

# Hitachi Storage Solutions at Work

## Düsseldorf University Clinic

**INDUSTRY** Health Care: Hospital Management

**SOLUTIONS** Consolidation

**Hardware**—Hitachi modular and high-end modular storage

**Software**—Hitachi LDEV Guard software (now called Hitachi Volume Retention Utility for IBM® z/OS®) and Hitachi QuickShadow software (now called Hitachi Copy-on-Write Snapshot software)

**Services**—Provided by Hitachi Data Systems Strategic Partner ASSISTRA AG



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*Dr. Zbigniew Kowalik*  
Systems Engineering Manager  
Düsseldorf University Clinic



# Extensive Open Source Flexibility of Hitachi SAN Mends Symptoms of Outdated Hospital IT

Düsseldorf University Clinic relies on IT systems to improve the costs and quality of the medical services it provides. Inflexible, outdated technology kept the health care facility from using more advanced digital procedures, such as picture archive and communications (PACS) and electronic medical records. Hitachi Data Systems made a house call, building a highly scalable storage area network to support Düsseldorf's digital health care.

Hospital management and health care services are almost universally supported at some level by computer technology. From laboratory results to patient billing, digital health care systems continue to permeate the medical services industry.

Düsseldorf University Clinic, located in North Rhine-Westphalia, Germany, was seeking a way to improve its IT wellness in order to become a digital hospital. With nearly 5,500 employees and 1,300 hospital beds, the health care complex operates more than 60 specialty clinics and institutions. Keeping highly accurate and readily accessible information is critical to providing quality care for many thousands of patients annually at Düsseldorf.

## Suffering Serious Data Ailments

But the hospital faced challenges in accommodating important data requirements within its current distributed IT environment. All patient admittance records are stored in Düsseldorf's decade-old hospital information management system (HIS). The system was not highly optimized and often experienced delays of several minutes for routine data requests. Doctors not wanting to wait for HIS to respond would resort to standalone methods to review or record medical notations.

Doctors' letters and most other health care documentation were created using word-processing applications, then printed and archived in paper folder systems or stored on RAID servers. Even laboratory images were retained in analog—not digital—format on SAP enterprise resource planning (ERP)

systems. When the hospital implemented a diagnosis-related group (DRG) system that required all case-based diagnoses to be categorized and electronically documented for insurance billing codes, databases quickly swelled with the new requirements for classification and retention.

Increased documentation demands at Düsseldorf and new industry technology advancements led Dr. Zbigniew Kowalik, the hospital's systems engineering manager—and active professor of neurological research—to seek out more practical solutions.

"We were keenly aware that the existing IT methodology would no longer meet current requirements for documentation and transparency. We wanted to adopt a highly open, flexible, and centralized infrastructure that would incorporate more modern, scalable, and secure storage technology," says Kowalik.

## Performing a Thorough IT Exam

Making his rounds on the IT ward at Düsseldorf University Clinic, Kowalik was able to identify requirements for implementing a phased centralized storage plan. Consolidation was his highest priority, one that he would accomplish through a storage area network (SAN) architecture. Performance, flexibility, and scalability would need to improve significantly in order to meet the anticipated growth in data volumes and applications.

The IT department was already overburdened with user restore requests. To revive lethargic backup and storage processes, Kowalik wanted plans to include simpler, faster backup functionality, read-only archival capabilities, and storage virtualization features.

Kowalik sent out bid invitations to potential storage suppliers. Six vendors submitted bids, including Hitachi Data Systems with its strategic partner ASSISTRA AG. The bid package contained a detailed survey, which was the basis of Kowalik's analysis and eventual vendor selection.

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## Administering the Open Source SAN

The exponential amounts of stretch needed to accomplish Düsseldorf’s goals began with the SAN implementation. Since interoperability and scalability are key considerations when

Then, the patient database and file servers were migrated to the new infrastructure and a Hitachi high-end modular storage system was installed protecting data by providing secure read-only archiving utilizing its “Write Once, Read Many” WORM firmware feature. All of Düsseldorf’s applications now house their data on the two Hitachi modular storage systems. To round out the comprehensive IT reform project, old servers were consolidated onto two HP blade servers with Intel Itanium 2 processors running HP-UX 11i. These are being used for testing, training, statistics, and hot fixes. PCs were installed in hospital rooms

“The overall performance of our open source IT operations has nearly tripled, and because we have a widely open environment, we cannot precisely determine which components contribute how much to this. That’s a good problem to have,” says Kowalik with a smile. “Thanks to Hitachi Data Systems and ASSISTRA AG, we have made great strides in advancing the hospital’s capabilities for digital access.”



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transitioning to a SAN architecture, ASSISTRA AG first installed a Hitachi modular storage system to extensively support open source environments.

The Düsseldorf SAN infrastructure is able to automate backup tasks and facilitate centralized storage, and hospital staff has direct access to files that are now centrally stored. This Hitachi SAN conducts more than 100,000 I/O operations per second, vastly speeding productivity of the hospital’s mission-critical operations.

To upgrade existing technology, Kowalik and the Hitachi Data Systems/ASSISTRA team next refreshed older database solutions and operating systems, including a switch from a Microsoft Windows NT cluster to a Novell SuSE Linux Enterprise Server 7 cluster for Oracle9i Database Real Application Clusters and SAP MaxDB databases. A digital image archiving solution that runs on SAP was also introduced, enabling the hospital to pilot a central PACS solution. As a result, imaging procedures such as MRIs, ultrasounds, and CT scans will be digitally and centrally stored.

to serve as both televisions and data terminals. Finally, 100 PC users switched to thin clients supporting the Citrix protocol.

## Advancing Digital Health Care

This exceptional example of open source networking currently serves 1,800 HIS users, 2,500 file server users, and 400 SAP users while providing network access for mail servers and a content management system. The Hitachi SAN solution was the catalyst for this level of high-performance open computing that Kowalik envisioned. Now, the HIS acts as the hospital’s central nervous system, allowing doctors and staff to immediately tap into the network for required data.

Rather than limping along with outdated or proprietary IT infrastructure, Düsseldorf University Clinic is now very well positioned to seamlessly scale its enterprise right along with medical technology advancements.

## About ASSISTRA AG

ASSISTRA AG is a service provider that has been specializing, for several years, in the areas of storage, storage management, and backup.

ASSISTRA AG supplies enterprise & cross-platform storage as well as storage management solutions to ensure an optimal availability of data and information.

When developing innovative storage solutions, ASSISTRA AG closely cooperates with leading technology partners. On account of this strategy, the company is able to offer a consistent and end-to-end portfolio of products in the areas of SAN and NAS storage, backup/restore, and disaster recovery.

In addition, ASSISTRA AG offers various types of maintenance contracts and service concepts.

For more information, visit [www.assistra.com](http://www.assistra.com)

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