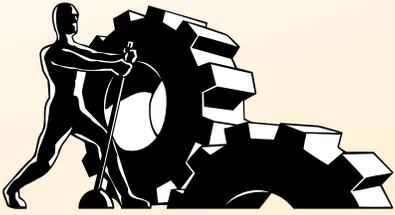


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Read Me First

Welcome to *Take Control of Upgrading to Mountain Lion*, version 1.2, published in August 2012 by TidBITS Publishing Inc. This book was written by Joe Kissell and edited by Tonya Engst.

Upgrading your Mac to a new operating system can be a daunting prospect, but with some expert advice, you'll be running OS X 10.8 Mountain Lion in no time. This book eliminates the uncertainty and the confusion, guiding you through every step of the process.

If you want to share this ebook with a friend, we ask that you do so as you would with a physical book: “lend” it for a quick look, but ask your friend to buy a copy for careful reading or reference. Discounted [classroom and Mac user group copies](#) are available.

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Updates and More

You can access extras related to this book on the Web (use the link in [Ebook Extras](#), near the end of the book; it's available only to purchasers). On the ebook's Take Control Extras page, you can:

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Basics

Here are a few “rules of the road” that will help you read this book:

- **Menus:** Where I describe choosing a command from a menu in the menu bar, I use an abbreviated description. For example, the abbreviated description for the menu command that creates a new folder in the Finder is “File > New Folder.”
- **Contextual menus:** *Contextual* menus appear when you Control-click various elements on a Macintosh screen, including Dock items and files in Finder windows. To describe opening a contextual menu, I usually I tell you to right-click (Control-click) an item on the screen. If your mouse offers a right-click option, or if you use a trackpad or other means of opening a contextual menu, you should feel free to use the method you prefer.
- **Finding System Preferences:** I sometimes refer to settings in System Preferences that you may want to adjust. To open System Preferences, click its icon in the Dock or choose Apple  > System Preferences. When the System Preferences window opens, click the icon of the pane whose settings you want to adjust. (To see the icons if they aren’t visible, click the Show All button near the upper left.) I refer to these panes using an abbreviated notation such as “the Network preference pane.”
- **Path syntax:** This book occasionally uses a *path* to show the location of a file or folder in your file system. For example, Mac OS X stores most utilities, such as Terminal, in the Utilities folder. The path to Terminal is: `/Applications/Utilities/Terminal`.

The slash at the beginning of the path tells you to start from the root level of the disk. You will also encounter paths that begin with `~` (tilde), which is a shortcut for the user’s home directory. For example, if the person currently logged in has the username `joe` and wants to install fonts that only he can access, he would install the fonts in his `~/Library/Fonts` folder, which is just another way of writing `/Users/joe/Library/Fonts`.

- **User Library:** The library folder mentioned in the previous paragraph, `~/Library`, is normally invisible in Mountain Lion. To see it, hold down the Option key and choose Go > Library in the Finder.

- **Big cats:** I frequently mention features specific to a particular version of Mac OS X, which Apple usually refers to by their “big cat” code names:
 - ▶ Mountain Lion: 10.8
 - ▶ Lion: 10.7
 - ▶ Snow Leopard: 10.6
 - ▶ Leopard: 10.5
 - ▶ Tiger: 10.4
 - ▶ Panther: 10.3

To find out which version of Mac OS X your Mac is running, choose Apple  > About This Mac.

And, note that Apple’s official name for their desktop operating system was “Mac OS X” up to and including 10.7 Lion, but is “OS X” starting with 10.8 Mountain Lion. In this book, I generally use “OS X” when referring only to Mountain Lion, and “Mac OS X” when referring to earlier versions—or all versions—of the Mac operating system.

What’s New in Version 1.2

Version 1.2 is a minor update intended to address several issues I learned about in the week or so following Mountain Lion’s release. Apart from small typographical changes, this version of the book changes the following:

- Clarifies an extra step you may need to perform to uncheck a volume’s Ignore Ownership setting; see the sidebar [RTFM](#)
- Adds a note about Mountain Lion’s Web Sharing feature in [Check Service Settings](#) and [Turn Deactivated Features Back On](#)
- Includes direct URLs for Mountain Lion in [Obtain the Installer](#), and Mountain Lion Server in [Install Mountain Lion Server](#)
- Updates the sidebar [Make a Bootable Mountain Lion Installer Volume](#) to give directions for using Lion DiskMaker

- Adds a recommendation to [Turn Off Anti-malware Software](#) to avoid potential problems downloading Mountain Lion
- Adds a step in [Migrate from Another Mac](#) to avoid a crashing bug in Migration Assistant

Introduction

Only a year ago—in July 2011—Apple released Mac OS X 10.7 Lion. At that time I imagined the next version of the operating system would be a good way off. Perhaps I'd have a couple of years before I'd start writing the next installment of my *Take Control of Upgrading to...* series, which began with the introduction of Panther in 2003.

But then, in February 2012, Apple surprised everyone by announcing that Lion's successor, 10.8 Mountain Lion, would be out within a matter of months. I quickly rearranged my schedule so that I could continue my nine-year tradition of delivering books to help readers through the upgrade process.

Apple has progressively made upgrading simpler, safer, and less expensive. Upgrading from Lion to Mountain Lion will be, for many people, a painless exercise consisting of a \$20 purchase, perhaps a few hours of waiting for an installer to download, and then a couple of clicks to perform the installation itself. Hardly something that requires over 150 pages of documentation!

And yet, upgrading always involves some hidden perils. For example, Apple doesn't force you to back up your Mac before upgrading, or even suggest that it's a good idea. But if something goes wrong during the process, or if you finish the upgrade but then realize you have to return to your earlier system for some reason, a proper backup could be your only salvation. As a result, I talk at length in this book about how to back up your Mac before upgrading—and how to use that backup to perform a clean installation of Mountain Lion, to solve problems, and to revert to your old system if the need arises.

I also explain why Apple's minimum system requirements don't tell the whole story about what you need to run Mountain Lion successfully, offer advice on avoiding software incompatibilities, show you how to recover disk space if you don't have enough to upgrade your system, and explore several other issues that can complicate the process.

In particular, although upgrading from Lion or even Snow Leopard to Mountain Lion is usually easy, upgrading from older “big cats” isn't. Some people own Macs that can run Mountain Lion but that are still running 10.4 Tiger or 10.5 Leopard. This is a real problem for users

who want to upgrade those computers to run Mountain Lion, because Apple is distributing Mountain Lion *only* as a digital download from the Mac App Store—which requires 10.6 Snow Leopard or later!

For the first time ever, Apple won't provide *any* physical installation media for Mountain Lion, not even as an option. This poses problems not only for those with older operating systems, but also for those without robust broadband connections that can handle a 4+ GB download. And even if you find another way to obtain a Mountain Lion installer, you may find that it refuses to run on your older system.

Furthermore, users who are still running Snow Leopard or earlier may have PowerPC applications that rely on the Rosetta software Apple discontinued with Lion. That means an upgrade without the necessary preparation steps can leave them with no way to do their work.

All these problems have solutions, which you'll find in the pages ahead. You'll also learn how to install Mountain Lion Server, how to migrate to a new Mac that's running Mountain Lion, and how to use Mountain Lion's Recovery mode for troubleshooting.

If you've upgraded Mac OS X numerous times, keep excellent backups, have up-to-date hardware and software, and consider yourself technically proficient, then really...you don't need this book. But if you count yourself among those feeling anxiety, confusion, or uncertainty about upgrading to Mountain Lion, you've come to the right place. In this book, I spell everything out in detail. Follow my steps carefully, and you'll have nothing to worry about.

And, if anything significant turns up, I'll mention it on this book's blog, update the text of the ebook, or both. To check for an updated copy of this ebook (or any other significant changes), click the link in [Ebook Extras](#).

Mountain Lion Upgrade

Quick Start

I've carefully arranged this book in logical order—I strongly recommend performing these steps in the order I present them. You need not learn every last detail, but I hope you'll at least skim the whole thing. Here's a brief overview of the steps you should take.

New Mac? Does your “upgrade” involve moving from a Windows PC or from an older Mac to a new Mac? Read [Migrate to a New Mac right away!](#)

Start on the right foot:

- If (and only if) you read and followed the instructions in version 1.0 (or 1.0.1) of this ebook, flip ahead a couple of pages to [Welcome Back, Version 1.0 Readers](#).
- Are you still using 10.6 Snow Leopard or earlier? If so, you'll need additional information to put you on a level field with Lion users. Learn about software compatibility issues, FileVault, how Mountain Lion is distributed, and changes you can expect in the installer. See [Older Cat? Learn New Tricks](#).

Prepare to upgrade:

- Make sure your computer can run Mountain Lion. See [Check Your Mac for Compatibility](#).
- Check that your cloud-based accounts and data are in order. See [Get Your Head in the Cloud](#).
- Back up before you go forward! See [Back Up Your Disk](#).
- Make sure key software is up to date, remove clutter that could interfere with the upgrade, and test your hardware for errors. See [Clean Up Your Mac](#).
- Learn how encryption and partitioning can affect the way you install and use Mountain Lion, and what changes you might need to make to ensure a smooth transition. Read [Make Sure Your Disk Is Ready](#).

- Decide which overall upgrade strategy is best for you. See [Decide on an Installation Method](#).
- [Make Final Preparations](#) such as obtaining the Mountain Lion installer, updating your bootable duplicate, and ensuring that you have a way to refer to this book while you upgrade (since you won't be able to read it on the Mac that's being upgraded).

Perform the upgrade:

Follow the strategy you selected earlier to run the Mountain Lion installer, choosing all the optimal settings and options for your computer and tastes, and making sure all your personal data is still in place afterward. You'll choose one of the following:

- [Upgrade Using Plan A: In-place Upgrade](#)
- [Upgrade Using Plan B: Clean Install](#)
- [Upgrade Using Plan C: Install over Leopard](#)

After the upgrade:

- [Perform Post-installation Tasks](#), such as running Software Update, setting up user accounts, and (perhaps) turning on FileVault and Time Machine. You'll also deal with any surprises that may have occurred along the way.
- Problems? If your computer isn't working properly after the upgrade, don't panic. See [Troubleshoot Upgrade Problems](#).

Go beyond the basics:

- If you want to [Install Mountain Lion Server](#), read my basic instructions to get you started.
- Moving from an older Mac to a new Mac that already has Mountain Lion installed? Find the details on how to make the process painless in [Migrate to a New Mac](#).
- Learn how to [Use Recovery Mode](#) to fix disk problems, reinstall Mountain Lion, and perform other maintenance tasks.

Welcome Back, Version 1.0 Readers

If you've read version 1.0 of this ebook already, you're way ahead of the game. Here's what you need to know now.

As long as you've already followed all the steps in version 1.0 of this ebook up through [Make Sure Your Disk Is Ready](#), there's no need to revisit those chapters; you're ready to pick up with the new material. However, I did add a few pieces of information to those earlier chapters that you may find interesting and will miss if you skip them, so let me briefly share with you a few new tidbits I now cover in the early part of this book that were not found in version 1.0:

- If you're upgrading a system that currently has Flash 10.3 or later installed, it remains in place after the upgrade; you won't have to reinstall Flash under Mountain Lion.
- The final (version 10.8.0) Mountain Lion installer is 4.37 GB.
- As I expected, the Mountain Lion license is similar to that of Lion. It authorizes you

to download, install, use and run for personal, non-commercial use, one (1) copy of the Apple Software directly on each Apple-branded computer running OS X Lion or OS X Snow Leopard ("Mac Computer") that you own or control...

(Terms for educational and commercial use differ. And, for everyone, running Mountain Lion in a virtual machine is also permitted, with some limitations.)

- I heavily revised the sidebar [Upgrading Directly from Tiger to Mountain Lion](#); it now provides more detail about the issues and directs you to get in touch with me if you are desperate to know how to do this.

That's all you need to know for now. You can skip directly to [Make Final Preparations](#) and proceed with the remaining installation steps!

Older Cat?

Learn New Tricks

If you're already running 10.7 Lion, skip ahead to [Check Your Mac for Compatibility](#)—there's nothing to see here. But if your Mac is still using an older big cat—10.6 Snow Leopard, 10.5 Leopard, or 10.4 Tiger—you need to know about some profound changes that first appeared in Lion, and that you'll encounter when you move to Mountain Lion. Some of these changes may force you to abandon software you've used for many years, adopt new habits, or reorient your thinking about how a Mac works.

Before you jump in, you should understand what awaits you—and what steps you'll have to follow to ensure a smooth transition.

Plot a Post-Rosetta Strategy

Starting with Lion, Apple removed Rosetta, the software that enabled older, PowerPC applications to run on Intel-based Macs. As a result, upgrading to Mountain Lion entails living without software that requires Rosetta, and if you use such software regularly, you're going to be unhappy with Mountain Lion unless you take one of several steps to adapt to the new world order.

Deal with Your PowerPC Software

To find out what PowerPC software you have on your disk, follow these steps:

1. Open System Profiler (in [/Applications/Utilities](#)).

Get Info: *The utility previously known as System Profiler is called System Information in Lion and Mountain Lion.*

2. In the list on the left, scroll down until you see the Software category. Under that (click the triangle next to the word Software, if necessary, to show its subcategories), select Applications. Wait a few moments while System Profiler compiles a list of the applications on your Mac.

Check Your Mac for Compatibility

All currently shipping Macs, and many models introduced within the past 5 years or so, can run Mountain Lion. However, Apple's new system requirements exclude certain models. In particular, not every Mac that can run Lion can also run Mountain Lion. And even a relatively recent Mac may not have enough RAM or disk space, or may need a firmware update. In the next few pages I help you verify that your hardware fully supports Mountain Lion. I also talk about the requirement to have Snow Leopard or later in order to use the Mac App Store, and make a suggestion about input devices.

Model Support

Apple's system requirements for a given big cat used to be simple—your Mac must have such-and-such a processor, something you could easily check. In Mountain Lion, however, it's more complicated. Apple now requires not just an Intel Core 2 Duo or better processor, but also a logic board that's designed to boot into a 64-bit kernel, as well as an “advanced GPU (graphics processing unit) chipset.” And those are all things most people can't discover about their Macs easily.

In an attempt to make things easier, Apple's Mountain Lion specifications page (<http://www.apple.com/osx/specs/>) provides a handy list of exactly which models can run Mountain Lion:

- iMac (Mid 2007 or newer)
- MacBook (Late 2008 Aluminum, or Early 2009 or newer)
- MacBook Air (Late 2008 or newer)
- MacBook Pro (Mid/Late 2007 or newer)
- Mac mini (Early 2009 or newer)
- Mac Pro (Early 2008 or newer)
- Xserve (Early 2009)

Get Your Head in the Cloud

Mountain Lion is more tightly integrated with a variety of Internet (or, in the lingo, “cloud”) services than any previous version of Mac OS X. And, of course, you can add apps and utilities to extend Mountain Lion’s reach even further into the cloud.

Because so much of Mountain Lion’s capabilities depend on the cloud, you’ll have an easier time making the transition if you already have a few things in order—the necessary accounts created, credentials handy, and data uploaded or downloaded. As a bonus, the steps you take now to improve your cloud cover will also make it easier to sync data with your mobile devices, Apple TV, and other Macs—and serve as an extra safety net in addition to backups (which I cover in the next chapter and later in the book).

We begin with that mysterious but increasingly important entity, the Apple ID.

Learn about Your Apple ID(s)

Near the end of the Mountain Lion installation process (see [Finish Setup Assistant](#)), you’re prompted for an Apple ID and its associated password, in much the same way that earlier big cat installers prompted you for a MobileMe (or .Mac) username and password.

Here’s what Apple’s Web site says about this feature: “Just sign in once with your Apple ID to set up Mail, Contacts, Calendar, Messages, FaceTime, Game Center, Safari, Reminders, iTunes, the Mac App Store, and Notes.” Isn’t that nice? Just enter your credentials once instead of having to sign in separately in a bunch of different places.

Except...wait, what? If you’re like most Mac users, you probably have questions: What’s my Apple ID? How does my Apple ID “know” about my email, notes, reminders, purchases, and everything else? Can I share my Apple ID with someone else? What if I have more than one Apple ID? What if I don’t have an Apple ID? Since your Apple ID becomes so important in Mountain Lion, it’s a good idea to sort out the answers to these questions before you install it!

Back Up Your Disk

If you've read pretty much any book I've written about the Mac, you know I consider a solid backup plan to be essential for every Mac user. I hope you already perform backups regularly, and if you don't, this is a perfect time to start.

Regardless of what you normally do, I want to state emphatically that you *must* create a bootable duplicate of your entire disk before upgrading to Mountain Lion. Even though the Mountain Lion installer doesn't tell you to back up or check for a backup, this is not something you can skip if it's inconvenient or if you're pretty sure you won't have problems. Creating a duplicate is a mandatory, integral part of the upgrade process. In this chapter I tell you both why and how to do this. (If you run Windows on your Mac with Boot Camp, as opposed to virtualization software, you should also [Back Up Windows Volumes](#).)

After you back up your disk, I'm going to tell you to do some spring cleaning (read [Clean Up Your Mac](#)), and then I'm going to tell you to back up *again*. I wanted to warn you about this up front so you know it isn't a mistake or capricious advice—it's for your own good. You need a great backup before you delete any files (in case you accidentally delete something you need), but you also need a freshly updated backup right before installing Mountain Lion.

Let me also point out that whatever the virtues of Time Machine, it's no substitute for a bootable duplicate, as I explain in the sidebar [But I Really Don't Want to Make A Duplicate!](#)

Why You Need a Duplicate

Of the many ways in which you can back up your Mac, one way involves making an exact copy of everything on your disk onto another disk, in such a way that you could start up your Mac from that other disk and it would behave precisely as it does when you start from your main disk. That type of backup is called a *bootable duplicate*.

You can't make a bootable duplicate in the Finder by dragging and dropping files onto another disk, and backup programs like Time

Clean Up Your Mac

Over time, most computers accumulate clutter, including outdated software, forgotten downloads, and obsolete files. Not only can this clutter make files harder to find, it can cause problems when you upgrade to Mountain Lion—incompatibilities may show up, or you may run out of disk space, for example.

In this chapter, I suggest that you install some software updates and delete files you don't need anymore. I also show you how to check both your RAM and your disk for errors that could cause problems when installing or running Mountain Lion.

Because you'll be making so many changes, you should first make a complete backup—so if you skipped [Back Up Your Disk](#), go back and follow those steps now. After you've cleaned up your Mac, restarted, and verified that everything is working properly, you should update your backup so that it'll be closer to the state of your disk when you upgrade to Mountain Lion.

Update Your Third-Party Software

Every major upgrade to Mac OS X results in software compatibility problems, where some applications work poorly or won't launch. Even factoring out PowerPC applications that depend on Rosetta (see [Plot a Post-Rosetta Strategy](#), earlier), most of us will have to update a few applications to get them to work correctly under Mountain Lion.

If history is any indication, some incompatible applications won't be updated right away, and a few might never be. But many developers work hard to ensure that their software is ready for each new version of Mac OS X, and “Mountain Lion-compatible” software updates have already been appearing for months.

Tip: RoaringApps maintains a wiki (<http://roaringapps.com/apps:table>) listing hundreds of Mac apps and the current status of their Mountain Lion compatibility, as reported by users. Although this list is neither exhaustive nor definitive, it provides a quick way to check on the applications most important to you.

Make Sure Your Disk Is Ready

Two features in Mountain Lion—FileVault 2 and Recovery mode—have special requirements when it comes to the state of your disk at the time you upgrade. In certain situations, especially if you're upgrading from Snow Leopard or earlier, you may need to make changes to your disk before you can upgrade.

As I explain in a moment, you can postpone changes like disabling encryption until just before you're ready to run the Mountain Lion installer; I mention this in case you're reading ahead but planning to perform the upgrade later. But bear in mind that making these changes to your disk may be time-consuming, so take that into account when scheduling time to install Mountain Lion.

Consider Disabling Encryption

If you currently use neither FileVault nor a third-party full-disk encryption program, or if you use FileVault under Lion, you don't need the rest of this topic—move right along to [Consider Re-partitioning Your Disk](#). But if you do use one of these types of encryption, continue reading for important information about steps you might want to take before upgrading to Mountain Lion.

FileVault

If your Mac is still running Tiger, Leopard, or Snow Leopard and FileVault is enabled for any account on your Mac, I suggest disabling it before you upgrade to Mountain Lion and then using FileVault 2 (introduced in Lion) after the upgrade is complete. (Read [Meet the New FileVault](#) for more details on FileVault 2.)

Surprisingly enough, if you have an account with the original flavor of FileVault enabled and then upgrade your Mac to Mountain Lion, *both* versions of FileVault will be active (even though, ordinarily, what Apple now calls Legacy FileVault is completely absent from Mountain Lion)—and when you visit the Security & Privacy pane of System Preferences for any account with Legacy FileVault enabled, you'll be

Decide on an Installation Method

The Mountain Lion installer doesn't ask you to pick an installation method, as was the case for early big cats. However, you still have some choices. You can approach the process in any of three ways:

- **Plan A: In-place Upgrade:** This easy, default method is appropriate for most people, with some qualifications.
- **Plan B: Clean Install:** Although the installer no longer offers an option that lets you start fresh by erasing your disk, you can accomplish the same thing in a slightly roundabout way.
- **Plan C: Install over Leopard:** Leopard users who can't—or don't want to—first upgrade to Snow Leopard have their own path to follow. (Tiger users have to be even more creative; I address the needs of those few people in the sidebar [Upgrading Directly from Tiger to Mountain Lion](#).)

Most users should start with Plan A and then if (and only if) they encounter problems, move on to Plan B. A few people may want to skip Plan A and go directly to Plan B. In almost every case, the end result will be virtually identical, regardless of which path you take.

In the pages that follow, I describe the differences among these three plans and help you choose which way to go. Then, in later chapters, I give you step-by-step instructions for each plan.

New Mac? If your “upgrade” involves not only upgrading a new Mac to Mountain Lion but also moving files to the new Mac from an old computer, you should generally choose [Plan B: Clean Install](#) so that you can get a fresh start on the new Mac. At the end of the Plan B installation, Setup Assistant will run, letting you transfer files from your old Mac or PC to your new Mac. However, if the new Mac contains software you can't replace after erasing the disk in Plan B, you can do [Plan A: In-place Upgrade](#) and then run Migration Assistant immediately after rebooting in Mountain Lion. In both cases, please read [Migrate to a New Mac](#) before you begin installing.

Make Final Preparations

Now that you know which basic technique you're going to use, you're nearly ready to proceed. Your next step (which could take hours, or even longer) is to obtain the Mountain Lion installer; then I'll recommend a few other quick, last-minute tasks before you dive in.

Obtain the Installer

Depending on your situation, obtaining the Mountain Lion installer may be a trivial matter of a few clicks, or it may be an involved ordeal. Let's start with the easiest case first.

Buy Mountain Lion on the Destination Mac

If you're running 10.6.8 or later and have a broadband Internet connection that can handle a 4+ GB download, obtaining Mountain Lion is easy—it's just like buying any other app:

1. Click the App Store icon in your Dock, click Featured, and locate OS X 10.8 Mountain Lion (which should be displayed rather prominently). Or, click <http://itunes.apple.com/us/app/os-x-mountain-lion/id537386512> to open the App Store and go directly to the Mountain Lion installer.
2. Click the price (\$19.99), followed by Install.
3. Enter your Apple ID and password, and click Sign In.

The Mountain Lion installer downloads to your `/Applications` folder—a process that could take anywhere from minutes to days, depending on the bandwidth of your broadband connection. In 10.7 Lion, the installer's icon appears in Launchpad as soon as the download begins, with a progress bar on the icon that gradually fill as the download proceeds, though it may take a while before you can discern the bar.

Upgrade Using Plan A: In-place Upgrade

Now that you've gone through all the preliminary steps, it's time to begin the upgrade. For most people, Plan A—essentially letting the installer do what it wants to do—is the logical choice. And remember, if it doesn't work out for any reason, you can always move on later to [Upgrade Using Plan B: Clean Install](#). Nevertheless, because you may encounter some questions or confusion during the process, I detail exactly what steps to take from start to finish.

Start the Installer

Unlike Mac OS X installers of old, the Mountain Lion installer requires no separate startup disc; you simply run an application and it does its thing. However, if you haven't already done so, you should:

- If you are installing onto a laptop, connect its AC adapter to a power source. (If you forget to do this, the installer will prompt you.)
- Quit all open applications. (The installer attempts to do this for you, but you might as well take care of this beforehand.)

Final backup reminder: *Not to belabor the point, but now that we're two clicks away from installing Mountain Lion, be sure you have an up-to-date bootable duplicate of your startup disk. If not, go no further until you've read and followed the instructions in [Back Up Your Disk](#).*

To begin, either double-click the Install OS X Mountain Lion icon in your `/Applications` folder or wherever else you put it. (If you're using Lion, you can instead click the Install OS X Mountain Lion icon in Launchpad.) A window appears with just one button: Continue. Click it!

The Software License Agreement appears next; click Agree, and then click Agree again in the confirmation dialog to proceed.

Upgrade Using Plan B: Clean Install

If you would prefer a cleaner installation of Mountain Lion than what an in-place upgrade provides—specifically, one that gets rid of any disk errors and gives you a chance to weed out some types of user-created data—Plan B is what you should follow instead of Plan A. It's also the right choice if you tried Plan A and encountered problems.

Much of Plan B is just like Plan A, so I refer to earlier discussions for some details. The differences come at the beginning (erasing your disk manually) and the end (using Setup Assistant to configure numerous settings and, optionally, transferring data from your bootable duplicate).

If you plan to complete a clean install over Leopard, read [Option 2: Clean Install onto Blank Volume](#), in the next chapter. (I've found no way to do a clean install over Tiger, but I say more about this in the sidebar [Upgrading Directly from Tiger to Mountain Lion](#).)

Start Up from Your Bootable Duplicate

Unlike Plan A's in-place upgrade, Plan B requires a bootable duplicate of a *Snow Leopard* or *Lion* volume, which accomplishes three goals:

- You must erase the destination volume first. But you can't erase the volume Mac OS X is currently running from, so you must start up from another volume.
- You'll need access to the Mountain Lion installer too, of course, so it'll be easiest if the volume you start up from contains the installer.
- Once Mountain Lion is installed, you'll need your bootable duplicate (the one you created in [Back Up Your Disk](#), remember?) connected in order to transfer your old data.

Upgrade Using Plan C: Install over Leopard

If you're still running Leopard and you can't bear the thought of having to upgrade to Snow Leopard just to make it possible to upgrade to Mountain Lion, there's a way do to it. In fact, there are two ways. You'll notice that these two options are similar to Plan A and Plan B, respectively, but with a few extra steps. (If you're still running Tiger, see the sidebar [Upgrading Directly from Tiger to Mountain Lion](#).)

Option 1: Trick the Mountain Lion Installer

If you want to force the Mountain Lion installer to do an in-place upgrade, you can perform a sneaky little hack that's slightly risky (that is, unsupported by Apple) but much faster than Option 2 ahead. This will trick the Mountain Lion installer into thinking that your Leopard volume actually contains Snow Leopard—thus letting you install Mountain Lion directly over Leopard.

Here's how you do it:

1. If you haven't already done so, get a copy of the Mountain Lion installer (see [Obtain the Installer](#)) and make a boot volume based on that installer (see [Make a Bootable Mountain Lion Installer Volume](#)). Set that installer aside for the moment.
2. Start your Mac normally from your Leopard system.
3. Make sure you're logged in as an administrator. (If you're not sure, open the Accounts pane of System Preferences. If the account under which you're currently logged in has the word "Admin" under it, you're good to go.)
4. Open Terminal (in [/Applications/Utilities](#)) and enter this—all on one line, followed by pressing the Return key:

```
sudo nano /System/Library/CoreServices/SystemVersion.plist
```

5. When prompted, enter your administrator password.

Perform Post-installation Tasks

If everything has gone as expected, your Mac is now successfully running Mountain Lion. (If things haven't gone as expected, flip forward to [Troubleshoot Upgrade Problems](#).) But there are still a few tasks left to do before you get to work—or play—with your new operating system. In this chapter I cover some important initial setup and configuration activities you should get out of the way right now.

Once you're finished with these simple tasks, I'll direct you to read Matt Neuburg's [Take Control of Using Mountain Lion](#), which picks up where I leave off and helps you learn about Mountain Lion's updated interface, new features, customization options, and more. Or, if you need a field guide to all the iCloud features, read [Take Control of iCloud](#). (Both ebooks cover iCloud's Documents in the Cloud feature.)

Wrangle Spotlight

In most cases, as soon as Mountain Lion starts up the first time, Spotlight begins indexing (or re-indexing) all the files on all mounted volumes. This process can take anywhere from a few minutes to several hours, depending on how many files you have and the speed of your CPU and disk. During this time, you may notice a lot of disk activity (along with, perhaps, somewhat slower overall performance).

However, unlike in previous big cats, you won't see a pulsing dot in the center of Spotlight's magnifying glass icon on the right side of your menu bar—but if you click this icon during indexing, a drop-down list displays an estimate of the time remaining for each volume.)

I find it mighty annoying to cope with a pokey Mac just at the time I'm eager to try the spiffy—but resource-intensive—features of my new operating system. If you feel the same way, you can *temporarily* disable Spotlight indexing long enough to set things up and play with your new system a bit, and then turn it back on when you're ready to step away from your Mac for a few hours.

Troubleshoot Upgrade Problems

Even if you diligently followed all the instructions in this book, you might encounter problems while upgrading. I can't anticipate every difficulty you may have (or provide solutions in every case), but here are some of the most likely issues and how to deal with them.

Can't Run the Mountain Lion Installer...

If the Mountain Lion installer icon has a slash through it, or if you try to run it and it quits immediately, the three likely causes are:

- You're trying to run it on a Mac whose CPU is incompatible with Mountain Lion (see [Model Support](#) for full details). Solution: Buy a new Mac. (Sorry.)
- You're trying to run it on a Mac that is booted under Leopard or Tiger. Solution: Boot from a Snow Leopard or Lion volume (if you have one) or [Make a Bootable Mountain Lion Installer Volume](#). (Tiger users: also be sure to consult the sidebar [Upgrading Directly from Tiger to Mountain Lion](#).)
- The installer didn't fully download, or the file was damaged. Solution: Delete the installer, open the Mac App Store application, click Purchased, and download it again.

Can't Select Installation Volume...

If you run the Mountain Lion installer, click Show All Disks when asked to choose a destination, and find that the volume on which you want to install Mountain Lion isn't available, chances are excellent that if you click on the volume in question, the installer will tell you *why* it can't be used—for example, not enough disk space, wrong partition map scheme, or wrong format—and, at the same time, tell you what you need to do to fix that problem.

Install

Mountain Lion Server

For years, Apple has shipped two separate versions of Mac OS X—the standard version that most people use, and a server version. Of course, any Mac can act as a server; just look at the Sharing pane of System Preferences and you'll see how easy it is to activate a simple file server, print server, Web server, and more.

Mountain Lion Server takes these capabilities much further, expanding them with options a business might need to support hundreds or thousands of users—and adding more services, including email, calendar, chat, and virtual private networks. Earlier versions of Mac OS X Server, focused as they were on the needs of businesses and other large institutions, were also prohibitively expensive for ordinary users—and quite complex to set up and administer.

Mountain Lion Server, like Lion Server before it, makes the process much less painful. It costs only \$19.99 (in addition to the cost of Mountain Lion itself) rather than hundreds or thousands of dollars. And its completely rethought user interface makes it much easier to configure and use. As a result, professional server capabilities are now within the reach of mere mortals.

So, I thought it only right to give you a taste of Mountain Lion Server here. In this brief chapter, I walk you through installation and a few basic setup options. Even though Mountain Lion Server is much easier to use than earlier big cat servers, complete instructions for using it would run hundreds of pages—and that's not the point of this book. But if you're interested in running Mountain Lion Server, this will get you started.

Server to server: *This chapter assumes you're installing Mountain Lion server for the first time on a Mac that didn't previously have a version of Mac OS X Server installed. (If you're installing over Lion Server, see the sidebar [Lion Server to Mountain Lion Server](#), at the end of this chapter.) Although it's certainly possible to upgrade from, say, Leopard Server or Snow Leopard Server to Mountain Lion Server, I don't cover that scenario in this book.*

Migrate to a New Mac

If you buy a new Mac and move over your old applications and data, that's not upgrading—it's *migrating*, because your new Mac already contains the latest (or nearly so) version of OS X. But, I get it: it *feels* like upgrading, because yesterday you were using a Mac running an old version of Mac OS X and by the end of the day today you want to be using a Mac running a new version. So, if you are, or are about to be, the proud owner of a new Mac and you want to know how to get your old files onto it, you've come to the right place.

In Mountain Lion, Apple's Migration Assistant utility can help you with not only upgrading from an old Mac to a new one but also from a Windows PC to a Mac. I talk about both options in this chapter.

Understand Migration Concepts

Let me begin by taking a bit of the mystery out of this migration thing. Migration is a fancy word for *copying*—a familiar, ordinary, everyday tasks that shouldn't seem in any way daunting. Whenever you make a backup, you copy stuff from one place to another; same thing when you share files over a network. You have stuff on your old computer, and you're going to copy it onto your new one. No big deal.

Migration essentially involves two parts:

- Making a connection between the new Mac and the old computer so they can talk to each other. This can be a simple matter of having them on the same wireless or Ethernet network, or stretching a FireWire cable between them. If you can't do either of those things, you can often copy everything from the first computer's disk onto an intermediate external hard drive and plug that into the new Mac.
- Figuring out which stuff from the old computer needs to go where—and with which attributes (such as ownership and permissions) on the new Mac. This is trickier than it sounds, because some of your data may be hidden in databases or invisible folders, or may (as in the case of applications) consist of numerous components scattered around your disk.

Use Recovery Mode

Recovery mode is a feature first introduced in Lion that lets you recover data (hence the name), perform disk maintenance, or even reinstall Mountain Lion without having a bootable DVD or external drive. It's both cool and useful—but it's not foolproof, and it has some rather surprising characteristics. In this chapter I discuss what it is, what it can and can't do, and how to use it. We begin with the mysterious hidden volume that makes this magic possible.

Get to Know the Recovery HD Volume

Assuming everything works as it should—and, specifically, that you're using one of the officially sanctioned volume structures as I discussed in [Why to Avoid Extra Partitions](#)—the Mountain Lion installer creates a special, hidden partition on the same disk where you install Mountain Lion itself. This partition contains a bootable volume called Recovery HD. Ordinarily you'll never mount or use this volume directly; instead you'll invoke the magic procedure to reboot your Mac from the Recovery HD volume, as I describe just ahead in [Boot into Recovery Mode](#).

Don't worry that Mountain Lion is using up vast amounts of precious disk space with this odd partition you might never need. It's quite small—only 650 MB, in fact. On the other hand, if you're of a more geeky disposition and dream of co-opting this partition for your own purposes, I've got some bad news. It's read-only, so you can't make any changes, including installing any extra third-party software of your own. Nor can you delete it (without repartitioning your whole disk)—Apple did some seriously weird stuff to put this little bugger in place. Of course, that also means that even if you accidentally wipe out everything on your startup disk, the Recovery HD volume should still be there, giving you a platform from which you can get back to work.

Alert readers may have noticed that you're supposed to be able to reinstall Mountain Lion from this volume—and yet the Mountain Lion installer is almost 4 GB while this volume is only 650 MB. Something doesn't add up! The Recovery HD volume does contain an application that *looks* like the Mountain Lion installer, but it's only about 24 MB in

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Joe Kissell is Senior Editor of *TidBITS*, a Web site and email newsletter about Apple and the Internet, and the author of numerous books about Macintosh software, including *Take Control of Maintaining Your Mac* and *Take Control of Backing Up Your Mac*. He is also a Senior Contributor to *Macworld*, was the winner of a 2009 Neal award for Best How-to Article, and has appeared on the MacTech 25 list (the 25 people voted most influential in the Macintosh community) since 2007.

Joe has worked in the Mac software industry since the early 1990s, including positions managing software development for Nisus Software and Kensington Technology Group.

When not writing or speaking, Joe likes to travel, walk, cook, eat, and dream (in both senses of the word). He currently lives in Paris with his wife, Morgen Jahnke, their son, Soren, and their cat, Zora. To contact Joe about this book, send him email at jwk@me.com and include *Take Control of Upgrading to Mountain Lion* in the subject so his spam filters won't intercept it.

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This book has been brought to you by the letters M and L and the numbers 10 and 8.

Shameless Plug

Although I write and speak about technology as my day job, I have a great many other interests. To learn more about me, read other things I've written, and find out what I'm up to beyond the realm of Apple products, visit my home page at JoeKissell.com. You can also follow me on Twitter ([@joekissell](https://twitter.com/joekissell)).

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Adam and Tonya are known in the Apple world as writers, editors, and speakers. They are also parents to Tristan, who thinks ebooks about clipper ships and castles would be cool.

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