Local Storage, Network Storage, and Backups

Max Buxton

Where to Go?

- What works best for me?

- Will I need to expand?

- How large is my organization?

- What is my budget?

- How much can you afford to lose?

It's All Data!

- Need it all the time

- Need it fast

- Need it safe

Storage Nomenclature

- Hard Drive - Uses Magnetic Platters

- SSD(Solid State Drive) - Uses Flash Memory

- Hybrid Drive - Uses Hard Drive with Flash

- Fusion Drive - Uses Hard Drive and SSD

RAID

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

RAID Benefits

- Improves the resiliency

- Improves Speed

- More capacity

- BUT...
recoverability is <u>not</u> improved!

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RAID in OS X

- Disk Utility
  - Striped, Mirrored and Concatenated (JBOD)

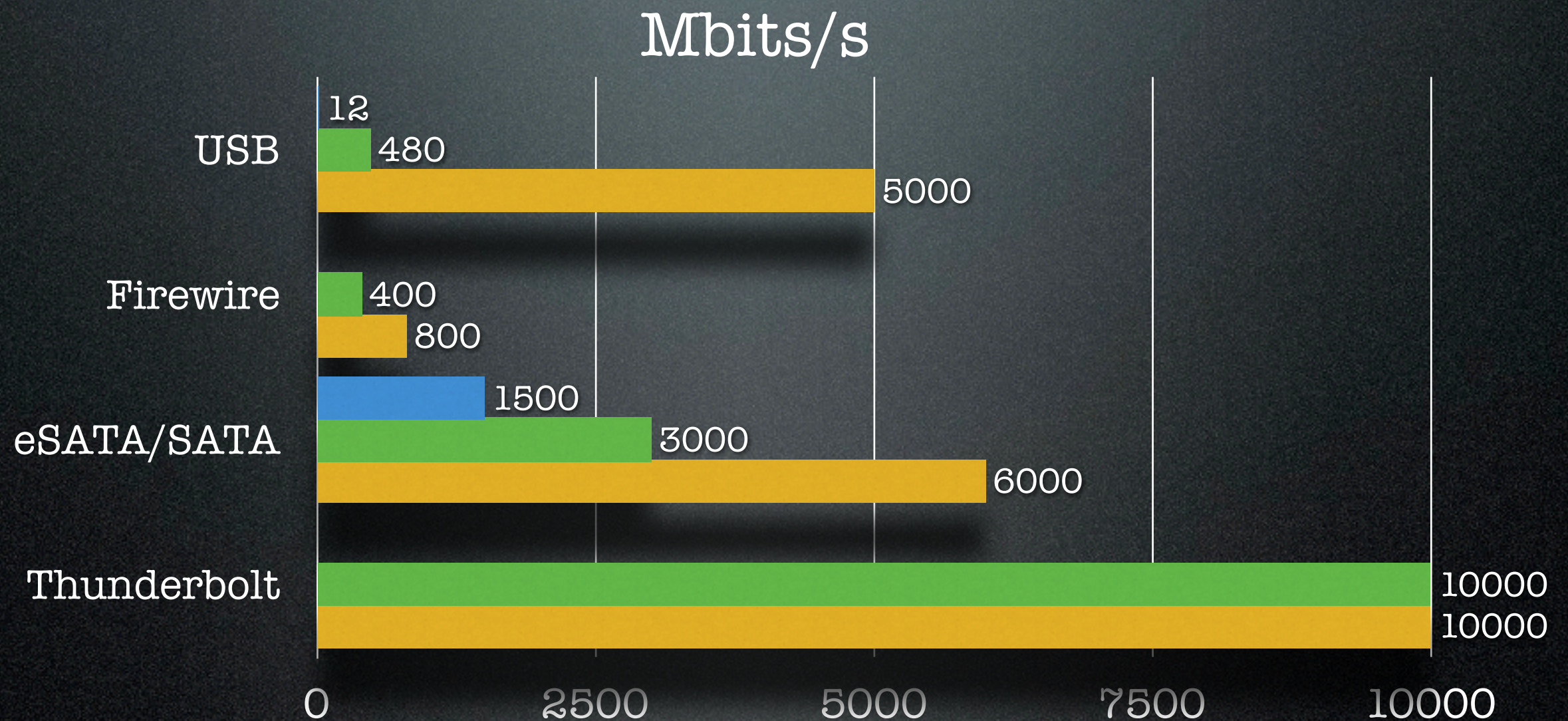- In 10.8, it can be a boot volume (but without a recovery partition)

RAID

- Why is external RAID a great idea?

- Hardware RAID vs. software RAID

- 3rd party Software RAID options

- 3rd party Hardware RAID options

The Fusion Difference

- Does Not Cache

- SSD performance at HDD prices!

- Partitioning a Fusion Drive will create the new partition on the HDD

The Performance Chain

- "External drive speed to it's connection bus"

- For Example:
  - Data throughput of a 5400 RPM drive: 750MBs
  - Data throughput of a 7200 RPM drive: 1030MBs

- Data throughput of an average SSD to it's connection bus depends on the tech

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Performance Sweet Spot

- There is a point where the drive in the case can't keep up with the bridge technology leading to the data bus.

- What is that sweet spot?

- Parity vs Performance

- NAS vs Direct Attached

Threats

- accidental deletion

- intentional deletion (mal intent)

- hardware failure

- software corruption

- natural disaster, fire, flood

Strategies Part One

- Time Machine

- Destination Options:
  - Local Drive
  - Time Capsule
  - Mac OS X Server Time Machine Network Destination

Strategies Part Two

- Third party File Servers, or NAS devices as network Time Machine destinations

- Using Carbonite or other Cloud offerings

- Using CrashPlan

- Using Retrospect

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Strategies Part Three

- Clone utilities
  - Carbon Copy Cloner
  - SuperDuper
  - Disk Utility

- Using other backup utilities

- The importance of "off-site" storage in a disaster recovery scenario.

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The Real Test

- Fire drills:
    - Test restores
    - Boot from the clone
    - Plan for the worse

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