



ROI CASE STUDIES

HIGHLIGHTS

Goal: For the Environmental and Occupational Health Sciences Institute (EOHSI) to increase storage, reduce costs, decrease downtime, and build an infrastructure that can handle the institute's growing storage needs.

Solution: A SAN based on the Hewlett-Packard StorageWorks Enterprise Virtual Array 6000; award-winning Hewlett-Packard ProLiant blade servers.

Results: A projected, cumulative, five-year net benefit of \$282,325, driven by savings in IT support, and the avoidance of costs associated with downtime. An ROI of 184%. Researchers have access to information more of the time, security has been improved, and an infrastructure has been built for expanding the institute and its research.

CUSTOMER PROFILE

Environmental and Occupational Health Sciences Institute
<http://eohsi.rutgers.edu>
The Environmental and Occupational Health Sciences Institute supports basic and clinical research in environmental health sciences and exposure assessment and fosters associated programs in environmental health education and public policy.

Location: Piscataway, NJ

Industry: Environmental and Health Research

Employees: 120

Environmental and Occupational Health Sciences (EOHSI) Institute Increases Storage, Reduces Costs, and Gains 184% ROI with Next-Generation Hewlett-Packard StorageWorks Enterprise Virtual Arrays

The Environmental and Occupational Health Sciences Institute (EOHSI), a joint institute of the Robert Wood Johnson Medical School and Rutgers University, had plans to grow by adding new researchers and updating its infrastructure to accommodate new technology. But its mixed, heterogeneous environment of Novell, Windows, and UNIX made it difficult to update its infrastructure. Additionally, it used direct-attached storage, which made storage expensive to support, difficult to secure, and led to instances of downtime. To solve the problem, it turned to a SAN based on the Hewlett-Packard StorageWorks Enterprise Virtual Array 6000 and the award-winning Hewlett-Packard ProLiant blade servers. As a result, the institute has been able to increase and centralize storage, provide better security, reduce costs, improve uptime, and create an easily scalable infrastructure for expanding the institute and its research. The project will result in a projected, cumulative, five-year net benefit of \$282,325, driven by savings in IT support, and the avoidance of costs associated with downtime. It will have an ROI of 184%.

Benefits

OBJECTIVE	BENEFITS ACHIEVED
Increase and centralize storage	The SAN based on the EVA 6000 provides six terabytes of centrally managed storage, and will allow the institute to add from 2 to 3 terabytes a year of additional storage.
Reduce downtime	Before the installation of the SAN, the institute suffered approximately 18 instances a year of downtime in which data or email was not available. Since the installation of the SAN, email and data are always available.
Reduce IT costs	Centralized management of the SAN allows the institute to reduce IT costs — a projected, cumulative \$351,329 in savings over five years.
Improve security	The centralized nature of SAN storage allows for significantly improved security, particularly important because the institute handles medical information and must comply with HIPAA privacy requirements.

“ We needed to upgrade our entire computing environment. We had hardware from multiple manufacturers, many different operating systems, and no easy way to scale and manage our storage.”

Mario Rodriguez
EOHSI Unit Computing Manager

The Challenge: Increase Storage, Reduce Costs, and Lay the Foundations for Growth

The Environmental and Occupational Health Sciences Institute (EOHSI), is an international resource that supports basic and clinical research in environmental health sciences and exposure assessment. The institute, jointly sponsored by the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School and Rutgers, The State University of New Jersey, has plans to grow by adding new researchers and installing new technology.

But there have been roadblocks to its growth. The institute had a heterogeneous environment of Novell, Windows, and UNIX servers, all of which had direct-attached storage. This made managing storage costly, and made it difficult to add adequate amounts of the new storage it needed to accommodate exponential growth. Additionally, growth was limited because of the heterogeneous hardware environment.

The institute's existing infrastructure caused other problems as well. When a server was down, data was unavailable to researchers. In addition, the institute was using legacy hardware and services which did not support the latest technologies, such as Microsoft Exchange. The institute was planning to move to a Microsoft platform.

The institute was looking for a storage solution that would accomplish the following:

- **Increase storage.** The institute was expanding by bringing in new researchers. These researchers needed vastly increased amounts of storage. Biomedical researchers were performing simulations and tests that generated terabytes of data. The existing system of network attached storage was inadequate to keep up with this exponential growth. Some of the existing researchers required additional storage as well.
- **Standardize on a backup solution.** Individual researchers had their own means of housing and backing up their own data. But there was no institute-wide backup solution. The institute recognized that it needed to find a comprehensive backup solution.
- **Increase uptime.** Because all data was on direct-attached storage, if a server went down, all the data associated with it was unavailable. So if an email server went down, no email was available, and if a file server went down, none of the files from that server were available. The institute was looking for a solution that would allow data and email to be accessible even if a server went down.
- **Reduce costs.** Direct-attached storage requires significant amounts of maintenance and troubleshooting. Continuing to add direct-attached storage would be prohibitively expensive because of the amount of staff time that would be required to manage it.

■ The institute chose HP over the competing solutions based on the advice of the consultant on the project, MTech Consulting. MTech Consulting's previous positive experience with HP and ProLiant servers played a significant role in its choice of HP. It had experience with HP hardware, and had found HP hardware to be powerful and reliable. In addition, the fact that HP holds 80% of the blade market gave EOHSI the confidence that it was going with a proven manufacturer.

“ We have had long experience with HP hardware and service, and had found their hardware to be solid performers, and their support to be excellent. That, combined with their market share, made us rate HP as the best solution for EOHSI. ”

George Kovach,
MTech Consulting

- **Improve security.** The heterogeneous environment of mixed operating systems, servers, and storage made it extremely difficult to provide adequate security for the servers and data. The institute handles medical information, and it must conform to the privacy requirements of the Health Insurance Portability and Accountability Act (HIPAA), and the existing platform configuration made it difficult to meet those requirements.
- **Lay a foundation for the future.** In order to expand, the institute needed to build a unified platform. It was looking to move to a Windows environment for email, and calendaring, and also wanted to have a storage foundation that could easily scale along with the institute's growth.
- **Provide secure, remote access to files and email.** Researchers and institute staff do not work normal 9 to 5 business hours, and wanted to be able to access their data and email when they were away from the institute. The existing solution offered remote access to their email and to the Novell server, but there was very little security.

The Environmental and Occupational Health Sciences (EOHSI) Institute Chooses HP

The institute evaluated servers and storage solutions from several vendors, including Dell and EMC, and chose the Hewlett-Packard StorageWorks Enterprise Virtual Array 6000 for the backbone of its storage area network (SAN), and Hewlett-Packard ProLiant blade servers for its infrastructure. The institute recognized that an EVA-based SAN and blade servers would be an ideal solution, allowing the institute to centralize storage and servers, and build an infrastructure for growth.

The institute chose HP over the competing solutions based on the advice of the consultant on the project, MTech Consulting. MTech Consulting determined that HP provided the most cost-effective solution with the most complete set of features. MTech Consulting's previous positive experience with HP and ProLiant servers played a significant role in its choice of HP. It had experience with HP hardware, and had found HP hardware to be powerful and reliable. In addition, the fact that HP holds 80% of the blade market gave EOHSI the confidence that it was going with a proven manufacturer.

The Bottom Line for the Environmental and Occupational Health Sciences Institute (EOHSI)

A detailed analysis of the implementation shows that the Environmental and Occupational Health Sciences Institute will realize a projected, cumulative five-year net benefit of \$282,325 from the project, driven by savings in IT support, and the avoidance of costs associated with downtime. The project has an ROI of 184%. Researchers have access to information more of the time, security has been improved, and an infrastructure has been built for expanding the institute and its research.

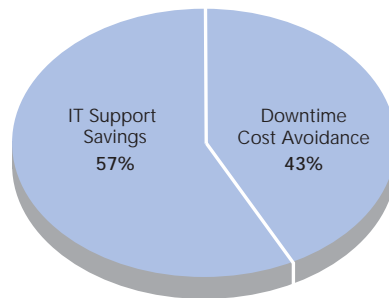
■ The Environmental and Occupational Health Sciences Institute’s bottom line for the project: A projected, cumulative, five-year net benefit of \$282,325, driven by savings in IT support, and the avoidance of costs associated with downtime. The project has an ROI of 184%. Researchers have access to information more of the time, security has been improved, and an infrastructure has been built for expanding the institute and its research.

“ With the HP EVA 6000, SAN, and ProLiant blade servers, we now have a state-of-the-art computing infrastructure, that will allow us to provide a secure and scalable computing environment that is required by our researchers.”

Mario Rodriguez
EOHSI Unit Computing Manager

Most of the financial benefit will come from savings in IT support costs. The storage needs of the institute will grow dramatically, at approximately 35% a year, but easy management of the centralized SAN will allow the existing staff to handle the additional storage. If the institute had stayed with direct-attached storage, it would have had to hire additional staff. As a result, it will save a projected, cumulative \$351,329 over five years in IT support costs.

The institute will also benefit from reduced downtime. A number of times a year, the institute had suffered downtime due to servers being down and the data and email attached to them being unavailable to researchers and staff. The combination of the blade center MS-clustered solution and a SAN will allow that data and email to be available even if a particular server is not available. This will significantly reduce downtime, leading to improved productivity and a projected, cumulative benefit of \$265,996 over five years. (A clustered blade solution is a large contributor to the increased availability.)



Cumulative 5 Year Net Benefit = \$282,325

The institute will reap additional benefits as well. The SAN will allow the institute to expand its storage and meet the growing needs of researchers. It also allows the institute to develop a comprehensive, centralized backup strategy, rather than relying on individual researchers to perform their own backups.

Because the storage is centralized, it allows the institute to provide better security, particularly important because the institute houses sensitive medical information. The improved security will ensure that the institute complies with the privacy requirements of HIPAA.

The new infrastructure has allowed the institute to move to and maintain a Windows-based environment.

“ EOHSI is an environmental health sciences research facility requiring a sophisticated information technology infrastructure to allow us to keep pace with the latest requirements for processing research data and storing extremely large scientific files. The structure implemented by Hewlett Packard and MTech Consulting provided a stable computing environment capable of growing with our ever-expanding research requirements. ”

Dr. Deborah Cory-Slechta
 Director
 EOHSI

5 YEAR ANALYSIS							
Project Summary							
ROI	184%						
Payback Period (in months)	45						
Cumulative Net Value	\$282,325						
Project Costs	Start Up	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
HP Hardware	\$245,000	\$0	\$0	\$0	\$0	\$0	\$245,000
Software	\$10,000	\$0	\$0	\$0	\$0	\$0	\$10,000
Other	\$80,000	\$0	\$0	\$0	\$0	\$0	\$80,000
TOTAL PROJECT COSTS	\$335,000	\$0	\$0	\$0	\$0	\$0	\$335,000
Benefits	Start Up	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
IT Support Savings		\$0	\$10,098	\$51,432	\$107,234	\$182,565	\$351,329
Downtime Cost Avoidance		\$49,110	\$51,074	\$53,117	\$55,242	\$57,452	\$265,996
TOTAL BENEFITS		\$49,110	\$61,172	\$104,550	\$162,476	\$240,017	\$617,325
Financial Analysis	Start Up	Year 1	Year 2	Year 3	Year 4	Year 5	
Net Value	-\$335,000	\$49,110	\$61,172	\$104,550	\$162,476	\$240,017	
Cumulative Net Value	-\$335,000	-\$285,890	-\$224,718	-\$120,168	\$42,308	\$282,325	
Net Present Value	\$113,371						
ROI	184%						
Internal Rate of Return	18%						

ROI (return on investment) is the percentage return expected over a specified period of time. ROI is the total benefit minus the total costs in years 1–5 divided by the startup costs. The ROI metric is good for assessing the net value benefit of the project relative to the initial investment.

Net Present Value (NPV) represents the cumulative present value of the expected return of a project over a specified period of time minus the initial costs of the project. This dollar figure provides visibility on the actual value of a project, taking into consideration the time value of money — the ongoing benefit of a project in today’s dollars. NPV tells you the magnitude of the project and if the project generates a profit.

Payback Period (or breakeven) is the timeframe it takes for the project to yield a positive cumulative cash flow. Payback period is a key measurement of risk but does not take into account cash flows after the payback period.

ROI, NPV and Payback should be used in conjunction to understand the rate, size and timing of the return.

Net Value (or Net Benefit) is the benefit delivered to the organization for the investment made in the project. Net Value is calculated by taking the total benefit minus the project costs.

Internal Rate of Return (IRR) is the implied rate of return of an investment assuming complete reinvestment of cash flows. It is the percentage rate by which you have to discount the benefits until the point that they equal all the costs. IRR is calculated as the discount rate necessary to drive the NPV to zero.

The Environmental and Occupational Health Sciences Institute (EOHSI) Looks to the Future

With the HP SAN, based on HP StorageWorks EVAs, and ProLiant blade servers, the EOHSI has an infrastructure that will allow it to continue its plans for growth. It uses HP’s System Insight Manager and the Altiris Rapid Deployment Pack to manage the servers and storage. Current researchers will be able to pursue research which requires significant storage and server resources. In addition, the institute hopes that its state-of-the-art computing infrastructure will help it attract new researchers.

About the Environmental and Occupational Health Sciences Institute

The EOHSI is an international resource that supports basic and clinical research in environmental health sciences and exposure assessment and fosters associated programs in environmental health education and public policy. Institute members investigate ways people are exposed to chemicals, study how chemicals react in the body, educate the public about risks from chemical exposure, and assist in formulating policies to protect human health. Established in 1986, the institute is jointly sponsored by the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School and Rutgers, The State University of New Jersey.

About Hewlett-Packard Company, StorageWorks Division

HP is a technology solutions provider to consumers, businesses and institutions globally. The company's offerings span IT infrastructure, global services, business and home computing, and imaging and printing. HP StorageWorks solutions help enterprises optimize current resources, manage multivendor environments and evolve to open architectures. For more information on how working with HP can benefit you, contact your local HP representative, or visit HP at www.hp.com.

About MTech Consulting

MTech Consulting is a Microsoft solution provider that specializes in architecting and managing IT infrastructures for small to medium sized companies. For more information, please contact MTech Consulting at 732-536-0667, or visit www.mtechnow.com.

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