

# Backups and Storage

Eric Ullman

# First things first...

## WAIVER OF LIABILITY AND HOLD HARMLESS AGREEMENT

1. In consideration for participating in MACTECH BOOTCAMP III, SAN FRANCISCO, CA and other valuable consideration, I hereby RELEASE, WAIVE, DISCHARGE AND COVENANT NOT TO SUE Eric Ullman or the officers, servants, agents, and employees of MacTech (hereinafter referred to as RELEASEES) from any and all liability, claims, demands, actions and causes of action whatsoever arising out of or related to any DATA LOSS, damage, or injury, including death, that may be sustained by me, or to any property belonging to me, WHETHER CAUSED BY THE NEGLIGENCE OF THE RELEASEES, or otherwise, while participating in such activity, or while in, on or upon the premises where the activity is being conducted or in transportation to and from said premises.
2. To the best of my knowledge, I can fully participate in this activity. I am fully aware of risks and hazards connected with the activity, including but not limited to the risks as noted herein, and I hereby elect to voluntarily participate in said activity, and to enter the above-named premises and engage in such activity knowing that the activity may be hazardous to me and my property. I VOLUNTARILY ASSUME FULL RESPONSIBILITY FOR ANY RISKS OF LOSS, PROPERTY DAMAGE OR PERSONAL INJURY, INCLUDING DEATH, that may be sustained by me, or any loss or damage to property owned by me, as a result of being engaged in such an activity, WHETHER CAUSED BY THE NEGLIGENCE OF RELEASEES or otherwise.
3. I further hereby AGREE TO INDEMNIFY AND HOLD HARMLESS THE RELEASEES from any loss, liability, damage or costs, including court costs and attorney's fees, that may incur due to my participation in said activity, WHETHER CAUSED BY NEGLIGENCE OF RELEASEES or otherwise.
4. It is my express intent that this Release and Hold Harmless Agreement shall bind the members of my family and spouse (if any), if I am alive, and my heirs, assigns and personal representative, if I am not alive, shall be deemed as a RELEASE, WAIVER, DISCHARGE AND COVENANT NOT TO SUE the above named RELEASEES. I hereby further agree that this Waiver of Liability and Hold Harmless Agreement shall be construed in accordance with the laws of the State of California.
5. I UNDERSTAND THAT NEITHER THE RELEASEES NOR THE SHERATON FISHERMAN'S WHARF HOTEL WILL BE RESPONSIBLE FOR ANY MEDICAL COSTS ASSOCIATED WITH ANY DATA LOSS THAT I MAY SUSTAIN.
6. I also understand that I should and am urged by Releasees to obtain adequate health and accident insurance to cover any personal injury to myself which may be sustained during the activity or the transportation to and from said activity.
7. I also understand that I am responsible for any damage I cause to the facilities.

IN SIGNING THIS RELEASE, I ACKNOWLEDGE AND REPRESENT THAT I have read the foregoing Waiver of Liability and Hold Harmless Agreement, understand it and sign it voluntarily as my own free act and deed; no oral representations, statements or inducements, apart from the foregoing written agreement, have been made; I am at least eighteen (18) years of age and fully competent; and I execute this Release for full, adequate and complete consideration fully intending to be bound by same.

IN WITNESS WHEREOF, I have hereunto set my hand on this 27th day of August, 2014.

\_\_\_\_\_  
Participant

\_\_\_\_\_  
Date

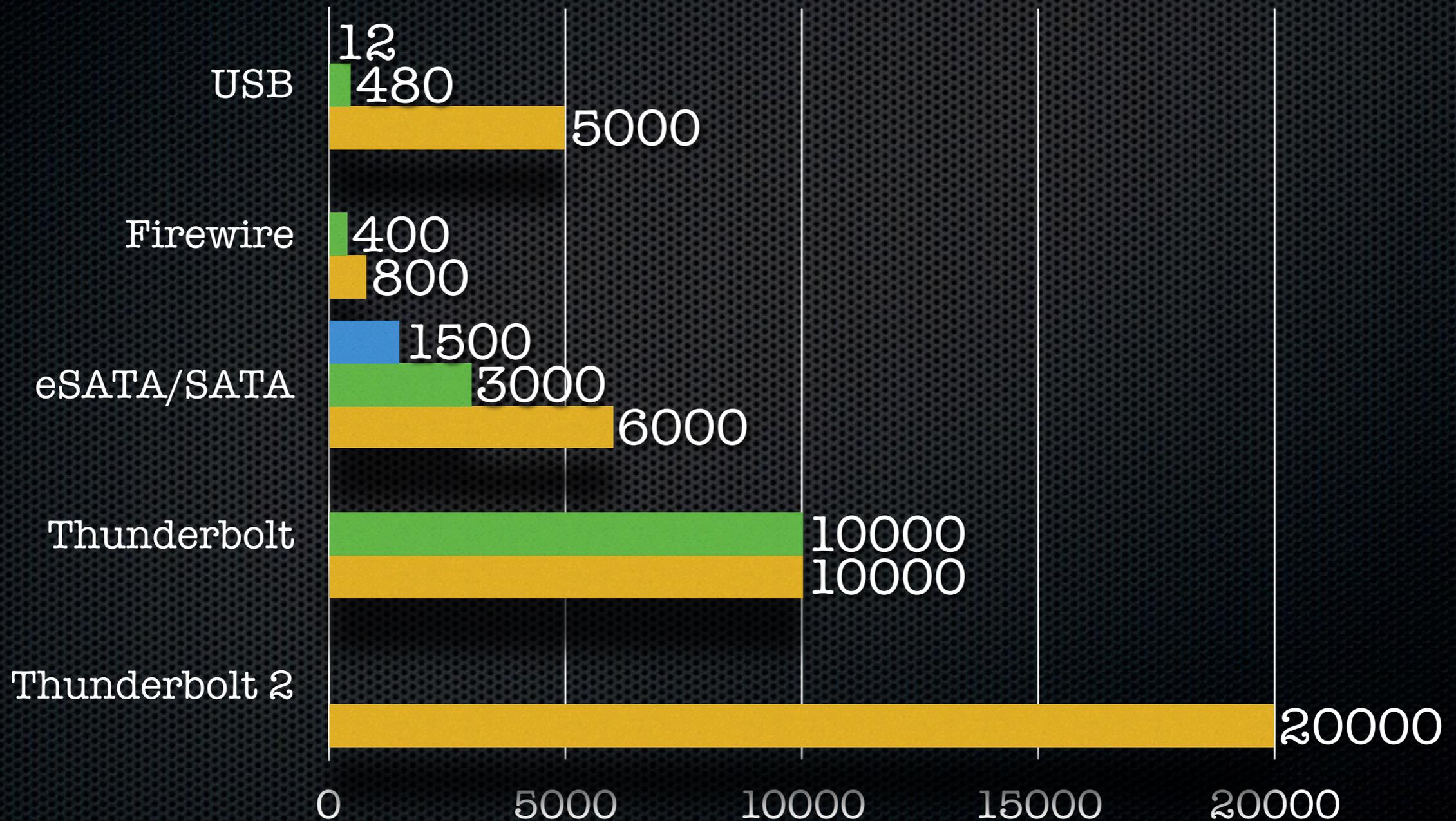
# Who am I?

- Cofounder at Retrospect, Inc.; principal consultant at CX Alchemy
- 16 years working in backup, storage, and sync
- 25 years in the Mac industry
  - Anyone remember Disinfectant?

# Storage Hardware

- Types of storage
  - Direct-attached storage (DAS)
    - FireWire, USB, eSATA, Thunderbolt, etc.
  - Network-attached storage (NAS)
    - NFS, CIFS, AFS, etc., typically Ethernet
    - Inexpensive; may support Time Machine
  - Storage Area Network (SAN)
    - Fibre Channel, iSCSI, FCoE
- Centralizing data storage
  - Pros and cons

# Hitting the redline: bus speeds



# What about RAID?

- Redundant Array of Independent (or Inexpensive) Disks
- RAID groups physical disks for performance and/or redundancy.
- RAID is not backup! RAID helps avoid disaster, not recover from it.
- *Please, never, ever say “RAID disk” or “RAID array.”*

# Cloud Storage

- Leverages the storage density, per-TB cost savings, and other benefits of a professionally maintained data center
- Service/application-specific or general-access?
- Fantastic offsite supplement to local backups



# Why back up?



# Backup is simple. Right?

- The 50,000-foot view: Backup is copying files in case something happens to the originals.
- Down in the trenches, it's far more complex: It's about protecting against the loss of data and business functions.

# Know your terminology

- **BACK UP:** Make one or more copies of data in order to protect against loss.
- **SYNC:** Make a file or container match another (unidirectional), or make them match each other (bidirectional).
- **ARCHIVE:** Store one or more copies of data as a historical archive (discovery, regulatory, reference, etc.).

# Archive + backup is best

- Archival method of backup
  - Backup that is additive, i.e., changed files are stored in addition to previous versions
  - Backup that is non-destructive
- Examples of archival backup software
  - Time Machine, Retrospect
  - Backblaze, CrashPlan
- Options for how long to retain archive copies

# Offsite storage is a must!



# Develop a backup strategy

- What needs to be protected, and how frequently should backups run?
- What storage media will be used for onsite and offsite storage?
- The 3-2-1 rule is a solid minimum safe practice
  - 3 copies, 2 types of media, 1 copy offsite
- Do we need an archive policy?
- Document what you implement and recommended improvements.

# Cookie cutter or custom?

- Not all data is created equal!
- Interview the customer; seek to understand the business functions.
- Bootable copy vs. archival backup
- Should you back up everything?
- What about disaster recovery?

# Disaster Recovery

- Basic: Be able to boot and completely restore any system (bare-metal restore).
- Comprehensive: Ensure the continued operation of a business following a disaster. This is a totally different animal.
  - These questions are worth asking.
- Plan and avoid; be able to recover.

# Special Considerations

- Transactional systems (email, databases, etc.)
  - Best is built-in backup or archive option, and then back up the backup
- Windows and Linux systems, VMs
- Mobile devices
- Legal implications (HIPAA, Sarbanes-Oxley)
- Data that only resides in the cloud
  - Do you know *their* data protection policies?

# Thoughts on security

- Password-protection and encryption
  - Should we? Most likely, yes. It's safest and may even be required.
  - Examine the performance trade-offs—it might not be necessary to encrypt everything.
- What about *physical* security?
  - Abso-freakin-lutely!
  - We often forget about controlling access.

# Implement now, improve later

- Don't get caught in analysis-paralysis; put something in place ASAP.
- Agree on a plan for improvement and/or expansion.
- You're in good shape when you have multiple copies, with at least one copy stored offsite.

# Common Backup Tools

- Mac-only apps
  - Time Machine
  - Carbon Copy Cloner, SuperDuper
- Cross-platform apps/services
  - Backblaze, CrashPlan
  - Retrospect
- Command-line tools
  - rsync, cp, ditto – be aware of metadata issues

# Scripting Resources

- *MacTech's* "Mac In The Shell"
- GitHub
- Lynda.com
- The great Google Code-sharing Database
- Training centers, geek MeetUps

```
#!/bin/bash
#cp-backup.sh
#Created by Sean Colins on
1-25-2011.#Copyright
2011-2014 CoreQuick LLC. All
rights reserved.
#Here we are copying the
documents folder to the
backup volume.
cp -Rp
"/Users/sean/Documents"
"/Volumes/backup/Users/sean/
Documents/"
```

# Restore Strategies FTW

- Teach the client.
  - What can they do unsupervised, and when should they absolutely-no-matter-what call you?
- Do it for them and show them the results.
- Keep reports of successes and failures.
- Deal with failures immediately!

# It only matters what you can RESTORE.

- *This is the reason...the why...the goal.*
- Use this mantra to guide your decision-making process and recommendations to your clients.
- TEST,TEST,TEST! (And then test some more.)
  - Friday the 13th is International Verify Your Backups Day
  - It's the only way to be sure.

# Talking backup with clients

- Get people to think: “Really, how bad would it be if...?”
- Or: “It’s simple. Just don’t back up what you can afford to lose.”
- Situations where clients don’t backup will come back to bite you and maybe even jeopardize your reputation.

# Making the case for backups

- Avoid the customer stone-walling.
- There are plenty of inexpensive or free software solutions.
- Protect yourself and your business; have a “Hold Harmless” agreement as part of your contract.
- If they’re not willing to get onboard with a data protection plan, it’s a sign of problems to come.

# Common customer objections

- High perceived cost
- “It impacts performance.”
- Privacy concerns
- Potential for and exposure from theft
- “I’ve never had a single hard drive crash.”
- “Macs are better than PCs.”

# Build services around backup

- Initial planning and implementation
- Day-to-day management and monitoring
- Periodic maintenance and testing
- Reassessment and improvement
  - Capacity, performance, new technologies
- These each represent revenue stream opportunities for you!

# Final thoughts

- *It's not a question of if, but of when.*
- Protect your clients and yourself. It's their business and your reputation on the line.
- Don't allow your clients to be repeat DriveSavers customers. LOL. ;) You are your clients' trusted advisor and advocate. Always recommend what's best. Implement the best you can, and make a plan for improvement.

# Questions?

Some people skydive.  
other people walk on hot coals.  
I beta test backup software.

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