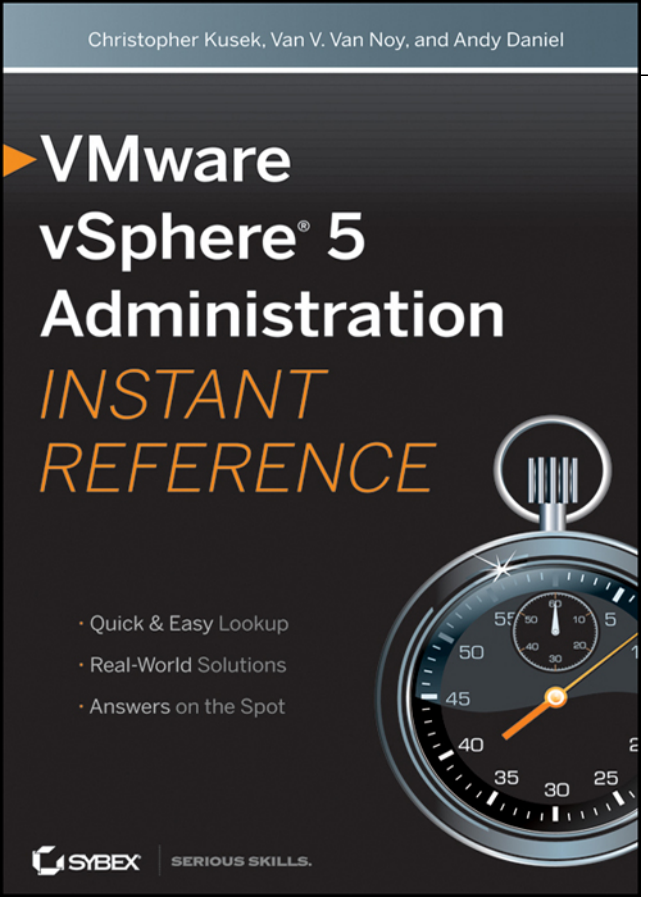
Christopher Kusek, Van V. Van Noy, and Andy Daniel
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Christopher Kusek
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To my wife Courtney, who provides me endless inspiration and whom I can always count on to have limitless patience when my head is in the clouds.

—Andy

I dedicate this book to my son Alexander and my godson Erehwon. They are the future of technology and will be the recipients of all of the gifts we imbue within the clouds from here and forever.

—Christopher

I dedicate this book to my wife Laurie and my two kids Henry and Avabella. They are the reason I get up every day and push myself to do more and be better than the day before.

—Van

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—Andy

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—Christopher

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—Van

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Introduction

For those of us who have been working in the virtualization industry since its earliest days, it's hard to imagine what datacenters were like without virtualization. Still, there are some organizations that have yet to adopt virtualization within their datacenter. With the release of VMware vSphere 5, VMware's flagship enterprise-class virtualization solution, VMware aims to change that reality.

However, even though virtualization has many benefits—not the least of which include reducing your hardware footprint, enabling faster server provisioning, and simplifying disaster recovery—some people feel that virtualization also has a steep learning curve. IT professionals who want to become more familiar with virtualization need to learn about terms like vMotion, vSphere Distributed Switch, vSphere Fault Tolerance, and VMkernel interfaces. All these new terms and new technologies can seem confusing to someone not familiar with how all the pieces fit together.

In addition, virtualization sometimes forces IT professionals to think differently about how to solve old challenges. The "traditional" way of doing things often isn't the best way of handling something after you've virtualized your datacenter.

This book is intended to help address these concerns. For administrators who might be new to virtualization, this book explains how virtualization works, what the components are, and how these components fit together—in a hands-on, how-to approach. We believe this approach will help new vSphere administrators get up to speed quickly.

For administrators who are familiar with previous versions of VMware's virtualization product suite but not VMware vSphere 5, this book will fill in the gaps through the step-by-step review of vSphere's new features and functionality—such as vSphere Web Client Server.

While this book isn't an in-depth, highly technical view of VMware vSphere—that's what you'll find in *Mastering VMware vSphere 5*, also from Sybex—it is a comprehensive reference guide for finding information quickly, just when you need it. We hope that it will earn its place on your reference bookshelf as a book to which you can return when you need a little extra guidance on how something works or how to perform a task within VMware vSphere.

What Is Covered in This Book

This book is written as a blend of explanatory text and "cookbook-style" recipes that are intended to help administrators become more familiar with installing, configuring, managing, and monitoring a virtual environment using the VMware vSphere product suite. We start by introducing the vSphere product suite and all of its great features. After introducing all the bells and whistles, this book details how to install the product, including considerations and steps you should take to upgrade to VMware vSphere 5. After showing you how to install vSphere, we move on to configuring VMware vSphere to meet your specific needs. This includes configuring VMware vSphere's extensive networking and storage functionality. Next, the book moves into virtual machine creation and management, importing and exporting virtual machines, security, and finally monitoring and resource management.

You can read this book from cover to cover to gain an understanding of the vSphere product suite in preparation for a new virtual environment, but you might find it more useful as a reference work to which you can refer when you're stuck and can't remember exactly how something works. If you're an IT professional who is new to virtualization with VMware vSphere, this book is intended to help you hit the ground running.

Here is a glance at what's in each chapter:

Chapter 1: Introduction to vSphere Chapter 1 takes a look at the features of VMware vSphere 5. This includes vSphere's "legacy" features—those features that were also present in earlier versions of VMware's enterprise virtualization products—as well as the new features specific to VMware vSphere 5. This feature overview should provide you with some idea of how VMware vSphere can address business problems.

Chapter 2: Installing and Configuring ESXi VMware ESXi is the foundation of the vSphere product suite, and Chapter 2 provides information on how to install and configure VMware ESXi.

Chapter 3: Installing and Configuring vCenter Server Many of the advanced features within the VMware vSphere product suite are only present when you also have vCenter Server, the management server for VMware ESXi. Chapter 3 describes how to install and configure vCenter Server and vCenter Server Appliance to manage your ESXi hosts and your virtual machines.

Chapter 4: Understanding Licensing VMware vSphere 5 continues use of an integrated licensing mechanism. How to install licenses, how to assign and manage licenses, and how to review current license usage are all covered in Chapter 4.

Chapter 5: Upgrading to vSphere 5 Perhaps you already use vSphere 4 but are looking to upgrade to VMware vSphere 5. This chapter provides information on the upgrade process, including which tasks should come first, and the various methods for upgrading the different components.

Chapter 6: Creating and Managing Virtual Networking Chapter 6 provides information and procedures for creating and configuring VMware vSphere's virtual networking features. This includes vSphere Standard Switches as well as vSphere Distributed Switches.

Chapter 7: Configuring and Managing Storage Storage is an essential part of every virtualization implementation, so Chapter 7 covers the different types of storage that are supported by VMware vSphere 5 and how to configure each of them.

Chapter 8: High Availability and Business Continuity Chapter 8 discusses the different ways that administrators can configure VMware vSphere to provide high availability for virtual machines. Features like vSphere High Availability, VM failure monitoring, and vSphere Fault Tolerance are all covered.

Chapter 9: Managing Virtual Machines Managing virtual machines is a pretty broad topic, but Chapter 9 attempts to cover it by discussing the most frequently performed tasks. Tasks such as creating virtual machines, adding or removing hardware from virtual machines, managing virtual machine power state, and managing virtual hardware versions are all covered in this chapter.

Chapter 10: Importing and Exporting Virtual Machines Creating new virtual machines sometimes means converting physical systems to virtual machines. This type of migration, a physical-to-virtual migration, is one of a couple of different types of imports discussed in Chapter 10. This chapter also provides information on how to export VMs out of VMware vSphere for use with other VMware virtualization products.

Chapter 11: Configuring Security Chapter 11 covers security-related aspects of VMware vSphere, such as role-based access controls and how to harden vSphere 5.

Chapter 12: Managing Resources and Performance Chapter 12 covers the important topics of resource management and performance, two areas that are closely related. This chapter discusses how to allocate resources, how to modify resource allocation behaviors, and how to identify performance concerns related to resource allocation.

Appendix: Fundamentals of the Command-Line Interface To help build your proficiency with command-line tasks, this online appendix focuses on navigating through the Direct Console User Interface and performing management, configuration, and troubleshooting tasks. You can find the appendix online at `www.sybex.com/go/vsphere5instantref`.

Who Should Buy This Book

This book is for IT professionals looking to strengthen their knowledge of constructing and managing a virtual infrastructure on VMware vSphere 5. Although the book can be helpful for those new to IT, we assume the target reader has the following:

- A basic understanding of networking architecture
- Experience working in a Microsoft Windows environment
- Experience managing the domain name system (DNS) and Dynamic Host Configuration Protocol (DHCP)
- A basic understanding of how virtualization differs from traditional physical infrastructures
- A basic understanding of hardware and software components in standard x86 and x64 computing

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