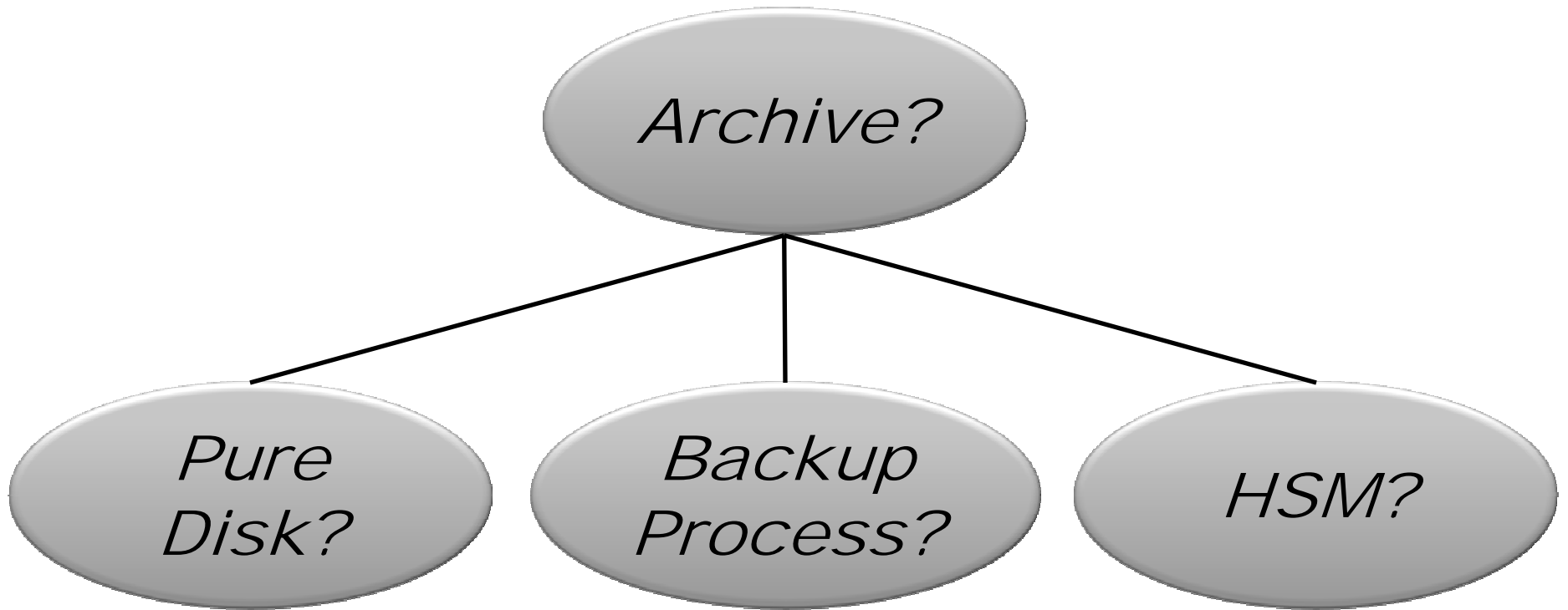


STRONGBOX The Future of Data Archive

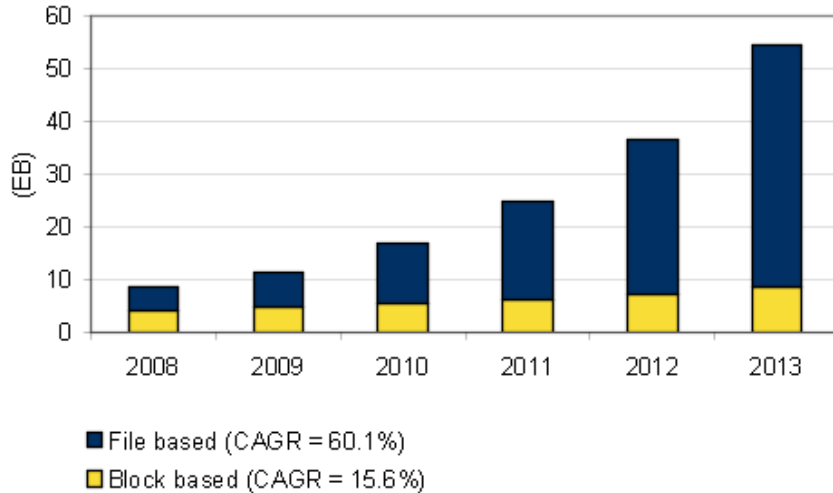
CROSSROADS[®]

Archive?



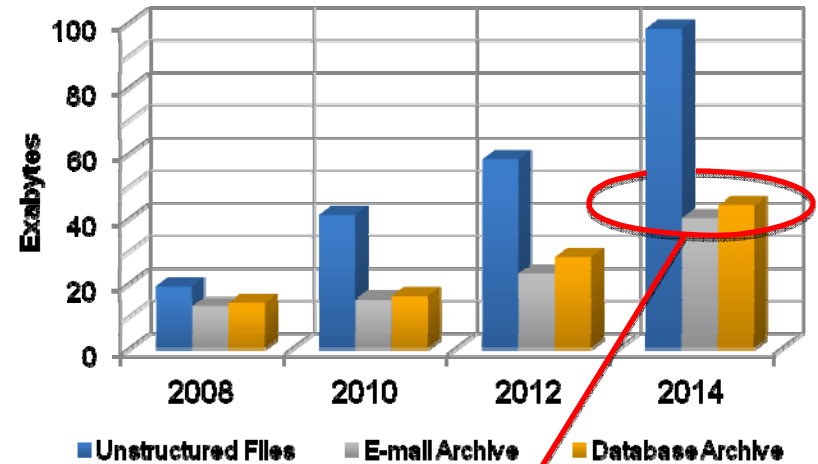
The File Archive/Cloud Market

Worldwide Storage Capacity Shipped by Segment, 2008–2013



Source: IDC's 2009 Enterprise Disk Storage Consumption Model

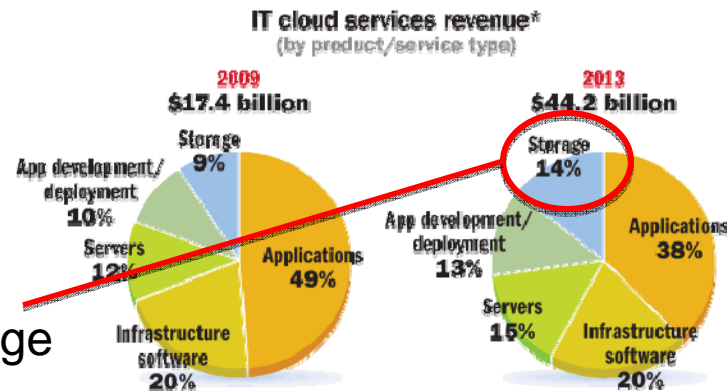
Tier 3 Storage Composition
Archive, Fixed Content and Compliance Profile



Source: *Horison Inc.*

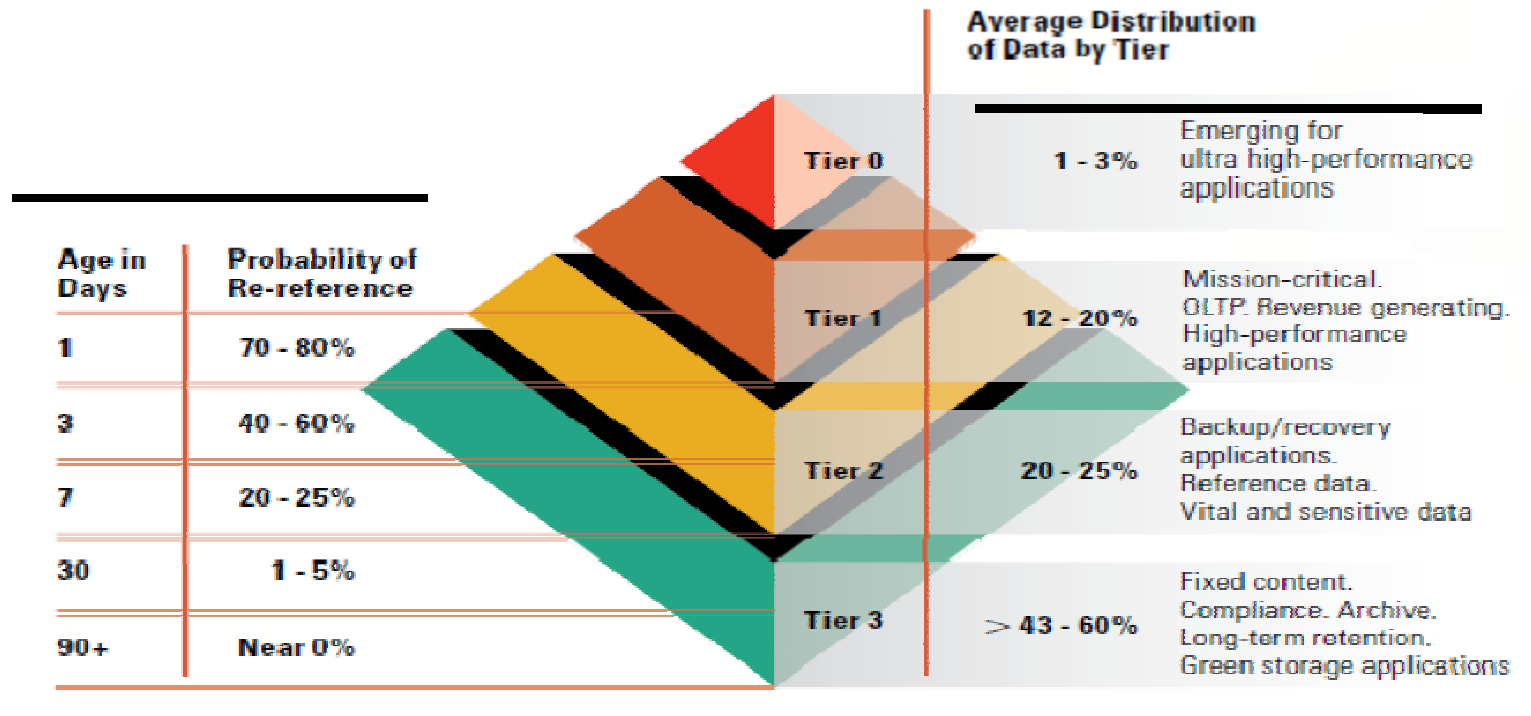
160,000
Petabytes

\$4.6 Billion in
physical storage



* Includes revenue from delivery of applications, app development/deployment, systems infrastructure, SW, and server and disk storage capacity via cloud services model; A268 excludes online B2B messaging providers/exchanges. SOURCE: IDC

The Tiered Storage Hierarchy



Availability Index %	Type of Technology
Tier 0 - 99.999+	DRAM SSD, flash memory HDD
Tier 1 - 99.999+	Enterprise-class HDD, RAID, mirrors, replication
Tier 2 - 99.99	Midrange HDD, SATA, virtual tape, MAID, Integrated virtual tape libraries
Tier 3 - 99.9	High-capacity tape, MAID, manual tape, shelf storage

Overcoming Tape Detractors – Write Efficiency

- Tape Drive Performance (throughput)
- Application Interface
 - ▶ Generic server approach
 - ▶ Tape process priority (lack thereof)
 - ▶ Lost the mission
- Analogous to SSD making Disk better...

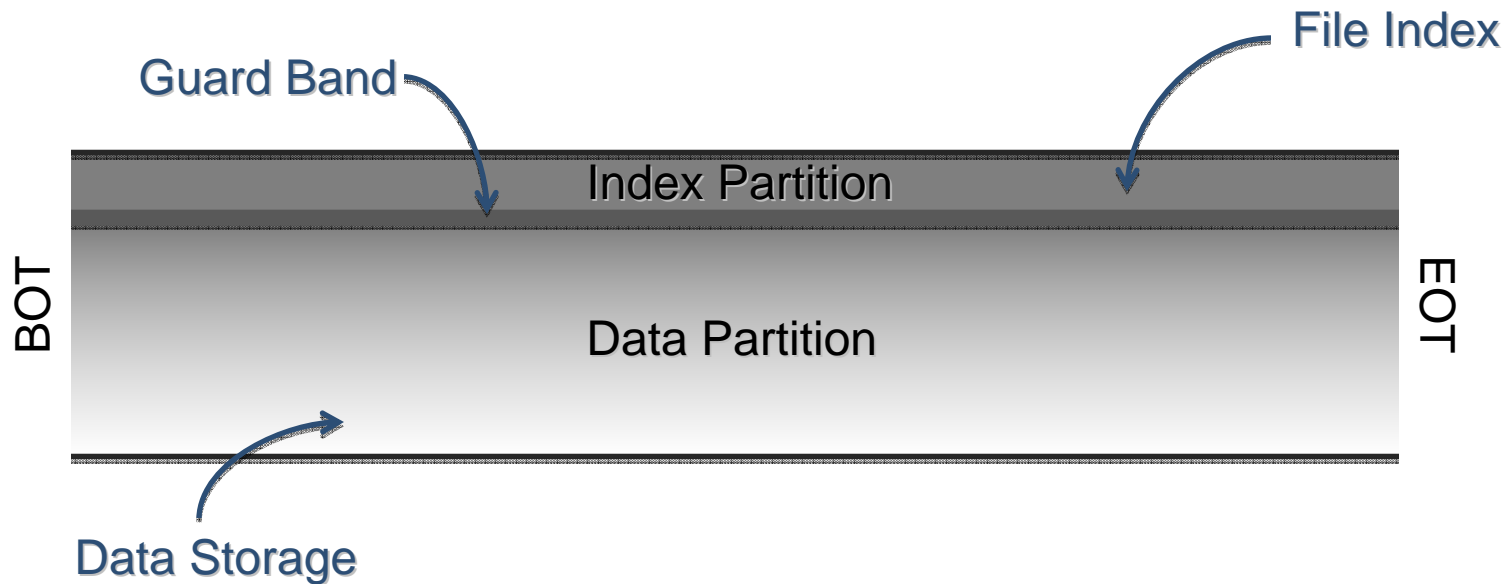


*A little bit of Disk can make
Tape last a long, long time...*

Overcoming Tape Detractors – File Write/Read



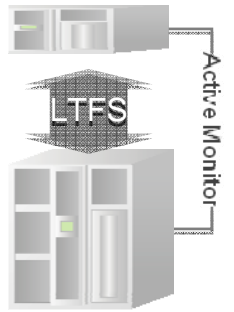
LTFS – Linear Tape File System




LTFS makes tape **self-describing, file-based**, and easy-to-use and provides users with the ability to use standard file operations on tape media for accessing, managing and sharing files with an interface that behaves just like a hard disk. In addition, LTFS provides the ability to **share data** across platforms, as you would with a USB drive or memory stick. Simply load a tape into the drive, mount it into the file system, and it becomes visible as a disk.

STRONGBOX Network Attached Tape Archive

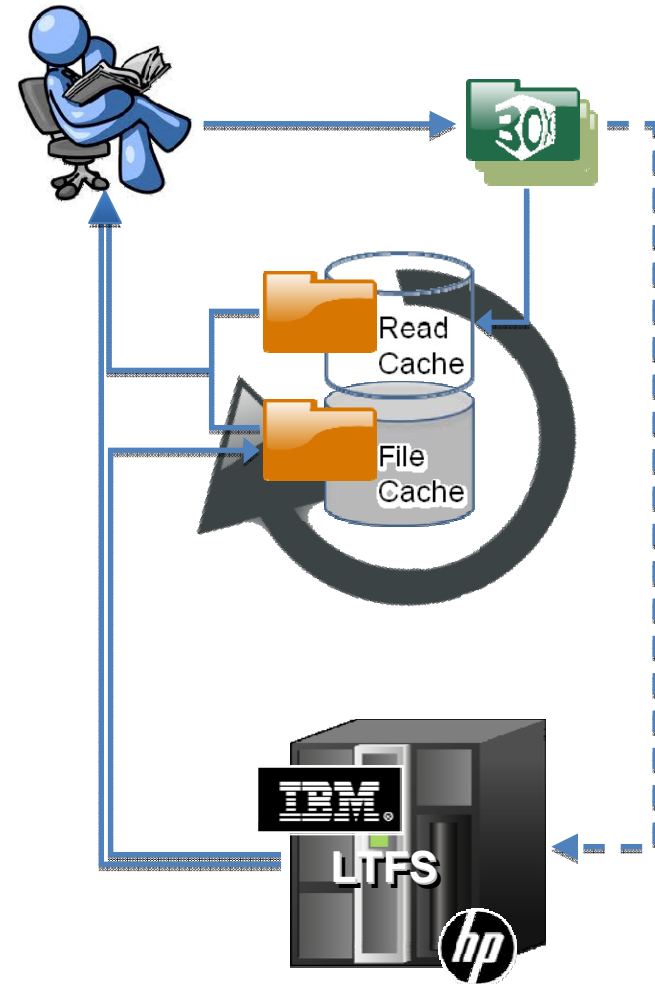
- Email Archive
- Database Archive
- File Archive
- ⋮
- Tier 3 Data



- Plug-n-Play CIFS/NFS File Share(s)
- Persistent File View
- Non-Proprietary Data Store
- Fully Portable (egress & ingest)
- Self Healing 
- High-Performance Write & Read
- Policy-Based Data Management
- Cost-Effective Scalability
- Auto Migration

STRONGBOX Optimized LTFS Read

- Random File Access
 - ▶ Standard NAS (CIFS/NFS) mount
 - ▶ No application modification
 - ▶ Persistent file view (for all files on tapes loaded in the library)
- Read Cache
 - ▶ Ingest buffer for initial file storage
 - ▶ CIFS/NFS timeout management
 - ▶ File HSM behavior (for initially stored files)
- File Cache
 - ▶ File access retry optimization
 - ▶ Multi-read file from disk
 - ▶ Pre-fetch enablement
- Direct Tape Read
 - ▶ No staging back to disk
 - ▶ Take advantage of tape's throughput superiority
 - ▶ Tape drive operated at full rate (maximize drive asset utilization)



STRONGBOX Bottom Line VALUE



French global IT services company, one of the world's largest management consulting, outsourcing and professional services companies with a staff of 108,698 operating in 39 countries.



Current Cost

- Storage Cost (All in) 7¢ /GB/Month
- 1 Petabyte \$70K /Month
- 5 Years \$4.2M



- Storage Cost (All in) 2¢ /GB/Month
- 1 Petabyte \$20K /Month
- 5 Years \$1.2M

Crossroads' product will leverage LTFS technology to usher in a new era for tape. This relieves tape of its age long dependency on backup applications to store and retrieve data from tape.



The StrongBox solution is exactly what LTFS was looking for when it was first rolled out a year ago. StrongBox takes that a level higher by offering what could be the simplest, easiest to use archiving solution we have seen.

\$3 Million in savings over 5 years!

STRONGBOX Vendor Lock In

- No Proprietary Applications
- Data is stored as received
- Multi-Vendor data sharing



Media Environment

Consumer Video Archive *Youtube'ish*

Number of files	100,000
Average file size	26.25MB
Streaming rate	700KB/sec

Pro-sumer video Archive *Hulu'ish*

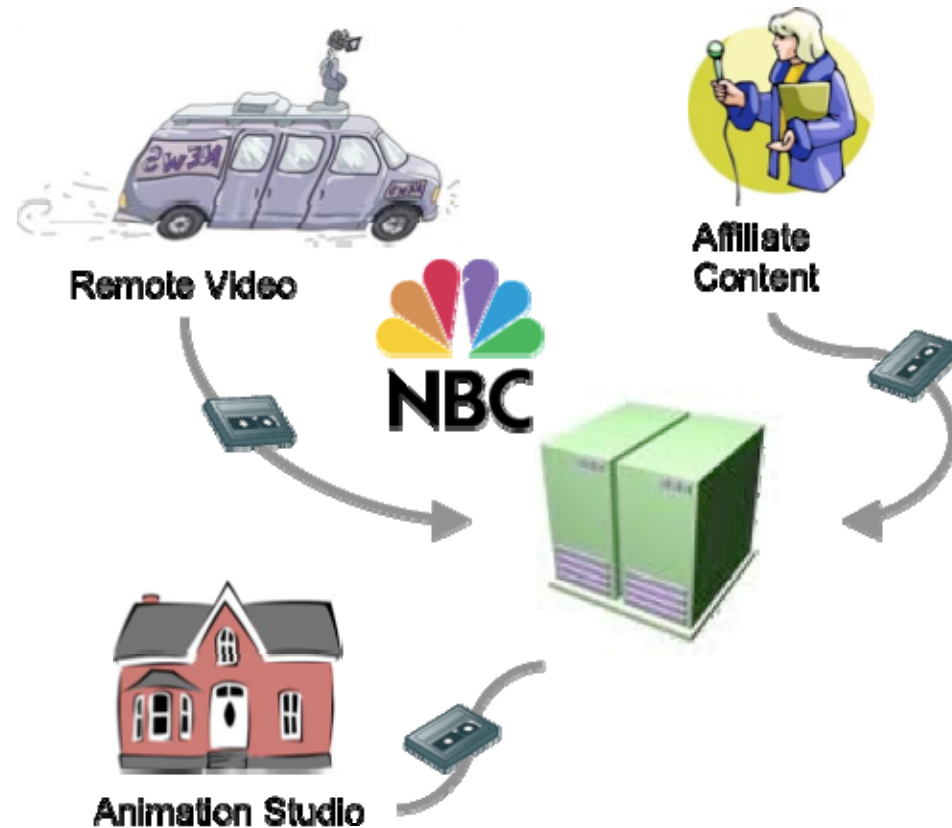
Number of files	10,000
Average file size	350MB
Streaming rate	1.1MB/sec

Broadcast Distribution Archive

Number of files	10,000
Average file size	16.875GB
Streaming rate	50MB/sec

Mezzanine Quality Archive

Number of files	10,000
Average file size	168.75GB
Streaming rate	500MB/sec

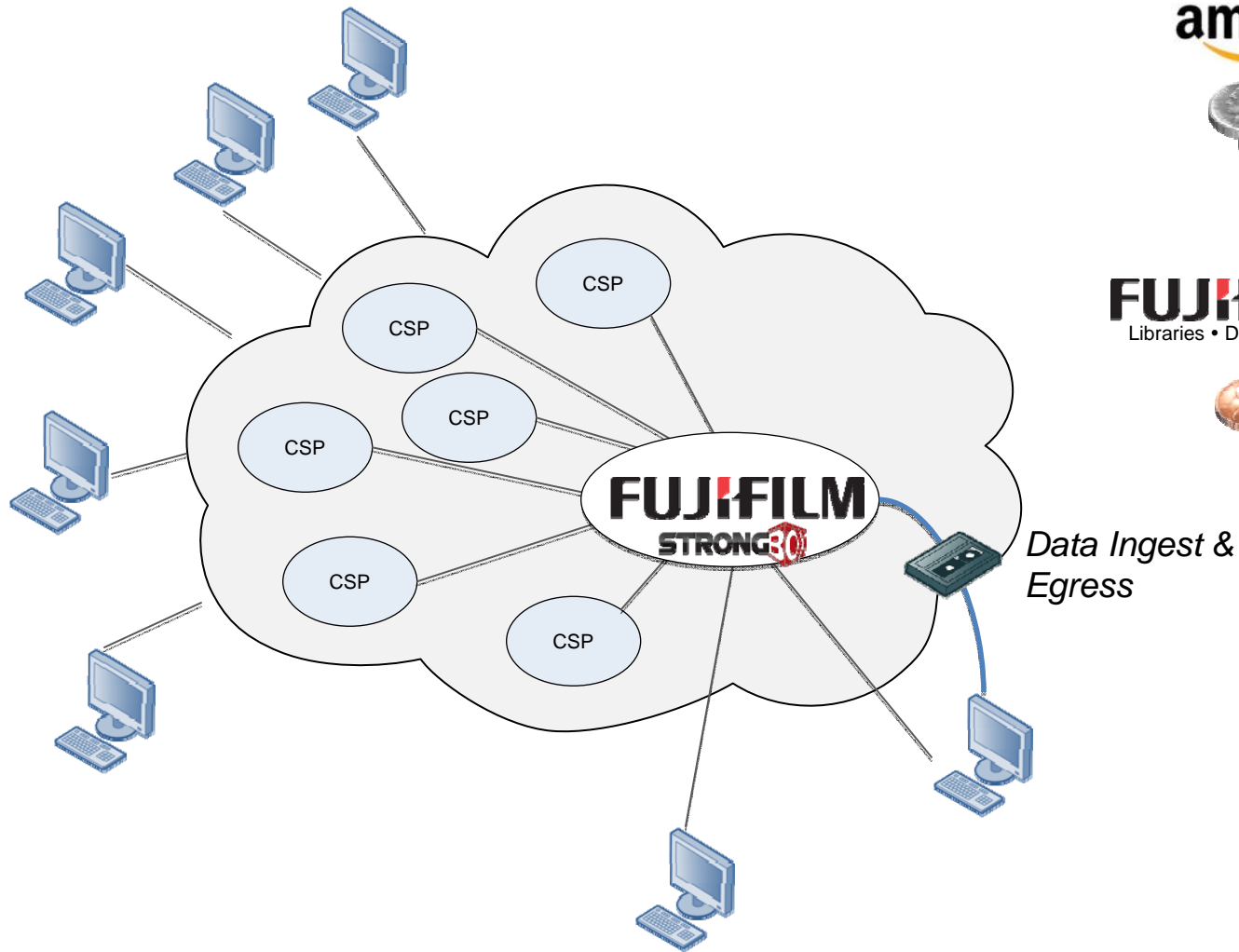


Backup – “D to D to Auto T”

- Looks like disk target to backup application
- Tape data protection built in
- Replication & offsite tape copy
- No secondary operation to move from second disk to tape



Cloud Opportunity



*First Petabyte
Cost (Per
Gig/Month)*



*Petabyte Cost
(Per Gig/Month)*



THANK YOU!

**For More Information visit our website at:
www.crossroads.com**

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