Nominee: Bradford Grammar School supported by DataCore Software

Nomination title: Faith in Software Defined Storage resurrected after multiple data losses in virtualised environment within one of the UKs oldest schools.

- **What was the driving force behind the project – what business or technology challenge needed to be addressed?**

Back in 2013 Bradford Grammar School found themselves in a desperate situation. Early adopters to both server and storage virtualisation, one of the North of England's most prominent schools teetered at the edge of abandoning their infrastructure plan due to multiple data losses and total corruption of data stores following an essential upgrade of software by their then supplier of software defined storage. For three days the supporting school infrastructure crumbled – finance, accounts, access to applications and irrecoverable loss of pupil coursework. Bradford leaned tirelessly on the vendors US support team for help, only to be told that support on this level was only accessible for premium support. Two years of blistering pain followed as the school limped through multiple patches and long awaited fixes. Simon Thompson, the school's Network Manager, details the problem. "We were able to decipher internally that the problem was stemming from provisioning storage and caching the virtual machines through the Log-Structured File System."

The issues were complex and the impact was far reaching. No longer could the school replicate data from the main campus to the secondary site 200m away. A long awaited patch did materialise, but it also performed poorly and once again, the school were still unable to replicate data. As soon as an I/O power hungry application such as an SQL database was added, the system would fail over, meaning that data stores would show- as corrupt or non-existent. The 98 VMs, remote desktops and 6 hosts were completely floored by the new install. Knowing this problem was far greater than could be solved by a further patch, Simon consulted C-Ways as their trusted independent advisors for their advice, who recommended that they look upwards to the next class of software defined storage; DataCore Software's SANsymphony-V solution complete with High Availability and synchronous mirroring.

- **How did the solution address the challenges and were there any particularly innovative aspects that made it stand out?**

Two DataCore nodes were seamlessly placed on two existing Dell Blade servers and the switch-on began. "The install of SANsymphony-V has literally been the difference between night and day." Simon recollects: "We had been limping along with a single SAN, so it was a pleasure to be able to turn everything on at once and see it powering through. Applications, software performance, database performance, opening files, saving files and replication - it all worked, and at speed. We haven't looked back."

DataCore provided first class onsite support throughout the install, aware of the pain and problems that had been experienced prior and keen that software defined storage was given the true reputation it deserved.

Innovation came from within SANsymphony-V seamlessly increasing performance, reliability and flexibility. Auto tiering hot data to the most appropriate SSDs vs normal disk, came as standard, rearing to go. Random writes, among one of the most costly operations that can be performed against a storage system, further enhanced the performance of random write workloads frequently updated in the school's databases by sequentialising them to achieve greater performance.

- **What major challenges were faced during the project and how were they overcome?**

When you have suffered at the hands of a lacking software platform to protect your environment for a few years, you are naturally more cautious about its replacement and the promises made from the outset, especially when it comes to watertight high availability and confidence in business continuity should failure occur. This was the biggest challenge for all concerned in the project. For Bradford Grammar, rectification clearly came from looking upwards to the next class of storage. DataCore, acutely aware of the background, helped meet the school's budget without compromising their 5 year infrastructure plan. They did this by mapping out the school's original requirements and going back to basics as to what could be realistically delivered and when. Involving the customer and setting expectations from the outset is a prerequisite in this situation to allow confidence to be re-instated. Simon states that after DataCore was installed, going to work 'Was like a breath of fresh air.'

Technically implementation was straightforward, so few challenges to report, with a dual node environment installed seamlessly for replication and for Disaster Recovery.

- **What tangible benefits has the organisation seen as a result of the project's implementation?**

Whilst the ability to turn everything on at once may be the expected norm, when you have experienced major issues within your virtual environment, advances are all the more noteworthy. DataCore has been running for 9 months, protecting 60TB of data faultlessly. Confidence is now at an all-time high with no downtime to report. Practically, the backup window has decreased significantly as throughput to Veeam's backup has increased dramatically. (With the monthly full backup, throughput has doubled). Even internet access performs better with significant increases in throughput from the serving VM. Critically, given their former journey, within the first six months of usage, Bradford Grammar are pleased to report that they have not experienced any downtime. Disaster Recovery is now assured, with replication occurring to an offsite hosted node.

For random writes, one of the areas that caused significant issues in the former environment, DataCore's Random Write Accelerator feature now effectively takes these highly random workloads and sequentialises them to achieve greater performance - coalescing the writes to reduce the number of I/Os to the back-end storage. Auto-tiering optimises performance further still,

automatically allocating appropriate data sets to appropriate class of storage (the school is running both SSDs and disk) based on how frequently the data is accessed.

Why nominee should win

***This entry is all about regaining confidence in a software defined environment*. Simon attributes such resolution in a relatively short timeframe to three factors; the fail-safe product; the tenacity of the IT department; and to the ongoing supporting role of the partner, C-Ways. The environment is now so optimised and offering such a degree of flex for the future, that the IT department have now completed their five year infrastructure upgrade plan a year early. Simon concludes:-**

"We are now thrilled with our optimised and highly available virtual environment. You simply get what you pay for in life. With DataCore, the install has been a breath of fresh air and I'm very confident in its ability to protect and optimise us for years to come."