

NETWORKING

**MCTS Guide to
Microsoft® Windows 7**

Byron Wright
Leon Plesniarski

**MCTS
MCITP**

Exam #70-680

MCTS Guide to Microsoft® Windows 7™

Byron Wright
Leon Plesniarski



Australia • Canada • Mexico • Singapore • Spain • United Kingdom • United States

This is an electronic version of the print textbook. Due to electronic rights restrictions, some third party content may be suppressed. Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. The publisher reserves the right to remove content from this title at any time if subsequent rights restrictions require it. For valuable information on pricing, previous editions, changes to current editions, and alternate formats, please visit www.cengage.com/highered to search by ISBN#, author, title, or keyword for materials in your areas of interest.

**MCTS Guide to Microsoft® Windows 7™
(Exam # 70–680)**

Byron Wright and Leon Plesniarski

Vice President, Career and Professional Editorial:
Dave Garza

Director of Learning Solutions: Matthew Kane

Acquisitions Editor: Nick Lombardi

Managing Editor: Marah Bellegarde

Product Manager: Natalie Pashouk

Developmental Editor: Jill Batistick

Editorial Assistant: Sarah Pickering

Vice President, Career and Professional
Marketing: Jennifer Ann Baker

Marketing Director: Deborah S. Yarnell

Senior Marketing Manager: Erin Coffin

Marketing Coordinator: Shanna Gibbs

Production Director: Carolyn Miller

Production Manager: Andrew Crouth

Senior Content Project Manager: Andrea Majot

Senior Art Director: Jack Pendleton

Manufacturing Coordinator: Amy Rogers

Technical Edit/Quality Assurance: Green Pen
Quality Assurance

Compositor: PreMediaGlobal

© 2011 Course Technology, Cengage Learning

ALL RIGHTS RESERVED. No part of this work covered by the copyright herein may be reproduced, transmitted, stored or used in any form or by any means graphic, electronic, or mechanical, including but not limited to photocopying, recording, scanning, digitizing, taping, Web distribution, information networks, or information storage and retrieval systems, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without the prior written permission of the publisher.

For product information and technology assistance, contact us at
Cengage Learning Customer & Sales Support, 1-800-354-9706

For permission to use material from this text or product,
submit all requests online at cengage.com/permissions

Further permissions questions can be emailed to
permissionrequest@cengage.com

Microsoft® is a registered trademark of the Microsoft Corporation.

Library of Congress Control Number: 2010933379

ISBN-13: 9781111309770

ISBN-10: 1-1113-0977-9

Course Technology20 Channel Center
Boston, MA 02210
USA

Cengage Learning is a leading provider of customized learning solutions with office locations around the globe, including Singapore, the United Kingdom, Australia, Mexico, Brazil, and Japan. Locate your local office at:
international.cengage.com/region

Cengage Learning products are represented in Canada by Nelson Education, Ltd.

For your lifelong learning solutions, visit **course.cengage.com**Visit our corporate website at **cengage.com**

Microsoft and the Office logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Course Technology, a part of Cengage Learning, is an independent entity from the Microsoft Corporation, and not affiliated with Microsoft in any manner.

Printed in the United States of America
1 2 3 4 5 6 7 12 11 10

Brief Table of Contents

INTRODUCTION	xv
CHAPTER 1 Introduction to Windows 7	1
CHAPTER 2 Installing Windows 7	49
CHAPTER 3 Using the System Utilities	97
CHAPTER 4 Managing Disks	157
CHAPTER 5 Managing File Systems	197
CHAPTER 6 User Management	243
CHAPTER 7 Windows 7 Security Features	283
CHAPTER 8 Networking	335
CHAPTER 9 User Productivity Tools	413
CHAPTER 10 Performance Tuning	457
CHAPTER 11 Application Support	495
CHAPTER 12 Disaster Recovery and Troubleshooting	531
CHAPTER 13 Enterprise Computing	589
CHAPTER 14 Remote Access	625
APPENDIX A	675
GLOSSARY	679
INDEX	697

Table of Contents

INTRODUCTION	xv
CHAPTER 1	
Introduction to Windows 7	1
Windows 7 Versions	2
Windows 7 Home Premium	3
Windows 7 Professional	3
Windows 7 Enterprise	3
Windows 7 Ultimate	4
Windows 7 Starter	4
Windows 7 Home Basic	4
Windows 7 N & K Editions	5
New and Enhanced Features of Windows 7	5
32-Bit and 64-Bit Computing Support	7
Aero	7
.NET Framework 3.5	9
Speech Recognition	10
Internet Explorer 8	10
User Account Control	10
Fast User Switching Enhancements	12
Windows Driver Foundation	14
Repair and Restart Improvements	15
Rapid Deployment	15
Windows BitLocker Drive Encryption	16
Trusted Platform Module Services	16
Network Connectivity	16
User Interface	18
Start Menu	18
Windows Help and Support	19
Search Interface	19
Gadgets	19
Taskbar	21
Notification Area	22
Advanced Window Management	22
Hardware Requirements and System Hardware Support	24
Processor Support	25
Plug and Play	29
Power Management	29
Tablet Hardware	29
Media Hardware	30
Multiple Monitor Support	30
Networking Technologies	30
Disk Technology	31
Disk Partition Styles	31
Types of Disk Partitions	31
File Systems	31
Application Support	33
Compatibility Settings	33
Program Compatibility Wizard	34
Application Compatibility Toolkit	34
Windows XP Mode with Windows Virtual PC	34
Kernel and User Mode Enhancements	35
Virtual PC Hypervisor	35
Connectivity Applications	36
Remote Desktop	36
Remote Assistance	36
Network Projection	36
HomeGroups	36
Networking Models	37
Workgroup Model	37

Domain Model	38
Windows Peer-to-Peer Networking	39
Chapter Summary	40
Key Terms	41
Review Questions	44
Case Projects	48
 CHAPTER 2	
Installing Windows 7	49
Deployment Enhancements in Windows 7	50
Design Improvements	50
Tools and Technology Improvements	51
Windows 7 Installation Methods	54
DVD Boot Installation	54
Distribution Share Installation	55
Image-Based Installation	55
Windows 7 Installation Types	55
Clean Installations	55
Upgrade Installations	56
Migrating User Settings and Files	56
Dual Boot Installations and Virtualization	57
Windows Easy Transfer	59
Copy Windows Easy Transfer	59
Select a Transfer Method	59
Select What to Transfer	61
Transfer User Settings and Files	62
Attended Installation	65
Product Activation	65
Unattended Installation	67
Answer File Names	68
Configuration Passes for a Basic Installation	68
Windows System Image Manager	72
Image-Based Installation	77
Sysprep	78
ImageX	82
Image Maintenance	87
Windows PE Boot Media Creation	89
Chapter Summary	90
Key Terms	91
Review Questions	93
Case Projects	96
 CHAPTER 3	
Using the System Utilities	97
Control Panel Overview	98
System and Security	100
Network and Internet	104
Hardware and Sound	106
Programs	110
User Accounts and Family Safety	113
Appearance and Personalization	114
Clock, Language, and Region	117
Ease of Access	119
Administrative Tools	122
Microsoft Management Console	124
Computer Management	126
Services	127

Hardware Management	131
Device Drivers	131
Device Driver Compatibility	132
Device Manager	132
Device Driver Signing	135
Hardware Component Installation	135
Power Management	136
ACPI States	137
Sleep Mode in Windows 7	137
Power Plans	138
Away Mode	140
Display	141
Display Settings	142
Visual Effects	144
Themes	144
Desktop Backgrounds	144
Screen Savers	146
Multiple Monitors	146
Task Scheduler	147
Chapter Summary	149
Key Terms	150
Review Questions	153
Case Projects	155
CHAPTER 4	
Managing Disks	157
Disk Technology	158
Internal Disk	158
External Disk	158
Virtual Hard Disk (VHD)	158
Multiple Disks as One Logical Disk	159
Partition Styles	160
Master Boot Record (MBR)	160
GUID Partition Table (GPT)	160
Types of Disk Partitions	161
Basic Disk Storage	161
Dynamic Disk Storage	162
Disk Management Tools	165
Disk Management	165
DiskPart	167
Disk Management Tasks	168
Preparing Hard Disks	168
Disk Cleanup	170
Checking Disk Health	171
Defragmenting Disks	174
Moving Disks	176
Converting Disk Types	177
Managing Fault Tolerance	177
Partition and Volume Management	178
Creating Partitions and Volumes	179
Deleting Partitions and Volumes	181
Extending Partitions and Volumes	182
Shrinking Partitions and Volumes	183
Virtual Disk Management Tasks	184
Creating VHDs	184
Attaching VHDs	186
Detaching VHDs	186
Advanced VHD Management	187

Chapter Summary	188
Key Terms	188
Review Questions	191
Case Projects	195
CHAPTER 5	
Managing File Systems	197
Supported File Systems	198
File Allocation Table	198
New Technology File System	199
Universal Disk Format	209
CDFS File System	209
Extended File Allocation Table	210
File System Tasks	210
Changing Drive Letters	210
Converting File Systems	211
File and Folder Attributes	213
Attribute Flags	217
File and Folder Permissions	224
Default Folder Permissions	224
NTFS Standard Permissions	226
Individual NTFS Permissions	227
Permission Scope	227
Permission Inheritance	229
Effective Permissions	229
Ownership	229
Permission Changes When Content Is Copied or Moved	230
Permission Strategy Considerations	230
Previous Versions	233
Chapter Summary	235
Key Terms	236
Review Questions	237
Case Projects	241
CHAPTER 6	
User Management	243
User Accounts	244
Logon Methods	244
Naming Conventions	248
Default User Accounts	249
Default Groups	251
Creating Users	252
User Accounts Applet	254
Local Users and Groups MMC Snap-In	256
Advanced User Accounts Applet	262
Managing Profiles	263
The Default Profile	264
Mandatory Profiles	268
Roaming Profiles	268
The Public Profile	268
The Start Menu	269
Network Integration	269
Peer-to-Peer Networks	270
Domain-Based Networks	271
Cached Credentials	271
Parental Controls	272
Time Limits	273
Game Controls	274
Block Programs	275

Chapter Summary	276
Key Terms	277
Review Questions	278
Case Projects	281
CHAPTER 7	
Windows 7 Security Features	283
Windows 7 Security Improvements	284
Malware Protection	284
Alternative Authentication Methods	285
Network Protection	285
Data Protection	285
AppLocker for Software Restrictions	286
Security Policies	286
Account Policies	287
Local Policies	288
AppLocker	290
Other Security Policies	297
Security Templates	297
Auditing	300
User Account Control	304
Application Manifest	305
UAC Configuration	305
Malware Protection	308
Windows Defender	308
Microsoft Security Essentials	311
Data Security	312
Encryption Algorithms	312
Encrypting File System	315
BitLocker Drive Encryption	320
Windows Update	324
Action Center	327
Chapter Summary	329
Key Terms	330
Review Questions	331
Case Projects	333
CHAPTER 8	
Networking	335
Networking Overview	336
Network and Sharing Center	336
Networks	336
Connections	339
Network Architecture	342
IP Version 4	343
IP Addresses	344
Subnet Masks	345
Default Gateways	347
DNS	348
WINS	348
Methods for Configuring IPv4	348
Essential IPv4 Utilities	354
Hostname	354
IPconfig	354
Ping	355
Tracert	356
Pathping	356
Route	356

Netstat	356
Nbtstat	357
Getmac	357
Arp	357
Netsh	358
Nslookup	358
Troubleshooting IPv4	358
Confirm current settings	358
Validate IPv4 connectivity	358
Verify DNS name resolution	359
Verify data connections	359
IP Version 6	360
IPv6 Address Notation	360
IPv6 Address Types	360
Link-local Unicast	361
Global Unicast	362
Unique Local Unicast	362
Multicast	363
Anycast	363
Special addresses	363
Teredo	363
Methods for Configuring IPv6	364
Troubleshooting IPv6 Settings	367
Confirm current settings	367
Validate IPv6 connectivity	367
Verify DNS name resolution	367
Verify data connections	367
File Sharing	368
Sharing the Public Folder	368
Sharing Any Folder	371
Creating and Managing Shared Folders	372
Monitoring Shared Folders	378
Internet Connectivity	379
Single-Computer Internet Connectivity	379
Shared Internet Connectivity	382
Internet Connection Sharing	382
Wireless Networking	383
Creating a Wireless Connection	385
Managing Wireless Connections	387
Troubleshooting Wireless Connections	388
Windows Firewall	388
Basic Firewall Configuration	389
Advanced Firewall Configuration	392
View and Edit Firewall Rules	395
Network Bridging	401
Ad hoc and Homegroup Networks	402
Ad hoc Networking	402
Homegroup Networks	402
Chapter Summary	404
Key Terms	405
Review Questions	408
Case Projects	412
CHAPTER 9	
User Productivity Tools	413
Printing	414
Printing Scenarios	414
XPS	415
The Printing Process	416
Printer Drivers	420
Printer Management	422

Windows Fax and Scan	433
Windows Explorer	435
Libraries	435
Views	436
Window Management	438
Search	439
The Search Index	440
File Metadata	443
Saved Searches	443
Internet Explorer 8	444
User Features	445
Security	447
Privacy	450
Tools	450
Chapter Summary	452
Key Terms	453
Review Questions	454
Case Projects	456
CHAPTER 10	
Performance Tuning	457
Performance Enhancements	458
Performance Tuning Overview	458
Establishing a Baseline	459
Recognizing Bottlenecks	459
Tuning Performance	461
Performance Monitor	462
Resource Monitor	463
Performance Monitor	469
Data Collector Sets	473
Reports	479
Task Manager	480
Applications	481
Processes	481
Services	482
Performance	483
Other Tabs	484
Performance Ranking	485
Performance Options	487
Virtual Memory	488
Data Execution Prevention	488
Chapter Summary	489
Key Terms	490
Review Questions	490
Case Projects	493
CHAPTER 11	
Application Support	495
Application Architecture	496
Supported Application Environments	497
Win32 Applications	497
.NET Applications	498
DOS Applications	498
Win16 Applications	499
x64 Application Considerations	501
Windows 7 Registry	501
Registry Structure	501
Registry Editing Tools	506

Registry Backup and Restore Methods	509
Registry Security	510
File and Registry Virtualization	512
Run As Administrator	513
Application Compatibility	514
Program Compatibility Assistant	515
Program Compatibility Settings	516
XP Mode	518
Kernel Patching	519
Application Compatibility Research Tools	519
Application Compatibility Manager	520
Compatibility Administrator	520
Standard User Analyzer	520
Setup Analysis Tool	520
Internet Explorer Compatibility Test Tool	520
Microsoft Compatibility Exchange	520
Application Shim Support	520
Application Control Policies	521
Software Restriction Policies	521
AppLocker	524
Chapter Summary	525
Key Terms	525
Review Questions	526
Case Projects	529
CHAPTER 12	
Disaster Recovery and Troubleshooting	531
General Principles of Troubleshooting	532
Information Collection	532
Solution Guidelines	551
Windows Backup and Restore	552
File Backup	552
Restore Files	556
Create a System Image	557
Repairing Windows 7	561
Advanced Boot Options Menu	562
System Restore	566
Device Driver Rollback	568
Windows Recovery Environment	569
Automatic Repairs	575
Preventative Maintenance	578
Windows Resource Protection	578
Advanced Troubleshooting	579
DirectX Diagnostic Testing	579
Windows 7 Boot Process	579
Chapter Summary	582
Key Terms	583
Review Questions	584
Case Projects	587
CHAPTER 13	
Enterprise Computing	589
Active Directory	590
Active Directory Structure	590
Active Directory Partitions	595
Active Directory Sites and Replication	596
Joining a Domain	597

Group Policy	598
Group Policy Inheritance	601
Group Policy Enhancements in Windows 7	602
Controlling Device Installation	605
Device Identification	605
Device Installation Group Policy Settings	607
Removable Storage Group Policy Settings	608
Deployment Planning	610
Scope and Goals	610
Existing Computer Systems	610
New Configuration	611
Deployment Process Selection	611
Test Deployment	611
Deployment	612
Enterprise Deployment Tools	612
User State Migration Tool	612
Windows Deployment Services	614
System Center Configuration Manager	616
Microsoft Deployment Toolkit	616
VHD Boot	616
Windows Server Update Services	617
WSUS Update Process	617
WSUS Updates	618
Network Access Protection	619
Enforcement Mechanisms	619
Chapter Summary	619
Key Terms	620
Review Questions	621
Case Projects	623
CHAPTER 14	
Remote Access	625
Remote Access and Remote Control Overview	626
Remote Access Dial-Up Connectivity	628
Dial-Up Protocols	628
Analog Dial-Up Connections	628
Remote Access VPN Connectivity	643
VPN Protocols	643
Creating a VPN Connection	645
Configuring a VPN Connection	647
DirectAccess	653
Remote Desktop	653
Stand-Alone Remote Desktop Client	654
RemoteApp and Remote Desktop Web Access	660
Remote Assistance	661
BranchCache	664
Sync Center	665
Mobility Center	666
Chapter Summary	666
Key Terms	667
Review Questions	669
Case Projects	673
APPENDIX A	675
GLOSSARY	679
INDEX	697

Introduction

Welcome to *MCTS Guide to Windows 7*. This book offers you real-world examples, interactive activities, and many hands-on activities that reinforce key concepts and prepare you for a career in network administration using Microsoft Windows 7. This book also features troubleshooting tips for solutions to common problems that you will encounter in the realm of Windows 7 administration.

This book offers in-depth study of all the functions and features of installing, configuring, and maintaining Windows 7 as a client operating system. Throughout the book, we provide detailed Activities that let you experience firsthand the processes involved in Windows 7 configuration and management. We then provide pointed Review Questions to reinforce the concepts introduced in each chapter and help you prepare for the Microsoft certification exam. Finally, to put a real-world slant on the concepts introduced in each chapter, we provide Case Projects to prepare you for situations that must be managed in a live networking environment.

Certification

MCTS Guide to Microsoft Windows 7 is intended for people getting started in computer networking as well as experienced network administrators new to Windows 7. To best understand the material in this book, you should have a background in basic computer concepts and have worked with applications in a Windows environment. The Microsoft Certified Technology Specialist (MCTS) certification allows technology professionals to prove their expertise in working with specific Microsoft technologies. This book prepares you to take exam 70-680: TS: Windows 7, Configuring, which leads to the MCTS: Windows 7, Configuration certification. After completing this book, you will not only be prepared to take the certification exam, but will also be prepared to implement and maintain Windows 7 in a business environment.

New to This Edition

The entire book has been updated from Windows Vista to Windows 7, covering the functions and features of installing, configuring, and maintaining Windows 7 as a client operating system. New activities, review questions, and case projects have been created to reinforce the concepts

and techniques presented in each chapter and to help you apply these concepts to real-world scenarios. A new, full-color interior design brings the material to life and full-color screenshots provide a more detailed look at the Microsoft Windows 7 interface.

Chapter Outline

The topics covered in the 14 chapters of this book are comprehensive and organized as described in the following descriptions.

Chapter 1, “Introduction to Windows 7,” outlines the versions of Windows 7 in the features available in each. It also introduces the new and improved features in Windows 7, including the updated user interface, hardware requirements, and system hardware support. New features for application support, connectivity applications, and enhanced networking models are also covered.

In **Chapter 2**, “Installing Windows 7,” we discuss the deployment enhancements in Windows 7 and the considerations for choosing an installation method and installation type. We also explore transferring settings from one computer to another by using Windows Easy Transfer. Detailed explanations of attended and unattended installations are provided. Finally, imaging of Windows 7 by using the Windows Imaging Format is discussed.

Chapter 3, “Using the System Utilities,” examines the tools used to manage Windows 7: namely, the Microsoft Management Console (MMC), Administrative Tools, Task Scheduler, and Control Panel applets. These tools are used to install and configure new hardware, power management, and the display.

In **Chapter 4**, “Managing Disks,” we explore the differences between basic and dynamic storage and discuss the drive configurations supported by Windows 7. This chapter also introduces partition and volume management as well as the common disk management tools. The new virtual hard disk files available in Windows 7 are also discussed.

Chapter 5, “Managing File Systems,” introduces the concept of file systems and describes the benefits and features of both FAT and NTFS. File system security is covered, including NTFS permissions and inheritance. Finally, accessing and restoring previous versions of files is discussed.

In **Chapter 6**, “User Management,” we introduce the concepts involved in working with users, groups, profiles, and Parental Controls. This discussion includes setting up, naming, and managing local users and groups and default user and group accounts. User profiles and their role in user management are covered. User security in peer-to-peer and domain-based networks are evaluated. Finally the use of Parental Controls is explored as a method for controlling user access.

Chapter 7, “Windows 7 Security Features,” teaches you about the security improvements in Windows 7, how to configure security by using the local security policy, and how to enable auditing. You will also learn about User Account Control, which is a way for user privileges to be managed. Malware security using Windows Defender and Microsoft Security Essentials is covered. Using Encrypting File System and BitLocker Drive Encryption for data protection is discussed. Finally, using Windows Update to automatically apply patches is covered.

Chapter 8, “Networking,” describes the networking components and architecture of Windows 7. You learn about the TCP/IPv4 and TCP/IPv6 protocols. You also learn about file sharing, Internet connectivity, Windows Firewall, network bridging, and HomeGroup networks.

In **Chapter 9**, “Using Productivity Tools,” we discuss Windows 7 printing and faxing. We also look at the new Windows Explorer libraries and search feature that make finding information easier. Finally, the new features and security of Internet Explorer 8 is discussed.

Chapter 10, “Performance Tuning,” gives you the information you need to understand the performance and monitoring tools found in Windows 7. You learn performance tuning concepts that can be used for Windows 7 and other operating systems. Then you learn how to use the Performance Monitor along with Task Manager to monitor Windows 7. The performance ranking system in Windows 7 is discussed and you see some methods for optimizing system performance.

In **Chapter 11**, “Application Support,” we discuss the Windows 7 architecture for supporting applications. The registry is also discussed. Support for applications compatibility including file and registry virtualization and compatibility tools are also discussed.

We introduce you to disaster protection and recovery concepts in **Chapter 12**, “Disaster Recovery and Troubleshooting.” You learn about the general principals of troubleshooting that can be used to diagnose problems with any computer system. Tools used for information gathering are covered including Event Viewer and Problem Reports and Solutions. Also, you learn about the utilities that can be used for system maintenance and repair such as Windows Backup and the Advanced Boot Options Menu. Finally, you learn about advanced troubleshooting tools used for DirectX and the Windows 7 boot process.

Chapter 13, “Enterprise Computing” describes Windows 7 features and functions that are used in large companies. You learn how Active Directory and Group Policy can be used to manage hundreds or thousands of Windows 7 computers. As well, deployment planning and enterprise deployment tools for Windows 7 are described. Finally, you learn how Windows Server Update Services and Network Access Protection can be used to ensure that computers on your network have appropriate updates installed.

In **Chapter 14**, “Remote Access,” we examine remote access. You learn how to use remote access under Windows 7, including how to use Remote Desktop and Remote Assistance. The new DirectAccess and BranchCache features are discussed. Finally, you learn about the Sync Center for mobile users.

Appendix A, “MCTS 70-680 Exam Objectives,” maps each exam objective to the chapter and section where you can find information on that objective.

Features and Approach

MCTS Guide to Microsoft Windows 7 differs from other networking books in its unique hands-on approach and its orientation to real-world situations and problem solving. To help you see how Microsoft Windows 7 concepts and techniques are applied in real-world organizations, this book incorporates the following features:

Chapter Objectives—Each chapter begins with a detailed list of the concepts to be mastered. This list gives you a quick reference to the chapter’s contents and is a useful study aid.

Activities—Activities are incorporated throughout the text, giving you practice in setting up, managing, and troubleshooting a network system. The Activities give you a strong foundation for carrying out network administration tasks in the real world. Because of the book’s progressive nature, completing the Activities in each chapter is essential before moving on to the end-of-chapter materials and subsequent chapters.

Chapter Summaries—Each chapter’s text is followed by a summary of the concepts introduced in that chapter. These summaries provide a helpful way to recap and revisit the ideas covered in each chapter.

Key Terms—All terms introduced with boldfaced text are gathered together in the Key Terms list at the end of the chapter. This provides you with a method of checking your understanding of all the terms introduced.

Review Questions—The end-of-chapter assessment begins with a set of Review Questions that reinforce the ideas introduced in each chapter. Answering these questions correctly will ensure that you have mastered the important concepts.

Case Projects—Finally, each chapter closes with a section that proposes certain situations. You are asked to evaluate the situations and decide upon the course of action to be taken to remedy the problems described. This valuable tool will help you sharpen your decision-making and troubleshooting skills, which are important aspects of network administration.

Text and Graphic Conventions

Additional information and exercises have been added to this book to help you better understand what's being discussed in the chapter. Icons throughout the text alert you to these additional materials. The icons used in this book are described as follows:



Tips offer extra information on resources, how to attack problems, and time-saving shortcuts.



Notes present additional helpful material related to the subject being discussed.



Each Activity in this book is preceded by the Hands-On icon.



Case Project icons mark the end-of-chapter case projects, which are scenario-based assignments that ask you to independently apply what you have learned in the chapter.

CertBlaster Test Preparation

The *MCTS Guide to Microsoft Windows 7 (Exam # 70-680)* includes an exam objectives coverage map in Appendix A. The guide also includes CertBlaster test preparation questions that mirror the look and feel of the MCTS exam. For additional information on the CertBlaster test preparation questions, go to <ftp://ftp.certblaster.com/1/Course/>.

Please follow these directions to install and launch your CertBlaster application:

1. Click the title of the CertBlaster you want to download.
2. Save the program (.EXE) file to a folder on your C: drive. (Warning: If you skip this step, your CertBlaster will not install correctly.)
3. Click Start and choose Run.
4. Click Browse and then navigate to the folder that contains the .EXE file. Select the .EXE file and click Open.
5. Click OK and then follow the on-screen instructions. In order to complete the installation, you will need the CertBlaster access code. The access code can be found inside the card in the back of your textbook.
6. When the installation is complete, Click Finish.
7. Click Start, choose All programs and Click CertBlaster.

Instructor Resources

The following supplemental materials are available when this book is used in a classroom setting. All the supplements available with this book are provided to the instructor on a single CD-ROM. All the information has been updated to cover Windows 7.

Electronic Instructor's Manual—The Instructor's Manual that accompanies this textbook includes additional instructional material to assist in class preparation, including suggestions for classroom activities, discussion topics, and additional projects.

Solutions—The solutions are provided for the end-of-chapter material, including Review Questions, and, where applicable, Hands-On Activities and Case Projects. Solutions to the Practice Exams are also included.

ExamView®—This textbook is accompanied by ExamView, a powerful testing software package that allows instructors to create and administer printed, computer (LAN-based), and Internet exams. ExamView includes hundreds of questions that correspond to the topics covered in this text, enabling students to generate detailed study guides that include page references for further review. The computer-based and Internet testing components allow students to take exams at their computers and also save the instructor time by grading each exam automatically.

PowerPoint presentations—This book comes with Microsoft PowerPoint slides for each chapter. These are included as a teaching aid for classroom presentation, to make available to students on the network for chapter review, or to be printed for classroom distribution. Instructors, please feel at liberty to add your own slides for additional topics you introduce to the class.

Figure files—All the figures and tables in the book are reproduced on the Instructor Resources CD, in bitmap format. Similar to the PowerPoint presentations, these are included as a teaching aid for classroom presentation, to make available to students for review, or to be printed for classroom distribution.

Companion Lab Manual

A companion lab manual is available with this book. It includes additional exercises for every chapter to complement the exercises in the book. The ISBN of the lab manual is 1-1113-0978-7.

System Requirements

Hardware

All hardware should be listed on Microsoft's Hardware Compatibility List for Windows 7. However, the Activities in this book have been designed to run with virtualization software such as Microsoft Virtual PC, Microsoft Virtual Server, Microsoft Hyper-V, VMWare Virtual Server, and VMWare Workstation.

Software

Microsoft Windows 7 Enterprise for each computer. Other versions can be used, but some activities may not be possible to perform. For example, the Parental Controls feature is not available in business versions of Windows 7. Students perform the installation of all necessary software during the course.

Software used during this course can be obtained at the following locations:

- Windows 7 Enterprise 90-day Trial—<http://technet.microsoft.com/en-us/evalcenter/cc442495.aspx>

Component	Requirement
CPU	1 gigahertz or faster, x86 or x64
Memory	1 GB of RAM (2 GB recommended for x64)
Disk Space	40 GB hard disk
Video	Monitor supporting a resolution of 1024×768 DirectX 9 capable graphics processor with WDDM support (recommended)
Keyboard	Keyboard
Pointing Device	Microsoft mouse or compatible pointing device
Drives	A DVD-ROM drive
Networking	Internet connectivity recommended. Network connectivity required for some activities.
Cards	A Windows 7-compatible network adapter card and related cable

- Windows Automated Installation Kit for Windows 7—<http://www.microsoft.com/downloads/details.aspx?FamilyID=696dd665-9f76-4177-a811-39c26d3b3b34&displaylang=en>
- Windows Server 2008 R2 Trial—<http://www.microsoft.com/windowsserver2008/en/us/trial-software.aspx>

Set Up Instructions

To successfully complete the Activities, you need a computer system meeting or exceeding the minimal system requirements for Windows 7. Confirming those requirements and installing Windows 7 (along with available service packs) is covered in Chapters 1 and 2.

Acknowledgments

Byron and Leon would like to thank the entire team that we have worked with at Cengage Learning.

In particular we would like to thank Jill Batistick who patiently worked with us as we missed the occasional deadline during the writing process. We would also like to thank John Blackwood, Mike Fuszner, William Hilliker, Paulette Sibrel, and Pamela Kurtz, the reviewers who evaluated the first draft of our chapters and provided feedback on them. Your insights were a valuable contribution to this book. Finally, Leon would like to thank his loving wife, Angela, and his boys, Tyler and Terry, for sharing their family time with all the people who will use this book as part of their greater education. Byron would especially like to thank Tracey, Sammi, and Michelle for allowing him to maintain a sense of perspective when deadlines loom.

Reviewers

John Blackwood, MS, CCAI/CCNA, MCITP:
Enterprise Administrator, MCSE: Security, A+
Associate Professor
Umpqua Community College
Roseburg, Oregon

Mike Fuszner, CCAI
Computer Networking
Cisco Networking Academy
St. Charles Community College
Cottleville, Missouri

William E Hilliker, MSCIS, MBA, A+
Assistant Professor
Monroe County Community College
Monroe, Michigan

Pamella Kurtz, MBA
Keiser University, Fort Lauderdale Campus
Fort Lauderdale, Florida

Paulette Sibrel, Associate Professor
Illinois Central College
East Peoria, Illinois

About the Authors

Leon Plesniarski has been building with Microsoft products since 1984. After graduating with a Bachelor in Science in Computer and Electrical Engineering from the University of Manitoba in 1990, he applied his training as a Network Administrator and independent consultant. By 1996, he supplied Microsoft and Novell teaching services for the University of Manitoba Continuing Education Division as a Microsoft Certified Trainer (MCT), Certified Novell Instructor (CNI), and Certified Technical Trainer (CTT). This is where his passion grew for developing new certification course material, focusing his attention on details that enable students to enhance or gain employment.

Since joining Broadview Networks in 2001, he is leading his technical team's efforts to help companies design, deploy, and benefit from Microsoft technology. Leon continues to proudly direct and grow the skills of master consultants and enterprise architects employed at Broadview, students at the next level of applied knowledge. You can reach Leon at leon@broadviewnetworks.ca.

Byron Wright is a partner in Conexion Networks where he designs, implements, and maintains business computing solutions. He started working with Novell NetWare, but now works primarily with Microsoft products. His areas of expertise include network design, network security, Exchange Server, and Windows server and desktop operating systems.

Byron has worked extensively in the technical training industry, teaching courses to hundreds of corporate administrators. He also is a sessional instructor with the University of Manitoba teaching management information systems and networking for the Asper School of Business. Byron has authored and co-authored a number of books on Windows servers, Windows Vista, and Exchange Server, including the Windows Server 2008 Active Directory Resource Kit. You can reach Byron at byron@conexion.ca.

Introduction to Windows 7

After reading this chapter and completing the exercises, you will be able to:

- Describe the versions of Windows 7
- Discuss the new features in Windows 7
- Understand the Windows 7 user interface
- Define the hardware requirements and understand the hardware support of Windows 7
- Describe the application support built in to Windows 7
- Identify essential connectivity applications used in Windows 7
- Understand the networking models supported by different versions of Windows 7

The digital world has changed our lives and our expectations of the world around us. Our day-to-day life is often touched by the digital information created to describe, control, and experience it. More data exists than ever before, and people find themselves overwhelmed as they try to use it.

With its latest client operating system, Windows 7, Microsoft safely and reliably connects users with the information they need in the digital world, providing enhanced user interface and operating system features.

Windows 7 is the successor to Microsoft's previous client operating system, Windows Vista. Windows Vista built on the effectiveness of Windows XP and offer improvements in security, data handling, and portability. The computing community was slow to adopt Windows Vista due to the perception that it was slow and too restrictive in its attempts to protect the user. Windows 7 users can use their computers and see fewer security prompts than they did in Windows Vista, yet they are better protected than ever before.

Windows 7 maximizes performance on today's hardware which is very important as new computers no longer fully support Windows XP. For maximum performance, Windows 7 eclipses Windows Vista in many performance categories. These improvements together enable a Windows 7 user to concentrate on using their computer safely and productively.

This chapter outlines the versions of Windows 7 and the features available in each. This information enables users to determine which version is appropriate for their specific needs. The chapter also introduces new and improved features in Windows 7, including the updated user interface, hardware requirements, and system hardware support. Updated features for application support, connectivity applications, and enhanced networking models are also covered in the chapter.

Windows 7 Versions

Windows 7 is available in different versions to meet different consumer requirements. A consumer can upgrade from one version to another to get the extra features found in enhanced versions. Retail versions support this feature, called Windows Anytime Upgrade. The installed retail version has full support for all retail editions of Windows 7 already built-in. If the user purchases an upgrade key they can unlock an upgraded edition of Windows 7 on the computer in about 10 minutes.

If Windows 7 is pre-installed from the factory by the Original Equipment Manufacturer (OEM) of the computer, the Windows 7 license is tied to that computer hardware. This limits the operating system upgrade and downgrade rights to the terms specified by the OEM Windows 7 license. OEM licenses of Windows 7 are not transferable to new computer hardware.

In corporate environments, Windows 7 licenses may be purchased in bulk by purchasing a Volume License (VL) that entitles upgrades of computers with an existing operating system to a volume licensed version of Windows 7. Volume licensing has rules and limits that are subject to change, therefore the upgrade terms should be researched at the time of the sale.

The four mainstream versions of Windows 7 are:

- Windows 7 Home Premium
- Windows 7 Professional
- Windows 7 Enterprise
- Windows 7 Ultimate

Several additional specialized versions of Windows 7 are:

- Windows 7 Starter
- Windows 7 Home Basic
- Windows 7 N & K Editions

General descriptions of each product and new Windows 7 features are provided in the following sections.

Windows 7 Home Premium

Windows 7 Home Premium concentrates on enabling the home user to enjoy a rich productive multimedia experience. Business enhancements such as encrypted files, joining a domain, and processing Group Policy settings are not available unless the operating system is upgraded to a business-grade edition. This version includes the following:

- Full Aero interface
- Multiple monitors
- Support for up to 2 physical CPUs
- 32-bit and 64-bit versions
- 64-bit version supports up to 16 GB RAM
- Support for tablet PCs and MultiTouch controls
- Display personalization
- Desktop enhancements
- Windows Media Center capabilities
- Creation and use of HomeGroups
- Windows Mobility Center
- Network printing
- Internet Connection Sharing
- Fast user switching
- Games

Windows 7 Professional

In a corporate environment, the enhanced manageability of Windows 7 Professional allows a business to simplify its operations and concentrate on doing business. This version includes the features of Windows 7 Home Premium and additionally:

- 64-bit version supports up to 192 GB RAM
- Multi-user fast switching
- Remote Desktop hosting
- Support for domain networking
- Location aware printing
- Dynamic disks
- Encryption File System
- Windows XP Mode with Windows Virtual PC
- Volume licensing

Windows 7 Enterprise

Windows 7 Enterprise is available only to customers who purchase **Software Assurance (SA)** from Microsoft. Software Assurance is available to medium- and large-scale customers who purchase Microsoft products at a volume level.

This version includes the features found in Windows 7 Professional and adds:

- Multiple Language User Interface for companies spanning the globe
- UNIX-based application support

- [read online *Can I Freeze It?: How to Use the Most Versatile Appliance in Your Kitchen* pdf, azw \(kindle\), epub, doc, mobi](#)
- [Antidepressants \(Drugs: the Straight Facts\) for free](#)
- [**Knitting 101: Master Basic Skills and Techniques Easily through Step-by-Step Instruction pdf, azw \(kindle\), epub, doc, mobi**](#)
- [The Singer's Gun for free](#)
- [**download online *Grave Descend \(The Med School Years, Book 9\)* for free**](#)

- <http://betsy.wesleychapelcomputerrepair.com/library/Can-I-Freeze-It---How-to-Use-the-Most-Versatile-Appliance-in-Your-Kitchen.pdf>
- <http://transtrade.cz/?ebooks/The-Urth-of-the-New-Sun--The-Book-of-the-New-Sun--Book-5-.pdf>
- <http://berttrotman.com/library/Knitting-101--Master-Basic-Skills-and-Techniques-Easily-through-Step-by-Step-Instruction.pdf>
- <http://www.netc-bd.com/ebooks/The-Singer-s-Gun.pdf>
- <http://korplast.gr/lib/Grave-Descend--The-Med-School-Years--Book-9-.pdf>