OSNEXUS

Nuclear Energy Company TerraPower Uses a Custom OSNexus QuantaStor Solution to Power its HPC Needs

Business Overview

TerraPower is a nuclear energy technology company, developing the next generation of safe, affordable, and advanced commercial nuclear power. TerraPower specializes in clean nuclear reactors that use spent fuel rods from older reactors to extract unused energy and reduce nuclear waste, and uses large Windows-based HPC clusters to meet its needs.

At a Glance

Challenge: Find a custom data storage solution to manage three Windows-based HPC clusters.

Solution: OSNexus QuantaStor

Hardware Platform: HPE

Use Case: High-performance Computing

Benefits

- ✓ High-performance
- ✓ Easy deployment
- ✓ Grid management
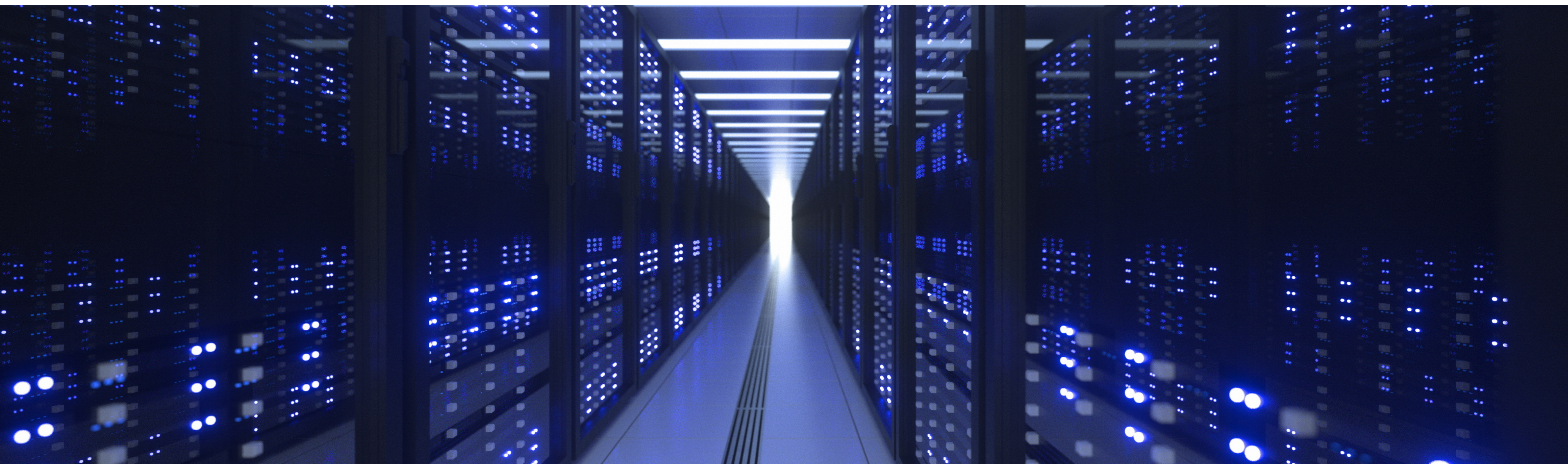- ✓ Hardware agnostic
- ✓ Intuitive interface

The Challenge

TerraPower is not a run-of-the-mill HPC user, and was in the market for an equally unique data storage system tailored to its specific use cases. Along with the sheer magnitude of information that needs to be available at a moment's notice, there are strict security constraints in the nuclear industry, so cloud systems were not viable. TerraPower uses three Windows-based HPC clusters, and its user base is very technologically adept.

> "Performance on QuantaStor was night-and-day above the alternatives - we've all been blown away."
>
> - **TerraPower**
> *A Nuclear Innovation Company*

The Solution

The TerraPower team was interested in finding a custom solution for its HPC data storage needs. OSNexus created a proposal using QuantaStor layered over HPE servers and SANs, and TerraPower performed on-premises testing on the system. "Performance on QuantaStor was night-and-day above the alternatives - we've all been blown away" said John-Luke Peck, Manager of IT, Security, and HPC at TerraPower.

After comparing the QuantaStor system tests to an off-the-shelf system's tests, limitations and performance issues were found in the off-the-shelf system that were not present in the HPE based QuantaStor system. Jason Wulf, HPC Systems Administrator at TerraPower, notes "From an engineering standpoint, the biggest benefit to QuantaStor over a vendor-built product is the flexibility. The QuantaStor platform behind the HPE hardware, allows this architecture to adapt to any future fabric and any new storage technology we need to use to expand what we've purchased today."

The Result

TerraPower configured a QuantaStor storage grid, consisting of their large Windows-based HPC cluster that uses QuantaStor highly-available storage appliances configured with multiple HPE MSA SANs behind it. QuantaStor appliances aggregate capacity and performance to meet the high-performance SMB protocol requirements for their HPC cluster.

QuantaStor provides high-performance computing (HPC) storage capabilities to scale-up and out with its grid architecture, for increased I/O and capacity requirements. Leveraging open source file systems and protocols including NFS, CIFS, SMB, iSCSI, QuantaStor enables access to file, block, and object storage across multiple nodes for fast and efficient pure performance, dedicated computational scratch, or multi-petabyte result set storage applications. This all supports HPC applications such as big data, rich media, weather forecasting, 3D computer modelling, seismic data processing and data mining, or large-scale simulations like those at TerraPower.

> " From an engineering standpoint, the biggest benefit to QuantaStor over a vendor-built product is the flexibility. The QuantaStor platform behind the HPE hardware, allows this architecture to adapt to any future fabric and any new storage technology we need to use to expand what we've purchased today. "
>
> - Jason Wulf, HPC Systems Administrator at TerraPower

About OSNexus

OSNexus helps organizations manage and scale their storage environments with greater efficiency, flexibility, and performance with its industry-leading QuantaStor™ platform. QuantaStor addresses a broad set of storage use cases including server virtualization, big data, cloud computing, and high-performance applications through scale-out physical and virtual storage appliances. OSNexus focuses on continuous innovation with a strong focus on product quality and industry-leading support to ensure customer and partner success with every deployment. QuantaStor is sold worldwide through managed hosting providers, OEMs, VARs, and System Integrators.