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MCSA 70-687 Cert Guide: Configuring Microsoft Windows 8.1

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MCSA 70-687 Cert Guide: Configuring Microsoft Windows 8.1

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Introduction

MCSA 70-687 Cert Guide: Configuring Microsoft Windows 8.1 is designed for network administrators, network engineers, and consultants who are pursuing the Microsoft Certified Solutions Associate (MCSA) certification for Windows 8.1. This book covers the “Configuring Windows 8.1” exam (70-687), which is the first of two exams required for earning the MCSA: Windows 8, certification. The exam is designed to measure your skill and ability to implement, administer, and troubleshoot computers running all editions of Windows 8.1. Microsoft not only tests you on your knowledge of the desktop operating system (OS), but also has purposefully developed questions on the exam to force you to problem-solve in the same way that you would when presented with a real-life errors. Passing this exam demonstrates your competency in administration.

This book covers all the objectives that Microsoft has established for exam 70-687. It doesn’t offer end-to-end coverage of the Windows 8.1 OS; rather, it helps you develop the specific core competencies that you need to master as a desktop support specialist. You should be able to pass the exam by learning the material in this book, without taking a class.

Goals and Methods

The number-one goal of this book is a simple one: to help you pass the Configuring Windows 8.1 Certification Exam (exam number 70-687). It is the first step in obtaining the MCSA certification in Windows 8.1, and is a stepping stone toward the Microsoft Certified Solutions Expert (MCSE) in any of several Windows fields.

Because Microsoft certification exams stress problem-solving abilities and reasoning more than memorization of terms and facts, our goal is to help you master and understand the required objectives for the 70-687 exam.

To aid you in mastering and understanding the MCSA certification objectives, this book uses the following methods:

- **Opening Topics List:** This defines the topics to be covered in the chapter.
- **Do I Know This Already? Quizzes:** At the beginning of each chapter is a quiz. The quizzes, and answers/explanations (found in Appendix A), are meant to gauge your knowledge of the subjects. If the answers to the questions don’t come readily to you, be sure to read the entire chapter.
- **Foundation Topics:** The heart of the chapter. Explains the topics from a hands-on and a theory-based standpoint. This includes in-depth descriptions, tables, and figures geared to build your knowledge so that you can pass the exam. The chapters are broken down into several topics each.

- **Key Topics:** The key topics indicate important figures, tables, and lists of information that you should know for the exam. They are interspersed throughout the chapter and are listed in table form at the end of the chapter.
- **Memory Tables:** These can be found on the CD-ROM within Appendix B, “Memory Tables.” Use them to help memorize important information.
- **Key Terms:** Key terms without definitions are listed at the end of each chapter. Write down the definition of each term and check your work against the complete key terms in the glossary.

Study and Exam Preparation Tips

It’s a rush of adrenaline during the final day before an exam. If you’ve scheduled the exam on a workday, or following a workday, you will find yourself cursing the tasks you normally cheerfully perform because the back of your mind is telling you to read just a bit more, study another scenario, practice another skill so that you will be able to get this exam out of the way successfully.

The way that Microsoft has designed its tests lately does not help. I remember taking Microsoft exams many years ago and thoroughly understanding the term “paper certified.” Nowadays, you can’t get through a Microsoft exam without knowing the material so well that when confronted with a problem, whether a scenario or real-life situation, you can handle the challenge. Instead of trying to show the world how many MCSAs or MCSEs are out there, Microsoft is trying to prove how difficult it is to achieve a certification, thereby making those who are certified more valuable to their organizations.

Learning Styles

To best understand the nature of preparation for the test, you need to understand learning as a process. You are probably aware of how you best learn new material. You might find that outlining works best for you, or, as a visual learner, you might need to “see” things. Or, as a person who studies kinesthetically, the hands-on approach serves you best. Whether you might need models or examples, or maybe you just like exploring the interface, or whatever your learning style, solid test preparation works best when it takes place over time. Obviously, you shouldn’t start studying for a certification exam the night before you take it; it is very important to understand that learning is a developmental process. Understanding learning as a process helps you focus on what you know and what you have yet to learn.

People study in a combination of different ways: by doing, by seeing, and by hearing and writing. This book’s design fulfills all three of these study methods. For the kinesthetic, there are key topics scattered throughout each chapter. You will also

discover step-by-step procedural instructions that walk you through the skills you need to master in Windows 8.1. The visual learner can find plenty of screen shots explaining the concepts described in the text. The auditory learner can reinforce skills by reading out loud and copying down key concepts and exam tips scattered throughout the book. You can also practice writing down the meaning of the key terms defined in each chapter, and in completing the memory tables for most chapters found on the accompanying CD-ROM. While reading this book, you will realize that it stands the test of time. You will be able to turn to it over and over again.

Thinking about how you learn should help you recognize that learning takes place when you are able to match new information to old. You have some previous experience with computers and networking. Now you are preparing for this certification exam. Using this book, software, and supplementary materials will not just add incrementally to what you know; as you study, the organization of your knowledge actually restructures as you integrate new information into your existing knowledge base. This leads you to a more comprehensive understanding of the tasks and concepts outlined in the objectives and of computing in general. Again, this happens as a result of a repetitive process rather than a singular event. If you keep this model of learning in mind as you prepare for the exam, you will make better decisions concerning what to study and how much more studying you need to do.

Study Tips

There are many ways to approach studying, just as there are many different types of material to study. However, the tips that follow should work well for the type of material covered on Microsoft certification exams.

Study Strategies

Although individuals vary in the ways they learn information, some basic principles of learning apply to everyone. You should adopt some study strategies that take advantage of these principles. One of these principles is that learning can be broken into various depths. Recognition (of terms, for example) exemplifies a rather surface level of learning in which you rely on a prompt of some sort to elicit recall. Comprehension or understanding (of the concepts behind the terms, for example) represents a deeper level of learning than recognition. The ability to analyze a concept and apply your understanding of it in a new way represents further depth of learning.

Your learning strategy should enable you to know the material at a level or two deeper than mere recognition. This will help you perform well on the exams. You will know the material so thoroughly that you can go beyond the recognition-level types of questions commonly used in fact-based multiple-choice testing. You will be able to apply your knowledge to solve new problems.

Macro and Micro Study Strategies

One strategy that can lead to deep learning includes preparing an outline that covers all the objectives and subobjectives for the particular exam you are planning to take. You should delve a bit further into the material and include a level or two of detail beyond the stated objectives and subobjectives for the exam. Then you should expand the outline by coming up with a statement of definition or a summary for each point in the outline.

An outline provides two approaches to studying. First, you can study the outline by focusing on the organization of the material. You can work your way through the points and subpoints of your outline, with the goal of learning how they relate to one another. For example, you should be sure you understand how each of the main objective areas for Exam 70-687 is similar to and different from another. Then you should do the same thing with the subobjectives; you should be sure you know which subobjectives pertain to each objective area and how they relate to one another.

Next, you can work through the outline, focusing on learning the details. You should memorize and understand terms and their definitions, facts, rules and tactics, advantages and disadvantages, and so on. In this pass through the outline, you should attempt to learn detail rather than the big picture (that is, the organizational information that you worked on in the first pass through the outline).

Research has shown that attempting to assimilate both types of information at the same time interferes with the overall learning process. If you separate your studying into these two approaches, you will perform better on the exam.

Active Study Strategies

The process of writing down and defining objectives, subobjectives, terms, facts, and definitions promotes a more active learning strategy than merely reading the material does. In human information-processing terms, writing forces you to engage in more active encoding of the information. Simply reading over the information leads to more passive processing. Using this study strategy, you should focus on writing down the items highlighted in the book: bulleted or numbered lists, key topics, notes, cautions, and review sections, for example.

You need to determine whether you can apply the information you have learned by attempting to create examples and scenarios on your own. You should think about how or where you could apply the concepts you are learning. Again, you should write down this information to process the facts and concepts in an active fashion.

Common-Sense Strategies

You should follow common-sense practices when studying: You should study when you are alert, reduce or eliminate distractions, and take breaks when you become fatigued.

Pretesting Yourself

Pretesting enables you to assess how well you are learning. One of the most important aspects of learning is what has been called *meta-learning*. Meta-learning has to do with realizing when you know something well or when you need to study some more. In other words, you recognize how well or how poorly you have learned the material you are studying.

For most people, this can be difficult to assess. Memory tables, practice questions, and practice tests are useful in that they reveal objectively what you have learned and what you have not learned. You should use this information to guide review and further studying. Developmental learning takes place as you cycle through studying, assessing how well you have learned, reviewing, and assessing again until you feel you are ready to take the exam.

You might have noticed the practice exam included in this book. You should use it as part of the learning process. The Pearson IT Certification Practice Test engine included on this book's CD-ROM also provides you with an excellent opportunity to assess your knowledge.

You should set a goal for your pretesting. A reasonable goal would be to score consistently in the 90% range.

Exam Prep Tips

After you have mastered the subject matter, the final preparatory step is to understand how the exam will be presented. Make no mistake: An MCSA exam challenges both your knowledge and your test-taking skills. Preparing for the 70-687 exam is a bit different from preparing for those old Microsoft exams. The following is a list of things that you should consider doing:

- **Combine Your Skill Sets into Solutions:** In the past, exams would test whether you knew to select the right letter of a multiple-choice answer. Today, you need to know how to resolve a problem that might involve different aspects of the material covered. For example, on exam 70-687, you could be presented with a problem that requires you to understand how to incorporate drivers in an unattended installation, as well as what errors you might see if you installed a computer that used a device driver incompatible with Windows 8.1. The

skills themselves are simple. Being able to zero in on what caused the problem and then to resolve it for a specific situation is what you need to demonstrate. In fact, you should not only be able to select one answer, but also multiple parts of a total solution.

- **Delve into Excruciating Details:** The exam questions incorporate a great deal of information in the scenarios. Some of the information is ancillary: It will help you rule out possible issues, but not necessarily resolve the answer. Some of the information simply provides you with a greater picture, as you would have in real life. Some information is key to your solution. For example, you might be presented with a question that lists a computer's hard disk size, memory size, and detailed hardware configuration. When you delve further into the question, you realize that the hardware configuration is the problem. Other times, you will find that the hardware configuration simply eliminates one or more of the answers that you could select. For example, a portable laptop does not support dynamic disks, so if the hardware configuration is a portable laptop and one of the answers is a dynamic disk configuration, you can eliminate it. If you don't pay attention to what you can eliminate, the answer can elude you completely. Other times, the hardware configuration simply lets you know that the hardware is adequate.
- **TCP/IP Troubleshooting Is Built Right In:** Because TCP/IP is a core technology to the Windows 8.1 operating system, you are expected to know how to configure the operating system, how to recognize IP conflicts, and how to use the TCP/IP tools to troubleshoot the problem. Furthermore, Microsoft expects you to know how to work with the new version 6 of TCP/IP along with the traditional version 4 that has been used for many years. You should also be able to discern between an IP problem and something wrong with the OS or hardware, or even some combination that involves IP along with some other element.
- **It's a GUI Test:** Microsoft has expanded its testing criteria into interface recognition. You should be able to recognize each dialog box, properties sheet, options, and defaults. You will be tested on how to navigate the new interface: for example, the new Start screen and apps used by Windows 8.1, as well as the Category View shown in Control Panel. If you have not yet learned the new interface, you might end up selecting answers that are deliberately placed to confuse a person used to the old Windows desktop. Of course, if you know the difference between the two, you'll be able to spot the old ones and avoid them.
- **Practice with a Time Limit:** The tests have always been time restricted, but it takes more time to read and understand the scenarios now and time is a whole lot tighter. To get used to the time limits, test yourself with a timer. Know how long it takes you to read scenarios and select answers.

Microsoft 70-687 Exam Topics

Table I-1 lists the exam topics for the Microsoft 70-687 exam. This table also lists the book parts in which each exam topic is covered.

Table I-1 Microsoft 70-687 Exam Topics

Chapter	Title	70-687 Exam Topics Covered
Chapter 1	Introducing Windows 8.1	<p>Evaluate hardware readiness and compatibility</p> <ul style="list-style-type: none"> ■ Choose between an upgrade and a clean installation; determine which SKU to use, including Windows RT; determine requirements for particular features, including Hyper-V, Miracast display, pervasive device encryption, virtual smart cards, and Secure Boot
Chapter 2	Installing Windows 8.1	<p>Install Windows 8.1</p> <ul style="list-style-type: none"> ■ Install as Windows To Go, migrate from previous versions of Windows to Windows 8.1, upgrade from Windows 7 or Windows 8 to Windows 8.1, install to VHD, install additional Windows features, configure Windows for additional languages
Chapter 3	Migrating Users and Applications to Windows 8.1	<p>Migrate and configure user data</p> <ul style="list-style-type: none"> ■ Migrate user profiles; configure folder location; configure profiles, including profile version, local, roaming, and mandatory
Chapter 4	Configuring Devices and Device Drivers	<p>Configure devices and device drivers</p> <ul style="list-style-type: none"> ■ Install, update, disable, and roll back drivers; resolve driver issues; configure driver settings, including signed and unsigned drivers; manage driver packages
Chapter 5	Installing, Configuring, and Securing Applications in Windows 8.1	<p>Install and configure desktop apps and Windows Store apps</p> <ul style="list-style-type: none"> ■ Install and repair applications by using Windows Installer, configure default program settings, modify file associations, manage access to Windows Store
Chapter 6	Configuring Internet Explorer	<p>Configure Internet Explorer 11 and Internet Explorer for the desktop</p> <ul style="list-style-type: none"> ■ Configure compatibility view; configure Internet Explorer 11 settings, including add-ons, downloads, security, and privacy

Chapter 7	Configuring Hyper-V	<p>Configure Hyper-V</p> <ul style="list-style-type: none"> ■ Create and configure virtual machines, including integration services; create and manage checkpoints; create and configure virtual switches; create and configure virtual disks; move a virtual machine's storage
Chapter 8	Configuring TCP/IP Settings	<p>Configure IP settings</p> <ul style="list-style-type: none"> ■ Configure name resolution, connect to a network, configure network locations
Chapter 9	Configuring Networking Settings	<p>Configure networking settings</p> <ul style="list-style-type: none"> ■ Connect to a wireless network, manage preferred wireless networks, configure network adapters, configure location-aware printing
Chapter 10	Configuring and Maintaining Network Security	<p>Configure and maintain network security</p> <ul style="list-style-type: none"> ■ Configure Windows Firewall, configure Windows Firewall with Advanced Security, configure connection security rules (IPsec), configure authenticated exceptions, configure network discovery
Chapter 11	Configuring and Securing Access to Files and Folders	<p>Configure shared resources</p> <ul style="list-style-type: none"> ■ Configure shared folder permissions, configure HomeGroup settings, configure libraries, configure shared printers, set up and configure OneDrive <p>Configure file and folder access</p> <ul style="list-style-type: none"> ■ Encrypt files and folders by using Encrypting File System (EFS), configure NTFS permissions, configure disk quotas, configure file access auditing
Chapter 12	Configuring Local Security Settings	<p>Configure local security settings</p> <ul style="list-style-type: none"> ■ Configure local security policy, configure User Account Control (UAC) behavior, configure Secure Boot, configure SmartScreen filter
Chapter 13	Configuring Authentication and Authorization	<p>Configure authentication and authorization</p> <ul style="list-style-type: none"> ■ Configure user rights, manage credentials, manage certificates, configure biometrics, configure picture password, configure PIN, set up and configure Microsoft account, configure virtual smart cards, configure authentication in workgroups or domains, configure User Account Control (UAC) behavior

Chapter 14	Configuring Remote Management and Remote Connections	<p>Configure remote management</p> <ul style="list-style-type: none"> ■ Choose the appropriate remote management tools; configure remote management settings; modify settings remotely by using MMCs or Windows PowerShell; configure Remote Assistance, including Easy Connect <p>Configure remote connections</p> <ul style="list-style-type: none"> ■ Configure remote authentication, configure Remote Desktop settings, configure virtual private network (VPN) connections and authentication, enable VPN reconnect, configure broadband tethering
Chapter 15	Configuring and Securing Mobile Devices	<p>Configure mobility options</p> <ul style="list-style-type: none"> ■ Configure offline file policies, configure power policies, configure Windows To Go, configure sync options, configure WiFi direct <p>Configure security for mobile devices</p> <ul style="list-style-type: none"> ■ Configure BitLocker and BitLocker To Go, configure startup key storage
Chapter 16	Configuring Windows Update	<p>Configure and manage updates</p> <ul style="list-style-type: none"> ■ Configure update settings, configure Windows Update policies, manage update history, roll back updates, update Windows Store apps
Chapter 17	Disk Management	<p>Manage local storage</p> <ul style="list-style-type: none"> ■ Manage disk volumes and file systems, manage storage spaces
Chapter 18	Managing and Monitoring System Performance	<p>Monitor system performance</p> <ul style="list-style-type: none"> ■ Configure and analyze event logs, configure event subscriptions, configure Task Manager, monitor system resources, optimize networking performance, configure indexing options
Chapter 19	Configuring System Recovery Options	<p>Configure system recovery</p> <ul style="list-style-type: none"> ■ Configure a recovery drive, configure system restore, perform a driver rollback, perform a refresh or recycle, configure restore points
Chapter 20	Configuring File Recovery	<p>Configure file recovery</p> <ul style="list-style-type: none"> ■ Restore previous versions of files and folders, configure file history, recover files from OneDrive

How This Book Is Organized

Although this book could be read cover to cover, it is designed to be flexible and enable you to easily move between chapters and sections of chapters to cover just the material that you need more work with. If you do intend to read all the chapters, the order in the book is an excellent sequence to use.

- **Chapter 1, “Introducing Windows 8.1”:** This introductory chapter is designed to ease readers who are new to Windows 8.1 into this book. It provides a broad description of the components of the Windows 8.1 operating system, including the major items that are new or recently updated, the Start screen and desktop interfaces, and the Control Panel components. It then goes on to identify the requirements for running Windows 8.1 on your computer.
- **Chapter 2, “Installing Windows 8.1”:** This chapter covers installing Windows 8.1 on a new computer without an operating system.
- **Chapter 3, “Migrating Users and Applications to Windows 8.1”:** This chapter discusses the procedures available for getting users of older computers working on new Windows 8.1 computers with a minimum of delay. It then describes procedures involved in redirecting the location of standard library folders and configuring user profiles.
- **Chapter 4, “Configuring Devices and Device Drivers”:** This chapter covers procedures you might use to set up and configure a variety of hardware devices, including use of the drivers that interface these devices with the Windows operating system.
- **Chapter 5, “Installing, Configuring, and Securing Applications in Windows 8.1”:** Applications are the heart of any work done by users with Windows 8.1 computers. This chapter discusses methods you might use to set up applications and configure or troubleshoot options with these applications, including the new Windows Store applications included by default with every Windows 8.1 computer. It also describes policies that you can employ to limit the applications that users can run on their Windows 8.1 computers.
- **Chapter 6, “Configuring Internet Explorer”:** Windows 8.1 includes two versions of Internet Explorer 11—the Start screen version and Internet Explorer for the Desktop. This chapter describes the differences between these versions and shows you how to configure various security settings that limit the ability of malicious Internet content to display on the computer.
- **Chapter 7, “Configuring Hyper-V”:** Virtualization is becoming increasingly prevalent in the corporate world these days, and this chapter discusses methods available for creating and using virtual machines, virtual hard disks, and virtual network switches.

- **Chapter 8, “Configuring TCP/IP Settings”:** This chapter discusses versions 4 and 6 of the TCP/IP protocol together with setting up network connections and name resolution. It also discusses network connectivity problems.
- **Chapter 9, “Configuring Networking Settings”:** This chapter describes the methodology involved in connecting to and managing wireless networks. It then goes on to discuss issues that might occur with network adapters and concludes with a discussion of location-aware printing.
- **Chapter 10, “Configuring and Maintaining Network Security”:** This chapter discusses the methods available for configuring and maintaining Windows Firewall, as well as network discovery and wireless network security.
- **Chapter 11, “Configuring and Securing Access to Files and Folders”:** This chapter covers sharing of files, folders, and printers and restricting access to these resources by users and groups. It also covers the use of the Encrypting File System (EFS) to provide an extra layer of security to sensitive documents.
- **Chapter 12, “Configuring Local Security Settings”:** This chapter discusses various local security settings that help to protect your Windows 8.1 computer, including User Account Control, Secure Boot, and SmartScreen Filters.
- **Chapter 13, “Configuring Authentication and Authorization”:** This chapter describes methods available for verifying the identity of objects, services, and users that are connecting to Windows 8.1. It shows you how to manage credentials, certificates, smart cards, and PINs used in authenticating users to Windows 8.1 and authorizing their connections to various resources.
- **Chapter 14, “Configuring Remote Management and Remote Connections”:** More and more users need to connect to corporate networks from diverse locations such as home, hotels, and client locations. This chapter covers all methods used for creating, authenticating, and troubleshooting these remote connections.
- **Chapter 15, “Configuring and Securing Mobile Devices”:** This chapter covers topics of special interest to users with portable computers, including data protection, network access, power options, Wi-Fi Direct, startup key storage, Remote Wipe, and Windows Location Services.
- **Chapter 16, “Configuring Windows Update”:** This chapter covers methods you might use to ensure that computers are kept up-to-date with the latest Microsoft patches, hotfixes, and service packs.
- **Chapter 17, “Disk Management”:** This chapter discusses methods you would use for installing and managing disks and disk volumes and troubleshooting problems you might encounter with disks.

- **Chapter 18, “Managing and Monitoring System Performance”:** This chapter focuses on computer performance and looks at factors that might cause degraded performance and steps you might take to restore performance to an acceptable level.
- **Chapter 19, “Configuring System Recovery Options”:** This chapter covers methods you can use to recover computers that have encountered startup and other problems.
- **Chapter 20, “Configuring File Recovery”:** This chapter discusses the new File History feature in Windows 8.1 that is now the primary application for backing up and recovering data on your computer. It also shows you how to recover files and previous versions of files from OneDrive.

In addition to the 20 main chapters, this book includes tools to help you verify that you are prepared to take the exam. The CD includes the glossary, practice tests, and memory tables that you can work through to verify your knowledge of the subject matter.

About the Authors

Don Poulton (A+, Network+, Security+, MCSA, MCSE) is an independent consultant who has been involved with computers since the days of 80-column punch cards. After a career of more than 20 years in environmental science, Don switched careers and trained as a Windows NT 4.0 MCSE. He has been involved in consulting with a couple of small training providers as a technical writer, during which time he wrote training and exam prep materials for Windows NT 4.0, Windows 2000, and Windows XP. Don has written or contributed to several titles, including *Security+ Lab Manual* (Que, 2004); *MCSA/MCSE 70-299 Exam Cram 2: Implementing and Administering Security in a Windows 2003 Network (Exam Cram 2)* (Que, 2004); *MCSE 70-294 Exam Prep: Planning, Implementing, and Maintaining a Microsoft Windows Server 2003 Active Directory Infrastructure* (Que, 2006); *MCTS 70-620 Exam Prep: Microsoft Windows Vista, Configuring* (Que, 2008); *MCTS 70-680 Cert Guide: Microsoft Windows 7, Configuring* (Que, 2011); *MCTS 70-640 Cert Guide: Windows Server 2008 Active Directory, Configuring* (Que, 2011); and *MCTS 70-642 Cert Guide: Windows Server 2008 Network Infrastructure, Configuring* (Que, 2012).

In addition, he has worked on programming projects, both in his days as an environmental scientist and more recently with Visual Basic, to update an older statistical package used for multivariate analysis of sediment contaminants.

When not working on computers, Don is an avid amateur photographer who has had his photos displayed in international competitions and published in magazines such as *Michigan Natural Resources Magazine* and *National Geographic Traveler*. Don also enjoys traveling and keeping fit.

Don lives in Burlington, Ontario, with his wife, Terry.

Randy Bellet: After establishing himself as a retailer in Richmond, Virginia, curiosity about the fledgling small computer industry brought Randy Bellet into the IT field in 1981. Beginning with the TRS-DOS operating system on a Radio Shack Model III and “sneaker-net,” he automated his and other businesses, initially programming spreadsheets using one of the original versions of VisiCalc. Hardware consisted of 32K of RAM, monochrome monitors, and no hard drives. Data was stored on floppy disks that really flopped. After the PC-XT and its clones arrived, he followed the market and extended his skills into the networking of PCs and XENIX servers and wrote applications for the retail and pager industries.

As PCs became commonplace and their connectivity a necessity, Randy configured Windows client-server networks for small and medium-sized businesses, and wrote n-tier applications on various Windows platforms ranging from Windows 3.1 through Windows 2008 Server for the medical, insurance, food, and leisure industries. As organizations expanded and scaled their uses of PCs, extracting data from mainframes for use in Windows applications became a specialty.

Since 1999, Mr. Bellet has been on the faculty of ECPI University, delivering and developing courses in Network Security and Programming, and writing ancillary instructor materials. Certifications include CompTIA Network +, MCSE, MCSD, and MCDBA. He holds a bachelor's degree in economics and marketing from New York University, and a master's degree in IT from Virginia Tech.

Harry Holt started his career in the early 1980s while working in trust accounting, where he discovered the advantages of Lotus 123 over paper spreadsheets, and how much better D:Base was at tracking transactions than a cabinet full of 3x5 index cards. That prompted a career change, and Harry took advantage of the burgeoning IT program at Virginia Commonwealth University's prestigious School of Business to hone his knowledge.

Harry gained experience over the years in most technical roles in the industry—from computer operator, programmer, LAN administrator, to network engineer, DBA, and project manager, among others. He has used his skills to improve efficiencies in a range of organizations including Fortune 500 companies, financial institutions, government agencies, and even small partnerships and sole proprietorships.

Exploring aspects of the computer industry both professionally, as a hobby, and as a volunteer for various non-profit organizations, Harry gained a working knowledge of many types of systems from large IBM z/OS mainframes, VAX systems, and Unix platforms, to Windows, Macintosh, and Linux systems. He can program in a variety of development languages and platforms, and enjoys collaborating in open source projects. Harry has a bachelor's degree in IT with a PMP certification, and is currently working as a Cyber Applications Manager in Richmond, Virginia.

Dedications

I would like to dedicate this book to my newest grandson Blake, who holds a world of international love in his future with his Chinese/Canadian heritage.

—Don Poulton

Dedicated to Evelyn, Rachel, and Sarah, all of whom supported my career choices at every turn.

—Randy Bellet

Dedicated to Donna, who taught me about healthy eating, which really helped while working on this book.

—Harry Holt

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—Don Poulton

Thanks to everyone at Pearson including Betsy Brown, who brought me on board; Chris Crayton and Chris Cleveland, who did everything to move this project along, even though the technology changed as we were writing; and to Vanessa Evans. Thanks especially to Don Poulton, who set the standard, and to Harry Holt, whose tireless efforts and research made this all something special.

—Randy Bellet

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—Harry Holt

We Want to Hear from You!

As the reader of this book, *you* are our most important critic and commentator. We value your opinion and want to know what we're doing right, what we could do better, what areas you'd like to see us publish in, and any other words of wisdom you're willing to pass our way.

We welcome your comments. You can email or write to let us know what you did or didn't like about this book—as well as what we can do to make our books better.

Please note that we cannot help you with technical problems related to the topic of this book.

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This chapter covers the following subjects:

- **Migrating Users and Their Profiles:** Microsoft provides methods you can use for migrating user files plus desktop and application settings from one computer to another: the User State Migration Tool (USMT) and the Windows Easy Transfer Wizard. This section shows you how to use these tools and provides guidelines as to when you should use each one.
- **Configuring Folder Redirection:** You can redirect library folders such as documents, music, pictures, and videos to common locations such as shared folders on a server. This enables you to keep track of users' documents and ensure that they are properly and regularly backed up. Group Policy provides policy settings that can be used to enforce folder redirection.
- **Configuring Profiles:** Windows provides user profiles that are composed of desktop settings, files, application data, and the specific environment established by the user. You can configure roaming user profiles that are stored on a server so that they are available to users regardless of the computer they access, or mandatory profiles that users are not able to modify.

Migrating Users and Applications to Windows 8.1

Many companies can purchase new computers with Windows 8.1 already loaded or upgrade certain computers from Windows XP, Vista, or 7. Users who will be working with these computers may have been using older Windows computers for several years, and these computers will have applications with user- or company-specific settings as well as important data on them. Microsoft provides tools to assist you in migrating users and applications to new Windows 8.1 computers, and it expects you to know how to perform these migrations in an efficient manner as part of the 70-687 exam.

“Do I Know This Already?” Quiz

The “Do I Know This Already?” quiz allows you to assess whether you should read this entire chapter or simply jump to the “Exam Preparation Tasks” section for review. If you are in doubt, read the entire chapter. Table 3-1 outlines the major headings in this chapter and the corresponding “Do I Know This Already?” quiz questions. You can find the answers in Appendix A, “Answers to the ‘Do I Know This Already?’ Quizzes.”

Table 3-1 “Do I Know This Already?” Foundation Topics Section-to-Question Mapping

Foundations Topics Section	Questions Covered in This Section
Migrating Users and Their Profiles	1–5
Configuring Folder Redirection	6–7
Configuring Profiles	8–9

1. You have been called to help a home user who has bought a Windows 8.1 computer move her documents and settings from her old computer running Windows XP Home Edition to the new computer. What tool should you use?
 - a. Files and Settings Transfer Wizard
 - b. User State Migration Tool (USMT)
 - c. Windows Easy Transfer
 - d. Windows Assessment and Deployment Kit (ADK)

2. Your company is migrating 50 users in one department from old computers running Windows XP Professional to new computers running Windows 8.1 Pro. What tool should you use?
 - a. Files and Settings Transfer Wizard
 - b. User State Migration Tool (USMT)
 - c. Windows Easy Transfer
 - d. Windows Assessment and Deployment Kit (ADK)

3. Which of the following items are components included with USMT 5.0? (Choose all that apply.)
 - a. ScanState.exe
 - b. LoadState.exe
 - c. Migwiz.exe
 - d. MigApp.xml
 - e. Migapp.exe
 - f. Usmtutils.exe

4. You are charged with the responsibility of migrating 100 users in the same department to new Windows 8.1 Pro computers. What program should you use to collect user settings and data from their old computers?
 - a. ScanState.exe
 - b. LoadState.exe
 - c. Migwiz.exe
 - d. Fastwiz.exe

5. You have stored user settings and data from all the employees in your company's Marketing department on a file server. You have also set up new Windows 8.1 computers for these employees and installed all required applications. What program should you use now to transfer the user settings and data to these new computers?
 - a. `ScanState.exe`
 - b. `LoadState.exe`
 - c. `Migwiz.exe`
 - d. `Xcopy.exe`

6. Which of the following folders can you redirect to a shared folder on a server so that they can be easily backed up? (Choose all that apply.)
 - a. Documents
 - b. Music
 - c. Pictures
 - d. Videos

7. Which of the following are components of a domain-based folder redirection implementation? (Choose all that apply.)
 - a. A Windows Server 2012 R2 computer configured as a router
 - b. A Windows Server 2012 R2 computer configured as a domain controller
 - c. A group policy object (GPO) that specifies folder redirection settings
 - d. A Windows Server 2012 R2 computer configured as a global catalog server
 - e. A Windows Server 2012 R2 computer configured with a shared folder accessible to network users

8. You want to ensure that all users on your company's network are provided with common settings that appear on any computer on the network, regardless of the computer they log on to. Further, you want to ensure that these settings cannot be modified by users and kept after logging off. What profile type do you configure?
 - a. Roaming profile
 - b. Mandatory profile
 - c. Local profile
 - d. Permanent profile

9. You want to copy a user profile so that another user of the same computer can use the same settings specified in the first profile. What do you do?
- a. From the System dialog box, click **Advanced system settings**. In the System Properties dialog box that appears, select the **Profiles** tab, select the default profile, and then click **Copy To**. Then type or browse to the desired location and click **OK**.
 - b. From the System dialog box, click **Advanced system settings**. In the System Properties dialog box that appears, select the **Profiles** tab and then click **Settings**. Select the default profile and click **Copy To**. Then type or browse to the desired location and click **OK**.
 - c. From the System dialog box, click **Advanced system settings**. In the System Properties dialog box that appears, select the **Advanced** tab and then click **Settings** under User Profiles. Then, in the User Profiles dialog box, select the default profile and click **Copy To**. Then type or browse to the desired location and click **OK**.
 - d. In File Explorer, browse to %systemdrive%\Users\Default User**Profiles**. Right-click this folder, choose **Copy**, browse to the desired user in the Users subfolder, access the \Profiles subfolder of this user, right-click it, and choose **Paste**.

Foundation Topics

Migrating Users and Their Profiles

Windows 8.1 provides two tools that assist you in migrating users from old computers to new ones. Windows Easy Transfer is a wizard-based tool that replaces the Files and Settings Transfer Wizard used in Windows XP; it is designed to facilitate the migration of one user or a small number of users, including their data and profiles. If you have a large number of users to migrate in a corporate environment, the User State Migration Tool (USMT) 5.0 is designed for this purpose. Running it from the command line, you can customize USMT to suit the needs of your migration requirements.

User State Migration Tool

Intuitively, you might first think that migrating a large number of users to new Windows 8.1 computers could be as simple as using the `xcopy` command or a tool such as Robocopy to move files from their old computers to a network share, and then moving them back to the new computers at a later time. However, users like to store data on various locations on their local hard drives; they have customized application settings and specific files (such as Microsoft Outlook PST files) that might be hard to locate after such a move is finished. Users also like to set up individual desktop preferences, such as wallpapers and screen savers. Using USMT enables you to move all these items and more in a seamless manner to their appropriate locations on the new computer so that the users can resume working on this computer with minimal delay.

You can use USMT 5.0 to quickly and easily transfer any number of user files and settings as a part of operating system deployment or computer replacement. This tool is included with the Windows Assessment and Deployment Kit (Windows ADK) for Windows 8.1. It includes migration of the following items:

- Local user accounts.
- Personalized settings from these accounts, such as desktop backgrounds, sounds, screen savers, mouse pointer settings, Internet Explorer settings, and email settings including signature files and contact lists.
- Personal files belonging to these accounts including user profiles, the Desktop folder, the My Documents folder, and any other folder locations users might have utilized. USMT 5.0 includes the capability to capture files even when they are in use, by means of Volume Shadow Copy technology.
- Operating system and application settings, including the Applications folder within Program Files, user profile folders, or storage folders on the local disk defined within specific application settings.

- Information contained in previous Windows installations and included in `windows.old` folders.

This tool reduces the costs of operating system deployment by addressing the following items:

- Technician time associated with migration
- Employee learning and familiarization time on the new operating system
- Employee downtime and help desk calls related to repersonalizing the desktop
- Employee downtime locating missing files
- Employee satisfaction with the migration experience

Key Topic

USMT consists of three executable files, `ScanState.exe`, `LoadState.exe`, and `UsmtUtils.exe`, and three migration rule files, `MigApp.xml`, `MigUser.xml`, and `MigDocs.xml`. You can modify these migration rules files as necessary. They contain the following settings:

- **MigApp.xml:** Rules for migrating application settings
- **MigDocs.xml:** Rules that locate user documents automatically without the need to create custom migration files
- **MigUser.xml:** Rules for migrating user profiles and user data

NOTE You should not use `MigDocs.xml` and `MigUser.xml` together in the same migration. Otherwise, some migrated files might be duplicated if these files include conflicting instructions regarding target locations.

You can also create customized `.xml` files according to your migration requirements, as well as a `Config.xml` file that specifies files and settings to be excluded from migration (such as a user's large folder full of images and music). `ScanState.exe` collects user information from the old (source) computer based on settings contained in the various `.xml` files, and `LoadState.exe` places this information on a newly installed Windows 8.1 (destination) computer. The source computer can be running Windows XP, Vista, 7, 8, or 8.1.

New to USMT 5.0 is the `Usmtutils.exe` tool, which provides the following capabilities:

- Improved capability to determine cryptographic options for your migration

- Removal of hard-link stores that cannot otherwise be deleted due to a sharing lock
- Determination of corruption in any files in the compressed migration store
- Extraction of files from the compressed migration store when migrating data to the destination computer

NOTE For more information about `Usmtutils.exe`, refer to “UsmtUtils Syntax” at <http://technet.microsoft.com/en-us/library/hh825264.aspx>.

CAUTION USMT is designed specifically for large-scale, automated transfers. If your migrations require end-user interaction or customization on a computer-by-computer basis, USMT is not recommended. In these cases, use Windows Easy Transfer instead.

Using the USMT involves running `ScanState.exe` at the source computer to collect the user state data to be migrated and transferring it to a shared folder on a server. Then you must run `LoadState.exe` on the destination computer to load the user state data there, as shown in Figure 3-1. Microsoft refers to the server used for this purpose as the technician computer. When migrating multiple users, you can create a script to automate this process.

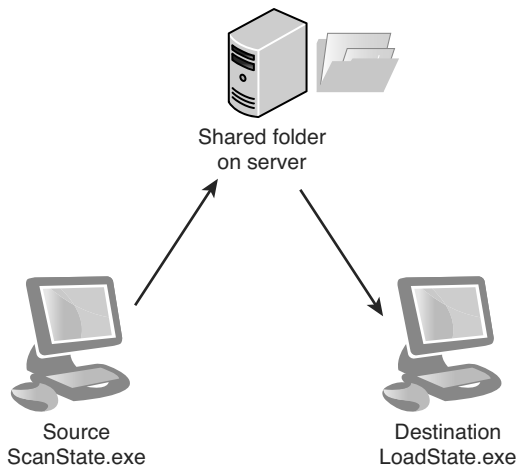


Figure 3-1 To use USMT, run `ScanState.exe` at the source computer to transfer the files to a shared folder on a server and then run `LoadState.exe` at the destination computer to load the data there.

NOTE You can use a server running Windows Server 2008 R2 or 2012 R2 as the technician computer. You can also use a computer running Windows Vista, Windows 7, or Windows 8 or 8.1.

Preparing the Server to Run USMT

You need to create and share the appropriate folders on the technician computer before running USMT. This procedure requires the Windows ADK for Windows 8.1, which you can download as an .iso file from <http://www.microsoft.com/en-US/download/details.aspx?id=39982> and burn to a blank DVD. Use the following procedure:

- Step 1.** Create and share a folder named `USMT` on the technician computer. The migrating user should have Read permission to this folder, and the local administrator on the destination computer should have at least Modify permission to this folder. Ensure that this folder has enough storage space available to meet the needs of all computers to be migrated.
- Step 2.** Create and share a folder named `MigStore` on the technician computer. Both the migrating user and the local administrator on the destination computer should have at least Modify permission to this folder.
- Step 3.** In the `USMT` folder, create two subfolders named `Scan` and `Load`.
- Step 4.** Insert the Windows ADK disc and follow the instructions in the Setup program that automatically starts to install Windows ADK.
- Step 5.** Copy all files from the `C:\Program Files (x86)\Windows Kits\8.1` folder created during the Windows ADK installation to the `USMT` shared folder. For example, use the following syntax:

```
xcopy " C:\Program Files (x86)\Windows Kits\8.1\Assessment and  
Deployment Kit\User State Migration Tool\x86" \\server\share\USMT
```
- Step 6.** Make any required modifications to the .xml files included in this folder, or create any additional .xml files as needed.

Collecting Files from the Source Computer

After you have created and shared the appropriate files on the technician computer, including the `USMT` folder and its contents, you are ready to scan the source computer and collect information to be exported to the new computer. Use the following procedure:

- Step 1.** Log on to the source computer with an account that has administrative privileges. This user should have permissions to the shares on the server as described in the previous procedure.
- Step 2.** Map a drive to the USMT share on the server.
- Step 3.** Open a command prompt and set its path to the `Scan` folder on the mapped USMT share.
- Step 4.** To run `ScanState`, type the following command:

```
scanstate \\servername\migration\mystore /config:config.xml
/i:miguser.xml /i:migapp.xml /v:13 /l:scan.log
```

In this command:

`/i:` is the include parameter, which specifies an XML file that defines the user, application, or system state that is being migrated.

`/config:` specifies the `config.xml` file used by `scanstate.exe` to create the store.

`servername` is the name of the server on which you installed the Windows ADK tools.

`l:` is a parameter that specifies the location of `scan.log`, which is the name of a log file that will be created in the USMT share and will hold any error information from problems that might arise during the migration. If any problems occur, check the contents of this file.

The `v:13` parameter specifies verbose, status, and debugger output to the log file.

NOTE Both `ScanState` and `LoadState` support a large range of command-line options. Refer to the `USMT.chm` help file in the Windows ADK for a complete list and description of the available options. Also refer to “ScanState Syntax” at <http://technet.microsoft.com/en-us/library/hh825093.aspx>.

Loading Collected Files on the Destination Computer

Before loading files to the destination computer, you should install Windows 8.1 and all required applications on this computer. However, do not create a local user account for the migrating user (this account is created automatically when you run `LoadState`). Join the computer to the domain if in a domain environment. Then perform the following procedure:

- Step 1.** Log on to the destination computer as the local administrator (not the migrating account).
- Step 2.** Map a drive to the USMT share on the server.
- Step 3.** Open an administrative command prompt and set its path to the `Load` folder on the mapped USMT share.
- Step 4.** To run `LoadState`, type the following command: (The set of `.xml` files should be the same as used when running `ScanState`.)


```
loadstate \\servername\migration\mystore /config:config.xml
/i:miguser.xml /i:migapp.xml /lac /lae /v:13 /l:load.log
```
- Step 5.** Log off and log on as the migrating user and verify that all required files and settings have been transferred.

In this command, `/lac` and `/lae` specify that local accounts from the source computer will be created and enabled on the destination computer. The other parameters are the same as defined previously for the `ScanState` tool. Note that passwords are not migrated (they are blank by default).

NOTE For more information on `LoadState`, refer to “LoadState Syntax” at <http://technet.microsoft.com/en-us/library/hh825190.aspx>. For more details on all three USMT procedures, refer to “Step-by-Step: Basic Windows Migration Using USMT for IT Professionals” at <http://technet.microsoft.com/en-us/library/hh824873.aspx>.

Using the User State Migration Tool

As already discussed, USMT 5.0 is designed for use when large numbers of users must be migrated from older computers to new computers running Windows 8.1. You can also use this tool when you have upgraded these computers from Windows Vista/7 to Windows 8.1. After performing the upgrade, you can use a USB drive to hold the required commands for migrating user data from the `Windows.old` folder. Use the following procedure:

- Step 1.** Download and install the Windows ADK as discussed earlier in this chapter.
- Step 2.** Prepare an external USB drive by creating a `USMT` folder in the root directory. This folder should have `x86` and `amd64` subfolders for migrating 32-bit and 64-bit installations, respectively.

- Step 3.** Copy the `Program Files\Windows ADK\Tools\USMT` folder from the computer on which you installed Windows ADK to the `USMT` folder in the USB drive.
- Step 4.** Use Notepad to create a batch file for x86 file migrations. Microsoft suggests the following batch file:

```
@ECHO OFF
If exist D:\USMT\*. * xcopy D:\USMT\*. * /e /v /y C:\Windows\USMT\
If exist E:\USMT\*. * xcopy E:\USMT\*. * /e /v /y C:\Windows\USMT\
If exist F:\USMT\*. * xcopy F:\USMT\*. * /e /v /y C:\Windows\USMT\
If exist G:\USMT\*. * xcopy G:\USMT\*. * /e /v /y C:\Windows\USMT\
If exist H:\USMT\*. * xcopy H:\USMT\*. * /e /v /y C:\Windows\USMT\
If exist I:\USMT\*. * xcopy I:\USMT\*. * /e /v /y C:\Windows\USMT\
If exist J:\USMT\*. * xcopy J:\USMT\*. * /e /v /y C:\Windows\USMT\
If exist K:\USMT\*. * xcopy K:\USMT\*. * /e /v /y C:\Windows\USMT\
Cd c:\windows\usmt\x86
ScanState.exe c:\store /v:5 /o /c /hardlink /nocompress /efs:hardlink
/i:MigApp.xml /i:MigDocs.xml /offlineWinOld:c:\windows.old\windows
LoadState.exe c:\store /v:5 /c /lac /lae /i:migapp.xml /i:migdocs.xml
/sf /hardlink /nocompress
:EOF
```

- Step 5.** Save this file to the USB drive as `Migrate.bat`.
- Step 6.** Log on to the computer that has been upgraded using an administrative account.
- Step 7.** Insert the USB drive and copy the `Migrate.bat` file to the desktop.
- Step 8.** Right-click this file and choose **Run as administrator**. If you receive a User Account Control (UAC) prompt, click **Yes**.
- Step 9.** When the batch file finishes, access the `C:\Users` folder and confirm that all user files have been migrated to the appropriate file libraries.

This batch file locates USMT files and copies them to the `C:\Windows` folder so that the `ScanState.exe` command can create a hard-link migration store at `C:\store` from the `windows\old` folder. This hard-link migration process creates a catalog of hard links to files that are to be migrated. The `LoadState.exe` command then remaps the catalog of hard-links to their appropriate locations in the Windows 8.1 installation. For AMD 64-bit machines, modify the batch file by changing the `x86` subfolder references to `amd64`.

NOTE For more information on this process, refer to “Step-by-Step: Offline Migration with USMT” at <http://technet.microsoft.com/en-us/library/hh824880.aspx>.

Windows Easy Transfer

Key Topic

Windows Easy Transfer enables you to transfer files and settings from an old computer to a new one across a network or by means of an external hard drive, a USB flash drive, or the Easy Transfer cable. You can purchase the Easy Transfer cable from a computer store or on the Web. This cable uses USB to link to cables and transfers data at about 20 GB/hour.

Windows Easy Transfer includes a wizard that helps you transfer your files, folders, and settings to a new computer or to a clean installation of Windows 8.1 on an existing computer, by collecting them at the old (source) computer and then transferring them to a new computer running Windows 8.1 (called the destination computer). This is the simplest method when only a few computers are affected or when users are individually responsible for migrating the user states on their own computers.

Using Windows Easy Transfer to Collect Files at the Source Computer

You can use the following procedure to collect files from any computer running Windows 7, Windows 8, or Windows 8.1. The steps shown here are as they occur for a USB drive on a computer running Windows 7; they are somewhat different if you are using the Windows Easy Transfer Cable or a network connection. Note that Windows Easy Transfer in Windows 8.1 no longer supports the transfer of data from a computer running Windows XP or Vista.

- Step 1.** On a Windows 7 computer, click **Start > Run**, type **migwiz**, and press **Enter**. On a Windows 8/8.1 computer, access the Search charm, type **migwiz**, and select **Windows Easy Transfer** from the list that appears. If you receive a UAC prompt, click **Yes**. This starts the Windows Easy Transfer Wizard, as shown in Figure 3-2.



Figure 3-2 Windows Easy Transfer presents a wizard that facilitates transferring files from an old computer running Windows XP or later.

Step 2. Click **Next**. The wizard provides the three choices shown in Figure 3-3 for storing the collected data. Click the desired choice.



Figure 3-3 Windows Easy Transfer provides three choices for storing the collected data.

- Step 3.** On the next page, confirm that you are at the old computer (if you are transferring from a Windows 7 or 8 computer to a Windows 8.1 computer or from a Windows 8.1 computer to another one, this screen asks if this is the old computer or the new one).
- Step 4.** The wizard displays the page shown in Figure 3-4 as it collects data from this computer. This process takes several minutes or even longer, depending on the amount of data to be transferred. When it is done, click **Next**.



Figure 3-4 Windows Easy Transfer collects data from the user accounts stored on the old computer.

- Step 5.** On the Choose what you can transfer page, clear the check boxes for any users whose data you do not want to transfer. To modify the types of files and settings to be transferred for any user, click **Customize** and then clear the check boxes for any file types you do not want to transfer. When finished, click **Next**.
- Step 6.** On the Save your files and settings for transfer page (see Figure 3-5), type and confirm a password that you will need to enter later at your new computer. Then click **Save** and confirm the filename provided, or enter a new one and click **Save** again.

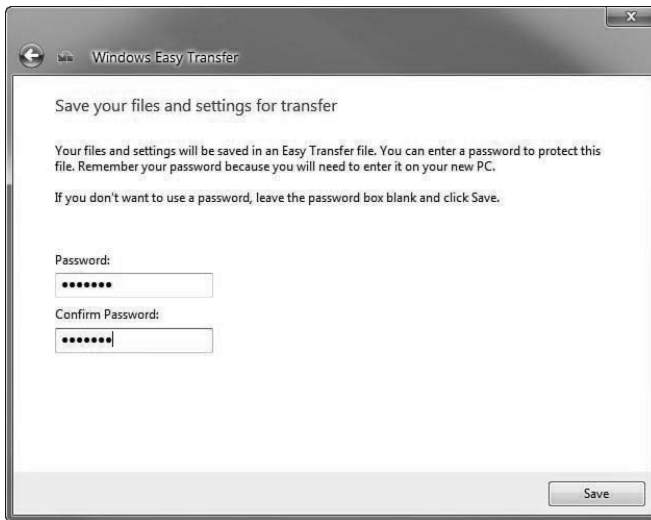


Figure 3-5 You should specify a password for the transfer to take place.

- Step 7.** The save process takes several minutes or longer, depending on the amount of data to be transferred. When informed that the files have been saved, click **Next**.
- Step 8.** Click **Next** again and then click **Close** to finish the wizard.

Using Windows Easy Transfer to Save Files at the Destination Computer

After you have installed Windows 8.1 plus any required applications on the destination computer, you can save the collected files by performing the following procedure:

- Step 1.** At the destination computer, connect the USB drive and double-click the file containing the migrated information.
- Step 2.** Windows Easy Transfer starts and displays the page shown in Figure 3-6 asking you for the password you specified when you collected your files. Type this password and then click **Next**.

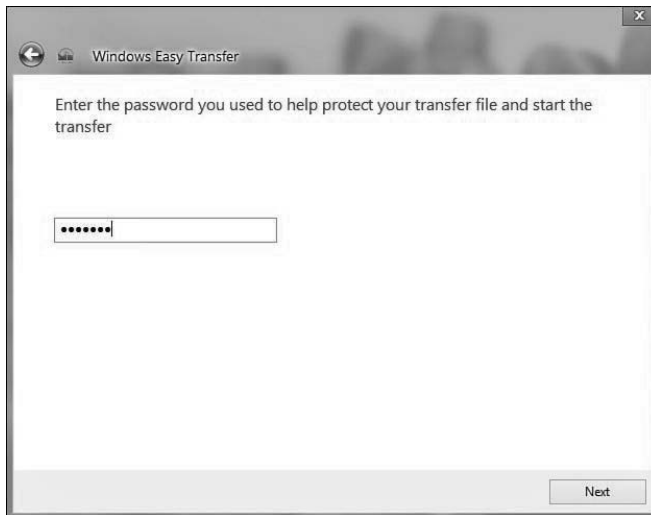


Figure 3-6 Type the password you specified at the old computer.

Step 3. On the Choose what to transfer to this PC page shown in Figure 3-7, deselect any users whose files and settings you do not want to transfer. If you want to map your user account to a different account on the new computer, or select a drive on the new computer to which you want to transfer files, click **Advanced options** and make the appropriate choices.



Figure 3-7 Windows Easy Transfer enables you to choose what is transferred to the new computer.

Step 4. To begin the transfer, click **Transfer**.

Step 5. The wizard transfers the files and, when finished, displays a `Your files have been transferred` message. Click **Close**.

NOTE For more information on using Windows Easy Transfer in Windows 8.1, refer to “How to Use Windows Easy Transfer to Transfer Files and Settings in Windows 8” at <http://support.microsoft.com/kb/2735227>.

Configuring Folder Redirection

Microsoft includes the technologies of folder redirection and offline files for redirection of the paths of local folders to a network location while caching their contents locally for increased speed and availability. In this section, we take a look at folder redirection. Offline files are covered in Chapter 15, “Configuring and Securing Mobile Devices.” Using folder redirection, you can redirect the path of a known folder to a local or network location either manually or by using Group Policy. The process is transparent to the user, who works with data in the folder as if it were located in its default place.

NOTE For more information on folder redirection, see the links found at “Deploy Folder Redirection, Offline Files, and Roaming User Profiles” at <http://technet.microsoft.com/en-us/library/jj649074.aspx>.

Benefits of Folder Redirection

Users and administrators benefit from using folder redirection in the following ways:

Key Topic

- Users’ documents are always accessible to them, regardless of which computer they log on to.
- When roaming user profiles are used, only the network path to a folder such as the Documents folder is actually part of the profile. This eliminates the need for copying the contents of this folder back and forth at each logon and logoff, thereby speeding up the logon/logoff process.

- You can configure the Offline File technology so that users' files are always available to them even when they are not connected to the network. Their files are automatically cached and are in the same logical location (for example, the U: drive) on the laptop as they are when they are connected to the network, facilitating their working on the files when they are away from the office.
- It is easy to back up all users' files from a central server without interaction by the user. The administrator or backup operator can accomplish this task as part of the routine backup task.
- Administrators can use Group Policy to configure disk quotas, thereby controlling and monitoring the amount of disk space taken up by users' folders. We discuss disk quotas in Chapter 11, "Configuring and Securing Access to Files and Folders."
- You can standardize users' working environments by redirecting the Desktop folder to a common shared location. This standardization can help with remote support problems because the support staff will know the desktop layout of the users' computers.

Redirecting Library Folders

Key Topic

First introduced with Windows 7 and continued in Windows 8.1 is the concept of virtualized folders. In Windows 8.1, a *library* is a set of virtual folders that is shared by default with other users of the computer. By default, Windows 8.1 includes four libraries (Documents, Pictures, Music, and Videos), which you can access from the Start menu, or from the task list on the left side of any File Explorer window. From the taskbar, click the folder icon to view the libraries on your computer, as shown in Figure 3-8. You can also see them when you open a File Explorer window and navigate to `C:\Users\Public`. The subfolders you see here are actually pointers to the folder locations on the computer. You can also think of them as the results of search queries. From the Libraries folder, you can create a new library by clicking **New library** in the toolbar and providing a name for your new library.

Right-click any library and choose **Properties** to view its contents. You will notice that each library contains a user-based subfolder, located by default at `C:\Users\%username%`. You can add additional folders by clicking the **Add** button shown in Figure 3-9 and navigating to the desired folder in the Include Folder in Documents dialog box, as shown in Figure 3-10; this can even include shared folders located on other computers on the network. You can also add folders to a library from any File Explorer window by selecting the folder and clicking the **Add to Library** option in the Explorer toolbar.

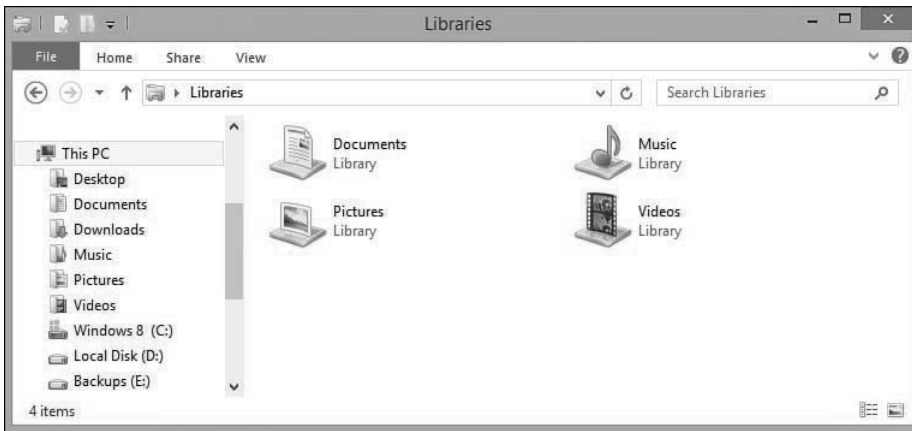


Figure 3-8 Windows 8.1 creates these four default libraries.

**Key
Topic**

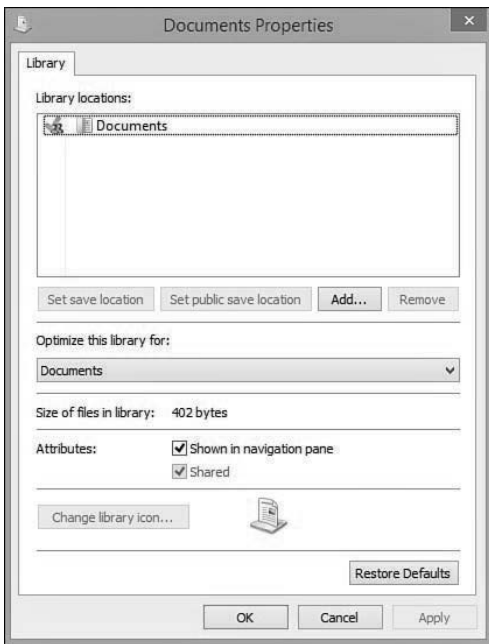


Figure 3-9 Each library by default contains a user subfolder.



Figure 3-10 Adding a folder to the Documents library.

The library's Properties dialog box also enables you to add folders and configure several additional properties. The check mark shown in Figure 3-9 indicates the default save location used by programs such as Microsoft Office; to change this location, select the desired location and click the **Set save location** command button. To change the location of public saved documents, select the appropriate folder and click the **Set public save location** button. To remove a folder from the library, select it and click **Remove**. To remove all added folders from the library and reset it to its default settings, click the **Restore Defaults** button.

Implementing Domain-Based Folder Redirection

Implementation of folder redirection requires an Active Directory Domain Services (AD DS) domain and a server running Windows Server 2012 R2. You can also use a server running an older version of Windows Server, but some functionality might not be available. Use the following procedure to implement a Group Policy Object (GPO) that enables folder redirection in an AD DS domain or organizational unit (OU):



- Step 1.** Open Server Manager on a computer with the Group Policy Management console installed.
- Step 2.** Click **Tools > Group Policy Management** to display the Group Policy Management Console.

- Step 3.** Right-click the domain or OU where you want to configure Folder Redirection and choose **Create a GPO in this domain, and Link it here.**
- Step 4.** In the New GPO dialog box, type a name for the GPO and then click **OK.**
- Step 5.** Right-click this GPO and choose **Edit** to open the Group Policy Management Editor console.
- Step 6.** Navigate to **User Configuration\Policies\Windows Settings\Folder Redirection.** You receive the options shown in Figure 3-11.

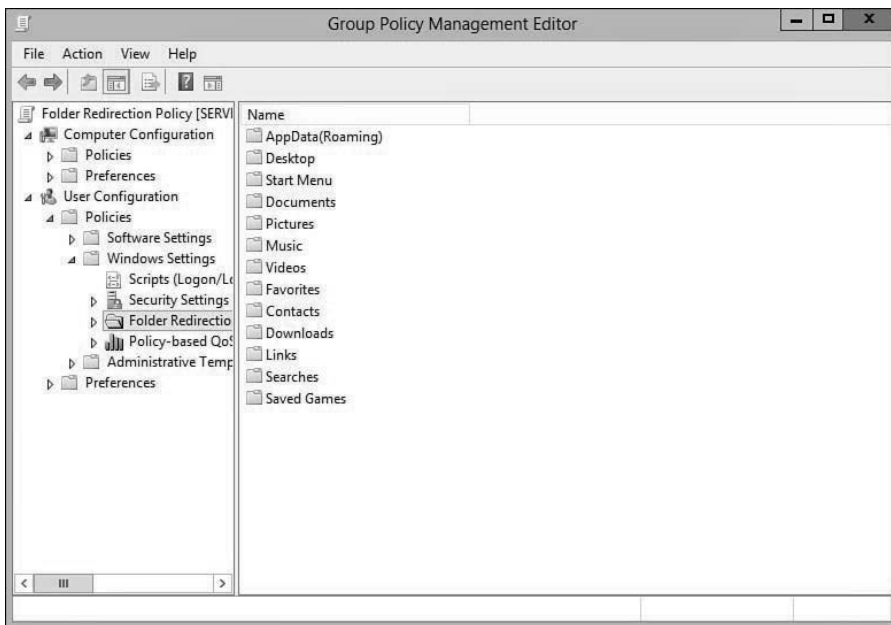


Figure 3-11 Implementing folder redirection in Windows Server 2012 R2.

- Step 7.** Right-click the folder to be redirected from the details pane in Figure 3-11 and choose **Properties.** This action displays the Properties dialog box for the selected folder, as shown in Figure 3-12.

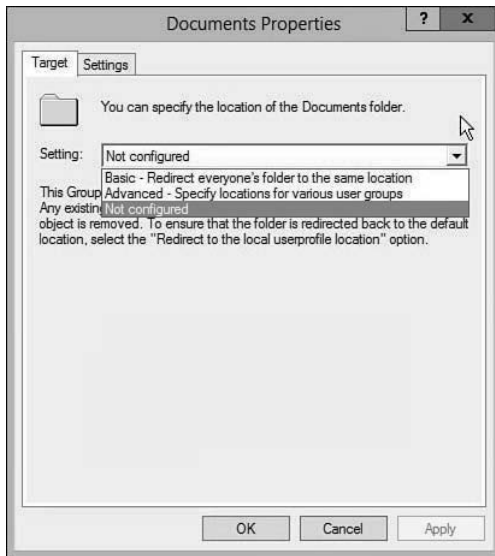


Figure 3-12 You have three choices for implementing folder redirection in Windows Server 2012 R2.

Step 8. Under Setting, select from the following choices:

- **Basic—Redirect everyone’s folder to the same location:** This option redirects all folders to this location.
- **Advanced—Specify locations for various user groups:** This option redirects folders to different locations depending on the users’ security group memberships. The bottom part of the dialog box changes so that you can specify a universal naming convention (UNC) path for each security group.
- **Not configured:** Folder redirection is not applied.

Step 9. Choose an option from those shown in Figure 3-13 and described here. To create a folder for each user, choose **Create a folder for each user under the root path**. Type or browse to the desired path (in general, you will want to use a UNC path such as `\\server1\documents`), and then click **OK** or **Apply**.

- **Redirect to the user’s home directory:** This option redirects users’ folders to the home directory as specified in the user account’s Properties dialog box in the Active Directory Administrative Center. This option works only for client computers running Windows XP Professional, Windows Server 2003, or later, and is available only for the Documents folder.

- **Create a folder for each user under the root path:** This option enables you to specify a root path in the form of a UNC path to a shared location. A subfolder is automatically created for each user in this location, and the folder path appears at the bottom of the dialog box.
- **Redirect to the following location:** This option enables you to specify a UNC path to the specific folder for each user. The username is automatically appended to the path you provided to create a unique folder name.
- **Redirect to the local userprofile location:** This option redirects users' folders to the local user profile location specified in the user account's Properties dialog boxes in Active Directory Administrative Center. This option is useful for returning redirected folders to their original default location.

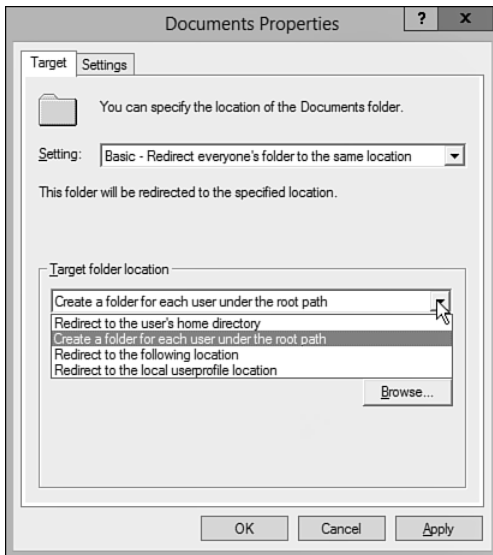


Figure 3-13 Specifying a location for folder redirection.

Step 10. You receive the message box shown in Figure 3-14 regarding Group Policy settings in Windows Server 2003 or older operating systems. Click **Yes** to accept this message and implement folder redirection.

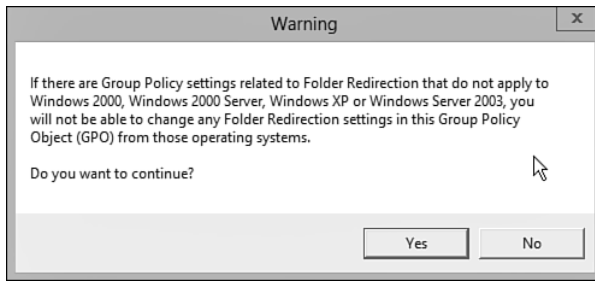


Figure 3-14 You receive this warning message about older Group Policy settings.

Step 11. You are returned to the Group Policy Management Console. Ensure that the GPO you created displays a GPO status of `Enabled` and that the Link Enabled column reads `Yes`.

NOTE For more information on implementing folder redirection in a domain environment, including a complete procedure for deploying domain-based folder redirection, refer to “Deploy Folder Redirection with Offline Files” at <http://technet.microsoft.com/en-us/library/jj649078.aspx>.

Configuring Profiles

When a user logs on to a Windows 8.1 computer, the operating system generates a user profile. This profile is composed of desktop settings, files, application data, and the specific environment established by the user. For example, a user named Peter logs on to Windows 8.1, changes his desktop wallpaper to a picture of his dog, edits the user information in Microsoft Word, configures a dial-up connection to his Internet service provider (ISP), and adjusts the mouse so that it is easier to double-click. When Sharon logs on to the same computer using her own account, she sees the default settings for Windows 8.1, not Peter’s settings. When Peter logs on next, Windows finds Peter’s existing profile and loads his settings—the wallpaper, the Word data, the dial-up connection, and the mouse click settings.

Windows 8.1 provides the following profile versions:

- **Local:** A profile that is available only on the computer and for the user for which it is configured.
- **Roaming:** A profile that has been placed on a server so that it is available to a given user no matter which computer she is logged on to. A user is free to make changes to this profile version at any time.

- **Mandatory:** A profile that has been placed on a server but is configured as read-only, such that the user is unable to make any changes to it.

In addition to these profile types, it is possible to set up a temporary profile, which is loaded by default if the user is unable to load her normal profile.

When Windows 8.1 is connected to a Windows network, you can configure a user profile to roam the network with the user. Because the profile is stored in a subfolder in the Users folder on the %systemdrive% volume, you can configure the profile to be placed on a network drive rather than a local hard disk, thereby making it accessible to the user regardless of which computer she is using.

User profiles allow users to customize their own settings without impairing another user's configuration. User profiles were developed in response to organizations that routinely provided shared desktop computers. In cases where a user absolutely requires certain settings to use the computer comfortably, having to share a computer with another person who then removes the needed configuration can be frustrating; plus it causes a loss of productivity. Another advantage to user profiles is that, when used in conjunction with network storage of data, the desktop computer is easily replaceable; users can use any computer on the network without having to perform extra tasks to customize the computer to suit their needs.

To use profiles, each user must have a separate user account. The user account can be a domain account or a local account. There are four different types of profiles, which are detailed in Table 3-2.

Table 3-2 Profile Types

Profile	Created For	How It Works
Local	Every user at first logon	When the user logs on to a computer, whether or not it is connected to a network, a local profile is created and saved in the local Users folder for that user. All changes are saved when the user logs off.
Roaming	Users who log on to different computers on the network	The profile is stored on a server. When a user logs on to a network computer, the profile is copied locally to the computer. When the user logs off the network, changes to the profile are copied back to the server.
Mandatory	Administrative enforcement of settings (this is applied to user accounts that are shared by two or more users)	The profile is stored on a server. When a user logs on to a network computer, the profile is copied locally to the computer. No changes are saved when the user logs off the server. Only an administrator can make changes to the profile.
Temporary	Users who were unable to load their profile	When an error condition exists that prevents a user from loading his normal profile, a temporary profile is loaded. When the user logs off, all changes are deleted.

User profiles consist of a registry hive that incorporates the data typically found in `NTuser.dat`, saved as a file that is mapped to the `HKEY_CURRENT_USER` Registry node and a set of profile folders.

You can change the location that Windows looks for a user's profile. When you do so, you must be logged on to the computer as a member of the Administrators group. Use the following procedure:

Step 1. Right-click **Start** and choose **Computer Management**.

Step 2. Expand the Local Users and Groups folder and select **Users**. Information about all users configured on the computer appears in the details pane, as shown in Figure 3-15.

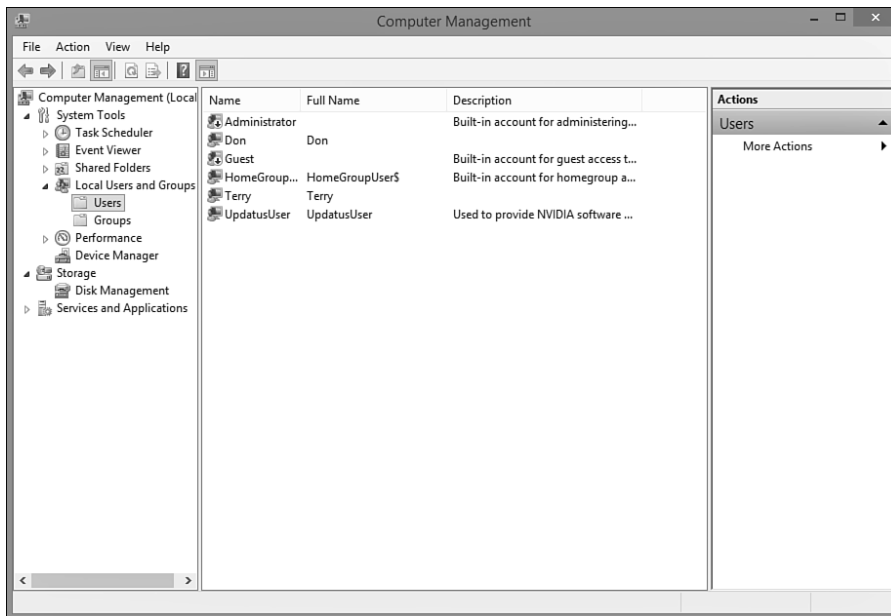


Figure 3-15 Profile information can be found in the Computer Management console.

Step 3. Right-click a user account and select **Properties** from the shortcut menu.

Step 4. Click the **Profile** tab.

Step 5. Type the location of the profile in the Profile Path text box. For example, type the UNC path as shown in Figure 3-16. Then click **OK**.

Key
Topic

Figure 3-16 Configuring a user's profile path.

Step 6. From this dialog box, you can perform the following actions:

- Click **Default Profile** and then click **Copy To** in order to copy an existing profile to another computer. This is useful in a nondomain situation where you want to standardize profiles between computers.
- Click **Delete** to delete a profile for a user. This is useful when you are moving a computer to a different user.
- Click **Change Type** to change the profile from a local profile to a roaming profile or vice versa.

Step 7. When finished, click **OK**.

Using Roaming and Mandatory Profiles with Active Directory

Roaming and mandatory profiles require a network server for implementation. Although it is recommended that you have an AD DS network for this, you can implement these profiles on other network servers. An AD DS network is recommended for use with roaming and mandatory profiles because of the additional management features that are provided by Group Policy. For example, you can specify additional folders to include in the profile, as well as mark certain folders to exclude from the profile.

An additional advantage to using Group Policy in conjunction with roaming profiles is that you can prevent users from running applications that you deem to be unacceptable, or to allow a user to run only a short list of applications. Even if a user has installed the application and incorporated its data into the user's profile prior to the restriction policy, the GPO will prevent the user from running it.

When you use Group Policy together with roaming profiles, you can ensure that a user's Windows 8.1 settings are exactly what you wish the user to have. You can create a default user profile that includes the desktop icons, startup applications, documents, Start menu items, and other settings. Then you can use Group Policy to manage the way that the user interacts with the network, such as preventing access to Control Panel. You can even use Group Policy to publish certain applications that the user is allowed to install, and you can redirect users' Documents and Desktop folders to a network location. When a user logs on to the network the first time, the desktop will be configured with the settings that are appropriate for your organization. If the user makes changes to the profile, those changes will be saved. The user can then log on to an entirely different computer the next day and automatically see the environment he configured for himself, plus have immediate access to his personal files, folders, and applications.

NOTE For more information on using roaming profiles in AD DS, including a detailed procedure for setting up a sample implementation, refer to "Deploy Roaming User Profiles" at <http://technet.microsoft.com/en-us/library/jj649079.aspx>.

Implementing Roaming Profiles

Local profiles cause an administrative headache when users roam around the network and when computers are routinely exchanged throughout the network. For example, if Joe logs on at PC1 and saves a file that holds key information for his job on his desktop, and later Joe logs on at PC2 because PC1 was replaced with new hardware, he is likely to have a panic attack to discover that his file is missing. Roaming profiles overcome this problem.

When a user with a roaming profile logs on for the first time, the following process takes place:

- Step 1.** Windows 8.1 checks for the path to the user's roaming profile.
- Step 2.** Windows 8.1 accesses the path and looks for the profile. If no profile exists, Windows 8.1 generates a folder for the profile.

- Step 3.** Windows 8.1 checks for a cached copy of the profile listed in `HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\ProfileList`. If a local profile is found, and the computer is a member of a domain, Windows 8.1 looks in the domain controller's NETLOGON share for a default profile for the domain. The default domain profile is copied to the local computer folder `%systemdrive%\Users\%username%`. If there is no domain default, Windows 8.1 copies the default local profile to the same location.
- Step 4.** The `NTuser.dat` file is mapped to the Registry's `HKEY_CURRENT_USER` key.
- Step 5.** Windows 8.1 updates the user's `%userprofile%` environment variable with the new location of the profile.
- Step 6.** When the user logs off, the local profile is copied to the network path configured in Windows 8.1.
- Step 7.** The next time the user logs on to the same computer, Windows 8.1 opens the locally cached copy of the user's profile and compares it with the copy on the domain server. Windows 8.1 merges the contents of the two profiles.

You can make changes to whether a computer uses local or roaming profiles in the Control Panel. Use the following procedure:

- Step 1.** From the System and Security category of Control Panel, click **System**. You can also right-click **Start** and choose **System** from the programs list that appears.
- Step 2.** From the System dialog box that appears, click **Advanced system settings**.
- Step 3.** Click the **Advanced** tab to display the dialog box shown in Figure 3-17.

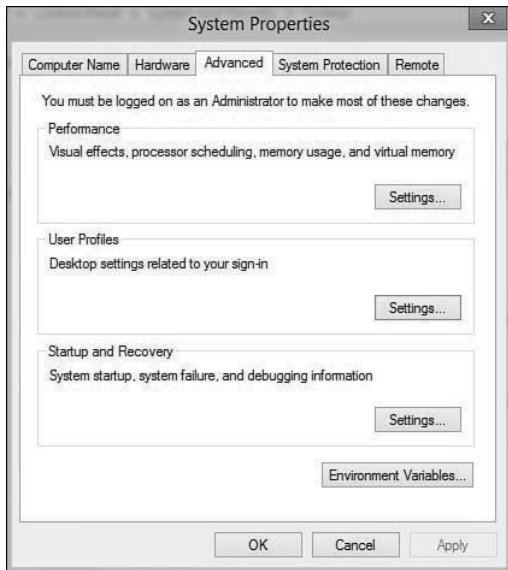


Figure 3-17 You can access user profile settings in the System Properties dialog box.

Step 4. In the User Profiles section, click **Settings** to display the dialog box shown in Figure 3-18.

Key Topic

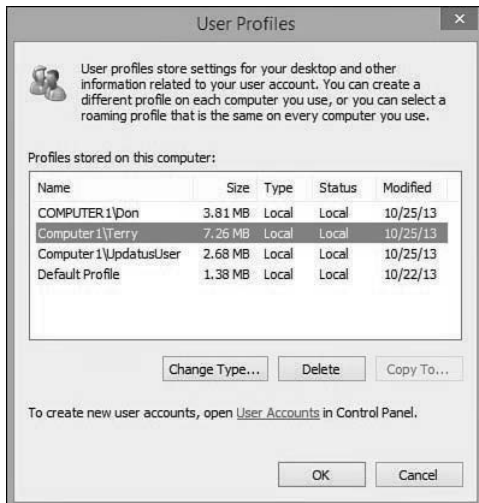


Figure 3-18 Some profile management options are to copy, delete, or change the type of user profile for specific users.

Step 5. From this dialog box, you can perform the following actions:

- **Change profile type:** Select a profile and click **Change Type** to change the profile from a local profile to a roaming profile or vice versa.
- **Delete a profile:** Select a profile and click **Delete** to delete an existing profile. This is useful when you are moving the computer to a different user.
- **Copy a profile:** Select a profile and click **Copy To** in order to use the same settings for another user on the same computer.

Step 6. When finished, click **OK**.

Establishing Mandatory Profiles

A mandatory profile is a roaming profile that can't be changed by the user. You configure the profile identically to the roaming profile. After the profile has been configured and saved as the `NTuser.dat` file in the user's profile path on the network, you simply need to rename the file to `NTuser.man`.

When the `NTuser.dat` file is renamed with the `.man` extension, it is treated as though it is a read-only file. At user logon, the file is read the same way as a roaming profile. However, if a user makes any changes to the environment, the changes are discarded when the user logs off. A mandatory profile is helpful in managing the desktop environment for users who unpredictably and accidentally delete items from their desktop and Start menu, or make other unintended changes. A mandatory profile is not useful for users who need a dynamic environment for running a variety of applications.

New to Windows 8.1 and Windows Server 2012 R2, mandatory profiles become super-mandatory profiles when stored in a profile path ending in `.man`; for example, `\\server\share\mandatoryprofile.man\`. When a super-mandatory profile is in use, users who use these profiles cannot log on if the server on which the profile is stored becomes unavailable. With ordinary mandatory profiles, a user can log on with the locally cached copy of the mandatory profile.

When you configure a mandatory profile to be used in an organization to be shared by a variety of users or computers, and when a single user moves around a network to use different computers, the profile's graphical presentation should be made to run at a level that all the computers can support. For example, if you have some computers that support a maximum 1680×1050 resolution, you should not create a profile with a 1920×1080 resolution setting because it will not display correctly on some of the computers.

If you need to make changes to a mandatory profile, rename the profile back to `NTuser.dat`, log on as the user, and configure the computer. After you complete the changes, you should log off so that the changes are saved to the profile. Then, after logging on as an administrator, you can rename the file as `NTuser.man`. If this is a profile that should be used by multiple people, you can replace the other users' `NTuser.man` files with the new version.

NOTE For more information on mandatory user profiles, refer to “Mandatory User Profiles” at [http://msdn.microsoft.com/en-us/library/windows/desktop/bb776895\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/bb776895(v=vs.85).aspx).

User Profiles and Operating System Versions

Most networks include computers running different Windows versions, such as Windows 7, Windows 8, and Windows 8.1, as well as servers running either the original or R2 versions of Windows Server 2008 or 2012. Each newer operating system version has introduced modifications to roaming and mandatory user profiles. Consequently, if a user moves between computers running different Windows versions, the user profiles are not compatible with each other. Profile versions include the following:

- Version 1 profiles used by Windows Vista, Windows Server 2008, and older Windows versions
- Version 2 profiles used by Windows 7 and Windows Server 2008 R2
- Version 3 profiles used by Windows 8 and Windows Server 2012
- Version 4 profiles used by Windows 8.1 and Windows Server 2012 R2

When a user logs on to a Windows 8.1 computer for the first time after using an older computer, Windows 8.1 automatically updates the profile to version 4. If the user then logs on to an older computer, the available profile is incompatible and is not loaded; further, the profile might become corrupted.

Microsoft recommends that you keep roaming, mandatory, super-mandatory, and domain default profiles created in one Windows version separate from those that were created in a different Windows version. Microsoft also makes available an update rollup that fixes this issue in Windows 8.1, and a hotfix that performs the same task in Windows 8. For more information, including the Registry entry that must be created, refer to “Incompatibility Between Windows 8.1 Roaming User Profiles and Those in Earlier Versions of Windows” at <http://support.microsoft.com/kb/2890783>.

Exam Preparation Tasks

Key Topic

Review All the Key Topics

Review the most important topics in the chapter, noted with the key topics icon in the outer margin of the page. Table 3-3 lists a reference of these key topics and the page numbers on which each is found.

Table 3-3 Key Topics for Chapter 3

Key Topic Element	Description	Page Number
Paragraph	Describes the USMT	136
Paragraph	Describes the Windows Easy Transfer	142
Bulleted List	Describes benefits achieved with folder redirection	147
Paragraph	Shows you how to redirect library folders	148
Figure 3-9	Describes library folder properties	149
Step List	Shows you how to implement domain-based folder redirection	150
Figure 3-16	Shows you how to configure local profile paths	157
Figure 3-18	Shows how to manage user profiles on a Windows 8.1 computer	160

Definitions of Key Terms

Define the following key terms from this chapter and check your answers in the glossary.

Destination computer, Folder redirection, `LoadState.exe`, Local user profile, Mandatory profile, Roaming profile, `ScanState.exe`, Source computer, User profile, User State Migration Tool (USMT), Windows Easy Transfer

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