Optical Storage for Professional Archiving

Optical Storage Technology Association

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VP Marketing
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Agenda

- Why archive?
- Professional archival storage requirements
- How professional optical storage addresses the requirements
All Data Does Not Need to be Archived

Professional Archival Storage - Long-term retention of valuable knowledge resources

Expected Data Longevity

Active Data

Archival Storage

Reference Data

Access Speed Requirements

On-line
Near-line
Off-line

High
Low

0 - 90 days
Months
3-50 years
The International Minefield of Digital Data Regulatory Compliance

- 10,000 regulations in worldwide
- Scope: Compliance with international, national, state or provincial and local regulations
- Depth: Industry-specific, public corporations
- Impact: Cost to comply or remediate, penalties for non-compliance
• Litigation affects all organizations:
  – Public and private; any size
  – Particularly the following industries – Securities, Insurance, Health Care, Financial Services, Consumer Products, Construction Materials, Food, Transportation, Pharmaceutical

• The focus of litigation is increasingly dependent on the discovery and authenticity of electronic evidence

• Average securities litigation settlements continue to rise - $25.1M in first seven months of 2003 (Pricewaterhouse Coopers)

• Average product liability settlement has jumped from $1.7 million in 1996 to 6 million in 2002 (Wall Street Journal)
Archived Data - Beyond Protection

Timely access to more comprehensive knowledge assets can:

• Drive more informed and efficient decision making
• Re-purpose information assets
  – Drive incremental revenue and business opportunities
  – Accelerate projects
  – Reduce development costs

**Examples**  **Use**

- **MRI scans**  Archived scans combined with current patient information provides for quicker, more accurate diagnoses and treatment
- **Mechanical designs**  Reusing design elements in a new product design dramatically speeds time-to-market as well as lowering costs
- **Financial trade info**  Using archived financial data facilitates more insightful trend analysis
Leaders in Professional Data Archival Solutions

Requirements Driving Archival Storage

- Retention periods
- Authenticity requirements
- Access speed requirements
- Need for flexibility

Total Cost of Ownership (TCO)
# Key Attributes for Archival Storage Solutions

<table>
<thead>
<tr>
<th>Market Requirements</th>
<th>Technology Attributes</th>
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<tbody>
<tr>
<td>Maximum authenticity and trustworthiness</td>
<td>• Unalterable, true Write Once media</td>
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<tr>
<td>Long archival retention periods</td>
<td>• Permanent, long-life media</td>
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<tr>
<td></td>
<td>• Robust drives and libraries</td>
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<td></td>
<td>• Forward media compatibility</td>
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<td></td>
<td>• Long-term support</td>
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<tr>
<td>High capacity and scalability</td>
<td>• High capacity media</td>
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<td></td>
<td>• Scalable library architecture</td>
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<tr>
<td></td>
<td>• Off-line media management</td>
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<tr>
<td>Timely access to archived data</td>
<td>• High random access performance</td>
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<tr>
<td></td>
<td>• High overall system performance</td>
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<tr>
<td>Low long-term Total Cost of Ownership</td>
<td>• Low software and hardware acquisition costs</td>
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<td>• Low-cost storage media</td>
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<tr>
<td></td>
<td>• Low maintenance and management costs</td>
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<td>• Less frequent and less complex data migrations</td>
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Professional Archiving Technology Fundamentals

- **Phase Change technology**
  - The most secure archival storage recording technology
  - Permanent – Media life > 50 years
  - Enables true Write Once and Rewritable media
  - Low-cost - Less than $2/GB vs. $10/GB for MO media

- **New blue laser technology**
  - Provides smaller spot than red laser for greater areal density
  - 30GB initial capacity > 3x media capacity increase over DVD and MO
  - 1st generation - roadmap through 120GB
Optical Phase Change Technology

Authenticity at the physical media layer
**Blue Laser Technology – Professional Drives and Media**

- **Robust professional drives**
  - 750,000 load cycle rating
  - Up to 8MB/sec data rate
  - Fast 25 msec access time
  - Backward-compatible in future generations

- **Ideally, in 5.25 inch ISO standard media format**
  - Compatible with existing libraries
  - Robust cartridge requires zero media maintenance
  - Removability enables lowest cost off-line archiving
Optical Technology Roadmap
## Optical Library product line

<table>
<thead>
<tr>
<th>Model</th>
<th>Entry Level</th>
<th>Midrange</th>
<th>Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>G24 / G32</strong></td>
<td>24 / 32</td>
<td>72 / 80</td>
<td>104</td>
</tr>
<tr>
<td><strong>G72 / G80</strong></td>
<td>4 / 2</td>
<td>164 / 238</td>
<td>438</td>
</tr>
<tr>
<td><strong>G104</strong></td>
<td>2 or 4</td>
<td>1.5TB / 2.2TB</td>
<td>5.8TB</td>
</tr>
<tr>
<td><strong>G164 / G238</strong></td>
<td>2, 4, 6, 8, 10, or 12</td>
<td>4.0TB</td>
<td></td>
</tr>
<tr>
<td><strong>G438</strong></td>
<td>2, 4, 6, 8, 10 or 12</td>
<td>13.1TB</td>
<td></td>
</tr>
<tr>
<td><strong>G638</strong></td>
<td>2, 4, 6, 8, 10 or 12</td>
<td>19.1TB</td>
<td></td>
</tr>
</tbody>
</table>

### Features

- **Slot Counts**
- **Drive Options**
- **Dimensions (in.)**
- **Dimensions (cm.)**

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<th><strong>Dimensions (in.)</strong></th>
<th><strong>Dimensions (cm.)</strong></th>
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</thead>
<tbody>
<tr>
<td>24 / 32</td>
<td>1 or 2</td>
<td>30.5 x 11.1 x 30.8</td>
<td>77.5 x 28.8 x 78.2</td>
</tr>
<tr>
<td>72 / 80</td>
<td>4 / 2</td>
<td>30.5 x 17.5 x 30.8</td>
<td>77.5 x 44.5 x 78.2</td>
</tr>
<tr>
<td>104</td>
<td>2 or 4</td>
<td>46 x 18.9 x 32.6</td>
<td>116.8 x 48 x 82.2</td>
</tr>
<tr>
<td>164 / 238</td>
<td>2, 4, 6, 8, 10, or 12</td>
<td>68 x 27.2 x 36</td>
<td>172.3 x 69.1 x 91.4</td>
</tr>
<tr>
<td>438</td>
<td>2, 4, 6, 8, 10 or 12</td>
<td>68 x 34.2 x 36</td>
<td>172.3 x 86.9 x 91.4</td>
</tr>
<tr>
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<td>2, 4, 6, 8, 10 or 12</td>
<td>68 x 41.2 x 36</td>
<td>172.3 x 105 x 91.4</td>
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**Options**

- Bar Code, Rack Mount* (16U)
- Bar Code, Rack Mount (16U)
- Bar Code, Rack Mount (25U)
- Bar Code, Redundant Power, 2 or 3 buses
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- Bar Code, Redundant Power, 2 or 3 buses

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*Plasmon: Leaders in Professional Data Archival Solutions*
**Data Archival TCO Results over 3 years**

![Total Cost of Ownership graph]

- **Archive Storage Type**
  - DVD
  - DVD-RAM
  - UDO - Write Once
  - UDO - Rewriteable
  - MO (9.1 GB) Rewriteable
  - EMC Centera (Usable Parity)
  - EMC Centera (Usable Mirrored)
  - Tape

**Total Cost of Ownership**

- $0
- $200,000
- $400,000
- $600,000
- $800,000
- $1,000,000
- $1,200,000
- $1,400,000
- $200,000
- $800,000
- $1,400,000

**Archive Storage Type**

- 2 to 3 TB Usable Storage Solution
- 8.5 TB Usable Storage Solution
- 20 TB Usable Storage Solution
Storage Technology Positioning

- **Disk-based Systems**
  - Non-permanent
  - Higher total cost

- **UDO**
  - Permanent
  - Low cost
  - Medium media capacity

- **DVD**
  - Non-permanent
  - Low Cost
  - Low media capacity

- **Tape**
  - Non-permanent
  - Low Cost
  - High media capacity

- **Magneto Optical**
  - Permanent
  - Medium cost
  - Low media capacity

Leaders in Professional Data Archival Solutions

Plasmon
**Broad Industry and Regulatory Support**

- International Organization for Standardization
  - UDO adopted as ISO Standard 17345

- SEC
  - Specifically identifies optical technology in key regulations

- HIPAA-compliant
Optical Technology for Professional Archiving

New optical technology meets the requirements:

- Durable, permanent if required
- Performant - Fast access and high bandwidth
- Designed to evolve
- Scalable
- Open
- Inexpensive