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**by Dan Mitchell
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About the Authors

Dan Mitchell: Dan Mitchell is an early adopter. At age 11, he was the youngest beta tester for what is now America Online. By age 13, he had become a staff writer for the Boston Computer Society. And at the age of 19, Dan started his first technology consultancy and has been active in cutting-edge technology ever since.

In recent years, Dan served as Technical Director for Dunes Technologies (USA). After Dunes Technologies was acquired by VMware in September 2007, Dan joined VMware's Professional Services Organization. Dan departed from VMware in June 2008 to become Technical Director for DynamicOps, a software spinout from Credit Suisse specializing in Virtualization Management and Cloud Automation.

Dan lives in Ashland, Massachusetts, with his wife and four sons.

Thomas Keegan: Tom Keegan never intended to be a technology whiz. He first started programming at ten years old by following a BASIC program out of *321 Contact Magazine*. After many hours of typing and code modifications, he succeeded at showing a dot orbiting another dot on his Apple IIe and was understandably thrilled.

In college, Tom wanted to hook his Macintosh up to the campus network. After being told by campus computer services "Macs can't access the Internet," he proved them wrong and was immediately offered a job by the college. This put him on the track to solve business problems in creative ways, which he still does today. Virtualization, even in the early years was exciting, and Tom has been working with VMware products for ten years. He is certified as a VMware VCP and a Certified Advanced Professional on vSphere 4-Datacenter Design.

Tom currently is a Technical Director at Fresenius Medical Care and lives with his family in Massachusetts.

Dedication

From Dan: I dedicate this book to my grandparents, whom I love and admire. Thank you all for setting such strong examples of honesty, dedication, work ethic, humility, and selflessness. I will do my best to pass on these noble qualities to my own children and grandchildren.

From Tom: I dedicate this book to my children, Elizabeth and Andy. You continually amaze me with your wonderful perspective on the world!

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From Tom: Dan Mitchell, my coauthor, invited me to join him in this endeavor. I've written articles and chapters behind the scenes in the past, but this book is the first time I have been in the spotlight, and I thank him for his confidence in me and his support.

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I've worked in various roles in technology books for ten years, and it all started because Tony Northrup asked me to help edit a book he was writing. Thanks, Tony, for helping me to get my start!

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Introduction

Every so often, a technology comes along that changes the way we go about our everyday business. This technology is called a *disruptive technology* and has such a significant benefit or improvement that people are willing to change their normal way of doing things to incorporate the new technology. Virtualization is one of those disruptive technologies, and vSphere leads the charge.

From the outside peering in, vSphere is intimidating. It appears to be this massive monster of complexity, able to span thousands of servers, connect to terabytes of storage, and even move around machines without turning them off. You probably feel like you're in over your head before you've even set foot in the pool, right? The reality is, vSphere can be as big or small as you want it to be. And once you get into it, you'll wonder how you ever got by without it. Not so scary after all.

This book is packed with real-world experience, compiled from our day-to-day adventures working with VMware technology. It gives you the know-how to get vSphere up and running, and stay that way. Use this book to get the most out of vSphere and enjoy all the benefits we've enjoyed over the years thanks to VMware virtualization.

About This Book

This book is a comprehensive introduction to VMware vSphere 4. It gives you the information you need to plan, install, and manage a vSphere virtual infrastructure. The book covers the most common elements of vSphere and how to make them work for you. While you're welcome to read this book from cover to cover, each chapter sticks to a specific topic, making the book a reference guide as well. Chapters are further divided into sections, so you can quickly get to the information you need.

This book isn't a vSphere manual. In fact, it's the vSphere anti-manual, meant to give you as much or as little information as you need about vSphere in plain English, without all the mumbo-jumbo and limited use of TLAs (Three Letter Acronyms).

There are no exams or quizzes, so you don't need to memorize the contents of this book. Put what you use from this book into your head, and leave the rest right here between the pages. If you need to look something up, you should have no problem finding this bright yellow book in your desk drawer. The whole point of the *For Dummies* series is to help you find the information you need to figure something out and get you back to your life.

How to Use This Book

This book is an introduction to a complex technology, written in the *For Dummies* conversational manner. Some of the concepts we describe talk about how and why things work the way they do. Other concepts are based on a process or a comparison. To keep it as simple as possible, we break them out like this:

- ✔ In bulleted lists, often you will find the concept name in bold, followed by the definition of the concept.
- ✔ A simple list of information is just regular text.
- ✔ Numbered steps of a process are shown in bold, followed by additional details and descriptions shown in regular text.
- ✔ Commands and Web site URLs are shown in monofont.

What You're Not to Read

This book is geared toward a few different audiences, each with different needs:

- ✔ If you're a *technical manager*, you may want to read the entire book, but you can skip the information and lists with the Technical Stuff icon.
- ✔ If you're a *system administrator*, you may want to read the entire book, plus read Chapter 21 more than once. Feel free to peek at Chapter 24 and put these tips in the back of your mind before you get deep into configuration.
- ✔ If you're an *experienced VMware administrator*, you can jump directly to Chapter 4 to see the differences between VMware Virtual Infrastructure 3.5, vSphere 4, and vSphere 4.1. Then check out the introductions in each chapter to see whether the information is new to you.

You also don't have to read information in the little gray boxes, known as sidebars. While interesting, the information isn't necessary to understand the topic at hand.

Foolish Assumptions

Although this book is written with the virtualization newbie in mind, we've made some assumptions about you, the reader:

- ✓ You've mastered using a desktop or laptop computer for stuff like e-mail and Web browsing.
- ✓ You know what a server is, how to remotely connect to it, and either have experience managing one or more servers or know someone who does.
- ✓ You have a basic understanding of networking and storage area networks (SANs).
- ✓ You have VMware vSphere 4.1 and at least one server on the VMware Hardware Compatibility List (at www.vmware.com).

How This Book Is Organized

This book is divided into seven parts, each of which describes a phase of a vSphere deployment:

Part I: Deciding on vSphere

This part of the book is an introduction to VMware vSphere and virtualization. vSphere has a lot of features and functionality, and this part touches on all of them. If you're transitioning from the previous version of VMware ESX, you can even find a chapter to tell you the differences between versions.

Part II: Getting Ready for vSphere

The best way to ensure a successful vSphere deployment is to plan and prepare for the rollout. The chapters in this part show you how to plan for your vSphere deployment, and they offer several points to consider while doing your planning. This part also provides the details you need to prepare your environment for vSphere installation.

Part III: Installing vSphere

Getting the installation right is key to a properly functioning vSphere environment. This part takes you through each step in detail to install VMware ESX,

vCenter Server, and the vSphere Client. The chapters in this part are independent of one another, so you can quickly access the installation steps of the product you're installing.

Part IV: Configuring and Connecting vSphere

This part of the book is all about configuring your new vSphere infrastructure. The chapters in this part help you configure your vCenter Server and get connected to your network. You also attach storage to your ESX hosts and configure them into a cluster.

Part V: Administering and Maintaining vSphere

The chapters in this part of the book discuss the day-to-day operation and ongoing maintenance of your vSphere infrastructure. You can create and clone virtual machines, organize your resources, and monitor the setup after the machines are built. You also get a quick overview of the virtual infrastructure from a high level.

Part VI: Tuning and Troubleshooting vSphere

As your vSphere environment grows, you want to make sure that every virtual machine is getting its fair share of resources. The chapters in this part help you tune the performance of groups of virtual machines and address fault tolerance and uptime considerations. Also, an entire chapter is dedicated to troubleshooting the most common vSphere issues, how to identify them, and where to go for resolution.

Part VII: The Part of Tens

Finally, this book ends with the famed *For Dummies* Part of Tens, where each chapter lists ten items or topics. A chapter in this part includes a list of tools to help manage your vSphere infrastructure and a chapter with some great online resources to further your vSphere know-how. The final chapter includes ten tips from the pros for a successful vSphere deployment.

Icons Used in This Book



Throughout the margins of this book, you see little pictures, known as *icons*, that highlight various types of information:

This icon flags useful, helpful tips or shortcuts.



This icon marks a friendly reminder to do something.



This icon marks a friendly reminder *not* to do something.



This icon alerts you to overly technical information and virtualization geek discussions of the topic at hand. The information is optional reading, though you never know if it will come in handy someday.

Where to Go from Here

If you're new to virtualization, start at the beginning of this book. Get familiar with the terminology. Explain the concept of vSphere and virtualization at your next family gathering. Most importantly, don't get overwhelmed. After all, it's just software.

Take some time to explore the Web sites and resources in "The Part of Tens" section at the end of the book. Those resources exist to make your job easier.

You can also visit Dan's Web page for more information or as a diversion:
www.startswithv.com.

Enjoy the book and thanks for reading!

Part I

Deciding on vSphere

The 5th Wave

By Rich Tennant



“Well, I suppose we should plan on getting rid of those coal-burning servers.”

In this part . . .

This part introduces you to VMware's vSphere virtualization platform. Chapter 1 covers how to get the most out of vSphere in your environment. Chapter 2 provides the background of virtualization and a basic primer on how it works. Chapter 3 explores the key features of vSphere and why each of them is important. Chapter 4 shows you what changed between VMware Virtual Infrastructure 3.5, vSphere 4, and vSphere 4.1.