

Making the grade with HP StorageWorks

Colby-Sawyer College saves \$30,000 annually with HP StorageWorks and VMware by avoiding unneeded hardware purchases



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Objective

Consolidate under-used storage and servers while reducing risk with a disaster recovery strategy

Approach

Deploy an affordable iSCSI SAN virtualized environment with a compact, energy-efficient centralized storage infrastructure

IT improvements

- Two-fold faster server recovery times
- Supports disaster recovery strategy across two data centers
- Enables consolidation of 100 physical servers into 10
- 80% reduction in time to add storage or nodes
- 20-fold faster expansion of data volumes

Business benefits

- \$35,000 costs avoided annually in unneeded hardware purchases
- No increase in power and cooling costs over 5 years
- \$100,000 expense avoided in data center expansion with 50% reduction in IT footprint



A lesson in innovation

Small liberal arts colleges such as Colby-Sawyer College (CSC) in New London, New Hampshire, hold an advantage over larger institutions when it comes to personalized instruction. Besides an average class size of 17, the college's Pathways program lets students choose from a wide selection of interdisciplinary courses in their first two years. In addition, 98 percent of all students participate in one or more relevant internships, giving students a head start toward successful careers.

With educational roots that date back to the mid-1800s, CSC is constantly innovating to achieve educational excellence. As a result, technology is a large part of the student experience. Each student on CSC's wireless campus creates an electronic portfolio that tracks achievements and progress throughout their time at the college. The school also offers numerous

HP customer case study: iSCSI SAN

Industry: higher education



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About Colby-Sawyer College

Colby-Sawyer College (www.colby-sawyer.edu) is a small liberal arts college in central New Hampshire, providing personal instruction with an average class size of 17. The wireless college offers the innovative Pathways program that allows students to create an electronic portfolio to track their achievements and progress through college, as well as choose from a wide selection of interdisciplinary courses in their first two years.

computer labs and provides students, staff, and faculty with their own file storage folder on the campus network.

CSC's IT department plays a vital role in supporting these programs, as well as the overall educational process at the college. But to provide students and faculty full-time access to personal and academic files, and to support new IT advances such as thin clients for administration, CSC needed a system with greater reliability and availability. It also needed scalability to handle growing data, all at a price point in line with the budget of a small college of under 1,200 students.

Pioneers in IT

CSC was using direct-attached storage, but had reliability issues with the file server. “We had no clustered file servers,” says David Blaisdell, manager of administrative information systems at Colby-Sawyer College. “So with every new server we bought, we would have to buy disk for it. But we never knew how much we might need. And with growing volumes of data, we never knew how much storage we should provision and would over provision half the time.”

To address these issues, Blaisdell and his IT staff of 12 sought to centralize storage, and looked for options in a SAN environment. But to avoid the cost and complexity of a SAN with Fibre Channel connectivity, CSC opted for an iSCSI SAN environment running VMware virtual machines. “We wanted a system that would be fairly easy to manage and maintain,” explains Blaisdell.

Avoiding unneeded purchases

An immediate issue solved by the deployment: over-provisioning storage. “Before, if we thought we might need 200 gigabytes on a server,” says Blaisdell, “we’d buy it, and maybe only need 20 percent of that.”

With HP P4000 SAN solutions, CSC has been able to avoid \$35,000 costs annually in unnecessary hardware purchases. “Easy provisioning of disk space with the HP StorageWorks P4000 SAN mixed with the flexibility of VMware,” says Blaisdell, “gives us an environment that allows us to save a lot of money.” CSC has avoided \$175,000 total in unneeded hardware purchases since deploying HP StorageWorks.

The HP StorageWorks solution also enables thin provisioning, which allocates space only as data is actually written, reducing storage costs and increasing efficiency of the HP P4000 SAN. “If we have a volume that’s been allocated 500 gigabytes,” says Blaisdell, “and we’re only using half of that, turning on thin provisioning returns that other 250 gigabytes back to the cluster to assign to other volumes. About a quarter of our volumes currently use thin provisioning.”

Expanding storage in minutes vs. hours

Expanding volumes on direct-attached storage was complex. “It would take a long time, as much as a few weeks, from ordering the new gear to its installation,” says Blaisdell. “The gear we were buying wasn’t easily expandable. We’d be moving data around, or buying more gear. It was difficult.”

Since virtualizing with HP P4000 SANs, expanding volumes is achieved in minutes for CSC. “With centralized management,” says Blaisdell, “if we have a server with growing data volumes, expanding those volumes with the Centralized Management Console on HP StorageWorks P4000 SAN is a matter of a few minutes.”

The Centralized Management Console has allowed the IT team to be more proactive. “We get alerts saying we’re at 80 or 90 percent capacity, and can quickly expand volumes,” says Blaisdell. “That has been really beneficial, and just a time-saver in terms of managing the systems.”



Adding storage or nodes is also faster, achieved in two to four hours versus several days in the previous direct-attached storage environment, an 80 percent reduction. "It's pretty straightforward," says Blaisdell. "Once the new nodes are on the LAN, you simply go into the HP Centralized Management Console, add the units to the existing group and cluster where you want them. And we can do this while the SAN is online with no downtime." As a result, staff and students are unaffected by any changes to the storage environment.

"The HP P4000 SANs are highly redundant. You can sacrifice a single unit and still have the overall environment function."

David Blaisdell, Manager of Administrative Information Systems, Colby-Sawyer College

A move to virtualize

A long-time HP shop, the college looked to HP servers to help with its transition to virtualization. CSC deployed two HP BladeSystem c3000 enclosures with HP ProLiant BL460c server blades. The school also opted for HP StorageWork P4000 SANs over EqualLogic as back-end storage for the virtual machines, "because it was a better system for us," adds Blaisdell.

The college consolidated 100 physical servers onto 10 HP ProLiant server blades running 110 virtual machines. "And we still have tons of CPU headroom," says Blaisdell.

50 percent reduction in footprint

Another issue solved by virtualizing with HP: server sprawl, with CSC's two server rooms bursting at the seams. "One of our server rooms has four racks," says Blaisdell. "Before we started virtualizing with HP StorageWorks and VMware, those four racks were totally full. Since then, we could probably fit everything into two racks, maybe a rack and a half."

Now, CSC has room to spare. "Instead of doubling, or more, physical space, we've actually reduced our footprint by 50 percent," says Blaisdell. "Building out the rooms, including more power and cooling, would have been very expensive for us." CSC has had the same server room capacity since 2005, avoiding more than \$100,000 in cost to build out its data center.

No unplanned "vacation" days

With the IT department supporting Microsoft® Exchange email, database access, file sharing, and thin clients for faculty and staff (via Citrix XenApp 4.5), high availability is a must. Power or disk failures, not uncommon at CSC, would typically knock out one of its two data centers. Having a disaster recovery strategy was critical.

Customer solution at a glance

Hardware

- HP StorageWorks P4000 SAN
- HP BladeSystem c3000 enclosures
- HP ProLiant BL460c G5, G6 server blades

Software

- VMware vSphere 4

Operating systems

- Windows® 2003, 2008

Network protocol

- TCP/IP 4

By choosing a network RAID for a campus SAN deployment, data is automatically written across multiple nodes of HP P4000 SANs to the college's two data centers. "If we lose a data center or it goes offline," says Blaisdell, "the data is still available and we can continue operations. The HP P4000, with its campus SAN configuration, supports that function."

And if a node or storage unit goes down, there's no interruption. "The HP P4000 SANs are highly redundant," says Blaisdell. "You can sacrifice a single unit and still have the overall environment function."

Twofold faster recovery times

Recovering hardware prior to virtualization was difficult. According to Blaisdell, when a physical server developed an issue, the server was down until it was recovered or repaired, a half-day process.

"With HP P4000 SAN and VMware, there's a lot more flexibility," says Blaisdell. "We can more easily recover an image onto a new virtual machine and get the server up and running within an hour or two."

Keeping staff levels the same

For the IT group at CSC, moving to an iSCSI SAN environment while adding virtual machines with HP StorageWorks and HP BladeSystem has meant keeping staff levels the same. "We're pretty much doing more with the same technical resource headcount," says Blaisdell.

It also means CSC is optimistic about the future of its IT infrastructure and the ability to provide additional services to students and staff. "It's been good," says Blaisdell. "We've been happy with the solutions from HP, and we're growing with it."

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