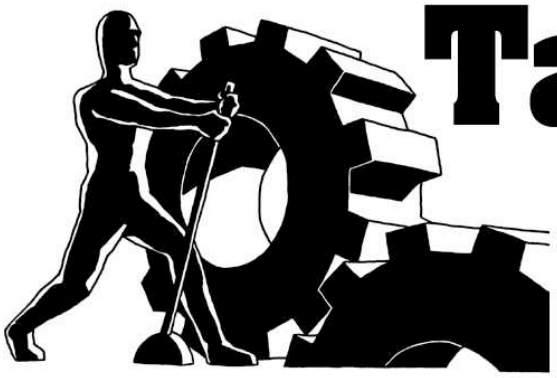

Take Control of Maintaining Your Mac

by Joe Kissell

Table of Contents (Version 1.0)

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Read Me First

Welcome to *Take Control of Maintaining Your Mac,* version 1.0.

Macs, like all machines, are prone to break down eventually—in either a physical sense (a component going kaput) or a logical sense (files becoming corrupted, applications misbehaving). You can reduce the risk of such problems, and minimize the damage when they do occur, with a regular maintenance regimen. This ebook contains simple, practical steps you can take to keep your Mac humming.

This ebook was written by Joe Kissell, edited by Caroline Rose, and published by TidBITS Electronic Publishing.

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We carefully designed the Take Control ebooks to be read onscreen, and although most of what you need to know is obvious, note the following for the best possible onscreen reading experience:

- Blue text indicates links. You can click any item in the Table of Contents to jump to that section. Cross-references are also links, as are URLs and email addresses.
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- Find more tips in the Take Control FAQ on the Web.

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- In the unlikely event that Adobe Acrobat or Adobe Reader cannot successfully print this PDF, try Preview; several readers have solved printing problems by using Preview.

Basics

In reading this ebook, you may get stuck if you don't know certain basic facts about Mac OS X, or if you don't understand Take Control syntax for things like working with menus or finding items in the Finder. Please note the following:

- **Path syntax:** This ebook occasionally uses a *path* to show the location of a file or folder in your file system. Path text is formatted in bold type. For example, Mac OS X stores most utilities, such as Terminal, in the Utilities folder. The path to Terminal is: **`/Applications/Utilities/Terminal`**.

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

- **Menus:** When I describe choosing a command from a menu in the menu bar, I use an abbreviated description. For example, the abbreviated description for the menu command that creates a new folder in the Finder is "File > New Folder."

- **Finding preference panes:** I sometimes refer to systemwide Mac OS X preferences that you may want to adjust. To change these settings, open System Preferences by clicking its icon in the Dock or choosing System Preferences from the Apple menu. Settings are categorized into topic-specific *preference panes*. You access a particular preference pane by way of its icon or the View menu. For example, to see "the .Mac preference pane," you would launch System Preferences and then click the .Mac icon or choose View > .Mac.

Introduction

A couple of years ago, I went to the dentist for the first time since the late 1990s. The main reason I'd failed to make dental appointments was embarrassment at having waited so long. I could just hear the dentist chiding me, "Ah, I can see you haven't had your teeth cleaned properly in 5 years. For shame!" The more time passed, the worse the embarrassment grew, and finally it took actual pain and a visible hole in a tooth to overcome it. So I was disappointed, but not surprised, to learn that I had several cavities and needed a root canal. The dentist was kind and understanding, but nevertheless pointed out several times that this visit might have been much less painful (and less expensive) had I flossed every day and gone for my semiannual checkups as I knew I should have.

I tell you this story not merely to urge proper dental hygiene, but because maintaining your Mac—like maintaining your teeth, your car, your health, or your home—is a good habit whose rewards are having fewer problems later on and being able to recover more easily from problems that do arise. You can sometimes get away without doing any maintenance for a few months or perhaps much longer, but you risk losing data, wasting time, and having to spend a great deal of money repairing or replacing your computer.

This ebook teaches you the most important and useful maintenance tasks you should perform to increase your chances of keeping your Mac in tip-top operating condition throughout its lifetime. I've organized the tasks according to their frequency: what you should do daily, weekly, monthly, and yearly, as well as some important initial steps, some things you should do when a Mac OS X upgrade appears, and some tasks you might want to *avoid*, contrary to conventional wisdom. If you follow these recommendations diligently, you'll dramatically decrease the likelihood of serious problems.

I want to make a few disclaimers up front. First, there's no such thing as the One True Way to maintain your Mac. Everyone's situation is unique, so you may need to adapt these instructions to suit your needs—perform certain tasks more often or less often, skip tasks that don't apply to you, and so on. Take these instructions as guidelines, as a starting point to determine your own maintenance regimen. Second, no amount of maintenance can guarantee that you'll never

have any problems. Manufacturing defects, malfunctioning software, user errors, and other mishaps can and do occur. Proper maintenance should, however, minimize both the number and the severity of problems you experience. Finally, this ebook does not cover trouble-shooting or repair; the focus is on preventing problems, not fixing them. If your Mac crashes, loses data, fails to start up, or otherwise behaves improperly, you'll need to look elsewhere for solutions. (I recommend some places to look in Appendix A: Troubleshooting Resources.)

NOTE To reflect the diversity of opinion about certain maintenance tasks, I've included several sidebars containing brief conversations among Mac experts, some of whom are Take Control authors or editors. These discussions are based on comments made on a preliminary draft of this ebook.

Although I wrote this ebook based on Mac OS X 10.4 Tiger, most of the information applies equally well to earlier versions of Mac OS X. However, note that one of the first suggestions I make is to upgrade your Mac, if possible, to run the latest version of Mac OS X, which is likely to contain fewer bugs than earlier versions.

The tasks in this ebook are easy, and they get easier the more you do them. So start developing those good maintenance habits right now. And don't forget to floss every day!

Quick Start

This ebook describes a step-by-step process for maintaining your Mac. The maintenance intervals (daily, weekly, monthly, yearly) reflect the relative urgency of the tasks in each section; you may choose to do the tasks within a section in any order, but I strongly suggest first following the steps in Start on the Right Foot.

Get ready:

- Get your Mac into the best possible shape by updating your software, getting rid of old files, setting up a backup system, and performing other preliminary tasks. Read Start on the Right Foot.

Perform periodic maintenance tasks:

- Every day, update your backup archive and download (but don't necessarily install) software updates. See Perform Daily Tasks.
- Once a week, perform maintenance such as cleaning up your Desktop, backing up your hard drive, installing software updates, and rebooting or clearing certain caches if you notice performance problems. See Perform Weekly Tasks.
- Once a month, empty your Trash, check your disk for errors, do some light cleaning, and exercise your notebook's battery. See Perform Monthly Tasks.
- Once a year, give your Mac a good spring cleaning inside and out; make extra backups for long-term storage, get rid of extraneous files, and change your passwords. See Perform Yearly Tasks.

Save time by skipping unnecessary work:

- Learn why you can probably avoid two common maintenance tasks. Read Things You Might Never Need to Do.

Handle Mac OS X upgrades with ease:

- Before you know it, Apple will ship the next major upgrade to Mac OS X. Learn what you need to know to be ready for it in When a New Version of Mac OS X Is Released.

Avoid or fix problems:

- Catch hardware and software problems before they become serious, or troubleshoot them if they do happen. See Monitor Your Mac's Health and Appendix A: Troubleshooting Resources.

Start on the Right Foot

Whether you've just unpacked a shiny new Mac or you're hoping to get an older machine into shape, your first step should be to perform some initial cleanup and preparation tasks. These steps will help your Mac run better right now, and will make ongoing maintenance tasks easier.

Install the Latest Version of Mac OS X

If your Mac is already running the latest and greatest version of Mac OS X, good for you! Skip to the next section. If not, your first step should be to upgrade.

Every release of Mac OS X includes dozens if not hundreds of bug fixes to prevent crashes or other errors and to patch holes that ne'er-do-wells might use to damage or gain access to your system. That fact alone is reason enough to keep up to date. In addition, Apple constantly introduces useful new features, and some newer software runs only on recent versions of the operating system. Often, doing nothing more than updating your system software can eliminate a wide range of problems—and prevent others.

Mac OS X updates fall into two categories: major and minor. Major updates (more properly known as upgrades) increment the digit after the first decimal point in the version number: 10.2, 10.3, and 10.4 were all major updates. With rare exceptions, Apple charges money (typically $129) for major updates. Minor updates increment the digit after the second decimal point: 10.4.2, 10.4.3, and 10.4.4 were all minor updates. Minor updates are always free.

Without exception, you should download and install every minor update. (I do, however, suggest waiting a few days after an update appears to make sure it doesn't contain any serious errors; see Download Software Updates, later.) The easiest way to do so is to use Software Update (see Turn On Software Update, next). Major upgrades are less urgent, because they focus primarily on new features. But because they also fix numerous bugs, you should consider buying and installing them. Read When a New Version of Mac OS X Is Released, later, for details.

Some Macintosh users, having heard horror stories of half-baked releases that cause as many problems as they fix, feel anxious every time a software update appears. I won't lie to you: major errors occasionally sneak into system updates. But this happens rarely, and in most cases Apple resolves such problems promptly. In addition, a fair number of errors that appear to be update-related are in fact the result of existing problems on the user's machine, minor issues such as incorrect permissions, or even (gasp!) user errors. I can't guarantee that a software update will never break anything, but in my experience the benefits of incremental updates overwhelmingly outweigh the risks—especially if you maintain good backups (see Set Up a Backup System).

Turn On Software Update

Mac OS X includes a feature called Software Update, which checks Apple's servers periodically to see if free updates exist for any Apple software on your computer, and, if so, offers to download and install them for you. Software Update is the easiest way to keep your Mac up to date with bug fixes and minor enhancements, and I strongly recommend that you use it.

> **NOTE** I want to reiterate that Software Update handles only Apple software (including Mac OS X as well as applications such as iLife, iWork, Logic, and Aperture). To learn how to update third-party software, see Update Third-Party Software, next.

Software Update is enabled by default, but you should check to see that it's still on and that its options are configured optimally. To set up Software Update, follow these steps:

1. Go to the Software Update pane of System Preferences (**Figure 1**).
2. Make sure the Check for Updates checkbox is checked. Then, from the pop-up menu, choose how often Software Update should run: Daily, Weekly, or Monthly. (If you have an always-on, high-speed Internet connection, choose Daily; even if you choose not to install an update immediately, you'll know about it as soon as possible.)
3. If you have a fast Internet connection and plenty of disk space, check Download Important Updates in the Background. This causes Software Update to download things like Mac OS X updates

and security updates as soon as it sees them. You still get to choose whether or not to install them, but when you do choose, you don't have to wait for the download to complete—the files are there, ready to go.

FIGURE 1

Configure Software Update settings in this preference pane.

4. To perform an immediate check, click Check Now. Software Update informs you if any new software is available. (You can also check for updates at any time by choosing Software Update from the Apple menu.)

5. Close System Preferences.

At the interval you set, Software Update checks for new software. When it finds some, it displays a dialog in which you can select any or all of the updates for immediate installation, defer them to a later time, or remove items from the list entirely. For complete details, read Use Software Update to Install Apple Software Updates.

SIDEBAR SOFTWARE UPDATE VS. MANUAL UPDATES

In general, software packages that Apple makes available through Software Update are also available on the company's Web site, so you can download them manually if you wish (http://www.apple.com/support/downloads/).

Starting with the second minor release of each Mac OS X version—such as 10.4.2 for Tiger—Apple typically produces three separate updaters: the updater available only through Software Update, known as a "patch" or "smaller-sized delta" updater; the standard (or "regular-sized delta") updater; and the "combo" updater. Delta updaters require the most recent previous release to be installed; for example, a 10.4.6 updater would require that 10.4.5 already h be installed. A combo updater, on the other hand, will update any previous version of the major system release (in this example, any release from 10.4.0 through 10.4.5) to the new version. Because of this, combo updaters are always larger—in some cases *much* larger. Software Update chooses the smallest applicable updater, which means it chooses the smaller-sized delta updater if you run Software Update regularly.

Why should you care? Well, on a few occasions, users have found that using the delta updaters (whether manually or via Software Update) for some reason left out essential files that prevented proper operation of some Mac OS X features, whereas these files *were* included when the same users applied the combo updater. Although I've never had problems with the delta updaters, anecdotal evidence suggests that you may have a slightly lower risk of problems if you manually download the combo updater for each Mac OS X update instead.

Update Third-Party Software

Software bugs are a fact of life, but in general, applications improve with each release. You can avoid, or solve, many maintenance problems simply by making sure you have the latest version of every program installed.

NOTE In some cases, getting the latest version of a program means spending hundreds of dollars on a major upgrade. In cases where you can't afford the absolutely latest version, you should at least install the latest *free* update you can find. This may require some searching on the company's Web site; earlier updates may not be featured as prominently as the most recent update.

Because Software Update handles only Apple software, any other developer wanting to offer similar capabilities must devise a separate update mechanism. Happily, almost every major application (and a good percentage of minor ones) contains some sort of update feature. Unhappily, they don't all work the same way. Some of them check for updates on a schedule, while others don't—and of those that do, not all have this feature turned on initially. Some programs can download *and* install new versions of themselves automatically, while others simply download a disk image and expect you to open it and run the installer yourself; still others do nothing but open a Web page with links to updates you can download manually.

In an ideal world, updates would require no intervention other than a single click to confirm that you're aware of, and approve of, the installation; everything else would happen automagically. Because only a few applications currently offer that level of automation, though, you may have to perform some extra steps.

I describe how to handle ongoing updates ahead in Download Software Updates and Check for Third-Party Software Updates. For now, do just two things:

- **Make sure all your software is up to date.** In each application that you use frequently, look for a Check for Updates command (the wording may vary). Such commands usually appear in the application menu (the one bearing the application's name), the Help menu, or the Preferences dialog. If you can't find such a command, visit the developer's Web site.

TIP Don't forget to check for updates of preference panes, menu extras, plug-ins, Dashboard widgets, and other system enhancements. These types of software frequently lack an automatic update feature.

- **Turn on any automatic software update features your applications may have.** Again, check each application's Preferences dialog for a checkbox that enables scheduled updates, and if you can choose how often to check, choose the most frequent option.

GRIPE Some applications check for updates every time you launch them, and display an intrusive alert after each check just to tell you that no updates are available. Ugh! An alert of that sort should appear only after a manual check for updates. In such cases, I either turn off automatic checking or change it to a weekly or monthly check.

Clean Out Accumulated Cruft

The term "cruft" is hacker slang for digital detritus—obsolete, extraneous, or otherwise useless files that have accumulated on your disk over time and now do nothing but take up space. By removing cruft, you can recover valuable disk space, increase the speed of backups, file searches, upgrades, and disk diagnostics, and reduce the chance of software conflicts.

NOTE This step may not apply to you if you have a brand-new Mac, but even a few months of use can generate a surprising amount of cruft.

Determining which files you need and which files can go may be a nontrivial undertaking. Some files ("2006 tax deductions.xls" or "Take Control of Maintaining Your Mac.pdf") are obviously important, and some (caches, old downloads, and so on) are obviously disposable. In between you may find thousands of files that you can't identify and that may or may not have some value.

My advice is to work slowly and deliberately, and avoid deleting anything whose purpose you're uncertain about. In particular—with a few exceptions I'll mention shortly—you should be circumspect about deleting items in **`/Library`**, and almost never delete anything

in **/System**. And remember: do this to reduce clutter, not as a matter of life and death. So don't be too ruthless when it comes to deleting your files.

> **TIP** Because you're about to delete files, I strongly recommend that you make a full backup *first*, in case you accidentally delete something important. See Set Up a Backup System and Back Up Everything.

Here are my suggestions for files you might consider deleting:

- Your **~/Documents** folder is a likely place for unneeded files. Skim the contents of this folder and its subfolders, looking for documents and application support files you no longer need, and drag such items to the Trash.

> **TIP** Numerous programs make automatic backups of their files. This is a good thing, but over time you might accumulate dozens or hundreds of old, large backup files that do you no good. BBEdit and MYOB AccountEdge are among the known culprits.
>
> In addition, if you save iChat transcripts (in **~/Documents/iChats**), you might also wish to delete old ones. And Eudora users may want to look through **~/Documents/Eudora Folder/Attachments Folder** for unneeded attachments.

- Look in **/Applications** (and **/Applications/Utilities**) for any software you've installed over the past year but never use. (Expired demo software, anyone?) Resist the temptation to delete Apple software that came with Mac OS X, though; you may need it later.
- In **/Library**, **/Library/Application Support**, **~/Library**, and **~/Library/Application Support**, look for folder names matching applications you no longer use, and delete them.
- Your **/Library** and **~/Library** folders may contain other folders that store components of third-party utilities. Look in Application Enhancers, Bundles, Contextual Menu Items, InputManagers, and PreferencePanes for any system enhancements you no longer use, and drag them to the Trash.

- Third-party Dashboard widgets live in ~**/Library/Widgets**. Any widgets you don't use can go.
- Software that requires some component to be running in the background all the time may install folders in **/Library/StartupItems**. In most cases, you should leave this folder alone, but if you see anything there from software you're sure you don't use, delete it.

WARNING! The **/Library/StartupItems** folder often holds background software you need but weren't aware you needed. For example, StickyBrain and SOHO Notes use an item in this folder called OpenBase; Retrospect uses a folder called RetroRun; and Now Up-to-Date & Contact uses a folder called NUDC. In short, if you're uncertain about anything in this folder, don't touch it.

- Kernel extensions (files with names ending in .kext) add low-level functionality to Mac OS X. Examples include hardware drivers (for devices such as mice, trackballs, and audio interfaces), encryption tools, and screen-capture software. These files are stored in either **/Library/Extensions** or **/System/Library/Extensions**. Any such software you no longer need can be deleted, but be *very* careful, especially in **/System/Library/Extensions**: most of these files are essential to Mac OS X, and that includes some that may have a third-party company in their name. If you see any obsolete items in one of these folders, the safest way to remove them is to run the installer that put them there in the first place and choose Uninstall (or follow uninstallation instructions provided by the developer). Do not delete them manually.

TIP UNINSTALLER UTILITIES

If you prefer not to muck around in your Library folders looking for individual files to delete, consider picking up a utility that can do all the hard work for you. Here are some examples:

- **Spring Cleaning:** This utility from Allume can find and remove all sorts of cruft, including empty folders, orphaned aliases, Internet caches, and of course ordinary applications and their supporting files. Among the many tricks up its sleeve is the ability to restore items it has deleted if you later realize that you need them.
  http://www.allume.com/mac/springcleaning/ ($50)
- **AppZapper:** A much simpler tool, AppZapper does just one thing (and does it well): it removes all the pieces associated with a given application, including preference and cache files, items in your Application Support folders, and even installer receipt files.
  http://www.appzapper.com/ ($13)

I should also mention two utilities that don't make any attempt to uninstall software but simply help you identify and delete large files on your drive that you may not need:

- **OmniDiskSweeper**
  http://www.omnigroup.com/applications/omnidisksweeper/ ($15)
- **WhatSize**
  http://www.id-design.com/software/whatsize/ (free)

When you're finished deleting files, be sure to empty the Trash (Finder > Empty Trash) to recover the space the files previously occupied.

SIDEBAR A CONVERSATION ABOUT REMOVING CRUFT

How important is it to remove extraneous files? These experts expressed a variety of opinions:

Kirk McElhearn: One thing I do is remove language files (using Monolingual, http://monolingual.sourceforge.net/) every once in a while. It saves a bit of disk space and makes backups a little faster.

Glenn Fleishman: I think advice to remove cruft is very 1990s. There's little reason, except for backup storage issues and local storage issues, to ever delete a document. Movies and pictures may need extra storage or culling, but between Spotlight searching and giant hard drives, why delete? Backups are only marginally slower with a greater number of small files, so the advantage in deleting them is minimal.

Kirk McElhearn: You can save over 1 GB by deleting language files, and this allows you to make a clone on a smaller partition for backups.

Joe Kissell: I don't delete language files myself, because I have plenty of disk space and I don't like to muck around with applications unnecessarily. However, to Glenn's point, I think removing cruft is valid even if you have tons of disk space, and Spotlight searching is in fact a great example of why I think that: when I'm looking for a file, I don't want to have to wade through a long list of matches, most of which are irrelevant items I could have deleted. And backups may not take much longer if you're backing up to another hard disk, but if you're backing up to optical media or a network server, every extra gigabyte has a significant impact.

Tonya Engst: I think it depends on the person. For example, I hate to keep extra email. It bothers me to have crufty mailboxes. Adam, on the other hand, prides himself on keeping all the email he's ever received, even the spam. Of course, if I'm missing something there's a good chance Adam has it, so I can get away with being a little trigger happy on the Delete command. I think it's OK for people to figure out whether they're pack rats or not, and to behave accordingly. I have found, though, that the better my filing scheme, the more files I keep. What I hate are files whose purpose or contents I can't easily identify. It's like someone else (perhaps Apple) putting real clutter on my real office shelves.

Turn Off Unneeded Login Items

Mac OS X can run applications or open files automatically when any given user logs in; items set to open in this way are called login items. (Under Mac OS X 10.3 Panther, Apple called them startup items.) You can add a login item manually—for example, to save yourself a click or two by making sure your email program or Web browser runs every time you log in. Numerous applications also install login items—often without advertising that fact—so that background services they rely on are always available. Examples of programs that install background-only login items are iCal, Microsoft Office, Quicken, StickyBrain, and StuffIt Deluxe.

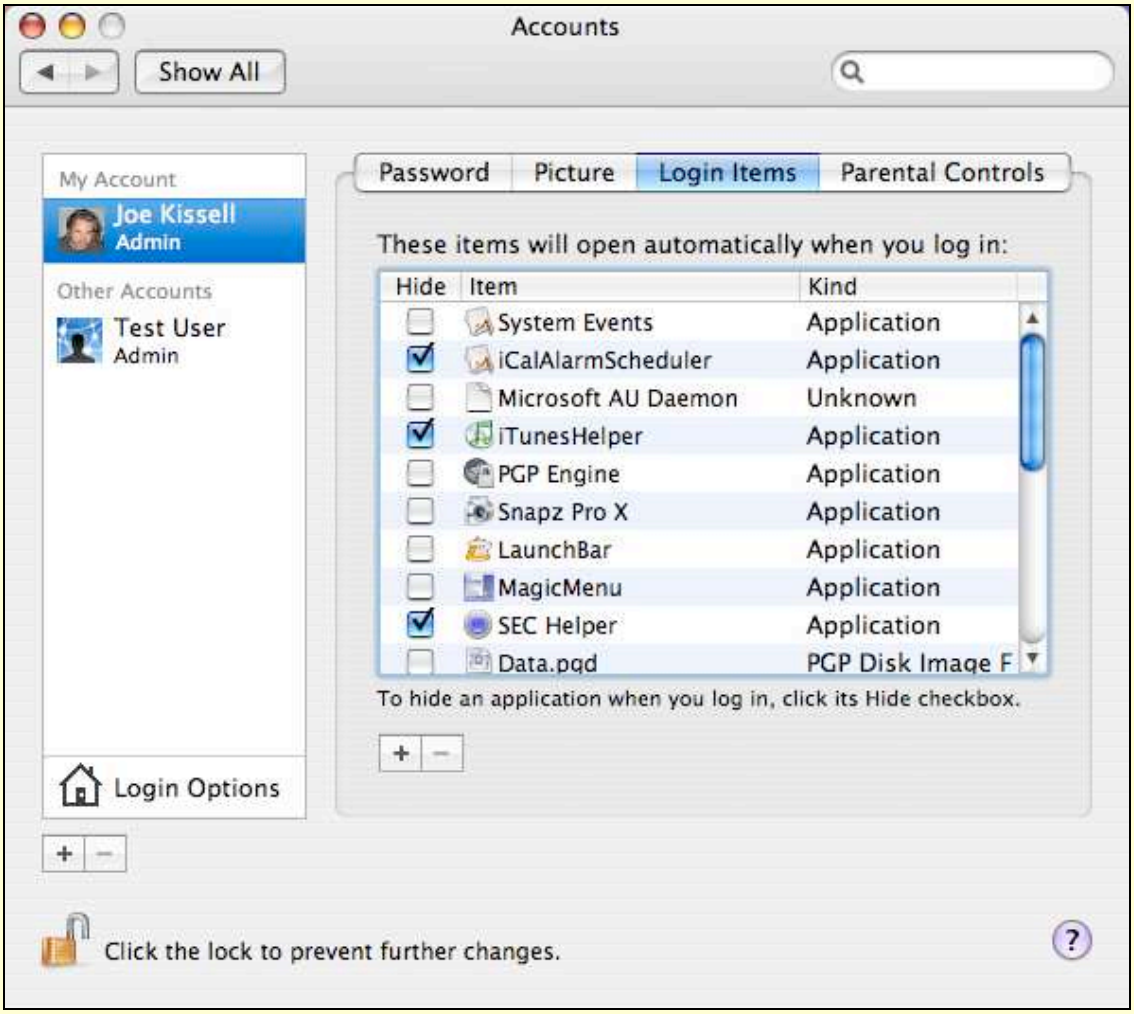
Login items are useful, but they can also increase the time it takes to start your Mac (or switch users). In addition, the more applications you have running at once, the greater your RAM usage and CPU load. So I recommend checking to make sure you don't have any login items you can do without.

To check your login items, follow these steps:

1. Go to the Accounts pane of System Preferences.
2. Select your account in the list on the left and click the Login Items button (see **Figure 2**).
3. Scan the list of login items for any you no longer use. If you find one, select it and click the − button. (This removes the item from the list but does not delete the corresponding file from your disk.) Repeat as necessary.

TIP If you hover your mouse pointer over an item in the Login Items list for a couple of seconds, a yellow tool tip appears with that item's complete path. This information may not tell you exactly what the item does, but it at least tells you where it is, which may provide important clues.

FIGURE 2



In the Login Items view, look for login items you no longer need and remove them.

NOTE You may find a few unfamiliar items in the Login Items list that are nevertheless legitimate and useful. In particular, do not remove these, if present:

- **iCalAlarmScheduler:** Enables iCal to display alarms even when the application is not running.
- **iTunesHelper:** Watches for an iPod being connected or disconnected, to help iTunes communicate with it.
- **Microsoft AU Daemon:** Schedules automatic updates for Microsoft Office applications.
- **System Events:** Enables AppleScript (or applications based on AppleScript) to send commands to parts of the operating system.

Set Up a Backup System

No amount of maintenance can guarantee that your hard drive will never crash, that your Mac will never be stolen, or that lightning will never hit your house. Any number of catastrophes could potentially imperil your computer—and its data. Of course, you can replace a computer, but what about your email, photographs, music collection, tax records, and all the other important information on your hard disk? To keep your data safe, you need good backups. If you've never taken the time to set up a proper backup system, the time is now!

I wish I could tell you that backing up your computer is a simple matter of clicking a few buttons. But there's more to it than that: understanding the various types of backup, choosing backup hardware and software that has all the features you need, configuring your system, storing backup media safely, and many other details. The good news, though, is that once you've set up a backup system, it should run happily with little intervention for months or years.

Because so much can be said about backups, I've written an entire ebook on the subject: *Take Control of Mac OS X Backups* (http://www.takecontrolbooks.com/backup-macosx.html). If you have any doubts or questions about backing up, I recommend giving it a read. I think you'll find it to be time (and money) well spent.

Although I can't cover everything in the *Backups* ebook here, I can give you a brief summary. For the best compromise among data safety, cost, and ease of use, I recommend the following:

- Obtain a full-featured backup application, such as EMC Dantz's Retrospect Desktop (http://www.dantz.com/en/products/mac_personal/index.dtml; $129), Prosoft's Data Backup (http://www.prosofteng.com/products/data_backup_info.php; $59), or Intego's Personal Backup X4 (http://www.intego.com/personalbackup/; $70).
- Use your backup application to store an archive of all your important files (and if you can afford the space, archive the unimportant ones too). Update this archive every day with files that are new or have been modified since your last backup—without deleting the old files in the archive.

- On a second partition of the backup drive (or on another external drive), make a bootable duplicate (a "clone") of your entire hard disk onto an external FireWire drive and update it at least once a week. All the previously mentioned backup applications can make duplicates as well as archives. Some applications make duplicates but not archives; of these, I suggest either SuperDuper! (http://www.shirt-pocket.com/SuperDuper/; $28) or Carbon Copy Cloner (http://www.bombich.com/software/ccc.html; free, donations accepted).
- If possible, schedule your backup software to update archives and duplicates automatically (at least daily for archives; at least weekly for duplicates).
- Funds permitting, maintain two or more sets of backup media. Be sure to store one of these sets offsite—that is, in a building other than the one where you normally keep your computer—rotating the sets every week or so.

Needless to say, you can back up your computer in many other ways, and I explore a wide variety of options—and why they may or may not be appropriate for different kinds of users—in my *Backups* ebook. But one way or another, get a backup system in place *right now*. Later on in this ebook, I reiterate important backup tasks: Back Up Changed Files (daily); then Back Up Everything and Rotate Backups Offsite (weekly). If you set everything up now, you'll breeze through those periodic tasks, almost without noticing them.

Run Apple Hardware Test

When you purchased your Mac, the box should have included a CD or DVD with an application called Apple Hardware Test. Depending on when you bought your computer, this could be an independent disc, or it may be included on the Mac OS X Install Disc. (Look for tiny lettering on the disc that says "To use Apple Hardware Test, hold down the Option key as the computer starts up," or words to that effect.) Find this disc now. (I'll wait while you root through your attic or basement to find it hidden in the bottom of a box somewhere.)

Back already? Super. You have in your hands a very special program. Apple Hardware Test can run only when you start up from the CD or DVD it came on; don't bother trying to copy it to your hard disk. This program performs a series of diagnostic tests on your Mac's hard-

ware, including the AirPort card, logic board, hard drive, RAM, modem, and video RAM. It doesn't repair anything, and it doesn't look for problems such as directory errors that are the province of Disk Utility (see Run Disk Utility, next). But it can identify subtle hardware defects that could later lead to serious problems. Whether your Mac is fresh out of the box or years old, you owe it to yourself to make sure its major components are in good health, and this is the easiest (and cheapest) way to do so.

NOTE Apple Hardware Test isn't the only tool that can check your RAM. Among the other utilities that can do this are TechTool Pro (http://www.micromat.com/tt_pro_4/tt_pro_4.html; $98) and Rember (http://www.kelleycomputing.net:16080/rember/; free). I've personally had bad RAM that Apple Hardware Test could identify while these others could not, whereas other Take Control authors have had the opposite experience. Your mileage may vary!

To run Apple Hardware Test, follow these steps:

1. Insert the disc with Apple Hardware Test on it into your Mac and restart, holding down the Option key until icons appear representing the available startup volumes.
2. Click the Apple Hardware Test icon, and then click the right arrow.
3. After the program loads, select a language and click the right arrow.
4. On the Hardware Tests tab, click Extended Test.
5. Take a nice hot bath or enjoy a stroll around your neighborhood. This test takes a while! The screen says, "Estimated time: 10–15 minutes, or longer depending on the amount of memory installed." Take the "or longer" part seriously. On a fairly fast test machine with 2 GB of RAM, the test took almost an hour and 45 minutes.
6. If all is well, the word "Passed" appears next to all the applicable tests in the Test Results area. If not, a failure message appears; if this happens, look in the About the Test and Results area for advice.
7. Click Restart to restart your computer.

I recommend running the test again after installing RAM or any other new hardware inside your computer, or if you begin to have inexplicable problems that ordinary disk utilities do not solve.

SIDEBAR BE SURE YOU HAVE ENOUGH RAM

The most important thing you can do to speed up your Mac and reduce crashes is to be sure it contains enough RAM. Few new Macs ship with what I consider "enough." Even though Mac OS X and most applications can run in as little as 512 MB, in my experience performance degrades quickly with that amount of RAM when you have numerous applications and windows open at once.

How much RAM *should* you have? The answer depends on the type of Mac, the way you work, and your budget. On the one hand, I think everyone should have at least 1 GB (or the maximum their machine supports, if less). On the other hand, more isn't necessarily better. For example, only a few people running the most memory-intensive applications would benefit from putting the maximum of 16 GB in a Power Mac G5.

In general, if your Mac can hold 2 GB or less, I suggest maxing it out (budget permitting). Go above 2 GB if you spend all day working with heavy-duty photo, video, or audio applications, if you run high-end scientific software that performs complex mathematical operations, or if your computer functions as a server in a high-demand environment.

Run Disk Utility

You know the old saying: "If it ain't broke, don't fix it!" With computers, though, things can be broken without manifesting any obvious symptoms. You can nip many such problems in the bud with a simple procedure that looks for, and fixes, common disk errors that can crop up over time without your knowledge. I recommend doing this not only as an initial step, but also monthly (see Use Disk Utility's Repair Disk Feature).

To repair your disk, follow these steps:

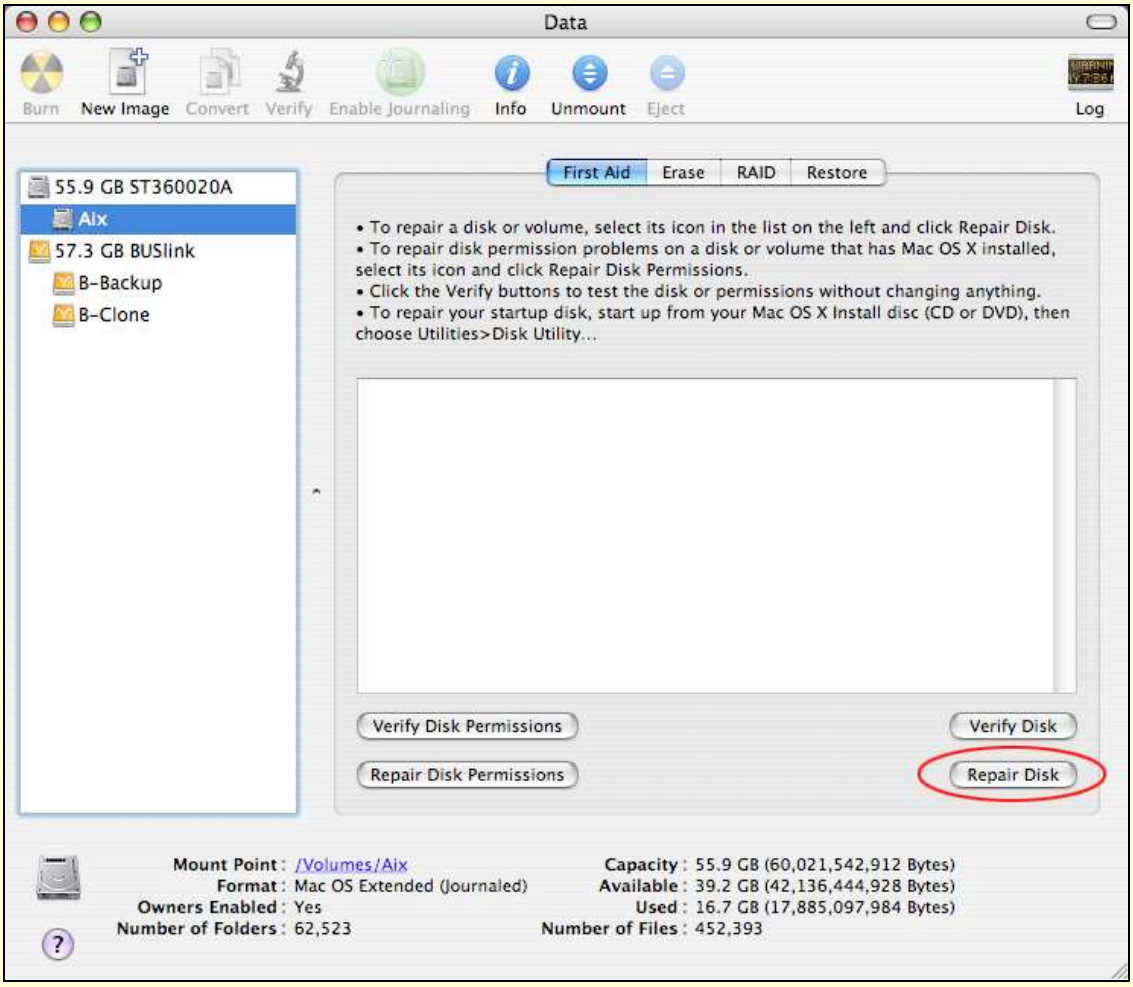
1. Start up your Mac from media *other than* your regular startup disk that also contains Disk Utility. This could be, for example:
   - A bootable duplicate of your startup disk stored on an external FireWire hard drive, a second internal drive, or a second partition of your main disk
   - A Mac OS X installation DVD or CD
   - A TechTool Protégé device, to which you've copied Disk Utility (http://www.micromat.com/protege/protege_intro.html)

NOTE You can't repair the disk from which Mac OS X is running (or the disk from which Disk Utility is running, if it's not the same one); that would be somewhat like trying to perform brain surgery on yourself. You can, however, verify the disk (by clicking Verify Disk in Step 4) to determine whether there are any problems that Disk Utility could repair.

2. Run Disk Utility. (If running from a cloned hard disk, you can find it in **`/Applications/Utilities`**. If running from a Mac OS X installation disc, click through the language selection screen and then choose Utilities > Disk Utility.)
3. In the list on the left side of the window, select your main startup volume (the one you want to test), as in **Figure 3**.
4. On the First Aid tab, click Repair Disk.

Disk Utility looks for common errors and repairs them if possible. Ordinarily, it displays a message saying that repairs were completed or that no repairs were necessary. In the (rare) event that Disk Utility encounters a serious problem it cannot solve, you may need to use a commercial repair tool such as DiskWarrior (http://www.alsoft.com/DiskWarrior/; $80).

FIGURE 3



Select a volume (other than the startup volume) on the left, and then click Repair Disk.

Make Sure Scheduled Maintenance Tasks Run

Mac OS X includes a tiny Unix utility called **`periodic`** whose purpose is to perform a variety of cleanup tasks, such as deleting old log files that would otherwise take up unnecessary space on your disk and updating the index that the Unix **`locate`** command uses to find files in the Terminal utility. The **`periodic`** utility can perform any of three sets of tasks. Once a day, **`periodic`** is supposed to run "daily" tasks; once a week, "weekly" tasks; and once a month, "monthly" tasks. (These names are more or less arbitrary; if, for example, you ran the monthly tasks every week, no harm would result.)

The **`periodic`** program doesn't launch itself, though; running it at the proper times is the job of another program, called **`launchd`** (under Tiger; in earlier versions of Mac OS X a utility called **`cron`**

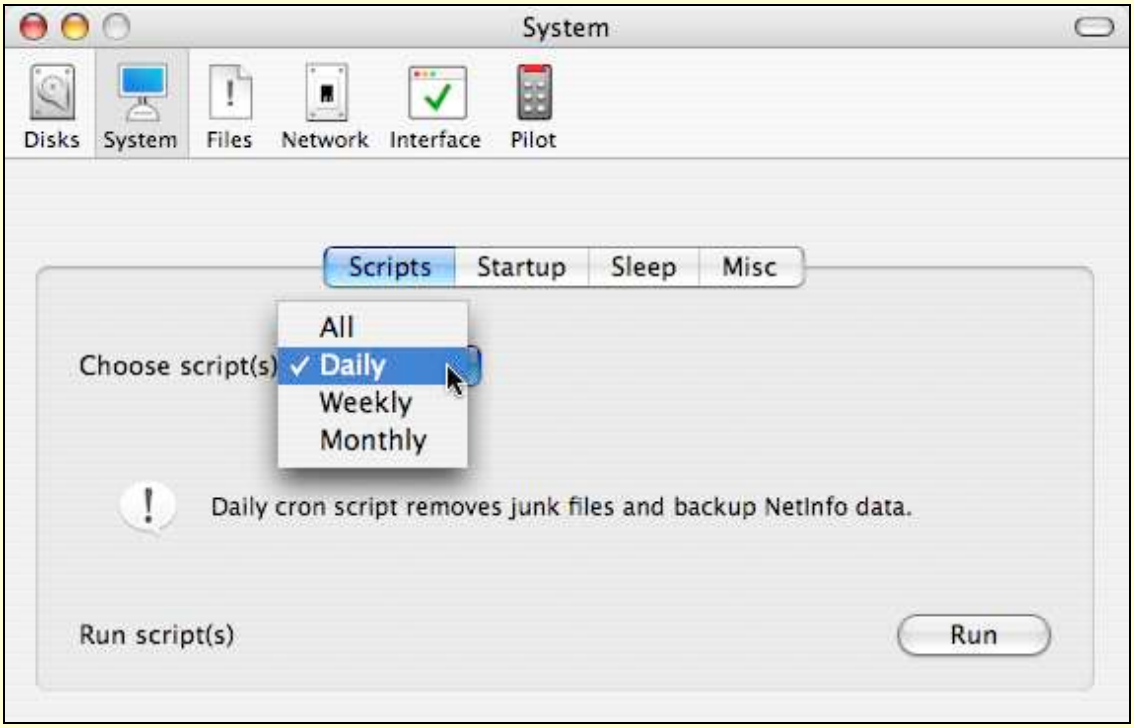
told **periodic** when to run). Apple set the launchers to run the **periodic** scripts in the middle of the night, so that they wouldn't slow down other things your Mac might be doing. The problem is that if your Mac happens to be off or asleep at the scheduled time (as it is for most of us), the scripts can't run. Tiger's **launchd** utility was supposed to be smart enough to notice that it had missed a scheduled task and run it the next time your Mac became active. Unfortunately, as of Mac OS X 10.4.4, **launchd** is flaky: sometimes the **periodic** scripts run (though possibly at completely unpredictable times) and sometimes they don't.

TIP To learn more about **launchd**, which is quite useful despite its limitations, see an article I wrote for *Macworld* magazine: "Launch Your Mac" (http://www.macworld.com/2006/01/secrets/februarygeekfactor/).

In short, unless you leave your Mac on and awake all the time, the **periodic** command needs a bit of help to do its thing. The easiest solution is to download any of several programs that enable you to run the maintenance scripts manually at any time or, in some cases, to schedule them for times you know your Mac will be available. Try one of these:

- **Anacron:** This utility runs the maintenance scripts whenever they're overdue, with no user intervention required. http://members.cox.net/18james/anacron-tiger.html (free)
- **Cocktail:** Cocktail (**Figure 4**) provides a single, simple interface for performing a wide range of maintenance tasks, including running the maintenance scripts, deleting cache files and old logs, adjusting hidden Finder, Dock, Safari, and Exposé settings, and more. Some tasks can run on a recurring schedule. http://www.maintain.se/cocktail/ ($15)
- **Mac HelpMate:** This utility can run the maintenance scripts manually or on a schedule. It also deletes various caches, adjusts hidden Finder and Dock settings, displays your drives' S.M.A.R.T. status (see Check Your Drives' S.M.A.R.T. Status), disk usage, and system uptime, and performs numerous other maintenance tasks. http://www.macworkshops.com/machelpmate/ (free; donations accepted)

FIGURE 4



Cocktail's System pane has controls for running the daily, weekly, and monthly maintenance scripts. You can also use the Pilot pane to schedule them to run automatically.

- **MacJanitor:** If you want nothing more than a simple utility that lets you run the daily, weekly, and monthly maintenance scripts manually, MacJanitor does that nicely. http://personalpages.tds.net/%7ebrian_hill/macjanitor.html (free)
- **MainMenu:** Like most of the other utilities in this list, MainMenu performs a wide variety of functions, including running the maintenance scripts, clearing caches, and deleting log files. Unlike the others, it puts all these commands into a single, always-accessible menu, so that you can run any of them with a single click. http://www.santasw.com/products.html (free; donations accepted)
- **OnyX:** Another multipurpose utility, OnyX can run the maintenance scripts manually (but not on a schedule), delete various caches and log files, adjust hidden Finder, Dock, and Safari settings, display log files, run Unix commands, and display disk usage and system uptime, among other tasks. http://www.titanium.free.fr/pgs/english.html (free)

WARNING! The utilities I list here are among dozens of tools that provide a pretty GUI wrapper to Unix commands. With all such programs, you should be careful not to click buttons blindly; because Unix commands can theoretically do just about anything, you could cause damage if you don't know what you're doing.

SIDEBAR **A CONVERSATION ABOUT PERIODIC MAINTENANCE TASKS**

Should you worry about running the periodic maintenance tasks at all? The experts had this to say:

Kirk McElhearn: This is one of my bugbears. In very few cases are these routines essential and, with all due respect, I think it's excessive to suggest otherwise. Too many users think that these routines can solve problems; I've never seen a case where this is true. At best—unless you use the `locate` command—they're placebos. They can clean out some log files, but again, only in some cases (if you run a server) does this make much of a difference.

Andy Affleck: The real advantage to running these tasks regularly is the log rotation. When I ran them manually I saw some space gains on my disk. It wasn't huge, but it was noticeable.

Dan Frakes: I agree with what Andy said: for most users it won't help much, but it will clean up log files. And if the user uses `locate`—or the GUI equivalent, Locator (http://www.sebastian-krauss.de/software/#locator; free)—it's useful to have the `locate` database updated regularly.

Chris Pepper: Right, and remember, the `locate` database is as relevant to SSH or a BBEdit shell worksheet as to Terminal.

Joe Kissell: I use `locate` all the time, so this is a big deal to me. For what it's worth, updating the `locate` database is one of the *weekly* script items. All three script types (daily, weekly, and monthly) rotate certain logs. The daily tasks also include backing up your NetInfo database and deleting certain "scratch" files, such as temporary files used when sending faxes. The monthly tasks include generating reports of system usage for each user.

Install Antivirus Software

If this ebook were about PC maintenance, one of the first steps would have been to install antivirus software. For Windows users, malicious software (or *malware*) has become epidemic in recent years, leading to untold grief and loss of time, money, and data. Among the varieties of malware are viruses (and their close cousins *worms* and *Trojan horses*), *spyware* (programs that spy on your computer usage, collecting sensitive personal data), and pop-up ad programs. Luckily, very little malware runs on Mac OS X: as of the time I wrote this, I could count on one hand the programs of this sort that have been found "in the wild."

Even though Mac users have been fortunate so far, we would be wrong to assume our computers are immune to infection. Sooner or later, someone is bound to come up with malicious software that does serious damage to Macs, and when that happens, those with enough foresight to have installed antivirus software will be much more likely to continue merrily with their work while the rest of us struggle to restore our systems. Furthermore, many kinds of malware spread via email, so you could unwittingly serve as a carrier by forwarding messages containing viruses to your Windows-using friends.

Your best defense is to load antivirus software—*and keep it up to date*. Developers release regular updates (to handle the latest threats), and you must be certain to configure your preferences to download them automatically as soon as they appear.

NOTE Although having antivirus software is better than not having it, and having up-to-date antivirus software is better still, there are no ironclad guarantees. A particularly wily virus might still sneak by. So you should still exercise caution, and especially avoid opening iChat or email attachments from unknown sources.

Antivirus software available for Mac OS X includes the following:

- **ClamXav**
  http://www.markallan.co.uk/clamxav/ (free)
- **Intego VirusBarrier X4**
  http://www.intego.com/virusbarrier/ ($70)

- **Norton AntiVirus**
  http://www.symantec.com/home_homeoffice/products/virus_protection/nav10mac/ ($50)

Use a Surge Protector

If that AC cord coming out of your computer goes directly into a wall socket, you're putting your Mac at the mercy of the power company, your home's wiring, and all the things that can go wrong in between: brownouts, voltage spikes, lightning, you name it. Your Mac's power supply is pretty robust, but a single random power surge can still fry its circuits. Even when the electricity appears to be flowing correctly, imperceptible fluctuations in the current can cause computer components to deteriorate more quickly than normal.

So please, take the basic precaution of using a surge protector. They come in many shapes, sizes, and prices—some with every bell and whistle, and some quite plain. Not all work equally well, so look for a model with a good warranty that covers not only the protector itself but also the equipment attached to it, in the event of a surge.

Better yet, consider buying a small UPS (uninterruptible power supply). A UPS contains a battery with enough juice to power your computer for anywhere from a few minutes to a few hours, along with circuitry to convert the battery's DC output to AC and switch over to the battery instantly and seamlessly in the event of a power outage. If the power goes out for more than a very brief period, the UPS sounds an alarm so that you will know to save your work and shut down your computer safely before the battery goes out. (Some UPS units include software to handle automated shutdowns.) In addition to protecting your computer from power outages, a UPS conditions the electricity flowing through it and absorbs power surges.

My favorite UPS manufacturer is APC (American Power Conversion). To find one of their models that suits your needs, use their product selector at http://www.apcc.com/template/size/apc/. Other UPS manufacturers that offer Mac-compatible software include:

- **Belkin**
  http://catalog.belkin.com/IWCatSectionView.process?IWAction=Load&Section_Id=76

- **MGE UPS Systems**
  http://www.mgeups.com/selector/ups/index.php?lang=us
- **Xantrex**
  http://www.preparedwithpower.com/backup/

SIDEBAR A CONVERSATION ABOUT SURGE PROTECTORS AND UPSES

Do you really need a surge protector? Is a UPS worth the extra money? The experts weigh in:

Sharon Zardetto Aker: In 20 years of having multiple Macs (there are six in use in the house right now), 10 years of which was in the country where power came and went with strong breezes, I've never had a surge problem affect any Mac, nor do I know of anyone who has ever had that problem, so I'm a little uncomfortable with this recommendation.

Dan Frakes: Consider yourself lucky! In my humble opinion, no computer should ever be run without a surge protector. All it takes is one incident to make a believer out of you!

Kirk McElhearn: I agree with Dan.

Adam Engst: Personally, I never use surge protectors, but I wouldn't run a Mac without a UPS. Power flickers too often for my taste, and preventing the lost work is worth it.

Tonya Engst: I've found that an important side effect of running a UPS, in addition to allowing a graceful shutdown at the beginning of a power outage, is that I can work on days when the power flickers frequently. In Seattle, probably once a month or more, and here in Ithaca, certainly once every 6 weeks, we have a day when the power goes out maybe 8 times, for about 20 seconds each time, over the course of an afternoon. Without the UPS, I wouldn't be able to work effectively on those days.

Geoff Duncan: I would be more comfortable recommending a voltage regulator or power conditioner over consumer-level surge protectors, which are usually pretty useless. UPSes are even better.

Perform Daily Tasks

If you performed all the preliminary steps in Start on the Right Foot, your daily maintenance ritual consists of at most two tasks, and at best, none!

Back Up Changed Files

In the type of backup system I recommend, your backup software begins by copying all your important files to some sort of external media—preferably a hard drive. What counts as "important" is up to you; it could be everything on your disk, just the contents of your home folder or your Documents folder, or just the files you're actively working on. But at a minimum, you should make a daily copy of any files you could not re-create in a matter of minutes, such as your saved email, photographs, and any documents you've spent hours working on during the day.

I advocate performing *additive incremental archives*. This means that after your first full backup of all the files you want (creating the *archive*), each successive daily backup copies only those files that are new, or have changed, since the last time (that's the *incremental* part); and it keeps the previous copies of the files, so you can go back to an earlier version if you accidentally modify a file you shouldn't have (that's the *additive* part; it also means that files you delete on your hard disk remain in the archive).

Note In addition to automated daily backups, it never hurts to make extra copies of files you're actively working on. If you take a moment to drag such files to a network server or iDisk (or even make an extra copy on the same drive) whenever you stop to take a break, you'll add yet another layer of safety to your valuable data.

If you configured your backup software to run on a schedule (see Set Up a Backup System), this happens automatically every day. You may, however, need to intervene in some cases, such as these:

- If you back up to optical discs, in which case you must insert new media as requested
- If you back up to a server that requires you to log in manually

- If you back up from, or to, a computer that's not always available at the same time of day (such as an iBook, PowerBook, or MacBook Pro)

Even if your backup software runs automatically, I recommend checking its logs regularly to make sure that it ran and that it backed up all the files you expected it to.

Download Software Updates

In Turn On Software Update, I suggested setting Software Update to check for, and download, any new updates from Apple daily. If you followed that advice, any important updates download in the background, and Software Update informs you when they're ready to install. So your daily task is more of a *don't* than a *do:* on the days when that inevitable alert appears, asking if you want to install the latest software updates, read about the updates but consider postponing installation for a few days—in other words, click Quit instead of Install.

I say this for two reasons. First, software updates take some time, and you may not have the time available at the instant Software Update informs you new software is ready. Besides, updates occasionally result in a cascading effect: now that you've updated X, Y no longer works and must be updated; now that Y has been updated, you must make changes to Z's settings. For this reason, I find Saturday mornings especially good for updating software (see Use Software Update to Install Apple Software Updates, ahead).

Second, in the unlikely event that an update contains a major error—as has happened a few times—waiting gives you a safety buffer. If you check sites like MacInTouch (http://www.macintouch.com/) or MacFixIt (http://www.macfixit.com/), you can get a sense of whether an update has raised any serious issues. However, take isolated reports of problems with a grain of salt. Updates can fail—or appear to fail—for many reasons, including user error. The fact that one or two people cry wolf should not dissuade you from applying an update.

SIDEBAR A CONVERSATION ABOUT SOFTWARE UPDATES

Many people install software updates as soon as they appear, but I recommend doing it once a week instead. Here's what some other experts have to say on the subject:

Kirk McElhearn: Daily isn't always best for updates—it means you're on the cutting edge and, since we've seen a handful of Apple updates that were pulled or quickly revised in recent years, it might be more risky than it's worth.

Andy Affleck: I agree with Kirk; daily software updates are very risky. I generally check MacFixIt and MacInTouch for a few days after each update to be sure it's a safe one. Doing software updates weekly is safer.

Tonya Engst: I try to do my Apple Software Updates over the weekend, because if they involve restarting it's too much time out of the day, plus it's a distraction.

Chris Pepper: In my department, we have the "Never on Friday" rule. The gist is that you should (a) assume that any work might go horribly pear-shaped, and (b) never start a process you're not prepared to see through to its conclusion. Since we don't like staying late Friday night or working Saturday, we don't start major upgrades on Friday afternoon (unless they're scheduled to run through the weekend). For any substantial maintenance (weekly, monthly, and especially annual), it's probably worth running or checking a backup first, and making sure you have twice as much time as you expect to need, so you don't start a process on Friday afternoon and suck away your weekend if the upgrade doesn't go smoothly.

Geoff Duncan: I check on Mondays but usually don't install anything at that point. Security updates have highest priority with me; I might apply them as early as Wednesday. Anything else has to wait until immediately after a backup and, following Chris's postulate that it's going to take at least twice as long as I think it will, until I have time.

Perform Weekly Tasks

Your daily maintenance tasks are minor—and perhaps even happen automatically. Once a week, however, you should set aside time for some more in-depth housekeeping. Depending on your work habits and system specifications, these weekly tasks might take 15 minutes or they might take a couple of hours. If you find that you can't finish them all conveniently in one sitting, feel free to stagger them—one each day of the week, for example—as long as any given task occurs about once every week.

Clean Up Your Desktop

I want to ask you a personal question. How many icons—not counting hard disks, network volumes, and removable media—are on your Desktop right now? (My answer: 11, though I usually try to keep it closer to 6. Ask me again tomorrow, after I've performed my weekly housekeeping.) I know lots of people who regularly have dozens or even hundreds of icons on their Desktops, who use it as a catchall for downloaded files, work in progress, email enclosures, and everything else that needs a temporary home. This is a bad idea! Here's why:

- Mac OS X considers every icon on your Desktop a window, and because every open window uses up a certain amount of RAM, more Desktop icons means greater RAM usage.
- Exposé shortcuts notwithstanding, putting files and folders on your Desktop makes them harder to find, because they're so easily hidden behind windows. (You can, of course, access the contents of your Desktop folder in a regular Finder window, but some people put items on the Desktop specifically to avoid working with Finder windows.)
- Your Desktop displays files and folders in icon view, unlike the more efficient list and column views available in other windows. (Yes, I know, you can view the contents of your Desktop folder in a window too, but work with me here…)
- Tossing lots of files into a single big storage area (wherever it may be) creates more work later on when you try to locate specific files.

- If you use your Desktop to hold important items that you want to keep "in your face" at all times, you'll lose that effect when the files become too numerous.

A cluttered Desktop slows you down, so take a few minutes once a week to organize most (if not all) the items on your Desktop into other folders.

I know of numerous organizational philosophies, but I have no wish to impose a rigid system on you. Instead, simply consider these suggestions for keeping files off your Desktop:

- If your chief concern is keeping track of a few important files, use the Finder's label feature (select a file and choose a color label from the bottom of the Edit menu) to mark all high-priority files in a given color. Then, use a smart folder to display all files on your disk labeled with that color. Choose File > New Smart Folder, choose Color Label from the first pop-up menu, and click the color you used to label the files. Then click Save and give your smart folder a name. The folder automatically updates itself to display all the files labeled with the selected color, wherever they may be stored on your disk.

TIP For details on using smart folders, read an article I wrote for *Macworld* magazine titled "Cut through the Clutter" (http://www.macworld.com/2006/01/secrets/febworkingmac/).

- If you store downloaded files on your Desktop, instead make a new folder named Downloads, put *that* on your Desktop (or somewhere else convenient, such as in your Documents folder), and keep the downloaded files inside it.

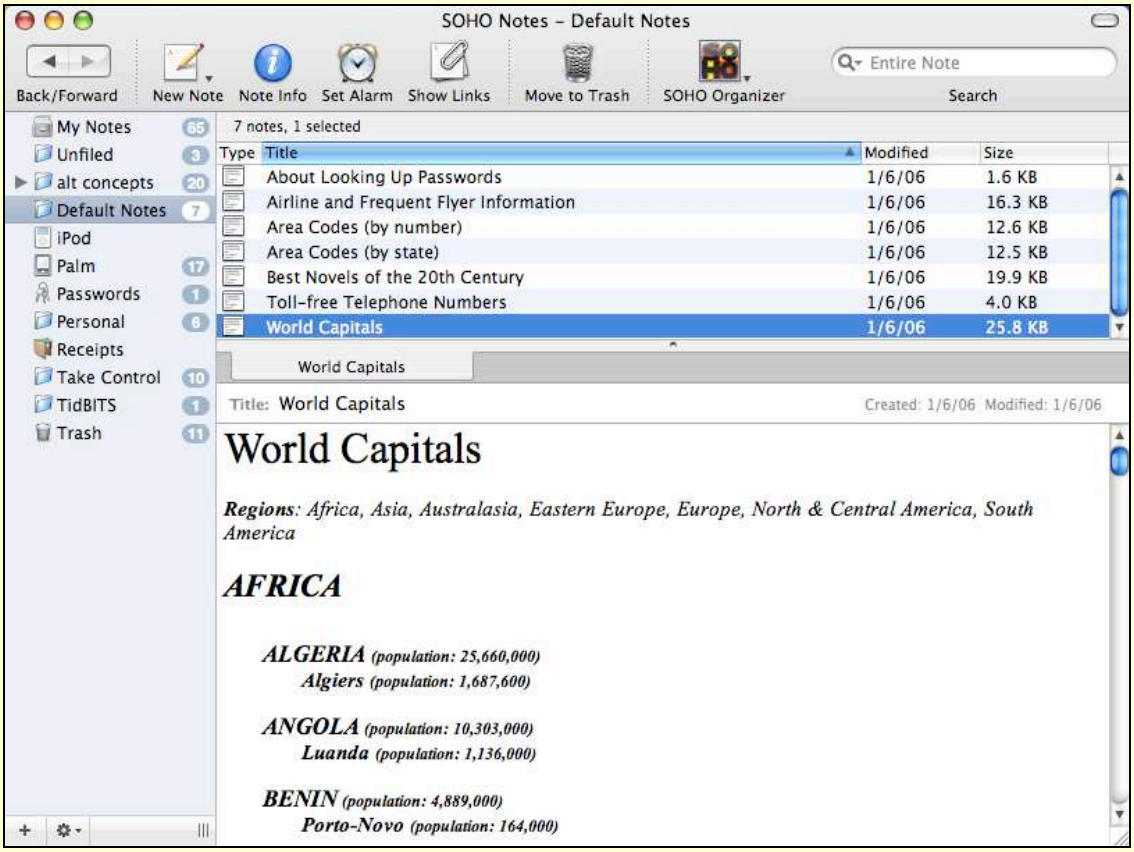
TIP To change the location to which Safari downloads files, choose Safari > Preferences, click the General button, and choose a location from the Save Downloaded Files To pop-up menu (choose Other to select any folder on your disk).

- Check your Desktop for files you no longer need, such as software you've already installed, PDFs you downloaded and printed (except this one, of course!), or outdated text clippings, and delete them.
- Several Mac OS X applications function as excellent snippet keepers, giving you a much better place to store things that might otherwise go on your Desktop (URLs, saved Web pages, text clippings, PDF and text files, and so on). Examples include:
  - **DEVONthink** http://devon-technologies.com/products/devonthink/overview.php (Personal edition, $40; Professional edition, $75)
  - **NoteBook** http://www.circusponies.com/store/index.php?main_page=notebook&sub=organize ($50)
  - **StickyBrain** http://www.chronosnet.com/Products/sb_product.html ($40)
  - **SOHO Notes** (see **Figure 5**) http://www.chronosnet.com/Products/sohonotes.html ($70)
  - **Yojimbo** http://www.barebones.com/products/yojimbo/ ($40)

One way or another, try to get your total number of Desktop icons below a dozen or so. You'll be surprised how much this simple step improves your efficiency.

TIP If you like to keep files and folders on your Desktop because you find it difficult to work with Finder windows, you may be able to improve your experience considerably by customizing the default Finder window. You can learn all about Finder customization in Matt Neuburg's ebook *Take Control of Customizing Tiger*. http://www.takecontrolbooks.com/tiger-customizing.html

FIGURE 5



SOHO Notes, whose interface is nearly identical to that of StickyBrain, is a competent all-purpose snippet keeper.

Back Up Everything

You already back up important changed files every day to an archive (see Back Up Changed Files), but a thorough backup plan also includes a bootable duplicate of your entire hard disk, which enables you to recover almost instantly from even a complete drive failure, with all your files intact. You can certainly update this duplicate every day if you wish, but because the process typically takes longer than updating an archive, I suggest updating your duplicate at least once a week.

NOTE The best place to store your duplicate is on an external FireWire drive—external so that you can store it in a safe place, away from your Mac, and FireWire because all Macs can boot from FireWire hard drives (only the new Intel-based Macs can boot into Mac OS X from USB hard drives). If you don't have a spare hard drive, you could store the duplicate on a stack of DVDs, though you would need to restore them all to a functional hard disk to use the duplicate.

If you do choose to use an external hard drive, and if (as I recommend) you store it offsite, you should think carefully about security, because ordinarily, bootable backups cannot be encrypted (and vice versa). Thus, anyone stumbling upon your drive could in theory read anything on it.

A relatively new breed of external hard drive employs hardware encryption using a physical digital key, which means your drive can be both encrypted and bootable. You'll pay extra for this capability, but it may be worth it. Such drives include RocStor's Rocbit drives (http://www.rocsecure.com/) and RadTech's Impact enclosures (http://www.radtech.us/Products/Impact.aspx).

If you configured your backup software to run on a schedule (see Set Up a Backup System), your duplicate should update itself automatically every week. If you opted for manual duplicates (or if the drive you use for duplicates isn't always connected), update your duplicate now.

NOTE Most backup software, when duplicating your drive onto an external volume, automatically performs an incremental backup—copying only those files that are new or changed since your last duplicate, and deleting files from the external volume that are no longer on your internal disk.

Rotate Backups Offsite

In Set Up a Backup System, I recommended maintaining at least two sets of backup media—for example, two hard drives, each with a partition for a duplicate and another to hold your archives. With two copies of your backups, you can keep one next to your computer, ready for the next day's backup, and another in a safe place offsite. That way, if disaster strikes your home or office and takes out one

of your backups, you have another to fall back on. If you swap your backup sets weekly, you'll rest secure knowing that even in the worst possible case, you'll lose no more than one week's data.

Today, after your backup software updates your daily archive and weekly duplicate, make the switch. Take the most recently used media and move it to another building, such as a friend's house or your office (if your computer is at home). Then, bring back the media you stored there last week, and you'll be ready for a new round of backups. You might even agree to a swap arrangement with a friend: every week you trade hard drives, giving each of you an offsite location for your data while keeping it in trusted hands.

WARNING! Don't store backups in your car. They're likely to be damaged by heat, cold, or humidity, and the risk of theft is much greater in a car than in a building.

Use Software Update to Install Apple Software Updates

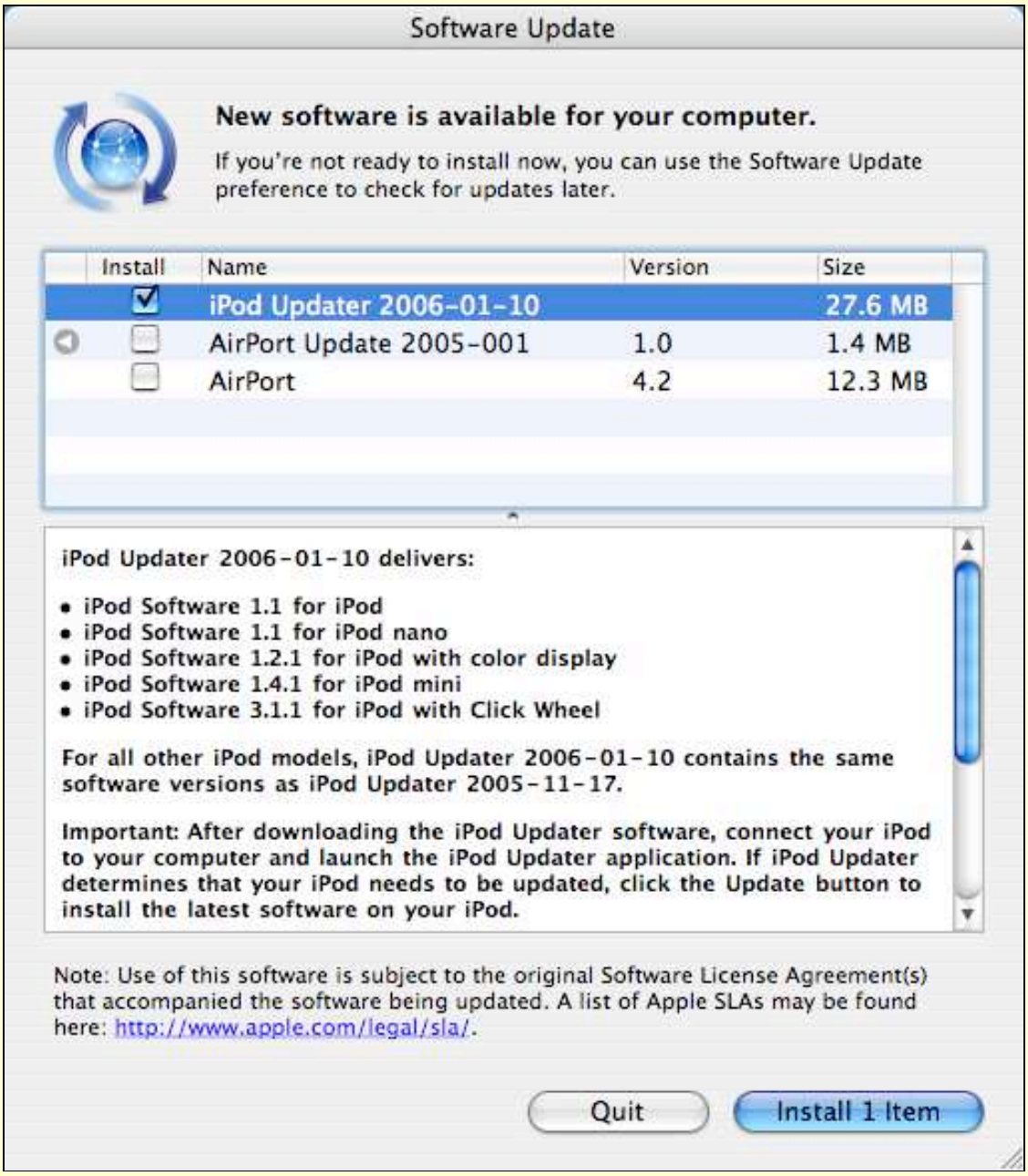
Software Update checks for new versions of any Apple software you have installed and (if you set it to do so) downloads them automatically. As I mentioned in Download Software Updates, though, you may wish to hold off on installing the downloaded updates until you have more free time and have checked to make sure they contain no serious flaws. When you're ready to install the updates, follow these steps:

1. Choose Software Update from the Apple menu. Software Update checks for updates and displays a list of any it finds, including those it has already downloaded but not yet installed (**Figure 6**). (If no updates are available, Software Update displays a message that says "Your software is up to date." Click OK, and skip the rest of these steps.)

2. Check the boxes in the Install column for the items you want to install. (Items with a icon require a restart after installation.)

3. Some items may not apply to you. For example, if you don't have an iPod, AirPort base station, or iSight camera, you can skip software updates for these items. In such cases, you can prevent Software Update from listing an item the next time it opens by selecting the item and clicking Delete. (If you later wish to see items you removed in this way, choose Software Update > Reset Ignored Updates.)

FIGURE 6



Select software updates to install in this window.

4. Click Install, and then click through any license agreements that appear.

Software Update installs your new software, prompting you to restart if necessary. If no restart is necessary, click Quit.

Check for Third-Party Software Updates

Like Apple's Software Update, third-party applications that have built-in automatic update checkers give you the option of postponing an update until a more convenient time. But some applications check only when you explicitly tell them to. Therefore, take a few minutes to launch your most frequently used applications and use their Check for Updates features (see Update Third-Party Software for more information). Download and install any free updates now, following the developers' instructions.

TIP Another way to check for the latest software is to subscribe to VersionTracker Pro. This service includes software that runs on your Mac and alerts you when updates to any of your installed software become available, at which time you can download and install them with a couple of clicks. VersionTracker Pro monitors up to three Macs for an annual fee of $50, but see the coupon at the back of this ebook before you buy.
http://www.versiontracker.com/subscribe/mactrial/

Reboot If Performance Seems Slow

Some people turn off their Macs whenever they aren't in use, either to save electricity or simply out of habit. Others leave them on all the time, on the basis that sleep mode uses a trivially small amount of energy and enables you to get back to work more quickly. (I fall into the latter group, turning off my Macs only when I go on vacation, or when for some other reason I expect to be away from them for more than a day.)

If you leave your Mac on all the time, you may find that over a period of days or weeks, its performance slowly degrades. One common reason for this phenomenon is memory leaks (see RAM usage), but other kinds of bugs can also lead to excessive RAM and CPU usage that gradually bogs down your system. In addition, as you use your Mac it may create virtual memory swap files on your hard disk if you

run low on physical RAM; the more of these files actively in use, the slower your computer runs.

When you begin to notice that your Mac doesn't feel as peppy as usual, try restarting (by choosing Restart from the Apple menu). If you use lots of resource-intensive applications and have a slower machine with comparatively little RAM, you may need to restart as as frequently as every day; if you never notice any slowdowns, once month may be adequate. You be the judge.

I talk more about keeping an eye on potential performance problems later, in Monitor Your Mac's Health.

Consider Clearing Certain Caches

As you use various applications, they often store frequently used information in files called *caches*. For example, when you visit a Web site in Safari, it stores the images from that site in a cache, so that the next time you go to the site, it can display the images more quickly (because it doesn't have to download them again). Another example is Microsoft Word, which can display the fonts in the Fonts menu in their own typefaces. If Word had to read in all those fonts each time you used it in order to build the Font menu, every launch could take a minute or more, so Word builds a cache that contains all the data it needs to draw the font names.

Caches are good things—usually. Sometimes they cause more problems than they solve. One problem occurs when an application has cached hundreds or thousands of files—so many that reading in the caches takes longer than reading (or recomputing) the data they contain, thus slowing down the application instead of speeding it up! A more serious problem involves damaged cache files. Maybe an application failed to write the file correctly in the first place, maybe the information it put into the cache was bad, or maybe a disk error corrupted the cache after the fact. Whatever the reason, a corrupted cache file can cause an application to crash, run slowly, or exhibit any number of incorrect behaviors.

NOTE I discuss caches in some detail in a *Macworld* magazine article titled "34 Software Speedups" (http://www.macworld.com/2006/02/features/softwarespeed/).

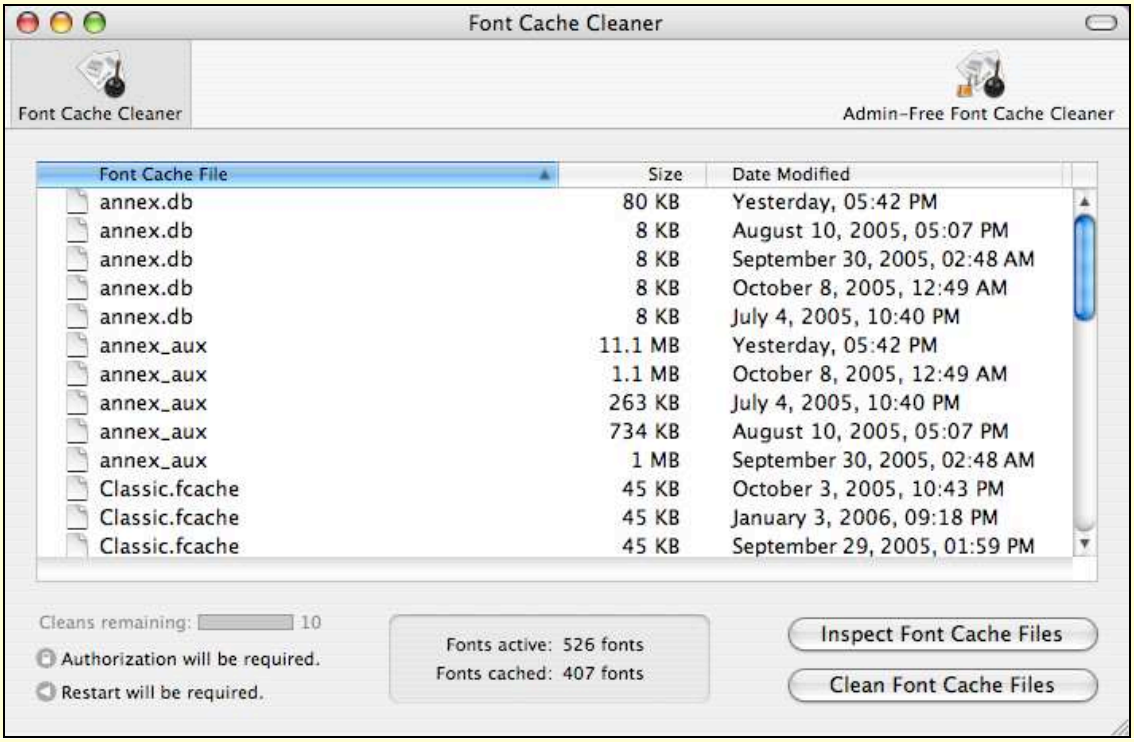
Several utilities provide a one-click method for deleting one or all of your caches. I recommend against blindly deleting all your caches; as I said, they *usually* help rather than hinder. However, a few caches in particular have notorious reputations, and clearing them periodically tends to make the applications that use them run more smoothly. My recommendations for weekly cache maintenance are as follows:

- Clear your Safari cache by choosing Safari > Empty Cache (Command-Option-E).

TIP Alternatively, you can disable Safari's cache altogether. In the Finder, navigate to the folder **`~/Library/Caches/Safari`**. Select this folder and choose File > Get Info. In the Ownership & Permissions section of the Info window, choose Read Only from the pop-up menu, and then close the Info window. This prevents Safari from being able to write new files into the cache folder.

- Safari stores *favicons* (those tiny icons that appear next to a site's URL in the address bar) separately from the main cache. To remove them, quit Safari and drag the folder **`~/Library/Safari/Icons`** to the Trash.
- Mac OS X maintains a system-level font cache that numerous applications use. Bad font cache files have been implicated in numerous problems. The easiest way to wipe out these caches is by using Font Finagler (see **Figure 7**). Or, to delete most of your font caches manually, drag the folder **`/Library/Caches/com.Apple.ATS`** to the Trash. Enter your password when prompted to do so, and click OK. Then restart your computer and empty your Trash.
  http://homepage.mac.com/mdouma46/fontfinagler/ ($10)

FIGURE 7



Font Finagler's Font Cache Cleaner window lists all your system's font caches and lets you delete them with a single click.

- Microsoft Office's font cache seems more prone to problems than the systemwide font cache. To clear it, quit all your Office applications and then drag the file **`~/Library/Preferences/Microsoft/Office Font Cache (11)`** to the Trash.

Perform Monthly Tasks

Once a month—perhaps on a different day from the one on which you perform your weekly tasks—set aside about 15 minutes to perform four additional maintenance tasks: emptying your trash, running Disk Utility, cleaning your screen, and cleaning your mouse or trackball.

Empty Your Trash

I have no doubt that some readers are now concluding I'm out of my mind. *Empty my Trash once a month?! What could he be thinking?* The thing is, of those people, some of them are thinking that once a month is far too seldom, and others are thinking it's far too often!

Your Trash, as you probably know, is simply another folder. As a result, moving files or folders to the Trash does not delete them, just as tossing a crumpled paper in a physical trash can doesn't automatically turn it into landfill. On your Mac, as in your home, the contents of the Trash continue to take up space until you empty the Trash (in the Finder, choose File > Empty Trash). When you empty the Trash, you free up that now-unused space for other files.

How often should you do this? It depends on how you think about the Trash.

Let me put my cards on the table: I am a compulsive Trash emptier. I picked up this habit many years ago when I was struggling to make do with a 20 MB hard disk and every kilobyte counted. If I left items in the Trash without emptying it for more than a few hours, I'd run out of space—simple as that. Today, even though I have a large hard drive with plenty of free space, I still haven't kicked that habit. On the other hand, because I know I'll be emptying the Trash shortly after putting a file there, I tend to think of moving files to the Trash as a final deletion from which recovery is impossible, so I don't take that step unless I'm entirely sure I can do without that file.

On the other end of the spectrum are what I'll call pack rats. They cringe at the idea of getting rid of anything for good. For them, the Trash is just another folder, and unlike a physical trash can, it never gets full. You can keep putting stuff in there for as long as you want. So they freely move files and folders to the Trash that don't seem especially important at the moment—just to get them out of the

way—because they realize they can open up that folder at any time and get the files back.

In between, of course, are most of the rest of us. Each person's Trash philosophy is a bit different from the next person's. If you're that hypothetical person right in the middle of the Trash emptying spectrum—neither a pack rat nor a compulsive emptier—let's just say that today is a good day to empty the Trash.

For everyone else, here are some reasons why you might want to move toward the center, toward what I'm proposing as the happy medium of monthly Trash emptying.

For those on the compulsive side, consider this:

- Everyone makes mistakes. You can probably recall at least one occasion when you had to fish a file out of the Trash. Remember that once you've emptied the Trash, the only way to recover deleted files is to try expensive (and often unsuccessful) undelete utilities or to send your drive to a much more expensive data recovery service. Giving yourself a bit of a safety net might save you grief later.
- Modern hard drives are large enough that you probably won't run out of space if you wait a few weeks before emptying the Trash.
- You'll be able to focus on your work and be more productive if you don't keep glancing down to see if the Trash can is full.

For those who lean more toward being pack rats, think about this:

- How many times have you had to recover a file from the Trash that was more than a month old. Ever? If that's a common occurrence, you should seriously consider revising your filing habits.
- Hard drives are large, but not infinite. You will eventually run out of space (see Disk usage). In the meantime, all those extra files can contribute to increased file fragmentation, potentially decreasing your Mac's performance (see Defragment Your Hard Disk).
- All those extra files, merely by sitting in the Trash, could result in productivity losses due to misleading Spotlight searches and longer waits for backups and diagnostic utilities to run.

And for everyone, regardless of how frequently you decide to empty the Trash, here's one huge piece of advice: look before you leap. Get into the habit of opening the Trash folder (by clicking the Trash icon in your Dock) and scanning its contents before you empty it. It may take you a few minutes, but you're far less likely to delete a file by mistake that way.

SIDEBAR A CONVERSATION ABOUT EMPTYING THE TRASH

How often should you empty your Trash? Let's ask the experts:

Sharon Zardetto Aker: I've always recommended, especially to the pack rats, that they create a folder called "To the Trash" and put stuff in there. At intervals, sort by modified date and anything older than [choose the age] goes to the Trash and gets emptied. You lose the convenience of having Command-Delete send to the Trash this way, but you don't have to review the Trash contents.

Kirk McElhearn: One problem with that approach is like-named files that overwrite existing files in the "To the Trash" folder. This doesn't happen with the Trash, which renames files if necessary.

Peter N Lewis: I'm not a pack rat, but I've trained myself to never empty the Trash unless absolutely needed. I find it hard to believe that issues of fragmentation and what-have-you are going to slow the computer down noticeably if you have a large hard drive that never comes near being full. Backups can be configured to avoid backing up the Trash folder if necessary.

Adam Engst: I'm with Peter on this; I empty the Trash only when I need the disk space or when there's some other reason to eliminate a particular file entirely (and when I'm too lazy to get rid of it individually via Terminal).

Joe Kissell: One big advantage to frequent Trash emptying is that Spotlight searches don't produce long lists of deleted (and therefore, in my way of working at least, irrelevant) files.

Tonya Engst: So many of the files in my Trash begin with "TCo" (for *Take Control of*) that I like to clear it out periodically so that I can easily find stuff if I put it in there accidentally. Otherwise, I'm scrolling through hundreds of versions of old ebook manuscripts.

Use Disk Utility's Repair Disk Feature

Earlier, I suggested using Disk Utility's Repair Disk feature to preemptively check for and eliminate common disk gremlins (see Run Disk Utility). Because disk errors do creep in during ordinary computer use (seemingly of their own accord), I suggest running Disk Utility and using its Repair Disk command once a month.

SIDEBAR WHY DO DISK ERRORS OCCUR?

In addition to Disk Utility, numerous third-party utilities check for, and attempt to repair, a wide range of disk errors. I've run these utilities hundreds of times over the years, and a shockingly large proportion of the time they've found and fixed errors—even though I wasn't aware of any problem. What causes these problems in the first place?

Although I can't give you a complete answer to this question, I can offer a few reasons *some* disk errors occur:

- **Buggy software:** Virtually all software contains some bugs, and bugs can cause bad data to be written to your disk or can corrupt existing data.
- **Hardware failures:** If your hard drive, logic board, or various other components have manufacturing defects—or develop malfunctions later on—these can result in disk errors.
- **User error:** If you unplug an external hard drive without unmounting the volume(s) first (File > Eject), you may interrupt the flow of data to the drive, or interrupt a housekeeping procedure. Many other user errors can also result in disk problems.
- **Power failure:** If the power goes out (or your battery dies) at an inopportune moment, a file may not be written properly.

In other words, stuff happens. You can guard against some problems simply by being careful, but stuff will still happen.

Clean Your Screen

Your computer's display attracts dust, and over time that can impair the screen's readability. (It's also, let's face it, just yucky.) Once a month, or whenever you can see a thin layer of dust on a black screen, give it a quick cleaning.

To clean a screen, use a soft, lint-free cloth—not a paper towel—moistened slightly with water to prevent static buildup. (You can also use cleaning solutions designed expressly for computer displays, but avoid anything containing alcohol or ammonia.) Wipe the screen gently; LCD displays, especially, can be damaged by excessive force.

> **Tip** I've had good results with iKlear screen cleaning products from Klear Screen (http://www.klearscreen.com/).

Clean Your Mouse or Trackball

I spent five years working for Kensington, a company that made its reputation in the Mac world by selling fantastic mice and trackballs. During the time I worked there, we saw the computing world transition from optomechanical devices (in which a ball turns slotted rollers connected to wheels whose speed and direction were measured with photosensors) to purely optical devices (in which a tiny camera tracks changes in the texture of your desk's surface, or the trackball's surface).

The biggest and most exciting advantage of optical designs was supposed to be that they never had to be cleaned. Gone were the old days of disassembling a mouse, losing the ball as it rolls across your office floor, and fumbling with cotton swabs to clean dirt and hair off of tiny rollers—a procedure you might have to repeat every few weeks or so. Optical mice have no moving parts—no rollers, no ball—so cleaning should never be necessary.

Experience has shown that although optical devices require *less* cleaning, they still require *some*. Specifically, optical mice tend to accumulate dust inside the opening at the bottom (often shaped like a keyhole) through which the sensor watches your desktop. If it becomes clogged, your pointer may move erratically, or not at all.

Optical trackballs have a similar opening above the lens (remove the trackball from the casing to see it) with a similar tendency to attract dust. In addition, the tiny bearings or rollers on which the ball rests can collect dust and hair, preventing the ball from moving smoothly.

And, of course, plenty of Mac users still have older pointing devices that use the ball-and-roller mechanisms and therefore require what we now think of as old-fashioned cleaning.

Your input device most likely came with cleaning instructions, so I'll simply say: follow them now. If you don't have the instructions (and can't find them on the manufacturer's Web site), they generally boil down to removing visible dust and gunk from wheels, rollers, bearings, and other moving parts (and away from the openings used by optical sensors). A slightly moistened cotton swab will do the job nicely.

TIP CLEANING MIGHTY MOUSE'S SCROLL BALL

The miniature trackball that enables you to scroll with an Apple Mighty Mouse can accumulate dirt, leading to poor scrolling performance. You can't remove the ball, but you can generally dislodge any dirt by inverting the mouse, pressing the ball inward as far as it will go (it springs inward slightly), and rolling it vigorously in every direction. If scrolling is still not smooth after you do this, repeat the procedure using a slightly moistened cloth or paper towel.

For most people, once a month is a reasonable cleaning interval. If you have pets, you may need to clean your mouse or trackball more frequently; if you work in an Intel clean room, maybe never!

Exercise Your Notebook's Battery

Early portable computers used NiCad batteries, which were subject to the dreaded "memory" effect. To get maximum run time from them, you had to discharge them completely before recharging them; if you failed to do this, even a fully charged battery might suddenly run out of power after a short time.

The lithium-ion batteries used in modern Mac notebooks (and iPods) don't suffer from memory, but according to Apple they still need to be "exercised" (that is, discharged and recharged periodically) for maximum performance. If you leave your notebook plugged in all the time, the battery never discharges beyond a few percentage points, so it gets insufficient exercise. For such users, Apple recommends that once a month you unplug your computer, run it on the battery until it discharges completely, and then recharge it.

For more information about Apple's notebook batteries, see http://www.apple.com/batteries/.

Check for Take Control Updates

All right, this isn't *exactly* Mac maintenance, but it's a good idea anyway. Every month, open each of the Take Control ebooks you own and click the Check for Updates button on the cover. If a newer version is available, you'll be able to download it, and if not, there may be updated information or news about an upcoming release. Make the most of your investment by keeping current with Take Control!

Perform Yearly Tasks

If you've ever looked around your home and thought, "It's time for a good spring cleaning," you know the value of decluttering. On your computer, as in your home, make an annual ritual of removing dirt, tossing out junk, and putting your belongings in order. Besides giving you a cleaner, more inviting environment, these yearly tasks can extend your computer's life span and help keep your data safe.

De-Dust Your Mac

Nearly all Mac models employ one or more internal cooling fans. Without them, your computer would overheat, leading to crashes, erratic behavior, and possibly even permanent damage to sensitive components.

But as the fans pull air into the computer, they also pull in dust. Dust can accumulate on the air intake vents, on the fan itself, or on any surface along the flow of air within the computer. When a layer of dust sits atop a hot component, it acts as an insulator, preventing some of the heat from escaping into the air. And if dust blocks the air flow, the heat that does escape has nowhere to go. Either way, your fan must work harder, which not only makes it noisier but also makes it suck in even more dust.

In short, dust is no friend of computers. By the simple act of getting rid of the dust, you can make your Mac cooler and quieter—and prevent all sorts of unpleasant problems.

You can remove dust by brushing or wiping, by vacuuming, or by blowing it off with compressed air. The compressed-air approach is the least desirable, because it puts the dust right back into the air. I prefer an ordinary vacuum cleaner with a hose attachment, but before using such a vacuum on the *inside* of your computer, take note of the warning just ahead. If you choose the brushing or wiping approach, be sure to use a *soft, dry* cloth or a *soft, dry* brush—and a gentle touch.

WARNING! Conventional AC-powered vacuum cleaners, particularly those with plastic nozzles, can in theory build up enough static charge to damage your computer's circuitry if used on the inside of a case. To vacuum inside a computer, use either a battery-powered vacuum or an anti-static vacuum designed expressly for cleaning electronic gear. In any case, be careful not to touch the nozzle to any components inside your computer.

To de-dust your Mac, follow these steps:

1. Shut down and unplug your computer; also unplug any peripherals or other cables.
2. Be sure you have room to work in. If your computer is located under a desk, for instance, move it out into the open.
3. Using your dust-removal tool of choice, remove dust from in or around any holes or slots on the outside of the case. Be aware that some of these openings may be on the bottom or the back of the case, depending on the design.

These remaining steps are for desktop computers only:

4. Following the instructions that came with your computer for installing RAM or other internal options, carefully open the case. The method for doing this varies widely from model to model. For example:
    - Most Power Mac models have a side panel that you can remove without tools by opening a latch.
    - Remove the back cover of iMac G5 models by placing the computer face down on a soft cloth and loosening three screws in the grill on the bottom.
    - For iMac G4 models, turn the computer on its side (again, using a soft cloth to protect the display), and loosen the screws on the bottom plate.

NOTE Some iBook and PowerBook models have removable keyboards or other ways to access the innards without performing major surgery. But even if you can see part of the computer's insides, you're unlikely to be able to reach spots where dust might accumulate. My advice is to leave the inside of a portable Mac alone; if you have reason to believe you have an internal dust problem, find an authorized service technician to open up the computer and clean it for you.

5. Once again, remove any visible dust using your tool of choice. If your PowerMac has add-in PCI or video cards, be sure to remove the dust from them as well. (In some cases, you may need to remove the card from the computer, de-dust, and reinsert it. If you do remove a PCI card, be sure to ground yourself—ideally, by wearing an antistatic strap—while handling it.)

WARNING! Be extremely careful when removing dust from the inside of your computer! If using a vacuum cleaner, avoid touching the hose tip or brush to any surface. If using a brush or cloth, apply the gentlest pressure possible.

6. Close the computer's case, reattach peripherals and other cables, and turn it back on.

WARNING! Avoid the temptation to perform any further disassembly on your computer beyond merely opening the case. As a general rule, if you have trouble reaching some spot inside your computer, so does dust.

Clean Your Keyboard

Before you put away that vacuum cleaner or canned air, give your keyboard a once-over too, following these steps:

1. Unplug the keyboard from your computer. (For portables, turn off the computer.)

2. Most keyboards cannot be disassembled easily, so don't even try. Instead, simply invert and shake to dislodge any large particles. For larger or more stubborn particles, you may need to use tweezers or a slightly moistened cotton swab.

3. Run the vacuum cleaner or compressed air between all rows of keys.
4. Using a soft and *very slightly* damp cloth, carefully wipe the keycaps clean. (Some heavy-duty stains may require the use of a mild all-purpose cleaner, but be sparing, because fluid that drips into the keyboard circuitry can damage it.)
5. If you're the patient type and your keyboard is especially cruddy, use a *very slightly* moistened cotton swap to clean the sides of the keys.
6. Plug your keyboard back in.

Clean Your iSight

If your computer has an iSight camera (either built in or external), this is also a good time to make sure it can see you clearly. Follow these steps:

1. Unplug your iSight (if appropriate).
2. Use a soft, *very slightly* damp cloth (or lens-cleaning paper, available from any camera store) to wipe the front surface, applying only gentle pressure.

WARNING! Do not use alcohol, ammonia, or any other chemicals; use only water.

3. Buff with a soft, dry cloth.

Make Archival Backups to DVD

By now, regular backups are a normal part of your routine: your backup software automatically updates your archives every day and your duplicates once a week, and you diligently rotate backup media offsite—right? (If not, see Back Up Changed Files, a daily task, and the weekly tasks Back Up Everything and Rotate Backups Offsite.) Even so, I recommend adding one final element to your backup regimen: archival DVDs.

If you've followed my advice, you already have archives of all your important files—going back several months or more—on each of two or more hard drives. You also have one or more complete, bootable

copies of your main hard disk as it existed at some recent time. This is all good, but some problems remain:

- Hard drives don't last forever. Sooner or later—in a year, or five or ten years—you'll no longer be able to access the data on your drives.
- Because archives constantly get bigger, the archive can eventually outgrow the drive you store it on.
- As your main hard disk fills up, you may want to delete files periodically to save space (see Remove Unneeded Files, next) and yet be able to retrieve those old files if you later need them.

I'm aware of several schools of thought regarding archival backups, so bear in mind that this is just one person's take on the process. In a nutshell, I recommend this: once a year, make a copy of all your backups (both archive and duplicate) onto a stack of DVDs, store them in a safe place, and then recycle the hard disk you use for archives by erasing it and starting over with a new, full backup. By doing this, you hedge your bets against hard drive failure, free up valuable space for archives, and give yourself a safety net in case you want to prune files on your primary hard disk.

NOTE I hasten to point out that DVDs don't last forever either, but if you store them carefully in a dark, cool, dry place, they should be readable for ten years. By the time you approach that point, if you still want to keep the data, you should migrate the contents of your discs onto new media.

To archive your data, obtain a big stack of recordable DVDs and follow these steps:

1. Make sure you have a backup application that can create duplicates and span data across multiple discs. Examples include:
   - **Impression**
     http://babelcompany.com/impression/ ($49)
   - **Intego Personal Backup X4**
     http://www.intego.com/personalbackup/ ($70)

- **Retrospect Desktop**
  http://www.dantz.com/en/products/mac_personal/index.dtml
  (downloadable copy, $119; boxed copy, $129)
- **Retrospect Express**
  http://www.dantz.com/en/products/express.dtml
  (free with purchase of selected third-party hard drives, or available as part of Allume's $100 CheckIt suite:
  http://www.allume.com/mac/checkit/)
- **Toast 7 Titanium**
  http://www.roxio.com/en/products/toast/ ($100)

2. Attach the drive you use for archives (if it's not already attached).
3. Following the instructions included with your backup application, select your archive drive as the source and your DVD burner as the destination.
4. Begin the backup process, feeding in blank discs as needed.
5. When the backup completes, repeat Steps 3 and 4 with your primary hard disk as the source (or, if you prefer, use a recent duplicate as the source).
6. Store your newly burned DVDs in a dark, cool, dry place.

> **TIP** Better yet—if you can afford the time and the media—make *two* complete copies of both archives and duplicates, and store them in different places.

7. Configure your backup software to replace the existing archive with a fresh, full backup on its next run. (In some cases, you may need to erase the drive manually first.) Again, consult the documentation that came with your backup software for details.

Now that you have a safe copy of all your data, you can consider deleting files to make extra space on your main hard drive, as I describe in the following section.

Remove Unneeded Files

Just as your home probably needs a good spring cleaning once a year, your computer can use a digital tidying-up now and then. So take this opportunity to get rid of applications you don't use, outdated files you'll never look at again, and any other crud that has gathered in the dark corners of your hard disk.

The process is the same one I described near the beginning of this ebook. Flip back to Clean Out Accumulated Cruft for complete instructions, and repeat that procedure now.

Change Your Passwords

Passwords are a fact of life in the wired 21st century. You probably have dozens or even hundreds of passwords, such as these:

- Your Mac OS X administrator password
- Passwords for .Mac and any other email accounts you may have
- Passwords for Web sites and other online services
- A password for your AirPort base station, and perhaps another one for your wireless network
- Passwords that protect encrypted files, folders, or volumes (such as your backups)

It's easy to become lazy—choosing short, easy-to-type (and easy-to-remember) passwords and reusing the same password in multiple places. The Mac OS X keychain enables you to store most of your passwords in one place and access them easily, but it can also contribute to password laziness by keeping you from noticing how often your passwords are required.

If you're the only person who uses your computer, and if you don't access sensitive information online (such as bank accounts or proprietary corporate data), you can probably get away with relatively few passwords that remain the same indefinitely. Otherwise, I strongly recommend changing your passwords—at least, those that protect the most sensitive information—once a year (or more often). That way, if someone were to guess one of your passwords, it would be useful for only a limited period of time.

Look for passwords to change

Each Web site, application, or device has its own procedure for changing passwords, and I can't begin to cover them all here. I will, however, mention a few common places to look:

- To change your Mac OS X user account password, go to the Accounts pane of System Preferences. Select your user name in the list on the left and click the Change Password button in the Password view.
- To change your .Mac password, go to http://www.mac.com/ and click the Log In link on the right side of the blue .Mac tab, which runs across the top of the window just under the row of tabs. Enter your member name and password. Then click your member name on the .Mac tab (logging in again if asked to do so) to display the Account Settings page, click Password Settings, and follow the instructions.
- To change the password used by your AirPort base station or your wireless network, open AirPort Admin Utility (in **`/Applications/Utilities`**). Select your base station and click Configure. Then, in the AirPort view, to change the password of the base station itself, click Change Password. To change the password of your wireless network, click Change Wireless Security.

In addition, I recommend opening Keychain Access (which is also in **`/Applications/Utilities`**) and looking through the passwords stored there. That will give you an important reminder of many of the Web sites and applications for which you've already established passwords.

Choose a good password

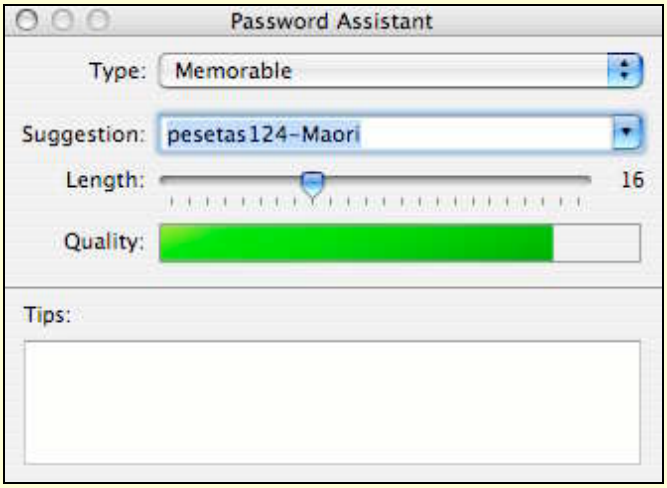
You've undoubtedly heard this sermon before, so I won't beat you over the head with it, but let me briefly reiterate the qualities of a good password:

- **Longer is better:** A 16-character password is much more secure than a 6-character password, and even longer is better still.
- **No common words:** Don't use a word (or words) from the dictionary as your password; a hacker can break it easily. Also avoid words and numbers people might guess: your favorite color, date of birth, pet's name, and so on.

- **Mix letters, case, and numerals:** Every password should include at least one uppercase letter, at least one lowercase letter, and at least one numeral.

Luckily, Tiger includes a tool to help you create passwords that meet these requirements: Password Assistant. Whenever you create a new password (for instance, in the Keychain Access utility or in the Accounts pane of System Preferences), a button appears next to the New Password field. Click this button to display Password Assistant (**Figure 8**).

FIGURE 8



Password Assistant enables you to generate passwords of any desired length and type.

To use Password Assistant, follow these steps:

1. Choose a type from the Type pop-up menu. Most of the choices (Memorable, Letters & Numbers, Numbers Only, Random) are relatively self-explanatory. The choice FIPS-181 Compliant creates passwords that comply with the U.S. Department of Commerce standard. The options Memorable and Random may also include punctuation.
2. Move the slider to the desired password length.
3. If you don't like the automatically generated choice shown in the Suggestion field, click the arrow at the right of the field to see other options, or choose More Suggestions to generate even more. For each password, the Quality bar fills up farther to the right as the password becomes harder to guess (either by a person or a computer).

Careful readers may have noticed that I omitted two common tasks from my recommendations of periodic maintenance procedures: repairing permissions and defragmenting your hard disk. Read this section to discover why you might never need to do these things—or whether you're one of the few people who should.

Repair Permissions

If you visit Mac discussion forums, blogs, and news sites, you've probably seen repeated recommendations to use Disk Utility's Repair Permissions feature. Some people recommend repairing permissions on a daily basis, or before and after every software installation, or as a first troubleshooting step when any sort of problem arises. Anecdotes abound about the magical curative (or prophylactic) properties of this feature, so it has achieved a mythical status—in much the same way rebuilding the desktop file was a standard cure-all under Mac OS 9.

At the risk of being labeled a heretic, I'd like to suggest that in most cases repairing permissions is nothing more than a placebo. True, the procedure can solve certain problems and rarely does any harm, but as a routine maintenance task, I consider it a waste of time. To explain why, I should provide a bit of background.

In Mac OS X, each file contains information specifying which users (or parts of the system) can read it, modify it, or execute it. This information is collectively known as *permissions*. If a file has incorrect permissions, it can cause applications to misbehave in various ways, such as crashing or failing to launch.

Ordinarily, installers set the correct permissions for the files they install, and the permissions stay that way permanently. However, a poorly written installer can mess up permissions—even for files it did not install—and if you use Unix commands such as **`chown`** and **`chmod`**, you can accidentally set files' permissions incorrectly. These sorts of problems occur infrequently, but they do occur.

The Repair Permissions feature looks for software installed using Apple's installer, which leaves behind files called *receipts* that list the locations and initial permissions of all the files in a given package. Repair Permissions compares the current permissions to those listed in the receipts and, if it finds any differences, changes the files back.

The command ignores software installed in other ways (using a different installer or drag-and-drop installation, for instance) and knows nothing about legitimate permission changes you may have made deliberately.

Although I said earlier that some kinds of disk problems can occur without any provocation (see the sidebar Why Do Disk Errors Occur?, earlier), permissions don't go out of whack all by themselves; you (or software you install) must do something to change them. And not all changes are bad; in many cases, a file's permissions can be different from what they were originally without causing any problems. So repairing permissions makes little sense as a regular activity.

NOTE I should mention that Apple suggests repairing disk permissions after installing new software. I suspect that their reason for doing so is to head off tech support calls about problems resulting from the use of a few poorly written third-party installers.

I do, however, recommend repairing permissions as a *troubleshooting* step if (especially right after installing new software) you find that an application no longer launches, or produces inexplicable error messages. To repair permissions, follow these steps:

1. Open Disk Utility (in **`/Applications/Utilities`**).
2. Select a volume in the list on the left.
3. In the First Aid view, click Repair Disk Permissions.

Disk Utility resets the permissions of files installed using Apple's installer.

TIP For much more detail about permissions, I recommend reading Brian Tanaka's *Take Control of Permissions in Mac OS X*. http://www.takecontrolbooks.com/permissions-macosx.html

Defragment Your Hard Disk

As you use your computer, your files gradually become fragmented into smaller segments scattered across your disk. Some people consider this a serious problem and go to great lengths (and expense) to correct it. Before worrying about fragmentation, you should

understand how and why it happens—and what the real-world consequences are.

Pretend, for the sake of illustration, that your hard disk consists of exactly ten blocks, and that initially, your disk contains five small files (A, B, C, D, and E), each of which takes up exactly one block. Your disk looks tidy and clean, something like this: **A B C D E _ _ _ _ _**.

If you delete files B and D and add a couple of new files, F and G, your disk looks like this: **A _ C _ E F G _ _ _**. If you then add a file H that's twice as big as the others, the drive puts it at the end, like so: **A _ C _ E F G H H _**. Now let's say file G grows to two blocks in size. There being too little space between F and H, G must split into two segments: **A _ C _ E F G H H G**. Finally, if you add file I and delete file F, your disk looks like this: **A I C _ E _ G H H G**.

Are you with me so far? Now imagine this happening with hundreds of thousands of files of many different sizes. Some tiny files might occupy just one block, while some huge ones may occupy millions of blocks. The more you read and write files, the more jumbled the data becomes: individual files split into numerous noncontiguous chunks, and lots of small, empty spots where other files once lived. That's fragmentation: the normal state of your hard disk!

Ordinarily, you never notice fragmentation, because Mac OS X keeps track of which parts of which files are where, and automatically reassembles or disassembles them as needed. With modern hard drives, this process goes so fast that it's normally imperceptible. Furthermore, starting with Panther, Mac OS X included automatic background defragmentation of smaller (<20 MB) files, so that although files may not be contiguous with each other, at least most of them are in one piece.

The problem occurs when you have programs that must read or write massive amounts of information in real time, such as audio or video recording and editing applications. When these large files become fragmented, the drive's read-write head must physically zip back and forth over the disk to get all the segments, and sometimes the rate at which it does the zipping is too slow to keep up with the amount of data coming in (or going out). The results can include gaps in the data, stuttering, or slow application performance.

For ordinary users, defragmentation is a waste of time unless the fragmentation is extraordinarily severe (as evidenced by long delays in opening and saving files). But if you use high-end audio or video applications regularly, occasional (say, monthly) defragmentation is worthwhile. Several utilities pick up where Mac OS X leaves off, performing thorough defragmentation and making sure all the empty space on the disk is contiguous, in order to squeeze every last bit of performance out of your drive. The process is quite slow, however—and if you're defragmenting large disks, your computer could be effectively out of commission for many hours. I recommend letting the process run overnight (or better yet, over a weekend). Defragmentation is also somewhat risky, since it involves deleting and rewriting almost every file on your drive. A good backup is always essential before undertaking defragmentation.

NOTE Related to defragmentation is *optimization*, which means moving the most frequently used files to the portions of the disk that can be accessed most quickly. Most utilities that defragment also optimize.

Utilities that perform defragmentation include:

- **Disk Defrag (part of SpeedTools Utilities)**
  http://www.speedtools.com/STUS.shtml ($100)
- **Drive Genius** (see **Figure 9**)
  http://www.prosofteng.com/products/drive_genius_info.php ($100)
- **iDefrag**
  http://www.coriolis-systems.com/iDefrag.php ($30)
- **TechTool Pro**
  http://www.micromat.com/tt_pro_4/tt_pro_4.html ($98)

FIGURE 9

Defragmenting hard disks is one of Drive Genius's many capabilities.

TIP Another way to defragment your disk is to make a complete, bootable copy (a clone) onto another hard disk, erase the original disk, and then reverse the process, cloning the backup disk onto the original. When the computer writes data to an empty drive, it automatically makes all the files contiguous.

Note that you cannot make a bootable clone simply by dragging files onto another drive. You must use a utility designed to do that job, such as SuperDuper! (http://www.shirt-pocket.com/SuperDuper/; $28), Carbon Copy Cloner (http://www.bombich.com/software/ccc.html; free, donations accepted), or most full-featured backup programs.

When a New Version of Mac OS X Is Released

Every 18 months or so, Apple rolls out a new, major update to Mac OS X. The current version, Mac OS X 10.4 Tiger, will be replaced by Leopard (10.5) in the not-too-distant future. As of early 2006, I don't yet know exactly when this will happen or what Leopard's features will be. I do know that in the weeks preceding the introduction of Mac OS X 10.5, I'll be working hard on *Take Control of Upgrading to Leopard*, and that most Mac users will want to upgrade. In anticipation of these facts—and of similar upgrades in the future—I'd like to share some advice you should follow whenever Apple releases a major new version of Mac OS X.

> **Note** Even more important than the major upgrades is keeping current with minor updates to Mac OS X, because these are likely to fix serious bugs and security holes. For more information, read Install the Latest Version of Mac OS X and Use Software Update to Install Apple Software Updates.

Buy It!

For the past several years, Apple has consistently charged $129 for major Mac OS X upgrades. As much as we might all wish they were less expensive, I recommend adding that amount to your budget right now; ultimately, you'll get much more than your money's worth. Major upgrades invariably contain features that enable you to get more done in less time and with less effort. If time is money, upgrades pay for themselves. So plan to make that investment, and it won't seem like such a big deal when the time comes.

Buy *Take Control of Upgrading to ____*

Barring unforeseen problems, I expect *Take Control of Upgrading to Leopard* will go on sale at exactly the same moment Leopard does, as was the case with Panther and Tiger. And in all likelihood, I'll continue creating new *Take Control of Upgrading* ebooks for each new version of Mac OS X. I write these ebooks based on weeks of extensive testing and dozens of installations of the new operating system on numerous test machines.

But you're already spending $129 on the OS itself, so why should you pay even more for an ebook about how to install it? Isn't it just a matter of popping in a DVD and clicking a button?

If only it were so. Every upgrade of Mac OS X brings with it not just new features and bug fixes but brand-new hardware and software incompatibilities, installer oddities, and confusing custom installation options. The *Take Control of Upgrading* ebooks provide expert guidance through every step of the process, helping you understand every option, keep your data safe, and make sure everything works properly afterward. I'm sure you'll find them to be money well spent.

Make a Fresh Bootable Backup

Before performing any major system upgrade, be sure to make a new, fresh duplicate of your startup drive (even if you regularly make duplicates once a week). In fact, resources permitting, make two. System upgrades can cause many things to go wrong, and you'll appreciate the security of knowing you can restore your system to its previous state if a problem occurs.

Upgrade

You may be surprised how often someone purchases a Mac OS X upgrade, reads about the installation process, and then leaves the DVD in a drawer for months. Some people habitually wait until the first or second minor update after a major Mac OS X release before taking the plunge, whether to give Apple time to work out all the bugs, to give developers time to update their applications for compatibility, or to see how other people like it before committing themselves. And others feel nervous about upgrading until it's nearly time for the *next* major version to be released! Don't let this happen to you.

I'm an early adopter, and although I've experienced my share of minor hurdles, I've never regretted a decision to upgrade immediately. You may, however, wish to delay an upgrade if you're in the middle of a project and can't afford any downtime, if you rely heavily on an application that has not yet been updated to work under the new system, or if you expect to buy a new Mac in the near future (which will, of course, include the latest version of Mac OS X).

Monitor Your Mac's Health

No matter how diligently you perform the maintenance tasks I recommend in this ebook, you won't truly know how well (or how poorly) your Mac is running unless you make the effort to find out. The fact that no smoke is billowing from your SuperDrive is a good sign, of course, but it's hardly definitive proof that all is well. In this section, I show you how to find out what's going on under the hood.

Use Monitoring Utilities

Numerous utilities (most of them free) can provide up-to-the-minute vital statistics about your Mac. In most cases, these programs run in the background all the time, but if you prefer, you can run them manually when you get curious about your Mac's current state. I provide a list of several such utilities just ahead. But first, you should understand what information you might want to monitor and why.

RAM usage

Mac OS X manages your computer's RAM efficiently for the most part. Applications can dynamically adjust the amount of memory they use, and even if all your RAM is actively in use, a virtual memory system lets Mac OS X use a portion of your hard disk to extend your RAM, automatically swapping (or "paging") data between the disk and the physical RAM as needed.

Even so, if you have enough applications open at once, and if they require enough memory to perform their respective tasks, you can get to a point where the data swapping occurs constantly. This slows everything on your Mac way down, and it also uses up disk space.

You should also be aware of a type of bug known as a *memory leak*. Applications usually ask the system for a certain amount of memory for any given task and then give it back when they're done with it. But sometimes, due to a programming error, an application keeps taking memory and not returning any, so that by doing nothing more than staying open, it constantly chews up more and more RAM. You can recover the used memory simply by quitting the application—but you might never know you have this problem in the first place without monitoring your RAM usage.

For all these reasons, I recommend keeping an eye on how much RAM is currently in use. If the free RAM drops near zero, consider

closing windows, quitting applications, or even restarting your Mac to reduce your dependence on virtual memory. Better yet, add more RAM (if possible); see the sidebar Be Sure You Have Enough RAM, earlier.

NOTE In Mac OS X, RAM is not simply "used" or "free" but can be used in any of three different ways: *wired* (in use and crucial to keep your Mac running); *active* (in use now, but may be paged out to disk later); or *inactive* (not currently in use, and possibly paged out to disk, but also stored in RAM for fast access when needed). Most RAM-monitoring utilities break down RAM into these three categories plus "free," and generally include documentation that explains RAM usage in greater detail.

Disk usage

With hard disk capacity constantly on the rise, you're now less likely to run out of space than you were a few years ago. Nevertheless, the consequences of running out of space can be severe. For one thing, as your hard disk approaches its maximum capacity, your Mac may run more slowly as files become increasingly fragmented (see Defragment Your Hard Disk). Worse, you could lose data, because your Mac has no space to save a file. And even more seriously, your computer may hang, crash, or fail to start up if it runs out of physical RAM *and* runs out of disk space to use for virtual memory.

In general, I recommend leaving at least 10 to 15 percent of your hard disk space empty to provide breathing room for file storage, virtual memory, disk image creation, and other tasks. When your disk gets close to that level, delete unneeded files (see the sidebar just ahead, "Deciding Which Files to Delete"), and archive seldom-used files to CD, DVD, or an external hard drive.

Although you can tell how much free space is on a disk by selecting it in the Finder and choosing File > Get Info, you may not notice if it gets dangerously full while you're busy working. (Mac OS X does display a warning message when space gets critically low, but it appears much too late for my taste.) Several utilities display a live status indicator (in your menu bar, a Dock icon, or a floating window) showing your disks' current free space.

SIDEBAR DECIDING WHICH FILES TO DELETE

If you're running desperately low on disk space, it may be time to buy a larger hard drive. In the meantime, you can delete files you no longer need. Begin by repeating the procedure in Clean Out Accumulated Cruft. If that still leaves you with too little free space and you're stuck for ideas, try removing these items:

- **Cache files:** Mac OS X automatically re-creates these if needed, so feel free to trash the contents of `/Library/Caches` and `~/Library/Caches`.
- **Downloads:** Do you hang onto installers or other downloaded files that you could simply download again if needed? If so, out they go.
- **Classic resources:** If (and only if) you never use Mac OS X's Classic environment, you can get rid of the Mac OS 9 System Folder (but *not* the folder named System, which belongs to Mac OS X!) and Classic applications (usually stored in a folder called "Applications (Mac OS 9)").
- **Developer tools:** If you installed Apple's Xcode Tools but aren't developing any software, remove the Developer folder at the top level of your hard disk. The proper way to do this is to double-click the file `/Developer/Tools/uninstall-devtools.pl`.
- **Re-rippable music:** As a last resort, look in `~/Music/iTunes/iTunes Music` for music you still have on CD (and which, therefore, you can reimport). Be careful not to trash music you purchased from the iTunes Music Store!

When you're finished deleting files, don't forget to empty the Trash (Finder > Empty Trash) to free up the space formerly occupied by those files.

CPU load

Your Mac contains one or more CPUs—chips that do the bulk of the computer's information processing. Depending on what software is running and what that software is doing, the CPU load goes up and down. Because all your applications share the available CPU power, it's generally true that the higher the overall load, the slower your software will run. In addition, greater CPU load means a higher internal temperature, forcing your computer's fans to work harder (see Temperatures, next).

Having your CPU(s) run at 100 percent capacity from time to time is normal. However, if the load is always at or near maximum—or if it's high even when your computer is relatively inactive—you may have a problem. For example, a background application could have a bug that causes it to use too much processor capacity, slowing down your foreground tasks. Or you may be running more applications than your hardware can handle gracefully. In any case, keeping an eye on CPU usage can help you spot potential problems before they get out of hand. Some CPU monitoring tools display a breakdown of usage by application, so that if one program is hogging too much of the CPU capacity, you can force it to quit.

Temperatures

Extreme heat can damage delicate components inside your Mac. This is why all Macs have carefully designed cooling systems, which usually rely on two or more fans to vent heat away from the processor, hard drive, and other vital components. These fans, in turn, rely on one or more internal temperature sensors that tell them when to turn on or off or to increase or decrease speed.

If a fan malfunctions, if dust blocks the flow of air through your computer (see De-Dust Your Mac), or if a defect in your computer causes it to overheat for some reason, bad things can happen. Your Mac may hang, shut down unexpectedly, or display other improper behavior. Depending on the nature and severity of the problem, you might be looking at an intermittent inconvenience or an expensive trip to the repair shop. In any case, it behooves you to be alert to excessive temperatures.

Several utilities monitor each of your computer's internal temperature sensors, so that you can easily see when heat exceeds safe limits and take action before damage occurs.

NOTE The types, positions, and design of temperature sensors vary from one Mac model to the next. Not all Macs' sensors work with monitoring utilities or provide live updates of their readings.

Other statistics

Some utilities monitor other statistics that may be interesting (though not necessarily relevant to your Mac's health). These include:

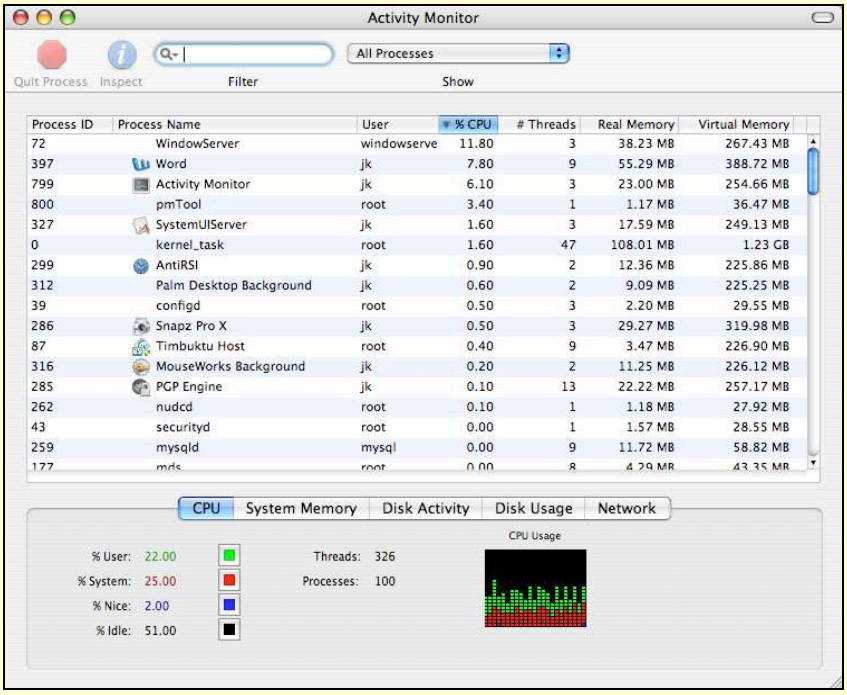
- Network traffic
- Disk access activity
- Battery level (for portables)
- System uptime (time since the computer was last turned on or restarted)

Monitoring utilities

Although this is by no means an exhaustive list, the following utilities all provide one or more monitoring services:

- **Activity Monitor:** This utility, included as part of Mac OS X (in **`/Applications/Utilities`**) displays CPU load, RAM usage, disk activity and usage, and network traffic (see **Figure 10**).

FIGURE 10

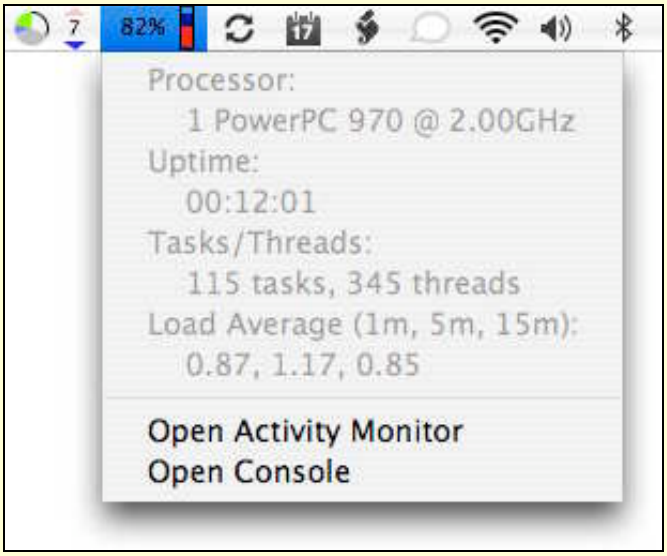


Activity Monitor, included with Mac OS X, displays CPU and RAM usage, among numerous other statistics.

Activity Monitor also displays memory and CPU usage statistics for each running application, and enables you to quit individual applications. Although it includes an optional floating CPU window, Activity Monitor is not the best choice for background operation.

- **Amnesia:** This tiny application displays current CPU load and free memory (only) in its Dock icon.
  http://dockapp-osx.sourceforge.net/dockapps.html (free)
- **App Monitor:** If you want to keep an eye on the CPU usage of one application at a time, try App Monitor, which displays a customizable usage graph in either a window or a Dock icon.
  http://blazingmousesoft.free.fr/AppMonitor.html (free)
- **Hardware Monitor:** This utility can display a wide variety of statistics in your menu bar, a Dock icon, or several other formats. Information includes heat sensor readings, power supply voltage and current, fan speeds (in RPM), battery level, and other data, depending on your Mac model.
  http://www.bresink.com/osx/HardwareMonitor.html (€7)
- **Mac HelpMate:** In addition to performing many maintenance tasks, this utility displays free RAM, internal temperature readings, disk usage, S.M.A.R.T. status, and system uptime.
  http://www.macworkshops.com/machelpmate/ (free; donations accepted)
- **MemoryStick:** This simple utility from Take Control's own Matt Neuburg displays a floating bar graph showing your current RAM usage.
  http://www.tidbits.com/matt/ (free)
- **Memory Usage Getter:** Somewhat like Activity Monitor, this utility displays overall RAM usage, plus per-application RAM and CPU usage, and enables you to quit individual applications.
  http://homepage.mac.com/simx/mug.html ($10)
- **MenuMeters:** My favorite of the group, MenuMeters (**Figure 11**), adds tiny, customizable indicators to your menu bar to display any or all of the following: CPU load, RAM usage, disk access activity (with usage on a drop-down menu), and network traffic.
  http://www.ragingmenace.com/software/menumeters/ (free)

FIGURE 11



MenuMeters can display RAM and CPU usage, as well as numerous other bits of information, in highly configurable menus.

- **miniStat:** For Dashboard fans, this collection of six widgets displays CPU load, free RAM, free disk space, CPU temperature, battery level, and system uptime.
  http://shockwidgets.com/?widget=miniStat (free)
- **SysStat:** Another Dashboard widget, SysStat displays a single panel with the following information: CPU load, RAM usage, network traffic (and bandwidth), disk usage, battery level, and system uptime.
  http://www.islayer.net/viewWidget.php?id=7 (free)
- **Temperature Monitor:** This application displays readings from your Mac's internal heat sensors, and even produces a graph of the temperatures over time.
  http://www.bresink.de/osx/TemperatureMonitor.html (free)
- **ThermographX:** This utility displays the readings of all internal heat sensors in your Mac and even keeps a graph of the temperature over time. But it's not compatible with every Mac model.
  http://www.kezer.net/thermographx.html ($7)
- **X Resource Graph:** XRG provides highly customizable graphs of CPU usage, RAM usage, disk access activity, network traffic, internal heat sensors (up to three), and battery level, plus the weather (in a city of your choice) and even stock market data.
  http://www.gauchosoft.com/Software/ResourceGraph/ (free)

Check Your Drives' S.M.A.R.T. Status

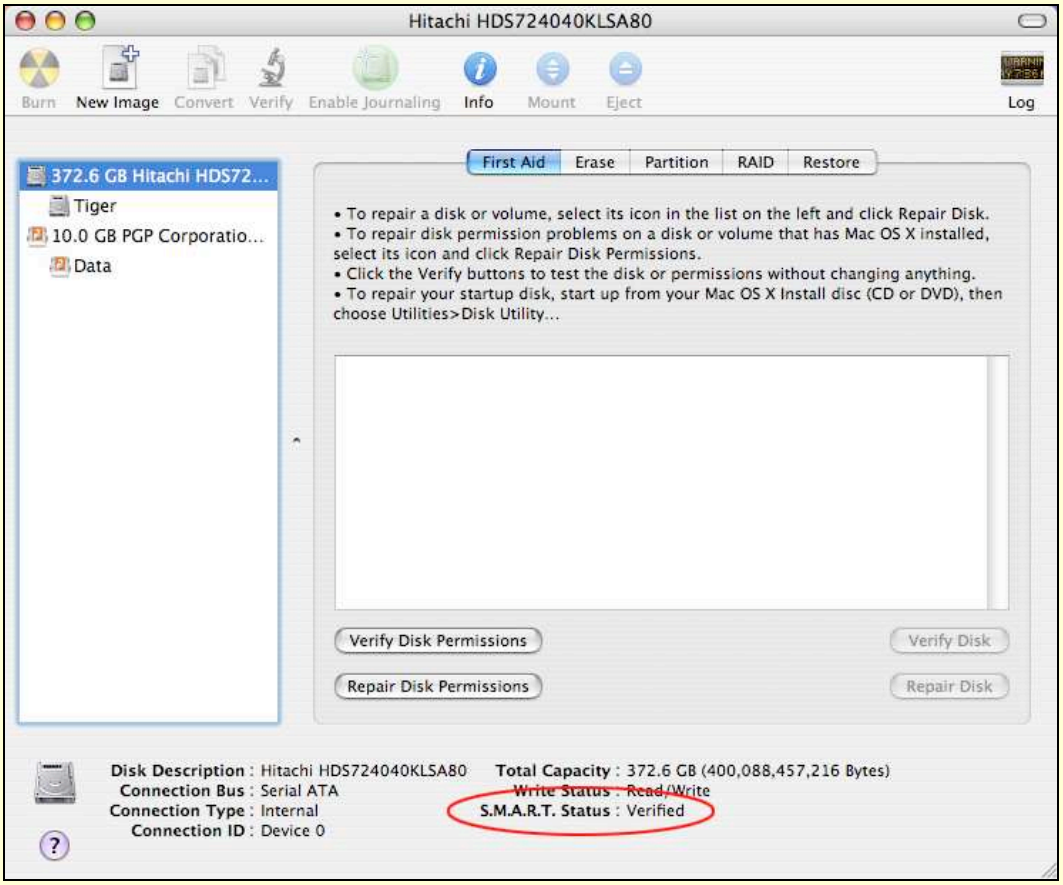
Most modern hard drives have built-in sensors and monitoring circuitry that form a system called S.M.A.R.T. (Self-Monitoring Analysis and Reporting Technology). The idea of S.M.A.R.T. is to detect the warning signs of potential problems *before* they occur. Although S.M.A.R.T. cannot detect every possible drive problem, it can provide one very valuable warning: "Your drive is about to have problems, so back it up and repair (or replace) it now!"

NOTE As of early 2006, Disk Utility's S.M.A.R.T. indicator works with internal ATA and Serial ATA drives, but not with external (USB or FireWire) drives. Some external drives, however, have their own built-in S.M.A.R.T. indicators.

To check your drives' S.M.A.R.T. status, open Disk Utility (in **`/Applications/Utilities`**) and select a drive in the list on the left. If the selected drive supports S.M.A.R.T., you should see this at the bottom of the window: "S.M.A.R.T. Status: Verified" (**Figure 12**). If you see "About to Fail" in red letters, back up the drive immediately. You can then use Disk Utility (or a third-party repair utility) to attempt to repair the drive, but more often than not, "About to Fail" indicates an imminent hardware failure that you cannot fix with software. Even if Disk Utility does appear to solve the problem, don't trust the drive with important data; replace it as soon as possible.

TIP To monitor your drives' S.M.A.R.T. status in the background (without having to remember to open Disk Utility), try the free utility SMARTReporter (http://homepage.mac.com/julianmayer/), which displays a status icon in your menu bar.

FIGURE 12



Disk Utility shows a drive's S.M.A.R.T. status.

Appendix A: Troubleshooting Resources

I wish I could promise you that by following the suggestions in this ebook, you'll never experience any problems with your Mac. You will lessen the likelihood and perhaps the severity of problems, but things still can and will go wrong. If, when an application crashes, your hard disk won't mount or smoke starts pouring out of your SuperDrive, you need more help than I can give you here. But allow me to suggest some places you might look for solutions.

Web sites:

- **Apple's support site:** Your first stop should be Apple's official support site, where you can search for FAQs, technical notes, and downloads that may address your problem.
  http://www.apple.com/support/
- **Apple's discussion forums:** Another Mac user may have discovered, and solved, a similar problem. Connect with other users at these forums.
  http://discussions.apple.com/
- **MacFixIt:** Check the MacFixIt site daily for information about newly identified problems and solutions for all sorts of Mac hardware and software. (See the coupon near the back of this ebook for a discount off the MacFixIt Pro premium service.)
  http://www.macfixit.com/
- **MacInTouch:** Keep current with Mac news and real-world reports from users around the world.
  http://www.macintouch.com/
- **MacOSXHints:** This site is geared more toward tips and tricks than troubleshooting, but it does contain solutions to many unusual problems as well.
  http://www.macosxhints.com/
- **Software update sites:** VersionTracker and MacUpdate provide up-to-the-minute info on updates for thousands of applications, along with user comments. (See the coupon near the back of this ebook for a discounted VersionTracker Pro subscription.)
  http://www.versiontracker.com/
  http://www.macupdate.com/

Printed books:

- *Mac OS X Help Line, Tiger Edition* by Ted Landau and Dan Frakes contains a wealth of troubleshooting and repair information. http://www.amazon.com/gp/product/0321334299/ ($50 retail; Amazon.com price, $33)

Ebooks:

- *Troubleshooting Mac OS X* by "Dr. Smoke" (Gregory A. Swain) is a 600-page ebook that goes into great detail about solving a wide variety of Mac problems. http://www.thexlab.com/book/troubleshootingmacosx.html ($20)

When all else fails:

- Visit the Genius Bar at a nearby Apple Store for free advice; Apple Stores also offer expert repair services. Be sure to call ahead (or visit the store's Web site) to make an appointment.
- If you're not near an Apple Store, search for an Apple Authorized Service Provider at http://www.apple.com/buy/locator/service.html.

Periodic Task Checklist

Print this page and hang it in a conspicuous place to remind you which tasks you should do when. You might also consider adding daily, weekly, monthly, and yearly reminders to your favorite calendar application.

Daily Tasks

- ❑ Back up changed files.
- ❑ Download (but don't install) software updates.

Weekly Tasks

- ❑ Clean up your Desktop.
- ❑ Back up everything.
- ❑ Rotate backups offsite.
- ❑ Use Software Update to install Apple software updates.
- ❑ Check for third-party software updates.
- ❑ Reboot if performance seems slow.
- ❑ Consider clearing certain caches.

Monthly Tasks

- ❑ Empty your Trash.
- ❑ Use Disk Utility's Repair Disk feature.
- ❑ Clean your screen.
- ❑ Clean your mouse or trackball.
- ❑ Exercise your notebook's battery.
- ❑ Check for Take Control updates.

Yearly Tasks

- ❑ De-dust your Mac.
- ❑ Clean your keyboard.
- ❑ Clean your iSight.
- ❑ Make archival backups to DVD.
- ❑ Remove unneeded files.
- ❑ Change your passwords.

About This Ebook

In contrast to traditional print books, Take Control ebooks offer clickable links, full-text searching, and free minor updates. We hope you find them both useful and enjoyable to read.

About the Author

Joe Kissell is the author of numerous print and electronic books about Macintosh software, including *Take Control of Upgrading to Tiger, Take Control of Mac OS X Backups,* and *Take Control of .Mac.* He's also a frequent contributor to *Macworld* magazine. Joe has worked in the Mac software industry for over 10 years, including positions managing software development for Nisus Software and Kensington Technology Group.

Joe holds the honorary title "Curator of Interesting Things" at alt concepts, an Internet publishing and consulting company. He invites you to read his popular Interesting Thing of the Day column at http://itotd.com/.

When not writing computer books or articles about interesting things, Joe likes to travel, cook, practice t'ai chi, and imitate the "ba-deep" sounds his TiVo makes. He lives in San Francisco with his wife, Morgen Jahnke. To contact Joe about this ebook, send him email at jwk@mac.com and be sure to include the words **`Take Control of Maintaining Your Mac`** in the subject of your message.

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Shameless Plug

Interesting Thing of the Day is a virtual museum of interesting things. Every day, you'll find an article that provides a detailed, entertaining, and educational look at something interesting. Topics include unusual or intriguing discoveries in food, travel, technology, language, philosophy, science, history, and more—there's something for everyone. You can even subscribe to the Audio Edition of Interesting Thing of the Day to get each day's article as a high-quality MP3 recording. I put the same care and enthusiasm into these articles as I do into my Take Control ebooks, and I think you'll enjoy them! Please click on over to http://itotd.com/ and visit.

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TidBITS Electronic Publishing has been publishing online since 1990, when publishers Adam and Tonya Engst first created their online newsletter, *TidBITS,* about Macintosh- and Internet-related topics. *TidBITS* has been in continuous, weekly production since then. Adam and Tonya are well-known in the Macintosh world as writers, editors, and speakers. They are also parents to Tristan, who thinks ebooks about trains, clipper ships, and castles would be cool.

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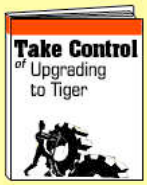
by Joe Kissell



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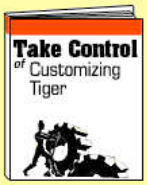

Find real-world advice in this road map to customizing Tiger, plus get started with new features, such as Spotlight and Automator.

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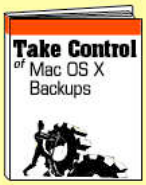
by Joe Kissell



Create a rock-solid backup strategy so you can restore quickly and completely, no matter what the catastrophe.

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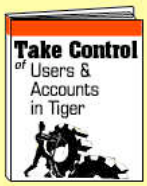
by Kirk McElhearn



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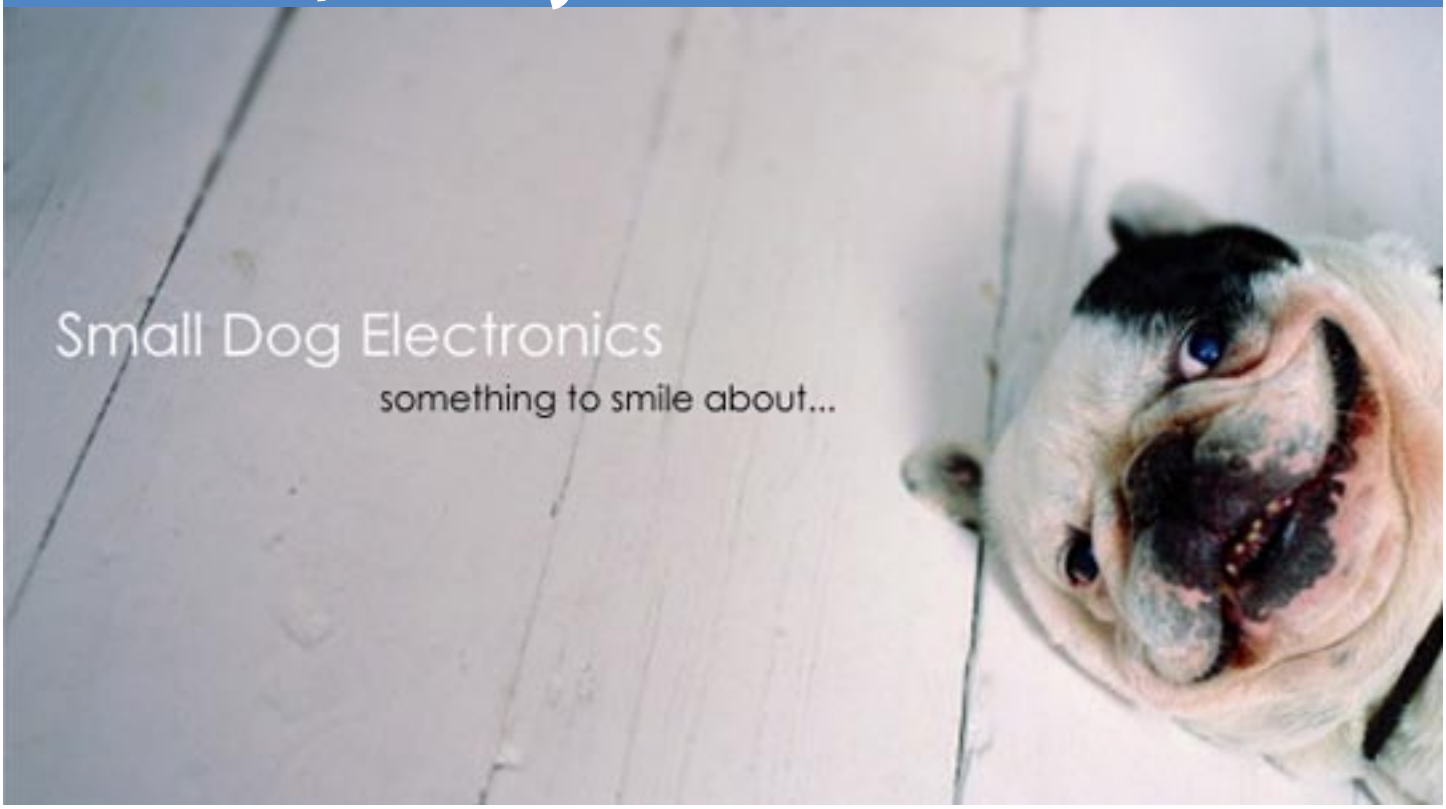

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