

# Backups and Storage

# About your Host

Josh has been in the IT field for over 25 years, owning his company JH Turiel & Associates, Inc. for a decade. Josh and his staff serve a variety of small and mid-sized business clients in the metro Boston area, handling Mac and Windows-based networks.

In his copious spare time, Josh lives up in Salem with his family and serves on the City Council there.

# Outline

- Local Storage
- Network Storage
- What's Coming Next?
- Backups (Of course you make them?)

# Storage Nomenclature

- Hard Drive - Uses Magnetic Platters
- SSD(Solid State Drive) - Uses Flash Memory
- Hybrid Drive - Uses Hard Drive with embedded Flash
- Fusion Drive - Uses aggregated Hard Drive and SSD



# RAID

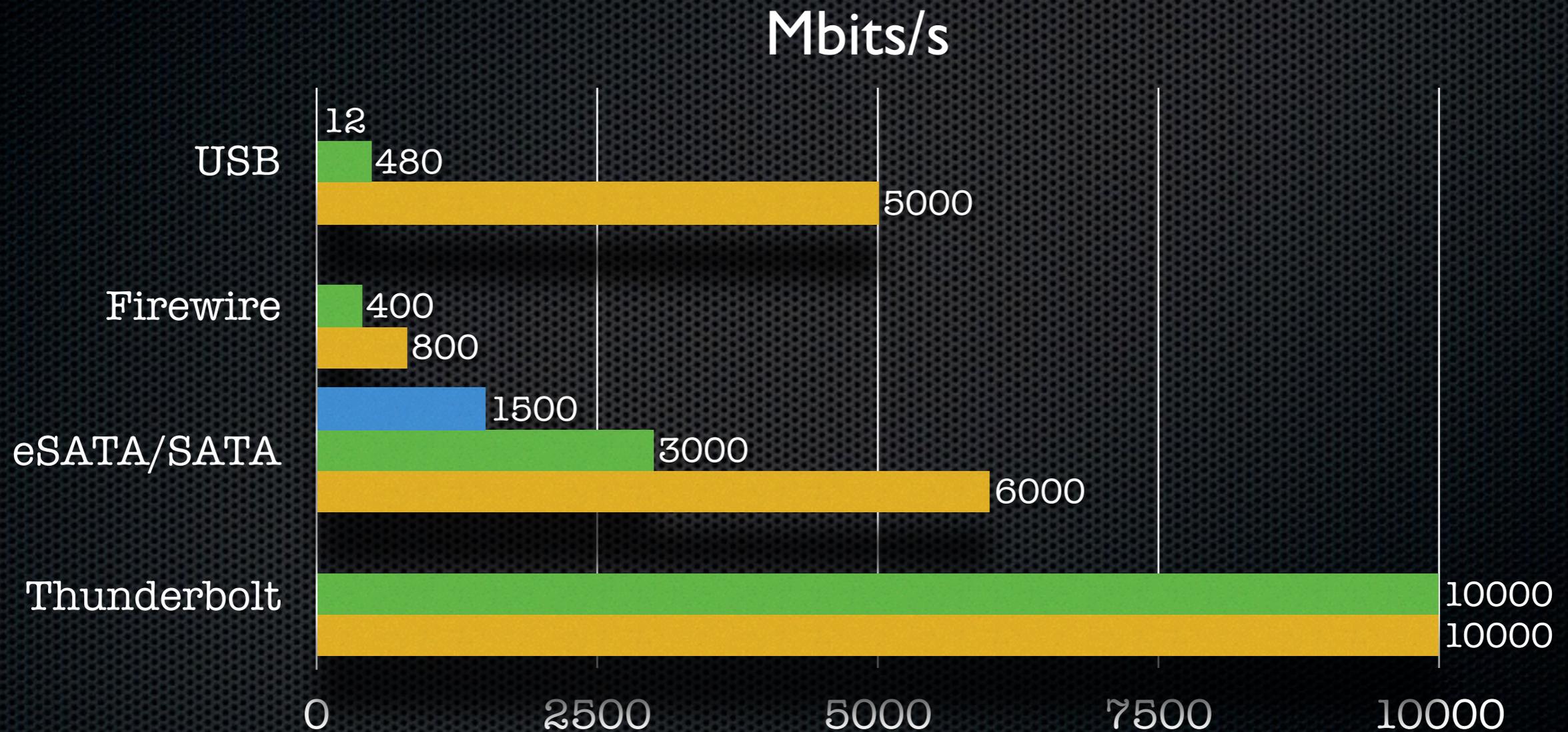
- RAID Levels:
  - 0 - Striped
  - 1 - Mirrored
  - 5 - Striped w/Parity
  - 6 - Striped w/Double Parity
  - 10 - Mirrored + Striping

RAID is data protection, NOT data backup!

# RAID in OS X

- Disk Utility
  - Striped, Mirrored and Concatenated (JBOD)
- In 10.8 and beyond, it can be a boot volume (though you then can't have a recovery partition)

# Bus Speeds & Performance



# Local Storage: Classic approach

- Internal boot and storage. i.e. old Mac Pro Server.
  - Big
  - Expensive
  - Powerful
  - Limited Storage (limited to 4 internal drives and RAID card)

# Local Storage: modern approach

- Internal boot and external storage.  
i.e., Mac Mini (or new Mac Pro) + external RAID.
  - Fast Storage with Thunderbolt
  - Potentially Underpowered (mini)
  - External Connections
  - Difficult to replace internal hard drives
  - Limited Internal Storage (2 internal drives)
  - Potentially slow network connection

# Network Storage

- Network Storage appliance NAS/SAN
  - NAS - Network Attached Storage
  - SAN - Storage Area Network
- Some products are both.
- Network limitations - single network port, (on many devices) link aggregation.
- Use-dependent - sometimes an appropriate solution.



File Station



DSM Help

### Control Panel

Search

**File Sharing and Privileges**

- Win/Mac/NFS
- FTP
- WebDAV
- User
- Group
- Shared Folder
- Directory Service

**Network Services**

- Web Services
- DDNS
- QuickConnect
- Router Configuration
- Firewall and QoS
- Auto Block
- Terminal
- SNMP

**System**

- Network
- DSM Settings
- Regional Options
- Notification
- Hardware
- Devices and Printers
- Bluetooth
- Restore Defaults
- DSM Update

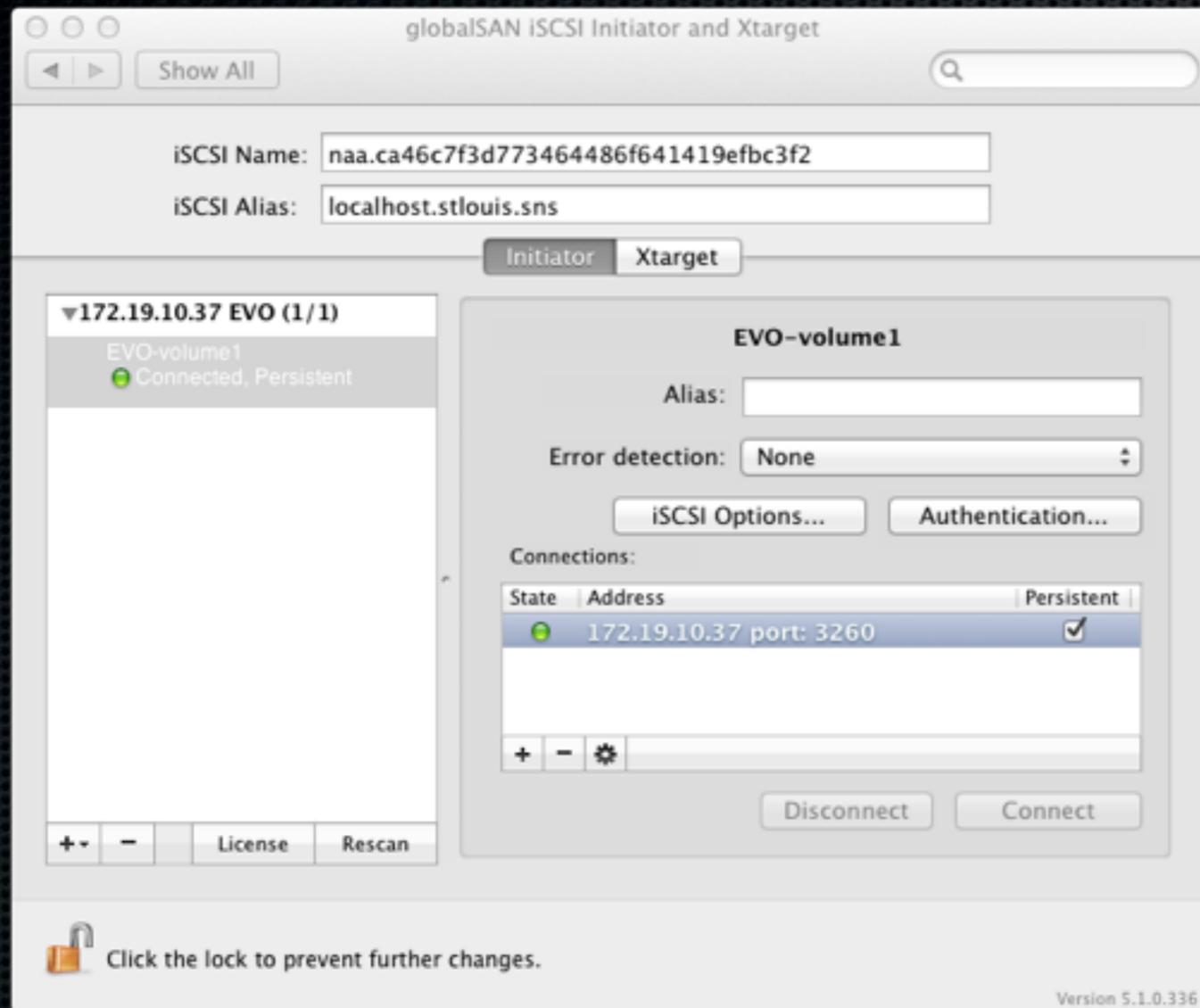
**Application Settings**

- Application Privileges
- Application Portal
- Syslog
- VPN
- Media Indexing Service
- Network Backup
- Task Scheduler

# SAN

- Block level based network storage - it is storage FOR a server.
- One large SAN can be shared to multiple servers for storage.
- Web based administration

# iSCSI



- Allows you to connect a network volume as if it was local.

# What's Coming Next?

- Faster storage:
  - Mac Mini Server HD - 100MBps
  - Faster spinning disk - 300+MBps
  - SATA SSD drive - 550MBps
  - Mac Pro SSD Drive - 1.2GBps
- Faster Networking:
  - 1Gbe - 125MBps Duplexed 250MBps
  - 10Gbe - 1.25GBps Duplexed 2.5GBps

# Backups

- Constructing a safe and sane backup plan that allows your customers to recover from likely threats to their 'working' data:
  - accidental deletion
  - intentional deletion (bad intentions)
  - hardware failure
  - software corruption
  - natural disaster, fire, flood

# Live Databases: Special Case Backups

- Examples: FileMaker, MySQL
- Use scripts for those
- Many SQL-based applications (Daylite, for instance) have internal backup processes. Back up the data backup, NOT the live data

# Backups (cont'd)

- Using third party File Servers, or NAS devices as network Time Machine destinations (or Time Capsule)
- Offering BackBlaze, Carbonite, MozyPRO, Dolly or other Cloud services
- Enterprise capabilities: CrashPlan, Druva, Retrospect, Archiware, Backup Exec, etc...

# Backups (cont'd)

- Clone utilities
  - Carbon Copy Cloner
  - SuperDuper!
  - Disk Utility
- Using other backup utilities
- The importance of "off-site" storage in a disaster recovery scenario.

# Things to think about

- Manual backup vs. Automated backup
- Distributed data set backup
- Full vs. incremental vs. differential backup
- Disk Encryption: How it impacts backups
- Encryption in backups:
  - To the cloud and In the cloud
  - Protected disk images
  - External hardware encrypted volumes and thumb drives

# Sync: Is it a backup?



- Google Drive, Sky Drive, Dropbox, and cloud services like them are great.



- Their primary function is synchronization (keeping multiple devices in sync) and collaboration.



- Not truly built for restoration, but can definitely be part of the equation.

# Archive: Is it a backup?

- DMG: Great for storing files in one enclosure for long period of time.
- Archive: Great for quickly collecting a set of files and keeping them all together.
- The answer: NO! (but they're useful)



First Published: 19:36 IST(29/8/2011)  
Last Updated: 19:38 IST(29/8/2011)

## Branson loses autobiography in blaze

Airline tycoon Richard Branson has lost his autobiography and 15 years of handwritten notes after his British Virgin Islands house caught fire.

Actress Kate Winslet and 20 other guests were holidaying at the billionaire's home when lightening hit the wooden property and set it ablaze, reports [contactmusic.com](http://contactmusic.com).

"My office was in the house and I lost everything in it. I'd got a long way into writing my autobiography and it's lost. Fifteen years of handwritten notebooks went and photographs and so on," Branson told Britain's *The Sunday Times*.

"Running a business, we have a meticulous computer backup system so I'd assumed all that was completely safe. But it turns out the backup was also in the house.

"Everything filed on the computers there in the past few years is lost, both business-related and personal... But these are things. And as long as you have your family and friends around you, they're not that important," he added.

<http://www.hindustantimes.com/StoryPage/Print/739287.aspx>

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# The real test

- Regardless of which tools / approaches you suggest to your client, make sure they run (or have you run) fire-drill type restore tests, for both their protection and yours.
- Critical backups should be in multiple locations on multiple media (disk/cloud, for instance)
- Documenting backup procedures is critical!

# Questions?



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