



FOUNDED MAY 1989
 MEETINGS - SECOND
 SATURDAY OF THE MONTH

RECOMMENDATIONS

Routers. Thewirecutter.com has a very useful article if you are looking for a new Wi-Fi router. Recommends the **Netgear R7000P** after spending more than 100 hours testing 18 routers, tinyurl.com/y8uswgk9.

Wi-Fi Mesh-Networking Kits. Thewirecutter.com has another very useful article if you are looking for a new Wi-Fi mesh networking kit. Recommends the **Netgear Orbi RBK50** kit after spending over 50 hours testing 12 kits. tinyurl.com/ydf6vdlc.

Surge Protectors. And if looking for surge protectors, Glenn Fleishman wrote an excellent article in techie.com. tinyurl.com/yacfy148.

Kindle App. imore.com has a worthwhile article for those who want to get more out of the Kindle app on the iPhone and iPad. A bit too long for the Newsletter. tinyurl.com/y742zzh5.

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APPS, HARDWARE, IPHONE ISSUE PICNIC



MLMUG JUNE

JUNE 9TH! REMEMBER IT'S PICNIC TIME. PICNIC MAP IS ON PAGE 5.

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Typical Meeting Agenda

9:00 - 9:05: Call to order in main meeting room.

9:05 - 10:05: Three Concurrent Special Interest Groups (SIGs) convene in separate rooms. The three current SIGs are:

Newer Users- We cover the most basic questions you may have about your Mac/iDevices and how to use them.

Multimedia - We discuss using your Mac/iDevices and applications for photo, video, audio, and print media.

OS - We go beyond basics to discuss Apple's current operating systems, using your Macs & iDevices, & various applications, & have Q&A.

10:05 - 10:15: Continuation of Q&A for all attendees.

10:15 - 10:30: Welcome and other business.

10:30 - 11:50: Main Presentation (by a member or guest)

11:50 - Noon: Raffles and silent auctions.

Come join some fellow MLMUG members for lunch after the meeting at a nearby restaurant.

MLMUG Email list

The Main Line Macintosh Users Group has its own email list, hosted at Groups.io. Compose your letter and email it to MLMUG@groups.io and your message will be sent to everyone on the mailing list. Contact Bob Barton (barton@bee.net) if you are a member and you are not on the list.

Please observe good email etiquette. If your message is humor or not Apple-related (off-topic), please include "Humor" or "OT" in the subject line. The Groups.io Terms of Service are at groups.io/static/tos. Look for the section on "Conditions of Use"

The MLMUG list may be used to post Apple-related items for sale, but any solicitation of members through the list is forbidden without the written consent of a MLMUG officer. Violation of the Groups.io terms of service or good email etiquette may result in removal from the list.

New Users SIG

You don't have to wait a whole month to get answers to your basic Mac questions! Get together with other members on the fourth Saturday (i.e., two weeks after each regular meeting) for the Startup Folder Lite.

Many new users have said that they can learn much more from face-to-face meetings than they do from manuals or other sources. That's what this meeting is all about. Go to www.mlmug.org/nusfl.html for details.

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Membership Information

Membership dues are \$25 for individuals and \$35 for families. Memberships are based on your anniversary date, which is the month you joined. You will be e-mailed reminders when membership fee is due.

If you're just visiting to check us out, or if you've been visiting for some time, but haven't joined, consider these **BENEFITS OF MEMBERSHIP**:

- **Monthly meetings**, where you can learn, share, and meet everyone from working Mac professionals to new Mac users from all backgrounds.
- **Monthly newsletter**, which is full of interesting Mac news, tips, and information.
- Useful free items at the monthly **Raffles**.
- **Discounts**. Vendors offer special prices to User Group members.
- **Web Site** with 2-3 years of MLMUG newsletters, meeting information, a member directory, directions to our meetings, and much more! Our web site is www.mlmutg.org.
- **MLMUG Mailing List**, to post technical questions or comments to each other and the experts within the group.
- **Reviewers** keep items reviewed.

Are you ready to join? Please make a check payable to MLMUG and bring it to a monthly meeting or mail it to:

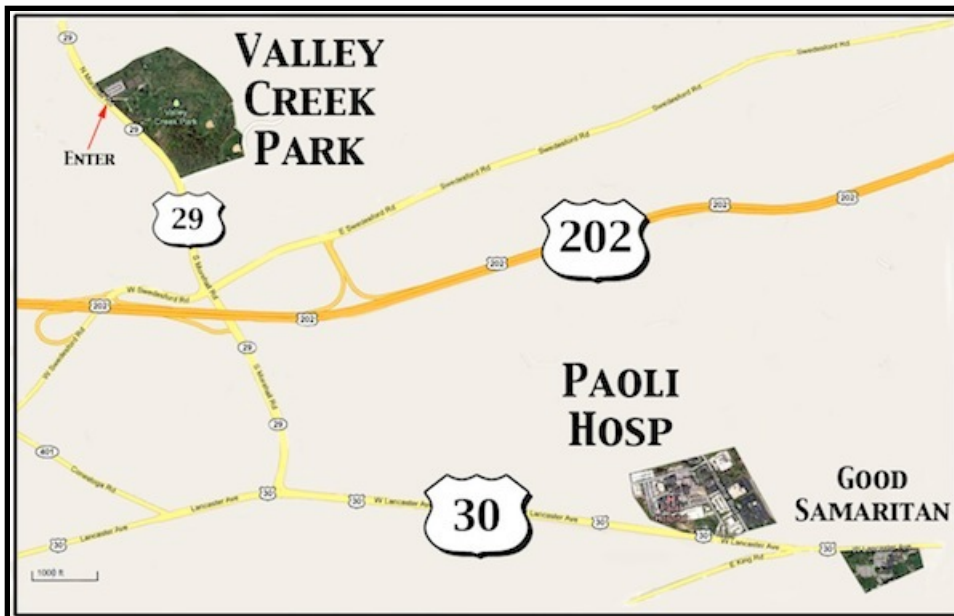
Treasurer, MLMUG
P.O. Box 1374
Southeastern, PA 19399

PICNIC INFORMATION

DIRECTIONS

Take US 202 North or South to PA 29N/Great Valley. Take 29N and go approximately 0.5 miles and pull into the turn lane for Valley Creek Park. You will have passed part of the Great Valley Corporate Center on your right. There is not a light at the turn so if you get to the light at Great Valley Parkway, you have gone too far. Once you pull into the lot, make a short left and right and park. Then walk down the hill to the covered pavilion.

From US 30 (Lancaster Pike), it's about 1.2 miles on 29N to



18TH ANNUAL MLMUG PICNIC-IN-THE PARK

Valley Creek Park
Route 29, East Whiteland.

Saturday, June 9, 2018
12 Noon - 4 PM
(No Raindate)

All members and their families are welcome.

Hamburgers, hot dogs, rolls and condiments will be provided by MLMUG. All other food and beverages will be brought by attendees.

We'll need: snacks, salads (green and main dish), desserts and beverages (canned sodas, juice, iced tea, etc.).

No alcoholic beverages in the park!
Pets are OK, but must be leashed and cleaned up after.

It's important that we have accurate numbers, so please RSVP: Gail Montgomery by Tuesday, June 5
gailmontgomery@aol.com

MLMUG May 12 Meeting Minutes

By Mark Bazrod, Secretary

Maria Arguello, our President, opened the MLMUG meeting at 9:00 AM at the Hershey's Mill Community Center near West Chester. There were about **30** attendees.

OS SIG - ADAM RICE

Adam discussed various aspects close files on our Macs. Data is stored in individual files and therefore many types of files stored in a Mac in a hierarchical file system in which files are stored in folders and folders are arranged in folders. Every file has a unique address.

The Mac hard drive is the top folder (referred to as the root in UNIX). The next level is users and many have several users on the Mac, including a guest folder

Adam suggests you activate path toolbar which will appear at the bottom of the Finder window. It will show you the path for whatever file you've selected. This is not a default toolbar. Go to the View menu and select *Show Path Bar* from the drop-down menu

There are ways to view the file structure. In column view, you can see multiple folder levels simultaneously. The other choices are the traditional icon view, list view, and cover flow view.

You can also see a file's path by doing a Command click on the title of the file.

The Sidebar is a very handy function. It can show shortcuts for files, folders, and applications which you often use. You only have to drag the file name from the Finder to the Sidebar.

if you go to *System Preference > iCloud > Options*, you can arrange to have your Desktop and Documents folders stored in iCloud as well as on your Mac. Files are synced between Mac, iCloud, other computers, and other devices.

If you select *Optimized Mac Storage*, iCloud will manage files for you so that if you run out of space on your hard drive, some files will be removed from the hard drive and stored only in iCloud.

Hidden files can be viewed in Finder by doing command + shift + period. Hidden files are greyed out on Finder. Trash and Library are hidden folders. Hidden folder names start with a period.

Disk Inventory X is an app which gives you a visual representation of what is on drive. Very handy. The larger the file size, the larger the size of the rectangle in the window. When you click on a rectangle, you see the folder file name at bottom. Right click on the rectangle and move the file to Trash. The app is free. Other apps in the same category are Omnidisksweeper and WhatSize.

Questions

Q. How do you remove notice of updates. **A.** You might go to *System Preferences > App Store*. If you deselect *Automatically check for updates*, you will turn off *Install system data files and security updates*. This is not a good idea. Gatekeeper and XProtect are system antivirus apps.

Q. I want to install High Sierra, but Excel 2008 is not supported. Alternatives appear to be use Numbers, partition the hard drive so can run two operating systems, and run Excel 2008 on a second Mac. None are particularly good options. **A.** Consider Microsoft Office 365 which costs \$70 or \$100 per year. Also, Google Docs and OpenOffice may be good free solutions.

Q. How can I print a portion of a spreadsheet in Numbers? **A.** It doesn't appear that its possible. However, A not particularly good workarounds are to copy the portion to another spreadsheet or to see if a screenshot might work.

Q. How can I transfer Excel data to Word? **A.** The best solution appeared to be set up a table in Word, set rows and columns to the configuration of the Excel date, and then copy the data and paste into Word.

It appears that some older versions of FileMaker will not run on High Sierra.

MAIN PRESENTATIONS

We had three concurrent presentations by long-time MLMUG members.

Mike Inskeep reviewed *Recent Developments in Security and Privacy*.

Mark Bazrod reviewed *The Recent Facebook Episode and What You Can Do*.

Bob Barton presented *Running Multiple Mac Operating Systems by Partitioning Your Hard Drive*.

All three presenters will forward PDFs of their presentations to Bob Barton who will post them on the MLMUG website. Go to mlmug.org/meeting2018.html#June to review the great presentations.

**SPEAKER ROSTER FOR
MLMUG'S 2018 MEETINGS**

January 13	Pot Luck Brunch, Swap Meet, Members' Show & Tell, & Election of Officers
February 10	Bob Barton – Drones and Their Future
March 10	Stan Horwitz – The Basics of Social Media
April 14	Dave Hamilton - Running your Mac Lean, Clean and Mean.
May 12	Mike Inskeep, Bob Barton, Mark Bazrod
June 9	Picnic
July	Recess - Summer
August	Recess - Summer
September 8	Joe Kissel - TBD
October 13	Joe Myshko - TBD
November 10	Bob "Dr. Mac" LeVitus - TBD
December 18	Pot Luck Brunch, Swap Meet, Members'

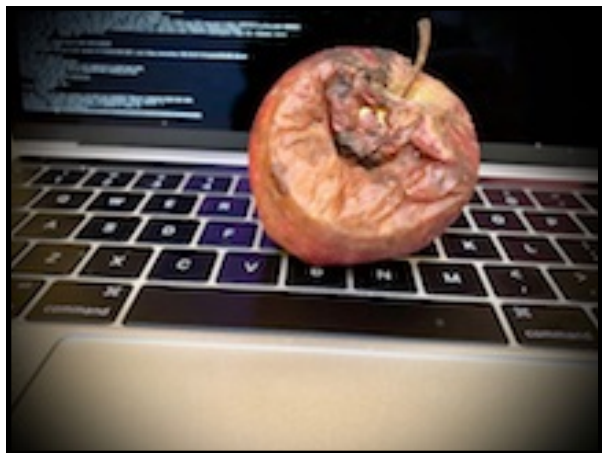
SOME SPEAKER ROSTER DETAILS

- May 12** **Mike Inskeep** - Recent Developments in Security and Privacy; **Bob Barton** - Run Multiple MacOS by Partitioning Your Hard Drive; **Mark Bazrod** - Facebook & What You Can Do.
- June 9** **Picnic** - Valley Creek Park, Route 29, East Whiteland
- September 8** **Joe Kissel** - Author and owner of the Take Control Book series.
- October 13** **Joe Myshko** - Has designed numerous Internet Gateways for Fortune 500 Companies. His skills include Internet security and especially securing Internet application layer protocols.
- November 10** **Bob "Dr. Mac" LeVitus** - a leading expert on Apple products and software. Has written or co-written 74 popular computer books. Known for his trademark humorous style and unerring ability to translate "techie" jargon into usable and fun advice for regular folks.
- December 8** **Pot Luck Buffet, Swap and Sell Meet, Member's Show and Tell, and Election of Officers for 2019**
An opportunity to enjoy friends, good food, and to swap or sell our Mac and iDevice treasures. A "Show and Tell" session called will allow members 5, 10, or 15 minutes to present a topic.

Adam C. Engst posted the following article to tidbits.com on April 6, 2018. tinyurl.com/ybrg2x38. © TidBITS Publishing Inc. He is the publisher of TidBITS. He has written numerous books and many magazine articles.

Reminders Doesn't Listen To Siri

By Adam Engst



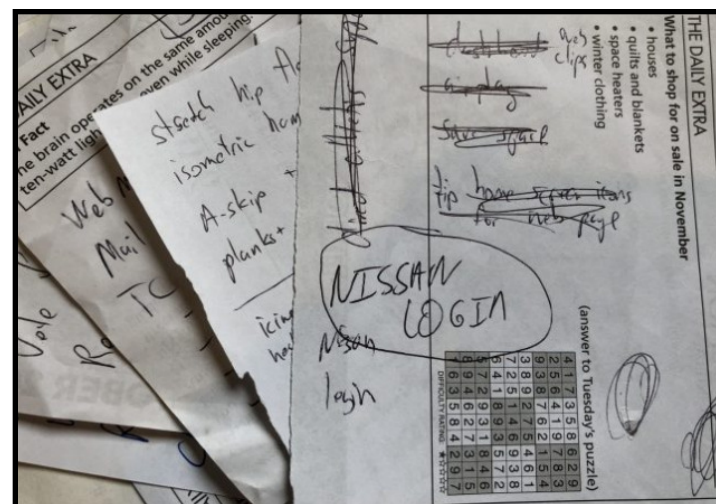
Welcome back to my Bad Apple column, in which I explore aspects of the Apple experience that are broken and need fixing. Today I want to focus on Reminders and how it integrates with Siri. I know what you're thinking. "Siri? Couldn't you pick on someone your own size?" But, in this case, Siri usually works well. It's Reminders that is messing up regularly and unnecessarily. Here's the story.

I've tried every to-do list and task manager under the sun. I've read David Allen's [Getting Things Done](#) and attempted to implement its advice. No app or strategy has stuck once I get busy and fall back on my generally reliable memory rather than wasting time fiddling with projects and priorities.

However, over the past few years, I've discovered that one of the few things Siri can do reliably is create to-dos in Reminders. While driving down the road in front of our house today, I said,

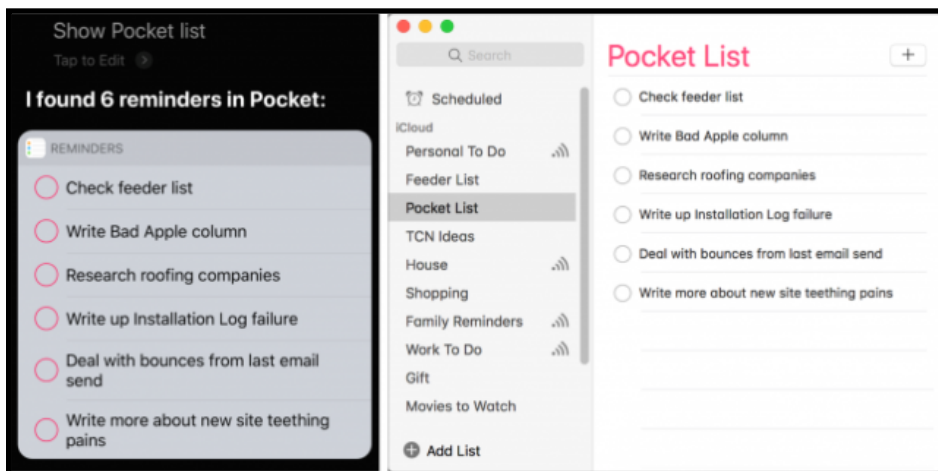
"Hey Siri, remind me to email Jose about his beehive cover at 2 PM." (A friend keeps some beehives in our meadow, and a high wind last night had knocked one of the covers ajar.) Even though Do Not Disturb While Driving was on, Siri reported that it had created the reminder. Then, at 2 PM, a notification alerted me to email my friend, so I did so and then marked the task as completed in Reminders. I use this feature all the time on my iPhone and Apple Watch, and less frequently on my iPad and Mac.

I have one other to-do list system that works for me. Laugh if you want, but it relies on old sheets from [the New Yorker cartoons daily calendar](#) — you know, one of those calendars with a square piece of paper that you rip off every day to reveal the next cartoon or funny saying. The backs of these daily calendar pages make great scrap paper (at least the ones that don't put the cruddy "Daily Extra" on the back— [Andrews McMeel](#), I hate those). On Saturday mornings, I'll often pull out an old cartoon and jot down things I want to remember to accomplish for the weekend. It's satisfying to cross things off as I do them, and to toss the entire sheet into the recycling when I'm done. The only problem is that I seldom finish everything, so I have stacks of these sheets with just one or two items on them. Bad Adam!

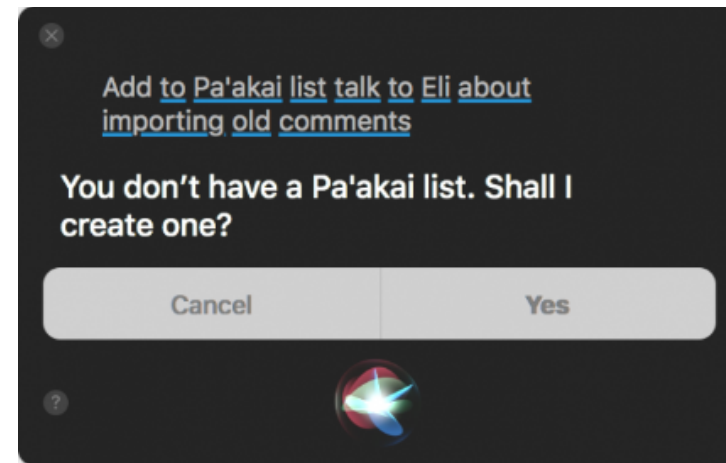


Only recently did I figure out how to move this system into Reminders and mimic a single list that shows me just what I need to do today. I didn't want to use the default Reminders list, where reminders created by Siri's "Remind me to take the ham out of the freezer tomorrow at 9 AM" command go. (You can change this in Settings > Reminders, assuming you can find it, given the topic of "[Bad Apple #2: Alphabetize Settings in iOS](#)," 21 February 2018.) That's because I have a fair number of those timed reminders for future tasks, and I only want to see untimed reminders of the things I have to accomplish sometime today.

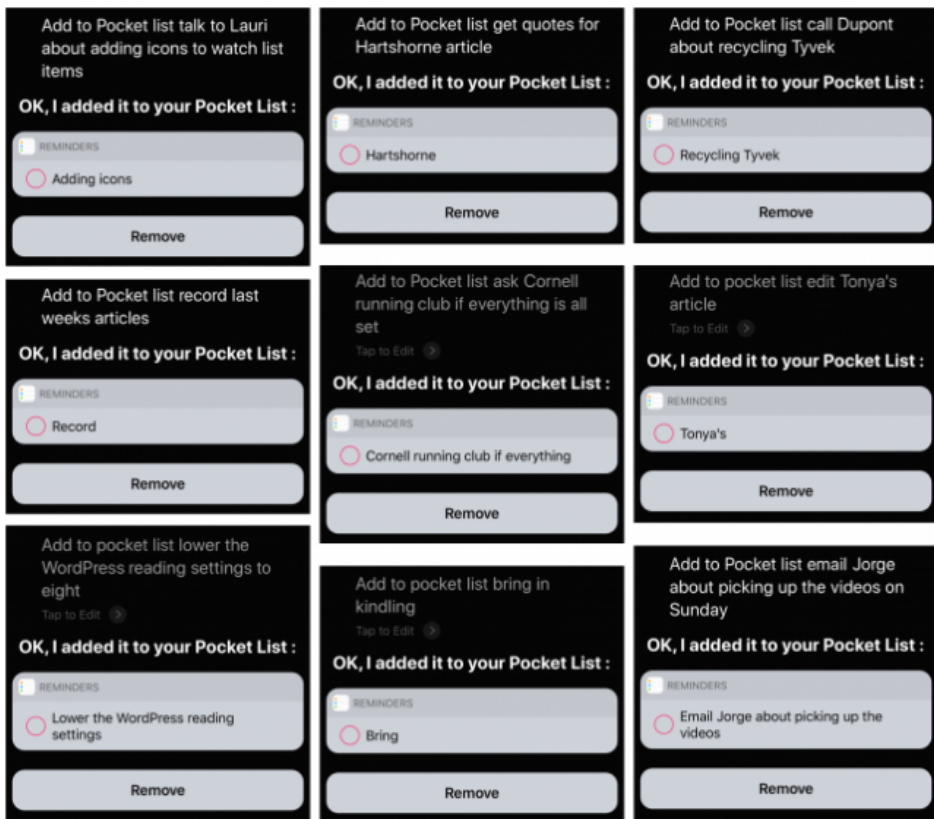
So I created another list and called it "Pocket List." The name proved to be important because Siri has to understand it as a list name in the phrase "add to X list," and not some other part of the command. I first tried calling it "Today," but that confused Siri completely. A few other names failed in other ways. Now, when I want to add a task to my virtual sheet of scrap paper, I can tell Siri, for instance, "Add to Pocket List write Bad Apple column." Anytime I want, I can view the list on my iPhone with "Show my Pocket List" or look at it in Reminders on my Mac. Then it's easy to see what to do and mark off items I've completed. (Since I still don't always finish all my work, I have another list called Feeder List that stores tasks that don't get done or aren't a high enough priority for any given day.)



As far as creating the task and adding it to the list called Pocket List, Siri and Reminders generally do a good job, regardless of where I invoke Siri. There was one amusing mistake where Siri on my Mac must have been thinking in Klingon, and tried to add my task to Pa'akai List, which I assume means something like "Enemies to Eviscerate Today." (In reality, it might be [Japanese for "rice"](#) or [Hawaiian for "seafood."](#))

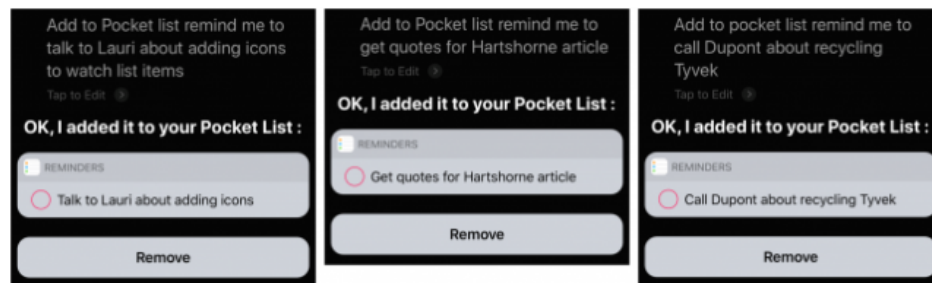


Here's the problem. Even though Siri usually transcribes what I've said correctly, or close enough for government work, Reminders is categorically disdainful of verbs, and drops them often, if not consistently. For instance, "Add to Pocket List call DuPont about recycling Tyvek" turns into a terse reminder titled "Recycling Tyvek." And sometimes Reminders drops words off the end too, as in "Add to Pocket List talk to Lauri about adding icons to Watchlist," which turns into the haiku-like "Adding icons." Bad Apple!



unnecessary. Siri has, for the most part, realized that I want to add an item to a list in Reminders called Pocket List, and it has transcribed my words correctly. So why is Reminders going rogue and deciding that to-do items shouldn't have verbs, or sometimes objects?

Ironically, while writing this article, I stumbled on the workaround that has eluded me for months. I was thinking about how Siri and Reminders seldom mess up when I add a timed task to my Personal To Do list with "Remind me to..." So I re-tested a number of the Reminders failures above, and wouldn't you know it, changing my trigger phrase along the lines of "Add to Pocket List remind me to call DuPont about recycling Tyvek" caused Reminders to do much more of what it should and use all the words after "remind me to." Most of the time.



Many of these verbs aren't exciting — talk, get, call, ask, edit — but they mean something to me. There's a big difference between "write" and "edit." And the words that get dropped off the end are usually rather important, and losing them can make the entire reminder meaningless, as when "Add to Pocket List bring in kindling" becomes "Bring."

In a few cases, it's understandable — if still wrong — that Reminders might lose words. "Add to Pocket List email Jorge about picking up the videos on Sunday" might seem as though I was scheduling it for Sunday. But in fact, I wanted to be reminded before Sunday to send email about running the errand on Sunday. And Reminders did not try to schedule the event; it just deleted "on Sunday."

What's so frustrating about this behavior is that it's entirely

Nonetheless, there is no reason that Reminders should drop so many words in text that Siri has recognized properly, so I'm still chalking this up as an errant behavior that Apple should fix.

Bob LeVitus posted the following article to workingsmarterformacusers.com on April 6, 2018. tinyurl.com/y9ybgncr. © Bob LeVitus. Bob is the author of more than 80 books, a computer columnist, & Mac expert. He writes a weekly column for *The Mac Observer* & is one of my favorite authors & speakers.

Why Snippets Are My Favorite Productivity Hack...

By Bob LeVitus

This post is adapted from my eBook, [Working Smarter for Mac Users](#).

One of the first things I install on any Mac I'm using is TextExpander, a third-party utility that lets me insert words, sentences, or paragraphs by typing short abbreviations.

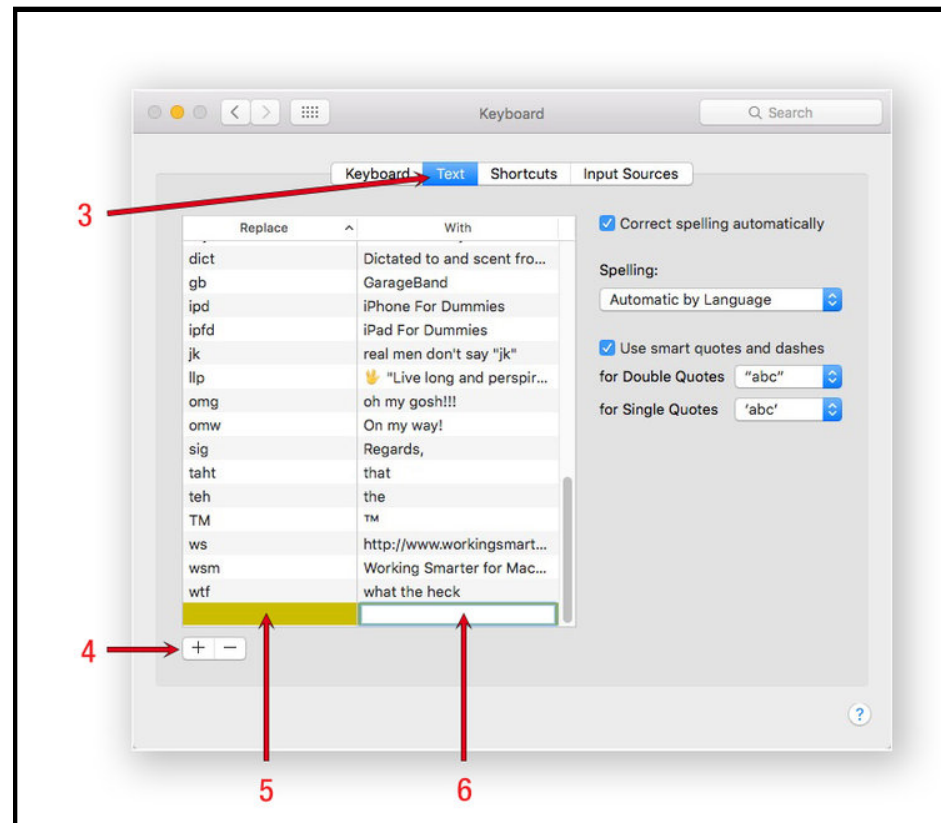
For example, if I type v-t-y and then press the spacebar, TextExpander replaces it with, Very Truly Yours in the blink of an eye. If I type blc, TextExpander replaces it with my email address—boblevitus@boblevitus.com. TextExpander also corrects thousands of common typos on the fly, so if I accidentally type, taht, TextExpander fixes it by replacing taht with that so quickly I rarely even see it.

I'd be remiss if I didn't at least mention that TextExpander's signature feature—replacing short abbreviations with longer text "snippets"—is also built into OS X. While the OS X version isn't as powerful or flexible as TextExpander, it does work and it is free.

So, here's how you create abbreviations and replacements on your Mac:

1. Launch System Preferences.
2. Click the Keyboard icon.
3. Click the Text Tab.

4. Click the little +.
5. Type the abbreviation in the Replace field.
6. Type the replacement word or phrase in the With field.
7. There is no step 7.



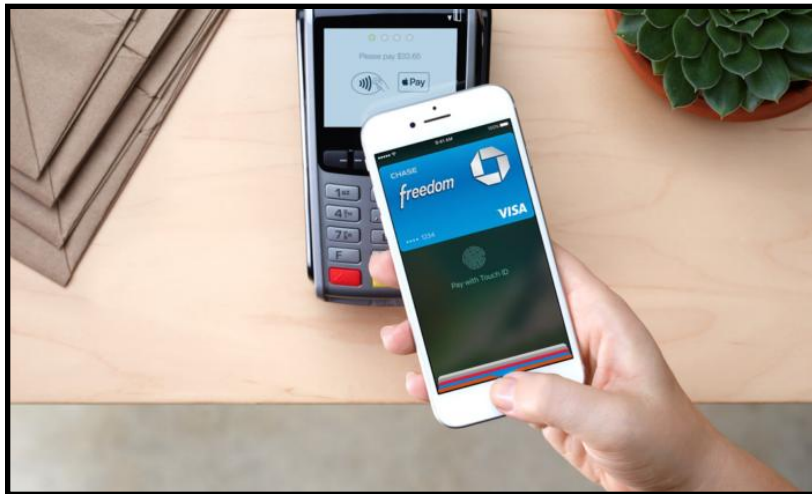
As I mentioned, the OS X way works, but text expansion is just the tip of the iceberg for TextExpander, which offers myriad powerful features unavailable anywhere else. I find it worth every penny of the \$3.33 per month subscription. There's a [free trial available](#), so if you find you like using snippets for free, you'll probably like [TextExpander](#) enough to pay for it.

The Macworld staff, which occasionally works on articles together, posted the following article to macworld.com on May 10, 2018. tinyurl.com/y9gfdm8s. © IDG Consumer & SMB.

Apple Pay FAQ

Here's everything you need to know about Apple Pay, including how to use it on your iPhone, iPad, Apple Watch, and Mac, and what stores and apps accept it.

By Macworld Staff



Apple Pay—the company's flagship mobile payment platform—has had breathtaking growth since its 2015 introduction. Apple Pay transactions continue to rise, and more banks, retailers, and countries continue to join. You can even use Apple Pay to complete web transactions via Safari, too.

You can even use Apple Pay for peer-to-peer payment transactions—similar to Venmo and Square Cash—through an [iOS 11 update](#) that introduces Apple Pay Cash.

With all of these Apple Pay options, it's high time you jump on the mobile payment bandwagon if you're not there already. Read on to learn more about how Apple Pay works, how to get your [iPhone](#), [Apple Watch](#), and [Mac](#) ready for it, and most importantly, where you can go use it.

Apple Pay for iOS

In order to use Apple Pay, you need to have a compatible device and the right version of iOS. For in-store purchases, Apple Pay is compatible with the following iPhone models:

- iPhone X
- iPhone 8/8 Plus
- iPhone 7/7 Plus
- iPhone 6s/6s Plus
- iPhone 6/6 Plus
- iPhone SE

These are the only iPhones equipped with the requisite NFC radio antennae. Besides NFC compatibility, the other piece of the hardware puzzle is Face ID/Touch ID.

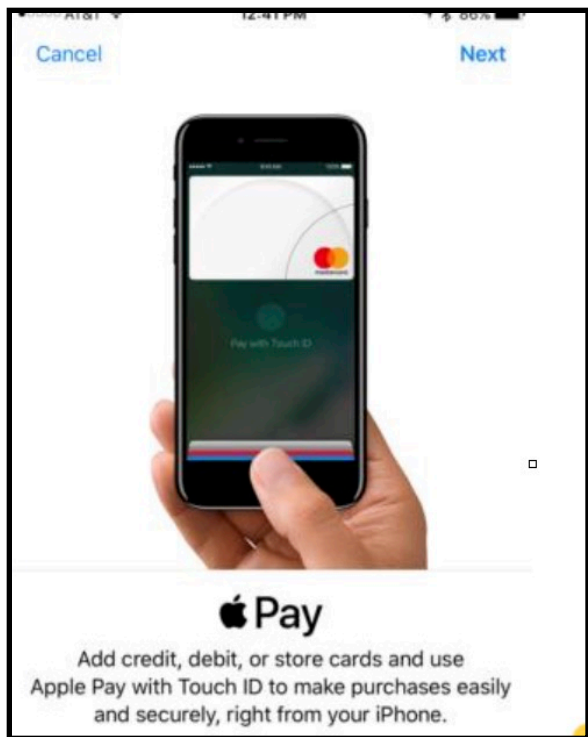
For in-app purchases, Apple Pay works with the following iOS devices:

- iPhone X
- iPhone 8/8 Plus
- iPhone 7/ 7 Plus
- iPhone 6s/6s Plus
- iPhone 6/6 Plus
- iPhone SE
- iPad (2018 edition)
- iPad (2017 edition)
- iPad Pro (12.9, 10.5, and 9.7-inch models)
- iPad Air 2
- iPad mini 4/iPad mini 3

You'll also need to update your iPhone to iOS 8.1 or later, which will turn on your phone's Apple Pay feature. To check which version of iOS you're running, go to *Settings > General > Software Update*.

Once your iPhone is in order, you'll need to link credit or debit card to use for payments. If you already have a card linked to

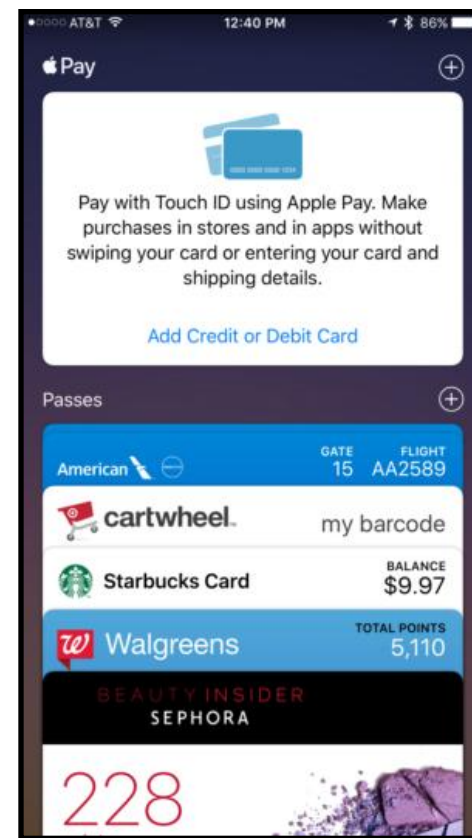
your Apple ID for making iTunes and App Store purchases, you can opt to keep using that card with Apple Pay—you'll just have to re-enter the card's security code so Apple knows you're legit. Take note: Some banks will add an extra layer of security to this step, asking you to enter a code they send to you via text, so that they too know you're on the up-and-up.



You can also add different cards—just launch Wallet and tap + in the top-right corner. You'll then be prompted to add either a credit or debit card to use with Apple Pay or another pass to store in Wallet. Tap *Add Another Card*, then follow the entry fields on the next screen. You can speed this up by taking a picture of your card with your iPhone.

Whether you're using the card already linked to your Apple ID or adding a new one, your iPhone will guide you through the setup process, which includes verifying your card, granting Apple Pay access, and then storing it in Wallet. Be sure to have your card

handy so you can verify the card with its security code.



The card linked to your Apple ID will be listed as your default Apple Pay card, but you can always change that by going to *Settings > Wallet & Apple Pay* and updating your transaction default information—or do it in-app by selecting your default card, choosing the “information” button on the lower right-hand side of the screen, and changing the details from there. You can also tweak your transaction settings (like your shipping and billing addresses), allow Apple Pay payments from your Mac (more on that in a bit), and allow you to start an Apple Pay transaction by double-pressing the Home button (or double-pressing the Side button on the iPhone X), all from Settings.

Apple Pay on the Apple Watch

To set up Apple Pay on your Apple Watch, you'll use the Apple Watch app for iPhone. In the My Watch tab, scroll down to *Wallet & Apple Pay*. In that section, you can mirror the alerts that show on your iPhone, or choose *Custom* and elect to have alerts come to your watch or not.

If you are already using Apple Pay on your iPhone, your cards should automatically sync up to use with your Apple Watch. If not, you can add cards again much like you would from Wallet, just follow your iPhone's prompts.

Once you're set up, you can find your debit/credit cards in the Wallet app on the watch, but it's much faster to use the shortcut. Just double-press the button underneath the Digital Crown, the same button you press once for the Friends ring and Digital Touch feature. Pressing twice will bring up your default Apple Pay card, with your other cards available too if you'd like to select a different one (just swipe left or right).

Apple Pay on the Mac

If your Mac is running [macOS Sierra](#) or [High Sierra](#), you can use Apple Pay to complete online purchases via Safari. However, unless you have a new [MacBook Pro](#) with Touch Bar and Touch ID, you can't just use Safari alone—you'll need to use an Apple Pay-compatible iPhone or iPad (running iOS 10 or later) or Apple Watch (running watchOS 3 or later) to verify any transactions. You'll also have to use the same iCloud account across devices.



If you have a MacBook Pro with Touch Bar, you can use Touch ID to check out with Apple Pay.

Once your iPhone and/or Apple Watch are ready to roll, using Apple Pay on your Mac is super simple—just look for the Apple Pay button at checkout on supported sites, select it, and follow the prompt. You'll be asked to approve the transaction through either your iPhone or Apple Watch:

- For iPhone or iPad verification, use your device's Face ID/Touch ID to verify your fingerprint. You'll be guided by an on-screen dialogue box.
- For Apple Watch verification, double-tap the side button underneath the Digital Crown. Your watch will display the total amount.

Once verified, you'll see a purchase confirmation on your Mac's screen. If you're using a Touch Bar MacBook Pro, make sure Touch ID is turned on—tap the Apple Pay icon on the Touch Bar to start the process.

What online stores actually support Apple Pay payments, you may ask? [Apple has a full list on their website.](#)

How to use Apple Pay in stores

When buying something at a brick-and-mortar store, you'll hold

your iPhone up to a wireless payment terminal near the cash register, and then use Face ID/Touch ID to complete your purchase. These sensors are the same ones [you've already seen in stores](#), often equipped with both card swipers and a tap-to-pay contactless terminal. The beauty of Apple Pay is that you don't even need to wake up your device or launch Wallet—your phone wakes up automatically when it gets in range of the terminal and initiates the payment process.

If you're [buying something with your Apple Watch](#), double-press the button underneath the Digital Crown. Pressing twice will bring up your default Apple Pay card, with your other cards available too if you'd like to select a different one.

Once you pick the card you want to use, you'll just hold your Watch close to the contactless payment terminal until you hear a beep and/or feel a vibration. It helps if you turn the Watch face toward the payment terminal, almost smooshing them together like they're kissing. So you typically can't see the watch's face while the payment is happening, unlike when using Apple Pay on an iPhone, where the screen is typically facing you.

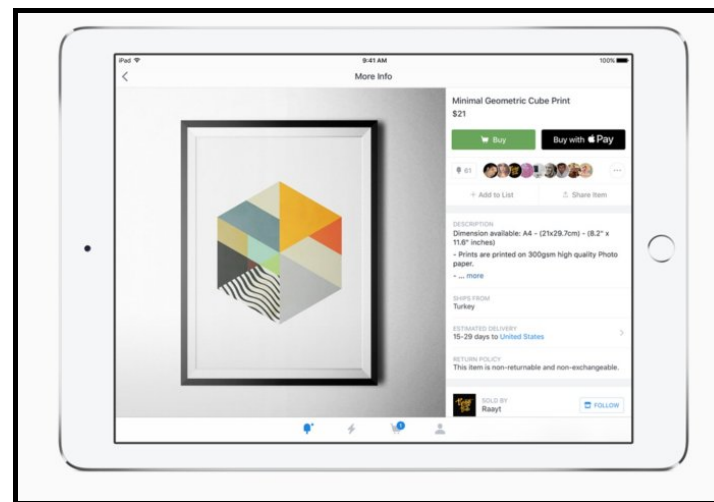


Depending on the retailer, the card you're using, and the value of your purchase, you might need to enter your PIN. And even

though credit card companies are either [phasing out or no longer require](#) customers to provide a signature to complete the transaction, the store itself may want your signature.

How to use Apple Pay in apps and online stores

If you're buying something through a partnered online store or app on your iPhone or iPad, you'll just use Face ID/Touch ID to complete the purchase. Depending on the app, you may have to toggle on a setting to allow the app to access Apple Pay, or to set Apple Pay as your default method of payment.



For the Mac, use your Touch Bar and Touch ID sensor, or use your paired secondary device (your Apple Pay-compatible iPhone, iPad, or Apple Watch, as outlined in the section above) to complete transactions. Make sure all your devices are connected to the same iCloud account.

Where can I use Apple Pay?

What makes Apple Pay such a game-changer is how many [retail partners](#) the platform has, with new stores being added constantly. Besides the Apple Store, you can use Apple Pay at several brick-and-mortar locations, which Apple outlines [here](#).

Apple Pay is supported by a plethora of U.S. banks, credit

unions, and credit card companies. For a complete list of banks and financial institutions that support the service, check [here](#).

Traveling abroad? Not a problem. Apple Pay is accepted in several countries and jurisdictions around the world—including the U.K., Australia, Japan, China, France, Spain, and Italy. Check out the full list [here](#).

Apple Pay Cash

Apple Pay Cash is a new feature that allows you to send money to another iOS user. It's similar to Venmo, PayPal, or Square Cash. It's not a new app that you need to download; it works within iMessage and the Messages app.

Here are Apple's requirements for Apple Pay Cash:

- A compatible device with iOS 11.2 or later.
- Two-factor authentication for your Apple ID.
- An eligible credit or debit card in Wallet, so you can send money.
- Be at least 18 years old.
- Live in the United States.



[Read our Apple Pay Cash guide](#) for all the information you need on how to use Apple Pay Cash, how it works, and more.

Apple Pay credit card

According to a report by [The Wall Street Journal](#), Apple and Goldman Sachs Group are going to have an Apple Pay credit card available early next year.

Details on what benefits the new credit card will offer have not been revealed, but the new card will replace the one Apple [currently offers in partnership with Barclays](#). The Barclays Apple Rewards Visa offers special financing on Apple products, points for money spent at the Apple store, restaurants, and other venues, and \$25 Apple Store/iTunes gift card rewards for every 2,500 points earned.



The following article was posted to osxdaily.com on may 26, 2018. tinyurl.com/ybocfwpc. © OSX Daily. Try the site. Lots of tips and good info.

How To Look Inside Airports With Apple Maps On iPhone And iPad To Plan Ahead When Traveling



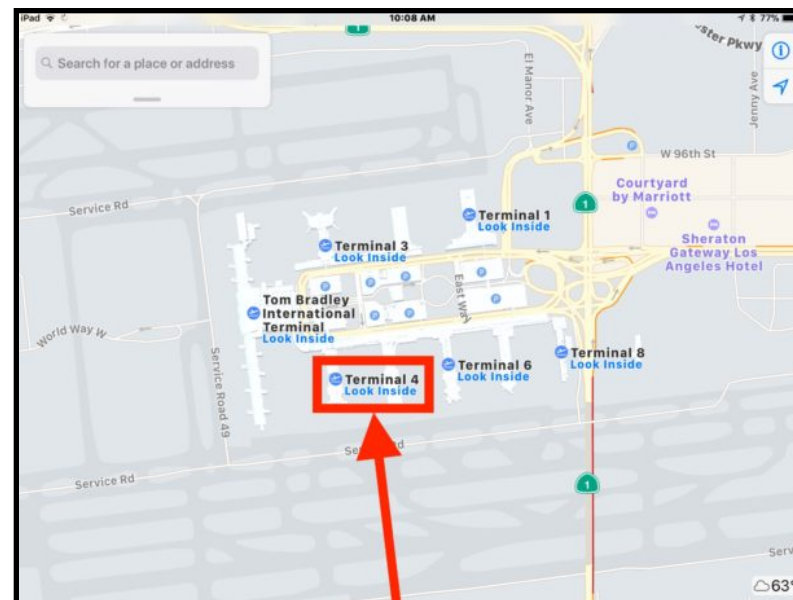
Airports can be hectic, and just about every traveler knows the stress of visiting an airport they have never been to before and trying to quickly navigate the maze of terminals to find their gate so that they can board a plane on time. A great trick that can ease the stress of travel and help you plan your travels better is to use Apple Maps on an iPhone, iPad, or Mac, to *virtually navigate within an airport* beforehand.

With Apple Maps airport exploration mode, you can explore inside airports to find terminals, boarding gates, baggage claims, check-in counters, security checkpoints, bathrooms and toilets,

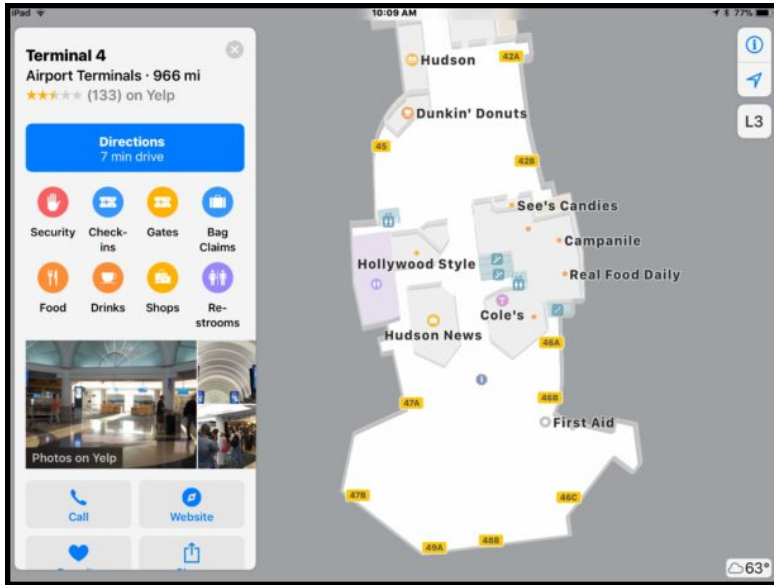
restaurants, shops, and more. This makes travel planning a bit easier and takes some of the stress out, particularly if you're visiting a huge airport, or one you're just unfamiliar with.

All you need is an iPhone or iPad to get started. The rest is super easy.

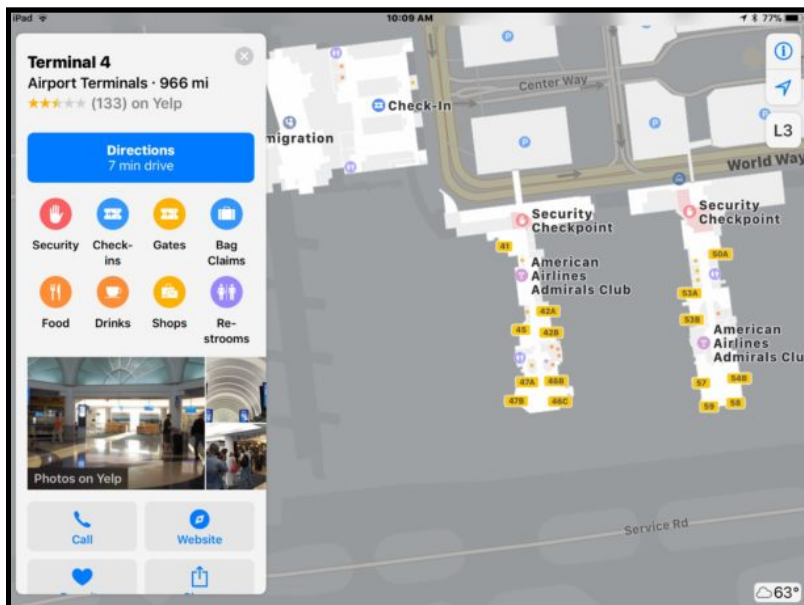
1. Open the "Maps" app on the iPhone or iPad, be sure the map setting is set to map mode and not satellite view
2. In the "Search" section, type in the Airport you want to browse and look in (you can also use airport codes, like "LAX")
3. Zoom in a bit and locate the terminal you want to investigate, then tap on the "Look Inside" text



4. Now zoom in further or navigate around the airport map, tapping on a Terminal to view even more information, including check-ins, gates, security, bag claims, food, drinks, shops, restrooms / toilets, and more



In the example screenshots here, we're using an iPad to browse Los Angeles International Airport (LAX), which is a large, busy, and particularly sprawling and complex airport to navigate around with its myriad shuttles, many terminals, parking garages, as well as many food and shopping options.



You can use this feature anytime from an iPhone or iPad as long as you have internet access on the device, but it's probably best to browse around an airport before you're actually in it, or when you're in it. Of course you could also use in-flight wi-fi service to browse through a destination airport before you land, which would certainly make the process of landing a bit easier too. If you already know where to go before you land, you'll be navigating the airport like a seasoned traveler!

If you're traveling with a companion but on different flights, or you're looking to meet-up with someone in an airport, a great way to use this feature is to use this in combination with either [Mark & Share Location in Maps for iOS](#) or ["Share Current Location" in Messages on iPhone](#), to share where you are, or where you want to meet up, with your travel partner, so that you can meet up with each other in the airport for a quick bite to eat, or to pair up and find your baggage together. That's particularly great if you're flying to the same destination as someone else but you're on different flights.

Oh and as a bonus tip, don't forget that you can also [see the weather reports of locations in Apple Maps too](#) (it's in the corner of the Maps screen), so if you're not quite sure what the weather will be upon arrival or departure, you can check that as well.

Do note that not all airports are supported by this Apple Maps feature, yet anyway, but most major international airport hubs, busy US airports, and international airports are supported and can be browsed through this way. Considering that it's usually the biggest and most busy airports that are the most complex, this makes some degree of sense, but don't necessarily expect a tiny airport in a rural location to be included in the Look Inside feature of Apple Maps, so if you're flying into some tiny remote destination you'll have to just figure that one out on your own.

Happy travels!

The following article was posted to osxdaily.com on December 27, 2017. tinyurl.com/ycexh8yf. © OSX Daily. Try the site. Lots of tips and good info.

How To Change The Default Notes Account In iOS



The Notes app in iOS is ever useful and offers a great place to store whatever little tidbits of text, [checklists](#), [pictures](#), [doodles and drawings](#), [shared notes with other people](#), [password locked notes](#), and other data points you wish to preserve in some organized manner on an iPhone or iPad. And as for storing, the Notes app on the iPhone and iPad has two different account locations for Notes data; locally on the device itself, or in iCloud.

By default with modern versions of iOS, the Notes app sets the default account save location of note data to iCloud, but if you wish to adjust the Notes default so that notes are local instead, you can do so via settings. This will impact default notes behavior, and also the default notes account that is interacted with [via Siri notes requests](#) and any Notes data visible from the widgets screen of notification center in iOS.

The setting adjustment is the same on iPhone and iPad, but the naming convention of the setting is slightly different to reflect the different naming of each device. Here's how you can adjust your default notes account in iOS for any iOS device:

1. Open the “Settings” app on the iPhone or iPad and go to “Notes”
2. Be sure the “On My iPhone” Account (or “On My iPad” Account) is enabled
3. Next, at the top of the screen under “ACCOUNTS” tap on “Default Account”



4. Tap to select either “On My iPhone” (or “On My iPad”) or “iCloud” to set that as the default account for notes to use



5. Exit out of Settings as usual

Note this does not modify any existing notes, it simply changes the default Notes account to be used on the device.

For example, if you [tell Siri to “make a new note”](#) and you had set the default account to “On My iPhone” then the new note would appear locally on the device. Or, if you set the default account to “iCloud” and told Siri to make a new note, the new note would appear in iCloud instead.

The splintering of accounts and data save location can cause some confusion, even with the [Notes searching feature in iOS](#), and perhaps one day they will merge with an option to upload and share local notes to iCloud rather than have a completely separate Notes section for iCloud along with another separate Notes section for local storage on a device. Or perhaps it’s best to keep the two separate, so that you can easily continue to use Notes on a device even where there is no internet connection or cellular service, assuming the notes are kept locally anyway on the device itself.

It’s also worth remembering how you navigate between the two different Notes sections in iOS. From within the Notes app, you tap the back arrow in the upper left corner until you see the “Folders” screen (yes it is labeled as Folders and not Accounts, which can be confusing when considering the settings app labels them as Accounts and not Folders... anyway), which is where you will find both the “On My iPhone” notes and the “iCloud” notes sections. Each will contain different notes if they have been created in one section versus the other, but they can be flipped between rather easily.

Andrew Orr posted the following article to macobserver.com on August 29, 2017. tinyurl.com/y7a5wf3r. © The Mac Observer, Inc. Andrew is a freelance writer and amateur photographer from Michigan.

Use Keyboard Shortcuts In Apple Notes

By Andrew Orr

Did you know you can use [keyboard shortcuts](#) in Apple Notes? If you’re a keyboard warrior, you that it’s really fast to navigate and perform tasks on your Mac with keys. I try to do this whenever I can, at least when doing tasks in an app. But I had no idea that Apple Notes supported keyboard shortcuts, although it makes perfect sense. Here’s a list of the commands.

Notes Shortcuts

Task	Keyboard Shortcut
Create new note	Command-N
Create new folder	Shift-Command-N
Show the main Notes window	Command-0 (zero). Note: This shortcut is useful if a note open in a separate window is blocking the main Notes window.
Show or hide Attachments Browser	Command-1
Search all notes	Option-Command-F
Move between the sidebar, notes list, and search field	Tab Note: This shortcut doesn’t work if you are currently editing a note’s contents.
Begin typing in the note selected in the notes list	Return Note: This shortcut places the insertion point at the end of the selected note’s contents. To go back to the notes list,

Andrew Orr posted the following article to macobserver.com on May 16, 2018. tinyurl.com/ybvjxw7v. © The Mac Observer, Inc.

Macos: Use These Keys To Keyboard Scroll Through Apps

By Andrew Orr

The newest addition to our keyboard tips is scrolling. There’s a particular key combination that lets you keyboard scroll through any macOS app. Here’s how to get started.



Keyboard Scroll

The keys to start doing this are **FN + Up/Down arrow keys**. This works in Finder, Safari, and other apps across the macOS system. And speaking of Safari, there’s another set of keys you can use to scroll through the browser, which we’ll share tomorrow.

Editing notes shortcuts

Task	Keyboard Shortcut
Attach a file	Shift-Command-A
Create a link	Command-K
Apply Title format	Shift-Command-T
Apply Heading format	Shift-Command-H
Apply Body format	Shift-Command-B
Apply Checklist format	Shift-Command-L
Increase list level	Command-] or Tab
Decrease list level	Command-[or Shift-Tab
Add a line break to a list item or checklist	Shift-Return
Insert a tab character in a list item	Option-Tab
Mark or unmark a checklist item	Shift-Command-U
Zoom in on note’s contents	Shift-Command->
Zoom out on note’s contents	Shift-Command-<
Change size of note’s contents to default	Shift-Command-0

John Martellaro posted the following article to macobserver.com on May 9, 2018. tinyurl.com/y96grrlp. © The Mac Observer, Inc. A scientist and author, he has worked for NASA, the Oak Ridge National Laboratory, & Apple.

Here's Everything You Need To Know About Carbon Copy Cloner APFS Snapshots

By John Montellaro

Bombich Software released version 5.1 of Carbon Copy Cloner on April 24 with APFS snapshots support. There's a lot to know about this major upgrade, and so some basic Q&A seems in order.

Here at The Mac Observer, we covered the initial news.

- [Bombich Software Updates Carbon Copy Cloner With APFS Snapshot Support](#)

Official Documentation

The developer, Mike Bombich, has written an excellent overview of this new capability. This is the major, definitive resource.

- [Leveraging Snapshots on APFS Volumes](#)

That article, at the very top, also points to an [excellent video introduction](#).

That's a lot of material to digest, so I contacted Mike and we chatted about some of the basics that could be integrated into a short "Getting Started Q&A." I asked what I thought might be the typical first questions from users.

CCC 5.1 And APFS Snapshots Q&A

Q1: What happens if I upgrade to v5.1 and just do nothing?

A1: Nothing changes. The backup plans you have in place will continue to write your clone backups to your external drive, as

before.

Q2: My external backup drive is an HDD. Can it be used for snapshots?

A2: No. A drive must be formatted as APFS for snapshots to work.

Q3: My internal drive is an SSD. Can I use it with snapshots?

A3: Yes, if it's been previously formatted as APFS during your **High Sierra** upgrade.

Q4: I have an external SSD as my clone drive but formatted as HFS+. Can I non-destructively convert it to APFS?

A4: No. If a cloned SSD drive has macOS system files on it, Disk Utility (File menu) won't let you convert it non-destructively. You'll need to reformat it as APFS and start fresh.

Q5: My external clone drive is an HDD with HFS+. What's the best strategy?

A5: Leave that HDD as your clone backup drive and consider enabling snapshots on your SSD startup disk. (Optional, however.)

Q6: What happens if I create **new** backup plans in CCC 5.1?

A6: Mike wrote: "Snapshot support is automatically enabled for a volume when you select that volume (or a folder on that volume) as a source or destination to a CCC backup task. If you prefer that CCC does **not** automatically enable snapshot support for source and destination volumes, you can disable that behavior in CCC's Preferences window." (Do that right after you upgrade to 5.1 and snapshots won't be invoked until you're ready.)

Q7: How much free space should I have on my SSD boot drive before I enable snapshots?

A7: 30 GB. If you have less, but have enabled snapshots, CCC will wait until you have 30 GB free to start creating permanent snapshots.

Q8: If I also elect to create snapshots on an external APFS SSD, does it remain bootable?

A8: Yes.

Q9: I need to revert my boot SSD to a previous snapshot. How do I do that?

A9: As the documentation linked above explains, boot from an external bootable clone, launch CCC, and use it to restore your internal SSD to a previous snapshot of the OS. They are listed and dated.

Summary

This Q&A was intended only to answer some of the most common beginner questions.

For all the details, refer to the Bombich Software links at the top of his article.

The developer has created a powerful, nicely designed system that's been thoroughly tested. But it's a lot to swallow initially.

One way for beginners to ease into this new APFS snapshots technology would be to 1) Upgrade, 2) Disable snapshots in the preferences, 3) Continue with the current backup operations, 4) Review the developer's help page and video linked above, 5) Review your disk types and formats in light of the above Q&A, 6) When ready, if you boot from an APFS formatted SSD, enable snapshots (for new plans) in the CCC preferences, 7) Ease into the new user interface and practice, for example, restoring a previously deleted TEST file, ("Reveal in Finder"), 8) Continue to grow in experience and learn the new capabilities of v5.1, as you go, over time. Others, who are experts, may elect, of course, to jump right in and proceed at a faster pace.

If you have questions, Mike Bombich is ready to assist on his [website's help page](#).



Glenn Fleishman posted the following article to macworld.com on April 24, 2018. tinyurl.com/y7crsop8. © IDG Consumer & SMB. He is a Senior Contributor to Macworld and others. He appears regularly on public radio to discuss the tech industry.

High Sierra: Why You Can't Format An Internal SSD With HFS+ Format

But you can downgrade and reformat for an older version of macOS.

By Glenn Fleishman

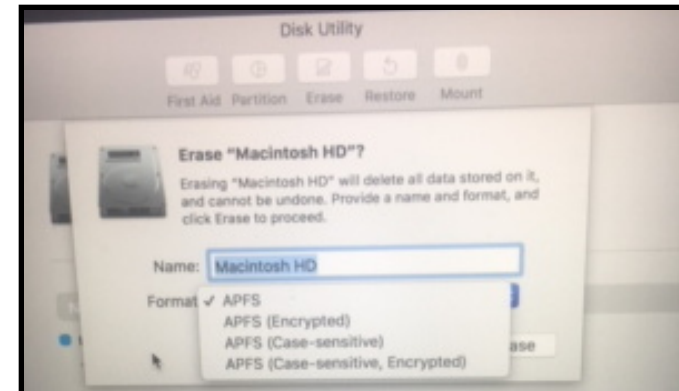


I've written [quite a bit about the not-quite-so-new Apple File System \(APFS\) format](#) that Apple adopted for both iOS and— with macOS 10.13 High Sierra—for SSDs that are a Mac's boot volume. While questions have largely tapered off in recent weeks after a spate of issues with [Time Machine, APFS, and external drives](#), people are clearly still wrestling with some of the details.

Macworld reader Andrew wrote in asking about reformatting his High Sierra system, and wanting to choose HFS+ (Mac OS Extended, Journaled). However, after [booting into macOS Recovery](#), the Disk Utility app only offers up APFS options. Why is that?

macOS Recovery is in sync with High Sierra, and Apple converts a boot SSD volume into APFS when you install High Sierra. While

that was optional during High Sierra's public beta period, it became mandatory and unavoidable on release. As a result, even trying to erase a boot SSD volume only presents APFS options.



A Macworld reader can't get the HFS+ option to appear, but that's by design.

It's possible you could force HFS+ on a boot SSD with High Sierra with some Terminal monkeying around, but I can't see that would end well, and I'm not sure it offers any advantages. It's too risky to recommend.

However, if you're trying to downgrade to Sierra or an earlier version of macOS, I would [create a bootable installer](#) of that version of macOS, start up your Mac from it, and then use Disk Utility within Sierra or earlier to reformat the SSD with HFS+. Then you can install previous versions of macOS on that Mac.

Mike Bombich posted the following article to bombich.com. tinyurl.com/ybgtt3du. © Bombich. He is the founder and President of Bombich Software, Inc., the developer of Carbon Copy Cloner.

Leveraging Snapshots On APFS Volumes

By Mike Bombich



[Watch a video of this tutorial on YouTube](#)

What is a snapshot?

Snapshots are a new feature of Apple's APFS filesystem, and they're available on macOS High Sierra and later. A snapshot is a point-in-time representation of a volume on your hard drive. Once the snapshot is taken, each file within that snapshot will be available on the snapshot in it's exact state at the moment that the snapshot was taken, even if you delete the file. When you configure CCC to make regular snapshots of your APFS-formatted volumes, you can quickly restore older versions of your files. When you combine snapshots and CCC bootable backups, you can even restore an older version of your Mac's operating system!

Note: Snapshots are only available for APFS-formatted volumes on macOS High Sierra and later.

The Role of Snapshots in a Comprehensive Data Protection Strategy

There are several aspects of data protection that a backup aims to provide. Protection against:

- Accidental file deletion or modification
- Malicious file modification (e.g. malware/ransomware)
- An OS or software update that causes functionality regressions
- Hard drive failure

- Computer theft
- Catastrophic loss (e.g. tornado, hurricane, flood -- loss of both original and backups)

Support for snapshots at the filesystem level is an important and integral component of a backup strategy, but snapshots are not a complete replacement for a true backup on physically separate hardware. If your startup disk fails, all the snapshots in the world aren't going to help you restore your startup disk and data. Having a bootable backup on an external disk will get you back to work immediately.

	Snapshots	Bootable Backup	Backup to Remote Macintosh
Accidental file deletion	X	X	X
Malware/ ransomware	X	X	X
Bad OS update		X	
Hard drive failure		X	X
Theft		X	X
Catastrophic loss			X

When you develop your backup strategy, consider all of the possible risks to your data and decide whether and how you will mitigate those risks. At minimum, we recommend regularly scheduled backups to a locally-attached hard drive. With a regularly scheduled backup, you will have very good protection against the most common risks to your data.

Using snapshots in CCC

When you select an APFS volume as a source or destination to a CCC backup task, CCC will automatically enable snapshot support on that volume and set a default Snapshot Retention Policy for that volume. **For basic snapshot support, you don't need to configure any settings; CCC will automatically**

manage your snapshots using a sensible set of defaults.

Snapshots on the source

Maintaining snapshots on the source volume offers protection against accidental file deletion and modification. When snapshots are kept on the source volume, you don't need your backup volume to recover accidentally-deleted files. Retaining snapshots will increase disk usage over time, however, so we recommend limiting retention of snapshots on the source. This recommendation is [specifically imposed by CCC upon the startup disk](#).

When your backup tasks run, CCC will automatically create a snapshot on an eligible source volume and use that snapshot as the source for the backup task. Because the snapshot is mounted read-only, changes that you make to files while the backup task runs won't cause errors during the backup task – you'll get a true point-in-time backup of your data. If you have snapshots disabled for the source volume (see more on how to do that below), CCC will automatically remove the temporary source snapshot at the end of the backup task.

Snapshots on the destination

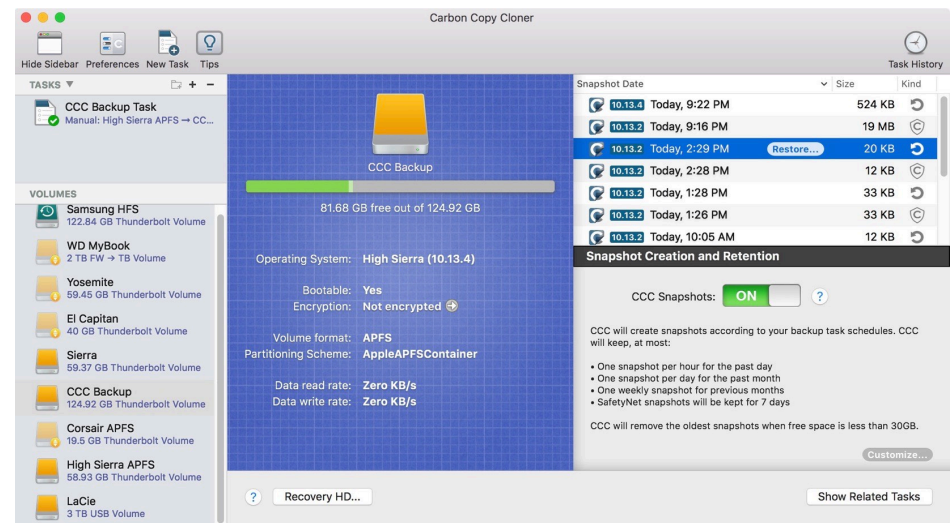
If you have CCC's SafetyNet feature enabled, CCC will create a [SafetyNet Snapshot](#) of the destination at the beginning of the backup task. CCC will then thin snapshots on the destination according to the Snapshot Retention Policy defined for that volume. At the end of the backup task, CCC will create another "Backup Snapshot" that defines the point-in-time backup for that backup task event.

Toggling snapshot support and setting a Snapshot Retention Policy

CCC considers snapshot support on an individual volume basis. Snapshot support is automatically enabled for a volume when you select that volume (or a folder on that volume) as a source or destination to a CCC backup task. If you prefer that CCC does not automatically enable snapshot support for source and

destination volumes, you can disable that behavior in CCC's Preferences window.

To view or change a volume's snapshot support or retention policy, reveal CCC's sidebar, then click on the volume in CCC's sidebar. CCC will list any snapshots currently present on the volume and will display the retention policy for that volume. Remember that snapshot support is limited to APFS volumes. If you select a non-APFS formatted volume in CCC's sidebar, you won't see any snapshot settings.



Default retention policy settings

- SafetyNet snapshots will be retained for 7 days
- Weekly snapshots will be retained until free space is constrained†
- Daily snapshots will be retained for 30 days†
- Hourly snapshots will be retained for 24 hours
- The oldest snapshots will be deleted when free space is less than 30GB

† CCC applies a more conservative retention policy for the startup disk – weekly snapshots are not retained, and daily snapshots are only retained for 7 days. You can customize those

settings if you want a longer retention for snapshots on the startup disk, but be sure to [consider the implications this will have on disk usage](#) on your startup disk.

CCC will thin snapshots at the beginning of the backup task, and any time during the backup task if free space becomes constrained (on a destination volume). The retention policy is evaluated in the order listed above, but any snapshot may be deleted if doing so is required to achieve the specified free space limit. The only exception to that is for any snapshots created by other applications, and the snapshot created during the current backup task – CCC will not remove the SafetyNet snapshot that was created at the beginning of the current backup task.

Snapshots created by other applications

During snapshot thinning, **CCC will never delete snapshots created by other applications.** If you would like to remove snapshots created by another application, click on the relevant volume in CCC's sidebar, select the snapshots you would like to remove, then press the Delete key.

CCC's snapshot retention policy is only applied when snapshots are enabled for that volume

If you disable CCC snapshot support for a volume that contains previously-created CCC snapshots, CCC will not perform automated snapshot thinning on that volume. When you disable snapshot support, you are welcome to delete the snapshots listed above the snapshot toggle button. Simply select one or more snapshots listed in the table then press the Delete key.

The snapshot retention policy defines which snapshots will be retained, not when they will be created

CCC creates snapshots when your backup tasks run, and only when your backup tasks run. CCC will never create snapshots outside of a scheduled or manually-run backup task. As such, a retention policy that saves "up to one snapshot per hour for 24 hours" does not imply that you will have 24 snapshots for the last day. If you have a backup task configured to run only on a daily

basis, you should expect to see only one snapshot for the source and destination volumes. If you want to have hourly snapshots, be sure to configure your backup task to run on an hourly basis.

CCC will override your free space limit if that's required to complete a backup

The default free space limit of 30GB will generally ensure that CCC can write 30GB of data to your destination volume during each backup task. If CCC finds more than 30GB of data to copy and runs out of room on the destination, it will remove additional snapshots during the backup task to free additional space. When this "emergency" thinning takes place, CCC will add a notification to your backup task event (in the Task History window), suggesting that you review the Snapshot Retention Policy for your destination volume.

Click on the destination volume in CCC's sidebar to review the Snapshot Retention Policy, and click on the **Customize** button to customize those settings. When reviewing the free space limit, consider whether your backup tasks generally copy more than 30GB. Specify a value that will leave enough space to accommodate the amount of data that usually gets copied to the destination to avoid the emergency thinning and associated notification.

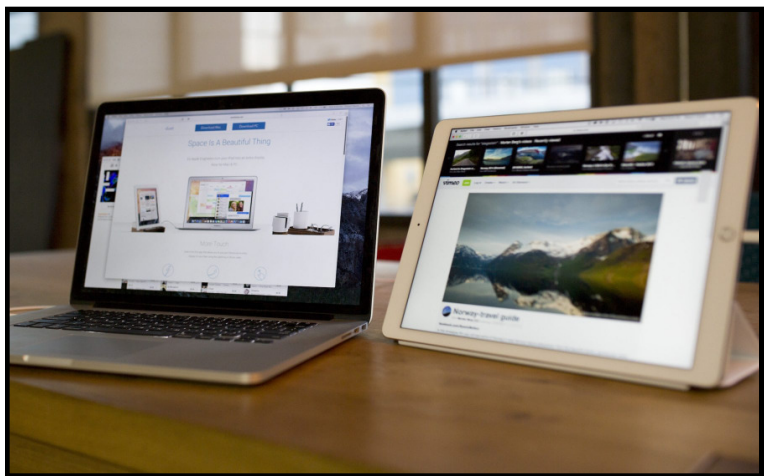
If you notice that your backup task is suddenly copying a lot more data than usual, please take a moment to look for potential problems. For example, if you have more than one backup task backing up different sources to the same destination, those tasks may be conflicting, removing each others' files. You should also determine if disk usage on the destination is unusually high compared to the source (excluding snapshot disk usage). If the disk usage looks suspicious, or if the amount of data that CCC is copying is difficult to explain, please don't hesitate to [contact us for an additional review](#) of your setup.

EDITOR NOTE - This article continues for several more pages, but since it is so specific to CCC, users should go to the original article if more information is desired.

Adam C. Engst posted the following article to tidbits.com on April 8, 2018. tinyurl.com/yabmwlr8. © TidBITS Publishing Inc. He is the publisher of TidBITS. He has written numerous books and many magazine articles.

Macos 10.13.4 Breaks Third-Party Dual-Display Systems

By Adam C. Engst



We're hearing reports, such as [this comment](#) from Dana Stevens, that the recent update to macOS 10.13.4 High Sierra is breaking third-party dual-display systems (see "[macOS 10.13.4 High Sierra Adds Business Chat and External GPU Support](#)," 30 March 2018).

[MacObserver](#) says the products affected include the hardware-based [DisplayLink](#), along with the app-based [Air Display](#), [Duet](#), and [iDisplay](#). However, the problem doesn't affect secondary displays that connect directly to the Mac via Mini DisplayPort or Thunderbolt.

In an email to Air Display users, Avatron wrote:

We're sorry to say that the Air Display Host software

does not yet work on macOS 10.13.4. This new version of macOS has made some bold changes to its WindowServer and Metal frameworks, and unfortunately has broken the Air Display Host, as well as all of our competitors. The breakage is severe; it causes an inelegant system crash when you try to connect to any unaccelerated display or USB monitor. We have reported the bug to Apple and are hoping for a fix in macOS 10.13.5.

Until Apple issues a fix, we do not advise updating to macOS 10.13.4. Of course Air Display continues to work fine on 10.13.3.

And Alban Rampon, a product manager at DisplayLink, shared [a similar story](#) in the company's support forums, saying:

We are aware that installing macOS release 10.13.4 will cause DisplayLink connected displays to go blank after the OS upgrade when using DisplayLink driver v4.1. (Functionality such as Ethernet and/or audio, where implemented, is unaffected.) Extended display support continues to work as expected in macOS 10.13.3.

The only workaround would seem to be to downgrade to macOS 10.13.3, which would likely involve installing an earlier version of High Sierra and then upgrading to 10.13.3 using [the combo updater](#).

Bob LeVitus posted the following article to macobserver.com on May 115, 2018. tinyurl.com/yavcj7f5. © The Mac Observer. Bob is the author of more than 80 books, a computer columnist, and Mac expert. He writes a weekly column for The Mac Observer.

Three Ways To Fix Mac Hard Disk Failures

By Bob LeVitus

I have more connected hard drives (usually 7 or 8) than most people. So, I also have more hard disk failures than most people.

For as long as I can remember I've relied upon the same three products when my hard (or solid state) disks go bad: Apple's Disk Utility (free), Prosoft Engineering's Drive Genius (\$79), and Alsoft's DiskWarrior (\$119.99).

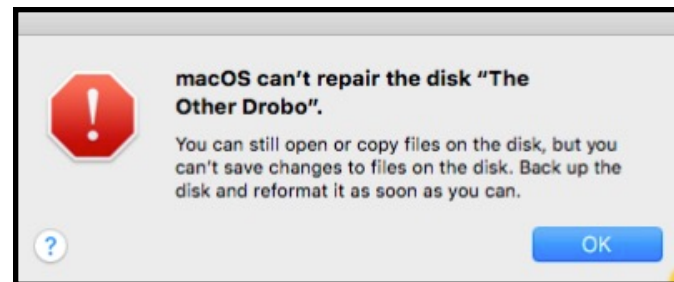
When a disk fails or acts wonky—by not mounting when it should, or by disappearing from the desktop when it shouldn't—the first thing I try is Disk Utility's First Aid.

For one thing, it's the only one of the three that doesn't require you boot from a different disk to repair your startup disk (macOS High Sierra only). That alone is reason enough to try it first. For another thing, who knows more about repairing your boot disk than Apple? And, for another 'nother thing, it's free (and you know how much I love free).

But when First Aid fails, as it sometimes does, I turn to a pair of third-party tools. Until recently, I'd have told you it was a three-way tie, with each of the three resolving roughly one-third of my disk issues over time. But, since the beginning of this year I've had three disk failures only one of these three apps could repair.

Disk Utility Failed

First, Disk Utility displayed an alert I don't remember ever seeing before:



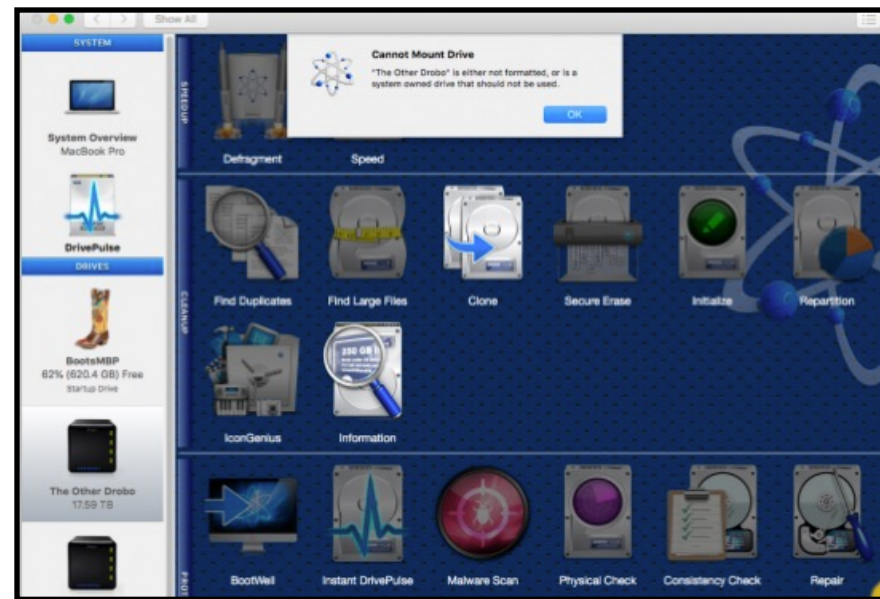
macOS can't repair the disk "The Other Drobo."

"macOS can't repair the disk "The Other Drobo."You can still open or copy files on the disk, but you can't save changes to files on the disk. Back up the disk and reformat it as soon as you can."

So I tried my next line of defense, Drive Genius...

Drive Genius Failed, Too

Drive Genius had a different alert I also don't recall seeing before:



Drive Genius can't mount "The Other Drobo."

DiskWarrior has successfully built a new optimized directory for the disk named "The Other Drobo." The new directory is ready to replace the original directory.

All file and folder data was easily located.

The disk was not mounted prior to rebuilding. Only the preview disk will appear if you preview the replacement directory.

Comparison of the original and replacement directories could not be performed because the original directory was too severely damaged. It is recommended that you preview the replacement directory.

- Errors, if any, in the directory structure such as tree depth, header node, map nodes, node size, node counts, node links, indexes and more have been repaired.
- 2 link Files no longer point(s) to an original file and therefore cannot be repaired.
- 788 Folders had a directory entry with an incorrect custom icon flag that was repaired.
- 6 Folders had a directory entry with an incorrect text encoding value that was repaired.

Disk Information:

Files: 1,034,566
 Folders: 207,862
 Free Space: 15.19 TB
 Format: Mac OS Extended (Journaled)
 Block Size: 16,384
 Disk Sectors: 34,359,066,544
 Media: Drobo Gen3

Time: 4/13/18, 4:50 PM
 DiskWarrior Version: 5.0 - RFZR-4USB-FJR7

Cannot Mount Drive. 'The Other Drobo' is either not formatted or is a system owned drive that should not be used." Note that both the Repair and Rebuild options are grayed out and unavailable.

At this point, it seemed my only option was to erase (reformat) the recalcitrant disks.

Then, DiskWarrior Fixed It (Three Times)!

Instead, I tried DiskWarrior, which repaired the disk damage after rebuilding and replacing the drive's directories, all in around 30 minutes.

DiskWarrior succeeded after both others failed...

The big benefit was that I didn't lose half a day erasing and restoring disks and got back to work in half an hour instead of half a day.

Recap and Thrilling Conclusion

In the past four months, I have had three disks failures that Disk Utility and Drive Genius could not repair but that DiskWarrior could. (For what it's worth, all three have performed flawlessly since their repair).

Does that mean you shouldn't try Disk Utility's First Aid or buy Drive Genius? Absolutely not. Disk Utility is faster, easier, and free. If it works, you've saved time and money. And, Drive Genius has many other disk analysis and maintenance options not available in the others, including Find Duplicates, Clone, Defragment, and Malware Scan to name a few.

DiskWarrior is a one-trick pony, but that pony can often repair damaged hard (or solid-state) disks when other apps can't.

So, at least in my humble opinion, DiskWarrior is the one to get if you're only going to get one.

Resources:

Disk Utility. Apple, Inc. Free with macOS. www.apple.com

Drive Genius. Prosoft Engineering. \$79. www.prosofteng.com/drive-genius-mac-protection-software/

DiskWarrior. Alsoft, inc. \$119.99. www.alsoft.com/DiskWarrior/

Andy Ihnatko posted the following article to fastcompany.com on April 3, 2018. tinyurl.com/y6vlp4by © 2018 Mansueto Ventures, LLC. His blog is Andy Ihnatko's Celestial Waste of Bandwidth. ihnatko.com/. He's a veteran technology journalist, the longtime co-host of the MacBreak Weekly podcast, and a regular contributor to WGBH Boston radio.

The Fifth Age Of Macintosh: What Happens If Apple Dumps Intel?

By Andy Ihnatko

Apple uses its own purpose-designed CPUs for its iPhones and iPads, built around the ARM architecture. [An article reported by Ian King and Mark Gurman, published by Bloomberg yesterday](#), says that the company wants to do the same for Macs and could start shipping computers with the new CPUs instead of Intel chips as soon as 2020.

As usual with such stories, the details are sourced to “people familiar with the plans” and Apple has declined comment. But I give this rumor a lot of credibility. Any such move would require the company to bring Mac developers into the loop as early as possible, so they can prepare their apps. If Apple is planning to do that at this year’s Worldwide Developers Conference (which opens on June 4), then we’re now within that window of time where I would expect the pool of people who have access to that information to have expanded to include possible blabbermouths.

More than that, however, the move emphatically makes sense. Apple’s consumer desktop strategy since the introduction of the iPad has sounded out as clearly as the first five notes of “Shave And A Haircut” and at this point, the response “TWO BITS!”—in the form of an ARM-based Mac—seems inevitable. It’s compatible with so many of Apple’s goals and frustrations.

Faster and better Macs come along at a glacial pace, a fact that Apple can’t wholly blame on Intel. But Apple’s dependency on

Intel’s CPU roadmap and release dates isn’t helpful. And Apple has a holistic approach to hardware design that has paid off well for both Apple and its users. Practically every major component inside an iOS device has been purpose-built to enhance the performance and the role of every other component, and the same goes for the relationship between the operating system itself and the overall hardware. The iPad Pro—which is every bit as powerful as almost any consumer-grade laptop—soars thanks to a level of design intimacy between iOS and Apple’s custom A10X processor that wouldn’t be possible if it used an off-the-shelf CPU. It wouldn’t get ten hours of battery life, either.

And what better way for Apple to protect the Mac from the Spectre and Meltdown vulnerabilities that affect nearly every CPU design in existence than to build a whole new CPU?

Designing its own Mac CPUs would also simply allow Apple to control a bit more of its own destiny. This is another foundational concept that gets Apple hardware designers all worked up.

I have no doubts that Apple has already ported MacOS (note proper capitalization; how embarrassing that Apple keeps misspelling it as macOS). By the time Apple announced the Mac’s transition from PowerPC to Intel in 2005, the new OS had been finished and idling in the driveway for a good long while. Besides, iOS and MacOS are both built on top of the same software kernel; porting to ARM isn’t as big a job as porting PowerPC to Intel was.

TRUE DISRUPTION

A move like that would still cause a lot of disruption. Not the fake kind, where college students who were about to flunk out of Stanford anyway announce that they’re leaving to launch a startup that’s going to totally disrupt how the world rents carpet cleaning machines. No, I mean the kind where developers do a lot of math and some of them decide that the revenue that their apps generate isn’t enough to justify the time (and thus expense) required to make them work with Apple’s next step for the Mac.

So much disruption, in fact, that Apple would almost be obligated to cause a whole lot more. Have you ever had to replace squeaky rotten subflooring in your kitchen? Yes? Then you already know where I'm headed; feel free to skip the next paragraph.

As for the rest of you: well, see, you're going to be without a kitchen for the duration. All of the counters have to come out, so it's new counters. Might as well get new cabinets to match the new counters. Do we really want to move that 1980s stove back in? And so long as we're ripping up the floor and exposing so much of the plumbing anyway, why not move the sink to a better location? But if the sink's going to be over *there*, you should put in a bigger window. Speaking of that, maybe there's space for sliding glass doors that lead out to a new patio?

See, disruptive change is an opportunity to consolidate a lot of unrelated pain into a single, horrifying ball and get it all over with at once.

Which is why I can easily picture a plan to build ARM-based Macs that's part of a bigger plan to change the whole character of the Mac. For years, MacOS has looked decidedly frumpy and unloved, and its few significant improvements (such as TouchID) have been iOS's hand-me-downs. Maybe that's because Apple has been sitting on some huge and wonderful ideas that'll boost the Mac into a higher orbit, and they've put off rebuilding MacOS until they had a good reason to tear it all down first.

Or...maybe Apple's longterm goal isn't to transition MacOS into the next decade (or, hell, even just our present one). Maybe its goal is to transition Mac users to iOS. Apple's obsessive love for the iPad has been made clear to me by both my observations of the product line and my conversations with people inside the company (present and former). It doesn't seem ridiculous that Apple might push the Mac much closer to the character of the iPad, with the iPad Pro picking up enough of the Mac's character and functions that the whole consumer Mac line would become redundant.

I can see a near future in which the only Apple hardware that behaves anything like what we'd recognize as a Mac today are the Mac Pros. These are the pricey workstation-class machines that benefit the most from Intel's top horsepower; I don't want to even take a guess as to how long it would take for Apple to build CPUs strong enough to do what an iMac Pro does. So if you use Macs for making movies, apps, visual effects, and machine learning models, rest easy: I think your Macs are safe from the red banner of revolution.

The rest of us are in an itchy spot. The functions of a basic laptop such as the MacBook Air could easily be met by an ARM chip, I reckon. And the latest generation of consumer MacBooks already *look* like iPads (and involve painful sacrifices, at least if you aren't a fan of their almost-zero-travel keyboards). Why wouldn't Apple make them *act* like iPads, too? In the absence of any visible sign of Apple's eagerness to make great consumer Macs, it's a tough question.

Also, although the classic keyboard-screen-pointer paradigm of desktop operating systems is here to stay, more and more of their functions are being bled off by mobile devices. Cloud services allow consumers and institutions to upgrade their notebooks and desktops less frequently. Apple's doing well in notebooks: KGI says that shipments of MacBooks will increase way faster than those of iPads or iPhones (16-17% versus 7-10% and 6% for iPads and iPhones, respectively). But most of those MacBooks will be MacBook Pros—workstations.

Apple, unfettered by nostalgia, has shown no reluctance to drop a product that's selling "okay" in order to boost another Apple device with a brighter future. Does the company want to move its consumer-level users away from the Mac and into iOS? It doesn't exactly seem unlikely.

ONE WAY OR ANOTHER, A NEW ERA

This supposed 2020 transition away from Intel is just a rumor. It could be a huge move that Apple will announce in June at WWDC. Or it could just be an idea that Apple is looking very

closely at. I used to get hot tips about an Apple-branded TV by the double fistful. Apple ultimately chose to go in another direction.

Regardless, the Fifth Age of the Macintosh is at hand. We just don't know what form it'll take. The first age began with the original 1984 Mac. The second age was marked by maturity and stability of the environment that came with Mac System Software 6 in 1988. 2001's OS X did nothing less than save the entire platform. And when Apple finally figured out notebooks—around 2006-2008, with the introductions of the MacBook Pro and the MacBook Air—the company brought the sexy back to the Mac.

Which brings us to Five.

The next major step could be a revolutionary spin on the Mac that goes way beyond merely keeping pace with modern computing and makes the Mac into an influential platform once more. We can even dare to hope that by building its own CPUs, consolidating the Mac's hardware design further, and incorporating iPad manufacturing methods, Apple can finally produce a great Mac that sells for way under \$900.

Or, it could be equally significant as The Last Version Of MacOS That Apple Ever Ships.

I'm hoping for the former, but I wouldn't bet either way.

Adam Satariano posted the following article to nytimes.com on May 6, 2018. [tinyurl.com/lyberwzef](https://www.nytimes.com/2018/05/06/technology/facebook-privacy-law). © The New York Times Company. He is a technology consultant with the New York Times and contributes to many websites.

What Europe's Tough New Data Law Means For You, And The Internet



The European Union is introducing some of the strictest online privacy rules in the world. The changes aim to give internet users more control over their information, but the long-term effects of the new law won't be known for years.

By Adam Satariano

In a couple of weeks, Europe will introduce some of the toughest online privacy rules in the world. The changes are aimed at giving internet users more control over what's collected and shared about them, and they punish companies that don't comply.

Here's what it means for you.

What Are the New Rules?

On May 25, a new law called the [General Data Protection](#)

[Regulation](#) goes into effect across the European Union.

The law strengthens individual privacy rights and, more important, it has teeth. Companies can be fined up to 4 percent of global revenue — equivalent to about \$1.6 billion for Facebook.

The internet's grand bargain has long been trading privacy for convenience. Businesses offer free services like email, entertainment and search, and in return they collect data and sell advertising.

But recent privacy scandals involving Facebook and the political consulting firm Cambridge Analytica highlight the downsides of that trade-off. The system is opaque and ripe for abuse.

Europe is attempting to push back.

It's too early to know how effective the law will be, but it is being closely watched by governments globally.

Will the Internet Look Different?

Not really.

Supporters of the law say it will bring sweeping changes to how companies operate online, but in reality, the effect on your internet experience will be minimal. An American visiting Europe, for example, isn't likely to see a difference.

If you live in one of the European Union's 28 member states, there is one change you may welcome — you are likely to see fewer of those shoe or appliance ads that follow you around the internet after you do some online shopping.

As e-commerce became commonplace, a cottage industry sprang up to track people around the web and nudge them back to online stores to complete a purchase. Advertisers call these ads "fine tuned," but most people consider them creepy, said Johnny Ryan, a researcher at PageFair, which makes tools to help companies work around ad-blocking software.

Mr. Ryan said the new rules would make it harder for ad-targeting companies to collect and sell information.

The new law requires companies to be transparent about how your data is handled, and to get your permission before starting to use it. It raises the legal bar that businesses must clear to target ads based on personal information like your relationship status, job or education, or your use of websites and apps.

That means online advertising in Europe could become broader, returning to styles more akin to magazines and television, where marketers have a less detailed sense of the audience.

What Are Your Rights?

Even if you don't notice big changes, the new law provides important privacy rights worth knowing about.

For instance, you can ask companies what information they hold about you, and then request that it be deleted. This applies not just to tech companies, but also to banks, retailers, grocery stores or any other organization storing your information. You can even ask your employer.

And if you suspect your information is being misused or collected unnecessarily, you can complain to your national data protection regulator, which must investigate.

Of course, an individual going up against a giant corporation like Google or Facebook isn't in a fair fight. [The law has 11 chapters and 99 sub-articles](#), and just initiating a case can take as many as [20 steps](#), according to the International Association of Privacy Professionals, an industry trade group.

But the new rules allow people to band together and file class-action style complaints, a legal approach that hasn't been as common in Europe as in the United States. Eager to exploit the new law, privacy groups are planning to file cases on behalf of groups of individuals. The hope is that a few successful lawsuits will have a ripple effect and lead companies to tighten up how they handle personal data.

The new law also ensures that you cannot be locked in to any service. Companies must make it possible for you to download your data and move it to a competitor. That could mean moving financial information from one bank to another, or transferring Spotify playlists to a rival streaming service.

What's With All These Privacy Notices?

In the weeks before the law goes into force, internet users have been receiving a stream of privacy policy updates in their inboxes — grocery store loyalty programs, train services, even apps that parents use for youth soccer all have to set out what data they gather from you, and how they handle it.

The law requires that the terms and conditions be written in plain, understandable language, not legalese. Companies must also give you options to block information from being gathered.

But the deluge of emails is leading to concerns that users are agreeing without taking a closer look.

A similar reaction came after the European Union required companies, starting in 2011, to put warnings on websites alerting users that they were being tracked. The rules have led to so many pop-up disclosure boxes that people often consent just to make the warnings disappear.

Companies argue that they are being careful to comply with General Data Protection Regulation, but Giovanni Buttarelli, who oversees an independent European Union agency that advises on privacy-related policies, has been unimpressed.

He has criticized the wave of privacy policy emails as being posed in a “take it or leave it” manner that leaves users thinking they have to accept the terms in order to keep using a service, rather than letting people choose what information to share.

Mr. Buttarelli said the messages may violate the “spirit” of the law.

Will It Make a Difference?

It's too soon to tell.

That may be an unsatisfactory answer, but the long-term effects of the new law won't be known for years.

Much will depend on how strictly national regulators enforce the rules, and how they use their tight budgets. Data-protection agencies in each European Union country will be in charge of policing the companies that have European headquarters within its borders.

That oversight structure is leading to concerns that officials in countries such as Ireland, where Google, Facebook, Microsoft, Twitter and many other data-heavy companies are based, will be overmatched.

A lot of responsibility also falls on you to keep tabs on how companies use your data.

The General Data Protection Regulation provides ways to take action if your information is being misused. But the question is whether people care enough, or if trading privacy for convenience remains a worthwhile deal.

The following article was posted to osxdaily.com on November 26, 2017. tinyurl.com/ya5ss96d. © OSX Daily. Try the site. Lots of tips and good info.

Watch A Helpful iPhone X Tutorial Video



Whether you have already bought or plan to buy an iPhone X, you'll undoubtedly noticed that using the iPhone is quite different from prior models, not only because it lacks a Home button and requires learning a series of new gestures to perform familiar tasks, but also because there are a handful of new features introduced on iPhone X that don't yet exist on any other Apple device.

Apple has apparently anticipated that the changes with iPhone X may require some adjustment and learning, and they have helpfully created a four and a half minute long tutorial video that walks through various tentpole features on iPhone X, including using Face ID, Animoji, Portrait Lighting mode on the new camera, and also learning and using the various new gestures required for the device.

The complete video is embedded below for easy viewing. Whether you already have an iPhone X, have ordered one and are awaiting its arrival, or are simply thinking about getting one down the road, the video is worth watching as it goes over a variety of features and changes, and how these new capabilities and changes work on the new device.

We've covered many iPhone X tips including [taking screenshots on iPhone X](#), [force restarting iPhone X](#), [quitting apps on iPhone X](#), [using Reachability on iPhone X](#), [what happens if you use iPhone X without Face ID](#), amongst other [iPhone X specific topics](#), and we'll continue to do so moving forward.

Even if you don't have an immediate interest in iPhone X, it's worth pointing out that iPhone X is likely an indicator of where other future iPhone and iPad devices are going, and the iPhone X seems to suggest that other upcoming devices will lose their Home button and instead rely on gesture movements and Face ID as well. With that in mind, these kind of tutorial videos from Apple can be helpful for getting a hint at where other devices are going.

Perhaps capabilities like Face ID and some of the nicer relevant gestures will even arrive on the Mac down the road too, time will tell.

Anyway enjoy the video, you'll likely find it helpful if you're a new iPhone X owner!

Liam Tung posted the following article to zdnet.com on April 24, 2014. [/tinyurl.com/y97rf8ej](http://tinyurl.com/y97rf8ej). © CBS Interactive. He is a full time freelance technology journalist who writes for several Australian publications.

Apple iPhone X Early Adopters: We Love Everything About The Phone, Except Siri

iPhone X owners are happy with every aspect of their purchase, with one glaring exception.

A new survey of iPhone X owners has found extremely high levels of satisfaction with every single key feature of the device, but just 20 percent satisfaction with Siri.

Although Siri's poor performance in the survey [might not be a major surprise](#), the result for Apple's virtual assistant is a huge deviation from the finding by tech analyst Creative Strategies that overall 97 percent of customers are satisfied with the device.

The company also found that 85 percent of iPhone X owners are "very satisfied" with their device, meaning a large portion of the overall satisfied number are not just satisfied but very satisfied.

Creative Strategies' principal analyst Ben Bjarin [said](#) this result is one of the highest 'very satisfied' rankings he's even seen with a tech product.

An earlier study he conducted with Wristly on how Apple Watch owners felt about that device found 97 percent of customers are satisfied, but only 66 percent are very satisfied.

The latest survey looks at satisfaction levels with the iPhone X's design, speed, camera, OLED display, FaceID, battery life, handling, and portrait-mode pictures.

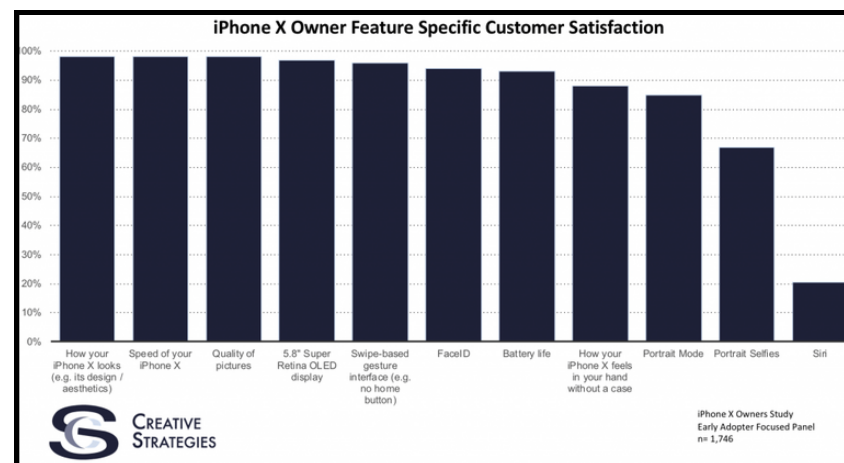
FaceID, which replaced the home button and introduced a major change to how iPhone owners interact with the device, has been well received, with a customer satisfaction score of over 90 percent.

Besides Siri, two features where Apple could eke out higher levels of satisfaction are portrait-mode pictures and portrait-mode selfies. However, even here these two features have respectable scores of over 80 percent and over 60 percent, respectively.

Even though Siri is not unique to the iPhone X, Bjarin justifies its inclusion in the survey because Apple made "unique optimizations with on-device performance and machine learning that exist with Siri on iPhone X due to the new processor design".

That Siri needs to improve is unlikely to come as a surprise to Apple, whose voice assistant is often seen as lagging behind AI voice assistants from Amazon, Microsoft, and Google. To change this situation, Apple [recently hired](#) Google's former head of search and AI, John Giannandrea, to lead its machine-learning AI strategy.

Apple is also ramping up its hiring of engineers to work on Siri. [According to Thinknum](#), Apple has posted hundreds of Siri-related job listings since the beginning of the year. Apple's jobs website currently lists 197 Siri-related vacancies.



The response from iPhone X owners to Siri stands out as particularly bad in an otherwise positive survey.

The following article was posted to osxdaily.com on November 8, 2017. tinyurl.com/ydfymdob. © OSX Daily.

How To Migrate To New iPhone X From An Old iPhone The Fast Way



Did you get a new iPhone X and now you want to migrate all of your data and stuff from an older iPhone to the new iPhone X? It's easy to migrate everything from an old iPhone to a brand new iPhone X and transfer all of your data with you. This walkthrough will show how to get all data over from an old iPhone to the new iPhone X in the fastest manner possible.

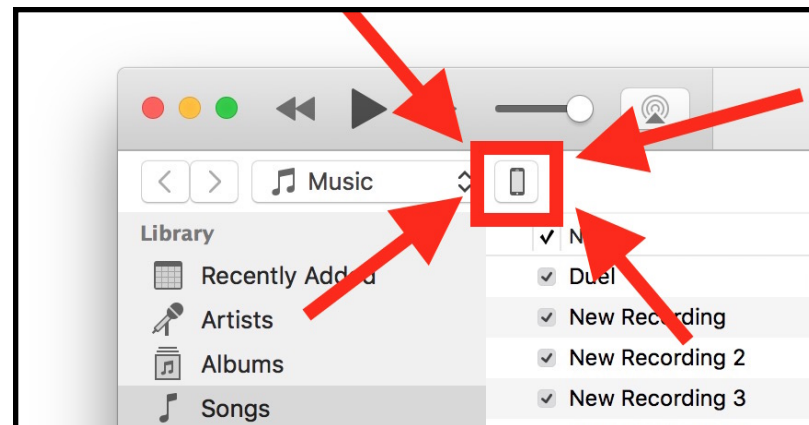
It's worth mentioning there are actually a few ways to transfer data from an old iPhone to a new iPhone X, each method requires making a backup of the old device which is then restore to the new iPhone X. While you can use iCloud backups and restore if you'd like to, our focus here is going to be on using iTunes backups and iTunes restore, because for many users it will be the fastest way to get a new iPhone X setup successfully with all of their old data onto the new phone.

How to Migrate All Data to New iPhone X from an Old iPhone

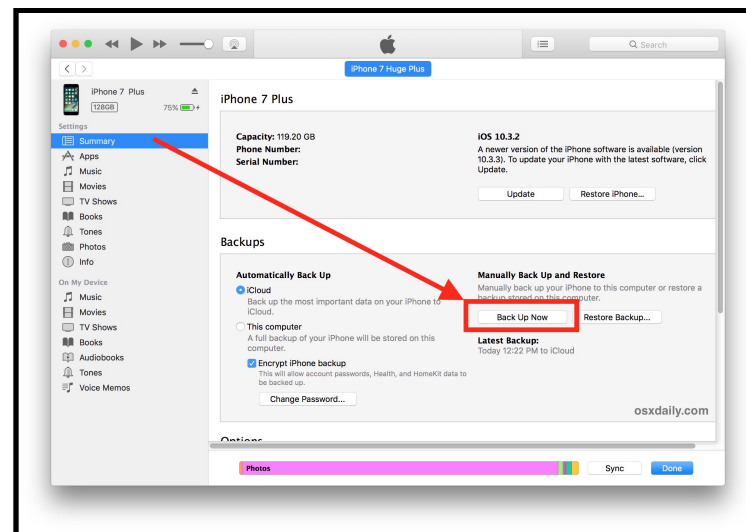
The tutorial here is going to walk through migrating all data from an iPhone 7 Plus to a new iPhone X by using iTunes and a computer. This is demonstrated on a Mac with iTunes, but the

process is identical on a Windows PC with iTunes.

1. Connect the old iPhone to a computer with a USB cable
2. Launch iTunes on the computer and then select the connected old iPhone by clicking on the tiny iPhone button near the top of the iTunes window



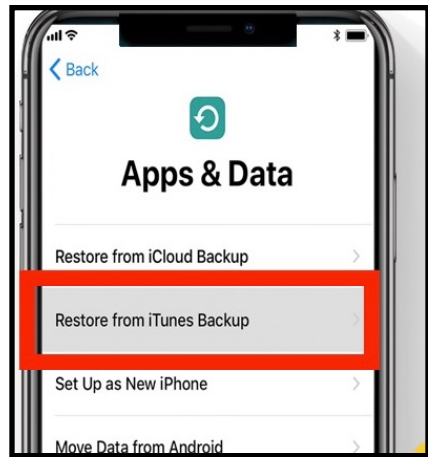
3. Under the Summary section, select "This Computer" and click on "Encrypt iPhone Backup"*, then choose to "Back Up Now" **



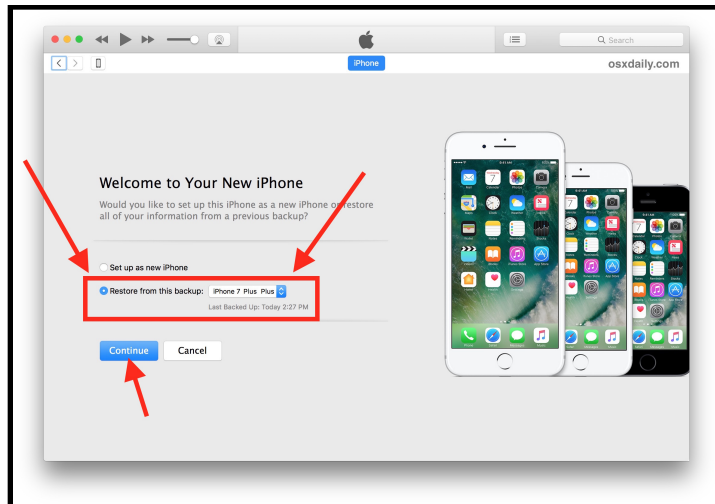
4. Let the backup process of the old iPhone to iTunes

complete

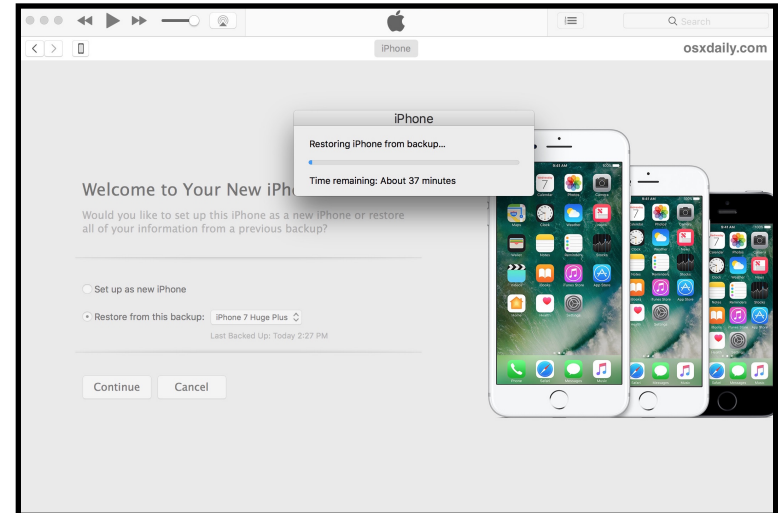
- 5. Now pick up your brand new iPhone X and go through the onscreen setup steps on the device
- 6. When you get to the “Apps & Data” screen, choose “Restore from iTunes Backup” and then connect the new iPhone X to the computer with iTunes



- 7. At the iTunes “Welcome to Your New iPhone” screen, choose “Restore from this backup:” and select the backup you just made of the old iPhone to iTunes, then click “Continue”



- 8. Let the Restoring iPhone from backup process complete, it may take a while – in the example here a 128GB iPhone with nearly full storage took about an hour to restore from an iTunes backup



- 9. When restoration from backup is complete, pickup the iPhone X and complete the setup steps

Note that new versions of iTunes (from 12.7 onward) will not restore apps from iTunes, and instead will download the apps again from the App Store during the restore process. You can get around that by using an [alternate version of iTunes with App Store support](#), but it seems inevitable for Apple to do away with app support in iTunes in the near future.

That’s it. You’re ready to use your new iPhone X, the new iPhone X will have everything your old iPhone had on it. All contacts, files, photos, movies, pictures, gifs, messages, apps, app data, health data, step counts and mileage tracking, everything will have successfully migrated over, assuming you completed the steps properly.

* It’s important to choose to “Encrypt iPhone backup” when the backup is made to the computer via iTunes so that passwords, logins, health data, email login details, account data, and other info are backed up as well. iCloud backups are always encrypted

by default. Do not forget the iTunes encrypted backup password, otherwise your backups will be inaccessible.

* You can backup the old iPhone with iCloud instead if you'd like to, but if you have a very large backup or tons of pictures, movies, then using iTunes with a USB connection between iPhone and a computer is going to be much faster for both backing up and restoring. There are some exceptions to this with those who have access to true first-world quality ultrafast broadband internet service, but if you are using one of the notoriously sluggish monopoly internet providers that are pervasive in the USA then it will take you a genuinely absurd amount of time to both make a large backup to iCloud and restore a large backup using iCloud. Just use iTunes, it will be much faster.

What about migrating data to the new iPhone X using iCloud?

You can absolutely use a fresh iCloud backup and iCloud restore to migrate everything from an old iPhone to a new iPhone X, the process is basically the same as the above method except you will choose to backup to iCloud, and then restore iPhone X from that iCloud backup.

Using iCloud to migrate rather than iTunes is entirely up to you, but perhaps the most important factor when using iCloud is the speed and reliability of your internet connection. iCloud Restore works very well, but to complete in a reasonable time frame requires either a relatively small device backup, or an extraordinarily fast and reliable internet connection.

Be aware that using the iCloud restore process can take an unreasonable amount of time to complete however. For example, using iCloud to restore my old 128 GB iPhone Plus backup to the new iPhone X was estimated to take a whopping *45 hours* using a standard American broadband connection (despite creating the internet, the [USA has notoriously slow and expensive broadband compared to the developed world](#), hooray). If you're in a major US tech hub with lightning speed fiber broadband, using iCloud may be a reasonable option for you. For me personally, the

decision to wait 1 hour by using iTunes restore versus 45 hours by using iCloud restore when setting up new iPhone X was not exactly a challenging decision to make; iTunes it is.

Sidenote: The iPhone X also has a new optional "Quick Start" setup and transfer process which uses iCloud backups and requires both devices be on iOS 11.0 or later, but as discussed already, the iTunes method is typically the fastest way to get a new device restored with your old iPhone data, which is why we're focusing on iTunes.

Can I migrate from Android to iPhone X?

Yes, Apple makes migrating from Android phones to iPhone X easy as well, but the steps are different. You can follow [this tutorial on migrating from Android to iPhone](#) if your old phone is an Android and you want to move to iOS. The process is entirely different than outlined above and does not use iTunes, instead it relies on an app downloaded to the Android app and a migration assistant on the iPhone to complete the task. [Learn more here](#) if that interests you.

Malwarebytes, an antivirus developer, posted the following article to its website, malwarebytes.com. [tinyurl.com/ybglhf6d](https://www.malwarebytes.com/tyurl.com/ybglhf6d). © Malwarebytes.

All About Mac Antivirus

Can Macs get viruses?

If you're a Mac user, you get mixed messages about whether viruses and other malicious software pose a bona fide threat. Historically, Mac fans have touted their platform as immune to the kinds of data attacks and other hostile intrusions that plague the Windows world. Apple itself even reassured its customers for years that Macs "don't get viruses." It even said so in [a series of commercials](#) that first aired in 2006.

While it's true Macs are more secure than PCs, they're still vulnerable to viruses, and they always have been. By design, the

Mac operating system is more secure against the threat of [viruses](#) and [malware](#), but there are still plenty of ways for malware to find its way in. Another thing protecting Macs is the fact that they're less popular than PCs, but that doesn't stop some hackers from targeting Macs. Despite this, there are still tech pundits who recklessly advise against taking even basic security precautions, such as installing a cybersecurity program.

[“Malwarebytes saw more Mac malware in 2017 than in any previous year.”](#)

In the last few years, a growing number of active threats have targeted the Mac operating system. In fact, Malwarebytes saw more Mac malware in 2017 than in any previous year. By the end of 2017, the Malwarebytes intel team counted 270 percent more unique threats on the Mac platform than in 2016. What's more, Apple's current strategies may not be enough to stop the rising tide of Mac viruses and malware. Look into the history of threats to Macs, and you'll see that even early on, the so-called “Mac invulnerability” was a myth. It makes you think twice about wandering around cyberspace on your Mac without taking precautions. (For further reading, see [“Mac security facts and fallacies”](#) by Thomas Reed.)

The latest Mac malware news

[The state of Mac malware](#)

[Interesting disguise employed by new Mac malware HiddenLotus](#)
[Mac malware OSX.Proton strikes again](#)

A short history of Mac attacks

The first widespread Apple virus was called Elk Cloner. It was created by a 15-year-old high school student in 1982, and it targeted Apple II computers. Disseminated by infected floppy disks, the virus itself was harmless, but it spread to all disks attached to a system. It proliferated so quickly that many consider it the first large-scale computer virus outbreak in history. Note that this was prior to any PC malware.

The first virus that targeted Macintosh computers, nVir, emerged

in 1987 and remained a problem until 1991. It infected executable files on Macs, causing system issues like printing problems, application crashes, and slow response times. Compared to today's malware that steals your identity or spies on you remotely, nVir's annoyances seem quaint.

[“nVir emerged in 1987 and remained a problem until 1991.”](#)

Apple's switch to a completely new architecture in 2001 helped squash such nasty bug invasions, but malware for OS X started to appear a few years later. Since roughly 2012, the number of Mac threats have seen a huge upswing. These threats include malware like [spyware](#), [keyloggers](#), [backdoors](#), and more. It also includes Mac [adware](#), and potentially unwanted programs ([PUPs](#)). All of these contribute to an increased risk for Macs. Even the Mac App Store has suffered a tidal wave of scam software. Go to any Mac forum these days and it won't take you five minutes to find someone suffering from some kind of malicious threat.

Even as the first Mac virus threats appeared, they inspired counter measures. The first Mac antivirus programs were created in 1987 in response to nVIR and variants of nVIR. In addition, those of us sufficiently long in the tooth might even remember one of the most popular early Mac antivirus programs—a free utility named [Disinfectant](#), released in 1989.

OS X security measures

Aware of the problem, Apple eventually replaced the classic Mac operating system with the new Mac OS X, which came with built-in malware security measures. For instance:

- **Quarantine**, introduced in 2007, alerts users if they try to open applications downloaded from the Internet. It acts as a reminder, in effect prompting users to think twice before clicking—even if it's a benign program. But Quarantine is useless against executable programs that download and launch by exploiting vulnerabilities in your browser, executing the so-called [drive-by download](#).

- **Xprotect**, added in 2009, prevents malware from being opened, but only if it carries a known signature from an ever-changing universe of malware programs. This means you have to keep updating the signature database to stay ahead of the latest threats. If that database lags behind, the bad guys get ahead.
- **Gatekeeper**, which appeared in 2012, only allows installation of applications from the Mac App Store and its identified developers who have “signed” their code. However, the modest fee to register as an identified developer, bad guy or not, presents a low barrier to getting around Gatekeeper. In other words, Mac malware often comes signed nowadays, so it looks legit to Gatekeeper.
- There is also **Malware Removal Tool**, which removes known malware but only after infection, and only at certain times, such as when the computer restarts.

While these measures by Apple help lower the user’s risk, they’re not really sufficient. There are ways to bypass them, and they don’t block or detect all threat types.

Who do Mac viruses and other malware target?

The answer to that depends on the malware. Mac adware and Mac PUPs most often go after the average user, based on the assumption that Mac users are well-to-do and worth the effort. Other malware deploys in a targeted manner, such as nation-state malware, which goes after specific individuals or small groups.

Another likely vector is the developer community itself. In this sort of attack, often called supply-chain attacks, the hackers concentrate on breaching a developer’s server, allowing them to insert themselves in some part of a process between the writing and delivery of the app to users. Some time ago, a particularly widespread hack of this sort placed an infected copy of Xcode (a suite of Apple software development tools) on a developer’s servers, which subsequently affected tens of thousands of iOS apps. Once it was discovered, Apple went in and shut down all

the infected copies of Xcode. (For further reading, see [“XcodeGhost malware infiltrates App Store”](#) by Thomas Reed.)

“Another likely vector is the developer community itself.”

Is my Mac infected?

How do you know if your Mac has a malware infection? Look for such clues as:

- You land on a web page you’ve selected, and advertising banners start to intrude on you aggressively.
- You notice that random web page text suddenly has a hyperlink.
- Browser pop ups get in your face, earnestly recommending fake updates or other fake software.
- You notice other unwanted adware programs, which you did not authorize or which were installed without your knowledge.
- Your Mac crashes, heats up, or runs its fan faster than normal for no apparent reason. It may be working on an intensive task because of a [cryptocurrency](#) miner on your system, most likely installed by a Mac [Trojan](#).

If you see any of the above, or other strange behavior, then it’s high time you got yourself some cybersecurity protection. Furthermore, though the general consumer may consider cybersecurity synonymous with the term “antivirus,” the more accurate designation should be “anti-malware,” a catch-all term that describes all malicious software, regardless of type. For example, viruses and Trojans are two specific types of malicious software, both of which are malware. The fact is, viruses are much less of a thing today, largely because there are far easier ways to infect Macs with Trojans, worms, spyware, and [ransomware](#). (For further reading, see [“How to tell if your Mac is infected”](#) by Wendy Zamora.)

So how do I protect myself against Mac malware?

First of all, don’t fall for the hype. There’s nothing implicitly safer about a Mac except for the rarity of threats compared to

Windows. As the Mac threat landscape continues to expand, most Mac users aren't prepared for it, continuing to think they're safe simply by virtue of using a Mac. This puts Mac users at higher risk of getting infected with something nasty.

[“There's nothing implicitly safer about a Mac except for the rarity of threats when compared to Windows.”](#)

Secondly, always remember the “if it's too good to be true” rule. If you get a perky pop up offering something free, put on your skeptical face and don't touch that mouse. This often happens on risky websites, so it's best to avoid them. If you look at the status bar at the bottom of your browser, it'll usually show you the true URL of the site you'll go to if you follow the link you're mousing over (*without clicking*). Pay particular attention if the domain ends in an odd set of letters, i.e., something other than com, org, edu, or biz, to name a few. This may indicate it is a viper's nest for malware.

Also, keep your software up to date, whether it's the operating system, browser, or just about any program you frequently use. That way, you'll avoid any malware that seeks to exploit any bugs in the code.

Remember, you are your own first line of defense, so stay vigilant. Beware of unsolicited email attachments and software from untrustworthy websites or [peer-to-peer file transfer networks](#).

Finally, install a Mac cybersecurity or anti-malware program from a reputable vendor. This will protect you from malware that makes it past your good cybersecurity habits.

What to look for in a Mac cybersecurity (“antivirus”) program

What should the enlightened Mac user look for in a cybersecurity program?

- **Comprehensive, layered protection.** It should be able to scan and detect viruses, as well as maintain proactive real-time defense against malware. The goal is to catch

dangerous threats automatically, before they infect your Mac. This way, you don't have to stress about it or rely on manual scans.

- **Detection of adware and potentially unwanted programs (PUPs).** These annoyances can lurk on your machine, slowing down your Mac. You want security software that finds and quarantines them.
- **Remediation.** After removing the threats, remediation corrects system changes, regardless of severity. This allows you to return to the machine's “desired state.”

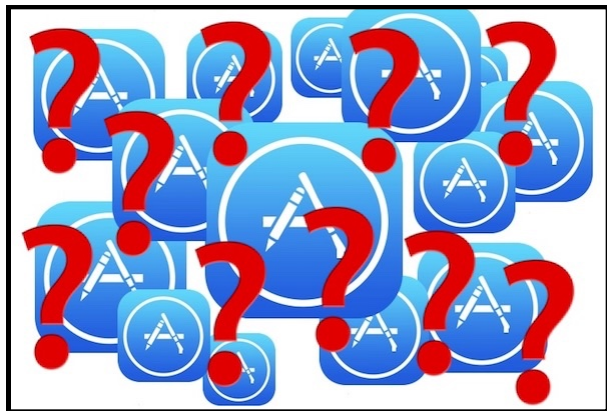
Of course, it's best to have comprehensive protection before something—malware or otherwise—infects your Mac. If you do take a hit, hit back by downloading [Malwarebytes for Mac](#), run a scan, and rest easier. It zaps and continues to block malware. It detects and quarantines adware and PUPs too, and it does it all with a low impact on system resources, so you don't get bogged down. It can even recognize when new threats appear to be similar to the signatures of previously identified threats, providing protection against new, unidentified threats ([zero-day](#)).

Here's your takeaway: Even on a Mac, safe computing is a matter of vigilance. Avoid opening unsolicited email attachments or downloading software from untrustworthy websites or peer-to-peer file transfer networks. Keeping security in mind can go a long way toward keeping you safe from some online threats, but not all of them. This is why a good Mac cybersecurity program is essential.

See all our reporting on [Mac malware at Malwarebytes Labs](#).

The following article was posted to osxdaily.com on May 19, 2018. tinyurl.com/y9cqhmpr. © OSX Daily.

Apps Disappearing From iPhone Or iPad? Try This Fix!



Have you ever found that apps are disappearing from your iPhone or iPad? Maybe you hadn't used a particular app in a while but you know for certain you downloaded it to your iOS device, but when you go looking for that app, it's missing.

While it's certainly possible that you [deleted the iOS app](#) and forgot about it (or someone else did, and didn't inform you), there's another more likely possibility as to why apps might be seemingly disappearing from an iOS device out of the blue, and it's actually a feature of iOS system software.

The probable reason why your apps are disappearing from an iPhone or iPad? A feature called Offload Unused Apps.

Many users have [enabled Offload Unused Apps on their iPhone or iPad](#) because their iOS device storage settings recommends to enable the feature, or they have turned it on themselves in an effort to free up storage space on their devices. Of course a side effect of this is that it can cause unused (or the least used) apps to be automatically removed from the iPhone or iPad in order to relieve storage space constraints.

Here's how to disable the system setting that may cause apps to vanish from an iOS device seemingly at random, when storage space is tight:

1. Open the "Settings" app on the iPhone or iPad
2. Go to "iTunes & App Store"
3. Scroll down and find "Offload Unused Apps" and toggle that switch to OFF



4. Exit out of Settings

You'll likely want to now launch the App Store and then [restore or re-download whatever the missing app\(s\)](#) were that you're looking for. The approach to getting deleted apps back is the same whether they went missing seemingly at random by way of Offload Apps, or if they were deleted directly.

But, going forward, apps will no longer automatically delete themselves. Instead you'll have to either [uninstall apps yourself](#), or [offload apps yourself](#), or find [some other way to free up storage space](#) on the device.

Both of the auto and manual "Offload Unused Apps" features of iOS are incredibly useful, but if you find it to be too aggressive and removing apps that you do need to use – even if those apps are used infrequently – then a better option is perhaps to disable the automatic offload feature, and instead rely on [manually using the Offload Apps trick in iOS](#) anytime when you're in a storage bind, or as mentioned above just looking for an alternate storage management solution.

Of course there are other reason why apps may appear to vanish or disappear from an iPhone or iPad too, but for most users of modern iPhone and iPad devices with new iOS system software, Offload Apps is the cause. The next most likely reason usually happens after a system restore or a device migration, where sometimes apps are not moved over to the new device, or not automatically restored and reinstalled on the device during that process.

Anyway, try disabling automatic offloading of unused apps, it very well may resolve your vanishing app problem, and hopefully your apps will no longer disappear from the iPhone or iPad now that it's disabled. If you have another solution, or any relevant experience with disappearing apps in iOS, share your experienced and solutions in the comments below!

Felix Richter posted the following article on May 7, 2018 to statista.com. tinyurl.com/y89kxlqf. © Statista. He is a data journalist at Statista.

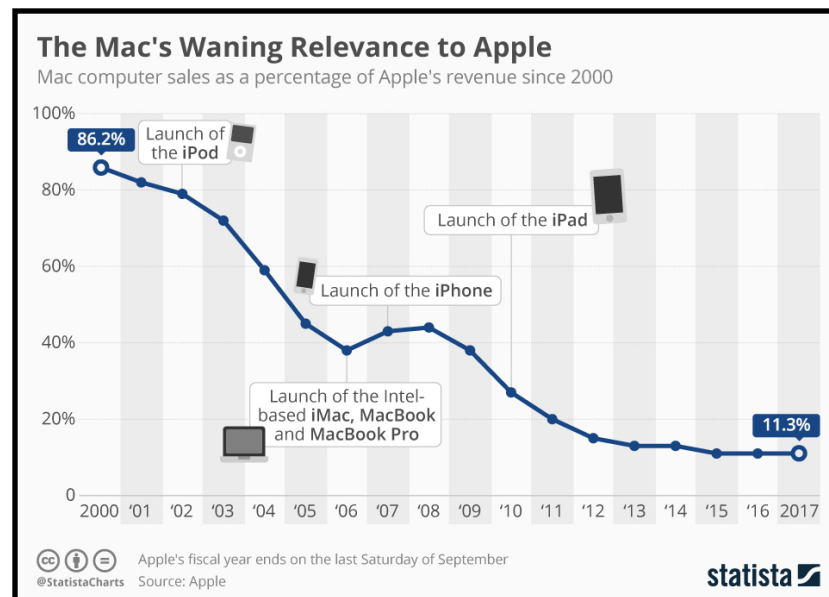
The Mac's Waning Relevance To Apple

By **Felix Richter**,

20 years ago, on May 6, 1998, Steve Jobs introduced the first iMac in one of his famous keynotes. It was a watershed moment for Apple, marking the beginning of a [remarkable turnaround](#) after the company had spent most of the 1990s flirting with irrelevance. The iMac was also Job's first major project after having returned to Apple in December 1996.

Interestingly, the iMac, or the Mac in general, started Apple's return to form in the late 1990s, but it has done little more than lay the groundwork for the company's rise to where it stands today. As the following chart illustrates, Mac computers gradually lost relevance to [Apple](#) as the company introduced one blockbuster product after the other (think iPod, iPhone and iPad) in the first decade of the 21st century.

In each of Apple's past three fiscal years, [Mac sales](#) accounted for 11% of the company's revenue, down from 86 %i n 2000.





AI And Humans

Superlinked

By Kathy Garges

Even in the fast-moving sphere of technology, the Internet of Things (awkwardly abbreviated “IoT”) is a relatively new concept. The definition of IoT is fluid, but the basic idea is to connect sensors fixed in the physical environment or embedded in movable physical objects with computers, each other, and/or the Internet. In some IoT systems, signals can be sent back to a device to initiate physical actions. Some IoT devices, like GPS, have been around for years, but the number of interconnections between the physical world and the cyberworld is about to supersize.

The IoT can let you know at your workplace that your cat has exited the house through a pet door or that a burglar has crawled through a window, or it can turn on your oven so your dinner will be ready when you arrive home. It can track your exercise training progress through a wristband and create a graph, or share the data with your friends via social media, or upload it to your medical provider. It can let you see weather, traffic, or wildlife at remote locations via live webcam.

IoT devices and networks do not necessarily use artificial intelligence, but AI technology is often part of the system. The ways that IoT expands human senses and knowledge, permits remote human sensing and action, and operates automatically are so convenient, innovative and powerful, that it makes sense to treat IoT systems as a subcategory of AI in its broadest sense.

Adding AI, or more AI, to IoT creates endless possibilities for useful applications. As one of the inventors of a “smartfin” surfboard noted, “until we’ve had them out there for a while, we

won’t even know the questions.”

The smart surfboard has a temperature sensor. It was invented by two Scripps Institution of Oceanography scientists who plan to add sensors for salinity, oxygen, and other ocean measures that are important for understanding coastal environments. Although it’s more expensive than the usual surfboard and intended for limited production, the smartfin has already brought in a significant amount of data. A similar, cruder surfboard device used for research in the U.K., already has gathered data that suggests that near-shore temperature data from satellite infrared scanners is unreliable. A smart surfboard could also be designed to collect data to improve a human surfer’s skills and surfing experience.

Using IoT in the world’s oceans is in the forefront of new developments. NATO scientists recently announced JANUS, the first international standard for underwater communication. JANUS sets a specific sound wave frequency for opening communications between underwater objects. Sound waves have to be used to send signals for long distances under water. JANUS will improve connections among underwater robots and sensors, and also relay information to the above-water world. Among other benefits, it will increase chances for rescue in response to submarine and other underwater distress calls.

The benefits of IoT connectivity have a flip side – vulnerability to hacking. A 2016 hijack of IoT devices brought down hundreds of popular websites by using Mirai malware code that scanned the Internet to gain entry to IoT devices with default passwords. The attack may have been a test run for a bigger scheme. It exposed a serious lack of attention to security in design of IoT devices, and raised a call for new industry security standards. The U.S. Department of Homeland Security also issued broad “strategic principles” for IoT security. IoT devices typically are designed as throwaways, for short use cycles, so devices with improved security could rapidly replace vulnerable versions.

There’s a flip side to planned obsolescence of IoT devices, of

course. That's more "e-waste." IoT is adding semiconductors to objects that never had them before, and electronic waste contains precious and toxic metals that are difficult to recycle. Designing small IoT devices to use replaceable batteries makes the product more expensive and, often, inconveniently large. So IoT devices usually last only one to five years and are discarded when the battery runs down. One maker of fitness trackers has designed its products to be easily taken apart for recycling, but that's only a partial solution to this consumer IoT problem.

Another challenge recently surfaced to the spread of consumer IoT – designing a device that adds desirable IoT functions, like parental controls, but that works by Wi-Fi according to existing industry standards. Wi-Fi is a wireless technology for networks in local areas, like coffee shops, offices, and homes. It works with all kinds of devices including computers, smartphones, printers, cameras, TVs, and game consoles. The local network connects to the Internet through an access "hotspot."

Internet service providers and makers of smart consumer devices are adding software layers on top of Wi-Fi standard software that makes it easy to add and interconnect new IoT devices, but only those made by the same company. This tends to lock consumers into inflexible, expensive systems and devices that are incompatible with components offered by other companies. Creating new open source code, bypassing Wi-Fi to connect devices directly to each other, and adopting new IoT standards are some of the options that could reverse this trend,

As the interconnection of physical space with cyberspace accelerates, there are likely to be new, surprising challenges and benefits. The free, online, open access, peer-reviewed journal Machines has requested submissions for a forthcoming special issue on "Artificial Intelligence for Internet of Things." Look for it to learn about up-to-date AI for IoT in ten key areas, including those already mentioned (oceans, smart homes) and others such as multimedia learning, medical signal processing, and mobile architecture and design applications.

Sources and additional information:

Jon Cohen, "Scientists put a 'smartfin' on my surfboard. Is it the next wave in ocean monitoring?" Science magazine, September 8, 2017, <https://tinyurl.com/y9yoa95l>

Amy Nordrum and Alyssa Pagano, "Underwater Robots Learn a New Language, JANUS," IEEE Spectrum, July 8, 2017, <https://tinyurl.com/yapg2v4b>

Ethan Baron, "Cybersecurity experts call for 'internet of things' standards in wake of massive attack," SiliconValley.com, October 24, 2016, <https://tinyurl.com/y9vjmwwz>

U.S. Department of Homeland Security, "Securing the Internet of Things," November 16, 2016, <https://www.dhs.gov/securingthelot>

Stacey Higginbotham, "The Internet of Trash: IoT Has a Looming E-Waste Problem," IEEE Spectrum, May 17, 2018, <https://tinyurl.com/y74f7g5d>

Stacey Higginbotham, "How the Internet of Things Could Fracture Wi-Fi," IEEE Spectrum, March 22, 2018, <https://tinyurl.com/y9hf9gv2>

"Artificial Intelligence for Internet of Things," Machines, upcoming special issue, <https://tinyurl.com/ybbazz6p>