

Leading CSP Architects Hybrid Flash Azure Stack HCI Solution to Meet Demanding Multi-Workloads Environment

Pronet Solutions meets demanding SLAs with a high-capacity QLC Intel® NVMe, with hard-drive storage design with hybrid storage volumes



The Challenge



- Eliminate three-tier SAN
- Support all-flash and hybrid high capacity workloads
- Acquire flexibility to meet new and existing customer storage demands and scale easily for both flash and HDD expansion
- Meet high-capacity and all-flash performance SLAs for a customer's index and image retrieval application without breaking the bank
- Guarantee 24/7 uptime

Organization

Located in the Greater Metropolitan Houston area, Pronet Solutions is a managed and cloud service provider (MSP and CSP) offering complete, turnkey on-premises and cloud email, backup, disaster recovery, and infrastructure security solutions. Pronet Solutions services a wide variety of companies in the financial, oil and gas, educational, industrial, and medical sectors.



Challenge

Pronet Solutions sought to refresh its existing infrastructure and increase storage capacity. Because many of its technology-dependent customers deliver 24/7 essential services, it was essential Pronet's new infrastructure be highly available, reliable, and ensure 24/7 uptimes with no extended maintenance windows.

Many of its new customers traditionally underestimate their storage requirements, making it difficult to predict data center infrastructure spending. Because SANs lack scalability, if one of Pronet's new customers needed more storage than planned, it might have to buy another unanticipated three hundred-thousand-dollar SAN. To meet its customers' fluctuation in storage demands, Pronet needed a flexible, highly scalable, high-capacity solution that could grow with its business.

Pronet also required a hybrid storage solution that could increase Exchange server, remote desktop services (RDS), storage, and backup performance. Although a hybrid storage solution could meet most of its service level agreements (SLAs), one of Pronet's customer index and image retrieval applications required approximately 90TB of all NVMe flash performance. Because typical NVMe flash storage drives lack the capacity of HDDs, Pronet needed to explore other flash storage options that could meet its customer's SLAs.

The Solution



- Azure Stack HCI
- Four-node DataON HCI-216 solution with Intel® P4610 NVMe 3.2TB and Intel® P4326 QLC 14TB flash
- Two-node DataON HCI-216 solution DNS-4760 JBODs with Western Digital Ultrastar 14TB HDDs
- NVIDIA 100GbE ConnectX RDMA networking
- Windows Admin Center and DataON MUST

Western Digital®

Solution

Early on, Pronet saw Microsoft Storage Spaces Direct, a software-defined storage solution that was first included within Microsoft Windows Server 2016, as a viable SAN replacement. Unlike a SAN, Microsoft software-defined storage delivered a highly scalable, highly resilient converged and hyper-converged solution. With this new infrastructure, if Pronet needed more storage, and it could no longer scale up, by adding server nodes and JBODs to the Microsoft SDS infrastructure, Pronet could affordably and easily scale-out without having to spend hundreds of thousands of dollars.

Andrew Hill, Co-founder, Pronet, said, “Storage Spaces Direct was great, but it required a very specific set of hardware. We originally worked with a systems builder, but the hardware solution was piecemeal, and we had to struggle with compatibility issues.” For this refresh, Hill sought out a validated solution.

Hill had heard about DataON by reputation as one of the premier Microsoft Azure Stack HCI solution providers. For him, Azure Stack HCI was ideal because it incorporated the same Microsoft software-defined technology Pronet was already using but built on Microsoft-validated industry-standard hardware, ensuring that he wouldn't face the same compatibility issues as he had with his white box solution.

One of the key attractors to DataON was DataON MUST™, a tool that provides a high level of infrastructure visibility, monitoring, and management for Azure Stack HCI. Hill engaged with the DataON team. They came up with a hybrid storage solution that could grow with Pronet's business and provide plenty of traditional hard disk drive (HDD) space to scale-up before needing to scale-out. DataON also came up with an innovative all-NVMe flash high performance and capacity solution to meet the challenging SLAs of Pronet's customers.

Pronet purchased a DataON HCI-216 in a four-node converged configuration configured with Intel® P4610 NVMe high-performance flash cache and P4326 QLC high-capacity flash storage and two direct attached storage (DAS) DataON DNS-4760 sixty-bay JBODs configured with Western Digital Ultrastar HDDs. For high-speed RDMA networking, Pronet selected NVIDIA 100GbE ConnectX network adapters and NVIDIA Spectrum switches.

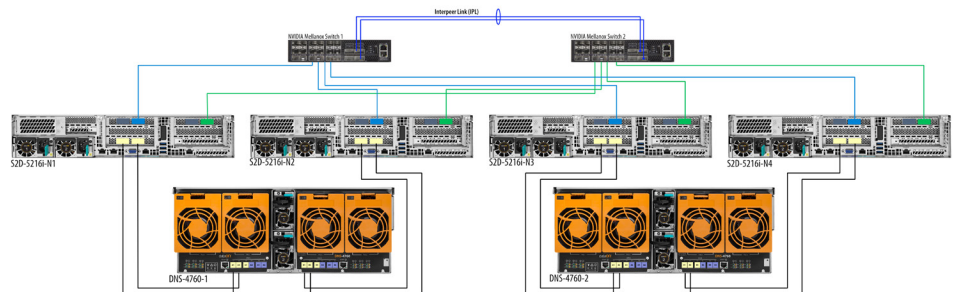


Figure 1: DataON Four-node HCI-216

Pronet configured the storage in the four-node and two JBOD solution into two volumes as follows:

- Vol 1: Intel® P4610 all-NVMe flash cache and Intel® P4326 QLC high-capacity flash storage for high-performance applications.
- Vol 2: Intel® P4610 all-NVMe flash server-side cache and DataON DNS-4760 60-bay JBODs divided into four 30-bay JBODs with Western Digital Ultrastar HDDs for all other applications.

The Result



- Consolidated infrastructure and reduced CAPEX costs with highly scalable, high-density, hybrid and all-flash storage platform, allowing room to scale-up before scaling out
- Acquired flexibility to meet new and existing customer storage demands
- Deployed higher density, affordable Intel® P4326 flash capacity storage with high performance Intel® P4610 cache tier, meeting customer capacity and performance SLAs
- Guaranteed 24/7 uptime and simplified deployment with a validated solution, high availability, and DataON support

Results

With included customized deployment scripts, detailed instructions, and DataON support, Hill was able to quickly get up and running. Because all DataON validated solutions for Azure Stack HCI are rigorously tested, tuned for optimal performance, benchmarked, and guaranteed to work out of the box, Pronet has improved reliability and reduced maintenance windows and downtime.

Microsoft Azure Stack HCI delivered the high availability Pronet needed. With a four-node, two JBOD solution (split into four 30-bay JBODs) and three-way mirror fault tolerance, Pronet's Azure Stack HCI infrastructure could safely tolerate at least two hardware problems (drive or server) at a time. This helped Pronet ensure uninterrupted 24/7 uptimes and meet its customer SLAs. Pronet's high capacity JBOD architecture provided enough room to scale-up at the Petabyte (PB) level and grow before even having to scale-out, giving it the flexibility, capacity, and agility to meet any variation in new customer storage requirements.

By deploying higher density Intel® P4326 QLC all-flash capacity storage with a high-performance Intel® P4610 NVMe cache tier, Pronet was able to deliver HDD density at close to all-NVMe flash speeds, meeting its customer index and image retrieval application SLAs without having to break the bank. Pronet also improved performance for its other customer Exchange server, RDS, storage, and backup workloads by assigning the remaining Intel® P4610 NVMe server-side flash cache tier with Western Digital HDD capacity storage.

Pronet relies on DataON MUST, a native third-party extension for Microsoft Windows Admin Center, for better insights, enhanced visibility, and improved management of its DataON infrastructure. DataON MUST offers historic data reporting, enhanced disk mapping, alert services, call home service, and an infrastructure inventory management tool in an easy-to-use GUI. If there are any issues, Pronet can see the status of the cluster and which drives and server nodes are affected. Pronet's system administrators receive real-time email alerts, improving their response and repair times if hardware or a cluster fails.

With the new infrastructure inventory management tool, Pronet can scan and compare which OS, firmware, drivers, BIOS and BMCs versions it has on each node against the latest quarterly validated server component image baseline from Microsoft. This eliminates guesswork, uncertainty and potential downtime when Pronet updates its infrastructure.

Tips

When asked if he could give any advice to those considering a software-defined infrastructure, Hill emphasized the importance of choosing the right hardware. "You need a partner like DataON who can put together a validated solution, make it work, and keep it current," Hill said. He highly recommends Azure Stack HCI and DataON.



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About DataON

DataON is a hybrid cloud computing company focused on delivering Microsoft Azure Stack HCI, on-premises storage systems, intelligent edge appliances, and cloud-based Microsoft Azure Services. Our company is helping enterprises and customers who have made the "Microsoft choice" to modernize their IT with Microsoft applications, virtualizations, and data protection through a complete and turnkey experience. With over 850 HCI clusters and 150PB of storage deployed, DataON enterprise-level solutions are designed to provide the highest level of performance, manageability, and security offered. DataON is a Microsoft Gold Partner, Microsoft Cloud Service Provider (CSP), and an Intel Platinum Partner.