

My Data Integrity Measures

Presentation for Tucson Mac Users Group by Jerry Cederquist
Version of February 11, 2021

My data-integrity protection approach (below) is an out-of-date Rube Goldberg system that just grew over a 15-year period, but it might serve as a source of ideas for you. I'll be revising it soon to use SSDs and Thunderbolt—I'm waiting for an Apple Silicon iMac before getting started. One thing I'll keep: Backblaze for offsite backup.

Both data-storage equipment and data-transmission equipment need your care and attention!

Tools that have Proven Necessary/Useful

- ° **Calendaring Software with Alarm Functions for scheduled verifications of proper operation.**
 - Even the most automated system needs to be checked manually; weekly in my case.
- ° **Crosscut Paper Shredder (cheap nowadays – get one and use it; Amazon Basics)**
- ° **Backup-related Software in addition to MacOS and iOS**
 - Carbon Copy Cloner (for MacOS)
 - iMazing (for iOS)

Under each point below, I list the additional non-Apple equipment and services necessary to implement the measure(s) discussed in the point. Cables are not explicitly mentioned; get high quality ones and dress them to keep them from flopping around.

My Data Stores that Need to be Managed and Protected

- ° **Attached to / part of 2012 iMac**
 - Macintosh HD—Fusion Drive (internal). Initially purchased as 1TB. Hard-drive subsystem replaced in 2018 with 3TB drive (repair). Running APFS Mojave. Soon to go to Catalina. 389 GB total used (years and years and years of cruft!), 241 GB used for /Users. Badly needs a clean install (cringe).
 - 1TB HD for Time Machine storage (USB3.0 external, cabled).
 - 2.5 TB for Time Machine storage (Synology 216J NAS, 2-HD RAID, 5GHz Wi-fi, 30-feet away from iMac).

Equip: Hard drive in enclosure, Network Attached Storage System with hard drives.
- ° **Built-in to 2016 iPad Pro**
 - 128 GB capacity, 74 GB used.
 - iOS backs iPad up to iCloud.
 - iMazing backs iPad up to iMac HD which is backed up several times daily
- ° **Built-in to 2018 iPhone Xs Max**
 - 256 GB capacity, 53 GB used.
 - iOS backs iPhone up to iCloud.
 - iMazing backs iPhone up to iMac HD which is backed up several times daily
- ° **iCloud**
 - 50 GB rented, 10 GB currently used for backups and iCloud Drive items.

Additional Data Stores used in my Integrity Protection Scheme

° Attached to 2012 iMac

- 2TB HD for bootable clone (USB 3.0 external, cabled)
- 3TB HD for bootable clone (USB 3.0 external, cabled)
- Carbon Copy Cloner updates clones daily on alternate days by a script.
- Backblaze Computer Backup, 310,400 files / 180 GB used

Equip: Hard drives for clones, Backblaze Computer Backup service (currently \$60/year)

Data Sources / Transmission Paths

° Internet Service from Comcast

- Private dedicated connection (not shared with other residents)
- Owned Cable Modem—don't pay rent.
- Owned Router with wi-fi access point (Have Wi-Fi 5, will upgrade to Wi-Fi 6)
- Small battery-backup power supply for all of the above items plus the Synology NAS. (Amazon Basics. Will upgrade with purchase of next router, to get more runtime.)

° Cellular Phone/Data Service

- Comcast cable is my primary data feed, so Consumer Cellular does everything I need: unlimited talk, 2 GB/month mobile data (I use about 1.5GB.). CC has excellent customer service.
- AARP discount pays for the sales tax.

° Hubs for Data Ports

- Hubs are critically important to the integrity of your system. Buy high quality ones and power them from an uninterruptible power supply. Dress their cabling to protect it.

Power Management and Integrity

- Use a battery-backup uninterruptible power supply (UPS) for your Mac and all co-located equipment except your laser printer. Plan on replacing UPS and/or batteries every 5 to 7 years. Thankfully, they're getting cheaper over time.
- Have a written list of things to do if you lose your power from the electric company. Things will need to be shut down in an orderly manner before your UPS batteries are depleted. Hopefully you will be present to do this. 😞
- For iOS devices, have extra power bricks and cables for when your primary ones fail.
- Having additional charging stations in locations where you use your iOS devices is nice.
- Try to buy USB C connectors on iOS-related devices. USB A is quickly going obsolete.

Don't Scrimp on Quality

- For keeping your data safe, you want to have equipment you can trust.
- Kevin Bonnot suggests Faraday Bags to hold devices that use flash memory (like SSD drives for clones) when they're not in use. This protects against potential data loss due to solar flares and static electricity. Price depends on size—perhaps \$20 for two phone-sized items.