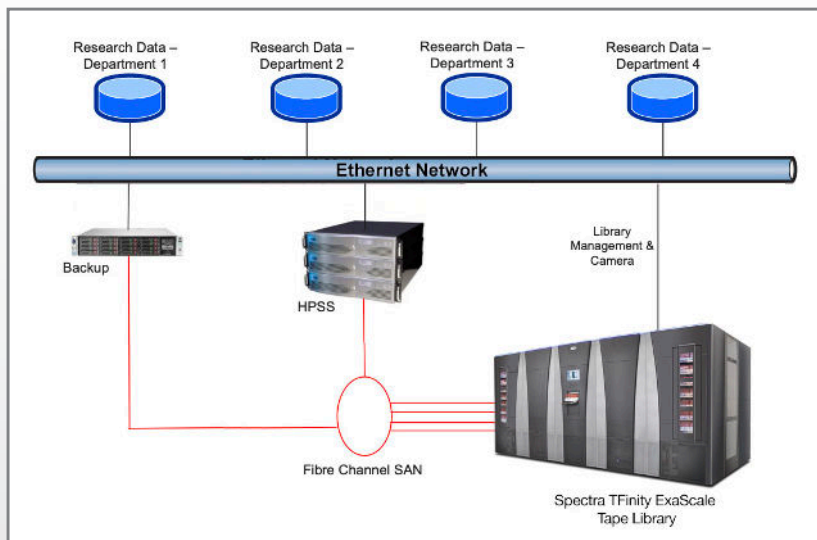


HPSS and Spectra Logic: Unparalleled High-Performance Storage for Demanding Environments

Every high performance computing site has similar demands. They all need fast, efficient and scalable storage that provides quick access to and integrity of vast data sets that are growing exponentially. Together, the storage software powerhouse, HPSS, and tape storage hardware from Spectra Logic, provide a tested, verified storage solution. Installed in many of the largest HPC deployments across the world, they allow high performance computing environments to easily meet their demanding requirements.

HPSS storage software meets the most challenging long-term scalable storage requirements. HPSS features reduce the total cost of ownership of data, maximize transfer performance of all file sizes, optimize storage utilization, efficiently manage data integrity, and minimize failure recovery time.

The Spectra TFinity® ExaScale Tape Library, with high-performance dual robotics, integrates seamlessly with HPSS storage software, to maximize the benefits of storage, optimize business results and minimize time-to-value. Combined, HPSS and Spectra reduce risk, improve efficiency and address data protection concerns – easily scaling to Exascale archives.



Solution Benefits

• Incremental Scalability

A single HPSS namespace can scale from petabytes to exabytes of data, while Spectra libraries scale to over 2.5EB of data and accommodate all three major tape media types.

• Performance & Efficiency

HPSS maximizes performance of Spectra tape hardware for long-term storage. A single scalable namespace simplifies management and maximizes the sharing of resources. HPSS efficiently uses Spectra's TFinity Exscale Tape Libraries' dual active tape robot movement with increased tape mount rate efficiency.

• Availability & Reliability

HPSS offers high availability and long-term data protection. Db2 allows for fast failure recovery while autonomous transactions ensure metadata integrity. Software file checksum validation and logical block protection ensures data accuracy while HPSS RAIT offers low-cost data redundancy. Spectra's TFinity Exascale includes a redundant, dual-robotic infrastructure that provides a failover solution, as well as twice the working ability.

• Delivery & Support

HPSS is delivered and supported as an IBM service offering, while Spectra's award-winning SpectraGuard® Support provides a superior level of service to achieve the least amount of downtime and fewer costly disruptions.

“ A multi-decadal storage namespace, HPSS provides a best of breed scaled-out archive designed for performance and data durability at a tremendous value proposition. We do that with passion for mission. Spectra tape libraries help enable successful realization of that mission with cost effective highly capable solutions. ”

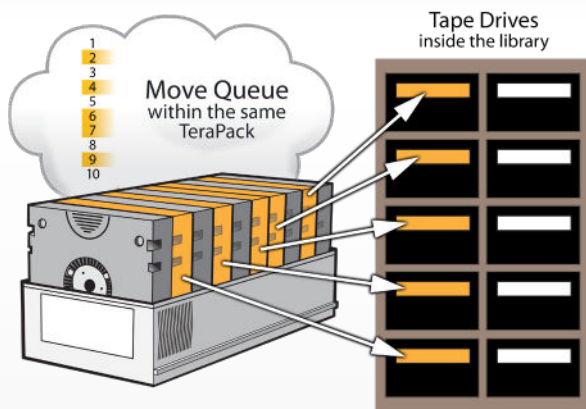
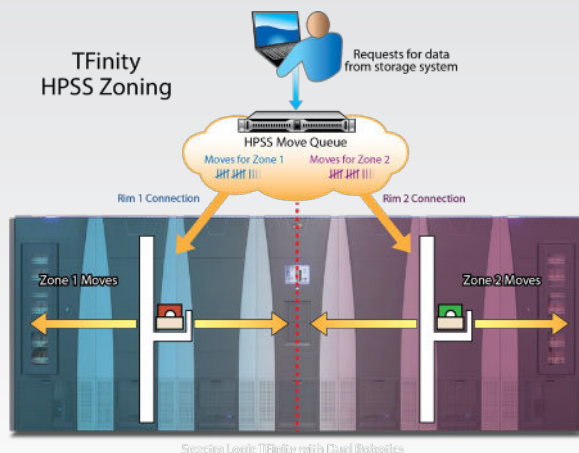
– Todd Heer, HPSS EC Co-Chair

Operational enhancements through tight integration of software and hardware

HPSS software has been upgraded with specific features that help to boost the performance of the Spectra TFinity Exascale tape library. These enhancements have been designed and tested for the toughest high performance computing environments to ensure reliability and functionality. HPSS versions 7.5.2 and 7.5.3 have introduced SCSI PVR and Spectra Logic library compatibility improvements that have increased tape mount rate efficiency from 42% to 99% on Spectra Logic tape libraries – maximizing the robotic performance.

Robotic Zoning

Spectra Logic has collaborated with the engineers at HPSS to optimize the zoning functionality with the TFinity ExaScale tape library. Testing has shown that when zoning and other optimizations focused on performance are enabled within HPSS, the robotic mount performance can be doubled compared to testing against older HPSS software with no TFinity performance optimizations. When zoning is enabled, the status of each element (drives and slots) includes a “zone” which indicates the side (left/right) of the library the element is currently on. This allows the host to select zone 0 drives for mounting zone 0 tapes, and vice versa. As long as moves do not cross zones, all moves can be performed in parallel. The software package can maintain two work queues, one for each zone. Work from the top of each queue is sent to the appropriate interface. As long as work is available on both queues, the library performs at twice the speed of a single-robot library.



TeraPack Affinity

Changes were also made to the HPSS software package so that tape barcodes can be associated with the corresponding TeraPack® barcode in which the tape resides. This allows HPSS to sort the move queue for each zone so that tapes from the same TeraPack can be loaded in order into drives, which further increases robotic mount performance. This accommodates loading up to 10 drives from a single TeraPack with intelligent move queues, significantly optimizing performance in the TFinity ExaScale. Capable of holding up to 10 LTO or 9 IBM® TS tapes, TeraPacks also make it easy to bulk load tapes into Spectra tape libraries.

Spectra TAOS

TAOS is a unique Spectra advancement that provides up to a 4 times improvement in overall access speed on reads and up to a 13 times reduction in tape movement across the drive head when reading multiple files from individual tapes. The latter also results in reduced tape and drive wear providing the secondary benefit of improving overall system reliability and reducing cost. TAOS speeds up recall times for the Spectra TFinity ExaScale by intelligently reordering recalls from LTO tapes to optimize the time required to perform a recall. Until now, no such functionality has existed for LTO-7 and LTO-8 tape-drive-based systems.

Spectra Logic

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