

# Deconstructing iCloud Drive: What Techs Must Know.

# Ross Mondschain





(2000)

Two minute history lesson.



(2002)

iTools - (2000) - POP Mail, 20MB (!) AFP iDisk, Homepage.

.Mac - (2002) - IMAP, WebDAV iDisk, iSync, Backup, 10-30GB.

MobileMe - (2008) - Windows, some features required 10.5+

iCloud (pre-Yosemite/iOS 8) - (2011) - iOS integration, 5GB

mobile*me*

(2008)



(2011)

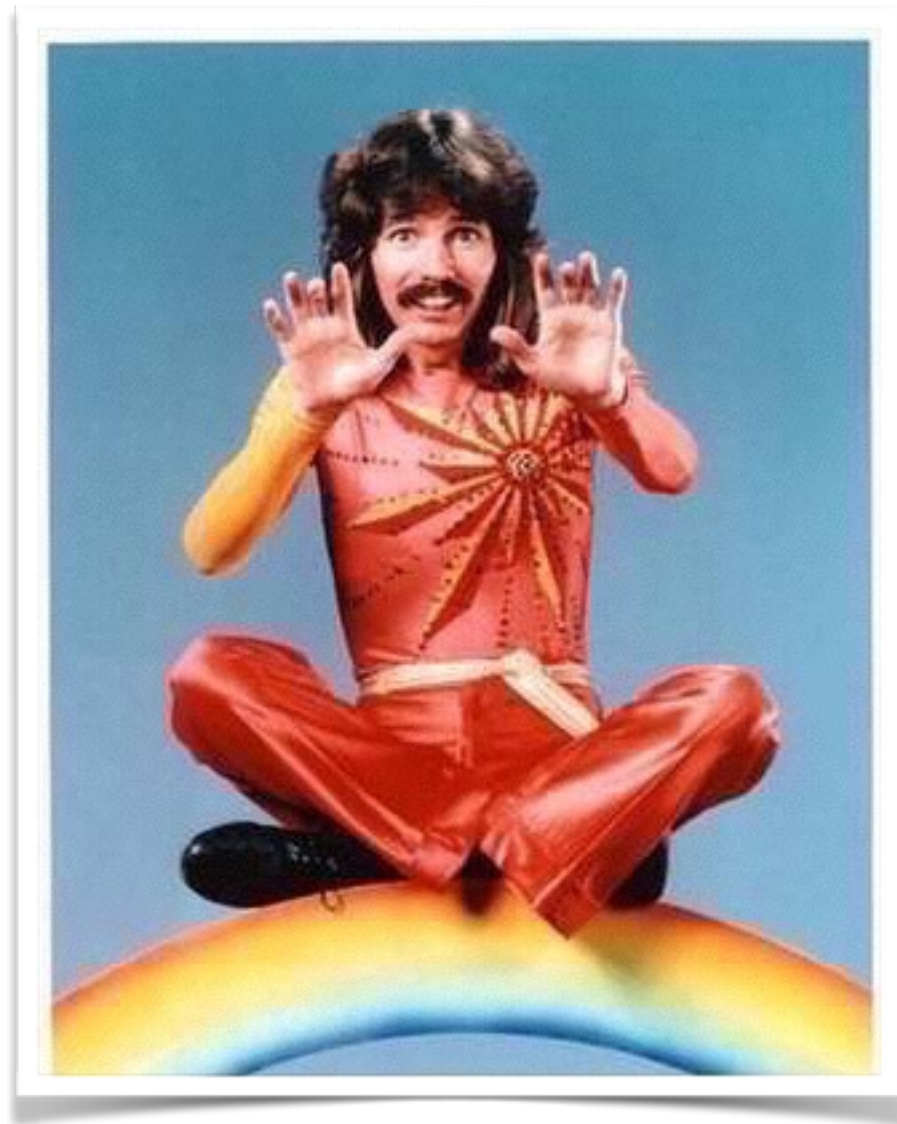
## What is iCloud?

- “iCloud gives you access to your music, photos, contacts, calendars, documents, and more from your Mac, iPhone, iPad, iPod touch, and Windows computer. iCloud stores your content and automatically keeps it up to date on all your devices. iCloud is easy to set up on your devices, and it’s easy to use with the apps included with your Mac and iOS devices, as well as the apps on [iCloud.com](https://www.icloud.com).” - Apple

<https://developer.apple.com/library/ios/documentation/General/Conceptual/iCloudDesignGuide/Chapters/iCloudFundamentals.html>

From the perspective of users, iCloud is a simple feature that automatically makes their personal content available on all their devices.

To allow your app to participate in this “magic,” you design and implement your app somewhat differently



Magic!!!

iCloud vs. iCloud Drive:  
What's the difference?

## What is iCloud Drive?

- Pretty much just the “**Documents-and-Data**” bit of iCloud.



# The Basics

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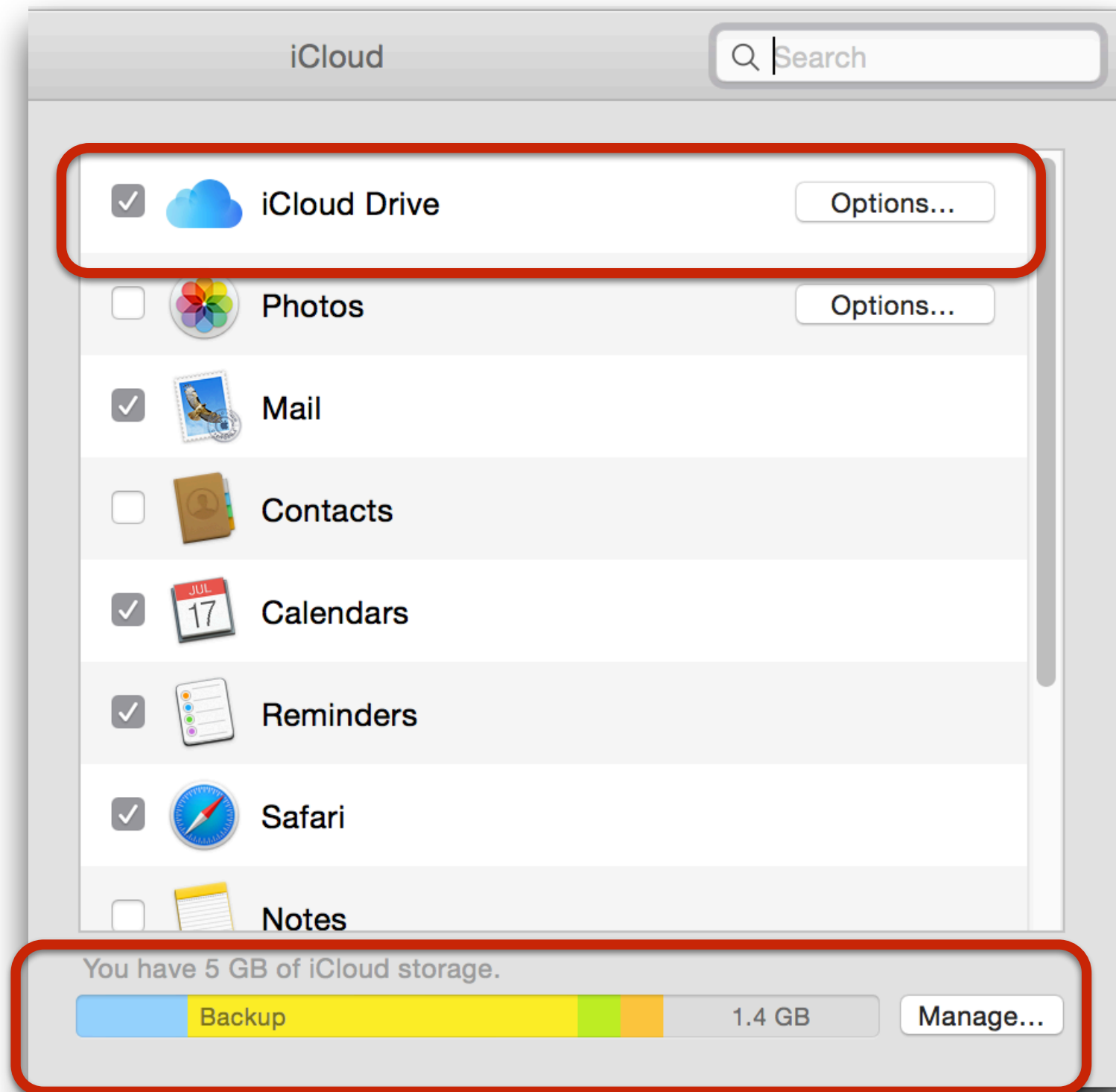
# The Basics



# The Basics



# The Basics



<15Gb

# iCloud Drive today

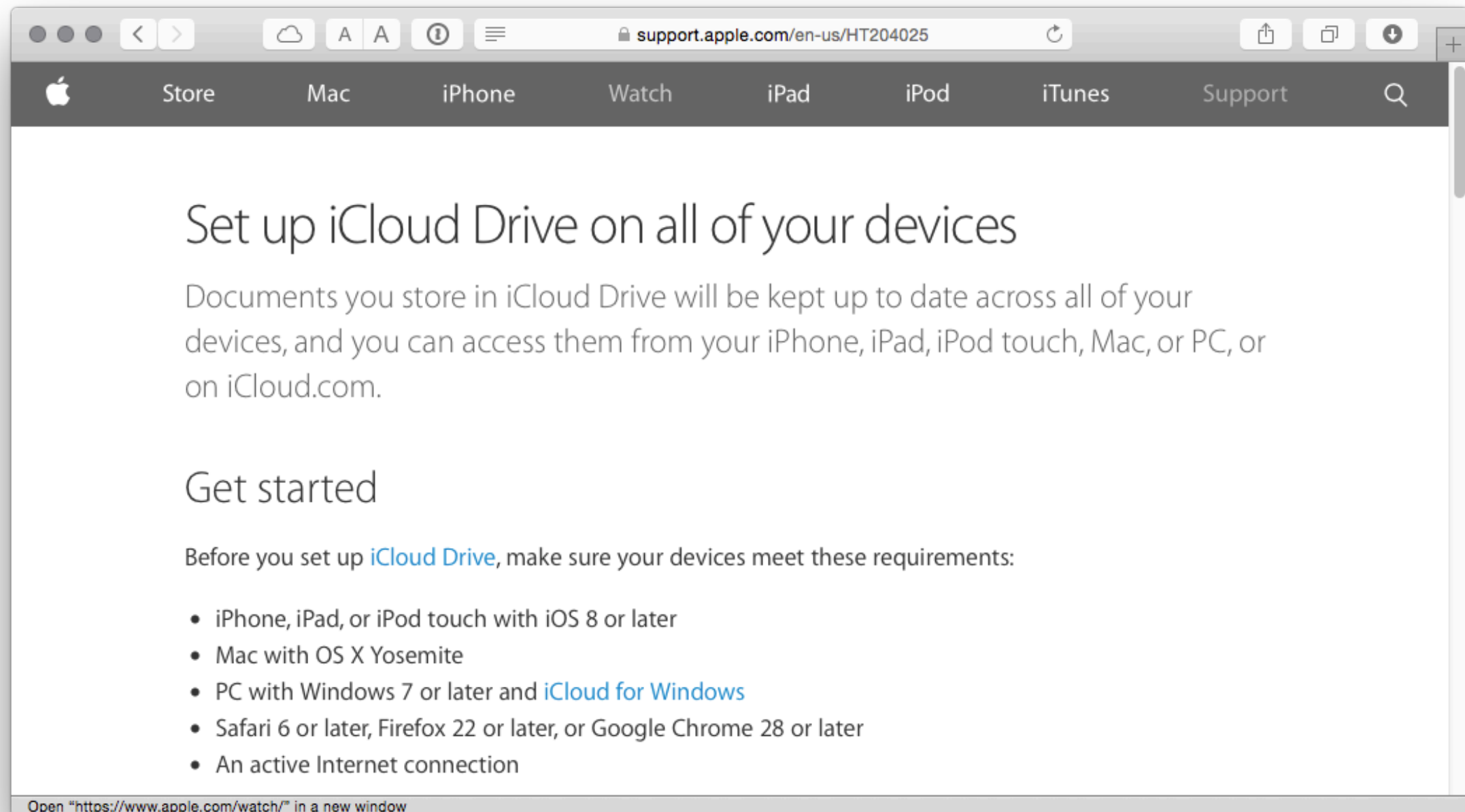


Requires iOS 8 and/or Yosemite.

Why?

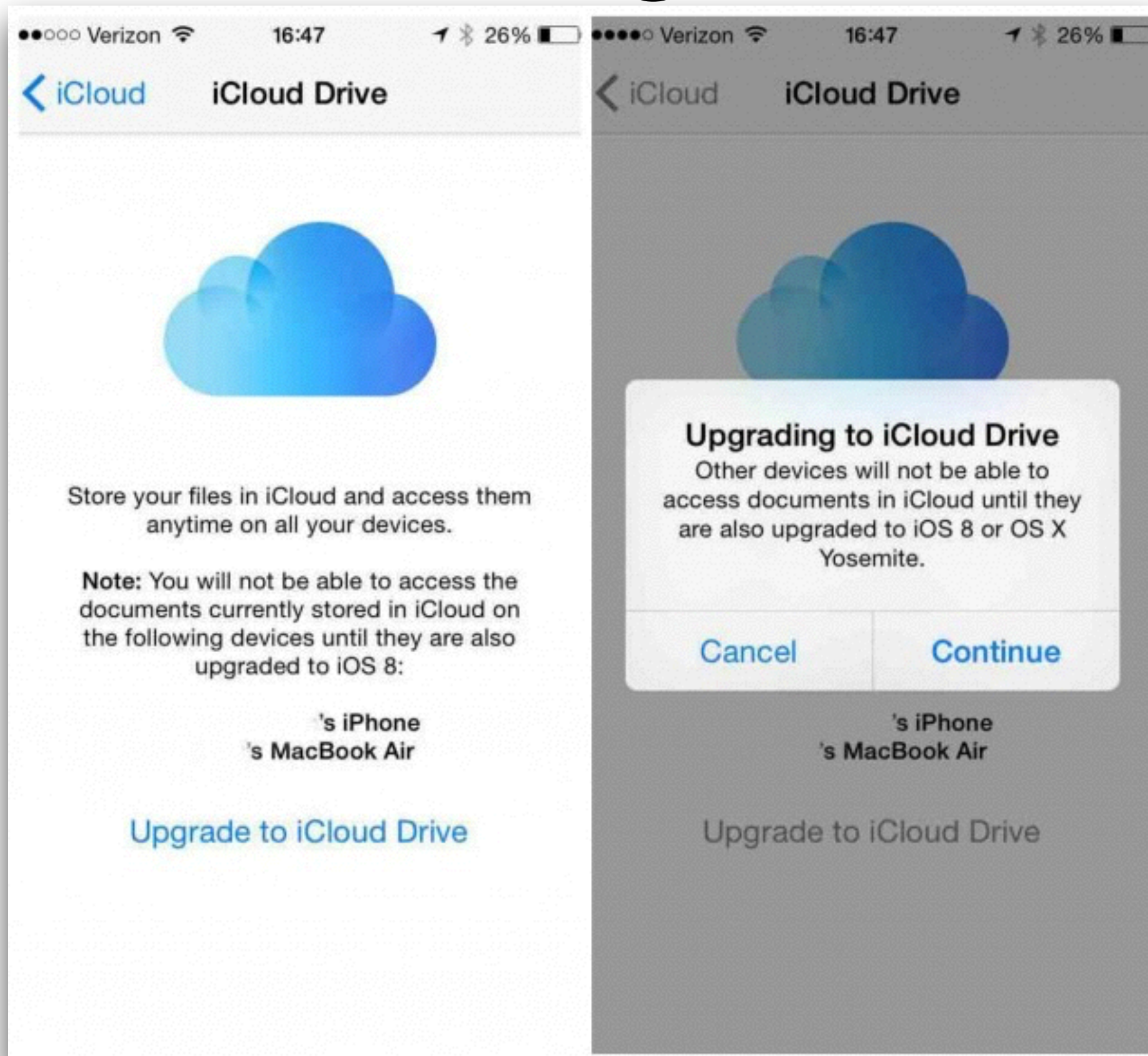
# Setup Steps

*<https://support.apple.com/en-us/HT204025>*





# No Turning Back!!



## iCloud Drive today

Once you've updated to iOS 8/Yosemite and enabled iCloud Drive, you've jumped into the new ecosystem. **You can't go back!**

Devices not updated will not lose data, but will no longer sync. You shouldn't lose anything except convenience.

## iCloud Drive today

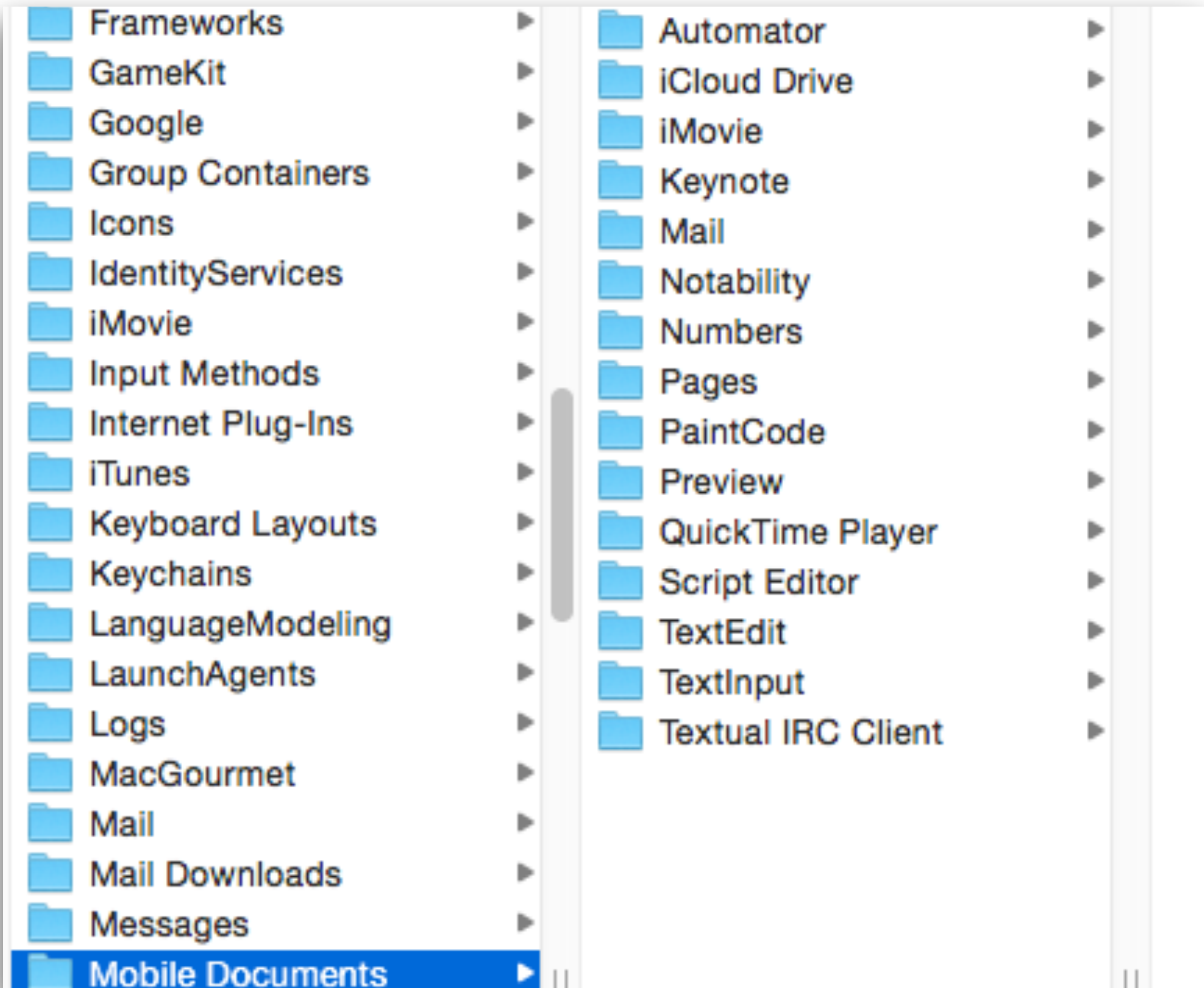
- iOS is kind of a big deal.
- In iOS, all files created by an app are saved inside that app's container.
- With iOS 8, Apple is letting developers make those containers visible.
- If you use Pages on iPad, you could open/edit/import a document saved on iCloud Drive, created on your Mac.

The Good Stuff.

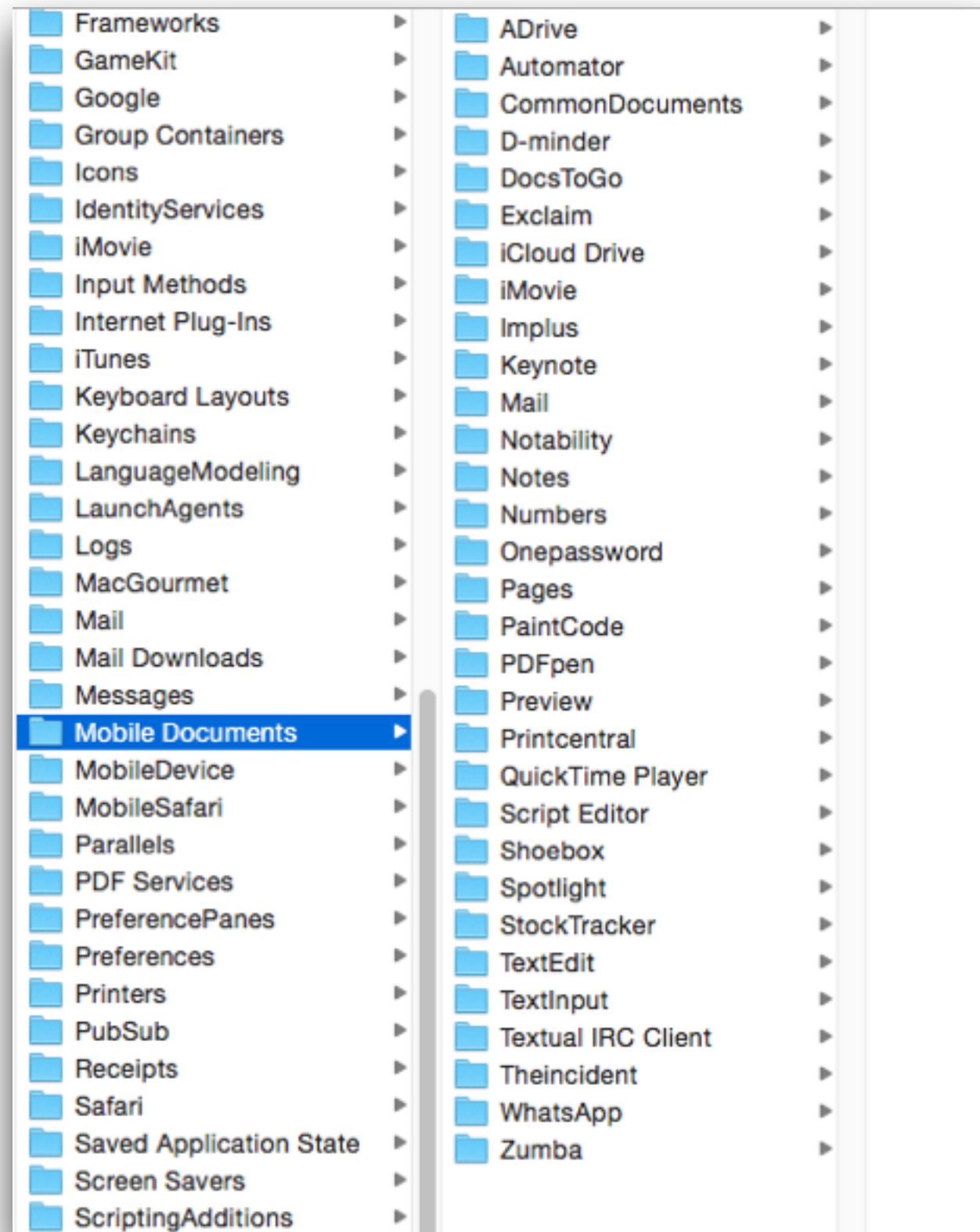
## What's stored where on Mac OS X.

- User data is ostensibly stored in `~/Library/Mobile Documents` – just like in 10.7+
- Contains folders specific to iCloud-enabled applications, as well as other user-addressable folders.
- Easy access from the Finder via Finder sidebar and “Go” menu.
- None of that is exactly accurate.

# Growing

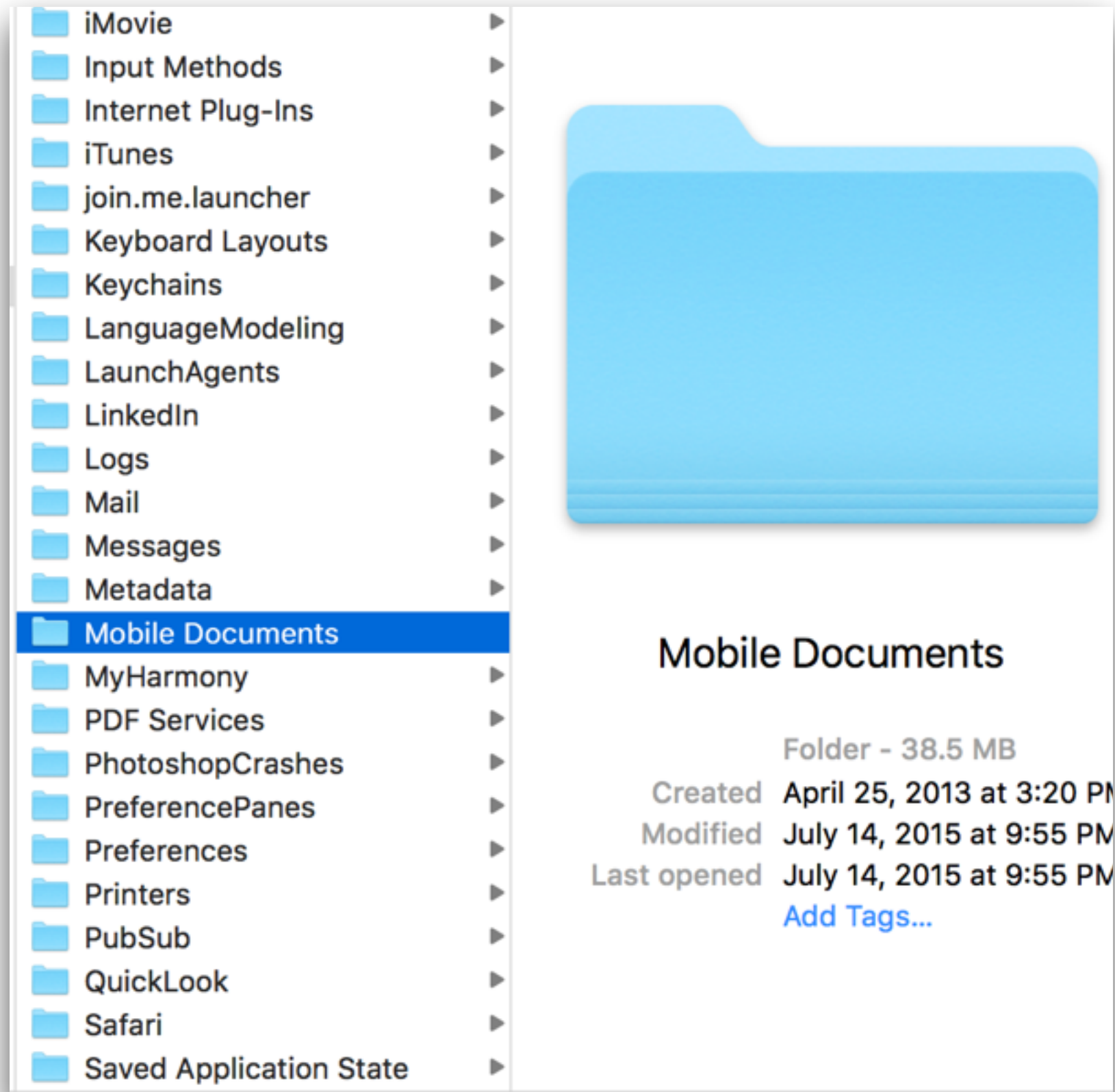


# Growing





# Gone

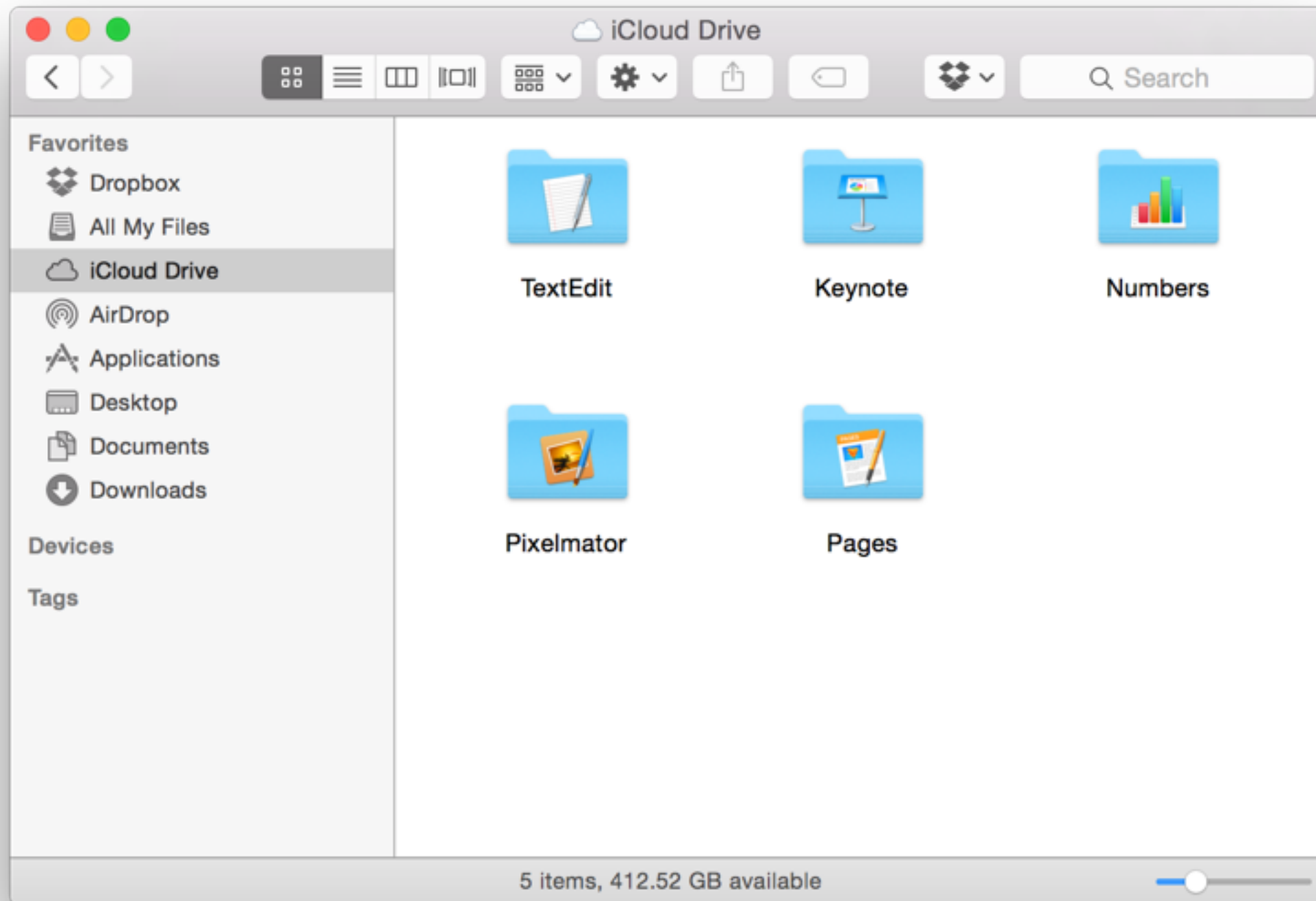




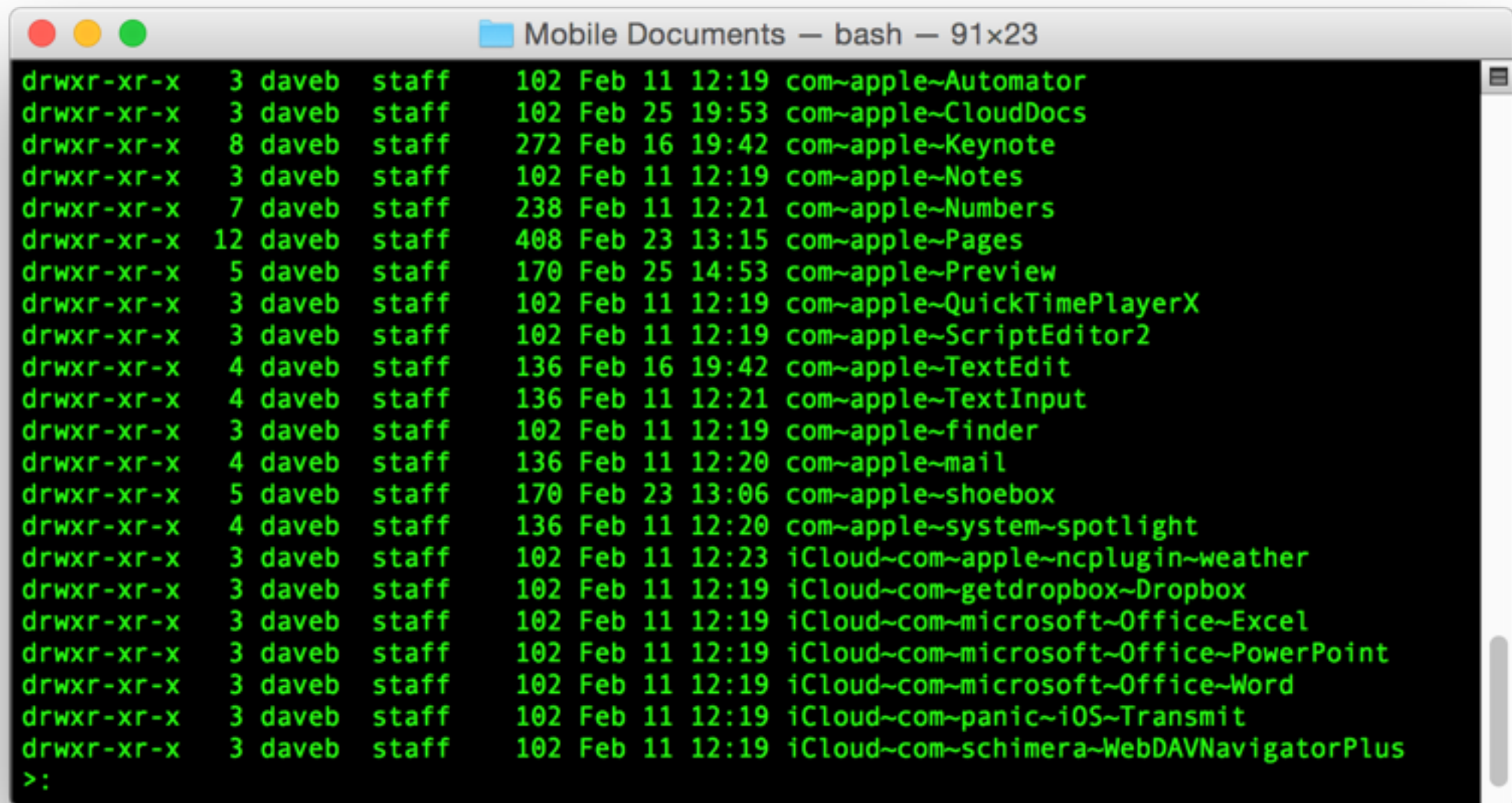
Huh?

- Folders in `~/Library/Mobile Documents` aren't regular folders. Special Permissions. **Can't** "Get Info".
- Hitting the "iCloud Drive" link in the Finder/"Go" menu takes you to iCloud Drive, not that directory.

# Finder:



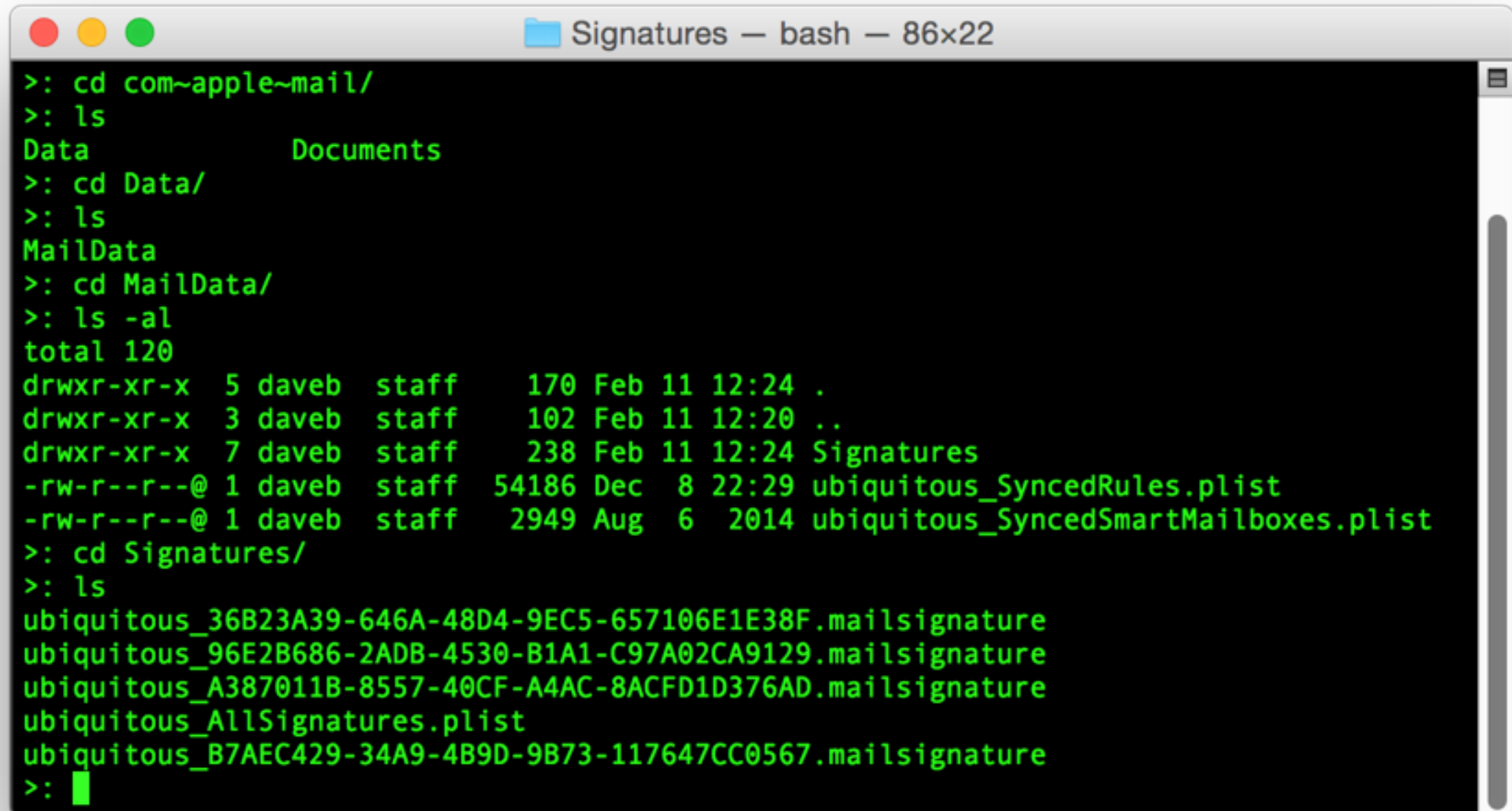
# Terminal:



A terminal window titled "Mobile Documents — bash — 91x23" displays a list of file permissions and ownership information. The text is green on a black background. The window has standard macOS window controls (red, yellow, green buttons) in the top-left corner and a scrollbar on the right side.

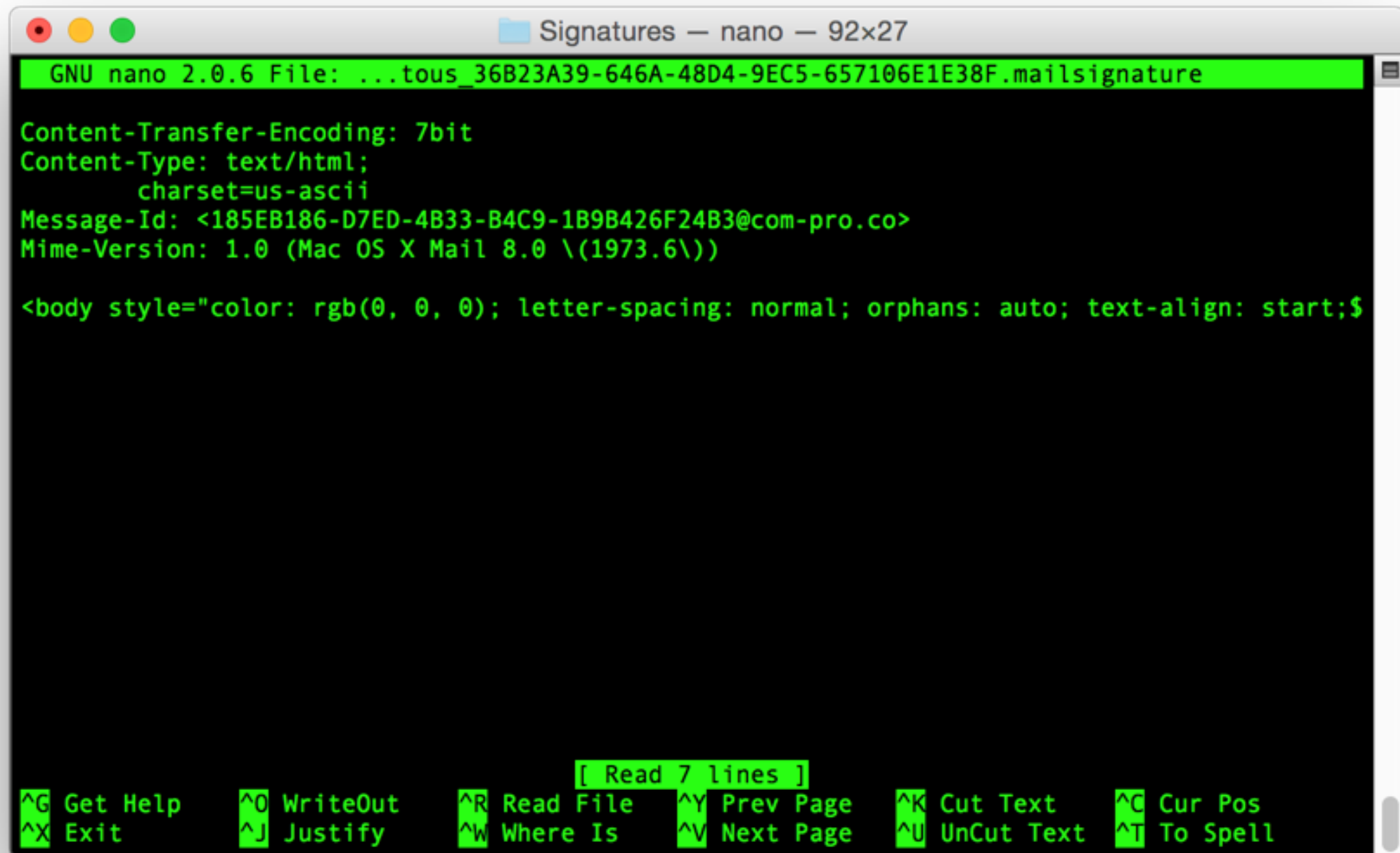
```
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 com~apple~Automator
drwxr-xr-x  3 daveb  staff   102 Feb 25 19:53 com~apple~CloudDocs
drwxr-xr-x  8 daveb  staff   272 Feb 16 19:42 com~apple~Keynote
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 com~apple~Notes
drwxr-xr-x  7 daveb  staff   238 Feb 11 12:21 com~apple~Numbers
drwxr-xr-x 12 daveb  staff   408 Feb 23 13:15 com~apple~Pages
drwxr-xr-x  5 daveb  staff   170 Feb 25 14:53 com~apple~Preview
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 com~apple~QuickTimePlayerX
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 com~apple~ScriptEditor2
drwxr-xr-x  4 daveb  staff   136 Feb 16 19:42 com~apple~TextEdit
drwxr-xr-x  4 daveb  staff   136 Feb 11 12:21 com~apple~TextInput
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 com~apple~finder
drwxr-xr-x  4 daveb  staff   136 Feb 11 12:20 com~apple~mail
drwxr-xr-x  5 daveb  staff   170 Feb 23 13:06 com~apple~shoebox
drwxr-xr-x  4 daveb  staff   136 Feb 11 12:20 com~apple~system~spotlight
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:23 iCloud~com~apple~ncplugin~weather
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 iCloud~com~getdropbox~Dropbox
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 iCloud~com~microsoft~Office~Excel
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 iCloud~com~microsoft~Office~PowerPoint
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 iCloud~com~microsoft~Office~Word
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 iCloud~com~panic~iOS~Transmit
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:19 iCloud~com~schimera~WebDAVNavigatorPlus
>:
```

Things get weird...



```
>: cd com~apple~mail/
>: ls
Data                                Documents
>: cd Data/
>: ls
MailData
>: cd MailData/
>: ls -al
total 120
drwxr-xr-x  5 daveb  staff   170 Feb 11 12:24 .
drwxr-xr-x  3 daveb  staff   102 Feb 11 12:20 ..
drwxr-xr-x  7 daveb  staff   238 Feb 11 12:24 Signatures
-rw-r--r--@ 1 daveb  staff 54186 Dec  8 22:29 ubiquitous_SyncedRules.plist
-rw-r--r--@ 1 daveb  staff  2949 Aug  6  2014 ubiquitous_SyncedSmartMailboxes.plist
>: cd Signatures/
>: ls
ubiquitous_36B23A39-646A-48D4-9EC5-657106E1E38F.mailsignature
ubiquitous_96E2B686-2ADB-4530-B1A1-C97A02CA9129.mailsignature
ubiquitous_A387011B-8557-40CF-A4AC-8ACFD1D376AD.mailsignature
ubiquitous_AllSignatures.plist
ubiquitous_B7AEC429-34A9-4B9D-9B73-117647CC0567.mailsignature
>: █
```

Things get weird...



The image shows a macOS-style window titled "Signatures — nano — 92x27". The window contains a nano 2.0.6 text editor editing a file named "...tous\_36B23A39-646A-48D4-9EC5-657106E1E38F.mailsignature". The editor's content consists of email headers and the start of an HTML body. The headers are: "Content-Transfer-Encoding: 7bit", "Content-Type: text/html; charset=us-ascii", "Message-Id: <185EB186-D7ED-4B33-B4C9-1B9B426F24B3@com-pro.co>", and "Mime-Version: 1.0 (Mac OS X Mail 8.0 \ (1973.6\))". The body starts with "<body style='color: rgb(0, 0, 0); letter-spacing: normal; orphans: auto; text-align: start;\$". At the bottom, a status bar shows "[ Read 7 lines ]" and a list of nano shortcuts: ^G Get Help, ^O WriteOut, ^R Read File, ^Y Prev Page, ^K Cut Text, ^C Cur Pos, ^X Exit, ^J Justify, ^W Where Is, ^V Next Page, ^U UnCut Text, and ^T To Spell.

```
GNU nano 2.0.6 File: ...tous_36B23A39-646A-48D4-9EC5-657106E1E38F.mailsignature

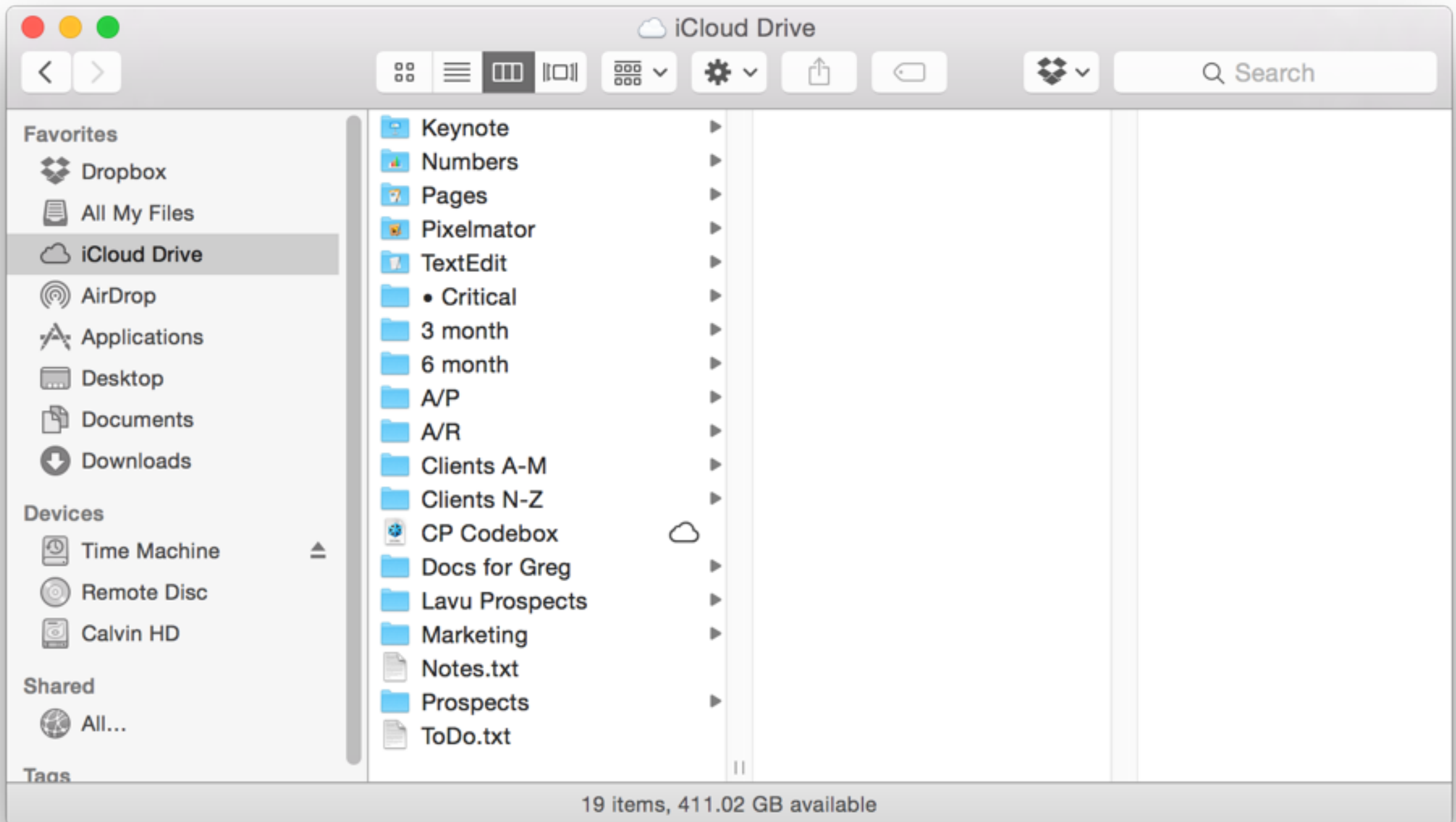
Content-Transfer-Encoding: 7bit
Content-Type: text/html;
    charset=us-ascii
Message-Id: <185EB186-D7ED-4B33-B4C9-1B9B426F24B3@com-pro.co>
Mime-Version: 1.0 (Mac OS X Mail 8.0 \ (1973.6\))

<body style="color: rgb(0, 0, 0); letter-spacing: normal; orphans: auto; text-align: start;$

[ Read 7 lines ]
^G Get Help    ^O WriteOut   ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit        ^J Justify    ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

# iCloud Drive Workflows

(or: If it looks like a duck, does it quack like a duck?)



- iOS/OS X apps enabled for iCloud Drive default to using their app libraries.
- Other apps treat  
`~/Library/Mobile Documents/com~apple~CloudDocs/`  
as a regular directory.



What's stored where on iOS 8.

- No legitimate file system access (jailbroken can poke around).
- Some legitimate third party apps e.g., CloudOpener
- Tapping “+” in enabled app takes you to document picker - some ability to browse.

What's stored where on The Cloud™.

Ultimately, all your iCloud Drive data lives on  
Apple's servers.

...or does it?

So, it's basically Dropbox, right?

No. Well, kinda. But mostly “No”.

# iCloud vs. Dropbox vs. Google Drive vs. One Drive



## Google Drive

- 15GB free, 100GB \$1.99/month, 1TB \$9.99/month, all the way up to 30TB \$299.99/month.
- Apps for Mac/PC/Android/iOS/Web.
- Store/access anything.

# iCloud vs. Dropbox vs. Google Drive vs. One Drive



## OneDrive

- 15GB free, 100GB \$1.99/month, 200GB \$3.99/month, 1TB \$6.99/month (inc. Office 365).
- Support for Office Online, Office 365.
- Excellent collaborative tools, Windows Phone support.

# iCloud vs. Dropbox vs. Google Drive vs. One Drive



Dropbox

- 2-16 GB free, 1TB \$9.99/month. Business users \$15/user/month.
- Robust tools for group collaboration.
- Simple, cross-platform & ubiquitous.

# iCloud vs. Dropbox vs. Google Drive vs. One Drive



## iCloud Drive

- 5GB free, 20GB \$0.99/month, 200GB \$3.99/month, 500GB \$9.99/month, 1TB \$19.99/month.
- Works with Mac/Windows/iOS/Web.
- Part of the iCloud ecosystem.
- Space used for app data, **iOS Backups, & Photos**



## iCloud vs. Dropbox vs. Google Drive vs. One Drive

If you want simple, flexible manageable cloud storage, choose **Dropbox**.

If you want inexpensive cloud storage with good basic apps/integration, choose **Google Drive**.

If you want excellent integration into Microsoft's ecosystem, choose **OneDrive**.

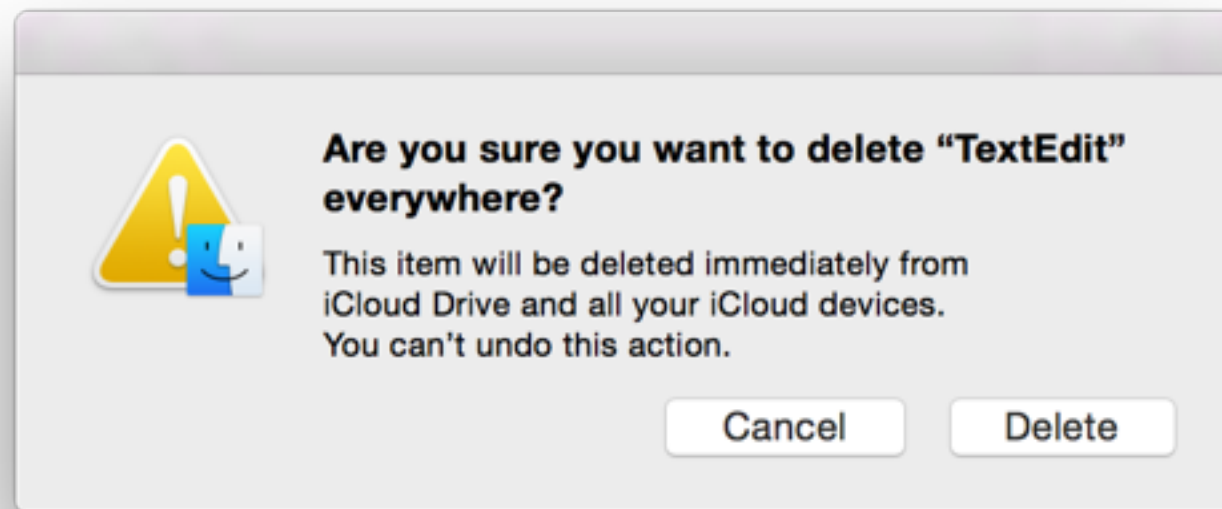
If you want excellent integration into Apple's ecosystem, choose **iCloud**.

Google Drive and Dropbox are great for sharing stuff with **other people** - OneDrive and iCloud Drive are great for sharing stuff between **your own devices**.

# **How to break iCloud Drive\***

\* Don't try this at home.

# Accidental deletion of App Libraries.



< - - BAD LOL!1!

## **File & location corruption**

- iCloud daemon works on top of CloudKit. Server-side API, iCloud daemon asynchronous.
- It never assumes that a file is only being accessed/used by one device at a time.
- If lightning strikes, you can restore from another device.

## **No revisions/undelete.**

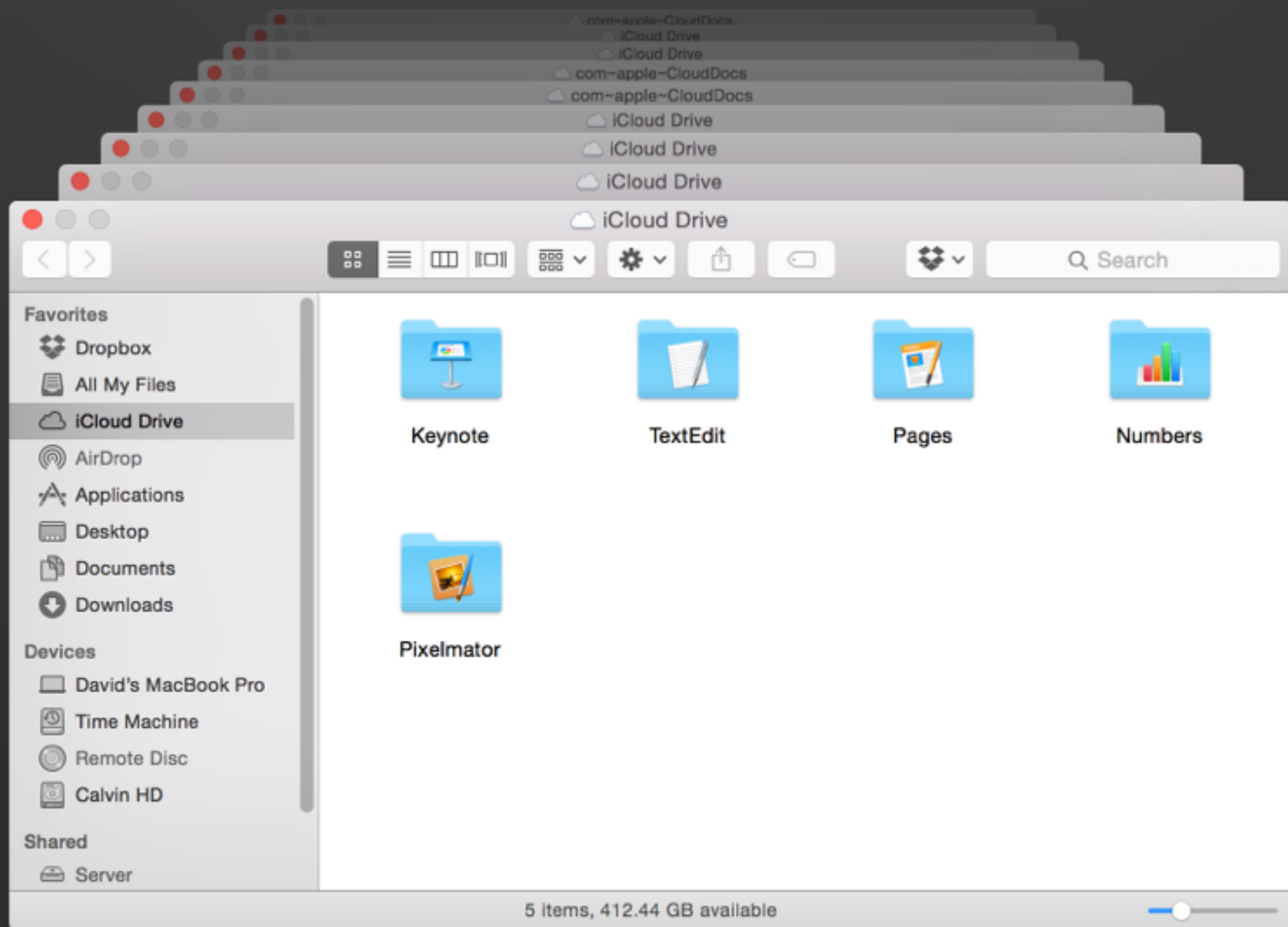
- iCloud Drive doesn't keep multiple revisions. Be careful.
- iCloud Drive doesn't allow undelete. Be careful.
- BYO Backup!

# **Know your network configuration**

- iCloud Drive lives and dies by port 80 & 443
- Just as with iCloud, be aware of proxies/DNS issues
- Ditto, filtering.

iCloud Drive & Time Machine

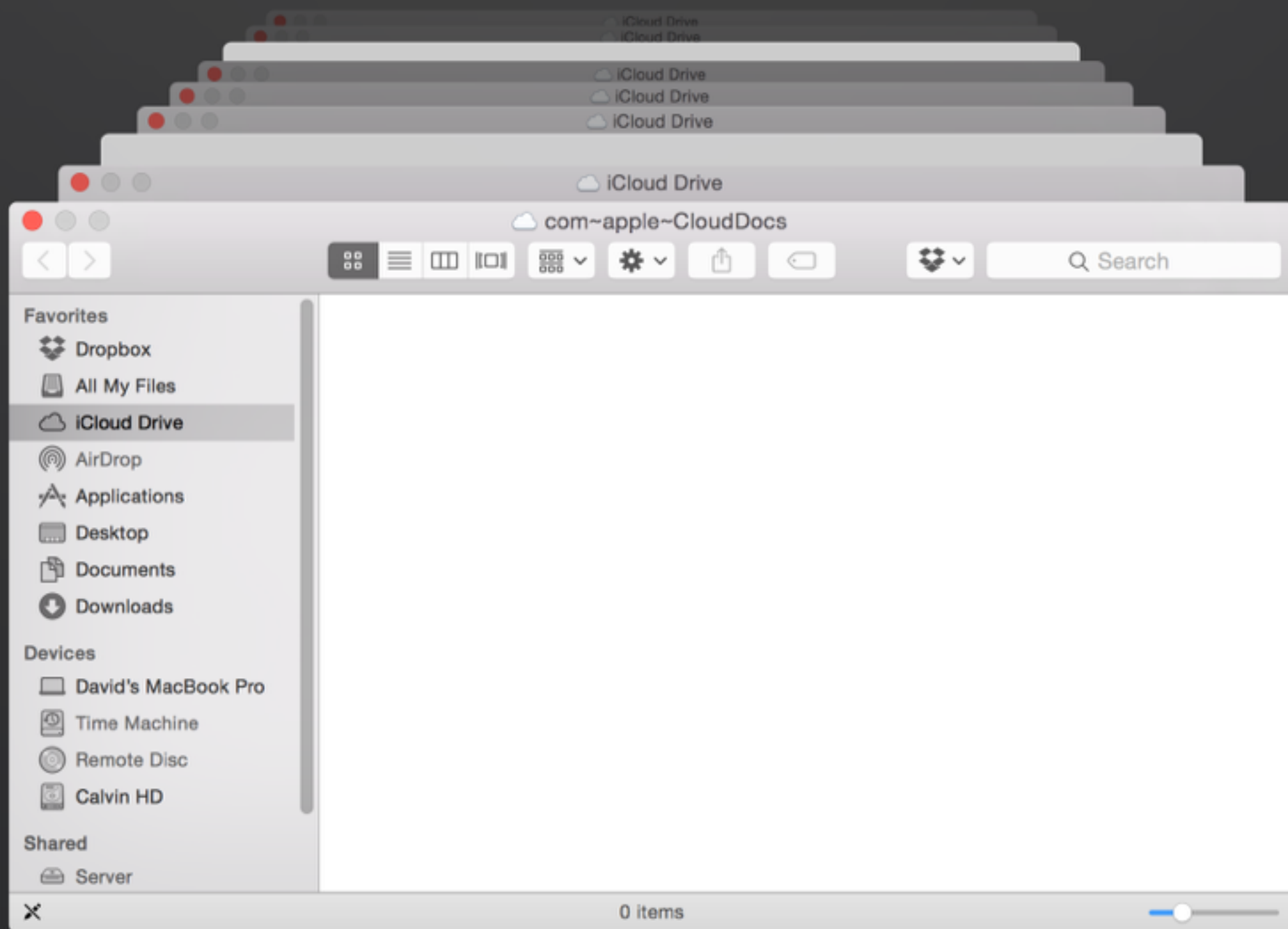




Today (Now)

Cancel

Restore

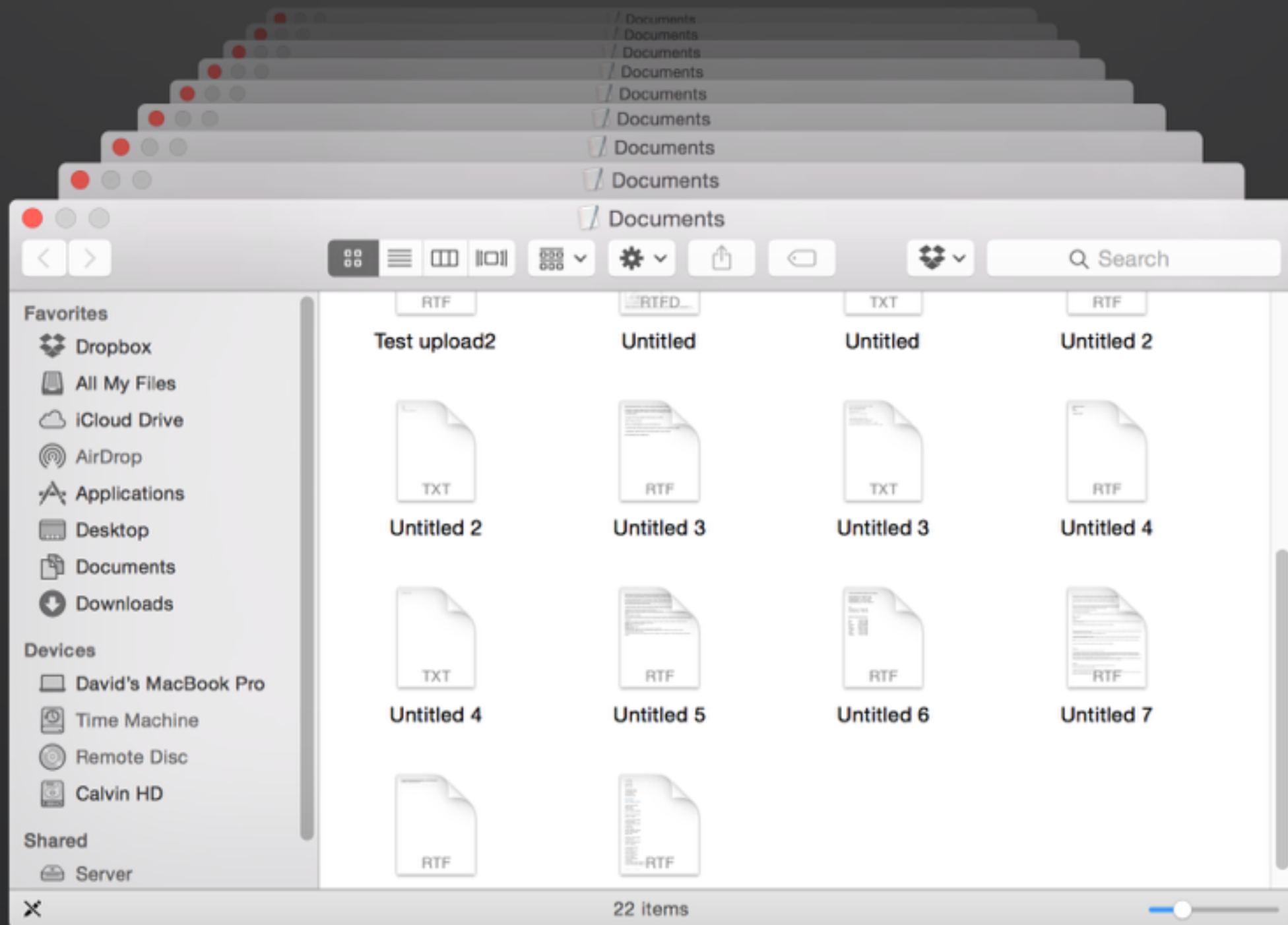


Today at 9:34 PM



Cancel

Restore



Today at 7:58 PM

Cancel Restore

## Third Party backups


- Rocky start, but most utilities (Crashplan, Backblaze etc will backup `~/Library/Mobile Documents`.
- Just like Time Machine, you may have to do some digging into those App Libraries.
- Think about what you're putting back - it will sync to all the devices.
- Sync != Backup.



# BACKBLAZE

Folders	Files
<div><div>Mobile Documents</div><div><div>243LU875E5~com~apple~moviet...</div><div>4G69W6JU4R~com~opongo~macnews</div><div>57T9237FN3~net~whatsapp~Wha...</div><div>82J93X7T25~com~apple~mobile...</div><div>8VM2L59D89~com~doublefine~d...</div><div>com~apple~CloudDocs</div><div>com~apple~Keynote</div><div>com~apple~mail</div><div>com~apple~Numbers</div><div>com~apple~Pages</div><div>com~apple~shoebox</div><div>com~apple~TextEdit</div><div>com~apple~TextInput</div><div>DA33APV56V~com~aetn~lifetim...</div><div>F6266T9T75~com~apple~iMovie</div><div>iCloud~com~microsoft~Office...</div><div>SXHX3674N7~com~reference~di...</div><div>WQFVN8NA97~com~FireproofStu...</div></div></div>	<div><div>Name</div><div>Size Modified</div></div> <div></div>

# Troubleshooting iCloud Drive Apps

1. Make sure that all devices are signed into the same iCloud account.
2. Verify that "iCloud Drive" is enabled in the iCloud settings.
  - OS X: System Preferences → iCloud → iCloud Drive
  - iOS: Settings app → iCloud → iCloud Drive
3. Make sure:
  - You are connected to a WiFi network and/or "Use Cellular Data", in the iCloud Drive settings, is enabled (this setting is iOS only)
  - App is allowed to save in iCloud Drive. On iOS you see a list of apps in the iCloud Drive settings. You find this in the Settings app under iCloud → iCloud Drive. Right below is a list of allowed apps. On a Mac click Options next to iCloud Drive, in the iCloud settings in System Preferences. App should be enabled on both devices.
4. Restart your device to relaunch the iCloud process on your device (sometimes it can get stuck):
  - OS X:  → Restart...
  - iOS: Hold the power button (top edge) until the shutdown slider appears and slide it. After the shutdown, hold the power button again to start the device.
5. Check the iCloud System Status page to learn of any iCloud service issues. Look for the iCloud Drive Status.
6. On iOS verify that APP uses iCloud:
  - On the documents screen press the gear icon (lower right corner).
  - In the iCloud Section enable "Use iCloud".
7. Verify that the correct time is set on your device (incorrect time settings will cause iCloud to reject the connection).
8. Make sure that you are not behind a firewall that blocks incoming or outgoing iCloud traffic (also applies to utilities like Little Snitch, TCPBlock, etc...).
9. When files are not uploaded to iCloud, ensure that you have enough free space on iCloud. The free plan only comes with 5 GB of total iCloud storage
10. Check icloud.com to see what's at the hub
11. Check other iCloud apps to see if the issue is app specific

Is it safe to use yet?

my humble opinion

## **Discussion**

iCloud Drive  
in the wild



- <http://support.apple.com/en-us/HT201104>
- <http://support.apple.com/en-us/HT204025>
- <http://support.apple.com/en-us/HT201385>
- <http://www.apple.com/legal/internet-services/icloud/en/terms.html>

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