

How not to be a victim of hard drive failure (RT4076)

Andrew Klein, Backblaze (www.backblaze.com) - 2/28/19 (Thursday) 3:00PM – 355A

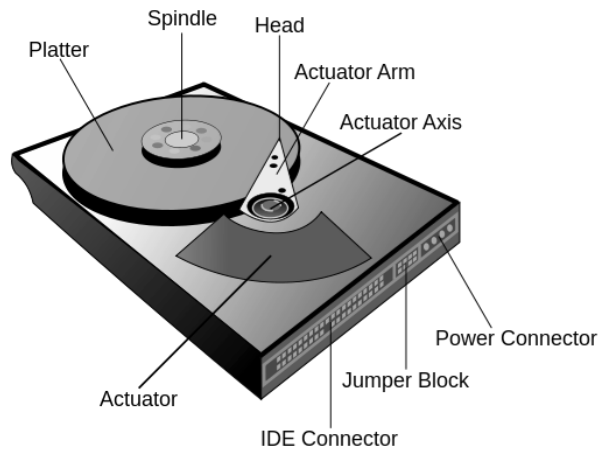
A Very Abridged History of the Hard Drive

1956 – IBM Ramac-350

- 4 Megabytes of storage
- 2,000 pounds
- 2,000 bits/square inch
- Cost \$300,000 in today's dollars
- \$75,000 per Megabyte
- \$75,000,000 per Gigabyte

Today

- 14 Terabytes of storage
- 2.2 pounds
- 1,300,000,000 bits/square inch
- Cost \$549.00
- \$0.000039 per Megabyte
- \$0.039 per Gigabyte



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Hard Drive Technology

- What's inside a hard drive
 - Platters, and Spindles, and Heads – oh my
 - Air, Helium, and soon maybe nothing
- Storage technologies today
 - PMR – Perpendicular Magnetic Recording
 - SMR – Shingled Magnetic Recording
- Storage technologies tomorrow
 - HAMR – Heat Assisted Magnetic Recording
 - MAMR – Microwave Assisted Magnetic Recording
- Hard Disk Drives (HDD) versus Solid State Drives (SSD) – What's the Diff?

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Hard Drive Failure

Lesson 1: All hard disk drives will fail.

Lesson 2: There are no exceptions to Lesson 1.

Hard Drive Failure Rates:

- 2018 Hard Drive Stats
- Different Size Drives
- Different Manufacturers
- Consumer Drives versus Enterprise Drives
- Air-filled versus Helium-filled Drives

Can You Predict Hard Drive Failure?

- SMART Stats
- Media Issues
- Temperature
- Vibration

Key Takeaways

1. Plan for failure. Wait, that's wrong – you should assume failure and act NOW.
2. Think 3-2-1
 - 3 copies of your data
 - 2 different media
 - 1 copy off site
3. Practice for failure – do you know how to recover your data.

Resources

3-2-1 Backup Strategy

<https://www.backblaze.com/blog/the-3-2-1-backup-strategy>

Hard Drive Statistics

<https://www.backblaze.com/b2/hard-drive-test-data.html>

Hard Disk Drive (HDD) vs Solid State Drive (SSD): What's the Diff?

<https://www.backblaze.com/blog/hdd-versus-ssd-whats-the-diff>