

Making Everything Easier!

Windows PowerShell™ 2

FOR
DUMMIES®

Learn to:

- Master Windows PowerShell 2 without complicated jargon
- Automate Windows Server® administration tasks
- Use the new features of Windows PowerShell 2
- Debug scripts, remotely invoke commands, and more

Steve Seguis



Windows PowerShell 2 For Dummies®

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Windows PowerShell™ 2 For Dummies®

by Steve Seguis



Wiley Publishing, Inc.

Windows PowerShell™ 2 For Dummies®

Published by

Wiley Publishing, Inc.

111 River St.

Hoboken, NJ 07030-5774

www.wiley.com

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Published simultaneously in Canada

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Library of Congress Control Number:

ISBN: 978-0-470-37198-5

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1



About the Author

Steve Seguis lives with his amazing wife, Annalene, in New York City, New York. He is a twelve-year Windows Systems Engineer veteran and specializes in systems automation. He was a Microsoft Most Valuable Professional (MVP) for Windows Server — Admin Framework from 2004–2007. He is also a contributing writer and technical editor for Windows IT Pro and, most recently, has published a book on Windows Server 2008 Administration.

Dedication

To my parents, Romeo and Lourdes, who gave me the opportunities that have allowed me to pursue my dreams and become who I am today.

Author's Acknowledgments

I've always been a fan of the For Dummies books, which has often resulted in one or two chuckles from my colleagues due to the incorrect perception that somehow reading a For Dummies book implies a lack of intelligence. The reality is that I'm a fan of making complex things simple and I like books that focus on getting me the information I need in an easy, digestible format. The For Dummies books have been doing this for years, and ever since I read my first For Dummies book

(specifically C For Dummies by Dan Gookin, over a dozen years ago), I was captured by the ease at which I was able to gain knowledge while having the occasional laugh. I never in my wildest imagination thought I'd ever have the opportunity to write one myself . . . that is until my agent, David Fugate, got me in touch with the good people over at Wiley Publishing and got this journey started. Thanks David!

I'd like to thank Greg Croy, Executive Editor, for getting my proposal for this book approved. He actually retired before I was done writing the book, but kudos to him for getting the ball rolling. Thanks goes out to Blair Pottenger, Project Editor, for keeping me well-informed, answering all my questions, and putting in a lot of work to get the book finished. Of course, I'd also like to thank Katie Mohr, Acquisitions Editor, who took over Greg's role in this project after he retired. Katie went on maternity leave just before we got done with the book, so congratulations Katie on the new baby. The project had hit a bit of a plateau half way through, but when she took over we were able to regroup and get everything back on track.

I have to thank my very patient and supportive wife, Annalene, who puts up with me disappearing into the cubby hole I call my home office for late night writing sessions and generally dealing with all my quirks. We somehow work together to stay sane despite our lives going at 100 miles an hour.

I also have to thank my parents and my family for understanding how busy I get, generally staying out of my hair (what hair I have left), and letting me pursue my interests even though they continue to say that I need to slow down a bit and get some more sleep.

Finally, I'd like to thank the guys over at Microsoft for creating this awesome scripting language called Windows PowerShell. We've come a long way since batch files and as a long-time Windows administrator, I bow to your greatness. Windows PowerShell is truly empowering and more Windows folks in every company need to embrace it.

Publisher's Acknowledgments

We're proud of this book; please send us your comments through our online registration form located at www.dummies.com/register/.

Some of the people who helped bring this book to market include the following:

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Introduction

Welcome to *Windows PowerShell 2 For Dummies*, your ticket to the awesome and magical world of Windows PowerShell. (Well, maybe it's not quite so magical, but at least your co-workers will think you're magical when you're done reading this book.) This book is a no-fluff, get-you-the-information-you-need-today kind of book, so if you like to read chapter after chapter of boring technical literature that keeps going around in circles, put this book back on the shelf, and walk away quietly. If, however, you want to read a book that is engaging, gives you the information you need to know rather than just a bunch of things you might want to know, and gets you up and running with Windows PowerShell as quickly as possible, then this book is for you!

About This Book

Windows PowerShell 2 For Dummies is an introductory guide to this relatively new and fascinating Windows scripting environment that's revolutionizing the way programmers think about Windows scripting. Before Windows PowerShell 2, there was Windows PowerShell 1.0 (what a shocker!). Windows PowerShell 2 takes the best elements of Windows PowerShell 1.0 and greatly improves on them, thanks in great part to the feedback from the Windows PowerShell community.

My goal in this book is to give you a concrete understanding of how things work in Windows PowerShell and fortify that knowledge with plenty of real-world examples that I'm sure you'll be able to relate to. In many

cases, very short and quick examples are sufficient, but I also make sure to provide larger, slightly more complicated (yet infinitely useful) scripts whenever possible so that you can see how various concepts can be strung together into one cohesive unit.

This book is logically organized so that if you read it from cover to cover, you'll build on knowledge from earlier chapters to keep advancing your Windows PowerShell skills and level up (as they say in the role playing gaming world). Each chapter, however, is written as an independent unit that you can use as a reference for years to come as you find the need to go back and brush up on things.

Because Windows PowerShell 2 can be installed in different Windows operating systems, the examples are designed to be operating system-agnostic whenever possible. This way, you aren't going to miss anything, regardless of whether you run the program under Windows XP, Windows Vista, Windows Server 2003, Windows Server 2008, or even Windows 7.

After reading this book, you'll be able to piece together your own Windows PowerShell scripts that'll be sure to impress your boss, not to mention save you a ton of work and time. In fact, when you know how to use Windows PowerShell to your advantage, you'll have much more free time to do more interesting things, such as read this book again.

To mention briefly what this book is *not*, it's not an all-inclusive, everything-you'll-ever-want-to-know-about-Windows PowerShell reference. As you read this book, however, you'll realize how truly powerful Windows

PowerShell is, because the book covers all the most important things you need to know.



This book is written to Windows PowerShell 2 CTP3. Windows PowerShell 2 has already come a long way since it was first announced to be under development, and I feel that any changes that Microsoft might make before the final release is out will be some bug fixes and perhaps some changes to some very advanced features (which this book doesn't delve into). That being said, we'll keep you up to date with any applicable changes through the *Windows PowerShell 2 For Dummies* Web site (www.dummies.com/go/powershell2fd), so keep yourself informed by visiting the site regularly.

Conventions Used in This Book

In this book, you enter a lot of commands at the Windows PowerShell command prompt or write scripts in a text editor such as Notepad. Scripts and code listings always appear in monofont, like this:

```
$str1 = "Hello "  
$str2 = "World!"  
write-output $str1 + $str2
```



Make sure that when you enter commands, you type them exactly as they appear in the book. Windows PowerShell is forgiving about things like spaces, but in

general, if you encounter problems running any of the examples, first make sure that you've entered the example exactly as it appears in the book.

You'll be required to use your keyboard quite a bit with Windows PowerShell. Fortunately, you can make your life a bit easier by taking advantage of several keyboard shortcuts. When I direct you to use a keyboard-shortcut sequence such as Ctrl+S, press these keys on your keyboard simultaneously; then release them together. The plus sign is there to show that the keys are to be pressed together; you don't type the + sign.

What You're Not to Read

This book contains everything you need to know and a few things that are good to know. I've separated the good-to-know stuff into sidebars (which are shaded in gray) and paragraphs marked with the Technical Stuff icon. You can skip these sections and still survive the day, but feel free to read them; some of them contain some pretty useful information that you may need someday to win a game show.

Foolish Assumptions

Whenever I pick up a technical book, I want to know that it was written for someone like me, so I want to be clear about my assumptions of what you know and what you don't know before you dive into this book.

For starters, I'm assuming that you know how to use a computer. (Yes, if you haven't noticed already, you're holding a computer book. If you thought it was something else, such as a cookbook, feel free to nod a few times; put the book down; and walk a few aisles down to find the other *For Dummies* book you had in mind.)

You should also know how to use at least one of the operating systems supported by Windows PowerShell, such as Windows XP, Windows Vista, Windows Server 2003, Windows Server 2008, or Windows 7.

I don't expect you to know any kind of scripting or programming language (although it helps if you do). I go over everything you need to know, even if this is your first time. (It's okay; I don't bite.) Many of my examples cover ways to use Windows PowerShell to manage a Windows environment, including Active Directory, so preferably, you have some Windows administration under your belt. If you don't, don't worry; you still find plenty of useful information in this book.

Finally, although the title of this book is *Windows PowerShell 2 For Dummies*, I know that you're not a dummy (but I bet that guy who's staring at you for having a *For Dummies* book in your hand is). I know that you're a smart individual who knows that the best way to start any new topic (especially a scripting or programming language) is to pick up a *For Dummies* book.

So without attracting too much attention, give yourself a round of applause; then quickly move toward the counter and buy this book. While you're at it, get copies for your colleagues, too. It's the best compliment you can give them. Seriously, it is!

How This Book Is Organized

There are no surprises here. I've organized the book to make it easy for you to find what you're looking for. Whether you need to look up something quickly or feel like reading this book in your leisure time, you'll feel right at home. I've broken this book into seven parts so that you can pace yourself.

Part I: Getting a Bird's-Eye View of PowerShell 2

I find it easy to see trees and miss out on the entire forest, so I'm starting this book with a soaring, 10,000-foot (3,048-meter) view of Windows PowerShell 2. Chapter 1 helps you get your arms around Windows PowerShell by giving you an understanding of how it got where it is today. I show you how to customize the environment to best fit your style and some different time-saving techniques that help get you going faster in Chapter 2. Finally, Chapter 3 gives you your first taste of this amazing shell. Consider Part I to be your gateway to the world of Windows PowerShell.

Part II: PowerShell's Basic Structure and Syntax

Part I gives you your first taste of Windows PowerShell. Part II takes a step back by providing a detailed look at

the structure and syntax that define Windows PowerShell. Think of this part as me showing you how to speak the Windows PowerShell language. Every scripting and programming language defines constructs for how to interact with it. Unfortunately, unlike humans (well, most humans), computers need precise instructions on what you want them to do, so getting this part right will pave the way for a smooth experience later.

Chapter 4 goes over Cmdlets, which are the basic commands that form the foundation of Windows PowerShell. I show you how to store data temporarily in your scripts using variables in Chapter 5. Chapter 6 goes on to show the different ways you can put some intelligence into your code by using logic expressions to control the flow of code within your script. Finally, Chapter 7 shows how you can make very effective command sequences by feeding the output of one command to the input of another command creating a command pipeline.

Part III: Complex Data Description and Sharing

Now that you know how to speak the language, Part III raises the bar and introduces more complex Windows PowerShell activities, such as interacting with Windows Management Instrumentation (WMI) in Chapter 8 and manipulating text in Chapter 9. You also get to see the power of numbers in Chapter 10. You discover how to take advantage of groups of data by using arrays in Chapter 11 and how to deal with reading and writing files in Chapter 12. Chapter 13 takes you on a journey through time by showing how you can use dates and times within PowerShell. The great thing about Windows PowerShell is