
www.InfiniteOptions.net



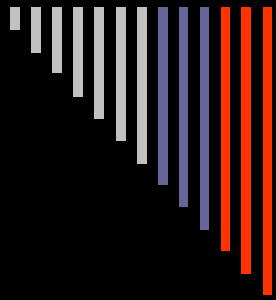
***Protecting Your
Critical Data
Infrastructure With
Optical Storage***

Lee Tutt

Business Development Manager

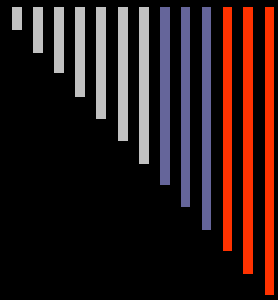
Infinite Options, Inc.

Copyright 2006 – Infinite Options, Inc. All Rights Reserved



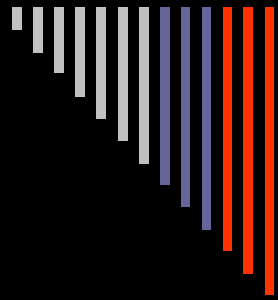
Data – vital to any business

- Data
 - Who – created it?
 - What – is it used for?
 - When – is it needed?
 - Where – is it stored?
 - Why – do you need it?
 - How – long does your data last?
 - Have you ever needed data and not been able to find it?
 - Have you ever lost valuable hours/days/weeks looking for or trying to get data?
-



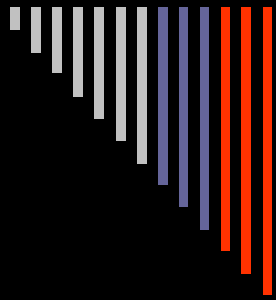
Data Retention Compliance and Regulations

- ❑ With the onset of federal regulations such as Sarbanes-Oxley, the needs of data retention and the management of accessing that data has tripled in complexity.
 - ❑ This data is kept for extended periods of time, sometimes seven years or more, posing a challenge for many organizations.
 - ❑ Known as retention managed data, companies often utilize archives and repositories for data storage.
 - ❑ As organizations address their data requirements to reach regulatory and legal compliance, they must ensure that the necessary documents and information are available when needed.
-



Data Retention Compliance & Regulations

- Sarbanes-Oxley Act of 2002
 - Requires stricter record-keeping and disclosure for publicly traded companies.
 - Has forced many companies to re-think how they store and manage their data.
 - Countless new Regulations
 - New regulations are already in the pipeline including new ISO standards for data retention and reliability.
 - The need to archive these records is driven by both internal guidelines and governmental regulations that mandate a 7 to 10 year retention period for financial information.
-



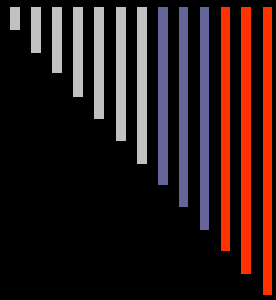
Ecma and ISO Standards

□ Ecma

- Ecma International is an industry association founded in 1961 and dedicated to the standardization of Information and Communication Technology (ICT) and Consumer Electronics (CE).

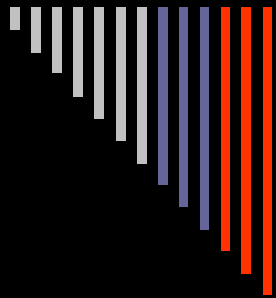
□ ISO – International Organization for Standardization

- Has begun writing new ISO standards for information being saved, stored, or archived.
-



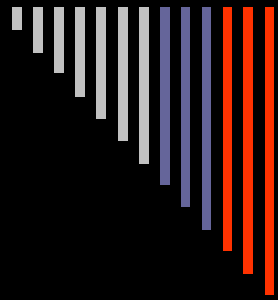
Data Retention Solution

- Beyond compliance requirements, an effective data retention strategy is important in its own right.
- Organizations face a daily challenge of managing data and content, establishing and applying storage and archiving policies, and accessing critical data when needed where needed.
- These organizations can achieve significant cost savings and operational efficiencies through a properly designed and implemented data retention solution.



What to look for when choosing a data storage solution.

- Beyond the mere idea of storage, companies must take into account other factors, such as –
 - **Total Cost of Ownership**
 - **Speed of Data Interchange**
 - **Integration**
 - **Security**
 - **Privacy**
 - **Life expectancy**
 - **Scalability**
 - **Reliability**
 - **Disaster Recovery**
 - These should all be considered important factors when it comes to finding the right storage system.
-

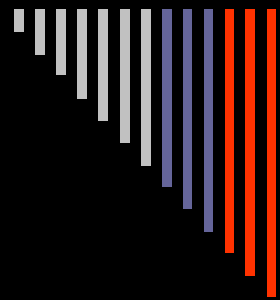


Optical Storage vs. Other Data Storage Solutions

- In this segment I will be showing and discussing with you how Optical Storage stacks up against other data storage methods commonly used today.

<i>Case Scenario Requirements</i>	
Required Archive Capacity	12TB
Typical Record Retention Period	7-10 years
Average Daily Archive Volume	8GB/day
Total Number of Records	> 6 million
Average Daily Archive Read Requests	2,500/day

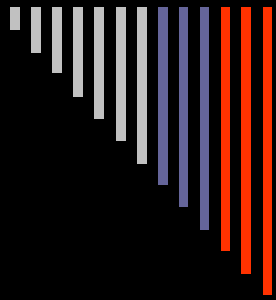
Figure 2 – Case Scenario Requirements



Lets introduce the Storage Solutions

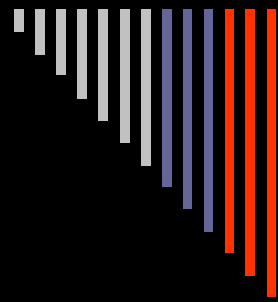
- **Magnetic**
 - **Tape**
 - **Disk**
- **Optical**
 - **DVD**
 - **MO (Magneto Optical)**
 - **UDO (Ultra Density Optical)**

Magnetic	Vendor	Product	Drive Count	Media/Drive Capacity	Media Count	Usable System Capacity
Tape	ADIC	Scalar 100 (AIT-3)	8	100GB	96	9.6TB
Disk	EMC	Centera Parity	64	320GB	-	11.2TB
Disk	EMC	Centera Mirrored	96	320GB	-	12.5TB
Optical						
DVD	Plasmon	D1525	6	9.4GB	1,475	13.8TB
MO	Plasmon	G638 (x 2)	4 (x 2)	9.1GB	1,276	11.6TB
UDO	Plasmon	G438	4	30GB	438	13.1TB



Optical Media

- UDO
 - Ultra Density Optical
 - 30GB per 5.25" optical cartridge
 - WORM and Re-Writable
 - MO
 - Magneto Optical
 - 9.1GB per 5.25" optical cartridge
 - WORM and Re-Writable
 - DVD
 - 9.4GB per dual-layer disk
 - 4.7GB per single-layer disk
 - Recordable and Re-Writable
-



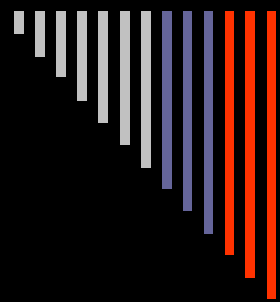
Total Cost of Ownership

Criteria

	Hardware Acquisition	Software Acquisition	Media Acquisition	Hardware Maintenance	Software Maintenance	Floor Space	Power Consumption
AIT-3 library	53.1%	16.9%	5.1%	11.3%	9.2%	3.3%	1.2%
DVD library	43.2%	13.2%	24.3%	6.6%	7.1%	5.0%	0.6%
UDO library	54.3%	10.0%	15.7%	9.4%	5.4%	4.6%	0.6%
MO library	48.9%	8.6%	24.2%	8.9%	4.6%	4.4%	0.5%
Centera Parity	20.9%	57.1%	0%	7.0%	10.9%	1.1%	3.0%
Centera Mirrored	23.5%	54.1%	0%	8.2%	9.9%	0.9%	3.4%

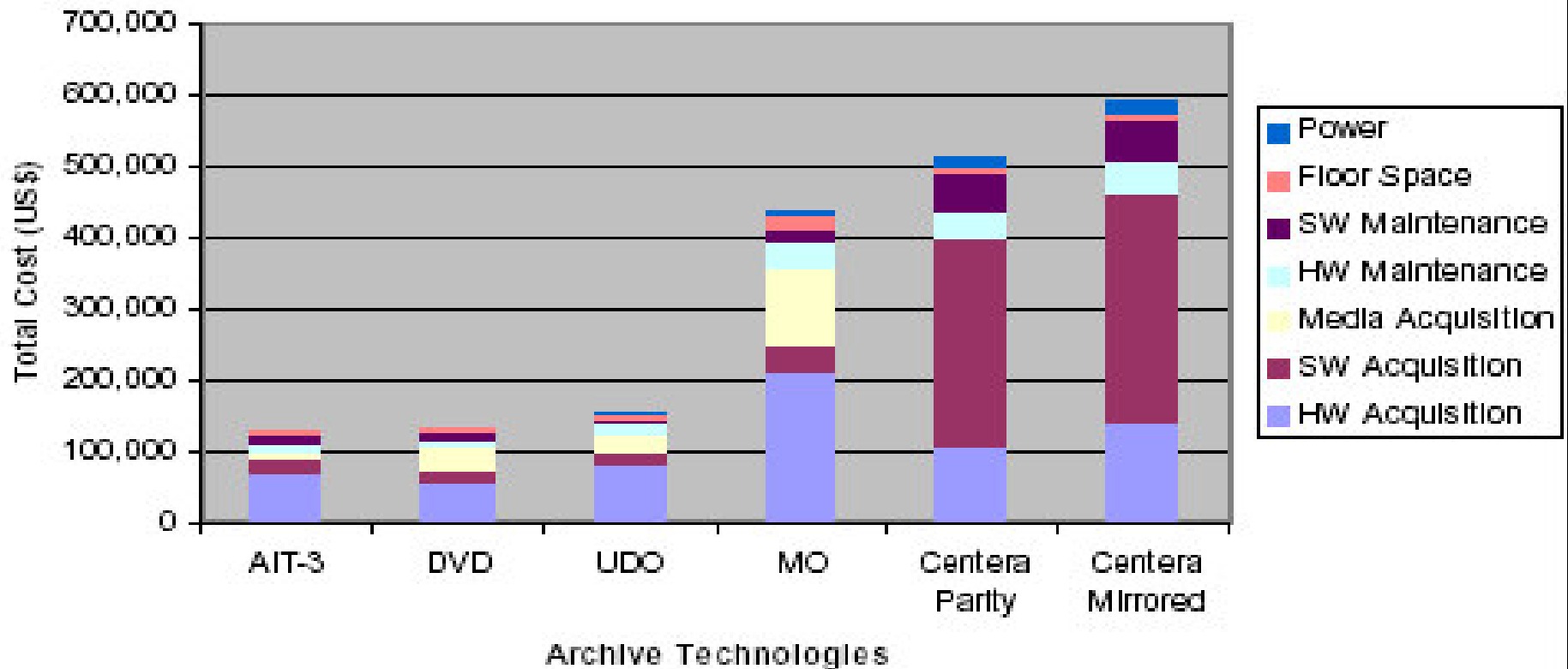
Actual Cost in \$

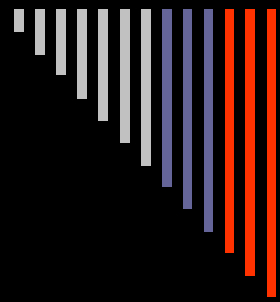
Archive Type	System Capacity	Actual System Cost \$	\$ / GB	Adjusted System Cost at 12TB - \$
AIT-3 Library	9.6TB	103,573	10.79	129,466
DVD Library	13.8TB	151,967	11.01	132,145
UDO Library	13.1TB	167,732	12.80	153,648
MO Library	11.6TB	421,162	36.31	435,684
Centera CPP	11.2TB	479,540	44.82	513,793
Centera CPM	12.5TB	618,265	49.46	593,535



Total Cost of Ownership Continued

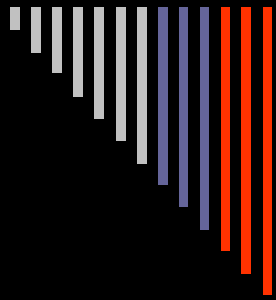
Archival Storage TCO
12 TB - 3 Years





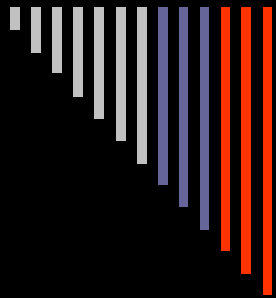
Speed of Data Interchange For Storage Devices

Drive / Library Specs.	DVD	MO, UDO	AIT-3
Load Time	15 sec	5 sec	10 sec
Unload Time	3 sec	3 sec	10 sec
Average Seek Time	200 msec	35 - 50 msec	27 sec
Average Rewind Time	0 sec	0 sec	12 sec
Media Exchange Time	6 sec	6 sec	6 sec
Average Data Access	5 sec	5 sec	5 sec
Average Access Cycle	29 sec	19 sec	70 sec
Access Cycles per Hour	124 cycles	189 cycles	51 cycles
Drive Count for Read	3 drives	2 drives	6 drives



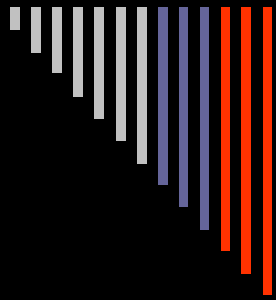
Integration

- With the right Optical Storage System you can seamlessly integrate your optical archival and retrieval of data without the end user ever knowing. Not to mention the fact that with proper policies in place optical archival can double as a disaster recovery solution.
- Migration of historical data to optical is also worth considering and has many benefits.



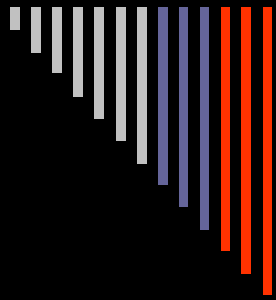
Security

- ❑ Make sure when purchasing an Optical Storage Solution that it has hardware, software, and OS level security.
 - ❑ Is the Optical Storage Solution certified by the government? If it is what level of security does it have?
 - ❑ Find out how well documented the software is.
 - ❑ If you want the most secure media – you should purchase WORM (write once read many).
 - ❑ If your data is being used by multiple sites how are you keeping it secure? Intranet or Internet?
 - ❑ Make sure you have a security officer who understands how to determine and control user access and passwords.
 - ❑ Can your data be corrupted by magnetic forces?
-



Privacy

- ❑ Configurable end user access with password protection.
 - ❑ Define rules of data archival and retrieval for different departments within the company or organization.
 - ❑ If you are using WORM media the data can not be deleted or changed in any way.
-



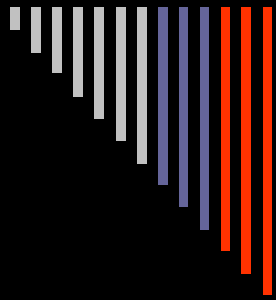
Life expectancy

□ Data

- How long do you need to retain the data being stored?

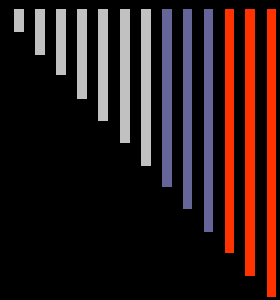
□ Media

- UDO & MO Media is certified as having a shelf-life of 50 years.
 - Tape, DVD, CD, and Disk do not and can not even get close to the shelf-life of UDO & MO media.
-



Scalability

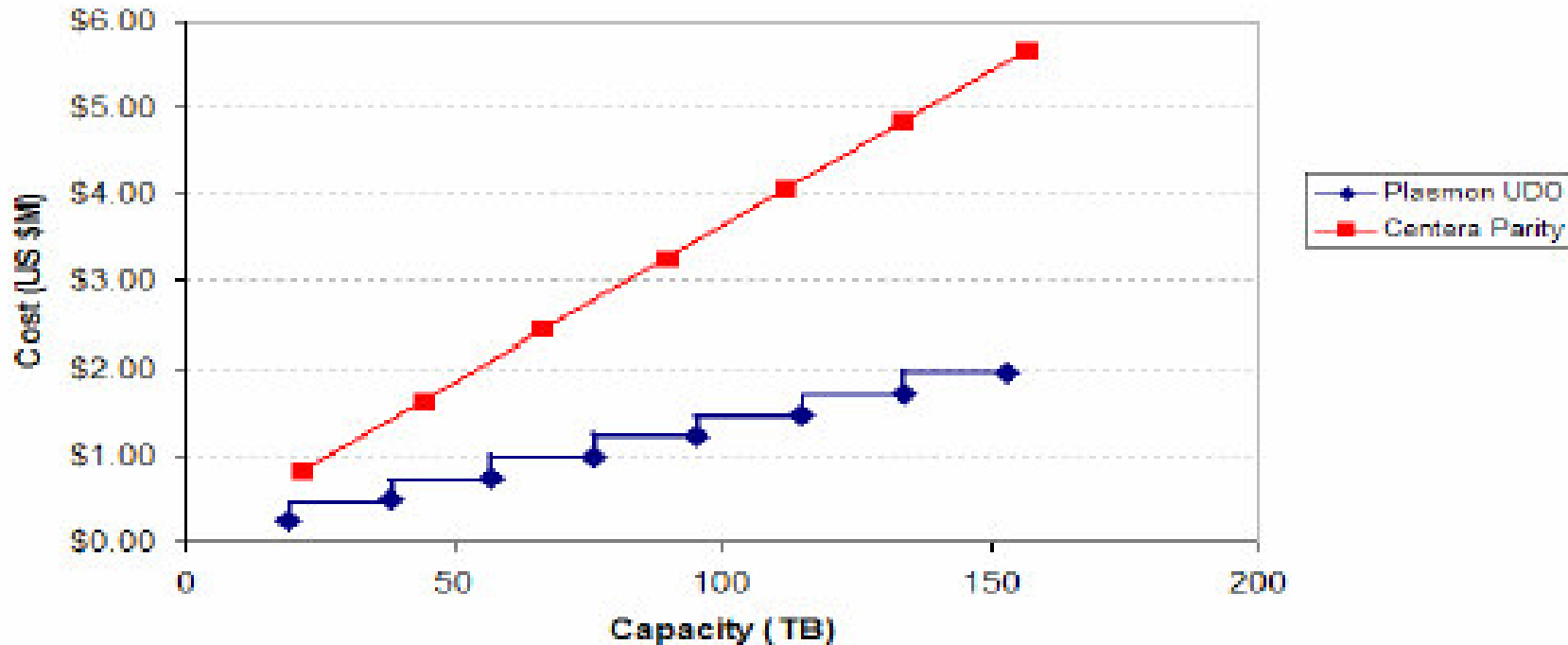
- Multiple optical jukeboxes can be attached to one optical controller.
 - For example: One IBM i5 eServer or iSeries can have up to thirty-six Plasmon UDO G-Series optical jukeboxes with 638 media slots (19.1TB) attached, thus giving you 687.6TB of data storage behind just one optical controller. And if that is not enough you can have up to 12 read/write drives within each G-Series optical jukebox (432 read/write drives).
-

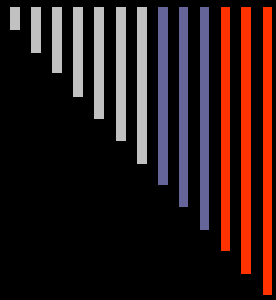


Scalability Continued

Plasmon UDO vs. EMC Centera

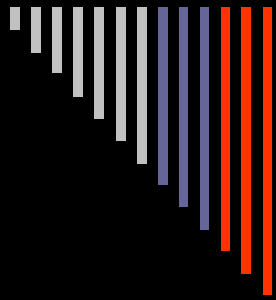
Archive Scaling TCO Analysis
Plasmon UDO vs. EMC Centera





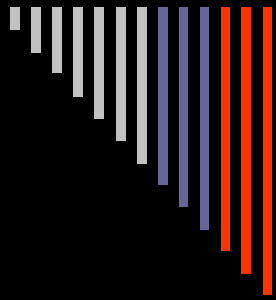
Reliability

- ❑ The best way to determine reliability is to contact other companies already using the system. Ask the vendor to provide you with the name(s) and contact info of other users.
 - ❑ Ask for reference letters.
 - ❑ How long has the vendor been selling this product? Are they knowledgeable of your company's needs?
 - ❑ How does the vendor answer tech-support questions?
-



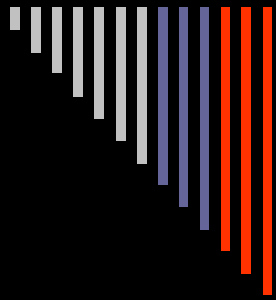
Disaster Recovery

- Obviously, optical storage offers higher security for both short-term and long-term protection of data for disaster recovery using both rewritable and permanent optical media. The latter can be located on-site and/or off-site. Redundantly archiving data to optical storage at disparate sites located far from each other (perhaps one on-site and another at a remote location) would allow for a very high level of security. The optical media can also be duplicated and the duplicates removed and stored at a secure remote site in a safe deposit box, vault, or other storage facility.



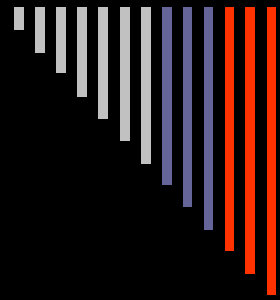
Disaster Recovery Continued

- Optical storage hardware is commonly installed on-site for daily operations but the media can be physically transported to a remote site for off-site storage or to be loaded into another optical device for remote accessibility and/or disaster recovery. Alternately, the data can be archived remotely using dedicated or switched (dial-up) telecommunication circuits with or without SSL (secure socket layer) or data objects can be encrypted then transmitted off-site to remote optical devices. These secure options provide for true disaster recovery while still allowing the data to be accessible within moments for normal business operations.
-



Conclusion

- ❑ When it comes time for you, your company, or your organization to consider how it will securely store data, optical storage is a viable option.
 - ❑ With reduced cost over expensive disk (DASD) storage and with all the security you could need why use anything else to protect your data?
-



Question & Answer Time

- If you have any questions about optical storage feel free to ask.
- You can also e-mail your questions to me @ io@InfiniteOptions.net (Lee Tutt)

- Thank you for your time and support.
 - Have a great day!

www.InfiniteOptions.net



***Protecting Your
Critical Data
Infrastructure With
Optical Storage***

Lee Tutt

Business Development Manager

Infinite Options, Inc.

Copyright 2006 – Infinite Options, Inc. All Rights Reserved
