Microsoft® Exchange Server 2003

24seven™

Jim McBee
with Barry Gerber
This book is dedicated to my parents, Charles and Betty McBee. How you ever managed to survive my “Calvin-like” childhood (or adulthood) is miraculous.
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Honolulu, Hawaii
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I am approaching 10 years of working with Exchange Server. As a former Microsoft Mail and cc:Mail administrator, Exchange was love-at-first-site. I have enjoyed the process of learning each version of Exchange and learning how to solve business problems using Exchange. I never stop learning new things about it.

As I’m writing this, a lot is happening in the messaging community. Microsoft has finally started getting serious about helping organizations fight spam. They have announced several initiatives that will help fight spam including support for e-mail “caller ID,” Exchange Edge Services, and Intelligent Message Filtering (IMF) for Exchange 2003. Microsoft has also announced official support for Network Attached Storage using the iSCSI protocol. Support has also been announced for “move mailbox” functionality for moving mailboxes between admin groups while still in mixed mode.

By the time you read this, at least the first Service Pack for Exchange 2003 will be available that will include a few new features and benefits that have yet to be publicly released.

I began planning this book while I was still finishing up this book’s predecessor, Exchange 2000 Server 24seven. By the time I finished that book, I found many additional things I wanted to include in another book. One of the most important factors in good administration is following good operational practices. That is one of the deciding factors in the design of this book.

I decided to focus more on operations and best practices in this book. I am relating the practices I have seen employed by organizations to generate the best user satisfaction with respect to functionality, availability, and services provided.

If you are reading this introduction and considering whether or not you will buy the book, well first of all, thanks for considering it. Because you are reading the introduction, you are off to a great start. I hope this introduction will give you a good idea of what you can find in this book and a little about my quirky style.

If you purchased the Exchange Server 2000 24seven book, you will find quite a bit of information. I estimate that about 60 percent of this book has been completely rewritten, but you will find some familiar material.

I found myself in a quandary as we neared completion. I wrote nearly 100 more pages of information than there was space for in this book. Much of this information I have placed on my web pages. You can find supplemental information at www.somorita.com.
Content? Does Anyone Have Content?
During the initial development of this book (and the entire 24seven series), the emphasis was placed on conveying what you, as an administrator, need to know to keep your Exchange server healthy, happy, and operational 24 hours a day, 7 days a week. This book is the sequel to both the Exchange 5.5 24seven and Exchange Server 2000 24seven books, which I wrote in 1999 and 2001 respectively. I listened to many readers and queried many experienced Exchange administrators, and I asked them a few questions:

- What do you do to keep your Exchange servers healthy and happy?
- What facts did you learn the hard way?
- What have you done wrong (and right)?
- What would you like to share with other Exchange administrators?

I used their information to assemble this book. I focused primarily on Exchange Server operations issues—due to the space and time constraints associated with this book, I had to avoid or only partially cover a few issues. I avoided client-related issues except when necessary; the Outlook family is the subject of its own book.

I avoided the topics of installation, migration, and interoperability in order to keep this book focused on operations and customization.

Throughout this book, you will find Exchange@Work sidebars. The Exchange@Work sidebars contain specific situations and problems that I have encountered in the field while deploying Exchange. I felt it important to use some special mechanism to emphasize how other companies are approaching problems. (The actual names of the companies have been changed.)

In several chapters, I incorporated a frequently asked questions section; in these sections, I hoped to address a lot of the typical questions I am asked about those topics. The Exchange administrator’s mailing list also has a FAQ maintained by Andy Webb located at www.swinc.com/resource/exchange.htm.

Throughout each chapter, you will find references to other books, white papers, RFCs, and Microsoft Knowledge Base articles. I hope you will find the time to review the reference material I am pointing you toward.

Most of the scenarios and the instructions for this book were tested on my test network, though some of the instructions were taken from how I had implemented something for a customer. My test network consists of four Pentium 3 and 4 computers with 700MHz to 3GHz processors and between 256MB and 1GB of RAM. I have started making good use of VMWare; I even configured a cluster lab using VMWare.

Who Should Buy This Book?
If you are standing in your neighborhood bookstore asking yourself this question, then ask no further. Maybe you are just starting a pilot deployment of Exchange. Possibly you have just come back from a Microsoft Certified Technical Education Center class and you want to know more. Maybe you are currently running Exchange and you want to know what you can do better. Perhaps you are curious
about some of the pitfalls and sticky situations that can happen with Exchange. If you are in any of these situations, this book is for you. This book focuses primarily on Exchange operations and best practices.

Maybe the mysteries of how Exchange 2003 and Active Directory interact are keeping you awake at night. Are you wondering what the best management practices for Exchange Server are? What events indicate that the Exchange server is having problems? How often should you run backups? Have you given any consideration to what would happen if disaster strikes? How about what you can do to proactively prevent problems? Are you wondering what Microsoft recommends versus what works in the real world? If you answered “Yes” to any of these questions, this book is for you.

Are you looking for ways to further customize your Exchange organization? Are you trying to figure out the best Exchange connectors to use? Or maybe you are trying to track down a problem with a connector? Do you know what to do if the Exchange server fails to restart or if you lose a disk drive? Maybe you are concerned about messaging security? If you are seeking answers to any of these questions, this book will steer you in the right direction.

I have endeavored to keep the topics in this book useful for you whether you are supporting 10 mailboxes or 100,000. For those of you with larger sites, you are already aware that any guidance I can provide in a 900-page book will have to be generic enough for you to customize to your own environment.

This book is not for beginners. Its readers should have networking experience in Exchange or some other messaging system, including knowledge of network operating systems, communications media, and related technologies. If you want to understand how to install Exchange, create mailboxes, or perform other basic Exchange server administration tasks, then this book is not right for you. For a good generic Exchange 2003 reference, pick up a copy of Mastering Exchange Server 2003 by Barry Gerber (Sybex, 2003). It is an excellent introduction to the world of installing, configuring, and administering Exchange Server. After you learn the basics, I hope you will consider purchasing this book to take you up to the next level.

If you are studying for the MCSE exams, this book will be helpful, but it should not be considered an exam study guide. If that is what you are seeking, purchase a copy of MCSE: Exchange Server 2003 Implementation and Management Study Guide by James Chellis and Will Schmeid (Sybex, 2004).

Assumptions

The book is centered on Exchange Server 2003 at a minimum; as I’m completing this book, the details of Service Pack 1 are still sketchy. I wanted to include a lot of SP1 related information, but that information is not publicly available yet.

Occasionally, I draw parallels between Exchange 5.5 and Exchange 2003. If you did not run Exchange 5.5, I apologize ahead of time for boring you with some details of an older version of the product.

In the text, I assume that the Windows operating directory is located on the C: drive in the \Windows directory and that you are using Windows 2003. I also assume that the \exchsrvr\bin directory is on the C: drive. The Exchange 2003 Setup program now puts the \Exchsrvr directory into \Program Files, but I still refer to it simply as \Exchsrvr.

Anytime you see HKLM in a Registry path, it is a shortened version of \HKEY_Local_Machine. The same is true for HKCU (HKEY_CURRENT_USER).
How This Book Is Organized

I divided this book into six parts that consist of 22 chapters. The topics and complexity of the book vary from chapter to chapter. Each chapter was intended to stand on its own; however, you should read Chapter 1 first. Throughout the book, I refer you to Chapter 5. If you are interested in Exchange Server and security you should read Chapters 17, 18, and 19. Though overall, you can read the chapters in just about any order you wish.

Part 1: Building a Foundation

The first part of this book covers important facts that you need to know when preparing your Windows 2003 environment, planning Exchange 2003, and understanding Exchange 2003’s interaction with Active Directory. I tried to emphasize things that have gone wrong with installations I’ve been exposed to, including common design mistakes with Windows 2000, Active Directory forests, and Exchange organizations, and suggestions for how to plan, deploy, and migrate to Exchange Server.

Much of Chapter 4 is new material based on my experiences working with customers and students. I have found a common lack of understanding of how Exchange stores data. During my research for this chapter, I found literally over a thousand pages of in-depth technical information on the ESE database engine. I tried to disseminate the most useful and interesting of that information so that you can better understand the operation of the database.

Chapter 5 is probably my favorite chapter in this book. This chapter represents nearly 10 years of my own experiences and many other expert administrators.

Part 2: Daily Operations

Part 2 covers the Exchange server operations. Overall, this is my favorite topic because I love to figure out how to make things run better (ever since I was a little kid taking my mom’s vacuum cleaner apart). A particularly popular chapter with the reviewers is Chapter 6, which covers typical operations with Exchange 2003. Chapter 7 includes some common things that you may want to customize. Chapters 8 and 9 include information on monitoring your Exchange organization’s health and well being.

These topics may be particularly useful to you if you believe your Exchange servers are overburdened. Chapter 10 was actually the last chapter I wrote; it covers disaster recovery. Chapter 11 is an overview of the Exchange 2003 clustering and clustering basics. Chapter 12 covers public folders, building a public folder hierarchy, and developing a replication strategy. Chapter 13 is the server troubleshooting chapter.

Part 3: Connectivity

Part 3 discusses connectivity and Exchange 2003. This section has two focuses: server SMTP connectivity and Internet client connectivity. Chapter 14 discusses Exchange 2003’s use of SMTP, connecting
routing groups. Chapter 15 covers connectivity between routing groups and Chapter 16 covers sending and receiving e-mail on the Internet.

**Part 4: Exchange 2003 Security Issues**

I like a challenge. Any server that has a user community presents a certain amount of challenge to keep it secure. Any server connected to a public network presents an even bigger challenge with respect to security. That is why I enjoyed writing this section. Chapter 17 discusses basic messaging security topics and virus protection. Chapter 18 covers securing message content using the S/MIME technologies. Chapter 19 covers topics you should be familiar with in order to protect Exchange using a firewall.

**Part 5: Exchange Clients**

Part 5 is intended to help you with the clients that connect to Exchange 2003. Chapter 20 discusses setting up and troubleshooting MAPI (Outlook) clients and using the new RPC over HTTP features that are introduced in Exchange 2003 and Outlook 2003. Chapter 21 covers Outlook Web Access 2003 including some of the features that I have found useful when deploying and securing OWA. Chapter 22 discusses Outlook Mobile Access, ActiveSync, and information on supporting mobile clients. I have an additional chapter posted on the Internet if you are interested in supporting POP3 and IMAP4 clients. This chapter can be found at [www.somorita.com/e2k324seven/e2k324seven.asp](http://www.somorita.com/e2k324seven/e2k324seven.asp).

**More to Come**

I could not fit everything I wanted to include in this book. There is just too much information to share. I also had certain things that I wanted to include on a disk or CD-ROM, but there was not enough material to justify including a CD-ROM with the book.

However, I do have a website onto which I will periodically post additional information such as corrections, sample documentation sheets, a sample Service Level Agreement, and anything else that may be relevant to the topics covered in this book. Right now, my poor, content-impaired website can be found at [www.somorita.com](http://www.somorita.com). Also visit the Sybex website ([www.sybex.com](http://www.sybex.com)), as they maintain a special section of the website for the 24seven books.

Thank you for reading the introduction; I hope it gets you off to a great start with this book. I hope that the material in this book answers some of those nagging questions you have had, and I hope it helps you to prevent a few problems in the future. And I hope that this book helps get you out of the office by 5:00 PM on most days!
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Building a Foundation

Topics Covered:
- What Is New in Windows and Exchange 2003?
- Major Exchange 2003 Components
- Getting the Right Edition
- Windows 2003 Dependencies and Platform
- Managing Exchange 2003 from a Desktop Computer
- Acquiring the Correct Administrative Rights
- Understanding the Basics of Active Directory
- Troubleshooting and Management Tools for Active Directory
- Unraveling the Mysteries of the Recipient Update Service
- Preparing the Active Directory Forest
- Customizing Active Directory
- Synchronizing Multiple Forests
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74 percent of the business people surveyed recently believed that losing e-mail service presents more of a hardship than losing telephone service.

— META Group survey (www.metagroup.com)

When compared to Windows NT and Exchange 5.5, Windows 2000 and Exchange 2000 were revolutionary products. Everything from architecture and functionality to management interfaces changed drastically. The learning curve from the earlier to the later Microsoft operating and messaging systems was quite steep. On the other hand, compared to Windows and Exchange 2000, the 2003 versions are much more evolutionary than revolutionary products. If you know Windows and Exchange 2000, you will have little difficulty adapting to the 2003 flavors. You’re going to welcome the evolutionary changes in Windows and Exchange 2003 with open arms. These changes will improve your end users’ experiences and will make your administrative tasks easier. I will look at some of these changes in this chapter.

In order to manage Exchange Server 2003 successfully, you need to understand its various components. You need to know what executables run the components, what the components do, and to some extent how they do what they do. Finally, you need to know how components depend on each other and on various Windows services. Understanding these concepts will make it easier for you to perform day-to-day management tasks and put you in a much better position to troubleshoot problems that arise. A major portion of this chapter is devoted to Exchange components.

Exchange Server 2003 comes in two editions: Standard and Enterprise. The Enterprise Edition offers greater capacity, clustering, and more protocol support. I will try to help you better understand the two editions and the features of each so you can make cost-efficient decisions about the software that supports your Exchange and Windows 2003 systems.

If you have older Windows and Exchange installations, you have to decide how to get to Windows and Exchange 2003. You can upgrade or do a fresh install of the two products on new hardware and then move Exchange objects to the new server or servers. If your first thought is to upgrade existing servers, you’ve come to the right place. I’m going to try very hard in this chapter to talk you out of that approach. First and foremost, Exchange 5.5 cannot be directly upgraded to Exchange 2003.
Once your Windows and Exchange 2003 systems are up and running and you’ve eliminated earlier OS and Exchange versions, you have the option of switching them to native mode. Native mode offers a number of very useful enhancements, but sometimes for a variety of reasons you can’t zap those old servers and “go native.” I will try to help you deal with this dilemma later in this chapter.

A successful Exchange 2003 deployment hinges on many elements; these include a strong dependency on Windows 2003 Active Directory (AD), Windows 2003 Internet Information Server (IIS), a properly configured DNS (Domain Name Service) infrastructure, sufficient and reliable hardware, and good operational practices. Your Exchange 2003 installation will have serious problems unless you have a good understanding of not only Exchange 2003, but also Windows 2003, AD, and DNS. Like Exchange 2000, Exchange 2003’s destiny is much more intertwined with Windows 2003 than versions 5.5 and earlier of Exchange. A basic understanding of the Exchange 2003 architecture and deploying Exchange 2003 on the proper hardware platform will also be crucial to your success.

One of the most important parts of deploying any Exchange system is making design decisions that relate to supporting your organization. This includes choosing the right edition of Exchange 2003 Server, deciding how to best store your data, maintaining time synchronization, setting reasonable standards (Active Directory, Exchange performance, user space allocation, etc.), and picking the right hardware. Placing your Exchange 2003 system on appropriately sized and configured hardware will also help to keep you happy and safe from end-user lynch mobs.

Finally, providing your user community with good documentation, notification, and training will help to minimize your administration woes. Most experienced Exchange administrators will tell you that educating their users, keeping them informed, and managing their expectations are some of the most powerful tools in their operations arsenal.

Yet perhaps first and foremost, essential tools to have in your bag of tricks are solid operational practices that will help reduce the likelihood of downtime and improve the recoverability from disasters—and help keep you sane. One particularly wise Exchange guru once said his secret to Exchange success was the following:

- Perform daily backups of Exchange.
- Check the event logs.
- Make sure the server does not run out of disk space.
- Check the queues.
- Then leave Exchange alone.

Although I elaborate on this in a lot more detail in Chapter 6, “Daily and Long-Term Operations,” successful Exchange server administration and management strategies have not changed since Exchange was first released.

So, is that all there is to say about Exchange administration? If so, why have volumes of information been written about it, and why am I writing more? The answer is simple: We all benefit from shared experiences. Combine that with the fact that software documentation and training do not always make matters crystal clear, and you have good reasons for a book about skillfully maintaining Exchange.
WHAT'S NEW IN WINDOWS AND EXCHANGE 2003?

Windows 2003 includes improvements in Active Directory: easier deployment and management, increased security, and better performance and dependability. Additionally, overall security has been strengthened and support for applications that run on Windows 2003 has been significantly updated. Security improvements are a two-edged sword. Although they better protect everything in your Windows and Exchange environment, you and your users’ first encounter with them is likely to come as a bit of a shock. For example, by default, Windows 2003 implements strong password requirements. Passwords must be of a specific length and must include uppercase and lowercase letters as well as numbers. All those three- and four-letter passwords won’t cut it any more—at least if you don’t change the defaults, which isn’t all that easy.

Improvements on the Windows 2003 storage side, so important to smooth and reliable Exchange Server operations, include snapshot backups of disk volumes, system-level open-file backup and much easier Storage Area Network (SAN) management. On the networking side, Windows Server 2003 supports IPv6 for increased security and a solution to the rapid depletion of Internet Protocol (IP) addresses.

Together Windows and Exchange 2003 include a great new way to connect MAPI clients such as Outlook 2003 to Exchange servers over Internet-based connections. Until Exchange 2003, such connections required the use of the Windows RPC protocol either directly over TCP/IP or RPC-TCP/IP encapsulated in virtual private network packets. Use of direct RPC-TCP/IP became a major problem as many corporations and ISPs closed off port 135, the port that supports RPC, to protect against a variety of RPC-based attacks on Microsoft servers. Exchange 2003 supports RPC encapsulated in HTTP. This approach uses the same port 80 that is used for browsing the Web. You need Windows 2003, Exchange 2003, and Outlook 2003 running on Windows XP clients to pull all of this off, but RPC-over-HTTP solves a problem that has plagued Outlook-to-Exchange public network connectivity since the two products came on the market.

THE MAKINGS OF A GOOD EXCHANGE ADMINISTRATOR

I have tended to a number of Exchange “disasters” where the clients were running Exchange 5.5, Exchange 2000, or Exchange 2003. These were situations in which I was called in to fix a pretty serious problem. I classify these as disasters because in each case the user community was without e-mail services for more than half of a business day. In one case, the user community was without e-mail for more than a week before I was called. One of the strengths I look for in system administrators is the ability to know when they are in over their heads and when to call for help. This includes not being afraid to call Microsoft Product Support Services.

With a few exceptions, the aforementioned disasters were either caused or compounded by administrators who were not prepared for the disaster, did not know what they were doing, or did not call for help when they should have. The administrators did not have a clear understanding of Exchange, Active Directory, and the steps to successfully manage an Exchange system, nor had they documented or practiced disaster recovery beforehand.

Disaster prevention involves two major steps. The first is recognizing that you cannot solve every problem in the world (and not being afraid to admit it). The second step—and the one you are taking now, by reading this book—is to do everything you can to improve your knowledge of Exchange 2003 (and Windows 2003).