Going to school on storage
For Longview Public Schools, flash-ready HPE MSA Storage delivers a lesson on reliability, capacity and performance
In every industry, having sufficient, reliable storage resources is critical—especially with the growing use of server virtualization, which requires centralized, shared storage.

“The need for storage capacity never stops growing,” says Dan Jones, technology specialist with Longview Public Schools in Washington state. “It’s a big challenge—balancing capacity, cost and performance.”

The school district in southwest Washington state has about 6,500 students and nearly 800 staff members across eight elementary, three middle, and three high schools. The district has about 4,000 Chromebooks in addition to thin clients and Microsoft® Windows® workstations. Because the district is part of a statewide educational cooperative that supports each district’s main databases, Jones and the district’s seven-person IT staff do not manage the database that contains student data, staff payroll and HR data. But they do support other databases, manage the connections between databases, support email archives, ensure access to Microsoft Windows Office applications, and house storage for virtual machines (VMs) associated with the district’s virtualized server environment. As a result, they’ve found that the storage required to do so—and the associated management burden—can really add up.

“The quality of HPE MSA Storage is great. HPE equipment is always well-made and well-supported.”

– Dan Jones, Technology Specialist, Longview Public Schools
VM storage wasn’t making the grade

Previously, Longview had been using two Microsoft Hyper-V hosts for its VMs and all the extra storage those VMs required, but those hosts only had local storage, making them “essentially standalone machines,” says Jones, who is responsible for the district’s network infrastructure.

“I was not able to move VMs from host to host, and therefore I was very limited in what I could do from a resilience perspective. We knew it could become a problem in the future as we virtualized more of our server infrastructure.”

– Dan Jones, Technology Specialist, Longview Public Schools

Jones wanted to go with a three-host cluster that would reduce the number of physical servers they would have to maintain while also allowing the district to utilize live migration features available in Windows Hyper-V 2008 R2. In order to be scalable, this cluster would require a reliable storage array with high performance, simple management, and the ability to grow as the district added records, users, and devices. As a result, Jones knew he needed a new storage solution that could balance the district’s current and future needs against its budget.
Storage array rises to the head of the class

In the summer of 2015, the district bought one HPE MSA SAN Storage array with a total capacity of 28.8 TB to support its three-host Hyper-V cluster. The MSA bundle included the storage chassis, hard drives, dual Fibre Channel controllers, and Fibre Channel Small Form-factor Pluggable (SFP) storage modules. It also bought two HPE 8 Gb Simple SAN Connection Kits, which included Fibre Channel switches, Host Bus Adapters (HBAs), and SFP modules for its servers.

“We’re primarily an HPE shop, and we appreciate HPE reliability,” Jones says. There was some early debate about whether to go with an MSA or a bigger HPE 3PAR StoreServ Storage array. But for the district’s needs, the HPE MSA system was the right solution with the right capacity at the right price.

“We started off with the standard storage tier, with spinning drives in the chassis,” Jones says. When the district decided to add a second chassis with a shelf to house more than the initial 24 drives supported by the MSA base system—to support virtualization of its Microsoft Exchange server environment—it chose to define a high-performance tier. It bought four 1.6 TB SSDs and invested in automated performance tiering software that utilizes a real-time I/O engine to intelligently position data on the most appropriate “tier” of storage based on data access patterns. The software’s thin provisioning allocates physical storage resources only upon consumption by an application for greater capacity efficiency, while the SSD read caching option improves random read performance by allowing an SSD to be utilized as an extension of the MSA’s controller cache.

“The performance tiering solution has really worked out well for us,” Jones says. “We’ve done some live migrating of VMs and it has worked flawlessly.”

A+ for management simplicity and storage capacity

HPE MSA Storage has really simplified SAN management, Jones says. The web user interface comes with an embedded storage management utility and wide striping that allows Jones to leverage virtualized storage “pools” to simplify volume expansion and make full use of all resources allocated to a specific volume.

“The resiliency is good,” Jones says. “We got the redundant power supplies with the MSA, but thankfully we’ve never had to worry about a failover.”

The HPE MSA Storage family comes in a choice of three models—a budget-optimized entry array and a flexible base model that are both flash-ready, as well as a performance-optimized hybrid flash model. Longview chose the flexible base model, which can scale up to 960 TB of total capacity, giving the district plenty of room to grow. “It will really be able to flow and scale with the district’s needs as we grow.”

The increased capacity has allowed Longview schools to virtualize more servers and retire some aged servers that were only in use out of necessity. It’s also allowed the district to change its replacement schedule for servers, Jones says. “We had a five-year replacement schedule for our servers, and now we’re able to space that out a little bit more because we don’t have to worry about the physical hardware as much. That’s definitely saving us money.”

However, speed is probably the biggest advantage of the HPE MSA Storage, Jones says. “Our users perceive that application performance, document access, and other specialized services have improved since we implemented the clustered solution.”

HPE MSA Storage also gives the district additional flexibility, Jones says. For example, if the curriculum department buys new software, it takes the IT team very little time to spin up a new VM so they can be up and running with the new application.
“It has enabled us to serve our end-users quite a bit better,” Jones says. “And the quality of the MSA is great. HPE equipment is always well made and well supported.

“I can see the MSA being a good product for other kinds of storage situations, as well. For example, if you just need extra storage and you have multiple servers writing to it as an iSCSI target, it would be a good fit for that, too. It’s very adaptable to your needs.”

**HPE MSA Storage: Earning top marks**

HPE MSA Storage uniquely addresses HPE ProLiant and BladeSystem server customers' shared storage and resiliency needs, reducing total cost of ownership while dramatically increasing performance and application availability using technologies such as SSDs, self-encrypted drives, and a host of advanced data services previously only available on higher cost disk arrays.

The HPE MSA 2052 array goes even further by taking the same proven MSA architecture that Longview deployed in their environment and adding 1.6 TB of SSD capacity for built-in application acceleration from day one—ideal for performance-hungry applications. In addition, the automated performance tiering software Longview purchased for real-time performance optimization is included at no additional charge, as well as the read cache acceleration, delivering a 40% cost savings. This “set-and-forget” software suite includes built-in, real-time data tiering that dynamically moves frequently used data to flash and less-used data to lower-cost media tiers. It also includes 512 snapshots for affordable remote replication and instant recovery, providing a simple, high-performance storage array to support growth now and into the future.

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