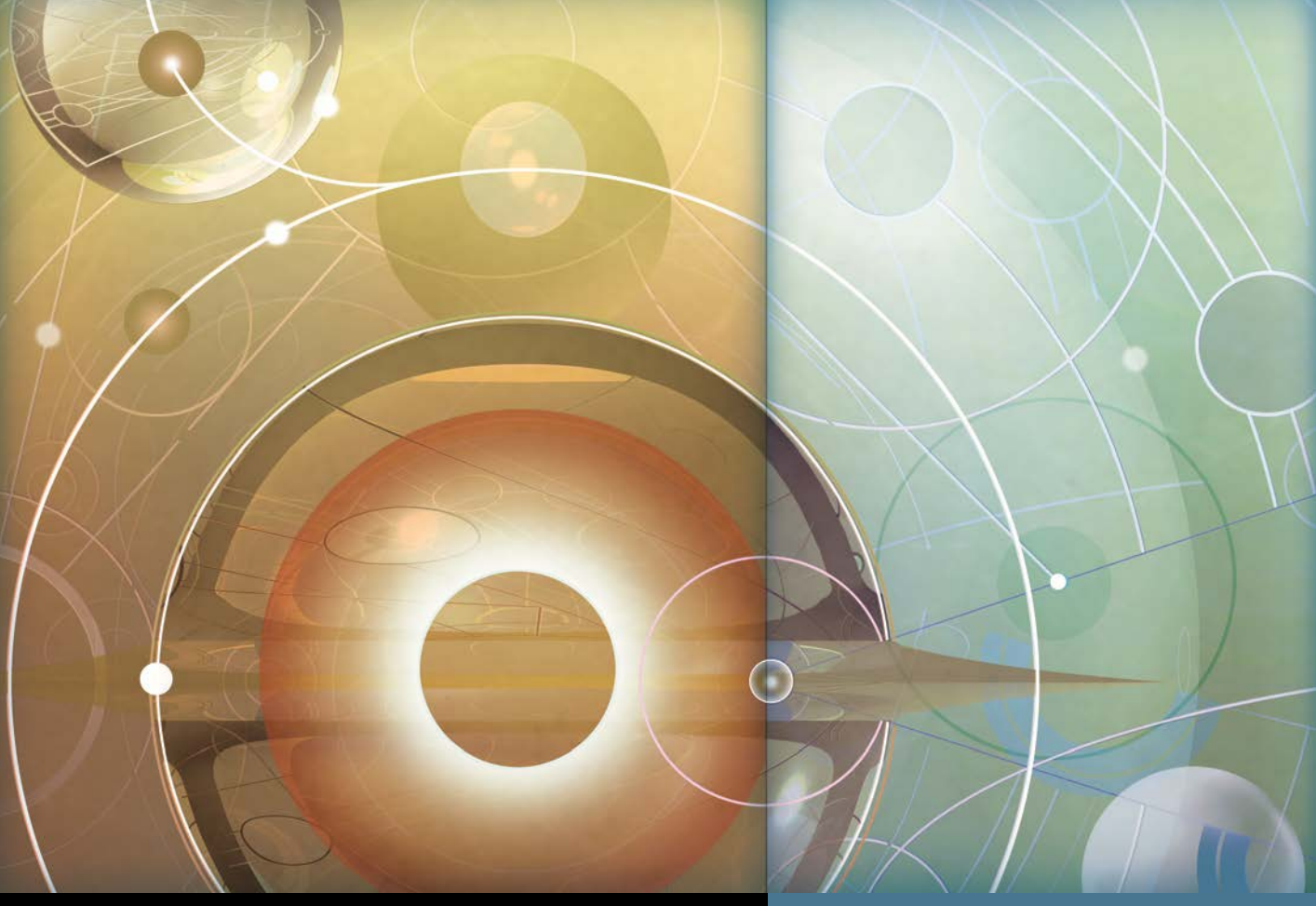

Apple Pro Training Series

OS X Support Essentials 10.11

Supporting and Troubleshooting OS X El Capitan

Kevin M. White and Gordon Davisson

Apple Certified

Lesson and media files available for download

Certification Exam Preparation for
Apple Certified Support Professional 10.11

Apple Pro Training Series

OS X Support Essentials 10.11

Kevin M. White and Gordon Davisson

Apple Pro Training Series: OS X Support Essentials 10.11
Kevin M. White and Gordon Davisson
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IMPORTANT: Some of the exercises contained in this guide can be temporarily disruptive, and some exercises, if performed incorrectly, could result in data loss or damage to system files. As such, it's recommended that you perform these exercises on a Mac computer that is not critical to your daily productivity.

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I could not have made this journey without the support of my family and loving wife, Michelle.

This book is dedicated to my greatest works: Logan, Sawyer, and Emily.

—Kevin White

Much appreciation to my amazing wife, Berit Benson, and her uncanny ability to sense when I needed coffee the most.

—Gordon Davisson

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About This Guide

This guide serves as a tour of the breadth of functionality of OS X El Capitan and the best methods for effectively supporting users of OS X systems. It is intended for both self-paced learners and those participating in an instructor-led course. This guide is the curriculum for the official Apple training course El Capitan 101: OS X Support Essentials 10.11, a three-day hands-on course that provides an in-depth exploration of how to troubleshoot on OS X El Capitan. This course is facilitated by an Apple Certified Trainer and is organized into multiple lessons, each containing instructor presentations followed by related student exercises.

GOALS

- Explain how this guide is organized to facilitate learning
- Set up an environment for self-paced exercises
- Introduce Apple Training and Certification courses and exams

The primary goal of this guide is to prepare help desk specialists, technical coordinators, service technicians, system administrators, and others who support Mac users to knowledgeably address customer concerns and questions. This goal includes providing learners with the ability to return a Mac computer running OS X back to normal operation using the proper utilities, resources, and troubleshooting techniques.

Whether you are an experienced system administrator or just want to dig deeper into OS X, you'll learn in-depth technical information and procedures used by Apple-certified IT professionals to install, configure, maintain, and diagnose Mac computers running OS X.

Unless otherwise specified, all references in this guide to OS X or OS X El Capitan refer to version 10.11, which was the most current version available at the time of writing. Due to subsequent updates, some screens, features, and procedures may be slightly different from those presented in these pages. When available, you can access updates to this guide on the Updates tab for the book at www.peachpit.com/apts.osxelcapitan.

Learning Methodology

Each lesson in this guide is designed to help experienced users become experts who are able to support other OS X users by:

- Providing knowledge of how OS X works
- Showing how to use diagnostic and repair tools
- Explaining troubleshooting and repair procedures

For example, in Lesson 19, "Manage Basic Network Settings," you'll learn fundamental networking concepts (knowledge). You'll experience using network configuration and troubleshooting applications such as Network preferences and Network Utility (tools). And you'll explore methods for resolving network issues (procedures). In addition, each lesson includes troubleshooting techniques for dealing with common issues related to the topic at hand.

This guide assumes a basic level of familiarity with OS X at the user level. This guide does not cover basic usage of the system, but a good place to start is the Apple Mac Basics support site, www.apple.com/support/macbasics/. Again, it's strongly suggested that you be comfortable using a Mac before you begin the exercises in this guide.

Lesson Structure

Each lesson in this guide contains a reference section followed by an exercise section.

> **NOTE ►** "Note" resources, like this one, offer important information or help clarify a subject. For example, some of the exercises in this guide may be disruptive. Consequently, it's recommended that you perform these exercises on an OS X computer that is not critical to your daily productivity.

The reference sections contain initial explanatory material teaching essential concepts. The exercise sections augment your understanding of concepts and develop your skills through step-by-step instruction for both self-paced learners and the hands-on portions of an instructor-led course.

> **TIP** "Tip" resources, like this one, provide helpful hints, tricks, or shortcuts. For example, although the exercises help reinforce reference content, the OS X Support Essentials 10.11 Exam content is derived only from the reference sections of this guide.

Throughout this guide you'll find references to Apple Support articles. You can find these articles at the Apple Support website (www.apple.com/support/), a free online resource containing the latest technical information for Apple products. We strongly encourage you

to read the suggested documents and search the Apple Support website for answers to any problems you encounter.

> **MORE INFO ►** The "More Info" resources, like this one, provide ancillary information. These resources are merely for your edification and are not considered essential for the coursework.

Lesson files and bonus materials are available online when you redeem the access code supplied with your guide at www.peachpit.com/redeem. The "Lesson Review Questions & Answers" appendix recaps each lesson through a series of questions that reinforce the material you learned in the guide. You can refer to the lessons and various Apple resources, such as the Apple Support website and documentation, mentioned in the guide. Answers are also provided to confirm your understanding of the concepts. The "Additional Resources" appendix contains a list of relevant Apple Support articles and recommended documents related to the topic of each lesson.

Exercise Requirements

This guide is written so that both the self-paced learner and those attending an Apple Authorized Training Center or Apple Authorized Training Center for Education (AATC or AATCE) can complete most of the exercises using the same techniques. Those attending the El Capitan 101 course at an AATC or AATCE will have the appropriate exercise setup provided as part of the training experience. Self-paced learners attempting these exercises will have to set up an appropriate environment using their own equipment.

> **NOTE ►** Some of these exercises can be disruptive—for example, they may turn off network services temporarily—and some, if performed incorrectly, could result in data loss or damage to system files. Consequently, it's recommended that you perform these exercises on an OS X computer that is not critical to your daily productivity. Apple Inc. and Peachpit Press are not responsible for any data loss or any damage to any equipment that occurs as a direct or indirect result of following the procedures described in this guide.

Mandatory Requirements

To perform the exercises in this guide, you must have some basic necessities:

- Mac computer meeting the requirements to run OS X El Capitan
- OS X El Capitan (Exercise 1.2, "Upgrade to OS X El Capitan," includes instructions for downloading El Capitan if you do not already own it)

- A high-speed Internet connection
- Student materials demonstration files, which can be obtained by redeeming the code provided with your guide (instructions to redeem the code and download are included in Exercise 2.5, "Download the Student Materials Independently")

Optional Add-Ons

Most of these exercises assume access to one or more of the following additional resources (specific resources needed for each exercise are listed at the beginning of the exercise):

- An iCloud account. You can use an existing iCloud account or set up a new free account during the exercises.
- An Apple ID that can make purchases from the Mac App Store. You can use an existing account or set up a new account during the exercises. You do not have to enter a credit card or payment information to download free items.
- An erasable external USB, FireWire, or Thunderbolt disk with a capacity of at least 1 GB (or 8.8 GB for Exercise 3.2, "Create an OS X Install Disk").
- An isolated network or subnet with an exercise-specific configuration. This can be facilitated with something as simple as a small network Wi-Fi router with multiple Ethernet ports. For example, the Apple AirPort Extreme (www.apple.com/airport-extreme/) would be a good choice. Instructions for the general setup of an exercise network and specific instructions for the configuration of AirPort Extreme are available with the lesson files and bonus material when you redeem the access code provided with this guide at www.peachpit.com/redeem.
- A Wi-Fi interface in your computer and access to at least two Wi-Fi networks (at least one of which is visible).
- An additional Mac system running OS X El Capitan.
- A FireWire, Thunderbolt, or USB-C cable (as appropriate) to connect the two computers.
- Optionally, the additional Mac system can have OS X Server installed and set up with an exercise-specific configuration. Any Mac that can run OS X El Capitan can run OS X Server after purchasing it from the Mac App Store for $19.99. Specific instructions for configuring an OS X Server for exercise use are available with the lesson files and bonus material when you redeem the access code provided with this guide at www.peachpit.com/redeem.
- If your computer has a Retina display, a magnifying glass may be helpful for Exercise 26.2, "Use Single-User Mode."

If you lack the equipment necessary to complete a given exercise, you are still encouraged to read the step-by-step instructions and examine the screenshots to understand the procedures demonstrated.

Exercise Order

The exercises in this guide are designed to be relatively independent of each other so that you can complete them out of order or skip exercises. However, there are some exercises you must perform in the correct order:

- If your computer is not running OS X El Capitan yet, you must perform the appropriate exercises in Lesson 1, "Install OS X El Capitan," to upgrade or reinstall it.
- You must perform the appropriate exercises in Lesson 2, "Set Up and Configure OS X," to set up your computer for any of the later exercises.
- Exercise 5.1, "Create a Standard User Account," and Exercise 6.1, "Restore a Deleted User Account," create user accounts that many later exercises depend on.

Some exercises also have specific dependencies on other exercises; these will be listed as prerequisites at the beginning of the exercise.

Accessing the Web Edition

This book is part of the Peachpit Content Update Program. As Apple updates features of OS X El Capitan, sections of this book may be updated or new sections may be added to cover relevant updates to the software. The updates will be delivered to you via a free Web Edition, which contains the complete text of this guide and can be accessed with any Internet connection.

Your purchase of this Apple Pro Training Series guide in any format includes access to the corresponding Web Edition through a simple registration process. The Web Edition contains the complete text of the book, which may be updated with corrections and content for software updates when relevant.

If you purchased your book from Peachpit.com, your book is automatically registered. You can find the link to your free Web Edition under the Digital Purchases tab on your Account page.

If you purchased your book through any other channel, it must be registered:

1 Go to www.peachpit.com/register.

2 Sign in or create a new account.

3 Enter ISBN: **9780134428208**.

4 Answer the questions as proof of purchase.

5 The Web Edition will appear under the Digital Purchases tab on your Account page. Click the Launch link to access the product.

Apple Training and Certification

The Apple Training and Certification program is designed to keep you at the forefront of Apple technology. Certification creates a benchmark to demonstrate your proficiency in specific Apple technologies and gives you a competitive edge in today's evolving job market.

Certification exams are delivered at Apple Authorized Training Centers around the world.

Reading this guide or attending the El Capitan 101 course will help prepare you to pass the OS X Support Essentials 10.11 Exam and become an Apple Certified Support Professional (ACSP).

- ACSP certification verifies an understanding of OS X core functionality and an ability to configure key services, perform basic troubleshooting, and support multiple users with essential OS X capabilities.
- ACSP certification is designed for the help desk professional, technical coordinator, or power user who supports OS X users, manages networks, or provides technical support for the Mac.
- Students earn ACSP certification by passing the OS X Support Essentials 10.11 Exam. Visit training.apple.com/certification/osxyosemite to review the OS X Support Essentials Exam Prep Guide.

MORE INFO ► To learn more about all Apple certifications, visit http://training.apple.com.

NOTE ► Although all the questions in the OS X Support Essentials 10.11 Exam are based on material in this guide, nothing can substitute for time spent learning the technology. After you read the book, take the class, or both, spend time increasing your familiarity with OS X on your own to ensure your success on the certification exam.

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Lesson 4

Update OS X Software

Adding new capabilities is the very reason "software" exists. It's expected that you will add new applications to increase the capabilities of your Mac and, as products are refined, add new software updates as well. In this lesson, you will configure and use the OS X software update technology, which is an automatic method to keep all your Apple-sourced software up to date. You will also explore an alternative to automatic software updates: manually downloading and installing software update packages.

GOALS

- Configure automatic software update settings
- Automatically update Apple-sourced software
- Manually update Apple software

Reference 4.1
Understand Automatic Software Update

Keeping current with software updates is an important part of maintaining a healthy computer. For that reason, OS X includes an easy-to-use software update mechanism that automatically checks the Apple servers via the Internet to make sure you're running the latest Apple-sourced software. Automatic software update checking is enabled by default as soon as you start using your Mac.

> **NOTE ►** In OS X El Capitan, both administrative and standard users are allowed to install system software updates via the Mac App Store. If your organization restricts this type of activity for nonadministrative users, you can disable automatic software updates, as covered later in this lesson.

Both automatic and manual software updates require an Internet connection to download update installers. The automatic software update mechanism checks only for updates of currently installed Apple-sourced software, including software included with OS X and any software purchased from the Mac App Store.

For most users, Mac App Store software updates require appropriate Apple ID authentication. If you have not previously signed in to the Mac App Store from the

computer you're working on, you will be required to authenticate with an Apple ID. If a Mac App Store item was installed with a different Apple ID and you wish to update the item, you must authenticate with the Apple ID used to purchase the original item.

> **NOTE ►** Some software updates require that you also agree to a new Apple Software License Agreement.

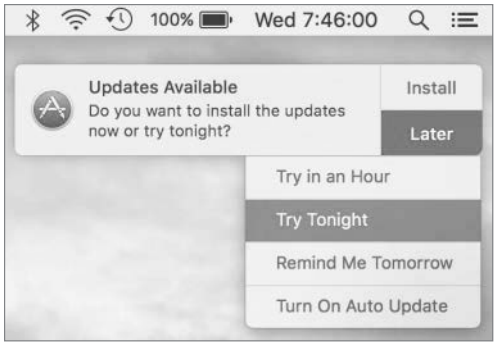
> **NOTE ►** Institutions taking advantage of Volume Purchase Program (VPP) Managed Distribution can install Mac App Store items on OS X computers without signing an Apple ID in to the Mac App Store. You can find out more from the Apple Deployment Programs website, https://deploy.apple.com.

Automatic Software Update Behavior

OS X features unified software updates via integration with the Mac App Store, meaning that all software you have installed from the Mac App Store, including OS X itself and applications created by either Apple or third parties, is updated from a single location. Further, software update is integrated with the Notification Center to let you know as soon as new updates are available for installation.

> **MORE INFO ►** Although it's covered here in terms of its update abilities, using the Mac App Store to install new applications is discussed further in Lesson 16, "Install Applications."

Assuming the default settings, updates for important system files and security software are always automatically downloaded and installed. On the other hand, by default, most OS X system and Mac App Store updates are automatically downloaded in the background but not installed. In this case, when updates are ready to be installed, a Mac App Store notification displays, stating "Updates Available."



From this notification you can click Install or Restart, which will immediately install the updates and restart the computer if necessary.

Alternatively, from the Mac App Store notification you can click Later to display a pop-up menu enabling you to defer the update until a more convenient time. This is especially useful because some system updates prevent you from using the computer while the installation completes, in addition to requiring a restart. The last item in this menu, Turn On Auto Update, allows you to turn on automatic updates for Mac App Store items. This option is not turned on by default on new OS X systems.

Again, by default on OS X, Mac App Store updates will not automatically install. You may, however, receive an additional notification that asks "Turn on Auto Updates?"

Clicking the Turn On button from this notification turns on automatic installation for Mac App Store items. As stated previously, by default, important system and security software are always updated.

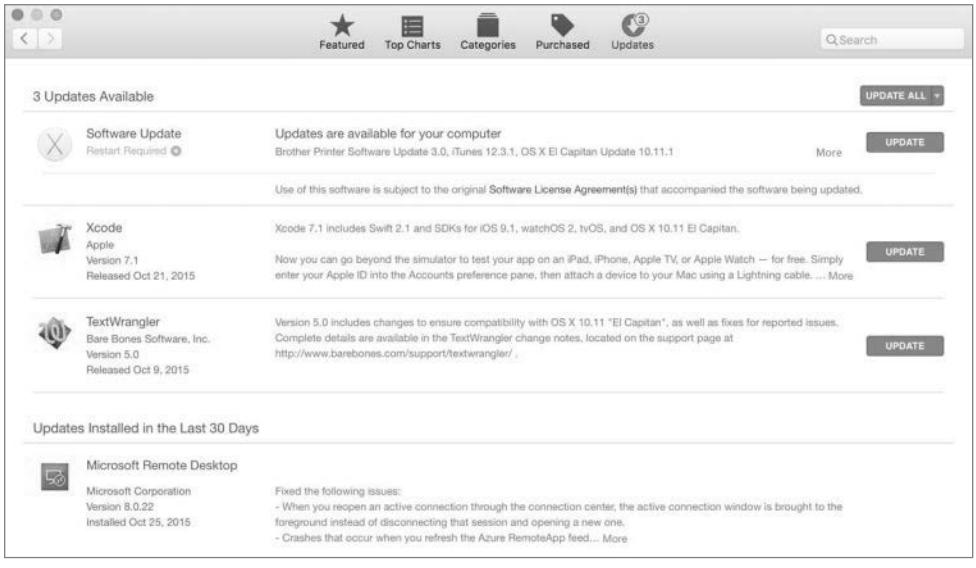
After deferring updates, when you are ready to install updates or want to manually check for new updates, you can do so at any time using the following methods:

- In the About This Mac window, click the Software Update button.
- In the Mac App Store preferences, found in the System Preferences application, click the Check Now button.
- In the toolbar of the Mac App Store, click the Updates button.

TIP When software updates are available, a number badge (indicating the number of available updates) will appear next to the Mac App Store icon, the Mac App Store toolbar Updates button, and the Mac App Store selection in the Apple menu. Also, when you try to restart or shut down the computer, you may be reminded to install available updates.

Mac App Store Update Details

When the Mac App Store opens to show you new updates, each update is listed with information about the software update contents. The information provided includes the update name, the Mac version, and a description. Updates that require a system restart include a notice below the update's name.



As in the previous screenshot, the Updates list is split into three sections:

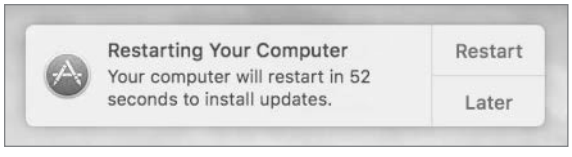
- At the very top are OS X software updates—This section contains only updates for OS X itself or updates for Apple software installed outside of the Mac App Store. Thus, updating these system items does not require that the user be signed in to the Mac App Store. (This is similar to the software update mechanism available in earlier versions of OS X.) To simplify the view, multiple software updates in this top section are hidden. You can see all the updates and their descriptions by clicking the More link next to the Update button in the top section.
- In the middle are individual Mac App Store updates—Items purchased from the Mac App Store, aside from OS X itself, always appear as separate update items. In this screenshot, both Xcode and TextWrangler require updates. Again, you can see more information about any individual software update by clicking the More link in the description. If the Install OS X El Capitan application is still on the system, you may also notice that an update appears for this application within the Mac App Store updates. This is to update any older OS X installer with the latest version.

- At the very bottom are previously installed updates—This section lists only updates installed by this user from the Mac App Store within the last 30 days. It does not list updates installed outside of the Mac App Store or by other users. A complete list of installations can be viewed using System Information, as covered later in this lesson.

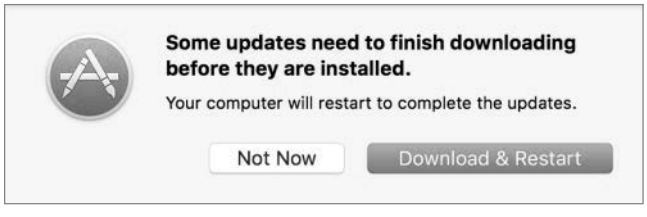
  NOTE ► If you don't believe the items listed in the Updates view to be accurate, you can refresh available updates by choosing Store > Reload Page from the menu bar or by pressing Command-R.

To install a single update, simply click the corresponding Update button, or click the Update All button to install all available updates. If none of the updates requires a restart for installation, the software automatically installs without any further interaction.

However, if any of the updates requires a restart after the install process, you are given the option to restart or again defer the installation. If the update items have already been downloaded, a notification displays.



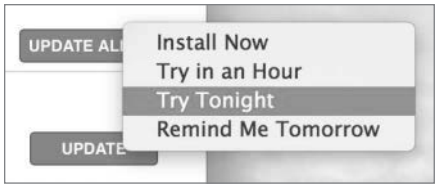
If any of the update items haven't been downloaded, a different dialog appears so that you can confirm you want to download the items and then restart.



In either case, when you select a restart option, the system verifies the downloaded updates, logs out the current user, installs the updates, restarts the system, and then automatically logs back in to the user account that initiated the updates. In the case of an update that requires a restart, through much of the update process the computer will be unusable by the user.

NOTE ► Some system updates may require that you accept new Apple Terms and Conditions, verify your Apple ID, or both. In these cases, the update will not complete until a user interacts with these dialogs.

You can, of course, choose the Not Now button, but you will eventually have to restart to take advantage of the new software. Alternatively, if updates requiring a restart are already downloaded, you can choose an automatic installation option from the Later pop-up menu in the restart notification (shown previously) or from the pop-up menu to the right of the Update All button in the Mac App Store. As you can see in the following screenshot of the Later pop-up menu in the Mac App Store, you can choose to automatically defer the software installation and system restart to a time when it's more convenient.



Bundled Mac App Store Apps

New Mac systems come with iMovie, GarageBand, Pages, Numbers, and Keynote installed along with OS X. These apps will probably also need to be updated. Updating these apps requires that the user's Apple ID owns licenses of the apps. To facilitate this on new Mac systems, a user may "adopt" or "accept" the free app licenses that came bundled with the Mac in the Mac App Store with his or her Apple ID. For more information about accepting these applications, see Apple Support article HT203658, "Accept bundled apps using the Mac App Store."

Older Mac systems upgraded to OS X El Capitan that also have a previous version of iMovie, Garage Band, and the iWork suite of applications can upgrade, for free, to the latest Mac App Store versions. The software update process automatically detects these updates, but you have to authenticate with an Apple ID to accept the licenses for the new versions. For more information about updating these applications, see Apple Support article HT201064, "Update iMovie, Pages, Numbers, Keynote, and Apple Remote Desktop apps that came with your Mac."

> **TIP** Once a user's Apple ID owns a license for an application, that user can install the application on any other Mac by signing in to the Mac App Store. In other words, a user can accept the bundled apps from a new Mac and then sign in on an older Mac to install the latest versions of the apps.

Automatic Software Update Preferences

App Store preferences, accessed via the System Preferences application, enable you to control the software update automation. Changes made in App Store preferences apply system-wide, so these settings will affect all users and how they interact with the Mac App Store.

From the App Store preferences, you can select or deselect the following Mac App Store and automatic software update options:

- Automatically check for updates—When this option is selected, the system checks for updates once a day. Note that "check" means that only a small amount of Internet bandwidth is needed to determine whether updates are needed.
- Download newly available updates in the background—In this case, the update system may need to use a large amount of bandwidth to download updates. It's not

uncommon for OS X system updates to weigh in at over 1 GB. Also, because this option will automatically download updates for applications purchased from the Mac App Store, systems with more applications will likely use more bandwidth.

- Install app updates—This option is not selected by default, but, as covered previously, the system prompts you to select this option via a notification. Once it's selected, you are notified after new Mac App Store items are automatically updated or if you need to quit the application to apply the update. Importantly, automatic Mac App Store updates do not require a system restart.
- Install OS X updates—This option is not selected by default, but, as covered previously, you can also select this option via a notification. Once it is selected, you will be notified after new OS X system items are automatically updated, as long as they don't require a restart. Again, any OS X updates that require a system restart allow you to restart immediately or wait until later.
- Install system data files and security updates—If Apple deems these updates important enough that they should always be installed, it's a best practice to leave this option selected. Keep in mind, though, that some system and security updates require that the system be restarted.
- Automatically download apps purchased on other Macs—This feature is off by default. If this feature is turned on, when you are signed in to the Mac App Store with an Apple ID, new installations made from another Mac using the same Apple ID will automatically install on this Mac as well. This is handy for those who use multiple Mac systems.
- Password Settings—These settings likewise apply only if a user is signed into the Mac App Store with an Apple ID. Adjusting these settings will reduce the number of times a user has to authenticate their Apple ID when making multiple purchases and free purchases.

In App Store preferences, you can also click the Check Now/Show Updates button to manually open the Updates section of the Mac App Store.

MORE INFO ► Standard users can be individually restricted using parental controls, which include the ability to block access to the Mac App Store. You can find out more about parental controls in Lesson 5, "Manage User Accounts," and more about the Mac App Store in Lesson 16, "Install Applications."

Reference 4.2
Manually Install Updates

Before the Mac App Store or automatic software updates, all Mac software was acquired and installed manually. Fortunately, OS X has always featured relatively simple software installation. In fact, many applications require only that the user copy a single application file to the local Applications folder. On the other hand, more complex software may require multiple resources to be placed in a variety of specific locations on your Mac.

A prime example of a complicated software installation is any system software update. In some cases it may be more convenient to manually install an update, as opposed to using automatic software update via the Mac App Store. For example, perhaps you need to install a particularly large software update for a system with limited Internet bandwidth. It may be better to manually download the update to a portable flash disk at a location with more bandwidth and then use the flash disk to apply the update to the Mac that needs it. An experienced OS X support specialist will always have an external disk with the most common large updates handy for just such an occasion.

TIP You have the option of manually downloading and installing Apple software updates. You can find all Apple updates at http://support.apple.com/downloads/. After you download the updates, use the Installer application to apply them.

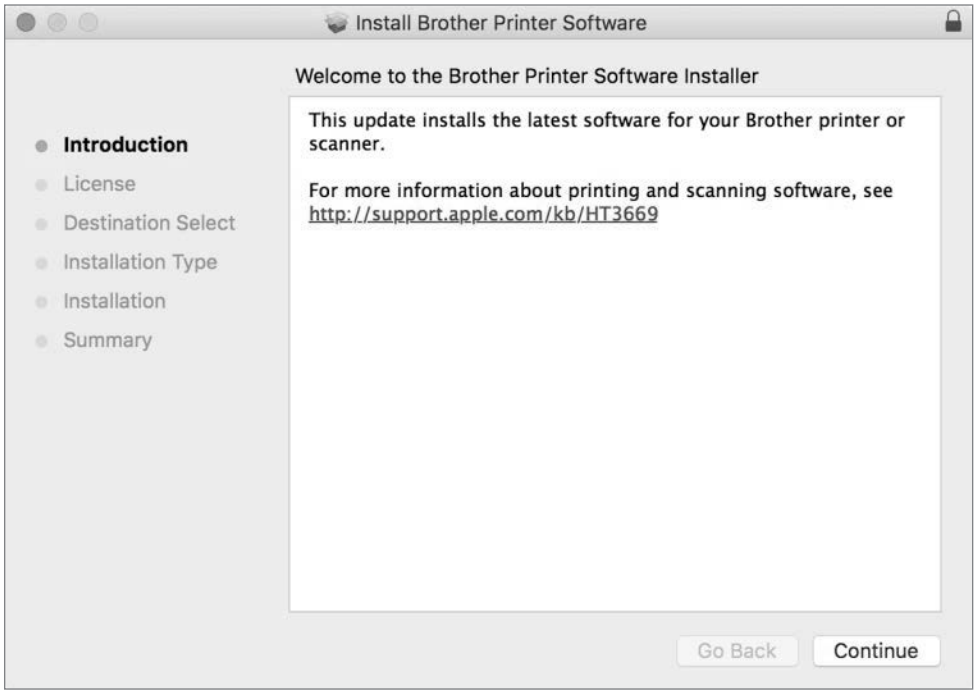
Installer Application

The Installer application makes complicated application installations simple. Often, software developers will create an "installer package" with all the instructions and resources necessary for the Installer application to set up the new software on your system.

MORE INFO ► Though it's covered briefly here, installing new applications is discussed further in Lesson 16, "Install Applications."

BrotherPrinterDrivers.pkg

Double-clicking one of these software installer packages opens the Installer application and begins the installation process. Much like the OS X installation process, the Installer application guides you through the steps necessary to install or update software. This may include agreeing to software licenses, selecting a destination, selecting package options, and authenticating as an administrative user.



Unlike the Mac App Store, the Installer application requires administrative access to install many items. This security mechanism is in place because anyone is allowed to make and distribute traditional OS X installer packages, including those who may have nefarious goals. Another mechanism in OS X, known as Gatekeeper, also provides an additional level of protection against unknown installation packages and software. You can find out more about Gatekeeper in Lesson 16, "Install Applications."

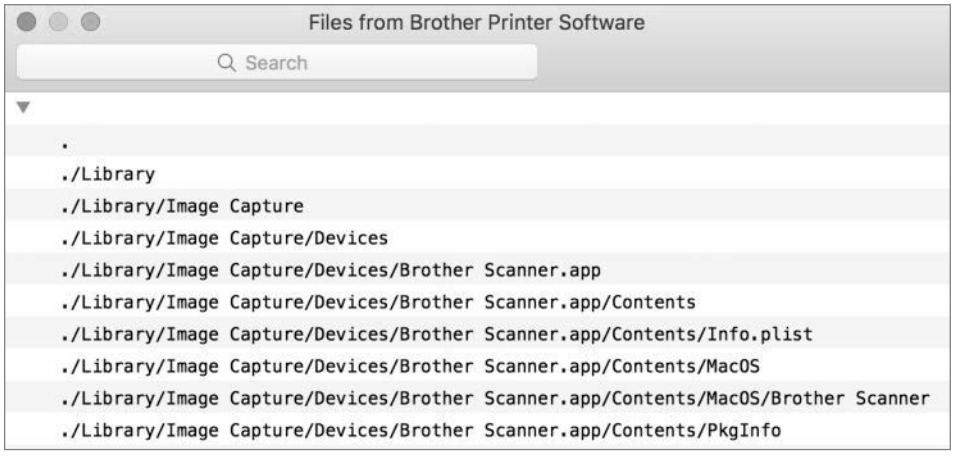
NOTE ► Third-party software developers may choose to use a proprietary, non-Apple installer for their product. These installers behave differently from the Apple Installer.

Advanced Installer Features

If you're curious about what an installation package is actually doing to your Mac, you have two ways to find out. First, you can view the Installer log at any time while using the Installer application by choosing Window > Installer Log or pressing Command-L. The Installer log is a live view of any progress or errors reported during the installation process.

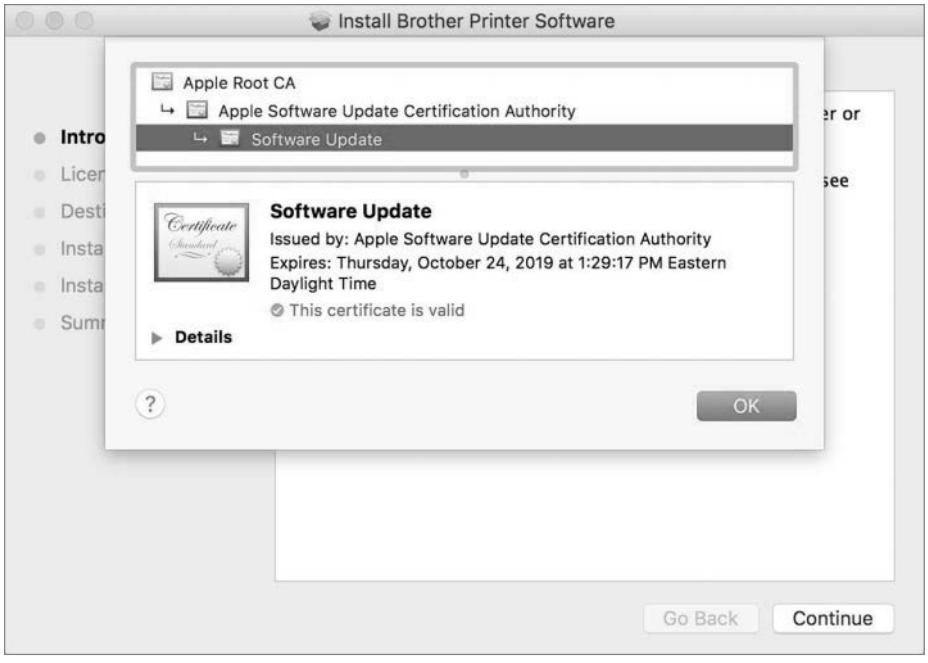
> **TIP** After installation, you can access the Installer log from the /Applications/Utilities/Console application. Once Console is open, select /var/log/install.log.

The second method allows you to inspect the contents of an installer package before installation. After opening an installer package in the Installer application and passing the initial welcome and license screens, you can preview the list of files to be installed by choosing File > Show Files or pressing Command-I.



> **TIP** Save time looking for what you need by using the search field in the toolbar when examining the Installer log or file list.

Apple has endeavored to increase the security and reliability of software installation packages by supporting signed packages. These packages contain special code used to validate the authenticity and completeness of the software during installation. This makes it nearly impossible for malicious parties to insert illegitimate files in trusted installation packages. You can recognize a signed installer package by the small lock icon in the far right of the installer window title bar. Clicking this icon displays details about the signed package, including its certificate status.

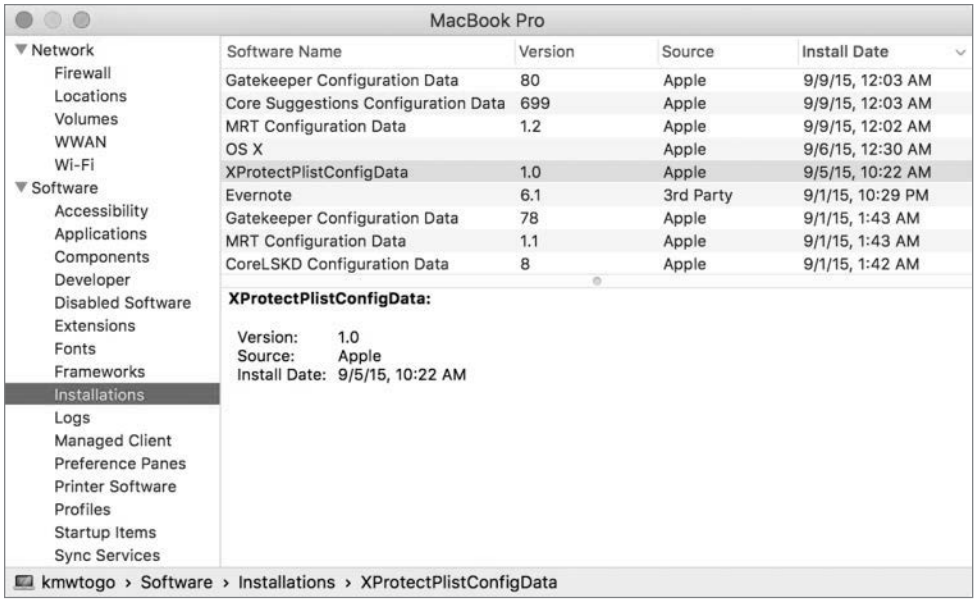


Reference 4.3
Examine Installation History

The automatic software update mechanism in OS X makes it incredibly easy for the average user to maintain an up-to-date system—so much so that the user often isn't even aware of how many updates or installations have been applied. Yet from a support perspective, it's important to know exactly which installations have taken place.

As you may have seen, the update screen in the Mac App Store shows recently installed updates. However, this list of updates doesn't show the complete history of all installations, but only recent installations from the Mac App Store and only for the currently logged-in user account.

Fortunately, the System Information application features a complete installation history report. To view this history, open /Applications/Utilities/System Information, and then select the Installations item in the left column. This interface shows all software installed via the Mac App Store or the Installer application, including both new and update installations from either Apple or third parties. You can see the name, version, acquisition source, and date installed.



Exercise 4.1
Manually Install Software Updates in a Classroom

Prerequisites

- This exercise is for students performing these exercises in a classroom environment. If you are following these exercises independently, perform Exercise 4.2, "Manually Install Software Updates Independently," instead.
- You must have created the Local Admin account (Exercise 2.1, "Configure a New OS X System for Exercises," or Exercise 2.2, "Configure an Existing OS X System for Exercises").

If your instructor has chosen to download any software updates and distribute them as part of the student materials, you can follow these steps to install them. Your instructor will tell you whether you need to do this.

Install Updates from StudentMaterials

1. In the Finder, open the Lesson4 folder in the StudentMaterials folder. Remember that you created a shortcut to the StudentMaterials folder in your Dock.

2. For each software update in this folder (note: your instructor may additionally specify an order in which they should be installed), do the following:

   ▶ Open the disk image file. After a short time, a new volume mounts. It contains the update package.

   ▶ Open the update package. The installer opens and walks you through the installation process.

   ▶ Continue through the installer prompts, and agree to the license agreement if required.

   ▶ When prompted, authenticate as Local Admin again (password: ladminpw, or whatever you chose when you created the account). Installing software updates manually requires administrative privileges.

   ▶ When each update has installed, click Close or Restart as appropriate.

3. Repeat these steps until all the updates have been installed.

4. If you did not restart, eject the disk image or disk images before proceeding. You can do this by Control-clicking in the background of the image's window and choosing Eject from the shortcut menu or by using the Eject button next to the disk image's name in the Finder sidebar.

Exercise 4.2
Manually Install Software Updates Independently

▶ Prerequisites

- This exercise is for students performing these exercises independently. If you are performing these exercises in a classroom environment, perform Exercise 4.1, "Manually Install Software Updates in a Classroom," instead.
- You must have created the Local Admin account (Exercise 2.1, "Configure a New OS X System for Exercises," or Exercise 2.2, "Configure an Existing OS X System for Exercises").

If you want to keep a copy of an update or want to install additional software (such as printer drivers) available for download from the Apple Support site, this exercise shows you how to download and install updates manually.

Download an Update from the Internet

1 Open Safari.

2 Navigate to https://support.apple.com/downloads/.

This page shows the featured updates Apple has made available for download. If you do not see the update you want, click "Browse by Product," and then either browse for it by product category or enter its name in the Search Downloads field.

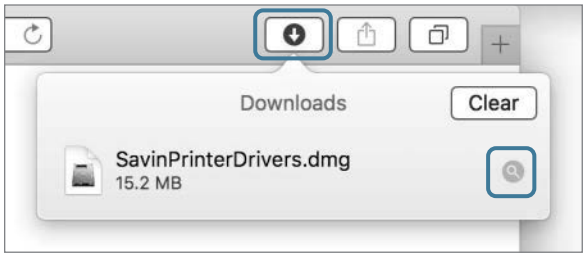
The following screenshots use the Savin Printer Drivers package as an example, but you can choose any update for which your computer is eligible.

3 When you find the update you want to install, click its Download button.

4 Wait for the download to complete. Note that a progress indicator in the Safari Downloads button, near the top right of the window, shows the status of the download.

5 Click the Downloads (down-arrow icon) button near the top right of the window.

6 Click the View (magnifying-glass icon) button next to the update you downloaded.

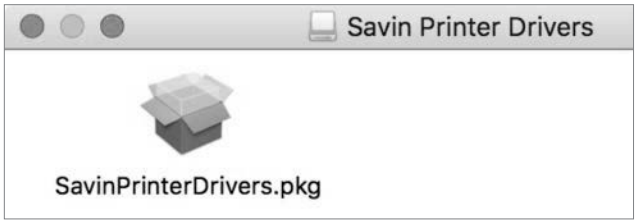


Your Downloads folder opens in the Finder, and the disk image containing the update is selected.

Install the Update

1 Open the disk image file.

The disk image mounts, and you will see the installer package it contains.



2 Open the installer package.

The installer opens and walks you through the installation process.

3 Continue through the installer prompts, and agree to the license agreement if required.

4 When prompted, authenticate as Local Admin (password: ladminpw, or whatever you chose when you created the account).

Manual software updates usually require administrative privileges to install.

5 After the update installs, click Close or Restart as appropriate.

6 If you did not restart, eject the disk image before proceeding. You can do this by Control-clicking in the background of the image's window and choosing Eject from the shortcut menu or by using the Eject button next to the disk image's name in the Finder sidebar.

Exercise 4.3
Use Automatic Software Update

Prerequisite

- You must have created the Local Admin account (Exercise 2.1, "Configure a New OS X System for Exercises," or Exercise 2.2, "Configure an Existing OS X System for Exercises").

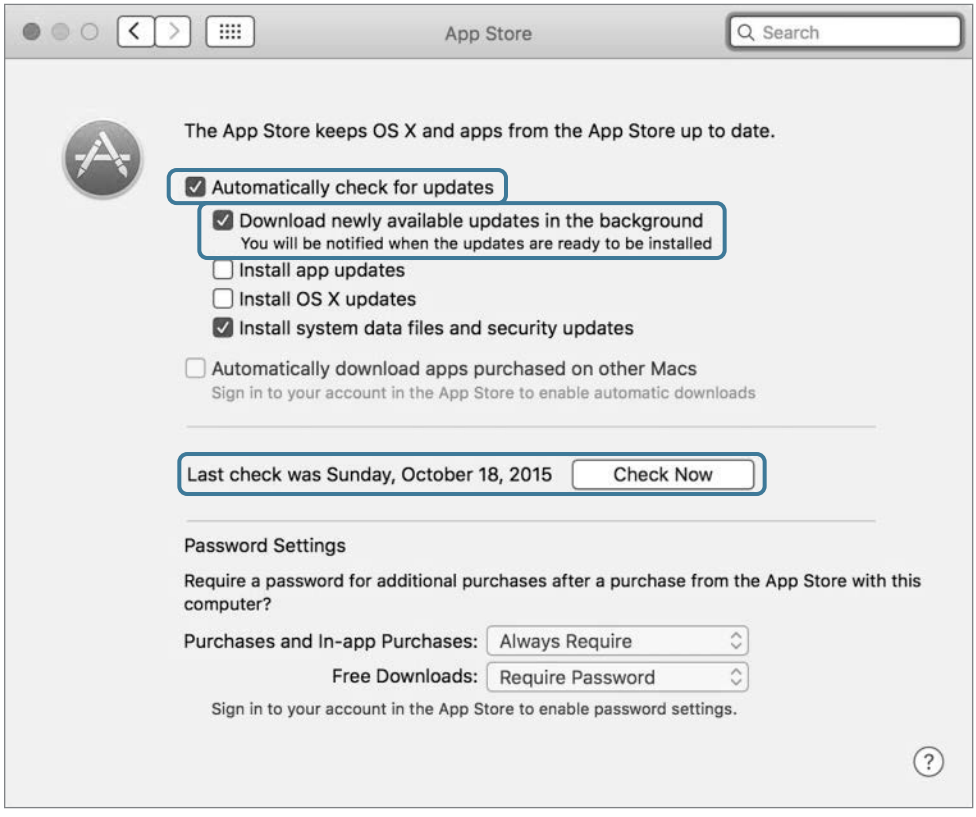
In this exercise, you will use the automatic update feature of the Mac App Store to check for, download, and install updates for OS X. You will also see how to view installed software and updates.

Check Your App Store Preferences

1 From the Apple menu, choose System Preferences.

2 Select the App Store preferences.

Notice that by default the system automatically downloads new updates in the background and then notifies you when they are ready.



Near the middle of the window, there is a line that either shows the last time updates were checked (and has a Check Now button) or indicates there are updates available (and has a Show Updates button).

3 Click the Check Now or Show Updates button.

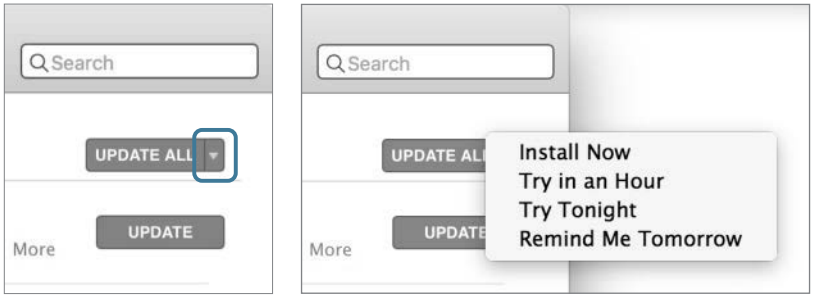
The App Store application opens, and its Updates tab is selected. Note that you can also open the App Store application directly from the Apple menu.

Update Your Software

1 Wait as the App Store checks for new software.

2 If you see a message that says "No Updates Available," your computer is up to date. Skip the rest of this section and proceed to "Check Installed Updates."

3 Click the small triangle next to the Update All button. A pop-up menu appears, with options to install updates later.



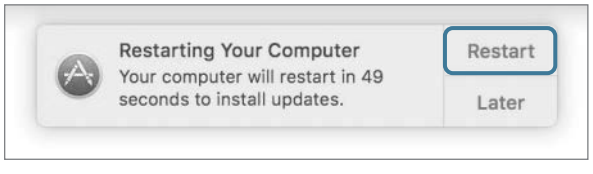
4 Click elsewhere to dismiss the pop-up menu.

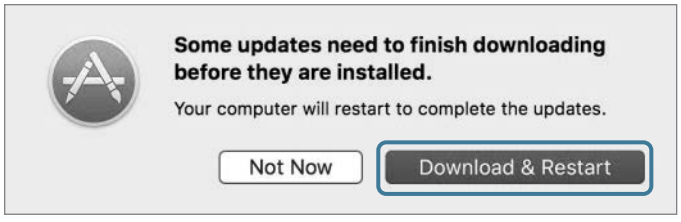
5 Decide which updates you want to install on your computer.

6 If there is more than one update, you can click More to see a detailed list. Click the Update buttons for the updates you want to install, or click Update All if you want all available updates.

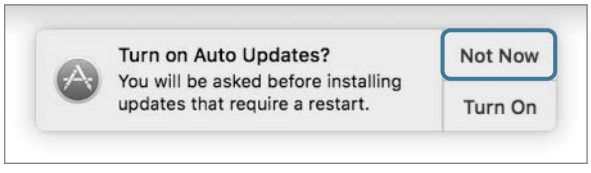
7 If any of the updates are subject to license agreements, you are prompted to agree to them. Read the agreements, and if they are acceptable, click Agree.

8 If you are prompted to restart your computer, click Restart or Download & Restart.





9 If a dialog appears asking if you want to automatically update OS X, click Not Now to keep your current update preference.



10 If the update restarted your computer, log back in to the Local Admin account. If you are prompted to sign in with your Apple ID, select "Don't sign in," click Continue, and then click Skip in the confirmation dialog.

11 Reopen the App Store application and check for additional updates. Some updates must be installed in sequence, so you may have to repeat the update process several times.

12 When all updates have been installed, quit the App Store and System Preferences.

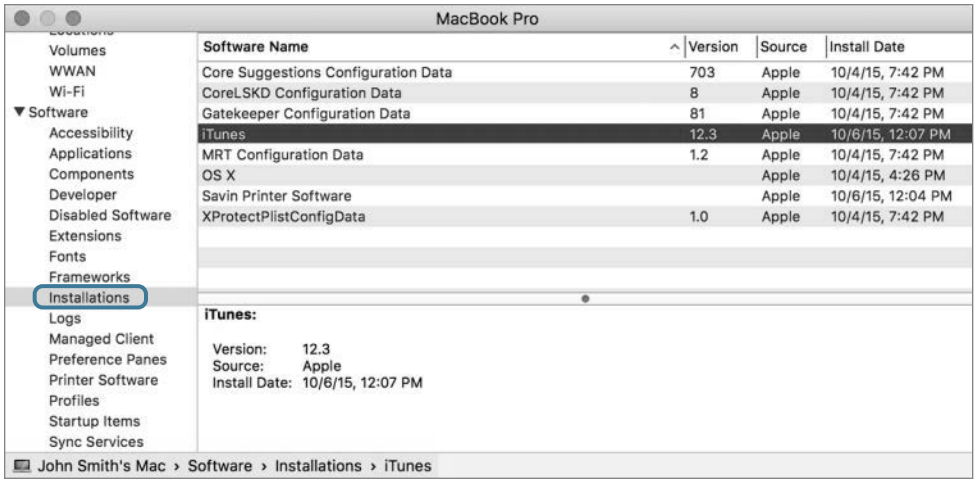
Check Installed Updates

1 Hold down the Option key while you choose System Information from the Apple menu. Note that the System Information menu item appears only when the Option key is held down.

System Information opens and displays its report.

2 In the Software section of the sidebar, select Installations.

A list of installed software and updates appears, including the updates you just installed. You can select specific updates from the list to get more information about them.



3 Quit System Information.

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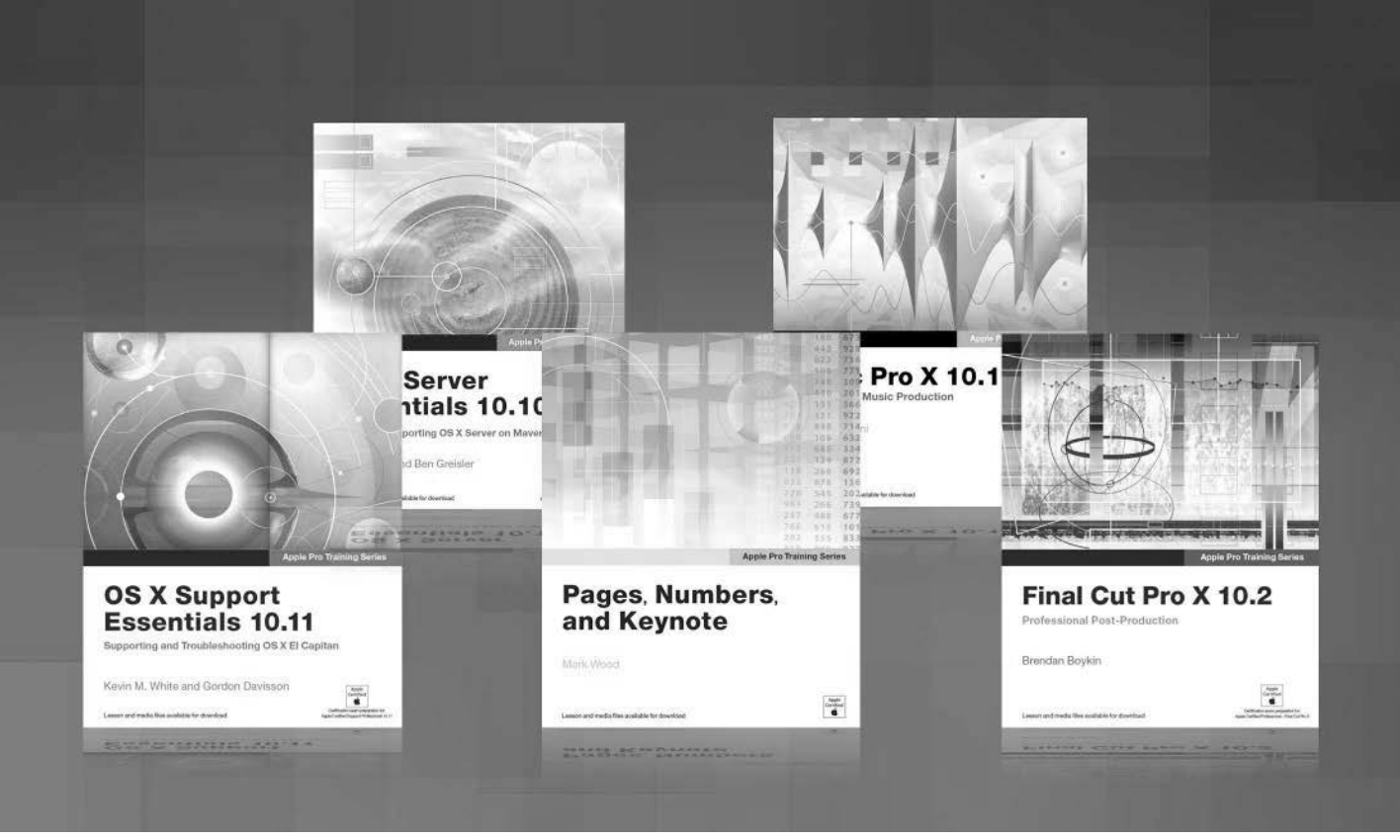

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