



CASE STUDY

Leading Hospital Speeds SAP Migration with Fusion ioMemory™

Speeds response times for thousands of users, increases SAP processing 2-5X, and reduces capital costs by 33%.

Solution Focus

- Healthcare
- SAP Oracle
- SAP ERP
- DataCore SANsymphony-V Storage Hypervisor

Summary of Benefits

- **2-5X faster** overall performance
- **4.5X faster** migration
- **1/3 lower** capital costs of existing system
- Nearly **6:1** footprint consolidation
- **Enterprise performance** on commodity hardware
- **Solution fully supported** by preferred vendor

The Challenge

The University Hospital of Würzburg is one of the oldest hospitals in Germany and has been operating for over 400 years. A public company since 2006, the hospital is a research and academic center for the faculty of medicine. It also provides comprehensive medical care for a region of 1.5 million people. The hospital consists of 19 clinics with polyclinics and three autonomous polyclinics, four clinical institutes, and six vocational schools. In 2010 it serviced over 250,000 patients.

The hospital business runs on an SAP-based ERP Medical Information System. Klaus Stärk, Head of IT Systems of UKW, explained the importance of this system to the hospital: "This system is the heart of the hospital IT. Thousands of MDs, nurses, scientists, and administrators work on it 24/7/365."

Consequently, it is critical that Mr. Stärk's IT team ensures this system is as innovative and powerful as the rest of the research institution. The hospital needed a system to meet these requirements:

1. Deliver maximum performance and fast response times to a growing number of users, while supporting the workload of new features in a SAP and Oracle upgrade.
2. Provide reliability for mission-critical operations.
3. Reduce costs while scaling for growth.
4. Fully supported by system OEMs.

The Solution

After careful research, Mr. Stärk's team decided to move its ERP system off a physical SAN and onto a SanDisk® powered virtualized storage system.

Upgrade in a Flash

Mr. Stärk's team migrated the entire SAP Oracle database, including the temporary tables, from its Fibre Channel SAN onto mirrored Fusion ioMemory™ ioDrive® cards totalling 1.2TB in capacity, residing in redundant, virtualized DataCore SANsymphony-V servers. They also moved the SAP dictionary to mirrored ioDrive Duo cards, totalling 2.5TB in capacity. In the process, they upgraded SAP from EHP4 to EHP5 and the Oracle database from 10G to 11G.

Even during the migration, Mr. Stärk's team experienced the benefits of the Fusion ioMemory solution. "The ioDrive cards were very easy to install. I did it quickly myself. We estimated the entire SAP upgrade, which included a hardware upgrade, would take 38 hours. The ioDrive cards reduced data migration time so much that the upgrade took just eight hours," Mr. Stärk said. "We expected a system downtime of five hours. But the performance of the ioDrive cards shortened our downtime to just an hour and 45 minutes."

Peak Performance for the “Heart of Hospital IT”

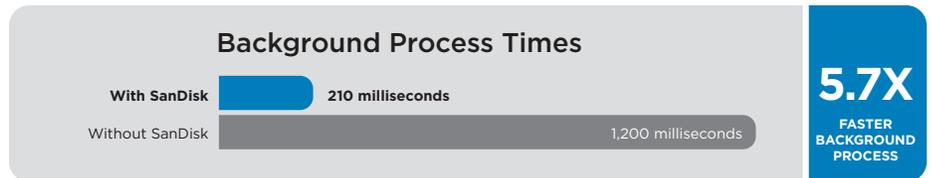
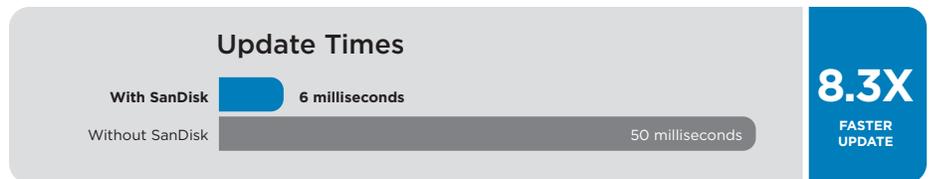
The rapid migration made life a lot easier for Mr. Stärk and his team, but the end goal was to improve the SAP database and ERP system performance so the hospital could utilize new SAP and Oracle features, as well as support a growing user base.

Mr. Stärk said, “We deployed the ioDrive2 cards in a virtualized DataCore SANsymphony-V server. This made everything two to five times faster on average. A dialog response that took 320 milliseconds on the physical SAN took just 70ms on the new system; an update that took 50ms on the physical SAN took just 6ms; and a background process that took 1.2 seconds took just 210 milliseconds.”

Mr. Stärk explained the benefits of this performance on the ERP system’s end users, “All interaction with the system is now faster, whether users are retrieving patient data, screens are being rendered, or statistics are being calculated. The improvement is noticeable to the naked eye. The end result is many more satisfied customers.”

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Head of IT Systems, UKW



A Cost-Effective Enterprise Solution

While Mr. Stärk's team needed to deliver best-in-class performance, they also had to do so on a limited budget. Fusion ioMemory solutions enabled both.

"The Fusion ioMemory solution with DataCore SANsymphony-V virtualization software reduced hardware and capital expenses of our existing system by 3X, while increasing performance by a factor of 2-5X," Mr. Stärk said. "We were able to use commodity servers with the ioDrive cards for a much more cost-effective system than enterprise storage, with at least the same level of performance. At the same time, the ioDrive cards work seamlessly with the SANsymphony-V software to provide all the storage functionality we need."

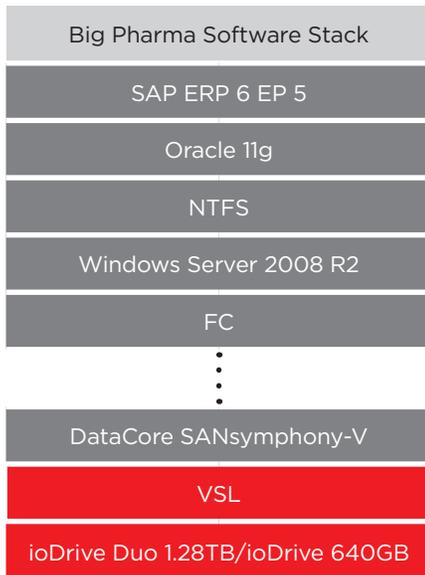
Proven and Fully-Supported Enterprise Technology

Mr. Stärk also noted the importance of choosing technology from an industry leader like SanDisk.

"SanDisk is clearly the market leader in the flash space, which gave us confidence in its quality. The ioDrive2 cards are supported and qualified by our preferred OEM, so we know we will have a fully supported system."

System Overview

SanDisk Powered Software Stack

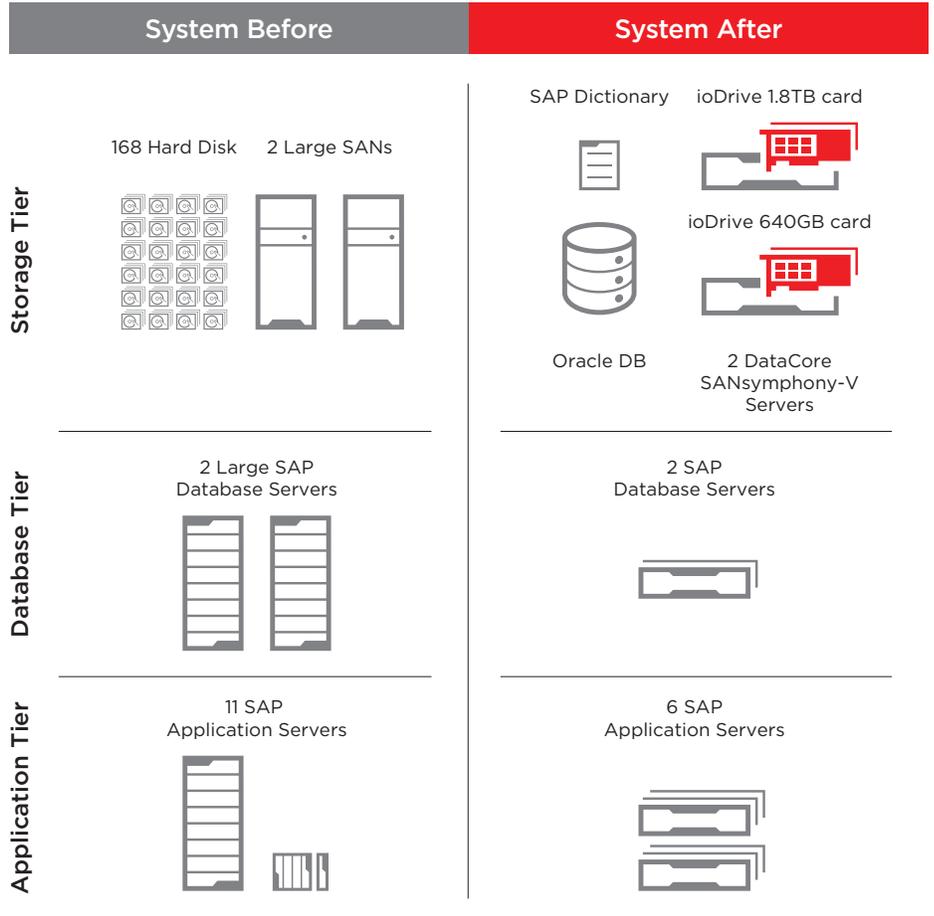


System Before	System After
<p>Storage (84U total)</p> <ul style="list-style-type: none"> • 2 x SANs • Hard disks: 168 x 10k RPM Fibre Channel drives, 300GB capacity 	<p>Virtualized Storage (16U total)</p> <ul style="list-style-type: none"> • 2 x servers, dual hex-core, 3.33GHz processors, 96GB RAM • Software: DataCore SAN Symphony-V, SAP dictionary on mirrored ioDrive Duo cards, Oracle DB on mirrored ioDrive cards
<p>SAP Database Servers (84U total)</p> <ul style="list-style-type: none"> • 2 x servers, 12 x dual-core 1.6GHz processors, 96GB RAM • OS: Windows 2003 R2 Datacenter • Applications: Oracle 10g MSCS clustered with Oracle FailSafe 	<p>SAP Database Servers (4U total)</p> <ul style="list-style-type: none"> • 2 x servers, dual hex-core, 3.46GHz Xeon processors, 96GB RAM
<p>SAP Application Servers (20U total)</p> <ul style="list-style-type: none"> • 11 x rack-mount servers and one blade server • OS: Windows 2003 R2 Datacenter • Applications: SAP ERP 6.04 (Enhancement package 4); Basis Netweaver 7.01 ER 	<p>SAP Application Servers (12U total)</p> <ul style="list-style-type: none"> • Kept the 4 most powerful, added 2 new servers





Fusion ioMemory - ioDrive®2



Summary

Implementing the Fusion ioMemory solution gave University Hospital of Würzburg the following benefits:

- 2-5X faster overall performance
- 4.5X faster migration
- 1/3rd lower capital costs of existing system
- Nearly 6:1 footprint consolidation
- Enterprise performance on commodity hardware
- Solution fully supported by preferred vendor

Mr. Stärk is thrilled with the benefits the Fusion ioMemory solution has given the hospital's SAP-based ERP system and has deployed Fusion ioMemory products in many other systems, including an SAP Business Intelligence system, a picture archive for mobile clients, a virtual desktop infrastructure system, and a Microsoft SQL Server cluster.

About The University Hospital of Würzburg

The University Hospital of Würzburg consists of 19 clinics with polyclinics, three autonomous polyclinic, and four clinical institutes and incorporates six vocational schools. In 2010 it provides service to over 250,000 patients. It also partners for interdisciplinary care with institutions including Comprehensive Cancer Center Mainfranken, the Interdisciplinary Center for Palliative Medicine and the Comprehensive Heart Failure Center.

Its clinics provide services for a wide range of medical disciplines including head (ear, nose throat, and neurology), psychiatry, dentistry, obstetrics and gynecology, and pediatrics.

Contact information

fusion-sales@sandisk.com

Western Digital Technologies, Inc.

951 SanDisk Drive
Milpitas, CA 95035-7933, USA
T: 1-800-578-6007

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SanDisk Europe, Middle East, Africa

Unit 100, Airside Business Park
Swords, County Dublin, Ireland
T: 1-800-578-6007

SanDisk Asia Pacific

Suite C, D, E, 23/F, No. 918 Middle
Huahai Road, Jiu Shi Renaissance Building
Shanghai, 20031, P.R. China
T: 1-800-578-6007

For more information, please visit:

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The performance results discussed herein are based on internal University Hospital of Würzburg testing and use of Fusion ioMemory products. Results and performance may vary according to configurations and systems, including drive capacity, system architecture and applications.

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