



Apple Pro Training Series

# OS X Support Essentials 10.9

Supporting and Troubleshooting OS X Mavericks

Kevin M. White and Gordon Davisson

Lesson and media files available for download



Certification exam preparation for:  
Apple Certified Support Professional 10.9

Apple Pro Training Series

# OS X Support Essentials 10.9

Kevin M. White and Gordon Davisson



Apple Pro Training Series: OS X Support Essentials 10.9  
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.*

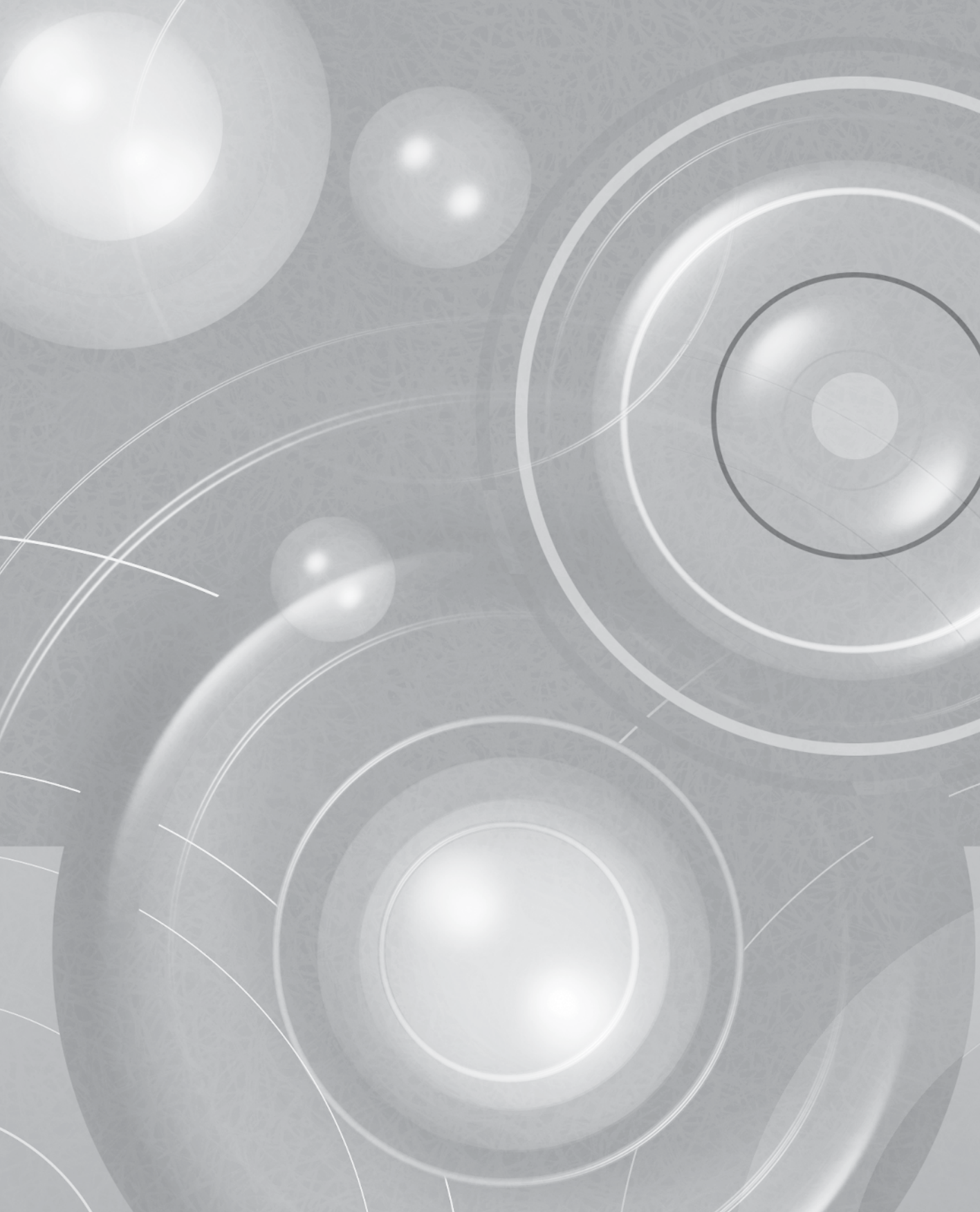
*This book is dedicated to my greatest works; Logan, Sawyer, and Emily.*

— 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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## Lesson 4

# OS X Recovery

From a troubleshooting viewpoint, one of the most useful OS X features is the OS X Recovery system. Via OS X Recovery, you can not only reinstall OS X but also access a variety of administration and troubleshooting utilities. OS X Recovery replaces functionality previously accessed via an OS X installation DVD. The primary difference is that the OS X Recovery system is, by default, located on the primary system disk. This allows easy “anytime” access to recovery utilities without the need for additional media.

In this lesson, you will learn how to access OS X Recovery both on new Mac computers that came with OS X preinstalled and on systems that were upgraded to OS X Mavericks. You will also briefly explore the utilities available from OS X Recovery. As long as you don’t make any permanent changes using the utilities in OS X Recovery, you can safely explore without damaging your primary OS X system. Finally, you will learn how to create external OS X recovery disks that can be used in cases where the local Recovery HD system isn’t available.

### GOALS

- ▶ Access the utilities available in OS X Recovery
- ▶ Reinstall OS X from OS X Recovery
- ▶ Create external recovery disks

## Reference 4.1

### Startup from OS X Recovery

Mac systems running OS X Mavericks, including both systems that shipped with OS X Mavericks and upgraded systems, include a hidden OS X Recovery system on the local system disk. To access this copy of OS X Recovery, simply restart the computer while holding down Command-R. Once the OS X Recovery system fully starts, the OS X Utilities window appears. From there you can install (or reinstall) OS X and choose from a variety of maintenance applications.

**NOTE** ► The OS X Recovery system partition, dubbed Recovery HD, is a hidden partition that does not appear by default when running OS X. The Recovery HD partition is automatically created out of the last 650 MB or so of the installation destination. You can verify the existence of the Recovery HD partition by examining the internal disk using the System Information application.

If for some reason OS X Recovery doesn't start or isn't installed on the local system disk, there are three alternatives for accessing it:

- If you have a Mac model released in mid-2010 or later—If your Mac computer has the latest firmware updates, it's capable of accessing OS X Internet Recovery. If the local OS X Recovery system is missing, late-model Mac computers should automatically attempt to access OS X Internet Recovery. You can also force a system to start up to OS X Internet Recovery by holding down Command-Option-R. When your late-model Mac computer starts from OS X Internet recovery, it attempts to redownload the OS X Recovery system from Apple servers. If successful, this process re-creates the local Recovery HD partition.

**MORE INFO** ► For more about using OS X Internet Recovery, see [Apple Support article HT4718](#), “OS X: About OS X Recovery,” and [article HT4904](#), “Computers that can be upgraded to use OS X Internet Recovery.”

- If you have an external OS X recovery disk—Connect the recovery disk to your Mac computer, and restart while holding down the Option key. This opens Startup Manager, where you can use the Arrow and Return keys or the mouse and trackpad to select the OS X recovery disk. Reference section 4.3, “External OS X Recovery Disks,” covers this topic in greater detail.
- If you have a local Time Machine backup disk—The Time Machine backup service automatically creates a hidden OS X Recovery system on local backup disks. To access this system, connect the Time Machine backup disk to your Mac computer, and restart while holding down the Option key. This opens the Mac computer's Startup Manager, where (as above) you can use the Arrow and Return keys or the mouse and trackpad to select the Time Machine backup disk. Lesson 18, “Time Machine,” covers this topic in greater detail.

## Reference 4.2

### OS X Recovery Utilities

OS X Recovery is a useful administrative and troubleshooting resource. When you start up from this system, you have access to several system-administration and maintenance tools.

This system even has a few utilities you cannot find anywhere else in OS X. Again, when you first start the OS X Recovery system, you are greeted with the OS X Utilities window.



**NOTE** ► When a Mac computer is started up from OS X Recovery, Ethernet and Wi-Fi networking is available if the network provides DHCP services. Ethernet is automatically enabled if physically connected. If a Wi-Fi network isn't automatically connected, you can select a wireless network from the Wi-Fi menu item.

**NOTE** ► If manual network setup is required during use of OS X Recovery, refer to instructions in Apple Support article HT5034, "Using Lion Recovery when no DHCP service is available."

**NOTE** ► While running from OS X Recovery, if the Mac computer's system disk is protected by FileVault 2, any access to this disk first requires unlocking of the disk. In most cases, any local user's password on the system should be allowed to unlock the system FileVault 2 drive. Lesson 11, "FileVault 2," covers this topic in greater detail.

From the OS X Utilities window in OS X Recovery, you can access the following functions:

- **Restore From Time Machine Backup**—Use this to restore a full-system Time Machine backup from either a network or a locally connected disk. Lesson 18, "Time Machine," covers this topic in greater detail.

- ▶ **Install OS X or Reinstall OS X**—As the name implies, this opens the OS X Installer. If you are running from an OS X Install disk, the disk contains all the OS X installation assets. However, the local hidden Recovery HD and disks created with OS X Recovery Disk Assistant do not contain the installation assets, and thus require Internet access to reinstall OS X. Further, the OS X Installer must verify that the user is allowed access to the OS X Mavericks assets. On older Mac computers that were upgraded to OS X Mavericks, you must verify the installation by providing the Apple ID used to purchase OS X. For Mac computers that shipped with OS X Mavericks, this verification is automatic. Lesson 2, “Install OS X Mavericks,” covers this topic in greater detail.
- ▶ **Get Help Online**—This opens Safari, directed to the Apple Support website.
- ▶ **Disk Utility**—This application is responsible for storage-related administration and maintenance. It is especially useful when the Mac computer has started up from OS X Recovery, because Disk Utility can be used to manage a system disk that otherwise can't be managed when in use as the startup disk. Specifically, Disk Utility can be used to prepare a disk for a new installation of OS X or to attempt repairs on a disk that fails installation. Lesson 10, “File Systems and Storage,” covers this topic in greater detail.
- ▶ **Startup Disk (by clicking the close button or quitting)**—If you attempt to quit the OS X Utilities window, it will prompt you to start the Startup Disk utility. This utility will allow you to select the default system startup disk. The default startup disk can be overridden using any of the alternate startup modes discussed in Lesson 29, “System Troubleshooting.”



Wait, there's more. OS X Recovery has a few extra utilities hidden in the Utilities menu at the top of the screen:



- ▶ Firmware Password Utility—This utility allows you to secure the Mac computer's startup process by disabling all alternate startup modes without a password. You can disable or enable this feature and define the required password. You can find out more about Firmware Password in Lesson 8, "System Security."
- ▶ Network Utility—This is the primary network and Internet troubleshooting utility in OS X. Its primary use in OS X Recovery is to troubleshoot any network issues that could prevent the download of OS X installation assets. The Network utility is further discussed in Lesson 24, "Network Troubleshooting."
- ▶ Terminal—This is your primary interface to the UNIX command-line environment of OS X. The most useful command you can enter from here is simply `resetpassword`, followed by the Return key.
- ▶ Reset Password opened via Terminal—This utility lets you reset the password of any local user account, including the root user, on the selected system disk. Obviously, this is a dangerous utility that can pose a serious security threat. Because of this, the Reset Password utility runs only from OS X Recovery. You can find out more about Reset Password in Lesson 8, "System Security."

**NOTE** ▶ The utilities available from OS X Recovery can certainly be used to compromise system security. Then again, any system whose default startup disk can be overridden during startup is wide open to compromise. Therefore, in secured environments, it's often necessary to use the Firmware Password utility to help protect your systems.

## Reference 4.3

### External OS X Recovery Disks

In some cases, a Mac computer with OS X installed does not have a local Recovery HD. For example, if you just replaced the internal disk with a new disk, nothing will be on the new disk. Also, OS X systems on RAID sets and disks with nonstandard Boot Camp



partitioning will not have a local Recovery HD. In these cases, you would need to start up from an external OS X recovery disk. Also, having an external OS X recovery disk handy can be a real lifesaver should you come across a Mac computer with a dysfunctional system disk.

**NOTE ►** When creating your own OS X recovery disks, make sure to keep track of the specific version of OS X you are using. As covered in Lesson 2, “Install OS X Mavericks,” newer Mac systems do not support older versions of OS X and may require computer-specific builds of OS X. As such, you should always keep your OS X recovery disks updated to the latest versions of OS X available from the Mac App Store.

Two do-it-yourself solutions exist to convert a standard disk into an OS X recovery disk. The first involves creating an OS X Recovery disk using the OS X Recovery Disk Assistant application. The second creates an OS X Install disk using the contents of the Install OS X Mavericks application.

- Create an OS X Recovery disk—The advantage to creating an OS X Recovery disk is that it requires only a 1 GB USB flash disk. This method is initiated through the OS X Recovery Disk Assistant application, available on the Apple support downloads website. This application simply copies the computer’s local Recovery HD system to an external disk. The downside to this method is that the resulting OS X Recovery disk will not contain the OS X installation assets. Thus, when running OS X Recovery from this disk, if you need to reinstall OS X, the system will have to download the OS X installation assets from the Internet. Exercise 4.2, “Create an OS X Recovery Disk,” outlines the steps necessary to create this type of disk.
- Create an OS X Install disk—The advantage to creating an OS X Install disk is that it will include the full OS X installation assets on the disk. This method involves using a special command-line tool, named `createinstallmedia`, found inside the Install OS X Mavericks application. This tool will copy both an OS X Recovery system and the full OS X installation assets to an external drive. The downside to this method is that it requires an 8 GB disk. Exercise 4.3, “Create an OS X Install Disk,” outlines the steps necessary to create this type of disk.

## Exercise 4.1

### Use OS X Recovery

#### ► Prerequisite

- Your computer must have a local hidden Recovery HD partition. This partition is normally created by the OS X Mavericks installation process.

In this exercise, you will start up your computer in OS X Recovery. OS X Recovery is stored on a hidden partition named Recovery HD that is created automatically when OS X is installed on the hard disk. You will review the included utilities as well as how OS X Recovery can reinstall the system itself.

**NOTE** ► You will not perform an installation, but you will get an opportunity to look at the steps leading up to the installation.

#### Start Up Using OS X Recovery

To access the Installer and other utilities in OS X Recovery, you need to start up from the hidden Recovery HD partition.

- 1 If your computer is on, shut it down by choosing Shut Down from the Apple menu.
- 2 Press the power button on your computer, and then hold down Command-R until the gray Apple logo appears on the screen.

When you hold down Command-R during startup, the computer attempts to start up using a recovery partition on the hard disk.

If no recovery partition is available, Mac computers with newer firmware can actually start up from an Apple server over the Internet and get access to the OS X Recovery features.

If your computer starts up to the login screen instead of OS X Recovery, you may not have held Command-R long enough. If this happens, click the Shut Down button and try again.

If your computer displays a globe icon with the text “Starting Internet Recovery. This may take a while,” your computer was unable to find a local Recovery partition. If the Recovery partition exists, you can shut down your computer by holding the



power button for 10 seconds, and then select the Recovery partition using the Startup Manager (see the instructions in Exercise 4.2, in the “Test the OS X Recovery Disk” section). If your computer does not have a Recovery partition, you can let it finish starting into Internet Recovery, and then proceed with this exercise.

- 3 If a language selection screen appears, select your preferred language, and click the right-arrow button.
- 4 After OS X Recovery starts up, you see a Mac OS X Utilities window. This window is the primary interface for OS X Recovery.



If you see a Welcome screen instead, you probably pressed Command-R too late or did not hold it down long enough. You can start over by pressing Command-Q and then clicking the Shut Down button.

### Examine the Utilities Available in OS X Recovery

While running OS X Recovery, you have access to some utilities for recovering, repairing, and reinstalling OS X. In this part of the exercise, you will familiarize yourself with some of these utilities.

**NOTE** ► While running from OS X Recovery, if the Mac computer’s system disk is protected by FileVault 2, any access to this disk will first require unlocking of the disk. In most cases, any local user’s password on the system should be allowed to unlock the system FileVault 2 drive. Lesson 11, “FileVault 2,” covers this topic in greater detail.

**View Help for OS X Recovery**

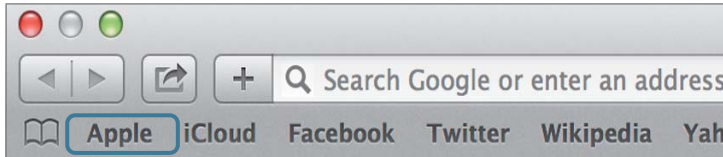
You will use Safari to view the built-in instructions of OS X Recovery and to browse the web.

- 1 Select Get Help Online, and then click Continue.

Safari opens and displays a document with information about how to use OS X Recovery. Take a moment to skim the document.

This document is stored on the Recovery HD partition, but as long as you have an Internet connection available, you can also use Safari to view online documentation such as the Apple Support articles.

- 2 Click the Apple bookmark.



Safari now displays the Apple website.

- 3 If Safari displays a message that says “You are not connected to the Internet,” you can join a wireless network using the Wi-Fi icon near the right side of the menu bar.
- 4 If you are prompted to unlock the Login keychain, leave the Password field blank, and click OK.
- 5 Click the Support link near the top right of the page.

You are taken to the support section of the Apple site. If you were experiencing a problem with your computer, this would be a good place to look for solutions and information. You will use some of the Apple support resources later in this guide.

- 6 From the menu bar, choose Safari > Quit Safari (or press Command-Q) to return to the main utilities screen.

Note that closing the Safari window does not actually quit Safari. This is common among Mac applications, but if you are accustomed to using Microsoft Windows it may be contrary to your expectations. Generally, the best way to quit a Mac application is to choose Quit <Application Name> from the application menu (the menu next to the Apple menu, named for the current application); or you can use the keyboard shortcut Command-Q.

### Examine Disk Utility

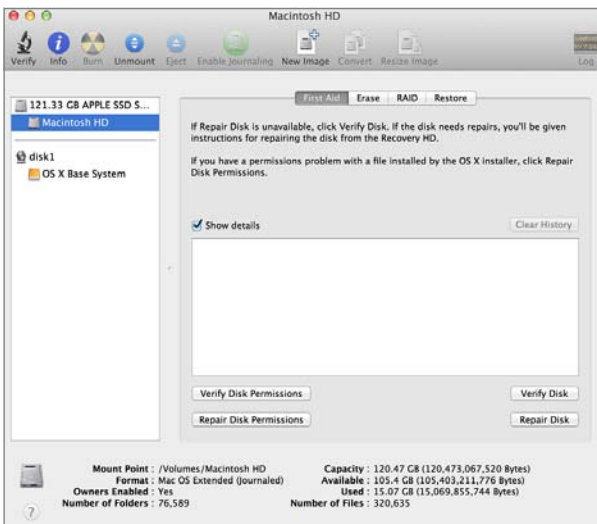
Disk Utility is provided in OS X Recovery to allow you to repair, image, reformat, or repartition your computer's disk.

- 1 Select Disk Utility, and then click Continue.

In the Device List on the left, you will see your disk device and a Mac OS X Base System disk image. Note the primary entry for each physical disk device and an indented list of volumes on each device (discussed in more detail in Lesson 10, “File Systems and Storage”).

- 2 Select the entry that represents your startup volume. Typically, it is named Macintosh HD.

Notice the options available to perform on the volume: First Aid, Erase, RAID, and Restore. Among the reasons Disk Utility is provided in OS X Recovery is to allow you to verify or repair the startup volume's file structure, or if necessary to erase the volume before reinstalling OS X.



- 3 Select the entry that represents your disk (just above the startup volume).

Notice that the Partition option is now available.

- 4 Quit Disk Utility by choosing Disk Utility > Quit Disk Utility or by pressing Command-Q.

You are returned to the main utilities screen.

**Examine Time Machine Restoration**

If you backed up your computer with Time Machine, OS X Recovery has the capability to do a full system restoration from that backup. Setting up Time Machine is covered in Lesson 17, “File Archives.”

- 1 Select Restore From Time Machine Backup, and then click Continue.

A page of notes on the restoration process appears. It is important to note that this restoration interface will erase all current data and replace it from the backup; other restoration interfaces that let you control which files or folders are restored are examined later.

- 2 Click Continue.

The “Select a Backup Source” screen appears. If you had configured a Time Machine backup target, it would be available here as a source for restoring your system. Time Machine is discussed in more detail in Lesson 18, “Time Machine.”

- 3 Click Go Back to return to the Restore Your System screen.
- 4 Click Go Back again to return to the main utilities screen.

**Examine the OS X Installer**

Now you will examine the reinstallation process, but you will not perform the installation. By going through the following steps, you can experience the configuration of an installation without actually waiting for the OS X software to be copied to your system.

- 1 Select Reinstall OS X, and then click Continue.

The OS X Mavericks installer opens.

- 2 Click Continue.

A dialog appears indicating that this computer’s eligibility will be verified with Apple.

- 3 Click Continue.

- 4 At the license agreement, click Agree.

- 5 In the license confirmation dialog, click Agree again.

The OS X installer displays a list of partitions where you could install or reinstall OS X.

**NOTE ►** Do not click the Install button; otherwise the Installer reinstalls OS X, which you do not want to do at this time.

## 6 Quit the Installer.

### Verify Your Startup Disk and Restart

The Startup Disk utility allows you to select the volume from which to start up. If you are having problems during system startup from your computer's internal disk, you could connect a second disk with OS X installed, and use Startup Disk to configure the computer to start up from the new disk.

- 1 From the Apple menu, choose Startup Disk. Notice that Startup Disk shows you a list of all startup volumes. Available options may include Network Startup or one or more NetBoot images, depending on what Startup Disk finds on your network.
- 2 Verify that your computer's normal startup volume (typically named Macintosh HD) is selected; if necessary, select it.



- 3 Click Restart.
- 4 In the confirmation dialog, click Restart.

You could also restart without using the Startup Disk utility by choosing Apple menu > Restart.

## Exercise 4.2

### Create an OS X Recovery Disk

#### ► Prerequisites

- Your computer must have a local hidden Recovery HD partition.
- You need an erasable external disk with a capacity of at least 1 GB.
- You must have created the Local Admin account (Exercise 3.1 or 3.2).

The OS X Recovery partition can help you recover from many problems that might otherwise render your computer unusable, but there are a few issues it cannot help with. For instance, anything that renders the computer's startup disk unreadable, such as a damaged partition table or even complete disk failure, will also prevent the Recovery HD partition from being used. This exercise will explore another option: You can copy OS X Recovery onto an external disk, such as a USB flash disk, for use in case of emergency.

**NOTE** ► You must run Recovery Disk Assistant from a Mac system that contains a local hidden OS X Recovery HD.

#### Download Recovery Disk Assistant

The following steps walk you through searching the Apple support resources for OS X Recovery Disk Assistant, and downloading it.

- 1 If necessary, log in as Local Admin (password: **ladminpw**, or whatever you chose when you created the account).
- 2 Open Safari. Note the shortcut for it in your Dock.



- 3 If you are not automatically taken to the Apple website, click the Apple shortcut in the Safari bookmark bar.

- 4 Click the Support link near the top right of the Apple webpage.

The support section of the Apple website includes a wide variety of resources, including software downloads, manuals and specifications, the Apple Support documents, and links to warranty and repair information.

- 5 In the search field to the right of the Support link (not the search field in the Safari toolbar), enter **recovery disk assistant**, and press Return.



The search results page has a number of options to change and refine your search, but you should not need these here; one of the first search results should be a download page (indicated by a down-arrow icon) for OS X Recovery Disk Assistant.



- 6 Click the link for OS X Recovery Disk Assistant v1.0.

- 7 Click the Download button.

While it downloads, take a moment to skim the information in the download page. Note that it includes a summary of what the program is and how to use it, as well as its version, system requirements, and a list of supported languages.

- 8 When the download is complete, quit Safari by choosing File > Quit or pressing Command-Q.

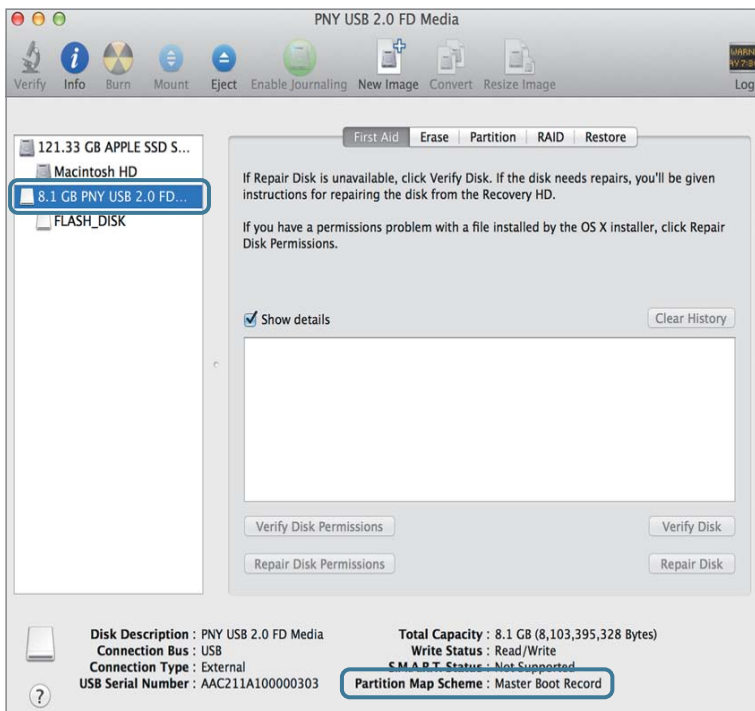
### Reformat the External Disk

Most external disks come preformatted with the MBR partition scheme; in order to allow an Intel Mac computer to start up from it, you must reformat this disk with the GUID Partition Table (GPT) partition scheme. Disk formats are discussed in more detail in Lesson 10, “File Systems and Storage.”

**WARNING** ► This operation will erase all information on the external disk. *Do not* perform this exercise with a disk that contains any files you want to keep.

- 1 Open Disk Utility. It is located in the Utilities folder, which is inside the Applications folder. You can navigate to this folder in the Finder; use the Finder shortcut Command-Shift-U; or open Launchpad from the Dock, and then select the Other icon in Launchpad.
- 2 Plug the external disk in to your computer.
- 3 If you are prompted for a password to unlock the disk, the disk is encrypted, and cannot be used for this exercise. If this happens, eject the disk, and use a different disk for the exercise.
- 4 Select the external disk device entry in the Disk Utility sidebar. Be sure to select the device entry, not the volume entry indented beneath it.
- 5 Check the Partition Map Scheme listed at the bottom of the window.

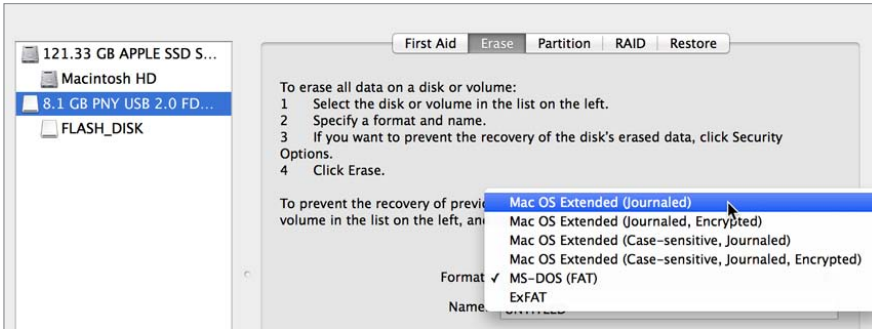
Depending on what this disk was used for most recently, the partition scheme could be anything. In order to convert it to the GPT scheme, you will erase the disk. If it is already using the GPT scheme, this is not strictly necessary, but you should erase it just to be sure.





It is also possible to partition the disk, and use only part of it for OS X Recovery. The download page has a link to more information about OS X Recovery Disk Assistant, including the partitioning procedure.

- 6 Click the Erase tab.
- 7 Choose Mac OS Extended (Journaled) from the Format pop-up menu.



If you are preparing to create a Recovery disk, you do not need to change its name from Untitled; however, if you are preparing to create an Install disk (Exercise 4.3), you should give it a descriptive name.

- 8 Click the Erase button near the bottom right of the window.
- 9 In the confirmation dialog, click Erase.
- 10 Verify that the Partition Map Scheme is now listed as GUID Partition Table.



Since you erased the entire disk, rather than a single volume within the disk, Disk Utility has rebuilt the partition map as well. Although a Mac OS Extended volume can be created under any supported partition scheme, Disk Utility created a GUID Partition Table because it is the best fit.

- 11 Quit Disk Utility.

## Create an OS X Recovery Disk

- 1 Near the right of the Dock is a shortcut for your Downloads folder. Click it once to show its contents.



- 2 Click RecoveryDiskAssistant.dmg to open it.

The disk image opens, revealing its contents—the Recovery Disk Assistant application.

- 3 Open the Utilities folder by choosing Go > Utilities or pressing Command-Shift-U.

A new Finder window opens, and the contents of the Utilities folder appears.

- 4 Drag the Recovery Disk Assistant application to the Utilities folder.

- 5 A warning dialog appears. Click Authenticate, and then enter the password for the Local Admin (`ladminpw`, or whatever you chose when you created the account).



- 6 Once the copy is complete, double-click the Recovery Disk Assistant in the Utilities folder.

Since this application was downloaded from the Internet, a warning dialog opens providing information about where the application came from. Since malware is sometimes distributed via web download, this warning gives you a chance to decide if you can really trust this software before running it. This feature is discussed in

more detail in Lesson 19, “Application Installation.” As this application was downloaded directly from the Apple website, you can go ahead and trust it.



- 7 Click Open.
- 8 In the license agreement pane, click Agree.
- 9 Select the icon for your external disk, and click Continue.



- 10 Authenticate as Local Admin when prompted.

The creation process takes a few minutes.

- 11 When the process completes, click Quit.

### Test the OS X Recovery Disk

- 1 From the Apple menu, choose Restart.
- 2 In the confirmation dialog, click Restart.
- 3 Hold down the Option key as the computer restarts. Keep holding it until a row of icons appears across the screen.

This is the Startup Manager, in which you can choose which volume to start up from. You will see your regular startup volume (typically Macintosh HD) and two volumes both named Recovery-10.9—one with a disk icon and one with a USB, FireWire, or Thunderbolt icon. Since both your external disk and your computer's internal disk now have valid, up-to-date Recovery-10.9 volumes, you could access OS X Recovery with either one of them.



- 4 You may now either enter OS X Recovery, or restart your computer normally:
  - ▶ If you have not used OS X Recovery before, you can select the Recovery drive, and then click the up-arrow button that appears below it. Then, follow the instructions in Exercise 4.1 to explore the features of OS X Recovery.
  - ▶ If you have already completed Exercise 4.1, then you have already experienced OS X Recovery, and you can start up from your normal startup volume instead. Unplug the external disk, select the Macintosh HD icon, and then click the up-arrow button below it.

## Exercise 4.3

### Create an OS X Install Disk

#### ► Prerequisites

- You need an erasable external disk with a capacity of at least 8 GB.
- You must have created the Local Admin account (Exercise 3.1 or 3.2).

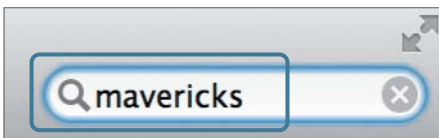
In this exercise, you will create an OS X Install disk, which not only includes the OS X Recovery environment and tools, but also a full set of installation assets. With a disk created by this method, you can reinstall OS X Mavericks without needing to redownload the installer application from the Internet.

**NOTE** ► When creating your own OS X Install disk, make sure to keep track of the specific version of OS X you are using. As covered in Lesson 2, “Install OS X Mavericks,” newer Mac systems do not support older versions of OS X, and may require computer-specific builds of OS X. As such, you should always keep your OS X Install disks updated to the latest versions of OS X available from the Mac App Store.

#### Acquire a Copy of the Install OS X Mavericks Application

If you upgraded to OS X Mavericks following the instructions in Exercise 2.2 and saved a copy of the installer application, you may use it and skip this section. If you are performing these exercises as part of a class, the instructor may have provided a copy in the Student-Materials folder. Otherwise, you can redownload the installer with the following procedure:

- 1 From the Apple menu, choose App Store. Note that the Mac App Store is discussed in more detail in Lesson 19, “Application Installation.”
- 2 In the search field of the App Store window, enter **Mavericks** and press Return.



- 3 Find OS X Mavericks in the search results, and click the “DOWNLOAD” button under its name.



- 4 Click Continue in the confirmation dialog that appears, then wait as it downloads.



When it finishes downloading, the installer application will open automatically.

- 5 Quit both Install OS X Mavericks and the App Store.

### Reformat the External Disk

Follow the instructions in the “Reformat the External Disk” section of Exercise 4.2, giving the disk a descriptive name (such as “Install Mavericks v10.9.0”) between steps 7 and 8.

## Create an OS X Install Disk

- 1 Open Terminal from the Utilities folder.
- 2 Switch to the Finder, and open the Applications folder. You can do this by choosing Go > Applications, or with the keyboard shortcut Command-Shift-A.
- 3 Control-click the Install OS X Mavericks application, and choose Show Package Contents from the shortcut menu that appears.  
  
Packages are discussed in Lesson 14, Reference section 14.2.
- 4 Inside the installer package, open the Contents folder, and then open the Resources folder inside that.
- 5 Drag the file named `createinstallmedia` from the Finder window into the Terminal window. This inserts the full path to `createinstallmedia` into Terminal.
- 6 Switch back to Terminal, and press Return.  
  
This executes `createinstallmedia` as a command-line program. It prints a usage summary, explaining how to use the program.
- 7 Begin another command by typing “`sudo` ” (note that there must be a space at the end), but do not press Return until step 13.
- 8 Drag `createinstallmedia` from the Finder window into the Terminal window again.
- 9 In Terminal, enter the text “`--volume` ” (note that there are two dashes at the beginning, and a space at the end).
- 10 Drag the “Install Mavericks” (or whatever you named it) volume icon from the desktop to the Terminal window.
- 11 In Terminal, enter the text “`--applicationpath` ” (again, there are two dashes at the beginning, and a space at the end).
- 12 In the Finder, navigate back to the Applications folder, and drag the Install OS X Mavericks application to the Terminal window.

At this point, the Terminal command should look something like this (although the lines may wrap at a different point):

```

ladmin — bash — 80x24
Last login: Sat Oct 5 11:27:44 on console
John-Smiths-Mac:~ ladmin$ /Applications/Install\ OS\ X\ Mavericks.app/Contents/R
esources/createinstallmedia
Usage: createinstallmedia --volume <path to volume to convert> --applicationpath
<path to Install OS X Mavericks.app> [--force]

Arguments--volume, A path to a volume that can be unmounted and erased to create
the install media.
--applicationpath, A path to copy of the OS installer application to create the
bootable media from.
--nointeraction, Erase the disk pointed to by volume without prompting for confi
rmation.

Example: createinstallmedia --volume /Volumes/Untitled --applicationpath /Applic
ations/Install OS X Mavericks.app

This tool must be run as root.
John-Smiths-Mac:~ ladmin$ sudo /Applications/Install\ OS\ X\ Mavericks.app/Conte
nts/Resources/createinstallmedia --volume /Volumes/Install\ Mavericks\ v10.9.0 -
-applicationpath /Applications/Install\ OS\ X\ Mavericks.app

```

- 13** Switch to Terminal, and press Return.

This operation requires admin access, so it prompts for your password.

- 14** Enter the Local Administrator account’s password (`ladminpw`, or whatever you chose when you created the account), and then press Return. Note that nothing displays as you type.
- 15** Since this operation will erase the disk, you are prompted to confirm the operation. Verify that the volume name (listed after “/Volumes/”) is the one you intend to use, and then enter “Y,” and press Return.

- 16** Wait as the Install disk is prepared. This may take several minutes.

When the process is complete, it prints “Copy complete.,” followed by “Done.”

- 17** Quit Terminal.

### Test the OS X Install Disk

Follow the instructions in the “Test the OS X Recovery Disk” section of Exercise 4.2, but note that the disk will have the name you gave it in the previous section.



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