Data Storage

FROM TRADITIONAL HARD DRIVES TO FLASH STORAGE – THE MANY WAYS TO STORE DATA

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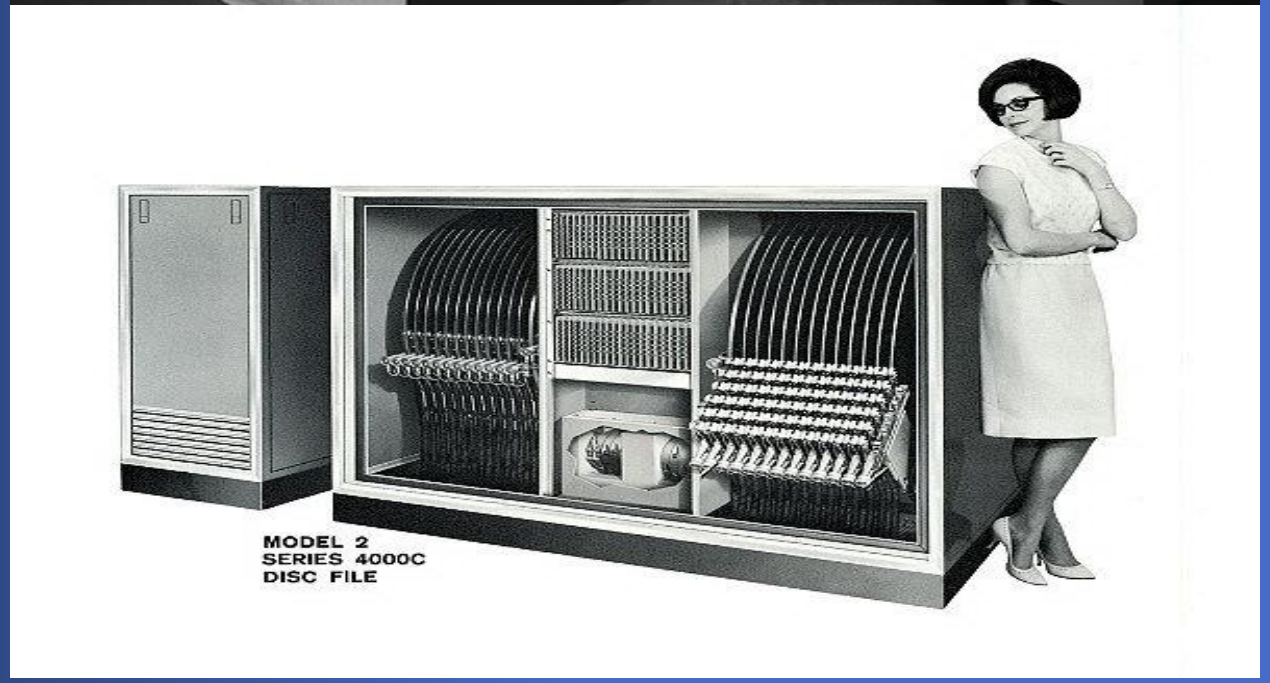
MAGNETIC DRUM, TAPE, AND DISKS

1950's: The evolution of Data Storage



MAGNETIC DRUM, TAPE, AND DISKS

1950's: The evolution of Data Storage

1950 – ATLAS stored data on the outside of a rotating cylinder. Utilized Ferromagnetic Materials and fixed read/write heads.

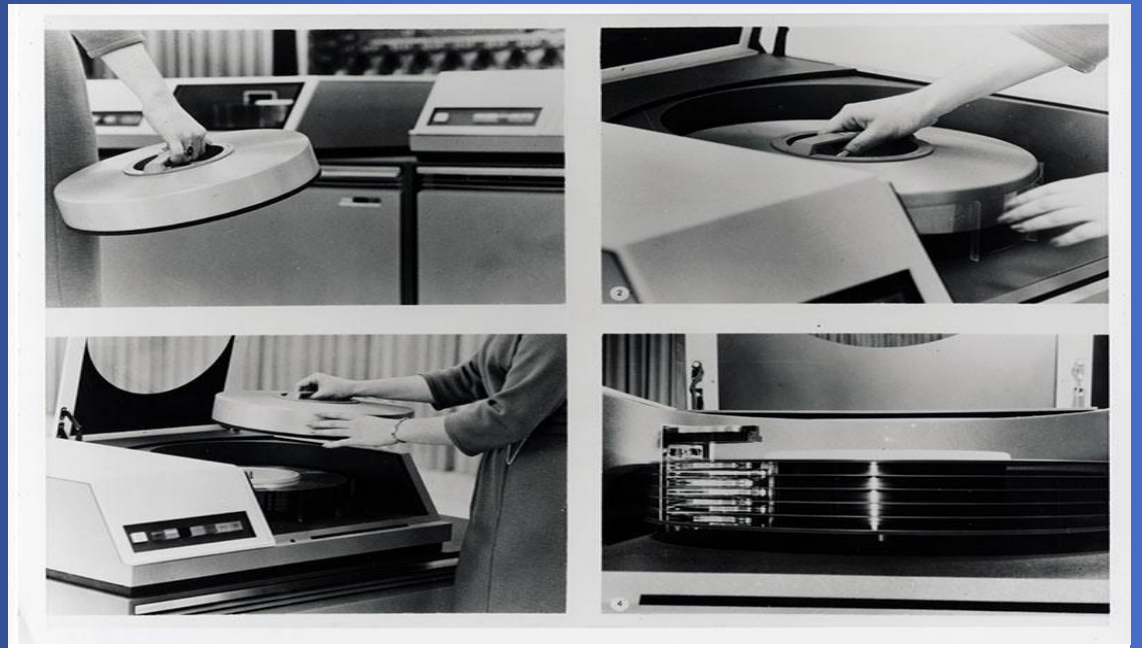
1951 – UNISERVO Tape Drive was the first commercial computer tape drive. Provides first offline/offsite storage of data.

1952 – IBM 726 and 701 introduced it's 2 Million decimal digit tape storage device.

1956 – RAMAC disk drive or hard disk was the beginning of the traditional Hard Drive.

EXTERNAL DATA STORAGE

1960’s: External Data Storage – Just the beginning



EXTERNAL DATA STORAGE

1960's: External Data Storage – Just the beginning

1962 – IBM 1311 Disk Drive was the first removable data storage device.

1964 – IBM 2315 Disk Drive was the first truly portable Data Storage Device.

1968 – IBM "Minnow" Floppy Disk Drive/Disk Drive began a revolution in Offline Data Storage.

DATA STORAGE

Improvements, Innovation, and Standardizing to Data Storage

Data Storage Devices and Technologies

- Traditional Hard Disk Drives
- Hybrid Hard Drives
- Solid State Drives
- Flash Storage Devices
- Network Attached Storage
- Storage Area Network
- Cloud Storage

TRADITIONAL DATA STORAGE

What is it used in, and why is it still being used?

Transfer Rates

- IDE/PATA: 133 MB/s
- SATA: 600MB/s
- SAS/SCSI: 600MB/s – 640MB/s

Lifespan

- IDE: EOL due to low under 600,000 MTBF
- SATA: 700,000 to 1,200,000 MTBF Hours at 25° C
- SAS/SCSI: 1,200,000 to 1,600,000 MTBF Hours at 45° C

FLASH DATA STORAGE

What is all the hype about? Is this really better?

Technology

- Flash Storage uses NVM to store data long term without Fragmentation.
- No Moving Parts allow these devices to read/write up to 20x faster.

Transfer Rates

- Speeds up to 600MB/s for SSDs and up to 640MB/s for USB 3.0
- Limited to the connecters and onboard capabilities

Lifespan

- Hours vs. Read/Write Sequencing
- MTBF is greater than that of HDDs at 1,200,000 – 1,600,000 hours

NETWORK DATA STORAGE

NAS devices are useful but is it worth it to you anymore?

Network Attached Storage (NAS) devices are external devices connected to a LAN, which multiple devices can access to store and retrieve data from. These typically have built in redundancy and hard drives that last longer than standard SATA drives.

NAS is perfect for personal or business:

- Data Storage for Multiple Devices or Users
- File sharing for Multiple Devices or Users
- Store and access larger files with less chance of data loss

CLOUD DATA STORAGE

Where does data storage go from here?

Common Configurations Today
Practical Uses
Trends

References

http://www.computerhistory.org/timeline/memory-storage/#169ebbe2ad45559efbc6eb357209494a

http://www.thinkaxiom.com/axiology/common-cloud-storage-backup-issues-and-possible-solutions/

http://www.adrc.com/interfaces.html

http://www.dewassoc.com/kbase/hard_drives/

http://www.pcmag.com/article2/0,2817,2404258,00.asp

http://www.pcworld.com/article/127105/article.html

https://www.extremetech.com/extreme/210492-extremetech-explains-how-do-ssds-work

http://www.digitaltrends.com/computing/

http://www.macworld.com/article/2039427

http://superuser.com/questions/453175

http://www.hardcoreware.net/mtbf

THANK YOU

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the many ways to store data

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