CAMPUS TECHNOLOGY

NetApp New Equipment Donation Program Provides a Quantum Leap in Data Storage at Three Higher-Education Institutions

AS NEW TECHNOLOGIES EMERGE and evolve, so do the demands on education. Colleges and universities across the country face growing demands on their IT infrastructure and data storage resources, thanks to the bring-your-own-device (BYOD) trend that's brought a proliferation of user devices to their campuses. Faculty, staff, and students arrive on campus--with tablets, smartphones, and notebooks--expecting the school's infrastructure to support their devices. IT managers need ways to resolve solve this pressing issue.

A large component of this IT challenge is data and data storage. Data requirements are exploding as a result of increased research demands, the growing use of video on campus, and multiple devices per user. The education sector, reports Campus Technology's Bridget McRae in her October 2012 story, "Big Data on Campus," makes up a large piece of the growing data pie making it one of the top 10 data-storing sectors in the U.S. economy. "The educational sector harbors one of the largest big data repositories," says McRae.

Acquiring new systems, though, to meet this need is no small feat for today's cash-strapped institutions. Shrinking budgets and strained IT resources make adding to the technology infrastructure a daunting challenge.

One solution for colleges and universities comes from storage solutions provider NetApp. The Sunnyvale, CA-based provider launched its New Equipment Donation Program in September 2011 as a way to provide high-end storage systems to institutions demonstrating need. NetApp places a great value on the role education plays in society and recognizes that budget reductions have had a significant impact on the capabilities of higher education institutions to provide the tools, technologies, and services that today's students require.

The NetApp Donation Program aims to help institutions in need drive innovation on their campuses with state-of-the-art technologies and applications. Colleges and universities applying for the dollars had to 1) provide information about their institution's fiscal challenges, and 2) outline their plan to raise the technology bar and create a positive impact on learning with the new systems. The types of innovation NetApp sought included: student learning systems; e-mail; virtual desktop infrastructure (VDI); virtualization; consolidation; backup and disaster recovery; ERP; and NetApp Academic Alliance (providing faculty with curricula to teach storage topics and providing a lab system for student use).

100 colleges, universities and K-12 schools were awarded new systems. NetApp worked with each institution to determine the best solutions for their campus and continued on through the installation process to ensure a smooth deployment.

In this white paper, we will profile three institutions that participated in the NetApp New Equipment Donation Program. Each campus was struggling

> NetApp storage systems enable features like automatic de-duplication of data, which allows institutions to use less storage than traditional systems. Space-saving technologies that save power and reduces footprint in the data center. As part of the donation, NetApp offers enrollment in a number of its training courses to help students understand the latest technology in the market.

with aging or even failing data storage and management systems. With funding for upgrades not readily available, the NetApp program became, as one participating IT manager put it, "the light at the end of the tunnel. The donation of the NetApp data infrastructure allowed these higher education institutions to address the data requirements needed to stay competitive and better support their learning initiatives.

USF Streamlines Its Storage with Structured Data Solutions

THE UNIVERSITY OF SOUTH FLORIDA system, consisting of three separate institutions serving more than 47,000 students and 16,000 faculty, had seen its central data storage requirements skyrocket in recent years, thanks to enormous growth in digital content and unstructured data.

University of South Florida (USF), Tampa, FL, www.usf.edu

CHALLENGES

- Need for data storage had increased by 800 percent over three years due to factors such as video lecture capture, higher resolution images, increases in research computing, and greater amounts of digital content.
- USF was not taking advantage of auto-tier solutions, using little disk duplication, and had not invested in thin provisioning technologies.
- A large amount of unstructured content increased storage demand and was duplicated in multiple locations across USF's SANs.
- Offsite replication methods were disparate across systems, creating a complex toolset for providing data redundancy.
- Budget conditions were very tight.

NETAPP SOLUTIONS

- NetApp V3170 dual controller array with 24TB of SATA disk.
- USF also decided to add disk to the array, and purchased two NetApp V3240 arrays and a FAS2240 array.

RESULTS

- USF was able to move unstructured and often redundant data onto virtual storage volumes. The ability to compress and de-duplicate data reduced the storage footprint by as much as 50 percent.
- NetApp's Flash Cache has enabled performance gains in heavier read operations, especially in accessing unstructured content stored on SATA drives.
- Sizable amounts of data have been migrated from traditional fiber channel SAN to NFS mounts on the NetApp storage system and replicated to USF's hot site using native, block-level NetApp replication. This method of disk provisioning and replication has proven to be more efficient and less complex.
- NetApp provides USF with the storage, tools, and support it needs under tight budget conditions

"With increases in research computing, video lecture capture, higher resolution images, and more digital content, the amount of central storage maintained by IT has grown 800 percent in the past three years," explained Michael Sink, director of data center technologies at USF. "Unstructured content was clearly the leader in storage demand and much of that unstructured data was duplicated in multiple locations across our storage area networks [SANs]."

Sink

USF knew it needed to address these data concerns, but budget conditions were very tight and options were limited. The NetApp New Equipment Donation Program helped USF streamline its data and reduce its storage footprint. "We received a NetApp V3170 dual controller array with 24TB of SATA disk. We also added disk to the array and subsequently purchased two V3240 arrays and a FAS2240 array," Sink explained. "The storage solutions provided by NetApp have been working flawlessly and we are continuing to consider and deploy new solutions utilizing additional features, such as the storage virtualization capability."

The new equipment received through the program made an immediate impact, both on the user side and on the data management side. "NetApp offered us the ability to start moving unstructured and often redundant data onto virtual storage volumes, replacing our traditional file systems with CIFS [common Internet file system] and NFS [network file system] mounts provided directly by the NetApp array controllers," Sink said. "The ability to compress and de-duplicate data reduced the storage footprint by as much as 50 percent. And utilizing NetApp's Flash Cache, we are seeing performance gains in the heavier read operations, especially in accessing unstructured content stored on SATA drives. Students, faculty, and staff are seeing increased response times while IT realizes more efficient use of storage capacity."

With the demand for storage looking only to increase

in the future, Sink is pleased to be able to meet the challenges of tomorrow with more efficient storage strategies, tactics, and tools. "NetApp understands that higher education has struggled with meeting the expectations of an increasingly digital learning experience in a very lean budget climate," he said. "It is clear to me that NetApp considers higher education a priority through their generous contributions of storage and data management solutions. This program has helped us introduce efficiencies in storage management that would have been difficult to fund otherwise."

CASE STUDY: BRIGHAM YOUNG UNIVERSITY, COLLEGE OF LIFE SCIENCES

BYU Meets Today's Storage Needs While Building for Tomorrow

BRIGHAM YOUNG UNIVERSITY (BYU) College of Life Sciences, with roughly 180 faculty and staff serving a student body of 5,600 students, needed help. The school's storage area network (SAN) was reaching capacity and nearing the end of its life. University IT staff was under pressure to find a new solution, but economic conditions made a major upgrade seem difficult, if not entirely unfeasible.

"These factors produced significant pressure on the IT staff to find an affordable, yet reliable storage solution," recalls Danny Yeo, manager of computing technology and services at the university. "We received information about the NetApp New Equipment Donation Program and were invited to apply. We were chosen to receive a donation, which addressed some of our challenges."

Yeo describes BYU's participation in the NetApp New Equipment Donation Program as "the light at the end of the tunnel." It allowed the institution to meet its growing present data storage needs and, perhaps even more importantly, build a solid infrastructure for the future. The College of Life Sciences received a NetApp FAS3140 with 12TB of storage and licenses for common Internet file system (CIFS) and Internet small computer system interface (iSCSI). Because the existing SAN infrastructure was primarily fiber channel (FC), BYU also purchased FC licenses. To meet the college's projected storage demands, a supplemental 36TB of storage also was purchased.

"The NetApp donation allowed us to meet our storage demands and provided a warrantied solution that is maintainable into the future," Yeo says. "The FAS3140

Brigham Young University (BYU) College of Life Sciences, Provo, UT, lifesciences.byu.edu

CHALLENGES
- Faculty and student research projects have increased the demand for storage.
- The college's existing SAN was near capacity and reaching the end of its usable life.
- Global economic conditions negatively influenced the funding available for IT to maintain its aging hardware.

NETAPP SOLUTIONS
- NetApp FAS3140 with 12TB of storage and licenses for CIFS and iCSCI.
- A supplemental 36TB of storage was purchased by BYU.

RESULTS
- Storage capacity was upgraded to meet increasing demands.
- Faculty and staff are able to request and receive storage and compute resources and IT staff can quickly and easily provision storage.
- The NetApp technology allows the use of a new front-end technology that better suits the institution's computing environment.

is now the primary SAN attached to our VMware ESX environment and is providing storage for our file servers, web services, databases, print servers, etc. We are able to expand some of our storage capacity to meet increasing storage demands."

Thanks to the new NetApp equipment, Yeo believes the college has right-sized its data storage resources to match its growing needs. "The equipment is working wonderfully," he reports. "We are able to continue using our legacy hardware to work as a secondary storage capacity in conjunction with our NetApp storage. Also, the NetApp technology allows us to work with different front-end technology that

better suits our computing environment."

Most importantly, the upgrade has come through for the end users. "Faculty and staff are able to request and receive storage and compute resources," Yeo says. "Our IT staff is able to quickly and easily provision storage to meet their needs. We are happy with the performance and simplicity of management of the system. The timing of the NetApp Donation Program couldn't have been better for us. Not only were we able to address financial resource challenges that we could not previously, but we are now equipped to work with newer technology that will better serve our growing needs."

Yeo

CASE STUDY: CLACKAMAS COMMUNITY COLLEGE

Clackamas Community College
Oregon City, OR, www.clackamas.edu

CHALLENGES

- Preparing current systems for higher availability and speed of recovery from reoccurring outages due to aging hardware failure and operating systems instability.
- Providing network storage and de-duplication of end user data.
- Implementing a reliable test environment for applications development, patching, and upgrades.
- Providing infrastructure for possible VDI and thin client test environments.

NETAPP SOLUTIONS

- NetApp FAS3140 Filer with 24TB of raw disk.
- FlexPod.

RESULTS

- Clackamas Community College is now migrating to NetApp as its primary network storage solution.
- Implementing NetApp as part of the college's FlexPod infrastructure strategy.
- Examining ways to reinvent the institution's backup strategies using NetApp technology.

Clackamas Community College Builds Next-Generation Data Infrastructure

WHEN CLACKAMAS COMMUNITY COLLEGE decided to transition to an information technology infrastructure library (ITIL) service management strategy that would support the needs of its more than 38,000 students, the school ran into a few hurdles. Existing systems, for instance, had to be prepared for higher availability and speed of recovery from reoccurring outages due to aging hardware failure and operating system instability. It was also important to provide network storage and de-duplication of end user data. Seeking answers to these challenges led Clackamas to NetApp.

"Initially, we intended to set up the NetApp system as a backup target and reduce our dependency on legacy backup systems," recalls Rick Sparks, director of technical services at the college. "It seemed to be a way to get started with NetApp as a secondary storage

solution for the college. As we spent more time with our NetApp reps, we began to rethink our strategy and shifted some priorities. Instead of simply using NetApp as a backup target, we are now choosing to migrate to it as our primary network storage solution."

Through its participation the NetApp Equipment Donation Program, Clackamas Community College received a 3140 Filer with 24TB of raw disk. "NetApp is a part of our FlexPod strategy," Sparks explains. "We had already deployed VMWare and Cisco UCS and are building on that three-way FlexPod support partnership between Cisco, VMWare and NetApp as our core infrastructure strategy."

While still in implementation phase, Sparks has been pleased with what he's seen so far and feels that participation in the NetApp Equipment Donation Program has been a great opportunity for the college. "We are now having discussions about how NetApp will reinvent our backup strategies," says Sparks. "In addition to simply resolving legacy tape issues, our NetApp defined strategy replaces backup software, streamlines recovery, automates previous manual processes, and reduces the total cost of ownership."

Sparks

CONCLUSION

THE PRECEDING EXAMPLES highlight some of the real and measureable benefits of NetApp's New Equipment Donation Program. These profiled institutions are not only keeping pace with BYOD trends and the growth of data and digital content, but have also cut IT costs--with the new reduced footprint--and laid the groundwork for future expansion. In fact, each campus extended the installation beyond the donated equipment with additional NetApp technology.

"After receiving the donation unit and understanding more of what NetApp can do for our college, we re-thought our implementation and chose to add more disk and services," recalls Clackamas Community College's Rick Sparks.

The training provided as part of the program enabled the institutions to leverage the full benefits of their new systems. "NetApp is committed to assisting higher education in providing storage solutions, and they are also committed to the education of the next generation of storage managers," said USF's Michael Sink. "Through their Academic Alliances program, they provide gratis resources for academic institutions to develop

or complement storage and data management solutions. This is a comprehensive program that is offered at no cost to qualified institutions."

Through this program, NetApp enables higher education institutions to provide their students, faculty, and staff with the reliable data storage infrastructure they need to support the 21st century learning environment today and well into the future.

"This program is a life-saver in our case," says BYU's Danny Yeo. "I did not anticipate that we would get the donation, however, I was completely elated with the donations and the options I now have going forward."

ABOUT NETAPP

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NetApp is committed to delivering the most efficient, cost-effective storage and data management solutions to meet educational institutions' critical infrastructure needs. Our solutions cut IT costs in half, use up to 80% percent less storage than competitors, and accelerate projects and programs by enabling storage administrators to deploy entire infrastructures in minutes instead of weeks—without sacrificing performance or availability. Of course, less storage means reduced power, cooling, and space costs. You can meet green initiatives while saving money. NetApp delivers reliable solutions. A 2008 IDC study proved NetApp storage systems achieve greater than 99.999 percent availability in field-measured uptime. In addition, disaster recovery, backup, and compliance services are all built into a single storage platform and available on demand. You can backup data in minutes and recover it in seconds. NetApp thin provisioning allows you to grow and shrink storage volumes to meet the exact needs for every department or application—without disrupting operations or wasting storage.

For more information, visit NetApp online: **www.netapp.com/us/solutions/industry/education.html**

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The only monthly publication focusing exclusively on the use of technology across all areas of higher education, Campus Technology provides in-depth coverage of specific technologies and their implementations, including wireless networks and mobile devices; enterprise resource planning; eLearning and course management systems; "smart classroom" technologies; telecom, web, and security solutions—all the important issues and trends for campus IT decision makers. Targeting administrators, IT professionals and tech-savvy faculty, Campus Technology provides direction, analysis and detailed coverage of emerging technologies to assist technology leaders in their specific roles on campus.

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REFERENCES

1. "Numerous stakeholders are exercising influence…" **http://www.educause.edu/ero/article/improving-student-attainment-requires-more-higher-education-data**

2. "The world will generate 1.8 zettabytes of data this year alone…" **http://campustechnology.com/articles/2012/10/09/big-data-on-the-college-campus.aspx?sc_lang=en**

3. "During the past year, public and political scrutiny…" **http://media.clemson.edu/administration/cfo/comptroller/sacubo/2-2012-outlook.pdf**