printer, joystick, adapter, modem card, or any other peripheral equipment. A device requires a device driver to function with Windows.
- A **device driver** is a component used to provide I/O services for a device such as a modem or network adapter. Rather than access the device directly, Windows loads device drivers and calls functions in the drivers to carry out actions on the device.
- If you **disable** a device in a hardware configuration, it becomes nonfunctional. Disabling a device frees the resources that were allocated to the device.

### FAST TRACK HELP

- [http://technet.microsoft.com/en-us/library/cc776246\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc776246(WS.10).aspx)
- <http://technet.microsoft.com/en-us/windows/dd361745.aspx>
- <http://www.microsoft.com/windows/compatibility/windows-7/en-us/default.aspx>

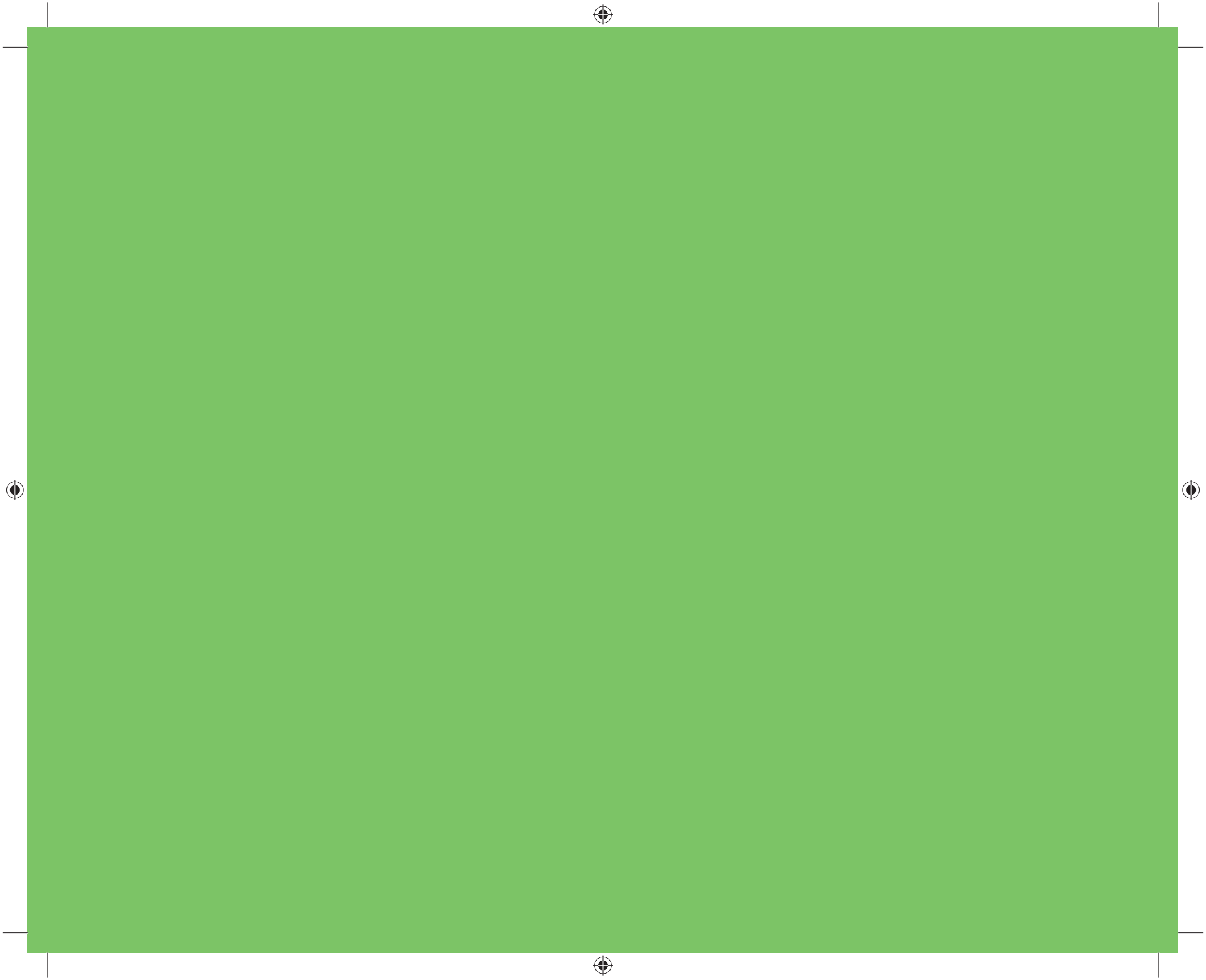


# 6

# Understanding Operating System Maintenance

## IN THIS CHAPTER

- 6.1 Understand backup and recovery methods
- 6.2/6.3 Understand maintenance tools; Understand updates



## Understand backup and recovery methods

**SCENARIO:** Walter Harp is a business consultant and assists Coho Winery with maintaining their small network of Windows® 7 Professional PCs. The company also has a pair of laptops that are running Windows 7. Walter has set up their system so that all their data resides on one computer. Walter is concerned that Coho employees will forget to back up their data regularly, and he needs to come up with a solution to prevent a major loss. He also has concerns with the laptops that are used by two traveling salespeople. There are times when the laptops perform updates that can cause some issues with their custom winery software as well.

- 1. What solution can Walter use to resolve the update issues with the laptops?**
  - a. Configure the laptops to shut down at the end of the normal workday.
  - b. Create restore points so that when a laptop returns, he can restore the system to the point prior to the updates that affected the software.
  - c. Disable the wireless cards on the laptops.
- 2. One laptop stops and freezes immediately after the salesperson logs in. Walter suspects a bad driver or perhaps malware. What can he do to diagnose the problem?**
  - a. Press F8 to enter the Advanced Boot Options menu and boot in to safe mode.
  - b. Plug the laptop into the network and attempt to log on as Administrator.
  - c. Restore a system image to the drive.
- 3. What can Walter do to make sure that system backups run regularly?**
  - a. Schedule an employee to run the backup every day at 5:30 PM.
  - b. Configure Backup and Restore to perform an automated backup daily after business hours.
  - c. Arrive at the office early each day and perform the backups himself.

### hint

*Safe mode loads basic files and drivers necessary to load the Windows operating system.*

## Answers

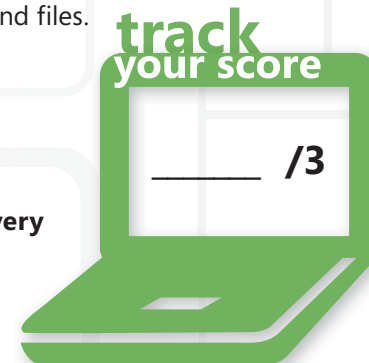
1. What solution can Walter use to resolve the update issues with the laptops?
  - a. **Create restore points so that when a laptop returns, he can restore the system to the point prior to the updates that affected the software.** Restore points restore the registry and system settings from a previous point in time. It does not affect personal files, but it may uninstall software or drivers.
2. One laptop stops and freezes after the salesperson logs in. Walter suspects a bad driver or perhaps malware. What can he do to begin diagnosing the problem?
  - a. **Press F8 to enter the Advanced Boot Options menu and boot in to safe mode.** Safe mode loads basic files and drivers. If Walter suspects malware, he should not connect it to the network with the other computers.
3. What can Walter do to make sure that the systems backups are running regularly?
  - b. **Configure Backup and Restore to perform an automated backup daily after business hours.**

## Essential details

- **Safe mode** is a troubleshooting option for Windows that starts the computer in a limited state. Only the basic files and drivers necessary to run Windows are started.
- A **system image** is an exact copy of a drive. By default, a system image includes the drives required for Windows to run. It also includes Windows and your system settings, programs, and files.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-US/windows7/Back-up-and-restore-frequently-asked-questions>
- <http://windows.microsoft.com/en-US/windows7/help/system-repair-recovery>
- <http://windows.microsoft.com/en-US/windows7/what-is-safe-mode>
- <http://windows.microsoft.com/en-US/windows7/Advanced-startup-options-including-safe-mode>



## Understand maintenance tools; Understand updates

**SCENARIO:** Jeff Hay is a desktop administrator with Blue Yonder Airlines. His job is maintaining the desktop computers in the airport terminal to ensure that they remain secure and run efficiently. The computers at the ticket counters are running Windows 7 Professional and Jeff has had a difficult time maintaining a high level of performance on some of them. He examined the computers and identified several things he can do to increase performance. Jeff also knows that Windows Updates are not being installed on a timely basis and has had to occasionally run updates during his lunch break.

- 1. Jeff has discovered that the computers have many unneeded temporary files. What can he do to be sure temporary files are removed on a regular basis?**
  - a. Teach the counter staff to search for files and delete those they think are unnecessary.
  - b. Create a task in Task Scheduler and run Disk Cleanup monthly.
  - c. Re-install the operating systems every month to keep them clean.
- 2. Jeff knows that using Disk Defragmenter is a great way to keep the computers running smoothly. Should he configure another task in Task Scheduler to defragment the computers automatically?**
  - a. No, Windows 7 defragments the hard drives automatically on a regular schedule.
  - b. Yes, defragmenting on a regular basis optimizes the operating system.
  - c. No, defragmenting is a waste of time.
- 3. How can Jeff manage updates so that he can enjoy his lunch breaks again?**
  - a. Schedule the updates to be downloaded and installed automatically.
  - b. Train the counter staff to run the updates.
  - c. Nothing, he has lost 20 pounds in the last six months by skipping lunch.

### hint

*Task Scheduler can start Disk Cleanup, however specific drives and files must be selected before it can execute.*



## Answers

1. Jeff has discovered that the computers have many unneeded temporary files. What can he do to be sure temporary files are removed on a regular basis?
  - a. **Create a task in Task Scheduler and run Disk Cleanup monthly.** Running Disk Cleanup in conjunction with Disk Defragmenter is an inexpensive way to maintain and optimize the Windows 7 operating system.
2. Jeff knows that using Disk Defragmenter is a great way to keep the computers running smoothly. Should he configure another task in Task Scheduler to defragment the computers automatically?
  - a. **No, Windows 7 defragments the hard drives automatically on a regular schedule.**
3. How can Jeff manage updates so that he can enjoy his lunch breaks again?
  - a. **Schedule the updates to be downloaded and installed automatically.**

## Essential details

- **Windows updates** include additions to software that can help prevent or fix problems, improve how your computer works, and enhance your computing experience.
- **Fragmentation** occurs as files on a disk are deleted and new files are added. It slows disk access and degrades the overall performance of disk operations.
- **A service pack** is a collection updates since the release of the product, including many resolved problems that have not been made available through any other software updates and may contain customer-requested design changes or features.

### FAST TRACK HELP

- <http://windows.microsoft.com/en-US/windows7/Improve-performance-by-defragmenting-your-hard-disk>
- <http://windows.microsoft.com/en-us/windows7/Delete-files-using-Disk-Cleanup>
- <http://windows.microsoft.com/en-US/windows7/Schedule-Disk-Cleanup-to-run-regularly>
- <http://technet.microsoft.com/en-us/library/cc700845.aspx>
- <http://windows.microsoft.com/en-US/windows7/products/features/windows-update>

