



Staffordshire Learning Technologies

Case Study

CUSTOMER QUOTE:

“We needed a VMWare Hardware Compatibility List certified iSCSI SAN solution that would provide investment protection and deliver excellent price-performance, the Dot Hill AssuredSAN™ 2332 platform met these criteria with ease and allowed for seamless upgrades if required”

ANDREW ARNOLD

Staffordshire Learning Technologies

BACKGROUND

Staffordshire Learning Technologies (SLT) are a not-for-profit government funded organization who provide a full range of consultancy, design, installation, training and support services with the primary aim of delivering high quality, cost effective Information and Communication Technology (ICT) services to learning establishments throughout the county of Staffordshire in the United Kingdom.

SLT are responsible for the infrastructure design, installation, maintenance and support of ICT equipment on school administration and curriculum systems. This includes approx. 25,000 pc's, 600 admin and curriculum file servers, 5,000 laptops provided under the “Laptops for Teachers initiative”, plus 1,000's of other laptops, printers and peripherals used within schools and educational establishments.

Increasingly the benefits of both server and storage virtualization are being realized within the Education sector delivering excellent hardware utilization and ease of maintenance across both curriculum and management information systems (MIS). SLT have the role of designing a robust and flexible design template to allow for the large scale roll out of VMWare certified server and storage virtualization solutions across several hundred educational establishments.



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Key Storage Issues

Staffordshire Learning Technologies support over 400 schools with technology needs ranging from MIS, audio-visual equipment through to thousands of desktop and laptop computers. In order to simplify the management of such as vast infrastructure they found it essential to develop standard design templates for the implementation of core technologies using best-of-breed components. There were a number of drivers underpinning the selection of external networked storage systems, however, the increased use of server virtualization and local authority budget constraints raised VMware certification and price-performance to the top of the list.

SLT needed a external RAID storage solution to meet the following criteria:

- Full VMware certification for ESX 4.x.x and 3.5.x. mandatory
- Include a flexible choice of host interfaces including iSCSI.
- Simple web based management GUI.
- Excellent price-performance.
- Ability to expand capacity or upgrade performance with maximum investment protection to ensure longevity of storage assets.

Developing a standard template for storage virtualization

To maximize the benefits of server virtualization SLT needed a storage environment that was equally as flexible to meet the performance demands of multiple virtual machines. Storage virtualization should allow complete storage pool virtualization delivering application fail over support and transparent migration of data across physical storage devices.

Several SAN infrastructures were considered based on compatibility with VMware's Storage VMotion which was introduced with VMware Infrastructure 3.5. Storage VMotion takes the same principals of VMware VMotion and applies them to the migration of virtual machine disk files from one shared storage location to another. Storage VMotion was initially released with support only for Fibre Channel SANs but soon extended to support iSCSI SANs with ESX 3.5 Update 1. This provided great flexibility by allowing migration of virtual storage pools between both iSCSI and Fibre Channel (FC) SANs in any direction.

Arnold: "We chose iSCSI as our standard storage virtualization platform as the infrastructure costs were far lower than alternative SAN technologies such as Fibre Channel, but with the gradual introduction of 10Gb iSCSI we knew there was a compatible upgrade path to higher performance should we need it. iSCSI makes use of existing Ethernet infrastructure using common Ethernet networking technology which is well understood by our support teams. We needed a VMware certified iSCSI SAN solution that would provide investment protection and deliver excellent price-performance, the Dot Hill AssuredSAN™ 2332 platform met these criteria with ease and allowed for seamless upgrades if required"

The VMware Certified iSCSI SAN Storage Solution

SLT evaluated the Dot Hill AssuredSAN™ 2332 external RAID arrays with SATA drives which are iSCSI host interface systems within the Dot Hill AssuredSAN 2002 Series. The AssuredSAN 2002 Series systems had the advantage of being on both VMware and Microsoft Hardware Compatibility Lists (HCL) and were deemed to be easy to manage using the web based host interface which requires no host agents unlike many category competitors.

Although SLT provide consultancy, design, implementation and support services for all schools within the county, first line support is generally provided by in-school technicians who are mostly familiar with Ethernet networking which further validated iSCSI as the platform of choice for the school IT environment.

Investment Protection Built In

SLT were very keen to implement a storage solution that would offer the highest level of investment protection and maximize the life span of all IT investments in light of recent budget constraints across the UK education authorities. The modular AssuredSAN architecture at the heart of every Dot Hill networked RAID solution assisted them with this goal on many levels.

The AssuredSAN 2002 and 3000 Series, regardless of host interface, are based on the same physical footprint using a single management interface and common field replaceable components wherever possible. This not only allows SLT to simplify service, support and inventory man-



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agement for all schools, but also reduces training costs as the management interface presented by our AssuredSAN 2332 iSCSI solution will be identical to the GUI present on any other storage solution within the range.

Furthermore, the modular architecture provides the utmost in investment protection allowing SLT to upgrade their core infrastructure to take advantage of advances in RAID controller performance, or to take advantage of protocol advances such as 10Gb iSCSI found on the Dot Hill AssuredSAN 3000 Series. This can be achieved while maintaining access and use of any JBOD expansion chassis containing crucial academic and management data which may have initially been supported by AssuredSAN 2002 RAID controllers. This feature which is termed 'Data-In-Place Migration', was again very hard to emulate within the choice of competitive offerings.

CUSTOMER BENEFITS AND OUTCOMES

Standardized VMware HCL certified iSCSI SAN solution enabling a 'cookie-cutter' design template for simple installation and support

Best in class price-performance

Flexible solution offering backed by excellent investment protection

Results

Following a successful initial roll-out across several schools in the county the AssuredSAN 2332 has been incorporated within a standardized 'cookie-cutter' design for simple installation and support of all VMware based virtualization solutions across the county. The systems have exhibited great price-performance and the modular AssuredSAN platform design has lowered service and support costs with the added peace of mind that future technology upgrades will not mandate the 'fork-lift upgrade' of an entire storage infrastructure, which is a common trait of many IT installations today.

AssuredSAN 2002 Series

The AssuredSAN arrays are equipped with 2.5-inch drives or 3.5-inch drives, supporting mixed-drive configurations of SAS, SATA, and SSDs. AssuredSAN arrays also features a number of eco-friendly enhancements such as energy saving drive-spin-down and Dot Hill's patented EcoStor™ battery-free alternative for cache memory, which leverages a combination of super capacitors and flash memory that outlasts traditional batteries nearly fivefold.

Dot Hill's AssuredSAN 2002 Series arrays are easy to configure and manage via the RAIDar 2.0 intuitive web-based interface which provides storage setup and monitoring without the need for host-based software. AssuredSAN users gain configuration and installation efficiencies via wizards and schedulers for snapshots and replication.

Optional AssuredSnap™, AssuredCopy™ is available with the AssuredSAN 2002 Series and AssuredRemote™ data protection software is available with the AssuredSAN 3000 Series offering necessary protection for critical academic and MIS applications. AssuredSnap and AssuredCopy data protection software can be easily added at the point of sale or afterwards, through the Try & Buy menu in the management interface.

The AssuredSAN 2332 external RAID systems can deliver up to 24TB of storage in a single 12 drive 2U chassis using 2TB SATA drives. The systems can be expanded if required to a total of 8 chassis which currently offers up to 192TB when using 96 2TB SATA drives.

For more information about Dot Hill Systems, visit www.dothill.com.

Staffordshire Learning Technologies web site is located at <http://education.staffordshire.gov.uk/SchoolAdministration/slt/>

