

# THE COMPUTERWORLD HONORS PROGRAM

## CASE STUDY



LOCATION:  
*Salt Lake City,, Utah,  
United States*

YEAR:  
*2006*

STATUS:  
*Laureate*

CATEGORY:  
*Medicine*

NOMINATING COMPANY:  
*Hitachi*

### ORGANIZATION:

University of Utah Health Care

### PROJECT NAME:

Storage Virtualization

### Summary

With the continual growth of data and protection requirements, University of Utah Hospitals and Clinics (UUHC) in Salt Lake City, Utah needed a new storage architecture that could accommodate incoming data while at the same time increase efficiencies and drive down costs. Charged with the stewardship of vital patient information, UUHC has to ensure that applications and information are available on a 24/7 basis and that patient confidentiality is protected—all in compliance with regulations governing the exchange of health care information. After much consideration and testing, UUHC selected Hitachi TagmaStore™ Universal Storage Platform to address growing storage demands and meet business requirements.

### Introductory Overview

The University of Utah Hospitals and Clinics (UUHC) was officially established with the opening of the University of Utah Hospital in July 1965. Since then, UUHC has expanded into a variety of facilities, including Community Clinics, the School of Medicine, Academic Colleges, and various institutes and centers. Information Technology Services (ITS) provides shared resource services, including storage service, to the various departments, hospitals, research groups, and clinics within UUHC.

The growth and requirements for protection of data at UUHC have increased exponentially over the last five years. Since the first storage area network (SAN) was implemented in 1999, pooled/shared storage growth has multiplied by 200 percent per year. This trend will continue and most likely accelerate as patient records and new IT user groups are encouraged to use shared services. ITS' goal was to move more direct-attached storage and server-attached storage to the SAN in order to provide increased quality of service, data protection, disaster recovery protection, and tiers of service.

Hitachi Data Systems was chosen to supply a virtualization solution, which collapsed current SANs and storage (new and old) and virtualized it behind the Hitachi TagmaStore™ Universal Storage Platform. Components and economic results of the successful Hitachi Data Systems solution included:



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Components. 10TB Universal Storage Platform (USP100 model), 10TB Hitachi Thunder 9585V™ system, 10TB Hitachi Thunder 9520V™ system, Hitachi ShadowImage™ In-System Replication software, Hitachi Universal Volume Manager software and Hitachi Resource Manager™ utility package. Economic Results. UUHC's \$705K investment provided a positive 127 percent return on investment, with payback in 14 months. Total three-year savings are estimated to have reached over US\$1.6 million, with savings accrued from waste reduction, reduced labor for management, hardware and software purchase avoidance, data risk reduction, increased recovery point objective and recovery time objective for backups, disaster protection, and hardware and software maintenance reduction.

### Benefits

Hitachi's Universal Storage Platform enables UUHC to combat the operational and technical problems associated with high levels of growth. Having a reliable architecture allows UUHC to better strategically align business applications and storage infrastructure so that cost, performance, reliability, and availability characteristics of storage meet business requirements.

Hitachi's Universal Storage Platform provides a solution which increases disk utilization, reduces storage management labor, multitiere storage, provides ShadowImage capabilities for data redundancy, and eliminates backup process from production instances of data.

UUHC is also seeing an increase in customer and end user satisfaction due to improved performance, provisioning time, and utilization reports. In the past, several outages occurred that could not be avoided with the previous configuration's advanced SAN and storage architecture. With the Universal Storage Platform, business risk is dramatically reduced during planned and unplanned outages.

### The Importance of Technology

"We had an explosive demand for capacity and needed a reliable and cost effective solution that could provide us with the support we needed while also leveraging our existing equipment," said Jim Livingston, Director of the UUHC Data Resource Center and Technology Architect. "Hitachi Data Systems far exceeded our expectations in meeting these challenges in a way that our customers did not feel any impact from the changes."

The technical benefits of the Hitachi Data Systems solution, when added to operating expense reduction and economic benefits, provide for a complete rationale for the move to storage virtualization on the Hitachi TagmaStore Universal Storage Platform. Because the Universal Storage Platform enables massive consolidation and aggregation across disparate platforms, it creates a reliable and cost-effective foundation for data lifecycle management at UUHC. A simplified yet advanced storage architecture gives UUHC long-term capabilities to meet increasing access rates and storage growth rates.



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### Originality

UUHC decided on a virtualization strategy using controller-based storage virtualization. This allowed for older storage systems to be virtualized behind the Universal Storage Platform and SAN management to be collapsed and unified into a single point of control.

Additionally, UUHC established a multitiered storage strategy to better align business applications and storage infrastructure so that cost, performance, reliability, and availability characteristics of storage can be matched to business requirements. A tiered storage environment simplifies infrastructure and reduces both current and long-term costs throughout the enterprise storage network.

UUHC established the following multitiered approach to best meet their business needs:

- Tier 1 was defined for mission-critical applications and systems and would reside on the Universal Storage Platform. This includes clinical data, operational data and email that require highest performance and protection
- Tier 2 storage was set in place for operational data and user data. This tier would reside on old and new modular storage systems virtualized behind the Universal Storage Platform.
- Tier 3 was needed for archive and disk-based backup and ShadowImage copies. This tier would be satisfied with new modular SATA drives, as well as older modular systems virtualized behind the Universal Storage Platform.

### Success

The implementation of Hitachi Data Systems' storage solution has far exceeded the goals of UUHC by providing a comprehensive solution that would use storage resources more efficiently while also allowing for cost-effective growth. "Inefficient information management was definitely creating a bottleneck that severely limited data availability. We are a 24/7 operation—access to information can literally save a life," said Jim Livingston, Director of the UUHC Data Resource Center and Technology Architect. "By implementing a virtualized storage solution we now have a centralized environment that enables us to easily store information and extract data when needed, which allows us to continue providing our patients with the best quality care and service."

Because of this success, UUHC is currently developing a storage architecture and catalog of services in order to market IT resources to other departments in the University of Utah system. By offering multiple types of storage solutions at different price-points, this new storage architecture will enable the IT group to capture more storage opportunities and lower the overall cost of ownership to the university and individual departments.

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### Difficulty

UUHC struggled to keep up with recent growth and protection requirements with their current SAN elements, storage, and operational infrastructure. The center has been using SANs, shared enterprise storage, and modular storage effectively since 1999, but a new architecture was needed for the future. UUHC's SANs had grown up based on different group requirements and purchasing authorities. One of the new charters of the IT division was to provide common storage services to all clinics and user departments, while increasing efficiencies and driving down costs.

Before employing the Hitachi Data Systems solution, stranded disk space was a growing problem for UUHC, and the cost of waste was increasing each year. Even with SAN networks, storage allocation and provisioning across multiple SANs and storage systems was prohibitive.

UUHC formed a committee that encompassed the entire ITS department that looked at key problems they were currently facing. After evaluating several vendors it was Hitachi's virtualization solution that proved best in helping utilize stranded storage, centralize data management tools, accommodate storage growth and allocate data on appropriate levels of storage.

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