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Keystone MacCentral

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Keystone MacCentral Macintosh Users Group ❖ http://www.keystonemac.com

KeyMac Christmas Party!

Our December meeting will be a combination Christmas party and regular meeting with the ever-popular Q&A and some interesting presentations as well. You will be able to enjoy the program at the same time you enjoy Wendy's delicious chili, tasty sourdough bread, soft drinks, and a plethora of side dishes and desserts provided by you, our members. The club will provide the bowls, plates, cups, cutlery, napkins, ice and soft drinks. We are requesting that each of you bring a side dish, snack, or dessert to share. If you can cook or bake, please do so. If that is not your strong point, buy some of your favorite snacks. We will all enjoy the variety of items as we have in previous years. If you like, bring a friend along too and show him/her how KeyMac has fun and learns something new and useful at the same time. December 20th is party time, so join us for a great meeting!

Wendy Adams will demonstrate Adobe Spark, a free program that lets you create impactful social graphics, web stories an animated videos. Here is a link to a web story she created using Adobe Spark: https://spark.adobe.com/page/E0qjRAvcovaDD/

Meet us at

Bethany Village Retirement Center

Education Room

5225 Wilson Lane, Mechanicsburg, PA 17055

Tuesday, December 20 2016 6:30 p.m.

Attendance is free and open to all interested persons.

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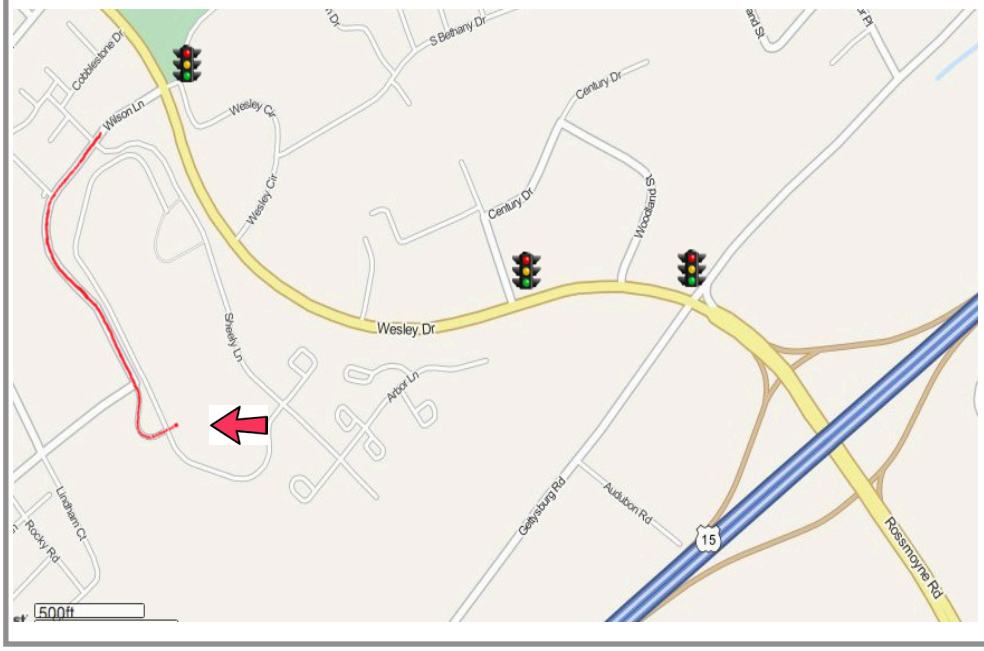

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by Adam C. Engst

Lost in Sierra: Five Missing Features

Although Apple mostly adds features to new releases of the Mac operating system, it's not uncommon for the company to remove small features or support for older technologies. Needless to say, Apple doesn't trumpet these removals from the rooftops, as it does with new features, leaving it to users who relied on a previous behavior to discover the change.

Here then are five features that have gone missing from macOS 10.12 Sierra:

- The option to set the system language separately from the format language
- Support for modem-based faxing
- Less historical logged information revealed in Console
- PPTP connections for VPNs
- Support for DSA keys in SSH

Not all of these are bad — the removal of support for PPTP VPN connections and DSA SSH keys may be annoying but increases Sierra's security. Nevertheless, I've tried to suggest workarounds where possible.

System Language vs. Format Language — Here's a subtle change that reader Hans van Maanen alerted me to. In previous versions of OS X, you could set a primary system language in System Preferences > Language & Region, and then click the Advanced button to set a separate format language. Hans appreciated this split in OS X 10.11 El Capitan because it enabled him to leave his system language set to English to avoid lousy Dutch localizations in the apps he used while still retaining Dutch as the format language for dates, times, and numbers.

International readers will likely understand what I'm talking about here, but for those in the United States who may not realize, people in other countries often use different formats for things like dates. For instance, the short date format that I get when using English in the United States would look like 1/5/16 (for January 5th, 2016, which is the sample date for reasons I don't know). However, if I change the Format Language pop-up menu (in El Capitan) to Dutch, the short date format changes to 05/01/16. And, of course, the names of days and months are different in other languages.

For unknown reasons, Apple removed the Format Language pop-up menu in System Preferences > Language & Region > Advanced > General.

You can still choose your country separately from the Region pop-up menu in the main view of Language & Region, but that controls only settings like the first day of the week, the calendar type, the time format, and the formatting for dates and times. Notably, it does not change the names of days and months to the language associated with the selected region.

Thanks to reader RT for discovering the workaround! In Terminal, enter this command and press Return to use Dutch:

```
defaults write NSGlobalDomain AppleLocale nl_NL
```

The key part of that command is the pair of two-letter codes at the end. From what I can tell, the first is an ISO 639-1 language code that corresponds to the format language used for the names of days and months, and the second is an ISO 3166-1 alpha 2 country code that matches the country selected in the Region pop-up menu.

You can set them separately, so the first command below would set the format language to German, and the region to Switzerland, whereas the second uses French for the format language.

```
defaults write NSGlobalDomain AppleLocale de_CH
```

```
defaults write NSGlobalDomain AppleLocale fr_CH
```

Should you wish to reset the formatting language to match your primary system language, just click Restore Defaults in the Advanced dialog.

Modem-based Faxing — Thanks to reader Jim Weil for alerting us to this missing feature, and my apologies in advance if I don't describe this quite right since I don't have the necessary hardware. Starting in 10.7 Lion, Apple removed support for the Apple USB Modem, which some people used for faxing with the Print & Fax pane of System Preferences in 10.6 Snow Leopard and earlier.

However, third-party USB modems that came with their own drivers, notably some models from USRobotics, continued to work with Lion, and you could still add and use a fax modem from the renamed Print & Scan preference pane. That status quo continued through 10.11 El Capitan, even as the preference pane was renamed once again to Printers & Scanners.

In Sierra, however, USRobotics support has confirmed that Apple removed even the capability to add a fax modem with external drivers to the Printers & Scanners preference pane.

> Apple for some reason removed support for modem faxing in the new OS. It is possible that they will add it back in upcoming updates, however, the issue has really nothing to so with the modem drivers or firmware. The modem still works in Sierra as a dial-up device, but the option to add it as a fax device is missing from the new OS.
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We're aware of four possible workarounds:

- The easiest approach is to use an Internet fax service; Randy Singer recommended a number of possibilities appropriate for different situations in "SRFax and Other Internet Faxing Alternatives to MaxEmail" (7 October 2016). The main problem with this approach is that your faxes must travel via the Internet. For some situations, the security of point-to-point faxing could be important.

- If you're already virtualizing Microsoft Windows within something like Parallels Desktop, VMware Fusion, or VirtualBox and have it configured correctly to see an external USB fax modem, Windows should automatically recognize the fax modem and enable you to use it from within Windows. It's probably not worth investing in a virtualization environment and Windows just for fax modem support, but it's worth remembering if you're already set up. Jim Weil also noted that, for an entirely free option, you could use VirtualBox and virtualize Linux, which supports apps that enable faxing. Consider that an exercise for the reader.

- Numerous multifunction printers include fax support, and Apple even provides an extensive list of printers supported by Sierra. In theory, the driver software for some of these printers might include the capability to send a print job via the printer's fax modem, which would work around Sierra's removal of general fax support. I have no personal experience with printers that make such a capability possible, but if you do, please let us know in the comments what model you're using.

Reader Firitia commented on an early version of this article that it's possible to move the underlying Unix fax software forward from El Capitan to Sierra and use it from the command line. To do this, you'll need to copy the following files from a Mac running El Capitan to equivalent locations on the Mac running Sierra:

/usr/bin/fax

/usr/bin/efax

/usr/bin/efix

/usr/share/man/man1/fax.1

/usr/share/man/man1/efax.1

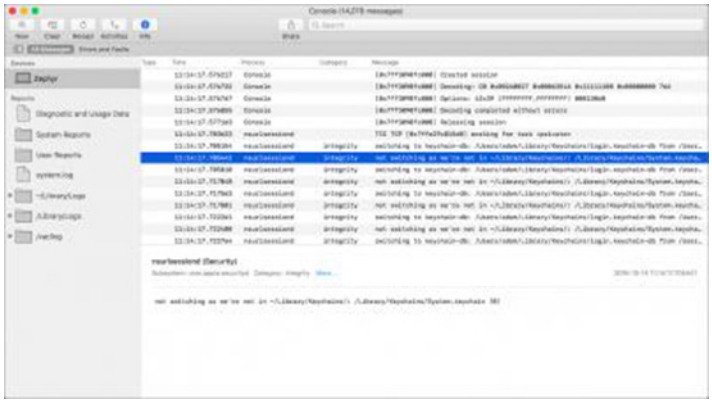
/usr/share/man/man1/efix.1

/System/Library/Coreservices/Menu\ extras/Fax.menu

(The last one may not be necessary, but Firitia suggested it for completeness.) Once you've copied all the files, use man fax and man efax to find instructions for using these command-line tools.

Console Loses Its Memory — The Console app has long been an essential troubleshooting tool on the Mac because it provides a way of browsing through all the log messages generated by the operating system. Although most users don't realize this, there's a lot of chatter that goes on at the operating system level.

As reader Tom Robinson noted in TidBITS Talk, Apple appears to have completely rewritten Console in Sierra, so much so that its version number changed from 10.11 in El Capitan to 1.0 in Sierra. Notably, Console 1.0 can display log message information in a set of user-configurable columns, filter messages to just errors and faults, and more — Kirk McElhearn has an overview at Macworld.



However, Console 1.0 doesn't provide all the capabilities that Console in El Capitan had, as Howard Oakley outlines in his criticism of the new version. The most important

thing that's missing in Sierra's Console 1.0 is historical log information. The app starts displaying logged messages when you launch it, but unlike Console in previous versions of OS X, you can't go back in time to see what was happening on your Mac last night, or the day before. That capability is a huge help when tracking down a problem that you can't reproduce at will.

The log messages are still available; you just can't get to them easily from within Console 1.0. Instead, you can use the new log command in Terminal or a little utility Howard Oakley created called LogLogger2. Unfortunately, Oakley has also documented some bugs in the log command's output. If you're interested in the topic, check out his other posts on Console and logs.

It's hard to make solid recommendations here. I turned up a few alternative log viewing apps for the Mac, including Log File Navigator, Logr, and LogTail, but it's not clear if they can provide access to the historical log information in Sierra.

We can hope Apple puts more effort into the new version of Console in updates to Sierra, or perhaps an independent developer will fill the void.

PPTP VPN Connections — PPTP, which stands for Point-to-Point Tunneling Protocol, is, as Wikipedia bluntly states, "an obsolete method for implementing virtual private networks, with many known security issues." Of all of Sierra's changes, this one should be the least surprising, since Apple has been warning against the use of PPTP since at least the release of 10.11 El Capitan and iOS 9. Apple also removed PPTP support from iOS 10.

In general, this move is positive — flawed security protocols should be avoided. Unfortunately, despite PPTP's weaknesses, some VPNs still require it. Two solutions present themselves: switch to another VPN protocol or install a third-party VPN client that still supports PPTP, such as Shimo or VPN Tracker. Obviously, since the entire point of a VPN is to protect your data connections, continuing to use the insecure PPTP isn't sensible, but it may be the only option for certain organizations.

DSA SSH Keys Deprecated — This change, which reader Ron Risley mentioned on TidBITS Talk, falls into roughly the same category as the previous one. Many who rely on SSH to log in to remote servers at the command line also use SSH keys to increase security (in contrast to using a regular password). My understanding is that most people use RSA keys with SSH, but it has been possible in the past to use what are called DSA (Digital Signature Algorithm) keys. Unfortunately, DSA keys can usually be only 1024 bits, and Apple decided in Sierra to require 2048-bit RSA keys, which are far more secure.

The practical upshot of this is that if you can't get into your remote server via SSH in some way other than using the DSA keys, you'll be locked out when trying to connect from Sierra. The solution is to replace the DSA keys with 2048-bit RSA keys, and Quincy Larson provides instructions for that on Medium.

More Missing Features? — I've tried to avoid truly minor changes here, such as Time Machine trading its On/Off switch for a Back Up Automatically checkbox. But it's entirely possible there are other features from El Capitan that are missing in Sierra — if you know of any, or have additional workarounds for the ones I've outlined here, please leave a comment!

by Glenn Fleishman

Explaining Thunderbolt 3, USB-C, and Everything In Between

The first Mac with Thunderbolt 3 is now available, the non-Touch Bar 13-inch model from Apple's new series of MacBook Pro laptops (see "New MacBook Pros Add Context-sensitive Touch Bar," 27 October 2016); the rest of the models ship soon. Thunderbolt 3 relies on the USB-C physical connector and, with the appropriate adapters, supports nearly all common peripheral-connection and networking protocols, including USB 2, USB 3, FireWire, Thunderbolt 2, Ethernet, and DisplayPort, and by extension, HDMI, DVI, and VGA.

The reason confusion afflicts this space is that a USB-C port on another computer may support just USB, USB plus display and networking protocols, or all of that plus Thunderbolt 3. The 12-inch MacBook's USB-C port, for

instance, natively supports USB 2 and USB 3 along with DisplayPort and, via adapters, VGA, HDMI, and Ethernet connections, but not Thunderbolt 2 or FireWire.

The summary for potential late 2016 MacBook Pro owners is that all current USB-C devices, cables, and adapters should work when plugged into a MacBook Pro's Thunderbolt 3 ports. However, Thunderbolt 3-specific devices won't work with computers and other devices like the 12-inch MacBook whose USB-C ports are less capable. Now, let's drill down into details.

How These Standards Relate to Each Other — USB-C is a standard developed by the USB Implementors Forum to modernize and coalesce USB into a single plug style that supports a variety of data, video, and power options for ports, cables, and adapters. It's reversible, just like the Lightning plug Apple uses for iOS devices and recent peripherals like the Apple Pencil and Magic Mouse 2.

Support for high-wattage and high-amperage cables allows USB-C chargers to charge laptops and other devices. While previous versions of USB allowed for high power flow, USB-C is the first version in which laptops take advantage of that, allowing external charging from an AC adapter or external battery. USB-C also offers bidirectional power, so a MacBook Pro could recharge itself via an external battery while also charging an iPhone.

(Although we're focusing here on USB-C, or more formally, USB Type-C, USB also supports other plug types. These include USB Type-A, the standard rectangular USB plug we're all accustomed to; USB Type-B, the squarish USB plug often used by large peripherals; and the smaller Mini-A, Mini-B, Micro-A, Micro-B, and Micro-B SuperSpeed plugs.)

USB-C appeared first in 2015 in the 12-inch MacBook, and shortly thereafter in equipment from Google and others. It has spread gradually, but it is still not the connection of choice for laptops and mobile phones. The third-party peripheral market, especially for docks and high-quality cables, started to accelerate only in early 2016.

Thunderbolt 1 and 2 use the same physical connector as Mini DisplayPort, which allowed a jack to fit easily into a thin laptop. Natively, they support two protocols: Thunderbolt (originally built on top of PCI Express) for general data and DisplayPort for video. With adapters, they can also carry USB, FireWire, and Ethernet.

Although Intel developed Thunderbolt jointly with Apple, Intel seems to control its future. In June 2015, Intel and the USB Implementors Forum announced that Thunderbolt 3 would rely on the USB-C plug style. That was good news: one fewer cable type and all ports would become multi-purpose! How this works has to do with abstraction: the hardware no longer defines a single associated communications protocol.

USB-C and DisplayPort exist both as a physical specification for connectors and cables, and also as a logical protocol that defines how data moves across a data bus. The USB-C data bus has a number of channels (called "lanes") that can be assigned and configured to different protocols, depending on the USB-C controller hardware in the host computer or other device, including USB, DisplayPort, PCI Express, and Thunderbolt. DisplayPort can either use its own connector type or be encapsulated and carried by other standards, which include USB-C, whether or not the controller hardware supports Thunderbolt. This capability of DisplayPort made it possible for Thunderbolt to use the Mini DisplayPort connector type and be backward compatible with existing DisplayPort devices.

Thunderbolt allows daisy chaining — plugging one peripheral into the next — though DisplayPort monitors have to be at the end of such a chain. Though I can't find a definitive answer, it appears that you cannot daisy chain USB devices connected via USB-C, although you can simulate daisy chaining with the addition of USB-C–connected hubs. Power, which is effectively a different kind of protocol in USB-C, can be passed through multiple devices.

When it comes to protocols, USB-C natively supports:

- USB 2.0 (480 Mbps)
- USB 3.0 (5 Gbps, branded SuperSpeed, now described as USB 3.1 Gen 1)
- USB 3.1 Gen 2 (10 Gbps, branded SuperSpeed+, which requires USB-C as a connector type)
- DisplayPort (under the ungainly name "DisplayPort Alternate Mode on USB Type-C Connector Standard")
- MHL 3.0 (Mobile High-Definition Link, which you've probably never heard of: it's a way to connect mobile devices to HD displays)
- Thunderbolt 3 (on computers that have Thunderbolt 3 controllers, like the new MacBook Pros)

USB-C can create the appropriate electrical signals for these natively supported standards internally and pass them through a cable with a USB-C plug on one end and the native format, like DisplayPort or USB 3 Type-A, on the other. Some of these are in the form of a dongle with a jack on the non-USB-C end, but it's still sending the signal straight through.

For other protocols, you need an adapter, which performs internal signal conversion between USB-C and the adapter's input port, like HDMI, VGA, Ethernet, and FireWire. (The HDMI trade group added USB-C as an option recently and says that monitors with native USB-C support will be out in 2017. For now, Ethernet is supported directly only in a 10 Gbps peer-to-peer version that's part of Thunderbolt 3.)

USB-C can drive at least a single 4K monitor, depending on the display circuitry on the host device. A computer with Multi-Stream Transport (MST) can drive two displays from a single USB-C port. Apple built MST into some Macs, but the 12-inch MacBook lacks it, and thus can only handle one

external monitor. Thunderbolt 3 has more robust display support, enabling it to use higher refresh rates and manage significantly more pixels overall.

Thunderbolt 3 cables are labeled with the same lightning logo used by Thunderbolt 2 cables, while USB cables with USB-C connectors show the familiar USB logo and may also be branded with SS+ for SuperSpeed+. Older USB 3.0 (also known as USB 3.1 Gen 1) cables are sometimes also branded with an SS for SuperSpeed.

Happily, Thunderbolt 3, as supported by the new MacBook Pros, supports all the protocols handled by USB-C, plus Thunderbolt and FireWire. The end result is that nearly any device can be plugged into a Thunderbolt 3 port, with the correct cable, adapter, or dock, as I explain next.

(What kinds of ports are you using with a Mac laptop? You can fill out my survey and see the current results.)

Adapt or Die! — There's both some FUD and reasonable caution about USB-C cables and adapters. Quality gear comes from the likes of Apple, Belkin, Google, and Kensington, although Apple's products have historically been quite expensive. Apple recently cut prices of all its USB-C and Thunderbolt 3 accessories through 31 December 2016; see "Responding to Complaints, Apple Drops Adapter and Monitor Prices" (4 November 2016).

You can often find less expensive gear made cheaply by little-known manufacturers and sold via Amazon (see "Be Careful When Buying Apple Accessories on Amazon," 24 October 2016). Before buying from unfamiliar brands, I recommend that you consult Google engineer Benson Leung's Amazon reviews, whether or not you make the purchase via Amazon. He has extensively tested cables, adapters, and other equipment in his personal time, and he can steer you towards and away from USB-C products.

Let's assume you have or are planning to get a new MacBook Pro with Thunderbolt 3. Here's a rundown of what you'll need for each of the various connection types:

- **USB:** For connecting older USB peripherals, you'll need a USB-C adapter, cable, or dock. Existing products will work fine with the MacBook Pro models. If you want the simplest one-to-one converter, pick up a USB-C to USB Type-A adapter — or several. Apple's adapter is $9; well-reviewed adapters on Amazon cost a couple bucks less.

My favorite dock is currently the Satechi Aluminum Multi-Port Type C Adapter, which I gave top marks to in a review at Macworld. It offers a 4K display output (via HDMI, compatible with DisplayPort), two USB 3.0 Type-A ports, and pass-through power. It held up well in testing, and it's an attractive, compact unit.

- **Lightning:** If you want to charge a Lightning-equipped device without using an adapter or dock, you can get Apple's USB-C to Lightning cable, available in 3.3 foot/1 meter ($19) and 6.6 feet/2 meters ($29) versions.

- **Ethernet:** To add gigabit Ethernet, which many people prefer over Wi-Fi when it's available at a home or business office, you have plenty of options with USB-C now. Don't overpay: the $17 Kanex adapter fits the bill. Like many USB to Ethernet adapters, it requires a free driver for the Mac. (Thunderbolt 3 uses the 10 Gbps Ethernet specification for peer-to-peer transfers between two computers using a Thunderbolt 3 to Thunderbolt 3 cable.)

- **FireWire:** If you have older equipment that supports FireWire 400 or 800 as its only or fastest communications method, you may need to wait to see what materializes. There's no direct adapter or cable available. Apple's FireWire 800 to Thunderbolt 2 adapter would then have to pass through a Thunderbolt 2 to Thunderbolt 3 adapter (see below), a combination that hasn't yet been tested for reliability, but which Apple says is supported. Some Thunderbolt 2 docks include FireWire ports, and an updated version of one of those could be the right path.

- **Thunderbolt:** Because Thunderbolt 3 is backward compatible with the previous version, Thunderbolt 2 docks should work fine. It's possible there could be incompatibilities with certain chips or features, so you may want to wait for others to test and report on them. Roman Loyola at Macworld rounded up the best Thunderbolt 2 docks in December 2015.

Docks will require a Thunderbolt 2 to 3 adapter ($29). Unfortunately, that adapter doesn't allow for connections to Mini DisplayPort displays like Apple's older Cinema Displays, although it should work with the 27-inch Thunderbolt Display. By the way, Thunderbolt 3 to Thunderbolt 3 cables are currently a little pricey: Apple is selling two Belkin cables: $22 for 0.5 meters (1.6 feet) and $52 for 2 meters (6.6 feet).

Belkin has announced a Thunderbolt 3 dock too. The Thunderbolt 3 Express Dock HD is a refresh of a previous version that cost about $250. It will sport pass-through power (up to 85 watts, enough for any MacBook Pro model), two Thunderbolt 3 ports, one full-size DisplayPort jack, gigabit Ethernet, two analog audio jacks, and three USB Type-A 3.0 ports. It can handle two monitors, each up to 4K, by using one Thunderbolt 3 port and the DisplayPort connection. A lot more Thunderbolt 3 docks are coming. For more details on other adapters and cables, consult Roman Loyola's recently posted Thunderbolt 3 adapter guide at Macworld.

- **Displays:** On the monitor side of the equation, you should be able to use all displays, up to 4K resolution, that support DisplayPort 1.2 or later. You'll need a USB-C to DisplayPort adapter or cable. An increasing number of monitors offer DisplayPort over USB-C as an option — sometimes the only option (see, for instance, "Acer H277HU USB-C Display Is an Affordable MacBook Companion," 11 April 2016). However, 5K displays will need native Thunderbolt 3 support, as with the new LG 5K monitor Apple showed off in its keynote and which it will be selling in Apple Stores.

Apple just dropped the price on its previously expensive USB-C multiport adapters, both of which offer video out, along with a USB-C power-only port for passthrough charging and a USB Type-A port. The Digital AV Multiport Adapter with HDMI and the VGA Multiport Adapter are both $49, at least through the end of 2016, after which the price may return to $69. You can also get a variety of USB-C to DVI adapters from other parties, though we don't have a particular recommendation.

The 13-inch MacBook Pro models have built-in video support for one 5K display or two 4K displays. The 15-inch models can handle two 5K displays and a whopping four 4K displays. That's because the 13-inch models have one USB-C controller and a perfectly fine video system; the 15-inch models include two USB-C controllers and much better display circuitry.

Real-World Scenarios — Now that you know what the adapter options are, how do you apply them? There are two notable scenarios: moving data to a new MacBook Pro via the Setup Assistant or Migration Assistant, and working with Target Disk Mode.

Apple has published a support page explaining the possibilities for migrating data to a 12-inch MacBook or late-2016 MacBook Pro; also be sure to read "How to Migrate to a New Mac" (14 September 2016). Depending on the Macs in question, Apple suggests a few choices:

- Wi-Fi: Apple suggests that Wi-Fi is the simplest method, but it's by far the slowest, and in our experience, it often fails in the middle. We recommend Wi-Fi as the last-ditch method.

- From a backup drive: If you have a backup of your previous Mac, either a bootable duplicate or a Time Machine backup, you can attach that drive to the new MacBook Pro via USB-C.

- Ethernet: With a USB-C to Ethernet adapter for the new MacBook Pro, and another adapter for the older Mac if necessary, Setup/Migration Assistant can transfer your data over a standard Ethernet cable.

- USB-C: If you're migrating from a 12-inch MacBook to a new MacBook Pro, a USB-C to USB-C cable will work. Not all such cables have full data transfer capabilities, so make sure to get one that does, such as this one from Belkin.

Target Disk Mode, a way to turn one Mac into a bootable drive for another Mac, is a somewhat different situation. Apple has updated its Target Disk Mode page to include a mention of Thunderbolt 3. Apple is light on the specifics but seems to imply that you will need two matching ports and a cable to connect them. From this reading, only the 12-inch MacBook and the new MacBook Pros will be able to employ Target Disk Mode between themselves, using either a USB-only USB-C cable or a Thunderbolt 3 cable.

However, Target Disk Mode also reportedly worked with a Thunderbolt 2-to-FireWire adapter, so that combination may also work with an additional Thunderbolt 2-to-3 adapter, but we haven't yet seen confirmation.

USB-Cing Stars — This may all seem confusing initially, but it should pass quickly because everything on the market for USB and DisplayPort over USB-C today should work with Thunderbolt 3. The main group that will be disappointed are those who buy Thunderbolt 3 peripherals and expect them to work with a 12-inch MacBook, which doesn't extend USB-C support to Thunderbolt. We can hope that Apple makes Thunderbolt 3 standard across the entire Mac line.

I anticipate that, now that Thunderbolt 3 is out and available in a mainstream Mac, other manufacturers will ship more new high-end computers with Thunderbolt 3 and USB-C. USB 3.1 Gen 2 tops out at 10 Gbps, which will be fine for lower-end systems, which don't require 40 Gbps performance and aren't intended to support more than two displays. Mobile devices outside of the Apple ecosystem will stick with and continue to adopt USB-C without Thunderbolt 3 for simplicity, power consumption, and controller cost.

With nothing else like either USB 3.1 Gen 2 or Thunderbolt 3 on the horizon and the broad industry support of the USB-C connector, USB is finally living up to the Universal part of its name — even when Thunderbolt is thrown in on top.

by Josh Centers

A Prairie HomeKit Companion: Core Concepts

At the end of "Getting Started with the Philips Hue Smart Light Bulbs" (1 August 2016), I touched on HomeKit, Apple's framework for controlling home automation devices. Since then, we've received a lot of requests for more information on HomeKit and home automation, so in this series, I'll explain what HomeKit is, how it works, and how to use it. I'll also look at some of the home automation devices that work with HomeKit.

But first, let's talk about why you might want to use home automation in the first place.

Why Home Automation? — If you've never used home automation before, it can seem like a gimmick at best and a potential nightmare at worst.

Untold movies and TV shows have explored the potential horrors of home automation. Most recently, in an episode of "Mr. Robot," a woman is driven from her home after hackers make her apartment go haywire.

Even if complete takeover of your home by revolutionary hackers is far-fetched, problems could be annoying. By definition, home automation takes place in your personal space, and buggy code or simple human error, even in Apple's somewhat simplified offering, could have a real impact on your life. Think carefully before diving in.

But once you begin to use home automation, you start to see the everyday problems it can solve. Home automation may not change your world, but it can remove friction from your daily existence. Think about how many times a day you turn lights on and off, set your thermostat, adjust a ceiling fan, or check door locks. Even if it's just a matter of making sure everything is as you want before bed, that's a win. It can also compensate for the thoughtlessness of others — those people in your household who forget to turn off lights or check that the fridge is closed.

When you set home automation up intelligently, you'll feel empowered, not overwhelmed. For Apple users, HomeKit offers the easiest, most secure way to achieve that goal.

This series will unfold over the next few weeks, but if you're in a hurry to learn more, check out my book, "iOS 10: A Take Control Crash Course," which has an entire chapter dedicated to HomeKit and iOS 10's new Home app.

Why HomeKit? — Apple's HomeKit home automation framework gives hardware manufacturers and software developers a unified way to interact with home automation devices on iOS, tvOS, and watchOS.

Home automation isn't new — the X10 home automation protocol has existed since 1975, and I've heard from readers who controlled home automation setups with Apple II computers!

By comparison, HomeKit is a baby. It debuted with iOS 8, although HomeKit-compatible devices didn't start hitting the market until iOS 9. Even then, HomeKit control was rudimentary, relying on third-party apps. iOS 10 and watchOS 3 introduced Apple's Home app, which offers a standardized way to manage and control HomeKit devices. Standard is good, but HomeKit is far from a complete home automation solution.

Every home automation vendor provides its own software, and some of those solutions offer capabilities beyond what HomeKit provides. Some systems, such as the Philips Hue, provide a complete developer API, which makes possible apps like Light DJ, which syncs your lights with music, something HomeKit can't do. That's just one example — an entire ecosystem has grown up around the Hue lights.

The other downside of HomeKit is that it can't control just any device — manufacturers must work with Apple to have their devices certified for HomeKit. Based on my discussions with vendors, that's challenging and expensive, though as I'll explain, there are good reasons for that. As a result, the HomeKit ecosystem doesn't offer as many options as more established and more open standards like X10.

So why use HomeKit at all? There are several excellent reasons:

- **Security**: Apple has arguably the best security of any large consumer-oriented tech company. Remote access to HomeKit devices is disabled by default and can't even be turned on unless you've enabled two-factor authentication on your Apple ID. You'd be hard-pressed to find a more secure home automation system that's this easy to use.

  This advantage came into sharp focus recently with the DDoS attack that interrupted Internet service in the United States (see "Massive DDoS Attack Blocks Access to U.S. Web Sites," 24 October 2016). That attack was made possible thanks to a plethora of insecure Internet of Things devices like DVRs and IP cameras.

  Last year, Forbes reported on the pains hardware vendors were experiencing making HomeKit devices to Apple's exacting standards, especially when it comes to security. However, after seeing the destructive potential of insecure Internet-connected devices, I think we can better appreciate Apple's rigorous approval process.

- **Integration**: HomeKit devices work with the built-in Home app in iOS 10, and your favorite Accessories and Scenes automatically appear in the third pane of Control Center. Also, you can control your devices using Siri in iOS 10, tvOS 10, and watchOS 3.

- **Sharing**: The Home app makes it easy to manage shared access to HomeKit devices. You can add and remove people, and decide whether or not they can edit your configurations. Also, changes you make to your HomeKit setup are automatically made available to everyone with whom you're sharing.

- **Interoperability**: The Philips Hue app is pretty good, but it can't control my iHome iSP5 or Elgato Eve Energy smart plugs. With HomeKit, I can set up a Scene to turn all of those devices off at once. HomeKit's goal is to let you forget about vendors and focus on functionality. Also, since HomeKit is an open framework, developers can create HomeKit control apps, some of which are more capable than Apple's Home app.

- **Ease of Use**: Home automation is complicated, but HomeKit offers the simplest, most unified home automation experience on the market. Apple's Home app may not be the most powerful home automation app, but it won't intimidate the casual user. Most HomeKit devices are plug-and-play.

As simple as HomeKit is to use, you need to understand its core concepts to feel in control and to know what I'm talking about in future HomeKit articles.

The HomeKit Hierarchy — First, let's go over a bit of necessary terminology, but don't worry, it's relatively straightforward.

Apple organized HomeKit into a hierarchy, which gives you various levels of control over your devices.

The highest level is a Home. A Home could be your residence, but it could also be an outbuilding, an office, a vacation home, or some other multi-room structure

In the next level down, you have Rooms. A Room is, as you'd guess, a section of a Home. You can set up your living room, bedroom, bathroom, and kitchen as Rooms in your Home.

(Technically speaking, there's another level of HomeKit hierarchy above Rooms: Zones, which are collections of Rooms. For instance, all the rooms downstairs in your house could be a Zone. However, Apple's Home app doesn't yet support Zones, so I won't discuss them much in this series.)

Next in the hierarchy are Accessories, which are the home automation devices in your Home, like smart bulbs, wall plugs, locks, thermostats, ceiling fans, etc.

Accessories offer Services, which are the functions of the Accessory. For most devices, the Accessory and Service are indistinguishable, but some Accessories offer multiple Services. For example, my Elgato Eve Room sensor provides four Services: Current Temperature, Current Relative Humidity, Air Quality, and Battery Level.

However, Apple's Home app blurs the line between Accessories and Services, listing Services as Accessories. It also doesn't display the Eve Room's Battery Level Service.

If you find the difference between Accessories and Services confusing, don't worry about it. At the moment, it's trivia.

You can also group Accessories to make operation simpler. For instance, I've grouped my two Hue-powered living room lamps, so I can adjust their color and brightness together. However, if I dig a little deeper into the Home app, I can still manipulate each one separately.

The HomeKit hierarchy is a bit of a pain, but it's essential to a smooth HomeKit experience, especially when you use Siri. I can tell Siri to turn on the laundry room light or make my living room blue, and it understands my commands perfectly. (Well, most of the time. It's still Siri.)

The last two terms you need to know are the most important: Scenes and Automations. A Scene is a collection of actions; for instance, my Good Night scene turns off the lamps in our laundry and music rooms, and dims the lights in the living room to zero (just enough light to see at night, without actually being off). Scenes are one of the most important concepts in home automation, and I'll cover them extensively.

As the name suggests, Automations invoke Scenes automatically according to a user-specified schedule. I'll cover these more in a future installment. When set up carefully, Automations can remove even more friction from your life.

For instance, on weekdays my wife usually wakes up earlier than I do. At 5:30 AM, my Good Morning scene turns on the lights in the laundry, music, and living rooms, so she doesn't have to stumble through a dark house (our laundry room doubles as her closet, and the music room — a converted garage — adjoins the laundry room). At 8:30 AM, the Good Night scene turns off all those lights because by that time, she's usually long gone from the house. At 3:00 PM, about the time she usually gets home from work, the Good Morning scene comes on again, so those areas of the house are well lit when she walks in and wants to change her clothes or prep for a music lesson. At night, we activate the Good Night scene manually, because we don't all go to bed at a fixed time.

I've put a lot of thought into these Automations, so no one's surprised by a light suddenly turning on or off. When my wife gets up, the lights she needs are on. They turn off after she leaves, and they're back on when she gets home. And that's with only two Scenes!

With careful planning, your automated home can be just as seamless.

Planning Your HomeKit Home — If you're intrigued by the promise of HomeKit and want to start playing with home automation, I have a few recommendations.

First, communication is essential. Discuss your plans before you start buying stuff so everyone in the house has input. If your partner or roommate isn't technical or might be bothered by the inevitable learning pains, consider starting with a single device. In the most extreme case, you might learn that home automation isn't worth the conflict it may cause.

If you're planning to set up automated lights and smart plugs, it's important to discuss our habit of using physical switches. For instance, if I turn off a switch that controls a lamp with Hue bulbs, my HomeKit Scene can't turn them back on automatically, which could leave my wife fumbling in the early morning darkness.

The solution to this problem is to install smart switches that can work with your home automation system and be activated manually (which is also helpful for guests). Elgato just released the first HomeKit-enabled wall switch, the Eve

Light Switch. Philips makes a couple for use with the Hue bulbs — the Philips Hue Dimmer Switch and the Philips Hue Tap Switch. iDevices announced a couple of HomeKit wall switches months ago, but they have yet to appear on the market. At first, you'll probably have to get used to using your iPhone or Apple Watch to control lights. I haven't personally used any of these smart switches yet, so I can't currently offer a recommendation. (If you have, let us know in the comments!)

When the decision makers in your home understand and agree to home automation, the next step is figuring out where to begin. I recommend starting small with some sort of light control, either the Philips Hue system or a smart plug like the iHome SmartPlug or Elgato Eve Energy.

Everyone I know who has tried Hue loves it (including our own Jeff Carlson, who regularly curses me for hooking him on home automation), but with starter kits ranging between $80 and $200, it's an investment. However, if you want to start with a simple smart plug to control a lamp, the iHome iSP5 costs only about $30, while the Elgato Eve Energy goes for about $50. The benefit of these smart plugs is that you can use them with any appliance that plugs into a standard power outlet, so they give you a lot of room to experiment.

Once you decide on your initial HomeKit investment, the next step is figuring out where to use it.

Again, take it easy at the start so you and your family can get a feel for the experience. There are so many possibilities that it can be tempting to jump in with both feet. Fight that temptation. Before I got my Hue bulbs, I didn't think there was any point in having just a handful of automated bulbs. After I started playing with them, I realized that I didn't need many to have a functional setup, since our most-used lights are the two floor lamps in our living room.

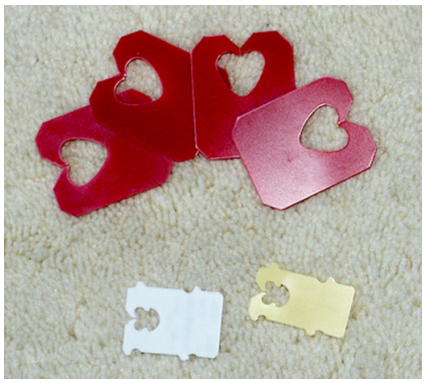
So think about where automation could have the most impact in your home. If you go for the Hue bulbs, the living room is an obvious place to start. But maybe there's a certain light that your family members always forget to turn off, or a basement light that you'd prefer to turn on before you venture down the stairs. If you have a smart plug, you might even want to use it to turn a space heater or fan on and off at certain times.

The keys to an intelligent smart home are communication and thoughtful planning. Nail those, and you'll find that home automation makes your home a more pleasant, comfortable place that doesn't require you to run around changing settings and turning things on and off. The tips, techniques, and products that I'll discuss in the rest of this series are just means to that end.

by Tom Bank, Sr.

One More Accessory Item For Our Macs

Everyone knows what the pictured items are. They come on loaves of bread. The little ones are on the bread found on grocery store shelves. The big ones I got at Costco on the artisanal loaves in their bake shop. But did you ever think they would have a place among your Mac's accessories? If you have a desktop computer, or even a fancy "smart" television, anything with a bunch of wires stuffed behind the desk or other furniture on which the electronic appliance resides, you may have accidentally pulled one of those wires loose or replaced an accessory item or just had to disconnect things to check for a fault; after which, you have to get the right wire connected to the right sockets on the right boxes.



That's where the bread wrapper clamps come in handy. Get a pair of like looking pieces, if there are date stamps on them remove same with medium grit sand paper, and relabel them with a Sharpie marker. Next clip one to each end of the wire and an extra one in the middle if the wire is routed any distance through furniture partitions and so on. Then when you find yourself on your back under the desk with a flashlight trying to trace a problem or identify a disconnect, you'll at least have a written clue to aid in your quest.

As an aside, I worked for many years with computer systems at the Mechanicsburg Navy Depot. We had a full World War II vintage warehouse full of mainframe computers on raised flooring, the under floor space being used both for system air conditioning and wire routing. Over the decades the computers were replaced with a succession of newer models. But the old wires were invariably found to be buried at some inaccessible point under newer wires, so they were left in place and the cables for the new computers were just threaded through on top. Eventually the time came when the space under the raised floor was too crowded to take any more wire. The alternative taken was to tear the whole building down and build anew. When that was done, the demolition company had a windfall. Scrap copper was, at the time, at a high and there were tons of the stuff in the three decades of wiring and rewiring that the old building had seen. But I trust when we replaced our old SCSI and Apple Desktop Buss cables and then Firewire 400 and USB 1 wiring, we stripped out the old before installing the new connections.

by Tim Sullivan

Rumors and Reality

Two enhancements to fonts are on the horizon.

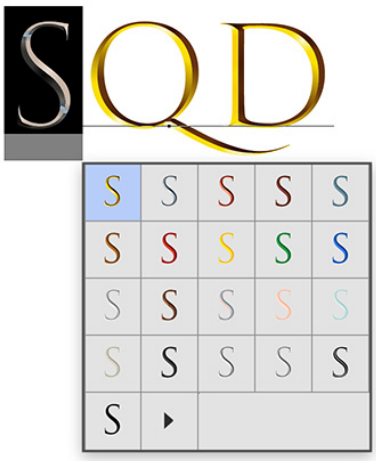
A variable fonts is a single font that behaves like multiple fonts. Normally a web developer would need to load a typeface family that might include regular, condensed, expanded, bold, italic, and bold italic fonts. The variable font allows the user to replace the multiple typefaces with a single font.

Two of the biggest gripes developers have with webfonts are, first, that you need to download a separate file for each width or style; and, second, that those files can be pretty big and take a long time to load. Variable fonts solve both issues by basically sticking everything into a single, highly optimized file.

Variable fonts have adapted to the flexible nature of our screens and the technology that fills them with content. They will have the power to shrink, grow, and gain or lose weight seamlessly.

The second offering, OpenType-SVG, is a font format in which an OpenType font has all or just some of its glyphs represented as SVG (scalable vector graphics) artwork. This allows the display of multiple colors and gradients in a single glyph. Because of these features, OpenType-SVG fonts are referred to as "color fonts".

Adobe is in the process of developing this format. At this time, it appears that each glyph (character) is chosen by selecting from a pop up panel, much like Emojis. Trajan Color Concept (it a concept, not a finished product) allows you to choose from many (19) different colors and textures.



Applications that support OpenType-SVG fonts:

Photoshop CC 2017

Firefox, versions 32 and above

Microsoft Edge (in Windows 10 Anniversary Edition and above)

In Windows 10, the DirectWrite and Direct2D platform components allow OpenType-SVG support in any apps that use those APIs

macOS 10.12 Sierra calculates free space on your drive differently than in the past. Along with drive space that doesn't contain any data, Sierra now includes in the calculation "purgeable space," which holds data that can be deleted from your drive because Sierra can redownload it if necessary. This purgeable data includes stuff like files stored in iCloud, certain large fonts, and unused dictionaries, along with purchased video content from the iTunes Store and photos and videos you have in iCloud Photo Library (those last two require you to have enabled the appropriate settings in iTunes and Photos.)

Every so often, a weird bug related to iOS will emerge that causes some sort of temporary misbehaving for users affected by it. For instance, it has been nearly two years ago the infamous "effective power" bug took the internet by storm, and we've seen various other similar issues since then.

Now, it has been discovered that playing a certain .mp4 video in Safari on any iOS device will cause the device to slow to a crawl and eventually freeze altogether. We're not going to name names to avoid the temptation to prank your office co-workers.

It's not clear as to why this happens. The likely reason is that it's simply a corrupted video that has some sort of memory leak and when played, iOS isn't sure how to handle it.

Because of the nature of the flaw, it isn't specific to a certain iOS build. Playing the video on an iPhone running as far back as iOS 5 will cause the device to freeze and become unusable.

If someone sends you the malicious link and you fall for it, this is luckily a pretty easy problem to fix. All you have to do is hard reboot your device. For any iPhone but the iPhone 7, this can be down by long-pressing the power and Home buttons at the same time. The iPhone 7, of course, uses a new non-mechanical Home button. In order to reboot an iPhone 7, you must long-press the power button and volume down button at the same time.

Apple and Trump: During a phone call after his election, Trump explained to Cook that he would consider it a "real achievement" if he could convince Apple to make devices in the United States instead of other countries and Cook reportedly acknowledged the suggestion by saying that he understands.

Trump told the CEO that Apple could build a big plant in the Unites States, or several big plants, and make its devices right there, and that could be doable with the right incentives.

Recalling his conversation Trump said, "I said: 'I think we'll create the incentives for you, and I think you're going to do it. We're going for a very large tax cut for corporations, which you'll be happy about.'"

Big tax cuts, however, are currently impossible due to regulations, therefore those regulations have to go. He added that regulations have become "ridiculous" and companies find it hard to start things up and expand.

Apple had already asked Foxconn, one of its manufacturing partners, to look into the possibility of shifting iPhone production to the United States. However, Foxconn chairman Terry Gou was reportedly not so excited with this idea, as it would lead to arguably higher production costs. Suppliers said recently that the idea of Apple doing all or most of its manufacturing in the U.S. is impractical due to the lack of the required vocational skills. Cost is not a huge barrier – a recent analysis suggesting that US-made iPhones would cost only $30-40 more.

Getting Apple to move its production to the United States has been an important thing in Trump's agenda for a while now. Earlier this year, as MacRumors points out, Trump said Apple will be persuaded to build its "damn computers and things" in the United States instead of other countries. At that point, Trump also threatened to slap a 45 percent tax on products imported from China.

It has been revealed that Apple chose to use a soldered down, non-removable SSD in its 13-inch and 15-inch Touch Bar MacBook Pros.

They also included a dedicated port on the logic board. In case of total disaster Apple can transfer the data from the SSD to a working MacBook Pro using the dedicated port and a proprietary recovery tool.

by Frank Petrie

Freshly Squeezed Reviews: A Stand That Delivers

If you were to assemble your dream iPad case, you'd have to gather numerous accessories to meet all of your desires. But what if there was a one-stop-shop bundle available?

I've spent too long reviewing software, as of late. And I'm not a member of the crowd that Apple is going to send review copies of their products to. (Please, oh please, Tim! Just one 27" 5K iMac! I promise, I'll write a review for the ages …)

So what hardware can I get my mitts on to review? I have always been a fan of people who see a need and then design a simple, pragmatic solution. And today we review a bundle of products that satisfies numerous desires.

"The [Touchfire] iPad … case is packed with innovative features that are simply not available in any other iPad case. But perhaps most importantly, our case provides a rock-solid typing platform with a wide range of positions."

All of this is focused around the Touchfire keyboard, a transparent silicon cover that you attach to your touchpad's keyboard via four small magnets, providing you with a tactile feel, somewhat like a laptop keyboard. You now have the ability to anchor your hands on the home row and keep your eyes on the screen.

(Before I go any further, understand that I reviewed the Mini version, which has several slight differences from the regular sized model. The experience on the regular sized model may be somewhat different.)

As the silicon overlay is transparent but three dimensional, it can distort the vision of the keyboard's text and symbols, making it difficult to read the keys unless you 'hunt and peck' (guilty) To help alleviate this problem, the manufacturers recommend that you go into Settings>General>-Accessibility. Locate the button to turn on bold text. I found that this did make reading the keys significantly easier.

The keyboard can be quickly retracted for full screen access. You can store it inside the case when closed by merely leaving it in position. If you'd prefer, you can purchase a separate carrying case to house the keyboard.

There are magnets built into the case to serve several functions. Of course, the obvious one being used as a latch to secure your cover and protect your screen while in transit. Depending on which model you're using, full size, the Air, or Mini, the same strategically positioned magnets function to position your iPad at various angles for typing and viewing. Naturally, you have more choices with the full-sized models as opposed to the mini version. You can also

stand the case on it's side if you wish to view your iPad in Portrait mode for reading.

The case has a smooth texture, but because of the material that it's constructed from, you need only grasp it with light pressure to obtain a solid grip. It has the necessary cut outs for your camera, Lightning connector, microphone, 3.5mm plug (so long as it remains a thing) and all the other necessary buttons.

There are two redirectors that aim both speaker's sound towards you. The manufacturer claims that it increases the volume by 50%. I wouldn't go so far as to say that it amplifies it by that much but it is certainly more convenient than cupping your hands over them.

The aspect that impressed me the most was the strength of the magnet on the back of the case used to stick your iPad to any ferrous material (i.e., fridge, metal-backed whiteboard, etc.). I'm usually leery of features such as this, fearing that my mobile device will at some point come crashing down. But I was very impressed with how solidly this held my iPad in place.

You can also use adhesive wall mounts for ideal placement on non-ferrous surfaces. Simply find your desired location and place a mark where the top of your iPad will go. Take the included rubbing alcohol wipe and clean the area where you will place the wall mount. Pull the cover off of the industrial adhesive on the mount's backing and place it where you placed your mark upon the wall. You can use it for three hours initially. But it takes the adhesive 72 hours to cure to a point where you can leave the iPad mounted as long as you like. There is a [wall mount video tutorial] demonstrating how to place the mount and how to remove it. (The mount can only be positioned one time because of the adhesive's properties.)

There were a few cons that I did come across. Occasionally, the Touchfire case didn't completely shut and put my iPad to sleep. As a result, after finishing work on my iPad one evening, I closed the magnetic cover and went to bed. The next morning I awoke, sat down at my desk, only to find that the battery had drained overnight. Perhaps it was an OM issue (Operator Malfunction).

The keyboard was disappointing in one respect. I repeatedly applied it as per instructions but the keyboard remained in place only if I typed with a light touch. Perhaps, like Apple's new keyboards, it takes time to adjust. (To be fair, I 'hunt and peck.' Possibly, if I had my hands in the 'home row' position, it would have anchored the keyboard more securely.)

The keyboard will not work with most screen protectors. One brand does and is available at [Touchfire's site].

Touchfire makes it very simple to get started with both the keyboard and the case by providing several [videos] on their site.

The Touchfire iPad case is available in four colors: Black, Light Grey, Blue, and Red. The case is currently available for iPad Air, iPad Air 2; iPad 2, 3, 4; iPad mini, Retina mini, iPad mini 3; wall mounts can be purchased in packs of 1 or 3. (Also, I understand that the developer is looking into the feasibility of a version for the iPad Pro.)

Components (the case, the keyboard, the carrying case, and the wall mounts) can be purchased separately or bundled from [the site] as well.

If you're in the market for a case, a keyboard, or both, the prices are reasonable. And think of it. You can travel with your iPad without having to lug a Bluetooth keyboard additionally and still get your work done. I would say that alone is worth the price of admission.

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