

SONY

SCALABLE. RELIABLE. FOREVER.

Sony Optical Archive, Inc. Fundamentally Redefines Archive With Optical Technology

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 EVERSPAN

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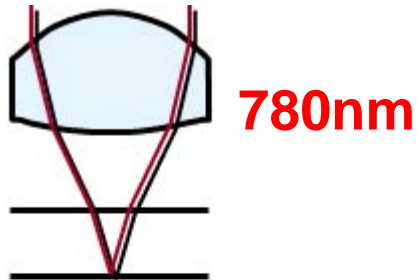
Agenda

- **Everspan Technology**
 - Media
 - Drive
- **Everspan Library**
 - Row level design
- **Connectivity Options**
 - S3 Object store
 - Tape interface

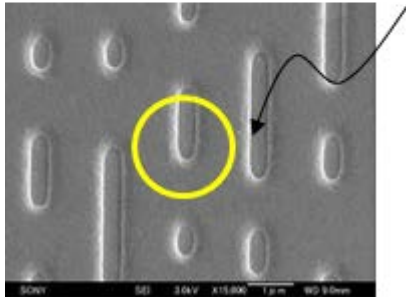
Optical technology for professional archiving

Consumer

CD(1982)

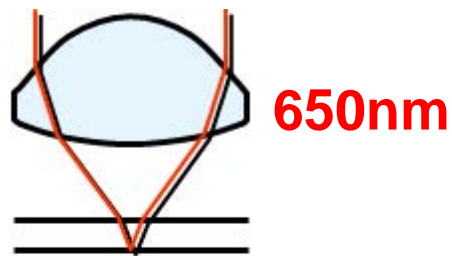


780nm

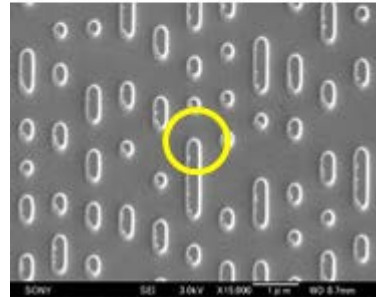


650MB

DVD(1996)

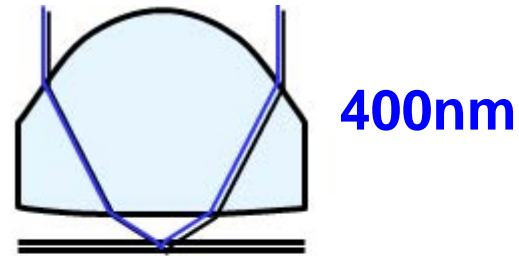


650nm

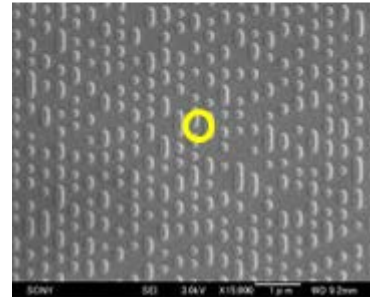


4.7GB

Blu-ray™(2003)



400nm



50/100GB

**Professional
Archival Disc
(2015)**



300GB

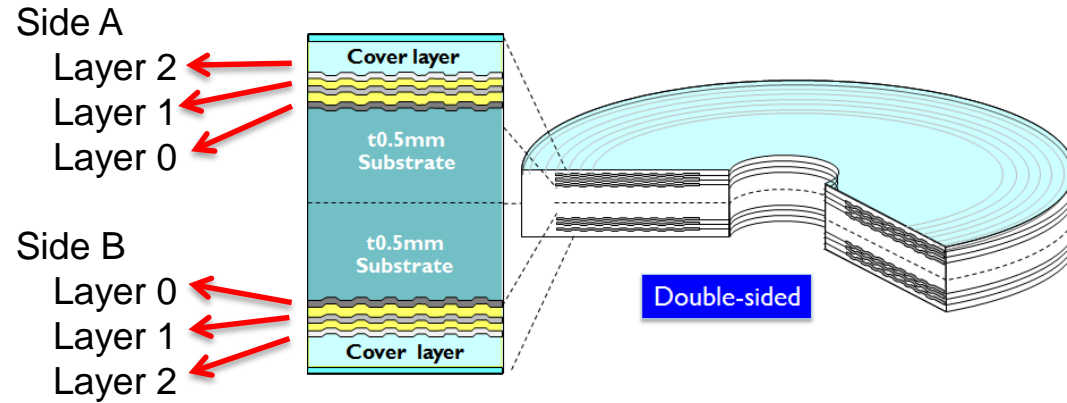
Archival Disc

Drive

Disc structure

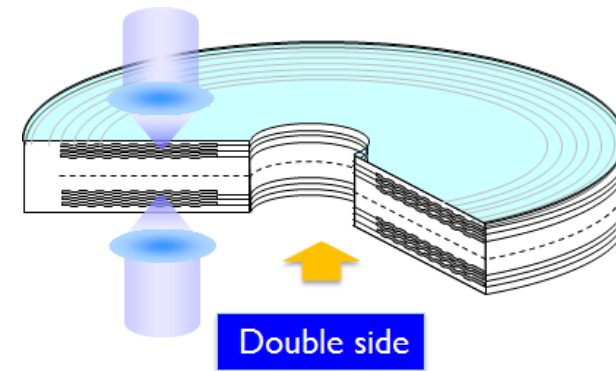
- 3 layers /side & Double-sided structure
- Inorganic recording layer structure
- Protective cover layer

Recording Layer



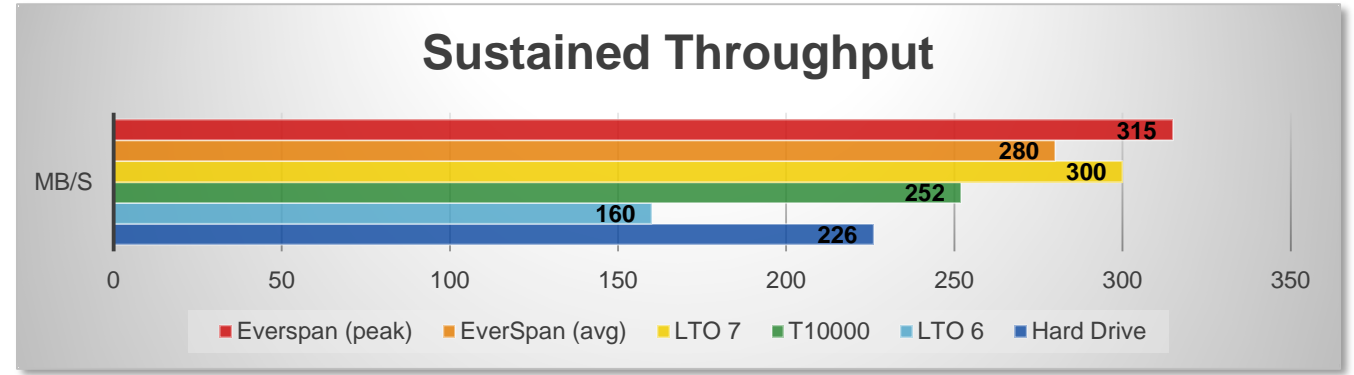
Key technologies

- Simultaneous recording on both sides
- 45MB/s Head



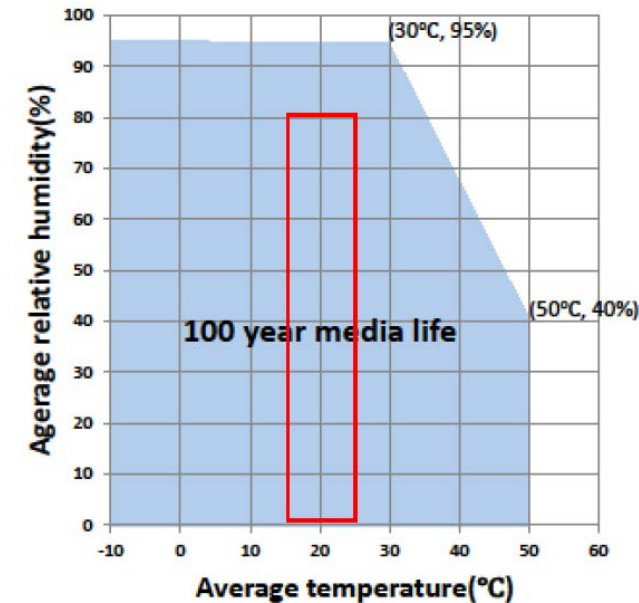
Performance

- Array head drive
- Restore 1.3PB/day (64 drives)
- Multi row options



Reliability

- Non contact recording technology
- Erasure coding option
 - Within library
 - Across 1,2 or 4 libraries
- 100 year media warranty



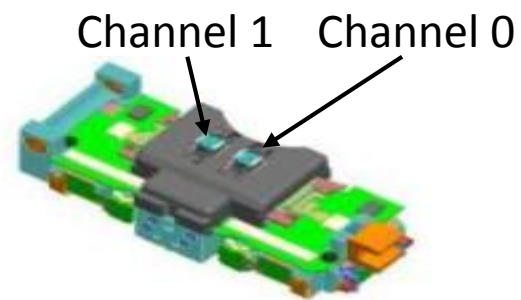
LTO-7 Archival Spec.

New Technology for high transfer speed (Gen2 drive)



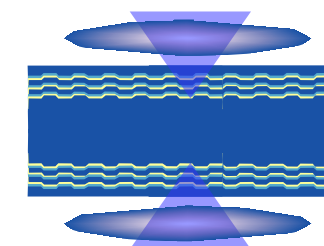
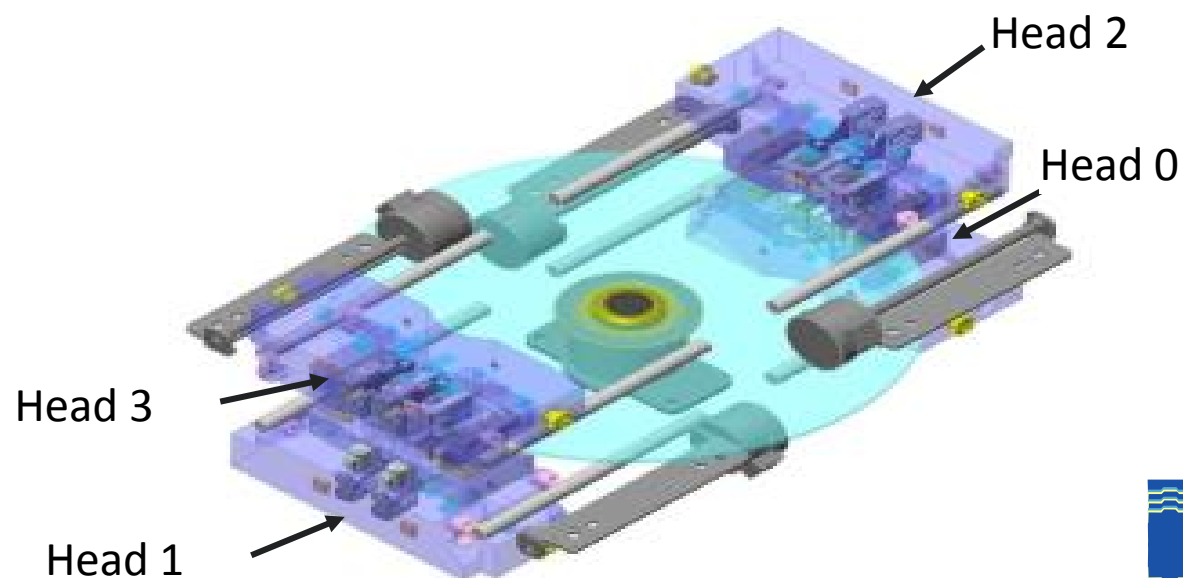
8-channel Drive can handle double-sided disc

2-channel Head



Dual Channel Head Assembly

8-channel Drive



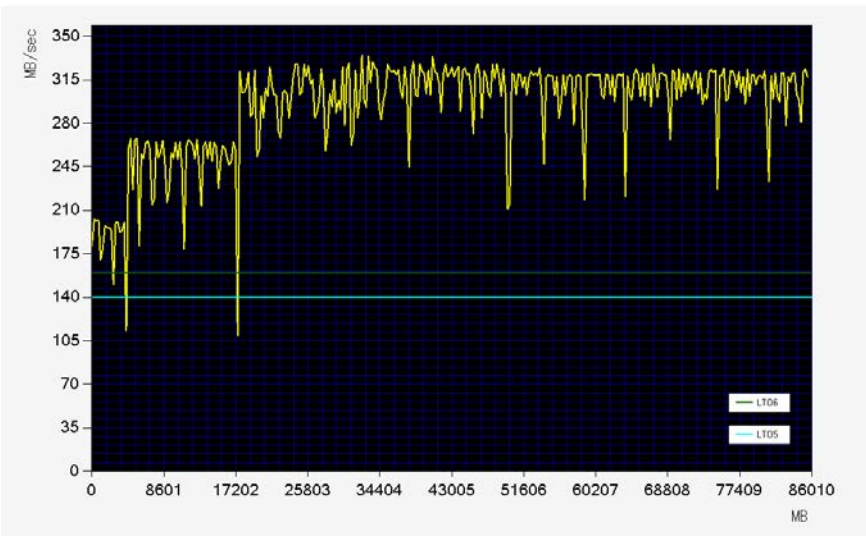
Double Side

High performance drive

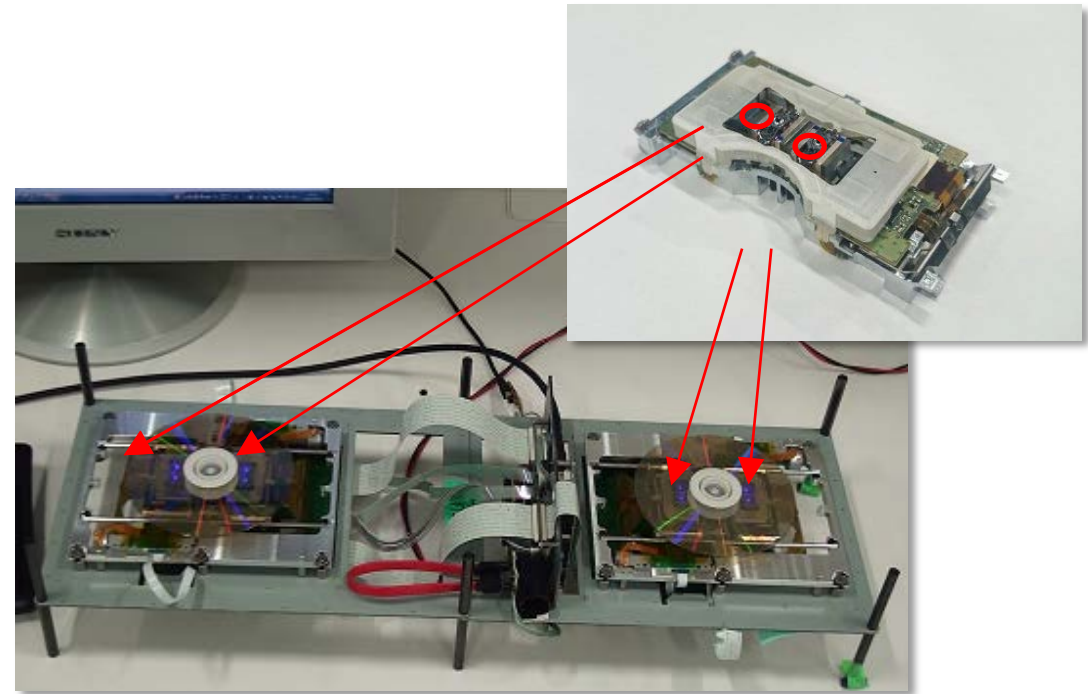


- The worlds 1st 8-CH dual-side drive for highly efficient operation
- Drive transfer rate:
 - Average write 140MB/s (with verification)
 - Average read 280MB/s (peak 315MB/s)
- SATA interface
- High reliability laser

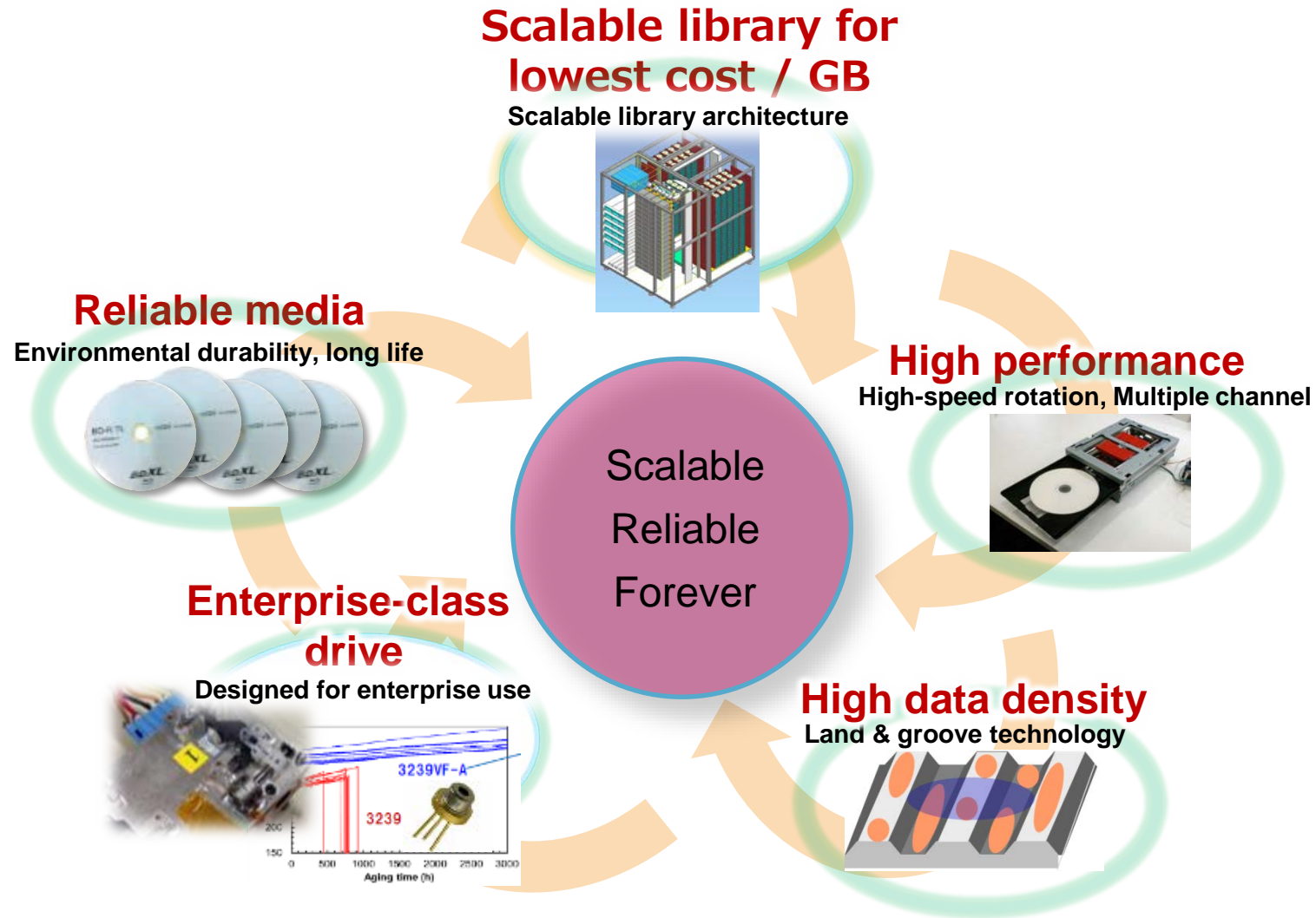
Read transfer rate



Optical head with 2 CH laser



Optical Technology is Optimized for Data Archival



Everspan brings Optical to Archiving

- *Scalability* across expansion units: 12.6PB increments
- *Reliability* independent of read frequency
- *Performance*: 18GB/s restore (1.3PB/day)
- *Compatibility* through drive/media generations
- *Lowest cost/GB* acquisition cost
- *Lowest power consumption* (typical 9kW/176PB)

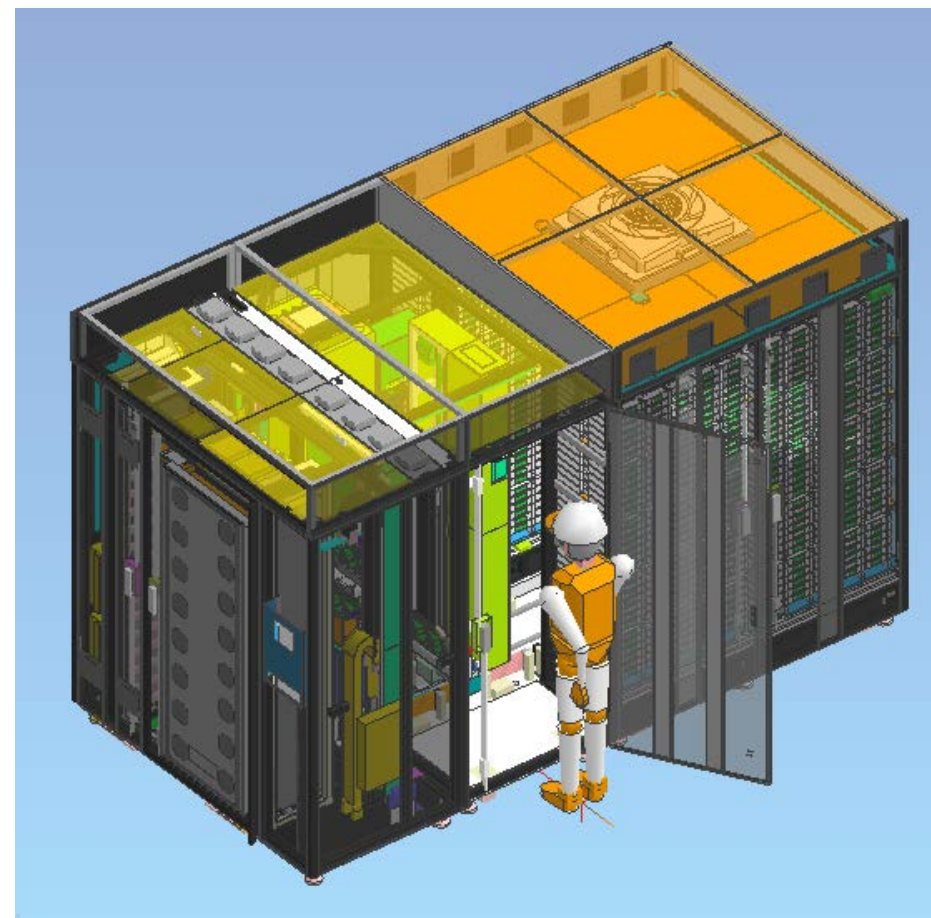
Everspan: 0.05kW/PB (\$7,708/YR for 176PB at 10c/kWh)

HDD (8TB): 2.5kW/PB (\$385,440/YR for 176PB at 10c/kWh)



Everspan Base Unit

- Configurable system components
 - Up to 64 drives
 - Highly efficient 4 drive loading mechanism
 - Up to 14 expansion units
- Complies with OCP standard dimensions



Everspan System

- Expansion units are media racks
 - 64 drives, total bandwidth 18GB/s
 - Each tray has 64x 300GB media (18.6TB per tray)
 - Each Expansion Unit holds 680 trays (12.6PB capacity)
- Expansion units require nominal power only
 - Scale storage capacity without scaling operational cost
- Scalable to 14 expansion units = 176PB



Connectivity Options & Software Integration

Library interfaces

- Robotic = SMC
- Optical drive = MMC-6 (iSCSI target)
- Optical drive with Tape Interface = T10 (iSCSI target)

Storage Interface Support at GA July/2016

S3 Object Store (>80% market share)

- Erasure code implementation
- Active/Passive Gateway- and Metadata Servers

HPSS implementation

- Utilizing HPSS connectivity options

HDS HCP implementation (Hitachi Content Platform)

- will be supported in 2016

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