

CASE STUDY

Lustre-based storage solution outshines expectations for NFS

The Challenge

A University of Minnesota laboratory develops innovative methodologies for solving real-world fluid-flow challenges, primarily in the areas of hydropower and wind energy research. The laboratory is at the center of a national effort to advance marine and hydrokinetic devices as a practical and sustainable solution for harnessing waterpower, thanks in part to their state-of-the-art computational fluid dynamics tools. The lab also works closely with academic institutions, government labs, and commercial industries, streamlining the process of wind power generation to make wind a more viable energy source. This research uses sophisticated computational tools to simulate real-world wind farm configurations.

The University of Minnesota's research requires and generates an enormous volume of data, which needs to be organized and stored for current use, and archived and protected for future use.

The Solution

In order to meet the University of Minnesota's highly demanding and ever-expanding storage needs, Nor-Tech developed a VoyStor Storage Server with the Lustre Distributed Filesystem (VoyStor Lustre).

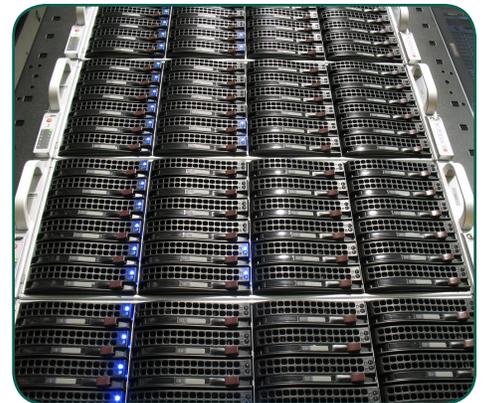
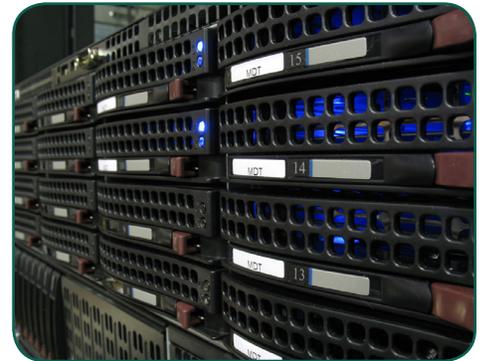
Nor-Tech chose the high-performance Lustre filesystem because of its celebrated speed and scalability, both of which are crucial to an organization like the University of Minnesota.

Storage servers or disk arrays can be added to grow a live filesystem, and the VoyStor Lustre can support tens of thousands of clients, including many multi-PB installations.

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The VoyStor Lustre can handle enormous amounts of data on the fly, reading files as fast as the QDR InfiniBand can send them, approximately 3.5GB/sec to a single client. To put it in familiar terms, that's about one DVD's worth of data every second. Nor-Tech's exhaustive testing produced results using 16 clients reading and writing 16 different files at the same time and each client averaged 126MB/s read and 117MB/s write speeds.

The scalable solution with its unprecedented speed and flexibility, is an ideal solution for the University of Minnesota's demanding applications and will provide them with tools they need to manage, protect, and access their always expanding information archive.



As commodity clusters continue to grow in performance and more applications adopt parallel I/O, traditional file systems such as NFS, NAS, SAN and DAS are failing to keep up with the HPC I/O demand. The Lustre parallel filesystem is gaining ground within the departmental and workgroup HPC space since it has proved capable of meeting the high I/O workload within HPC environments as well as presenting a range of additional operational benefits.