Virtualization has taken the information technology world by storm. In the short space of ten years or so, it has emerged from relative obscurity, to become an essential part of many organizations’ systems and network strategy. The benefits are compelling: the ability to consolidate servers, to support legacy applications, to install multiple operating systems from different software vendors, to develop a software environment for testing, debugging and learning as well as improve business continuity and make more efficient use of server hardware. In spite of its importance in many networks, many systems administrators still know relatively little about it, and are unsure about its implications. It is for these people that this book is intended.

The authors mention companies like Microsoft and Citrix in passing because they produce virtualization software of one kind or another, but the focus of this book is really on VMware, a company that, more than any other, has become almost synonymous with virtualization. More specifically, the book covers one of a number of VMware products: VMware ESX. This software is based on Red Hat Linux, but its kernel has been adapted and optimised for hosting virtual machines (VMs). As the book makes clear, VMware ESX is therefore not hosted virtualisation, meaning that it does not install on top of another operating system, as other products such as VMware Server and VMware Workstation or indeed Microsoft’s Virtual PC do. Instead, VMware ESX installs on the bare metal, and through its hypervisor provides an environment capable of running VMs. As a result, for those network administrators knowledgeable about and competent working on Microsoft systems, it means having to learn about an entirely new environment. For this group of people, the book does a particularly good job of introducing this technology and giving them the start they need to acquire the basic knowledge and skills necessary to implement and maintain VMware ESX.
The first three chapters of the book place VMware ESX in the context of server virtualisation generally before considering its associated tools and features and then its basic architecture. The fourth chapter covers the topic of installing VMware ESX and explains various options and offers practical advice but not before stressing the importance of planning, including not just the (expected) hardware requirements but also the question of licensing, supported versus unsupported VM (or guest) operating systems and developing a use case document. Perhaps the most useful aspect of the fifth chapter is that it reveals that as VMs are ultimately a set of directories (or folders) and files, they can be easily copied to different sets of hardware, including hardware of different vendors. This is possible because the hardware the VM sees is not of the actual hardware but a standard abstracted form of the hardware the hypervisor presents to the installed operating system. (The only exception is the processor, which often needs to be the same as the original machine. In other words, if the original VM was created on hardware with an Intel processor, it should remain on an Intel-based physical machine.)

The next two chapters consider the standard ways of interacting with VMware ESX: the Virtual Infrastructure Client (or VI Client), the Web Client, the VMware Remote Console and the Service Console. Chapter 8 then covers networking, such as the different kinds of virtual network interface cards, teaming of network adapters, virtual switches and their ability to use virtual local area networks (VLANs) and tagging of one kind or another. Chapter 9 is somewhat disappointing because it could have provided more detail on the all important topic of storage, especially as most people who not familiar with virtualization would know little about the VMware Virtual Machine File System (VMFS). The “advanced features” in chapter 10 include VMotion. This is one of the major selling points of VMware ESX because it enables system administrators to migrate live VMs from one host to another, without disrupting the end user, something Microsoft have tried but not yet succeeded in doing in its comparable product, Hyper-V. The chapter also discusses VMware Consolidated Backup, used to backup VMs as well as introducing Virtual Desktop Infrastructure (VDI), which enables system administrators to take a client desktop from the server and deploy it to users, with the result that organisations could choose to use thin clients for the sake of easier management, improved security and more efficient use of computing resources. This topic in itself is worthy of a book.

Chapters 11 (“Resource Management”) and 12 (“Performance Optimization”) could have been consolidated into one chapter, and while some of the advice seems obvious to experienced systems administrators, it is true to say that often for one reason or another they do not follow best practice. Many people would have experienced bandwidth issues due to auto-negotiated settings on a network device, and mentioning it in this context is a good way of reminding readers to apply the skills and experience of physical computing to virtual environments and virtual devices. Other suggestions are to power off idle VMs and to remove any unneeded virtual hardware in VMs. Chapter 13 discusses the ways in which administrators can automate tasks on a VMware ESX and extend its capabilities through the use of software development kits and toolkits. It is of little practical use but it does reveal some of the possibilities that await the attention of the novice VMware ESX administrator. The final chapter covers various other resources worth studying: web sites, user groups, blogs and third-party vendors.

The book is easy to read and at 237 pages is fairly short, something comparatively unusual for a book on computing. The chapters follow one another logically, making it easy either to read from cover to cover or to read portions of it as the reader wishes. The headings provide clear and useful signposts to the content of parts of chapters, for those people who have some knowledge of the topic and may wish to skip certain parts of the book. Occasionally, a typographical error does appear but it is true that we, the system administrators, have to ac-
cept that management make the decisions and that “we are then forced to make due (sic) with what we have” (p.150).

*VMware ESX Essentials in the Virtual Data Center* is a much needed introduction to an important implementation of virtualisation. It is well-written and refreshingly concise, but like many such books, has been overtaken by rapid technological development and is already looking out of date. This is particularly the case now that VMware have released vSphere 4, the next generation of VMware ESX and new associated software. Much of this book remains relevant and just as useful, but a new edition needs to be released in order to make it more current, something the authors should not find too difficult due to its relative brevity. It is a book aimed at the administrator, who might have skills in various systems but who feels quite lost in the Linux-like VMware ESX environment. As such it remains a valuable contribution to the literature on the subject.

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