

printout

Keystone MacCentral Macintosh Users Group ❖ www.keystonemac.com

Keystone MacCentral September Program

Time: Sep 15, 2020 06:30 PM Eastern Time (US and Canada)

Join Zoom Meeting

<https://zoom.us/j/94091442862?pwd=YjBqd29heENVYW8wNXh0TDd3aFFWUT09>

Meeting ID: 940 9144 2862

Passcode: 459713

One tap mobile

+19292056099,,94091442862# US (New York)

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Our main emphasis will be on Zoom. One of the options is to use a virtual background. See the following links for information and a bunch of backgrounds that you can download and use:

Zoom Help Center:

<https://support.zoom.us/hc/en-us/articles/210707503-Virtual-Background>

Fun Backgrounds:

<https://www.pocket-lint.com/apps/news/151711-best-zoom-backgrounds-fun-virtual-backgrounds-for-zoom-meetings>

<https://www.goodhousekeeping.com/life/a32145012/best-zoom-backgrounds/>

<https://medium.com/@dominickent/zoom-virtual-backgrounds-get-the-best-300-99cff58c5b72>

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Keystone MacCentral is a not-for-profit group of Macintosh enthusiasts who generally meet the third Tuesday of every month to exchange information, participate in question-and-answer sessions, view product demonstrations, and obtain resource materials that will help them get the most out of their computer systems. Meetings are free and open to the public. *The Keystone MacCentral printout* is the official newsletter of Keystone MacCentral and an independent publication not affiliated or otherwise associated with or sponsored or sanctioned by any for-profit organization, including Apple Inc. Copyright © 2020, Keystone MacCentral, 310 Somerset Drive, Shiresmanstown, PA 17011.

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The club is ending our summer hiatus this September.

Our regular meetings begin at 6:30 pm on the third Tuesday of the month –

September 15th this month.

We will be having virtual meetings via Zoom. Directions/invitations are sent out prior to each meeting. Just follow the directions as outlined.

By Josh Centers & Adam Engst

iOS 13.6, iPadOS 13.6, macOS 10.15.6, watchOS 6.2.8, and tvOS 13.4.8 Add News Features, Car Keys, Symptom Tracking

Apple has broken up the summer doldrums with iOS 13.6, iPadOS 13.6, macOS 10.15.6, watchOS 6.2.8, and tvOS 13.4.8. These are almost certainly the last feature releases before iOS 14, macOS 11 Big Sur, and the rest hit the scene later this year.

Surprisingly, given how late in the cycle they come for Apple's current operating system releases, these updates offer not only the usual "bug fixes and improvements," but also some notable new features, such as the Car Keys feature advertised for iOS 14 and new options in Apple News.

As always, the question is when you should install these updates. Unless you've just bought a BMW that rolled off the line in the last two weeks or are an Apple News zealot, we recommend the usual caution. Wait a few days to make sure nothing new crops up and then install.

Car Keys

This addition comes as a bit of a surprise since Apple advertised it for iOS 14, but [Car Keys](#) has arrived in iOS 13.6 and watchOS 6.2.8. The feature lets you use your recent iPhone or Apple Watch Series 5 as the key for your car, enabling you to unlock and start your car, even up to 5 hours after your iPhone battery runs down. You can also share car keys with others and restrict what those other users can do, including limiting the stereo controls and top speed. As one might want to do for a teenage driver.

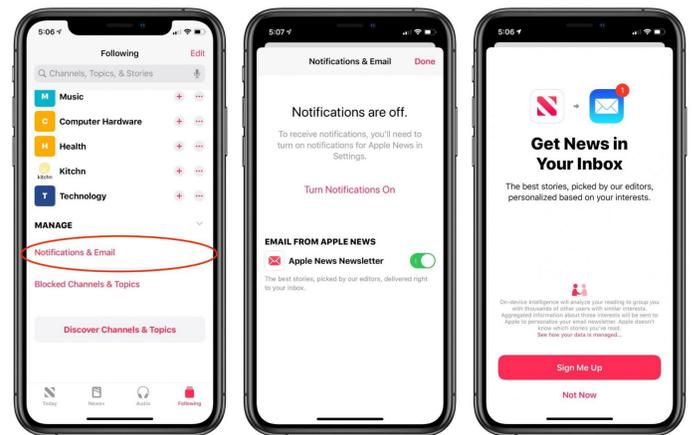
Sounds fantastic, right? The bad news is that the car must have the necessary NFC hardware baked-in. So far, the only manufacturer to support it is BMW,

which says it's adding the feature to numerous models manufactured after 1 July 2020—you can check to see if your car is compatible via the vehicle tab in the [BMW Connected](#) app.

What's New in Apple News

Almost no one can use Car Keys right now, but many more people—125 million according to Apple—might appreciate the four new features these releases add to Apple News:

- **Personalized Apple News email newsletters:** You can now have personalized Apple News emails sent to you daily. To sign up on the iPhone, go to Following > Notifications & Email > Apple News Newsletter and tap Sign Me Up. On an iPad, Notification & Email is at the bottom of the sidebar, and on a Mac, choose File > Manage Notifications & Email.



- **Local news:** Apple News now has a new local news section for select cities, including San Francisco, the Bay Area, Los Angeles,

Houston, and New York City. Plus, Apple News is adding more local and regional news outlets, including The Charlotte Observer, the Miami Herald, and The News & Observer from Raleigh, North Carolina.

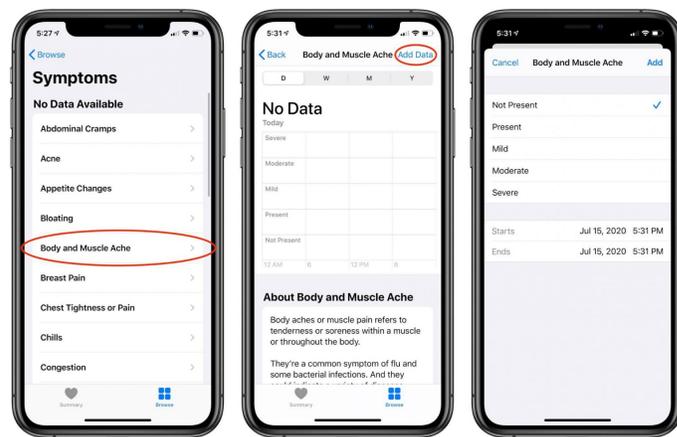
- **Apple News+ Audio Stories:** Subscribers to Apple News+ now have access to new audio versions of written stories from Apple News+ sources, narrated by professional voice actors. Apple mentioned this feature only in relation to the iOS 13.6 update, and not in the release notes for iPadOS 13.6 or macOS 10.15.6.
- **Apple News Today** Apple has also started a new news roundup podcast, called Apple News Today, which will be available to US listeners every weekday morning in Apple News (look in the Audio tab) and on Apple Podcasts.



We're not sure how popular any of these features will be. Still, Apple investing so much effort in news is notable, especially the Apple News Today podcast, which is the company's first foray into creating a news program itself, even if it draws its content from articles on Apple News.

Tracking Symptoms in Health

The Health app in iOS 13.6 has an entirely new category of biometrics: symptoms. To see these, tap the Browse tab in Health and then tap Symptoms. You can track things like body aches, runny nose, coughing, sore throat, wheezing, vomiting, loss of smell, and fever.



Apple undoubtedly added this feature in response to the COVID-19 pandemic, but it includes a broad list of symptoms that fall outside those typically exhibited with COVID-19. It could be a real help in tracking the progression of any illness.

Everything Else in iOS 13.6 and iPadOS 13.6

If you're tired of Apple forcing you to download updates that take up space on your devices, even if you weren't ready to install them, you can now turn that off. Both [iOS 13.6](#) and [iPadOS 13.6](#) include a new setting to control if system updates automatically download to your device while connected to Wi-Fi. You can find that switch in Settings > General > Software Update > Customize Automatic Updates.

The updates also fix a number of bugs. This first list of fixes applies to both iOS 13.6 and iPadOS 13.6, which:

- Address a bug that could cause apps to become unresponsive when syncing data from iCloud Drive
- Address a bug that could interrupt audio when using Wi-Fi Calling
- Resolve a bug that could cause the software keyboard to appear unexpectedly when

connected to certain third-party hardware keyboards

- Fix a bug that could cause Japanese hardware keyboards to be incorrectly mapped as a US keyboard
- Address stability issues when accessing Control Center when Assistive Touch was enabled
- Provide a mechanism for administrators to specify domains to exclude from traffic carried by always-on VPN connections

A few problems are specific to iOS 13.6, which:

- Fixes a bug that could cause data roaming to appear to be disabled on eSIM even though it remained active
- Fixes a bug that caused some phone calls from Saskatchewan to appear as originating from the United States
- Fixes a bug that prevented some iPhone 6S and iPhone SE devices from registering for Wi-Fi Calling

The updates block [26 security vulnerabilities](#).

You can install the updates, which clock in at 387.3 MB on an iPhone 11 and 349.9 MB on an iPad Air, in General > Software Update.

Other Changes in macOS 10.15.6 Catalina

[macOS 10.15.6 Catalina](#) receives the new Apple News features, along with some changes that:

- Add a new option to optimize video streaming on HDR-compatible Mac notebooks for improved battery life
- Fix a bug that could cause the computer name to change after installing a software update

- Resolve a bug where certain USB mice and trackpads may lose connection

As with previous updates to Catalina, Apple said nothing about fixes for problems users have experienced with Mail. However, the most recent comment in [Michael Tsai's long-running thread warning about data loss](#) notes that Mail's build number has changed, so it's possible that Apple made some changes.

You can install the 2.96 GB macOS 10.15.6 update in System Preferences > Software Update.

macOS 10.15.6 includes fixes for [16 security vulnerabilities](#).

watchOS 6.2.8

The [watchOS 6.2.8](#) update adds Car Keys support to the Apple Watch and makes it so users in Bahrain, Brazil, and South Africa now have support for the ECG app and irregular heart rhythm notifications.

You can install the update, which weighs in at 118 MB on an Apple Watch Series 5, from the iPhone's Watch app: go to Watch > General > Software Update.

watchOS 6.2.8 eliminates [16 security vulnerabilities](#).

tvOS 13.4.8

As usual, the [tvOS 13.4.8 update notes](#) are sparse, promising only "general performance and stability improvements." The update includes [17 security fixes](#), largely shared with the other operating systems.

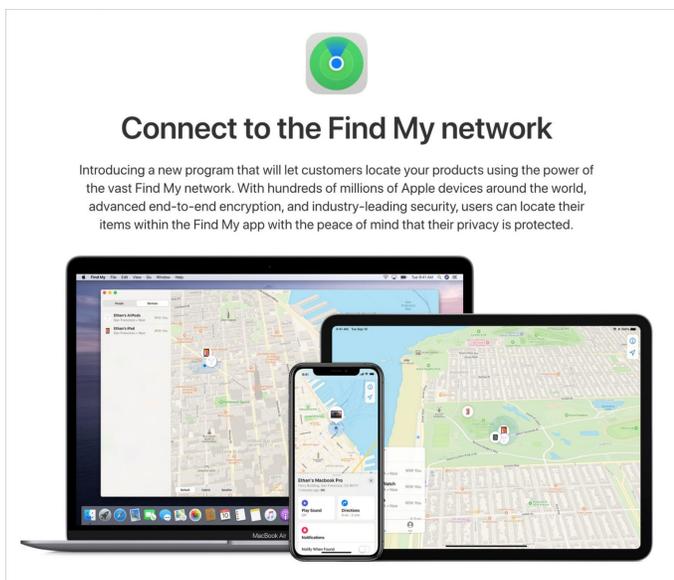
If automatic updates aren't on, you can update your Apple TV HD or Apple TV 4K by going to Settings > System > Software Updates. We just let ours update automatically when they get around to it. Let us know if you notice any changes. 🍷

By Glenn Fleishman

Apple Opens “Find My” Crowdsourcing to Third-Party Accessories

Apple’s Find My service lets you keep track of your iPhone, iPad, and even Apple-using friends and family. In the future, you might be able to use Find My to track your keys, glasses, and even your cat—that’s unrealistic. Let’s say your dog.

By late 2020, makers of wireless-equipped accessories should be able to [make use of Apple’s crowdsourced Find My system](#) for lost and stolen hardware. The Find My update in iOS 13 and macOS 10.15 Catalina allowed Apple hardware that couldn’t connect to the Internet to use Bluetooth to broadcast an encrypted identifier that nearby Apple laptops, iPhones, and iPads could securely relay along with location information to Apple servers. That update also added a standalone app to macOS; previously, Mac owners had to use the iCloud Web site. (See “[How Apple’s New Find My Service Locates Missing Hardware That’s Offline](#),” 21 June 2019.)



[In a FAQ](#) about letting third-party accessories participate in the Find My system, Apple said that the final specification would be available by the end of 2020. Manufacturers will have to meet a number of hardware requirements and join [Apple’s MFi program](#) for iPhone, iPad, and iPod touch compatibility.

Why Open Find My?

Many details remain publicly unanswered. Apple offers a draft specification behind a non-disclosure agreement that may provide additional insight into hardware requirements and features that developers can implement. For instance, while Apple uses Bluetooth in the current Find My to allow a Mac, Apple Watch, iPhone, iPad, or iPod touch to broadcast its identity, the iPhone 11 and iPhone 11 Pro also have ultrawideband (UWB) wireless, a short-range technology the company uses to provide pinpoint directionality within a space. (With one of these iPhones, use any Share sheet to open AirDrop and point it at another iPhone 11 or 11 Pro. The person who owns that phone will appear first in the AirDrop list.)

Given how many people use (and lose) Bluetooth headphones and earbuds, including Apple’s AirPods and various Beats listening devices, Find My support for more devices will help people locate relatively expensive gear that’s easily left behind or stolen. (Apple supports [Find My for AirPods](#) currently, but it works only if one or both in a set are out of their case and near a paired iPhone, iPad, or iPod touch.)

Third-party support could also take the sting out of Apple introducing standalone tracking

tags that will also work with Find My. [Such trackers have been rumored for years](#)—most recently under the name AirTags—based in part on [traces in company screen captures and software](#). They apparently will rely on UWB using Apple chips, allowing battery efficiency and data exchange.

Apple’s purported AirTags would compete directly with products from [Tile](#), a company that has made Bluetooth-based trackers for years. Tile has built [its own crowdsourced tracking system](#) for finding missing items with Tile tags attached. Tile vice president and general counsel Kirsten Daru [testified in front of Congress in January 2020](#) about Apple reducing access to location and continuous-tracking features Tile needed and denying access to UWB, even without a competitive product appearing. Daru said:

Apple is acting as a gatekeeper to applications and technologies in a way that favors its own interests.

Every company tries to act in its own interests, [with a few exceptions](#), but Apple’s tight control over access to a large set of users and devices provides it a particularly unequal advantage in the mobile world. Competition is a healthy way to trigger improvement in products and often results in lower prices or more features. Giving Tile access to what Apple describes as “hundreds of millions” of Apple devices updated for the current Find My would reduce any sense of anti-competitive behavior while enhancing Tile’s value to Apple equipment owners.

How Find My Works

The current Find My system works among devices logged into the same iCloud account, with cryptographic information transferred among those devices without Apple having unencrypted access to any of it. When a device can’t connect to the

Internet, it begins broadcasting a cryptographically derived Bluetooth ID that provides no information to anyone around it and can’t be matched to the owner’s account. (Apple doesn’t describe how these broadcasts initiate but, based on the company’s documentation, it’s how I infer the system works since you can’t mark a device lost or stolen when it’s unable to connect to the Internet.)

Any Mac, iPhone, iPad, or iPod touch with the latest operating system installed recognizes that form of Bluetooth ID and uploads it to Apple along with its own current location (from GPS, Wi-Fi, cellular towers, or some combination thereof).

Marking a device as lost in a Find My app triggers the upload of account-based cryptographic data stored on each device in the iCloud account set that allows Apple to find any similarly encrypted Bluetooth IDs, all without revealing secrets. Bluetooth IDs that match are downloaded to the device from which the user marked their hardware as lost. That device’s app decrypts the IDs and uses them to plot locations of the missing hardware. If this sounds similar to Apple and Google’s anonymized COVID-19 notification system, that’s because it’s built on the same general idea (see [“Apple and Google Partner for Privacy-Preserving COVID-19 Contact Tracing and Notification,”](#) 10 April 2020).

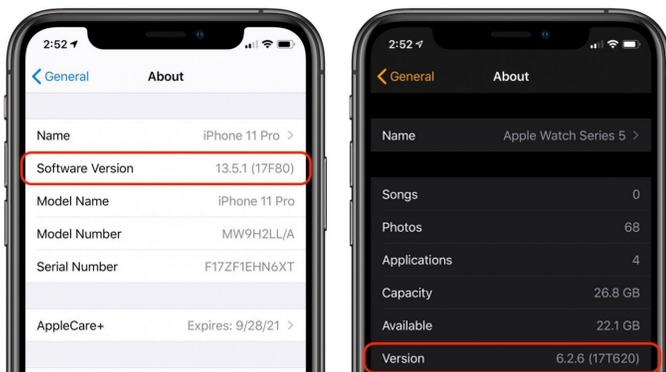
It’s almost always a good thing when Apple opens up its ecosystem. The company usually pays close attention to privacy and implementation details that enforce a better user experience. In this case, opening the Find My network could save many people the cost of lost hardware and increase competition, all without jeopardizing the system’s utility or our privacy. 🗑️

By David Shayer

How to Decode Apple Version and Build Numbers

Everyone knows that Apple operating systems have version numbers, like iOS 13.5.1 or macOS 10.15.5. But have you noticed that Apple operating systems also have build numbers? For instance, iOS 13.5.1 is build number 17F80. But what does that mean?

To see your macOS version and build numbers on a Mac, choose Apple > About This Mac and click the version number. In iOS or iPadOS, go to Settings > General > About and tap Software Version. For watchOS, in your iPhone's Watch app, go to General > About and look at the Version line.



Although it's easy to check the build number of any operating system you're running, Apple doesn't publish a canonical list of them anywhere. For that information, head to Wikipedia's [iOS Version](#)

[History](#), [macOS Version History](#), [watchOS](#), and [tvOS](#) articles or look in the [MacTracker](#) app (for the macOS build numbers, you'll need to click through from the version history article to the expanded article about each release).

Apple makes a new build of each operating system at least every night, so there's a fresh version ready for the engineers each morning. Most of these builds are never released outside the company, so they don't get an official version number like 13.5.1. But the engineers still need a way to identify a particular build. That's what build numbers are for. Once you understand how to decode Apple's build numbers, you can glean additional information about any given release.

Understanding Apple Version and Build Numbers

Apple's two main operating system lines, iOS and macOS, have independent version and build number systems. iOS, iPadOS, watchOS, and tvOS share a common system since they are all derived from the iOS code base. (Only Darwin-derived operating systems—macOS, iOS, iPadOS, watchOS, and tvOS—use build numbers. Classic Mac OS and iPod OS didn't use the same build number system.)

As you know, every Apple operating system release has an official version number, composed of three parts:

- **Major version:** For iOS, it's incremented once per year for significant upgrades. For macOS, the major version number has been 10 since the initial release of Mac OS X, rendering it pointless up until the upcoming update to macOS 11 Big Sur.
- **Minor version:** For iOS, the minor version is incremented as necessary (usually three to six times) throughout the lifespan of a major version

to reflect updates that contain new features along with bug fixes. For macOS, the minor version is really the major version, incrementing for each annual named release of macOS.

- **Patch version:** For iOS, the patch version increments as necessary for bug fix updates to each minor release. For macOS, Apple updates the patch version for every release that's more than just a quick bug fix—those are called “supplemental updates” and don't get their own version numbers. But their build numbers change!

Here's a simple chart to help clarify the official version numbering scheme.

OS	Major	Minor	Patch
iOS	13	5	1
macOS	10	15	5

An Apple build number also has three parts:

- **Major version:** Within Apple, the major version is called the *build train*.
- **Minor version:** For iOS and its descendants, the minor version tracks with the minor release; for macOS, it tracks with patch releases.
- **Daily build version:** The daily build indicates how many times Apple has built the source code for the release since the previous public release.

To make this crystal clear, look at iOS 13.5.1, which is build 17F80, and macOS 10.15.5 with its supplemental update, which is build 19F101.

OS	Major	Minor	Daily
iOS 13.5.1	17	F	80
macOS 10.15.5	19	F	101

One tangentially related note: For macOS Big Sur, Apple updated the major version number to 11 and reset the minor version number to 0. This move may cause problems for some apps that check feature availability by looking up the operating system version. Since macOS's major version number remained at 10 for so long, some developers got lazy and checked only the minor version number. Needless to say, such sloppy code could break in Big Sur. Luckily, [as Howard Oakley explains](#), Apple has made some effort to mitigate this problem by having Big Sur return 10.16 rather than 11.0 in some situations. This is why apps should check macOS APIs directly for the existence of a particular feature, rather than assume it exists in a specific operating system version just because Apple first included it in that version or an earlier one.

Major Build Number

These days, the major build number for iOS changes every year. iOS 13's major build number is 17; iOS 14's is 18.

iOS, iPadOS, watchOS, and tvOS Build Trains				
iOS	iPad OS	watch OS	tvOS	Major Build Number
iPhone OS 1				1–4
iPhone OS 2				5
iPhone OS 3				7
iOS 4				8
iOS 5				9
iOS 6				10
iOS 7				11
iOS 8		watchOS 1		12
iOS 9		watchOS 2	tvOS 9	13

iOS	iPadOS	watch OS	tvOS	Major Build Number
iOS 10		watchOS 3	tvOS 10	14
iOS 11		watchOS 4	tvOS 11	15
iOS 12		watchOS 5	tvOS 12	16
iOS 13	iPadOS 13	watchOS 6	tvOS 13	17
iOS 14	iPadOS 14	watchOS 7	tvOS 14	18

With macOS, the major build number also changes with every significant release, which occurs every year now, although less frequently in the past.

macOS Build Trains	
macOS Version	Major Build Number
Mac OS X Public Beta	1
Mac OS X 10.0 Cheetah	4
Mac OS X 10.1 Puma	5
Mac OS X 10.2 Jaguar	6
Mac OS X 10.3 Panther	7
Mac OS X 10.4 Tiger	8
Mac OS X 10.5 Leopard	9
Mac OS X 10.6 Snow Leopard	10
Mac OS X 10.7 Lion	11

macOS Version	Major Build Number
Mac OS X 10.9 Mavericks	13
Mac OS X 10.10 Yosemite	14
Mac OS X 10.11 El Capitan	15
macOS 10.12 Sierra	16
macOS 10.13 High Sierra	17
macOS 10.14 Mojave	18
macOS 10.15 Catalina	19
macOS 11.0 Big Sur	20

Minor Build Letter

For iOS, the minor build version usually changes for each X.1 operating system release. It's a letter, not a number, and generally clambers its way up the alphabet. There are some discrepancies, such as iOS 13.1 continuing minor version A instead of switching to B. Also, iOS 13.3 is minor version C, and iOS 13.4 is minor version E, skipping D. More on these oddities shortly.

iOS 13 Minor Versions	
iOS Version	Build
iOS 13.0	17A577
iOS 13.1	17A844
iOS 13.2	17B84
iOS 13.3	17C54
iOS 13.4	17E256
iOS 13.5	17F75

Things are a bit different in the macOS world. As you can see, the minor build letter corresponds with the macOS patch release number.

Catalina Minor Versions	
macOS Version	Build
macOS 10.15.0	19A583
macOS 10.15.1	19B88
macOS 10.15.2	19C57
macOS 10.15.3	19D76
macOS 10.15.4	19E267
macOS 10.15.5	19F96

Daily Build Number

Things get interesting when we come to the daily build number. Apple engineers increment it every time a new build is made, usually every night, but sometimes more often. The first time Apple made an engineering build of iOS 13, it was assigned build number 17A1. The next build was 17A2. And so on.

The first shipping version of iOS 13.0 was 17A577, which means Apple made 577 builds of iOS 13 before it shipped the first copy to users. The second shipping build was iOS 13.1, build number 17A844. It took an additional 267 builds to create iOS 13.1. More interesting are the build numbers corresponding to the patch releases.

iOS 13 Patch Releases	
iOS Version	Build
iOS 13.0	17A577
iOS 13.1	17A844
iOS 13.1.1	17A854
iOS 13.1.2	17A860 and 17A861
iOS 13.1.3	17A878

As you can see, Apple was pushing those patch releases out quickly—there were only 10 builds between iOS 13.1 and iOS 13.1.1, only 6 or 7 between 13.1.1 and 13.1.2, and only 17 or 18 more before the release of iOS 13.1.3. I don't know why iOS 13.1.2 had two build numbers; iPadOS 13.1.2 shared only the first one, so perhaps the second one was specific to a particular iPhone model or geographic area.

With macOS, the daily build number is more important. As you've undoubtedly noticed, when Apple is forced to release a quick bug fix update for all of its operating systems, it sometimes gets stuck with macOS. iOS 13.5 went to 13.5.1, for instance, but macOS 10.15.5 was given a "supplemental update" with no change in the official version number.

Luckily, the build number has no such limitation. As you can see in the chart, the daily build number changes for the supplemental updates, enabling you to tell if your copy of macOS has been updated or not. That's helpful because Apple usually backpatches supplemental updates into the update they address. So if you held off on installing macOS 10.15.5 for a week, by the time you got to it, it would have already included the macOS 10.15.5 Supplemental Update (see "[Kernel Vulnerability Causes Apple to Update All Operating Systems](#)," 1 June 2020). The only way you could tell what you had would be to look at the build number.

Catalina Supplemental Updates	
macOS Version	Build
macOS 10.15	19A583
macOS 10.15 Supplemental Update	19A602
macOS 10.15 Revised Supplemental Update	19A603
macOS 10.15.4	1.9E267
macOS 10.15.4 Supplemental Update	1.9E288
macOS 10.15.5	19F96
macOS 10.15.5 Supplemental Update	19F101

Extracting Meaning from Build Numbers

As you can see, we can learn useful information from build numbers. For instance, watchOS 1 (12S506) has major build number 12, the same as iOS 8 (12A365), because watchOS 1 is derived from the iOS 8 code base.

We can also tell iOS and iPadOS are built from the same source because they have the same build number (17A577). On the other hand, we can tell tvOS 13 and watchOS 6 are derived from the iOS 13 code base, because they have the same major build number, but are distinct branches, because they have different minor build numbers that aren't used for iOS, with tvOS starting at J and watchOS starting at R.

OS	Build
iOS 13.0	17A577
tvOS 13.0	17J586
watchOS 6.0	17R575

Apple isn't dogmatic about following these rules, or, to put it another way, circumstances sometimes force the company to deviate from its rules. If it had followed past years, iOS 13.1 would have been 17B267, but it was 17A844. This fact probably means that Apple originally thought that iOS 13.1 was going to be iOS 13.0.1, but it ended up containing such important changes that the company decided to increment the minor version number rather than the patch version number.



Last year's confused iOS release reflects that decision, with Apple releasing iOS 13.0 and promising a quick update to iOS 13.1 with features that weren't ready at launch (see "[Apple to Ship iOS 13 on September 19th, iOS 13.1 on September 30th](#)," 10 September 2019, and "[Features Added in iOS 13.1: Personal Automations, Driving ETA, and More](#)," 24 September 2019).

Similarly, iOS 13.3 is 17C54 and iOS 13.4 is 17E255—what happened to minor version D? That was assigned to iOS 13.3.1, which has build number 17D50. Presumably, Apple had planned the release that ended up being iOS 13.3.1 to include the many new features in iOS 13.4 but felt a pressing need to push out a quick bug fix update first. In this case, it was to address the privacy concerns surrounding the ultrawideband technology in the iPhone 11 (see "[Apple Releases iOS 13.3.1, iPadOS 13.3.1, macOS 10.15.3, watchOS 6.1.2, and tvOS 13.3.1](#)," 28 January 2020).

There are undoubtedly many other stories behind jumps in build numbers or build numbers that skip around. An apparently missing build might be destined for HomePod, or an unreleased product, or a product only used internally at Apple. But what's important going forward is that you now know how to find and decode the build number associated with any given operating system release. And with that information in hand, you can draw various conclusions about the release: how much work went into it, whether Apple was taken off guard by some bug report, or just whether or not you've actually received a supplemental update. 🗑️

Feeling Paranoid? Micro Snitch Tells You If Your Mac Is Spying on You

Our reporting on Apple's warning against closing a MacBook with a webcam cover installed (see "[Don't Close Your MacBook with a Webcam Cover Attached](#)," 14 July 2020) sparked an interesting [TidBITS Talk discussion](#) about Mac webcam security.

In theory, malware can't activate your Mac's webcam without your knowledge, because the indicator light is wired in series to the webcam. That means the webcam cannot receive power without turning on the light. An earlier webcam implementation in pre-2008 Apple laptops was [vulnerable to a firmware exploit](#), but a [lengthy treatise by John Gruber of Daring Fireball](#) quotes an unnamed Apple engineer as saying that this exploit is now impossible, because the connection is direct. No malware can bypass basic electrical connections.

Nothing's Perfect

Or so we think. The problem with any sort of "unbreakable" security scheme is that there are a lot of bad guys out there, and security breaches have real monetary value to organized crime and government surveillance agencies. One TidBITS Talk reader pointed out that a clever attacker could use the webcam to take quick still images, flashing the indicator light so quickly that you might not even notice it.

Even if Apple's webcam security is foolproof, what about third-party webcams? Built-in Mac webcams aren't very high-quality (see "[The 2020 MacBook Air's FaceTime HD Camera Is Still Lousy](#)," 8 April 2020), so many people who rely on videoconferencing (a number that has skyrocketed during the COVID-19 pandemic) have a third-party camera attached.

The reality is that you probably don't have much to fear from your webcam, because even years ago it would have taken a targeted attack to access it. But there's something about having an electronic eye pointed at you all day long that can make you feel like you're being watched...

Micro Snitch to the Rescue

If you'd like a little extra peace of mind, consider installing [Micro Snitch](#) from Objective Development, makers of [LaunchBar](#) and the famous [Little Snitch](#) network monitoring utility. Micro Snitch costs \$3.99 either [directly from Objective Development](#) or in the [Mac App Store](#), and Objective Development makes a free trial available.

Micro Snitch lives in your Mac's menu bar. Whenever an app accesses your webcam or microphone, a large, square icon of a hat and glasses appears in the center of your screen and then moves to the lower-right corner. You also receive a notification. The hat and glasses icon doesn't go away until you close it or the activity stops.



Afraid that you somehow missed the little spy guy? Choose Open Activity Log from Micro Snitch's menu bar icon to see a log of every time either the camera or the microphone has been accessed.

```
Micro Snitch.log
Reveal Now Clear Reload Share Search
Jul 21, 2020 at 11:07:31 AM: Video Device became inactive: HD Pro Webcam C920
Jul 21, 2020 at 11:08:03 AM: Video Device became active: HD Pro Webcam C920
Jul 21, 2020 at 11:08:12 AM: Video Device became inactive: HD Pro Webcam C920
Jul 21, 2020 at 1:34:23 PM: Micro Snitch terminated
Jul 21, 2020 at 1:34:27 PM: Micro Snitch launched
Jul 21, 2020 at 1:34:27 PM: Activity log enabled
Jul 21, 2020 at 1:34:27 PM: Unsupported Audio Device found: Soundflower (2ch)
Jul 21, 2020 at 1:34:27 PM: Audio Device found: HD Pro Webcam C920
Jul 21, 2020 at 1:34:27 PM: Unsupported Audio Device found: Soundflower (64ch)
Jul 21, 2020 at 1:34:27 PM: Audio Device found: Built-in Microphone - Internal Microphone
Jul 21, 2020 at 1:34:27 PM: Unsupported Audio Device found: EpocCam Microphone
Jul 21, 2020 at 1:34:27 PM: Audio Device found: Iriun Webcam Audio - #9
Jul 21, 2020 at 1:34:27 PM: Video Device found: FaceTime HD Camera (Built-in)
Jul 21, 2020 at 1:34:27 PM: Video Device found: HD Pro Webcam C920
Jul 21, 2020 at 1:34:27 PM: Unsupported Video Device found (active): EpocCam
Jul 21, 2020 at 1:34:27 PM: Video Device found: Iriun Webcam
Jul 21, 2020 at 2:47:55 PM: Audio Device became active: Built-in Microphone - Internal Microphone
Jul 21, 2020 at 2:55:27 PM: Audio Device became inactive: Built-in Microphone - Internal Microphone
Jul 21, 2020 at 5:08:32 PM: Video Device became active: HD Pro Webcam C920
Jul 21, 2020 at 5:08:39 PM: Video Device became inactive: HD Pro Webcam C920
Jul 21, 2020 at 5:08:43 PM: Video Device became active: HD Pro Webcam C920
Jul 21, 2020 at 5:08:48 PM: Video Device became inactive: HD Pro Webcam C920
Jul 21, 2020 at 5:08:51 PM: Video Device became active: HD Pro Webcam C920
Jul 21, 2020 at 5:09:41 PM: Video Device became inactive: HD Pro Webcam C920
Jul 21, 2020 at 5:12:23 PM: Video Device became active: HD Pro Webcam C920
Jul 21, 2020 at 5:12:38 PM: Video Device became inactive: HD Pro Webcam C920
Jul 21, 2020 at 5:12:41 PM: Video Device became active: HD Pro Webcam C920
Jul 21, 2020 at 5:12:43 PM: Video Device became inactive: HD Pro Webcam C920
Jul 21, 2020 at 5:12:47 PM: Video Device became active: HD Pro Webcam C920
Jul 21, 2020 at 5:19:15 PM: Video Device became inactive: HD Pro Webcam C920
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The only downside I can find is that Micro Snitch can't monitor some of the odd software devices I have installed, like Soundflower (which lets me reroute audio on my Mac) and the EpocCam driver that promised to let me use my iPhone as a webcam —I was planning a review, but recent security changes to Zoom and Skype prevented it from working. I recommend being careful about installing such drivers, and I've now uninstalled EpocCam. Soundflower, on the other hand, [is now open source](#).

If your webcam causes you any anxiety, \$3.99 for Micro Snitch is a small investment for additional peace of mind. Give it a try, and let us know if it reveals any unexpected behavior on your Mac! 🍏

