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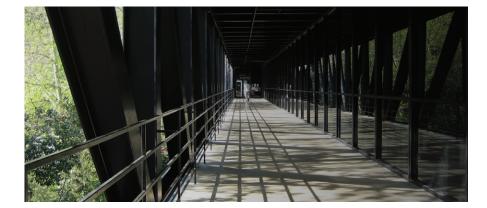
Art Center Avoids $135K in Storage Costs Using NetApp Deduplication and Thin Provisioning

● Art Center College of Design

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KEY HIGHLIGHTS

Industry
Higher education

The challenge
Support diverse IT environment and aggressive educational goals, boost infrastructure availability and operational flexibility, and stay within tight budget and staffing constraints.

The solution
Virtualize IT infrastructure using VMware® server software, Citrix desktop software, and NetApp storage. Consolidate storage onto multiprotocol platform with flexible provisioning, enhanced data protection, and centralized management.

Benefits
- Avoid purchasing $45K of Fibre Channel storage through deduplication
- Avoid purchasing $90K of storage by supporting 8:1 overprovisioning for personal storage
- Recover corrupted mailbox 98% faster (45 minutes versus 2 days)
- Reduce staff time needed to migrate to new leased servers

CUSTOMER PROFILE

"Our students challenge boundaries and take risks," proclaims the Web site of Art Center College of Design. Its graduates—automobile designers at BMW, Ford, and Volvo; noted movie and television directors and designers; and top-flight photographers, artists, and illustrators around the world—would agree. With two campuses in Pasadena, California, Art Center offers undergraduate and graduate programs in a variety of art and design fields, as well as continuing studies.

THE CHALLENGE

Support the college's diverse IT environment and aggressive educational goals
Jason Blackader, UNIX System Administrator, offers a perspective on Art Center's IT challenge: "Few colleges our size rely on such a heavy computing environment." The reason is clear from the curriculum, which features data-intensive disciplines such as film, photography, and graphic design. The college looks to its IT team to provide comprehensive information services to 1,500 degree students, over 5,000 continuing education students, 400 faculty, and 200 staff members.

A few years ago, Art Center's storage was highly decentralized. Much of it was direct-attached storage in isolated islands that were hard to manage and protect. Many departments managed their own storage, sometimes on consumer-grade drives. With a range of platforms—Windows®, Mac® OS X, Sun™ Solaris™, Red Hat Enterprise Linux®—and multiple management packages, the existing infrastructure needed an upgrade to support Art Center's aggressive push to remain one of the world's top design schools.

Boost infrastructure availability and operational flexibility
To avoid large capital outlays, the college leases major IT components. That can create headaches for IT when leases expire. "As many as 20 servers were leaving the data center every year," Manny Hernandez, Manager of Network Services, recalls. "My staff was constantly negotiating leases, migrating data, rebuilding servers, learning unfamiliar hardware—a major time drain."

Unlike many institutions, Art Center has no break in its academic calendar. "We have three full terms a year," he explains. "The short gaps between terms are filled with enrollment, registration, and orientation. There's no good time for downtime." Art Center needed an infrastructure that was more flexible and required less time to make the transition between different hardware and operating systems.

"Deduplication has reduced our VMware storage requirements 40%. We've saved over 4TB of Fibre Channel storage, a cost savings of $45K."

Jason Blackader
UNIX System Administrator, Art Center College of Design

Transform the infrastructure within tight budget and staffing constraints
Academia is famously budget conscious, and Art Center is no exception. "Major purchases are hard to justify," Blackader says. "We leverage new technologies that deliver efficiencies and allow us to do as much as we can internally."

Realizing the need for transformation, Art Center's IT team began to evaluate systems. Hernandez explains the goal: "Consolidate scattered storage resources onto a single platform with centralized management, support for SAN and NAS, and scale with little or no downtime."

THE SOLUTION
Consolidate storage onto a multiprotocol platform with flexible provisioning
As an Art Center vendor since 2004, NetApp was invited to bid on the project. When the evaluation was completed, Art Center found that only NetApp met all the requirements. One of the reasons that Art Center chose NetApp was its ability to consolidate the entire storage environment. "Other vendors said they could support the protocols we need—Fibre Channel, CIFS, and NFS—but the proposed solutions were complex to change and manage," says Blackader. "NetApp gave us everything in one package."

In 2005, Art Center leased a NetApp FAS3050, using it to consolidate storage from a Sun StorEdge 6910, two NetApp FAS270 systems, and a number of file servers. Three years later, Art Center upgraded its storage infrastructure by purchasing a NetApp FAS3140. SnapMirror® smoothed data migration when Art Center upgraded to the FAS3140 system. "To move the data from the FAS3050 to the FAS3140, I just set up SnapMirror and let it run," recalls Blackader. "Because the migration was so intuitive, I didn't need to spend much time."

NetApp gets top grades for flexibility. "Storage requirements vary during each term in ways that are hard to anticipate," Blackader says. "With FlexVol®, we can easily and quickly reprovision storage to meet the changing needs of our students and faculty." When more raw capacity is needed, adding additional storage is much easier with NetApp—and doesn't involve professional services. "We just install a new shelf ourselves and allocate the storage where it's needed most," Blackader explains.

The NetApp system provides reliable storage for critical applications including Microsoft® Active Directory®, Microsoft Exchange e-mail, and Oracle® Databases. Student e-mail is outsourced to Google, but the college supports staff and faculty with Microsoft Exchange—600 mailboxes totaling

about 3.5TB of data. Art Center has two servers—development and production—running Oracle Database 10g™, which together constitute another 1TB of data.

Virtualize the IT infrastructure
The demands of the equipment lease cycle drove Art Center to a virtualized environment based on VMware ESX. "With VMware, we can easily migrate servers even though we have dissimilar platforms such as X86 and SPARC," Blackader explains. "We spend far less time rebuilding servers." Currently, the college is running 68 VMware virtual machines—44 Windows and 24 Linux®. To support Art Center's VMware environment, the NetApp FAS3140 provides about 3.5TB of FC SAN storage.

Art Center also uses Citrix XenApp to deliver its Datatel Colleague ERP application to Macintosh® users. Citrix is virtualized within the VMware environment.

Improve data protection and security
To maximize the availability of its Microsoft Exchange environment, Art Center deployed SnapManager® for Exchange and Single Mailbox Recovery. "Our requirements go beyond e-mail," Blackader reports. "Users sometimes experience corruption in their Outlook calendars or contacts. The ability to recover that information is just as important as rebuilding a trashed mailbox."

Shared storage can expose personally identifiable information to unauthorized access. MultiStore®, an optional feature of the Data ONTAP® 7G operating system, provides secure partitioning with little administrative overhead. "We use MultiStore to separate our educational and administrative environments," Blackader says. "It's easy to configure and manage, and gives us peace of mind that data is protected."

Rely on centralized management and top-flight support

During the competitive analysis, NetApp was rated tops in storage management. Operations Manager gives Blackader a way to anticipate storage needs. "Operations Manager alerts us when a department is running out of storage, *before* they call me," he says. "I tell my manager, 'Expect department X to ask for more storage.'"

As self-reliant as Art Center's IT staff is, they still need dependable support. They get it through their NetApp SupportEdge Premium contract and Advanced Systems Group (ASG), a national open systems integrator and a Star-level solutions partner in NetApp's Partner Program. "ASG comes in periodically to help us assess the overall health of our system," Hernandez observes. "They also represent VMware, so they understand how to keep our virtualized environment

operating smoothly. And ASG makes sure we get academic discounts—which helps us stay on budget."

BUSINESS BENEFITS

Meet demanding storage needs of students and faculty

Providing storage for an ever-changing mix of students and faculty is a balancing act, one that Art Center's IT staff is mastering—with help from NetApp. "We used to purge student data at the end of the academic year, to reclaim needed storage space," says Blackader. "With the enhanced efficiency and flexible provisioning of NetApp, we can provide 5GB of personal storage that persists as long as that student is enrolled at Art Center." Faculty members can count on 20GB.

Thin provisioning keeps storage costs manageable even with the dramatic increase in per-user storage. If you add up the storage allocation for all students and users, the total is 27.5TB. Thanks to thin provisioning, Art Center can support this requirement with just 3.5TB of physical storage running at 80% utilization, resulting in an overallocation ratio of more than 8:1. To provision enough physical storage to cover the total need, Art Center would have to purchase an additional 24TB of usable storage—an expense of more than $90K that is avoided with thin provisioning.

NetApp storage is helping accomplish one of IT's strategic goals: consolidating storage from diverse locations. "We tell the departments about the benefits of centralized storage to their mission," Blackader says. "Thanks to the ease of reprovisioning with NetApp, they know they won't be locked into a fixed amount of storage. Add in backup and the higher level of data protection for centralized data and that usually persuades them. We've migrated a lot of data from LaCie drives onto our NetApp system."

Optimize storage for a virtualized environment

Virtual machines eat up storage, much of it redundant copies of operating system files. Deduplication, a standard feature of Data ONTAP, recovers much of that space for Art Center. "Deduplication has reduced our VMware storage requirements 44%," Blackader estimates. "We've saved over 4TB of Fibre Channel storage, a cost savings of $45K."

Enhanced e-mail availability

When an Exchange mailbox is corrupted or accidentally deleted, the affected user is understandably in a hurry to have it restored. That task is faster—and easier—with SnapManager for Exchange and Single Mailbox Recovery. James Sabelis, Art Center's Microsoft Exchange Administrator,

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Jason Blackader
UNIX System Administrator, Art Center College of Design

explains the before-and-after comparison: "Recovering a mailbox from tape takes as much as two hours—*after* you get the tape, which can take days. With NetApp, I can have a mailbox back on line within 45 minutes of receiving the request, which completely exceeds user expectations."

Provide needed services with a small IT group
At the end of the day, Art Center's Network Services group of just six IT professionals provides the full range of network services the college needs. "Art Center students come from around the world to prepare for careers in automobile design, product design, industrial design, advertising, and film, often in management roles," Blackader reflects. "It's our job to provide the IT environment that supports their educational aspirations. NetApp is making a big contribution to that effort—on a daily basis."

SOLUTION COMPONENTS

NetApp products
NetApp FAS3140 storage system
NetApp Data ONTAP 7G operating system
NetApp deduplication
NetApp FlexVol
NetApp MultiStore
NetApp SnapManager for Microsoft Exchange Server
NetApp Single Mailbox Recovery for Microsoft Exchange
NetApp SnapMirror
NetApp Operations Manager

NetApp Global Services
NetApp SupportEdge Premium

Protocols
CIFS, NFS, FC SAN

Third-party products
Citrix XenApp 4.5
VMware ESX 3.5
Oracle Database 10*g*
Microsoft Exchange Server 2007
Microsoft Active Directory

Environment
Datatel Enterprise Education Platform
3D CAD software (Autodesk Maya, Autodesk AliasStudio, Rhino, SolidWorks)
Bunspeed, RTT, Adobe Suite, Apple® Final Cut

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