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Inspire the Next

SUCCESS STORY

Hitachi Storage Solutions at Work

Indiana University

INDUSTRY	Education
SOLUTIONS	Tiered Storage/Virtualization and Capacity **Hardware—**Hitachi Universal Storage Platform™ model USP600 and Hitachi Adaptable Modular Storage model AMS500 **Software—**Hitachi Volume Migration, Hitachi HiCommand® Tiered Storage Manager, Hitachi HiCommand Device Manager, Hitachi HiCommand Dynamic Link Manager, Hitachi ShadowImage® Heterogeneous Replication software **Services—**Migration and training services provided by Hitachi Data Systems Global Solution Services

"We knew exactly what our technical needs were. Hitachi Data Systems exemplified the strengths we were seeking in array-based virtualization technology and we wouldn't have to compromise on I/O performance, reliability or scalability. And Hitachi's storage platform offered a single management interface to manage the entire storage environment," says Lowden. "We consulted with dozens of other IT institutions across the country and received very favorable recommendations for anything Hitachi. But because we're a public entity with a public bidding process, we must be good stewards of financial assets and we assumed that the Hitachi solution would be too expensive. The university purchasing department awards the bids and we were incredibly pleased to learn that Hitachi was the lowest bid and was awarded the contract for an entire SAN infrastructure."

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Director, Enterprise System Infrastructure
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SAN from Hitachi Data Systems Helps Raise the Storage IQ for Higher Education

University IT departments have broad responsibilities for supporting the full range of academic, research, and campus programs. When Indiana University needed to upgrade an end-of-life SAN architecture to improve capacity and service levels and guarantee reliability, Hitachi Data Systems was called to the head of the class. The Hitachi Universal Storage Platform™ delivered sophisticated virtualization, tiered storage management, and exceptional administrative tools.

Universities are among the most treasured institutions in America—and are highly competitive with regard to funding, rankings, and scholastic excellence. Indiana University's distinguished academic reputation is built on more than 960 degree programs, a combined enrollment of 99,122 students across 8 campuses, and over US$1 billion in endowments. The university also receives a high volume of multidisciplinary research grant awards.

Supporting the business of higher education requires technology infrastructure excellence and Indiana University earns high marks in that subject. With the former CIO now serving as president, the university is benefiting from a strategic IT plan that better supports academic pursuits.

"Technology must always be able to advance our educational and scientific pursuits. By centralizing IT across the university, we can standardize, achieve economy of scale, and have a greater ability to research, test, and deploy...technologies that significantly raise the academic bar," says Director of Enterprise System Infrastructure at Indiana University's University Information Technology Services, Rob Lowden.

Educational Excellence Requires Valedictorian-level IT Performance

Critical data is ubiquitous on the Indiana University campuses, and it is the job of Lowden's team to manage it. From collaborative software development with other institutions to data storage administration of enterprise applications, performance and capacity are instrumental in supporting university data.

But the existing storage area network (SAN) was approaching the end of its lifecycle, with systems becoming stressed, at storage capacity, and sluggish in I/O performance. The SAN feature-set did not include sophisticated monitoring and reporting tools to diagnose dips in performance or prevent failure states. Additionally, availability of storage capacity was severely limited, so faculty requests to house new research data were hampered, which in turn strained the university's ability to meet incoming grant requirements.

"The stability of the storage environment was in question and downtime is simply not acceptable. Even five minutes of downtime a year costs many thousands of dollars and that cost is rapidly multiplied when we are running services for joint research ventures. We needed real-time visibility, the very best performance, and limitless scalability to keep us out front, ahead of the exponential growth of on-demand capacity," says Lowden.

Data Storage Needs Clairvoyant Management Capabilities

The university's IT architecture included direct-attached and network-attached storage in addition to the SAN, and IBM® AIX® and Microsoft® Windows operating environments running Oracle, PeopleSoft, and VMware systems. One of the most I/O-intensive operations at Indiana University is its mission-critical decision support system, which collects, organizes, and exchanges valuable information among departments and campuses.

"That batch job would start nightly at 10 p.m. and needed to complete by early morning. There were plenty of times when I'd receive a warning notification that we might not finish," recalls Lowden. "While we did not have a specific I/O level in our bid proposal for new storage solutions, we expected the very highest performance available."

Other essential criteria listed in the university's proposal included absolute reliability and extensive scalability to support future petabytes with robust virtualization technologies, tiered storage management, and administrative tools to monitor, forewarn, and report performance issues. After eight months of extensive research on possible storage solutions, the university IT unit narrowed its selection to three vendors.

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Hitachi Virtualization Provides Curriculum for Flexibility and Success

The storage infrastructure was based on Hitachi Universal Storage Platform™ model USP600 with 80TB usable storage. The initial focus was on consolidation and data migration of three IBM storage systems onto the USP600 and on virtualizing as many applications as possible.

Hitachi Data Systems Global Solution Services carried out the SAN-to-SAN migration processes seamlessly, with the use of Hitachi HiCommand® Tiered Storage Manager software and Hitachi Volume Migration software, effectively moving all production systems onto the Hitachi platform. All of the university's production data and testing now run as first-tier data on high-performance Fibre Channel on the USP600.

Virtualized behind the USP600 is a Hitachi Adaptable Modular Storage model AMS500 with 24TB usable capacity. The AMS500 was configured to maneuver application-specific and high-I/O performance for RAID-protected SATA backups that eventually would offload to tape libraries.

"Consolidation onto the Hitachi platform enables us to pay only for what we're using today and defer expansion purchases until needed, which has improved our business model and eased our forecasting burdens—we aren't penalized for overestimating or underestimating storage growth," explains Lowden. "And the Hitachi management tools provide us a command center for the entire storage portfolio with much less per-terabyte administrative effort."

University Expands Services and Research Support

The first phase of consolidation is complete at the University. Now running more than 400 virtual machines off the USP600, Lowden was able to reduce 14 racks of equipment down to 4 racks, with nearly 5 times the capacity.

"When we turned on the Hitachi platforms on day one, we immediately saw a 20 to 25 percent performance gain, with no tweaking, no refining, nothing. We had I/O and application performance improvements by literally just turning on the equipment and moving the data," says Lowden. "And we now have the flexibility to respond to the university's needs faster and more efficiently with on-demand capacity."

Since the Hitachi implementation, the IT unit is also able to expand its level of services. "We now offer fully virtualized, intelligent infrastructure services to university departments and schools that once ran makeshift datacenters. We manage the physical environment; they have enormous flexibility with no worry about failure, downtime, or maintenance. Thanks to the Hitachi SAN, we have created a complete picture of high-caliber IT services," says Lowden.

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