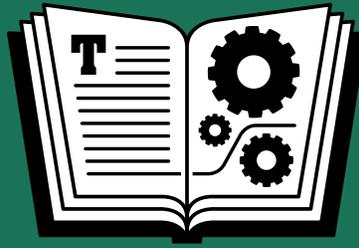


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TAKE CONTROL OF

UPGRADING TO SIERRA

by **JOE KISSELL**

\$10

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Read Me First

Welcome to *Take Control of Upgrading to Sierra*, version 1.0, published in September 2016 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 macOS 10.12 Sierra in no time. This book eliminates the uncertainty and the confusion, guiding you through every step of the process.

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Basics

To review background information that might help you understand this book better, such as finding System Preferences and working with files in the Finder, read Tonya Engst's free ebook [*Read Me First: A Take Control Crash Course*](#), available for free on the Web or as a standalone ebook in PDF, EPUB, and the Kindle's Mobipocket format.

Introduction

Upgrading your Mac's operating system used to be a big deal—something that was expensive, time-consuming, confusing, and stressful. That's why I started writing the *Take Control of Upgrading to...* books: I wanted to make the process as simple and painless as possible.

As I was preparing to write this tenth (!) version of my guide, I realized a few things that made me rethink my approach somewhat:

- For most people in most situations, upgrading to a new version of the Mac operating system these days is no more difficult than updating an app like Pages or Safari (although, admittedly, it does take quite a bit longer). A long, complex book (*Take Control of Upgrading to El Capitan* was 151 pages) makes upgrading seem a lot more difficult than it usually is.
- A number of the topics I covered in earlier *Upgrading* books involved edge cases that very few people will ever encounter, or were safety measures to prevent or solve quite obscure problems. Making everyone jump through those hoops may have been excessive.
- Many pages were spent reiterating instructions that can be found in other books of mine, or in articles on the Web.
- The people most likely to benefit from a book about upgrading to Sierra—and who are most likely to feel anxious without such a guide—are those upgrading from much older versions of the Mac operating system (especially 10.6 Snow Leopard).

For all these reasons, I decided to refocus this book a bit. I've slimmed it down considerably by concentrating on major areas of potential concern or worry, eliminating bits that almost everyone can safely ignore, and adding references to other books and articles where they seemed helpful rather than stuffing in every last detail here.

Even so, the book's essence remains the same: I tell you how to both prepare your Mac and set your expectations for a successful transition

to Sierra. This book offers clear, step-by-step instructions that will keep you out of trouble and explain all the choices you'll have to make.

And even experienced Mac users may want to take extra precautions, since moving to a new full version of the operating system makes major changes to your system. The Sierra installer has no “undo” or “downgrade” command to reverse the upgrade process if something should go wrong, and without careful planning (which includes making just the right sort of backup ahead of time), you could be stuck with a nonfunctional Mac. I walk you through the preliminary procedures necessary to ensure a safe transition to Sierra—or a way to go back to your previous operating system if all else fails.

Backups also factor into a *clean* install—that is, putting Sierra on an empty volume, as opposed to upgrading an existing copy of OS X in place. Most people don't need a clean install, but it can solve certain problems, and some people just like the extra tidiness it provides. Nevertheless, you'll undoubtedly want most, if not all, of your old files under Sierra, so if you decide on a clean install, I explain how to do it as well as how to put back the stuff you want to keep.

I also explain why Apple's minimum system requirements don't tell the whole story about what you need to run Sierra 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.

If you've upgraded your Mac 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 Sierra, 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.

If anything significant turns up that I didn't cover (or that changes after the beta version), I'll mention it on this ebook's blog, update the ebook, or both. To check for an updated copy of this ebook (or any other significant changes), click the link in [Ebook Extras](#).

Sierra Upgrade Quick Start

I've arranged this book in logical order, and I 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.

Start on the right foot:

- Discover what you have to look forward to when you upgrade to Sierra. Read [Take In the Scenic View](#).
- If you're still using 10.8 Mountain Lion or earlier, you'll need additional information to put you on a level field with users of 10.9 Mavericks or later. See [Catch Up with macOS Changes](#).
- If you're upgrading to the Sierra *beta*, or if you've already installed the beta, read the sidebar [Upgrading to \(or from\) the Sierra Beta](#).

Prepare to upgrade:

- Make sure your computer can run Sierra. See [Check Your Mac for Compatibility](#).
- Back up before you go forward! See [Back Up Your Disk](#).
- Make sure key software is up to date, and remove clutter that could interfere with the upgrade. See [Clean Up Your Mac](#).
- Decide which overall upgrade strategy is best for you. See [Decide on an Installation Method](#).

Perform the upgrade:

Follow the strategy you selected earlier to run the Sierra 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 do one of the following:

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

After the upgrade:

- [Perform Post-installation Tasks](#), such as responding to login requests, installing updates to macOS, and tweaking preferences. You'll also deal with any surprises that may occur along the way.
- Problems? If your computer isn't working properly after the upgrade, don't panic. See [Troubleshoot Upgrade Problems](#).

Take In the Scenic View

Since you've bought this book, I assume you've already decided to upgrade to Sierra and don't need convincing that it's worth your time and effort. However, I would like to call attention to some of the biggest changes in Sierra that you can look forward to.

Apple has a list of new Sierra features on [this Web page](#). Among the most notable changes and improvements are:

- **Siri:** After years of being iOS-only, Apple's voice-controlled personal assistant is now on the Mac too.
- **Apple Pay:** Using your Apple Watch, or Touch ID on a newer iPhone, you can make Apple Pay purchases on participating Web sites.
- **Auto Unlock with Apple Watch:** Another great perk for Apple Watch users, this feature lets you skip your password when unlocking your Mac as long as you're wearing your watch.
- **Universal Clipboard:** Taking the Handoff feature a step or two further, you can now copy or cut text on one device (Mac or iOS device) and paste it on another.
- **iCloud Drive sync for Desktop and Documents:** Sierra can optionally sync everything in your Desktop and Documents folders with iCloud, and from there, with your other Macs.
- **Optimized Storage:** At your option, you can ask Sierra to move large or rarely used files to iCloud Drive, freeing up local disk space; you can then download those items on demand. Sierra can also remove duplicate files, delete installers and other superfluous files, and empty your Trash automatically.
- **Tabs everywhere:** Almost every document-based app now offers a tabbed view (like in your browser).

- **Picture in Picture:** Videos from Safari or iTunes can appear in a small, floating window that you can watch while working in other apps.
- **Photos improvements:** The Photos app has a new Memories feature to highlight your most important photos, and includes better face recognition as well as improved location support and searching.
- **Messages improvements:** Messages now offers bigger emoji, embedded Web page previews and videos, and other changes.
- **iTunes improvements:** The Sierra version of iTunes has re-designed support for Apple Music, and also displays song lyrics (even if you don't subscribe to Apple Music).

If you're upgrading not from 10.11 El Capitan but from an older version, you have even more to look forward to:

- El Capitan added Split View (like Full Screen, but for two apps at a time); major improvements to Spotlight, Notes, Safari, Maps, and Photos; new system fonts; improved performance; and a security feature called System Integrity Protection (SIP), about which you can read in Glenn Fleishman's Macworld article [Private I: El Capitan's System Integrity Protection will shift utilities' functions](#).
- Yosemite added Continuity features that enable Macs and iOS devices to work together more seamlessly, a significantly redesigned Spotlight, iCloud Drive, an expanded Notification Center, and several improvements to Mail.
- Mavericks improved support for multiple displays, added both tags and tabs to the Finder, added the iBooks and Maps apps, and introduced interactive notifications, all while improving performance on several fronts.
- Mountain Lion introduced Messages, Notification Center, Dictation, and Power Nap (among many others).

- Lion added features such as iCloud support, Versions and Auto Save, FileVault 2, Launchpad, Mission Control, full-screen apps, and multi-touch gestures.

Sierra inherits (and in many cases improves) the above-listed features.

Last but not least, every major upgrade offers you the opportunity for a fresh start—you can clear out clutter, zap disk gremlins, remove or update incompatible software, and generally make your Mac a leaner, meaner computing machine.

So, as you follow along in this book and prepare to install Sierra, remember that you can look forward to some important improvements and interesting changes.

Catch Up with macOS Changes

If you're already running 10.9 Mavericks, 10.10 Yosemite, or 10.11 El Capitan, skip to the next chapter, [Check Your Mac for Compatibility](#)—there's nothing to see here. But if your Mac is still using an older operating system, you need to know about some changes that have occurred in the past few releases that you may not be fully prepared for. This is especially important for anyone still running 10.6 Snow Leopard, because 10.7 Lion did away with a great deal of older technology that many users relied on.

The older the operating system you're upgrading from, the more changes you'll notice in Sierra—and the greater the likelihood that you'll encounter compatibility problems with old hardware and software. You may have 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.

Learn What You'll Have to Live Without

By now, you've probably heard about some of the older technologies that are no longer included with the latest versions of the Mac operating system. In case you haven't, let me fill you in briefly—forewarned is forearmed:

- **Messages Theater:** As of 10.9 Mavericks, the Messages app no longer has a Theater mode, which once let you show the other person a PDF or Keynote presentation (which you could flip through remotely), with live video of your face in a smaller panel off to the side. For details, including alternatives you might consider, see my Macworld article [Replacing Messages Theater: more screen-sharing alternatives](#).

- **Web Sharing:** Although macOS still contains the necessary software to host a Web site, the Sharing System Preferences pane stopped including Web Sharing controls in 10.9 Mountain Lion. If you still want to use your Mac as a Web server—without installing Sierra Server—read Adam Engst’s TidBITS article [How to Bring Web Sharing Back to Mountain Lion](#) (which still applies to Sierra).
- **RSS support:** The Mountain Lion versions of Apple Mail and Safari both removed their earlier support for RSS feeds. Safari in Yosemite brought back RSS support in a somewhat different form; but if you find it inadequate, you can use a third-party RSS client, such as [NetNewsWire](#) or [Vienna](#), to read RSS feeds. Mail still has no RSS support.
- **Renamed apps:** In Mountain Lion, iCal was renamed Calendar and Address Book was renamed Contacts. In addition, a new Notes app appeared (replacing the Notes feature previously in Mail) and a Reminders app appeared (replacing the Reminders feature in iCal).
- **Rosetta:** Starting with 10.7 Lion, Apple removed Rosetta, the software that enabled older, PowerPC apps to run on Intel-based Macs. As a result, upgrading to Sierra entails living without software that requires Rosetta.

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

- a. Open System Profiler (which has been renamed System Information in Lion and later) in [/Applications/Utilities](#).
- b. 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 apps on your Mac.
- c. In the list of software, look for a column named “64-Bit (Intel).” If you don’t see it, you may need to enlarge the window or scroll to the right. (To make the display easier to work with, I suggest dragging the “64-Bit (Intel)” column header to the left, so that

Check Your Mac for Compatibility

All currently shipping Macs, as well as models introduced within the past 6 years or so, can run Sierra. But sadly, after three consecutive OS X upgrades for which the system requirements didn't change at all, Sierra does drop support for some Mac models that were able to run 10.11 El Capitan. You'll want to make sure your Mac is compatible.

In addition, even if your Mac can run Sierra, you may not be able to use every part of it. Certain features, such as Handoff and AirDrop between a Mac and an iOS device, require a recent version of Bluetooth—see [Recent Bluetooth Hardware](#) for an explanation.

The next several pages will help you verify that your hardware is fully compatible with Sierra. And, if you're running 10.5 Leopard or a version of 10.6 Snow Leopard earlier than 10.6.8, you'll want to read [OS X 10.7.5 Lion or Later](#) in order to use the Sierra installer.

I also talk about how this could be a good time to add RAM or complete a firmware update, and I look at special considerations regarding [Free Disk Space](#), [A Magic Input Device](#), and [An Apple ID](#).

Model Support

Sierra no longer supports Mac models introduced before late 2009, whereas El Capitan could run on most mid-2007 and newer models. Macs that can run Sierra include the following:

- iMac (Late 2009 or newer)
- MacBook (Late 2009 or newer)
- MacBook Air (Late 2010 or newer)
- MacBook Pro (Mid 2010 or newer)

- Mac mini (Mid 2010 or newer)
- Mac Pro (Mid 2010 or newer)

Of course, that list is helpful only if you know which model of Mac you have! If your Mac is running Lion or later, this is easy to check. You can either choose Apple  > About This Mac and (if needed) then click More Info, or open System Information (in [/Applications/Utilities](#)) and choose Window > About This Mac. Either way, you'll see something like **Figure 1**; the Overview pane spells out your Mac's model using Apple's current terminology.



Figure 1: This window on Macs running Lion or later gives you the exact marketing name of your Mac model.

However, if your Mac is running Snow Leopard, nowhere on your Mac can you *see* these designations (like “Late 2009”). Instead, you'll have to go by your Mac's Model Identifier. To find it, open System Profiler (in [/Applications/Utilities](#)). In the list on the left, make sure Hardware is selected, and look for the line that says Model Identifier. It consists of your Mac model name followed by a pair of numbers, without spaces—as in [MacBook6,1](#).

Once you know your Mac's Model Identifier, you can look it up in my *enhanced* version of Apple's list, below. (Keep in mind that the

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 do normally (such as using Time Machine or CrashPlan), I want to state emphatically that before upgrading to Sierra, you should create a specific type of backup called a *bootable duplicate*. That's an exact copy of everything on your startup volume, stored on 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 boot from your regular startup volume.

Even though the Sierra installer doesn't force you to make this type of backup, it's not something you can safely skip if it's inconvenient or if you're pretty sure you won't have problems. In my professional opinion, 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.

Note: I say "volume" here rather than "disk" because your startup volume could be an SSD (solid-state drive). Some Mac models use what Apple calls "solid-state storage," which is different from an SSD only in its physical configuration. I'll use the term "SSD" to refer to any type of solid-state storage.

After you duplicate your startup volume, I'm going to tell you to do some spring cleaning (see [Clean Up Your Mac](#)), and then I'm going to tell you to update your duplicate. 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 Sierra.

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!](#).

Tip: Upgrading or not, every Mac user should have a thorough backup strategy; you can learn how to minimize downtime and thoroughly protect your important information by reading my comprehensive book [Backing Up Your Mac: A Joe On Tech Guide](#).

Why You Need a Duplicate

As I said, the particular type of backup you want at this moment—regardless of any other backups you may have—is a bootable duplicate, which is a clone or mirror image of everything on your startup volume. You can't make a bootable duplicate in the Finder by dragging and dropping files onto another disk, and backup programs like Time Machine and CrashPlan (though they're both fantastic for what they do) can't make them either. You must use a backup program that's designed specifically for making a bootable duplicate.

Everyone should create a bootable duplicate and update it regularly (at least once a week) as part of a solid backup regimen. In day-to-day use, duplicates are important because they let you get back to work almost instantly in the event of a major disk error or even a complete failure of your hard drive or SSD. You simply plug in the backup drive, reboot while holding the Option key, and select the external drive, and you're back up and running. You can then use the backup disk to repair your internal startup volume and restore your files—or if the drive is too far gone, replace it at your leisure.

However, aside from that “nice-to-have” reason for making a duplicate, you truly need one when it comes time to upgrade your operating system. Despite Apple's valiant efforts at idiot-proofing the installer, something could go wrong—either during the upgrade or afterward—that deletes important files, leaves your disk unusable, or results in your needing to revert to your previous version of OS X. Bootable duplicates let you recover from these situations handily.

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 also cause problems when you upgrade to Sierra—incompatibilities may show up, or you may run out of disk space, for example.

Sierra includes new features for helping you rid your Mac of this clutter, and that's something you should consider setting up later on. For now, though, it's important to deal with the clutter that could interfere with installing and running Sierra in the first place.

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 Sierra.

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 Sierra.

Update Your Third-party Software

Every major upgrade to the Mac operating system results in software compatibility problems, where some apps work poorly or won't launch. Most of us will have to update at least a few apps to make them work correctly under Sierra. If history is any indication, some incompatible apps 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 macOS, and “Sierra-compatible” software updates have already been appearing for months.

Tip: [RoaringApps](#) maintains a wiki listing hundreds of Mac and iOS apps and the current status of their compatibility with various operating system versions, as reported by users. Although this list is neither exhaustive nor definitive, it provides a quick way to check on the apps most important to you.

The Sierra installer looks for, and disables, certain types of incompatible software—but there’s no guarantee it will find everything. Given the choice, you’re usually better off upgrading third-party software *before* you install a new version of your operating system. In cases where low-level incompatibilities exist, especially with things like drivers, preference panes, kernel extensions, and startup items, you can save yourself grief by preventing, rather than fixing, the problem.

Apple built an update mechanism into the App Store, so any apps you downloaded from the App Store can also be updated there—and App Store updates are free. To check for and apply App Store updates:

1. Choose Apple  > Software Update (in Mavericks or earlier) or Apple  > App Store (in Yosemite and later), which opens the App Store app and checks for updates. If any are available, the Updates icon in the toolbar (as well as the App Store’s Dock icon) displays a badge showing the number of updates.
2. Click Updates in the toolbar to display a list of available updates.
3. To update a single app, click the Update button next to it. Or, to update all the listed apps at once, click Update All.
4. If prompted to do so, enter your Apple ID and password, and click Sign In.

The App Store downloads and installs the updates automatically.

Note: Even though updates from the App Store are free, some developers release entirely new apps (which require an additional purchase) to replace older apps, and which version you use depends on the version of macOS you’re running.

Decide on an Installation Method

The Sierra installer doesn't ask you to pick an installation method, as was the case for installers of years past. However, you still have some choices. You can approach the process in either of two ways:

- **Plan A: In-place Upgrade:** This easy, default method is appropriate for most people (including anyone [Upgrading to \(or from\) the Sierra Beta](#)), 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.

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 between these two plans and help you choose which way to go. Then, in later chapters, I give you step-by-step instructions for each plan.

Upgrading a New Mac

If your "upgrade" involves not only upgrading a new (or new to you) Mac to Sierra but also moving your 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 the files from your old Mac or PC to your new Mac.

However, if the new Mac contains software that 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 Sierra. See [How to Migrate to a New Mac](#).

Upgrading to (or from) the Sierra Beta

If you're planning to install the Sierra public beta before the final Sierra release, everything in this book still applies, except that the wording will be different in spots. However, what if you've *already* installed the public beta and are using this book to upgrade from the beta to the final release?

You can still choose from Plans A and B—nothing changes there, because it's possible to do either an in-place upgrade from the beta to the final version or a clean install of the final version that migrates data from the beta.

However, if you installed the Sierra beta on a separate volume—not your ordinary startup volume—my advice is to restart from your main El Capitan volume, create a bootable duplicate of your startup volume, and then choose Plan A or Plan B as though you'd never used the beta at all. Once you're sure everything is present and functional, you can erase your Sierra beta volume.

Note that if you used SuperDuper's sandbox feature to install the Sierra beta on an external drive while keeping your user data (and perhaps your apps) on your El Capitan volume, you can still upgrade your El Capitan volume to Sierra (again, using Plan A or Plan B). Doing so will break the sandbox—not that it's likely to matter much. To learn how to handle this situation, see [Upgrading from a SuperDuper Sandbox](#).

Plan A: In-place Upgrade

As has been true since Snow Leopard, the Sierra installer offers a single upgrade method that attempts to make the transition simple by leaving almost all your files, apps, and settings in place. You run the installer as you would any other app, and it replaces all the components of your old OS X installation with their Sierra equivalents, while deleting those that are obsolete—just as the App Store app does when it installs minor updates.

In the past, one of the main reasons to avoid the default upgrade method was that some of the existing software left behind could

Make Final Preparations

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

Note: If you're installing the public beta now, come back to this chapter once the final release is out and follow its steps again.

Turn Off Anti-malware Software

In general, anti-malware software doesn't interfere with purchases and upgrades from the App Store. However, when Apple released Mountain Lion, users reported that the Ad Banner Filter in Intego's VirusBarrier software sometimes interfered with the process of downloading the installer. Something similar could happen again, and other anti-malware apps could also conceivably prevent Sierra from downloading properly. So, the easiest course of action is to turn off any anti-malware or ad-blocking software you may have until you have successfully downloaded Sierra, and then turn it back on.

Obtain the Installer

Depending on your situation, obtaining the Sierra installer may be a trivial matter of a few clicks, or it may be an involved ordeal.

Download Sierra on the Destination Mac

If you have a broadband Internet connection that can handle a 5 GB download, obtaining Sierra is just like downloading any other app:

1. Click the App Store icon in your Dock, click Featured, and locate macOS 10.12 Sierra (which should be displayed prominently).

2. Click Download.
3. If prompted, enter your Apple ID and password, and click Sign In.

The Sierra installer downloads to your [/Applications](#) folder—a process that could take anywhere from minutes to days, depending on the bandwidth of your broadband connection.

Estimating Your Download Time

For an estimate of your download time, use a speed test Web site, such as [M-Lab's Network Diagnostic Test](#), to see the effective download bandwidth of your Internet connection. Then visit a site like [Download Time](#) and enter 5 GB (the approximate size of the Sierra download) and your bandwidth to find out how long your download should take.

After it downloads, the installer launches automatically.

But we're not ready to install Sierra quite yet, so choose Install macOS Sierra > Quit Install macOS Sierra to quit the installer for the time being; we'll return shortly!

The App Store and Multiple Macs

If you have more than one Mac—each running Snow Leopard or later and signed in to the App Store with the same Apple ID—then once you download Sierra on one, it will show up in the Purchased view on the others too.

If you have bandwidth (and time) to spare, you can click Install on each Mac to download the Sierra installer. (If your Macs use *different* Apple IDs in the App Store, you can choose Store > Sign Out, choose Store > Sign In, enter the other Apple ID, re-download Sierra, and then repeat the procedure to sign in under the original account.)

But why go to that bother? It's faster and easier to copy the installer from [/Applications](#) on the first Mac to the others using the Mac's built-in File Sharing feature (hint: look in System Preferences > Sharing) or another method of your choice. Or, you may want to [Make a Bootable Sierra Installer Volume](#).

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 installers of old, the Sierra installer requires no separate startup disc; you simply run an app and it does its thing. However, if you haven't already done so:

- 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 apps. (The installer attempts to do this for you—and prompts you if it can't—but you might as well take care of this beforehand.)

Note: Not to belabor the point, but now that we're two clicks away from installing Sierra, 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 the process, double-click the Install macOS Sierra icon in your `/Applications` folder or wherever else you put it. A window appears with just one button: Continue. Click it!

If you happen to be installing the Sierra public beta, you'll see an additional alert here urging you to have a current backup of your data.

But you already do—right?—so just click Continue. (If you don't, go back and read [Back Up Your Disk](#).)

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

Select a Destination

The next screen asks you confirm which volume you want to install Sierra onto. In most cases, it displays its best guess—typically your startup volume (**Figure 6**)—but in some situations you may see multiple disks here, in which case you should select the one you want. To install Sierra onto a volume that's not shown, click Show All Disks to display all available options and then make your selection.

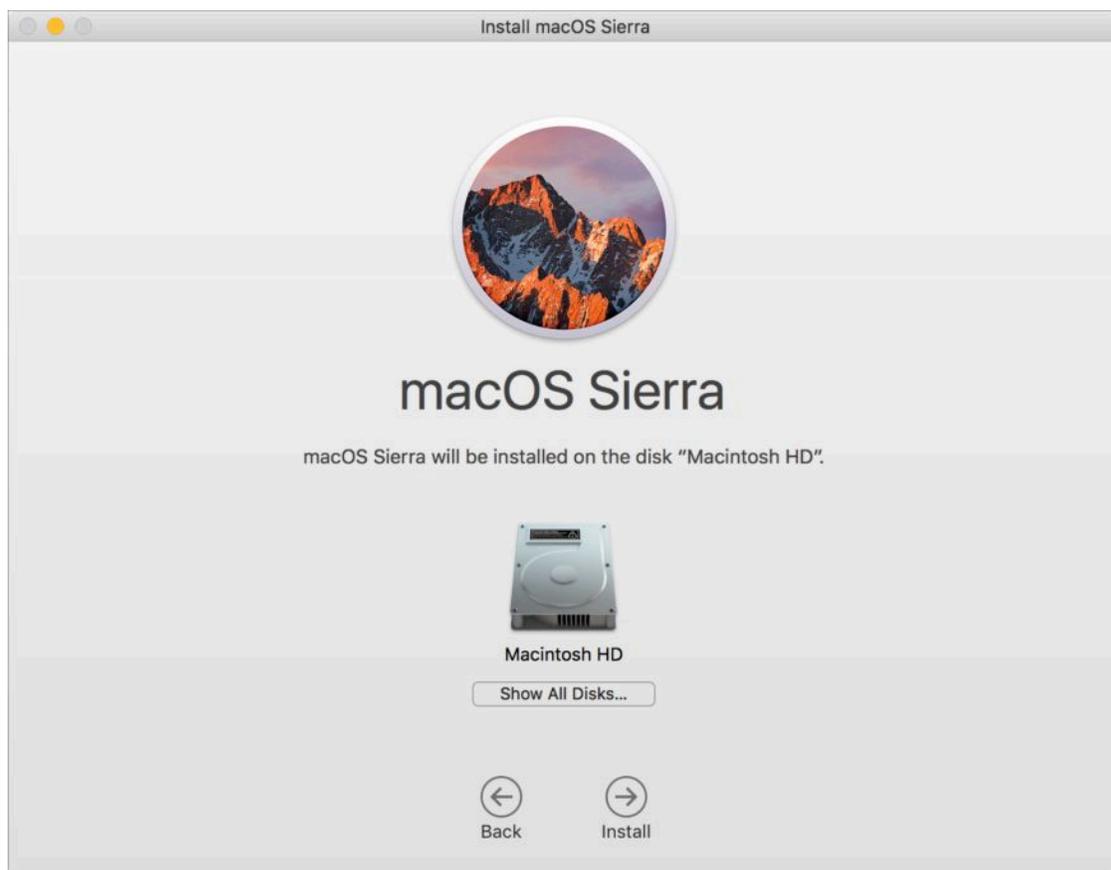


Figure 6: If the installer's best guess as to your desired destination isn't right and the one you want isn't visible, click Show All Disks.

Upgrade Using Plan B: Clean Install

If you prefer a cleaner installation of Sierra 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, transfer data from your bootable duplicate).

Start Up from Your Bootable Duplicate

Unlike Plan A’s in-place upgrade, Plan B requires a bootable duplicate of a Snow Leopard, Lion, Mountain Lion, Mavericks, Yosemite, or El Capitan volume, which accomplishes three things:

- You must erase the destination volume first. But you can’t erase the volume your Mac is currently running from, so you must start up from another volume.
- You’ll need access to the Sierra installer too, of course, so it’ll be easiest if the volume you start up from contains the installer.
- Once Sierra 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.

To start up from your duplicate:

1. Make sure the disk containing your duplicate is physically connected to your Mac (via Thunderbolt, USB, FireWire, or eSATA).

2. Choose Apple  > Restart.
3. Press and hold the Option key until a list of available startup volumes appears on screen.
4. Use the arrow keys to select your duplicate, and then press Return to boot from it.

Now that you've booted from what is about to be your *old* copy of OS X, you can erase your main disk and install Sierra onto it.

Erase Your Disk

Having started up from your duplicate, to erase your destination volume in preparation for Sierra, follow these steps:

1. Open Disk Utility (on your duplicate, in [/Applications/Utilities](#)).
2. In the list on the left, select the volume you want to erase. Volume names (there may be one or more per disk) are shown indented under the disk name, so be sure to select one of the indented icons.

Choose carefully! Triple-check to be sure that the volume you're erasing is the one where you want to install Sierra, and that it's the one you have a backup copy of on your bootable duplicate!

3. Click the Erase button.
4. Make sure Format is set to OS X Extended (Journaled) (or, on older systems, Mac OS Extended (Journaled)), and click Erase.
5. If you see a confirmation dialog, click Erase again. Disk Utility erases the disk, which normally takes just a few seconds. Click Done if prompted to do so when the Erase process is complete.
6. Choose Disk Utility > Quit Disk Utility.

You're now ready to install Sierra on the empty volume.

Perform Post-installation Tasks

If everything has gone as expected, your Mac is now successfully running Sierra. (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.

Respond to Immediate Questions

My test installations of Sierra have used various combinations of starting points, configurations, and upgrade paths. In some cases, after installing, I saw a normal Desktop and nothing more. In other situations—especially when I upgraded older versions of OS X, had a lot of third-party software, or wasn't previously logged in to iCloud—I was immediately confronted with a large stack of overlapping dialogs and notifications.

Among the most common questions are requests for your user account password or Apple ID password. For example, certain apps may once again need an administrator's authorization to make changes to your data, and various apps that use your Apple ID (including iTunes and iBooks) may need you to sign in again.

Tip: Even if you're not prompted, it's a good idea to check System Preferences > iCloud to make sure you're signed in to iCloud (and with the correct Apple ID). Do the same in iTunes (Account > View My Account) and the App Store (Store > View My Account).

In some situations, you may also see a notification like the one in **Figure 9**. This appears to mean that, in the process of syncing your accounts via iCloud with your other Macs, Sierra found one or more

email accounts that were either missing from this Mac or had different settings. To add (or update) the accounts, click Continue; Sierra then opens System Preferences > Internet Accounts, where you can verify all the settings. Or, click Not Now to leave your accounts as is for the time being.

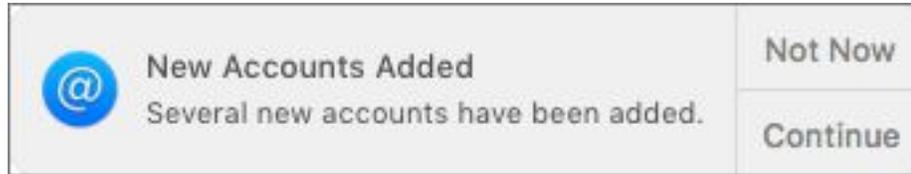


Figure 9: Sometimes email accounts are correctly configured but not turned on until you agree.

Work your way through any such dialogs you see, even if they seem redundant. After that one-time process, most of them will not reappear.

Handle Software Updates

The next thing you should do is to update macOS itself (and any other crucial Apple software) to the latest version. Sometimes Apple releases bug fixes and security updates almost immediately after a major upgrade, and if any such urgent updates are available, it's in your best interest to install them right away.

In Sierra, as in every version of OS X since Mountain Lion, all updates to Apple software—including macOS itself, built-in software such as Safari and QuickTime, and optional purchases such as Final Cut Pro and Pages—are delivered through the App Store app. And, of course, you can update all the third-party apps you've purchased from the App Store at the same time.

In some cases, the App Store notifies you automatically of updates, but I recommend checking manually, shortly after your Mac starts up under Sierra for the first time. You can open the App Store by clicking its Dock icon, double-clicking its icon in [/Applications](#) or in Launchpad, or choosing Apple  > App Store. Then click the Updates button on the toolbar.

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 Sierra Installer...

If the Sierra 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 Sierra (see [Model Support](#) for full details). Solution: Buy a new Mac. (Sorry.)
- The installer didn't fully download, or the file was damaged. Solution: First delete the installer. Then open the App Store app, click Purchased, and download Sierra again.

Can't Select Installation Volume...

If you run the Sierra installer, click Show All Disks when asked to choose a destination, and find that the volume on which you want to install Sierra isn't available, chances are excellent that if you click 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 how to fix that problem.

You may also see a message about an “unsupported partition structure,” which means the installer thinks the disk containing the volume where you want to put Sierra isn't partitioned in one of the

officially sanctioned ways. Repartitioning your disk as described in [Prepare Your External Drive](#) is the only reliable solution.

Come to mention it, repartitioning is, in fact, the best (if brute-force) way to eliminate almost every possible cause of an unselectable volume. If all else fails, try that.

Mac Won't Start Up under Sierra...

Following installation—either on the first restart or a subsequent restart—if your machine will not start up under Sierra (or if you experience a kernel panic upon the first restart), try these steps in order until you are able to start up normally:

1. **Disconnect non-essential USB devices:** USB devices have been known to interfere with the Mac startup sequence, so if your Mac gets stuck on a gray screen and won't finish booting, try this:
 - a. Press and hold the power button for about 10 seconds until your Mac shuts down.
 - b. Disconnect all USB cables from your Mac *except* any that go to a keyboard, mouse, or other pointing device.
 - c. Press the power button again and wait for your Mac to start. If it starts normally, you can then reconnect your USB devices. If it's still stuck after 10 minutes or so—or if it starts but then you experience a kernel panic—move on to the next step.
2. **Try a Safe Boot:** Restart your Mac. (If the Mac is frozen or you see a kernel panic message, press and hold the power button for about 10 seconds until the Mac shuts down. Then press the power button to turn it back on.) As soon as you hear the startup chime, press Shift. Release the key when the gray Apple logo appears on the screen. The Mac will complete the startup process, which may take considerably longer than usual. You'll eventually see the words "Safe Boot" on the screen—likely in red at the top of the login screen.

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Joe Kissell is the author of more than 50 books about technology, including [*Maintaining Your Mac: A Joe On Tech Guide*](#) and [*Take Control of Your Online Privacy*](#). He is also a contributing editor to TidBITS and a senior contributor to Macworld.

When not writing, Joe likes to travel, walk, cook, eat, and practice t'ai chi. He lives in San Diego with his wife, Morgen Jahnke; their sons, Soren and Devin; and their cat, Zora. To contact Joe about this book, [send him email](#) and *please* include [Take Control of Upgrading to Sierra](#) in the subject of your message.

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