Organizations are generating and storing petabytes and exabytes of unstructured data—video, high-res images, IoT data, research data, and much of this data needs to be kept for years and decades. The total installed enterprise storage systems are expected to grow 30.9% CAGR between 2020-2025 totaling 5.5 zettabytes (ZB)—that’s over 5 million petabytes. The data deluge (growth) will expand within the enterprise and tape is the most cost-effective, secure storage option, requiring very little power to store data for long periods, and is a key component in the fight against cyber threats.

**Data Sheet**

**SCALAR TAPE LIBRARIES**

**Low-Cost, Secure Storage for Long-Term Data Archiving and Cyber Protection**

**Features & Benefits**

**Lowest-Cost, Long-Term Storage**
LTO tape continues to provide the lowest-cost, long-term storage solution, and for PB-scale data sets, is a fraction of the cost of public cloud and other cold storage solutions. Quantum Scalar tape systems further reduce total cost with space efficient designs, Layer Proactive diagnostics and analytics, automated monitoring and reporting, and integration with cloud-based AIOps software to reduce administrative time.

**Easily Manage Data Growth**
Quantum Scalar Tape Libraries have a modular design that simplifies adding storage slots for capacity growth and drives for greater performance. Capacity-On-Demand (CoD) slot licensing provides a level of storage granularity to help you better manage your storage costs in a pay-as-you-grow approach with capacity scaling from 1,125 TB up to 540 PB based on LTO-9 compressed capacity.

**Ensure Data Integrity and Security**
Quantum Scalar Tape Libraries are the most secure tape libraries on the market, with over 25 unique features and capabilities that form a comprehensive security framework which controls system access, provides system monitoring and event detection, data security and encryption, and unique features for cyber protection and data integrity.

**Minimize Downtime**
Scalar Tape Libraries have a comprehensive set of high-availability features to ensure the system remains operational and accessible. Redundant power supplies and path failover (for both robotic control and data path) provide the fault tolerance needed in an enterprise system. Additionally, intelligence built into the iLayer software provides a higher level of availability as advanced features like environmental and power monitoring, proactive diagnostics, and media and tape drive reporting identify trends and notify users of potential issues before faults occur—enabling proactive control of the library system to ensure maximum uptime.

**Manage Massive Data Growth With Quantum Tape Libraries**
Organizations are generating and storing petabytes and exabytes of unstructured data—video, high-res images, IoT data, research data, and much of this data needs to be kept for years and decades. The total installed enterprise storage systems are expected to grow 30.9% CAGR between 2020-2025 totaling 5.5 zettabytes (AB)—that’s over 5 million petabytes. The data deluge (growth) will expand within the enterprise and tape is the most cost-effective, secure storage option, requiring very little power to store data for long periods, and is a key component in the fight against cyber threats.

**Building a Digital Tape Archive With Offline Protection**
Quantum Scalar® Tape Libraries offer efficient, intelligent, and secure LTO tape storage for data archiving and long-term retention. Scalar tape systems combine high-density and highly reliable hardware designs with intelligent software that proactively monitors each tape system. As a result, administrators spend less time managing tape. Scalar Tape Libraries are the most secure tape systems on the market with a host of unique features that protect data stored on tape.

**LEARN MORE:**

www.quantum.com/Scalar

---

**Public Cloud**
CAGR to 4.2 ZB

**Dedicated (private) Cloud**
CAGR to 509 Exabytes

**Traditional IT (non-cloud)**
CAGR to 733 Exabytes

Quantum Scalar Tape Libraries are the Most Secure Tape Systems and a Key Component of a Cyber-Resilient Infrastructure

Quantum Scalar Tape Libraries offer a cyber-resilient solution that can be as small as a few tapes, scale within a rack, or can start at a full rack to grow according to your storage needs. Our automated security features enable you to efficiently store and manage your offline copies and keep them out of the reach of ransomware or other malware. You can learn more about Scalar’s Security Framework at [www.quantum.com/security-framework](http://www.quantum.com/security-framework), which includes exclusive features with increasing levels of security such as Active Vault, Logical Tape Blocking, and Ransom Block.

Quantum Scalar Tape Libraries Make Tape Easy With Advanced Monitoring and Proactive Diagnostics

Quantum Scalar Tape Libraries start as small as three rack units and 25 slots and can scale as large as over 20 racks in size. Every module offers Capacity-on-Demand (CoD) licensing, with configurable designs to accommodate data growth. Scalar iLayer™ proactive diagnostics software is constantly monitoring the tape library environment, including media, tape drives, and the tape library itself. Degraded conditions, including media and drive conditions, can be detected and alerted proactively to make tape easier to manage and minimize downtime.

Investment Protection With Support for Multiple LTO Generations

Quantum Scalar Tape Libraries support many generations of LTO media. Different generations of LTO tape drives and tape media can be mixed within a single library, offering investment protection and giving customers the benefits of decreasing tape costs over time.
## Scalar Tape Libraries

Scalar Tape Libraries offer ultra-high density and scalability, designed for a variety of use cases. Here’s a detailed look at some of its key features and benefits:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Best-in-Class Storage Density</strong></td>
<td>All Scalar Tape systems offer the best density within a standard 19&quot; rack form factor.</td>
</tr>
<tr>
<td><strong>Capacity-on-Demand Growth (CoD)</strong></td>
<td>Simplifies growth by scaling quickly and easily, without disruption.</td>
</tr>
<tr>
<td><strong>Quantum Ransom Block</strong></td>
<td>Provides the highest level of security by creating a physical barrier between tapes and the tape robot. Data stored on tapes that have been &quot;blocked&quot; cannot be accessed even in the unlikely event that a tape library is hacked.</td>
</tr>
<tr>
<td><strong>Active Vault</strong></td>
<td>Secure, isolated in-library vault partition not visible to applications or network. Protects data against ransomware and other cyber threats. Archive tapes inside the library, minimizing costs and cartridge handling while improving security and access to vaulted content.</td>
</tr>
<tr>
<td><strong>Logical Tape Blocking</strong></td>
<td>Logical Tape Blocking is a logical policy-based block that’s placed on a tape magazine, while it waits for the magazine to be filled. Before tapes are ejected, administrators can prevent tapes from being loaded into a drive using software commands, reducing the risk window until Ransom Block is initiated. Works in conjunction with Scalar Ransom Block.</td>
</tr>
<tr>
<td><strong>Multi-Factor Authentication (MFA)</strong></td>
<td>Multifactor authentication option for library UI login using standard MFA applications to protect library admin/user accounts with an additional layer of security via a time-based one-time password.</td>
</tr>
<tr>
<td><strong>Extended Data Life Management (EDLM)</strong></td>
<td>Ensures stored data remains readable with automated integrity checks.</td>
</tr>
<tr>
<td><strong>iLayer™ Proactive Monitoring and Diagnostics</strong></td>
<td>Ensures the entire system stays running smoothly; provides guided steps to resolve issues, often before failures occur.</td>
</tr>
<tr>
<td><strong>Advanced Reporting</strong></td>
<td>Media, drive, and media security reports help manage system resources, improve security, and improve budget and planning. Automated report scheduling and distribution save time.</td>
</tr>
<tr>
<td><strong>Scalar Key Manager (Encryption)</strong></td>
<td>The Scalar Key Manager FIPS-validated solution makes it easy to manage keys, mitigating risk of lost data. AES 256-bit encryption standard provides the highest levels of security.</td>
</tr>
<tr>
<td><strong>Scalar Key Manager Support</strong></td>
<td>FIPS-validated solution makes it easy to manage keys, mitigating risk of lost data.</td>
</tr>
<tr>
<td><strong>Active/Active Dual Robots</strong>*</td>
<td>Adds a second robot to the library for high availability and faster performance. Operations continue in the event of a robot failure. Robot service is non-disruptive to the application.</td>
</tr>
<tr>
<td><strong>High-Density Expansion Module</strong>*</td>
<td>Can store up to 23.4 PB* in a single 19-inch rack without compromising cartridge access performance. Provides non-disruptive bulk loading and fast independent cartridge scan/inventory.</td>
</tr>
<tr>
<td><strong>Cloud-Based Analytics</strong></td>
<td>Gain insight into your system with Real-Time Monitoring and Predictive Issue Resolution analytical tools.</td>
</tr>
<tr>
<td><strong>Path Failover</strong></td>
<td>Control path and data path failover features ensure library system stays operational and accessible, even with a SAN fabric failure.</td>
</tr>
<tr>
<td><strong>RESTful Web Services</strong></td>
<td>Saves administrative time by easily automating repetitive tasks.</td>
</tr>
<tr>
<td><strong>Automatic Firmware Update Checks</strong></td>
<td>Customers can choose to have automatic checks for firmware updates to ensure use of the latest library and drive code levels.</td>
</tr>
<tr>
<td><strong>Auto-Discovery and Auto-Calibration</strong></td>
<td>Auto-discovery and auto-calibration for installed/added components (modules, tapes, drives, magazines, etc.)</td>
</tr>
<tr>
<td><strong>Partitioning</strong></td>
<td>Every Scalar Library supports logical partitioning, up to 24 partitions per system, so that systems can be shared between multiple applications.</td>
</tr>
</tbody>
</table>

---

*Ransom Block not available on Scalar i6000. **EDLM not available on Scalar i3. ***Active/Active Dual Robots and HD Expansion module available only on Scalar i6000.
### Scalar Tape Libraries | Technical Specifications

<table>
<thead>
<tr>
<th>Number of Slots</th>
<th>Scalar i3 (Small to Mid-Market)</th>
<th>Scalar i6 (Medium Enterprise)</th>
<th>Scalar i6000 (Large Enterprise)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 to 400</td>
<td>50 to 800</td>
<td>100 to 15,000</td>
<td></td>
</tr>
</tbody>
</table>

**System Capacity Range (TB)**

<table>
<thead>
<tr>
<th>LTO-9 (raw / compressed)</th>
<th>450 to 7,200 / 1125 to 18,000</th>
<th>500 to 14,400 / 4,500 to 36,000</th>
<th>1,800 to 26,108 / 4,500 to 540,270</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTO-8 (raw / compressed)</td>
<td>300 to 4,800 / 750 to 12,000</td>
<td>600 to 9,600 / 1,500 to 24,000</td>
<td>1,200 to 144,072 / 3,000 to 360,180</td>
</tr>
<tr>
<td>LTO-7 (raw / compressed)</td>
<td>150 to 2,400 / 375 to 6,000</td>
<td>300 to 4,800 / 750 to 12,000</td>
<td>600 to 72,038 / 1,500 to 180,900</td>
</tr>
</tbody>
</table>

**Number of Drives**

| 1 – 24 |

**Drive Types Supported**

| Half-Height (H-H) LTO Drives | Full-Height (F-H) LTO Drives | Full-Height (F-H) LTO Drives |

**Central Module Form Factor**

| 3U | 6U | Full Rack |

**Minimum Size**

| 3U | 6U | Full Rack |

**Maximum Size**

| 24U | 48U | Full Rack |

**Deployment**

| Rack-mounted | Free-standing, scales linearly |

**How System Scales**

- Scales vertically in rack up to 24U in 3U increments and 25-slot CoD licensing
- Scales vertically in rack up to 48U in 6U increments and 25-slot CoD licensing
- Scales up to 20 racks in 6U increments and 25-slot CoD licensing

**Operation**

- **Inventory Speed:** Ranges from approx. 1 minute to 6 minutes, depending on the configuration
- **Connectivity:** For most modules, 1 minute 12 seconds; four modules, 5 minutes

**Drive Interfaces:**

- 8 Gb Fibre Channel and 6 Gb SAS Management Interface: 1 GbE
- 8 Gb Fibre Channel and 12 Gb SAS (LTO-9 only) Management Interface: 1 GbE
- 8 Gb Fibre Channel and 12 Gb SAS (LTO-9 only) Library Interface: 8G FC bridged through drive for data, 1 GbE with remote GUI and RESTful Web Services for library mgmt

**i3 and i6 Import/Export Options**

- Up to 240 import/export elements supported per logical partition
- Option for 0, 24, or 72 slot I/E stations per expansion module
- One I/E station with 24 slots

**i6000 Import/Export Options**

- Option for 0, 24, or 72 slot I/E stations per expansion module
- One I/E station with 24 slots

**Dimensions**

<table>
<thead>
<tr>
<th>Control Module</th>
<th>Expansion Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 x 17.4 x 36.4 in (13.2 cm x 44.1 cm x 92.45 cm)</td>
<td>5.2 x 17.4 x 36.4 in (13.2 cm x 44.1 cm x 92.45 cm)</td>
</tr>
<tr>
<td>10.4 in x 17.4 in x 36.4 in (26.4 cm x 44.1 cm x 92.45 cm)</td>
<td>10.4 in x 17.4 in x 36.4 in (26.4 cm x 44.1 cm x 92.45 cm)</td>
</tr>
</tbody>
</table>

**Power**

- Optional 2N power / 80 PLUS® Gold certified power supplies

**Reliability and Availability**

- **MSA/MTBF:** Greater than 2 million hours
- **MTTR:** 30 minutes
- **Electrical:** 100 VAC to 240 VAC, 50 Hz to 60 Hz

**Environmental Factors**

- **Temperature:**
  - LTO-9, LTO-8: 16 to 25 °C (61 to 77 °F)
  - LTO-7: 15 to 25 °C (59 to 77 °F)
- **Relative Humidity:**
  - 20 to 50% (non-condensing)
  - 20 to 80% (non-condensing)
- **Maximum Temperature Change:**
  - 5 °C / hour
  - 10 °C / hour
- **Temperature Limitation for Humidity Conditions:**
  - LTO-7, LTO-8: Wet Bulb Temperature ≤ 26 °C (79 °F)
  - LTO-9: Max Dew Point 22 °C (72 °F)
- **Maximum Altitude:**
  - 3,048 m (10,000 ft)
  - 12,192 m (40,000 ft)

**Additional Information**

- Quantum technology, software, and services provide the solutions that today's organizations need to make video and other unstructured data smarter – so their data works for them and not the other way around. With over 40 years of innovation, Quantum's end-to-end platform is uniquely equipped to orchestrate, protect, and enrich data across its lifecycle, providing enhanced intelligence and actionable insights.
- Leading enterprises in cloud services, entertainment, government, research, education, transportation, and enterprise IT trust Quantum to bring their data to life, because data makes life better, safer, and smarter. Quantum is listed on Nasdaq (QMCO) and the Russell 2000® Index. For more information, visit www.quantum.com.
- ©2022 Quantum Corporation. All rights reserved. Quantum, the Quantum logo, and Scalar are registered trademarks, and Layer is a trademark, of Quantum Corporation and its affiliates in the United States and/or other countries. All other trademarks are the property of their respective owners.