



CASE STUDY

University of South Dakota achieves high-availability sharing and long-term offsite storage with Spectra solution



A core requirement of our solution was its shareability across all stakeholders. BlackPearl's hybrid ecosystem easily manages our research data, moving it seamlessly to tiers of storage, while greatly improving both data accessibility and usability for USD researchers and administrators alike."



Douglas Jennewein,
Director of Research
Computing at the
University of South Dakota

AT A GLANCE

Challenges

- Growing supercomputing demand
- Limited data storage capacity
- Decentralized data storage
- Need for better data access

Solution

- Deploy Spectra NAS solution
- Use BlackPearl for archiving
- Integrate Globus for storage
- Migrate data without disruption

CHALLENGE

The University of South Dakota's Research Computing Group advances science, engineering, and medicine. Serving USD and global collaborators, USD operates two supercomputers, Lawrence and Legacy, with 2000 and 680 cores, respectively. Lawrence, launched in 2018, delivers over 100 TFLOPS.

USD's supercomputing user base has expanded from bioinformatics in 2006 to most STEM fields, with emerging use in the Humanities. Their infrastructure had a 470TB capacity, but local lab storage limited cross-campus data access and collaboration.

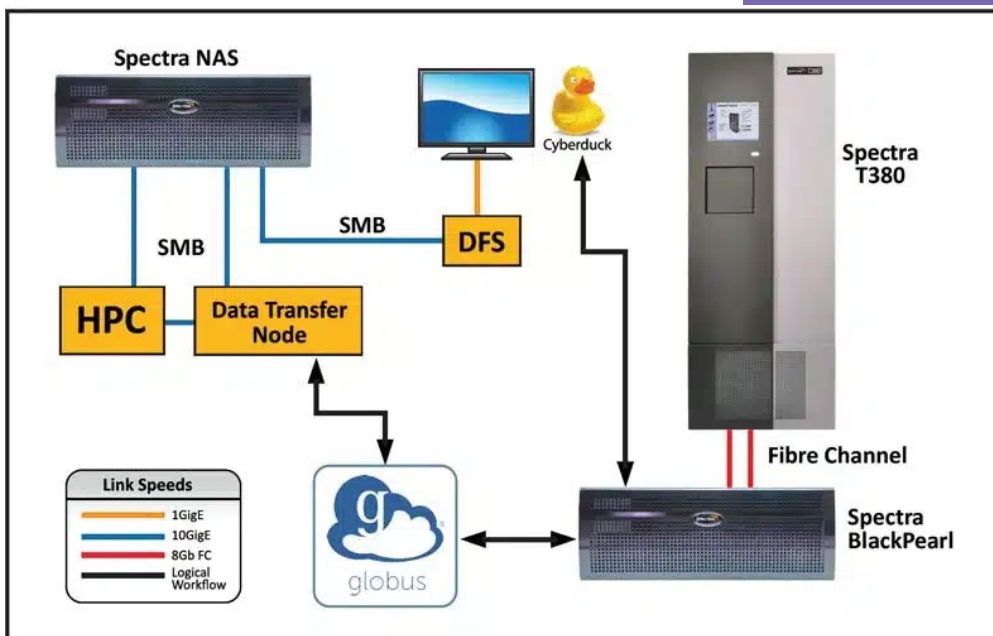
To manage growth, USD launched the South Dakota Data Store (SDDS) project, offering two service tiers: the Sharing Tier and the Archival Tier.

SOLUTION

USD deployed a Spectra NAS solution, BlackPearl® Converged Storage System, and T380 Tape Library with LTO drives. The NAS with 8TB SAS drives serves as the local file system, while BlackPearl and T380 handle the archive. This multi-tier, storage-diverse architecture ensures high data reliability and scalability, balancing NAS accessibility with tape-based long-term protection.

BlackPearl integrates with Globus, allowing the Research Computing Group to manage storage through a single interface. The NAS handles NFS/CIFS storage and data staging, with Cyberduck and EON Browser sending unmanaged data to the Archive Tier. The system scales easily and supports shared access from multiple sites. BlackPearl's migration capabilities enable seamless data transfers without disrupting operations.





Network Diagram for University of South Dakota

UNIVERSITY OF SOUTH DAKOTA'S ENVIRONMENT

SOLUTION INFORMATION

Spectra BlackPearl – BlackPearl offers an object-based, hybrid storage platform that scales cost-effectively as data volumes grow. It adapts to changing requirements and simplifies data synchronization between on-prem and cloud storage. Supporting multiple workflows, BlackPearl minimizes the need for third-party data movers by integrating with certified clients and file movers.

Spectra T380 Tape Library – Scalable from 50 to 380 LTO slots, the T380 supports up to 4.5PB of data storage. With transfer rates of up to 15.5TB/hr (32.4TB/hr compressed*), it features 12 LTO drive support and is compatible with LTO and IBM TS11X0 tape technologies.

Spectra NAS Solution – Ideal for mid-tier data storage, Spectra NAS offers file storage from 48TB to 10.7PB. It supports various drive types, including 4TB, 8TB, and 12TB enterprise drives, 8TB archive drives, and SSDs. Cost-effective, flexible, and scalable, Spectra NAS simplifies data storage at just 7.5 cents per gigabyte.

Why University of South Dakota Chose Spectra

- Storage diversity
- Accessibility
- Ease-of-use
- NFS to object storage pathway
- Integration with Globus

ENVIRONMENT

- Spectra BlackPearl Multi-Purpose Hybrid Storage Platform
- Globus research data management platform
- Spectra 4U NAS Solution
- Spectra T380 Tape Library
- Cyberduck client software
- Spectra EON Browser
- Spectra Certified Media

ABOUT HPC AT USD

University of South Dakota (USD) operates two supercomputer systems, the Lawrence Supercomputer and the Legacy Supercomputer. Coupled with advanced data platforms and high-speed research networks, and managed by the USD Research Computing Group (USDRCG), these advanced digital resources are employed to accelerate computational and data-driven research and scholarship. Their mission is to leverage this cyberinfrastructure to reduce time to discovery – growing the number of affiliated research practitioners and increasing USD's competitiveness for research funding. Access is free to all non-commercial entities in South Dakota.