HP fashions speedy, reliable SAN
for German clothing manufacturer

s.Oliver Bernd Freier GmbH & Co.

"We must provide reliable IT services to our company. Our installed HP StorageWorks Enterprise Virtual Array and HP SAN solution are an essential part of our IT strategy to provide both performance and stable applications to our employees."

- Chief Information Officer Stefan Beyler, s.Oliver Bernd Freier GmbH & Co.

Although s.Oliver operates in the cyclical, unpredictable retail industry, the company is on an international expansion course. Information technology contributes to that success, according to s.Oliver's IT Infrastructure Team Leader Kurt Engel: "We can't do business without extremely reliable, highly available IT systems. Every step in our work procedure depends on IT technology – from design to delivery logistics, from material purchase to invoicing. If we have a problem and can't access our IT environment for even a few hours, nearly 1,000 employees couldn't do any work."

The production department also completes tracking, inventory control, and stock deliveries via computer. The organization is so dependent on its information systems that when a fire erupted in one administration building in February 1999, the president ordered the IT staff to boost reliability, implement disaster-recovery capabilities, and establish a disaster-tolerant IT infrastructure. In response, the staff implemented a disaster-tolerant IT solution, including a storage-area network (SAN) using two IBM Shark Enterprise Storage Server Model 2105 systems for central storage consolidation. The staff finished the implementation in September 2001. However, the SAN implementation did not fit all of the requested functions. For example, there were several restrictions using the IBM servers for the Windows environment. In December 2001,

s.Oliver sought a storage solution that provided more flexibility and performance for its Windows 2000 servers.

Engel and his colleagues thoroughly tested the HP StorageWorks Enterprise Virtual Array 5000 (EVA5000) system for performance, flexibility, failover, and storage capacity at the HP Storage Solutions Lab in Munich. "We compared the HP EVA system with the installed IBM Shark array by using a sophisticated benchmarking tool to document algorithms, data transfer rates, and response times," Engel affirms. "Across the board, the HP StorageWorks Enterprise Virtual Array system was much faster than the IBM Shark array. The EVA system's throughput was about 10 percent faster overall with about 60 attached clients, compared to 30 clients attached to the IBM Shark. The system's average response rate was 30 percent quicker in our testing environment."

Model performance in s.Oliver´s Microsoft Windows 2000 environment

The Shark SANs posed another problem for the IT staff members when they began consolidating their computing and networking components in the company's Rottendorf data center and deploying the Microsoft Windows 2000 environment. "We had several problems implementing our new Windows environment on the IBM SAN storage system," says Engel, "such as the data migration from our old NetWare file server to the new Windows file cluster. The calculated file system space was not enough for data migration, and it was not possible to expand the volumes. Overall, the IBM experts did not have enough experience for our migration project. On the other hand, the HP Services experts examined our business requirements and recommended a solution, which fulfilled most of our requests."

The IT staff hit another brick wall trying to implement peer-to-peer remote copying between the two Shark-based

SANs. "The problem was performance related to the IBM storage array," Engel explains. "We could replicate data only at a maximum rate of 48 MB per second. Since Fibre Channel access to the SAN supports potential data-transfer speeds of 100 MB per second, and we have multiple servers transferring data, we verified there was a replication bottleneck."

Comparatively, the HP StorageWorks EVA5000 performs replications and provides storage virtualization, including the ability to dynamically grow and change RAID sets. In addition, with dual, redundant controllers, the EVA system satisfies the company's advanced requirements for failover. "We are quite pleased with the ability of the HP StorageWorks Enterprise Virtual Array system to instantly replicate data without performance degradation and to remain functional should a controller fail," Engel says. "We implemented the perfect solution. We also plan to implement the HP OpenView Continuous Access Storage Appliance (CASA) later this year to gain controller-based replication functionality, and possibly use the EVA system's snapshot technology to streamline backup activities." Enabled by virtualization technology, CASA pools together enterprise-wide storage assets to deliver local and long-distance data replication.

HP SAN dons dynamic storage functionality
In addition to the ability of the StorageWorks EVA to resolve previous replication and performance bottlenecks, s.Oliver needed to expand storage capacity and make swift changes in response to new business opportunities. This was difficult with the Shark array. "The IBM Shark array could only present a maximum physical volume disk of 210 GB to the host servers," Engel explains, "which means that the Shark is relatively rigid in the way it creates and allocates disks. The HP StorageWorks Enterprise Virtual Array is far more flexible, thanks to virtualization and its ability to incorporate new capacity into the system easily and dynamically. Our data is always growing, so we need these capabilities. The

StorageWorks EVA is extensible and provides dynamic storage expansion."

To ensure the EVA system's expansion and virtualization capabilities would meet s.Oliver's business needs, the IT staff mounted 44 disk drives in each EVA system and conducted a two-week testing program. The objectives of the test were to verify the manageability, flexibility, and performance of the new EVA solution. The IT staff defined several virtual disks, increased them up to 1 TB in the testing environment, migrated the data, tested the replication capability, and verified all requested functions. The s.Oliver IT staff performed all management during this time. After performing all tests, s.Oliver was confident that the EVA solution met all of its storage requirements, and the staff started the migration from the IBM SAN to the EVA.

"We were quite satisfied with the flexibility and disk volume benchmarks of the HP StorageWorks Enterprise Virtual Array system," Engel comments. "HP virtualization technology lets us allocate storage capacity as we need it. For example, when we migrated our Microsoft SQL Server database to the EVA, we simply defined the required virtual disks, and the EVA created them from free space and presented it on SQL Server. After the migration, we no longer needed the additional space, so we put it back into the storage pool."

In collaboration with store partners, s.Oliver opened 26 new stores in Germany and 15 abroad during 2002 — in addition to about 130 shop-in-shops and four new megastores operating under s.Oliver's management. Data grows as the company expands. The two EVA systems afford the clothing merchandiser approximately 8 TB of storage capacity, ensuring that the IT staff can sustain this year's projected data growth of 500 GB to 1 TB. "We'll easily manage the growth by adding disks to the HP StorageWorks EVA SANs," Engel says. "Currently, we're using 90 percent more storage overall with the EVA

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Challenge

- Improved disaster recovery

- Increased storage capacity

- Consolidated, flexible, resilient, extensible storage environment

Solution

Hardware:

- Two HP StorageWorks Enterprise Virtual Array 5000 (EVA5000) systems

- HP StorageWorks SAN Management Appliance

- Nine HP ProLiant servers, including models DL760, DL580, DL380, and 3000

- Two HP rp5430 servers attached to the SAN

- Four SAN-attached IBM x370 servers

- Dual Fibre Channel HP StorageWorks SAN Switch 2/16

Software:

- HP StorageWorks Secure Path software

- HP StorageWorks SAN Management Appliance software

- HP-UX operating system

- Microsoft Windows 2000 operating system

- Microsoft Exchange Server

- Microsoft SQL Server 2000

- Oracle9i database

HP Services:

- SAN implementation

- Server integration

Results

- s.Oliver met its goal of implementing a reliable, disaster-resilient, replicated infrastructure, which protects data assets and provides quick data access.

- HP Adaptive Enterprise offerings – including HP StorageWorks systems, ProLiant servers, storage software, and services – drive operational efficiencies and save administrative expenditures.

- HP StorageWorks Enterprise Virtual Array systems address s.Oliver's storage capacity, flexibility, and replication requirements by providing dynamic scalability and improving the IT staff's ability to meet future storage demands.

- The inherent compatibility of the HP StorageWorks systems enables s.Oliver to maximize resources and consolidate data among both the Microsoft Windows and HP-UX operating systems – all on a single storage platform.

- Due to its global reach and considerable experience, HP Services completed the SAN implementation two weeks ahead of schedule, enabling s.Oliver to meet its business-critical requirements sooner.

system compared to 50 to 60 percent utilization in our former direct-attached storage environment. We're really maximizing our capacity."

HP Adaptive Enterprise blueprint fits perfectly

s.Oliver implemented redundant, clustered HP ProLiant servers in its production and replicated data centers. Within the SANs, two ProLiant DL760 servers run file services, two ProLiant DL380 servers host the HP StorageWorks SAN Management Appliance, and two ProLiant DL580 servers run Microsoft print cluster technology. "We're enjoying the superior performance of industry-standard HP ProLiant servers," Engel says. "They provide outstanding scalability and adaptability for growing businesses like ours – without increasing server management complications." Two HP rp5430 servers also attach to the EVA system running the HP-UX operating system with HP Multi-Computer/ServiceGuard (MC/SG) software and an Oracle 9i database.

In addition, two SAN-attached IBM x370 servers run Microsoft Exchange Server, and two IBM x370 servers run Microsoft SQL Server Cluster. The StorageWorks EVA SANs in s.Oliver's production and replicated sites include dual Fibre Channel StorageWorks core switches for redundancy.

The staff uses the StorageWorks SAN Management Appliance to configure the HP storage systems and StorageWorks Secure Path software to monitor the data paths between servers and storage. "HP StorageWorks Secure Path is an important component of our disaster-tolerance system because it enhances fault tolerance," Engel declares. "If one Fibre Channel switch or host bus adapter fails, the software reroutes data-transfer functions to an alternate path, and our systems continue operating."

In addition, HP software and storage technology provide an environment the IT staff members can manage themselves. "We had to hire a specialist to change the configuration of the IBM SAN," notes Engel. "However, we can manage the HP SAN on our own, and that's a cost-saving benefit."

Another significant benefit arises from the knowledge and expertise of HP Services, especially in the integration and deployment of the SANs. Unlike the IBM specialists, who promised they could migrate the old IT Infrastructure to

s.Oliver's new Windows 2000 environment, the HP Services professionals achieved the migration of s.Oliver's Windows servers to the HP StorageWorks EVA. "It was frustrating and expensive to have the IBM specialists train on our project," remembers Engel. "But it was a refreshing change when HP configured and implemented the storage arrays and migrated the servers onto them. The HP project leader was competent and adept at solving problems swiftly. We finished the implementation two weeks ahead of schedule and everything worked perfectly, because HP knows exactly what to do. Now we have a manageable, disaster-resilient, high-performance solution."

Company profile:

s.Oliver Bernd Freier GmbH & Co. has developed into the leading fashion producers in Germany with brand sales revenue, including license fees, of 655 million Euros (US$715 million) in 2002. From its head office in Rottendorf, the company employs a staff of about 2,000 worldwide and designs ten collections ranging from baby clothes to premium lines. The s.Oliver Group has three subsidiaries: comma, KNOCKOUT, and QS. In addition, s.Oliver owns 35 stores, approximately 200 stores with partners, and about 700 shop-in-shop outlets.
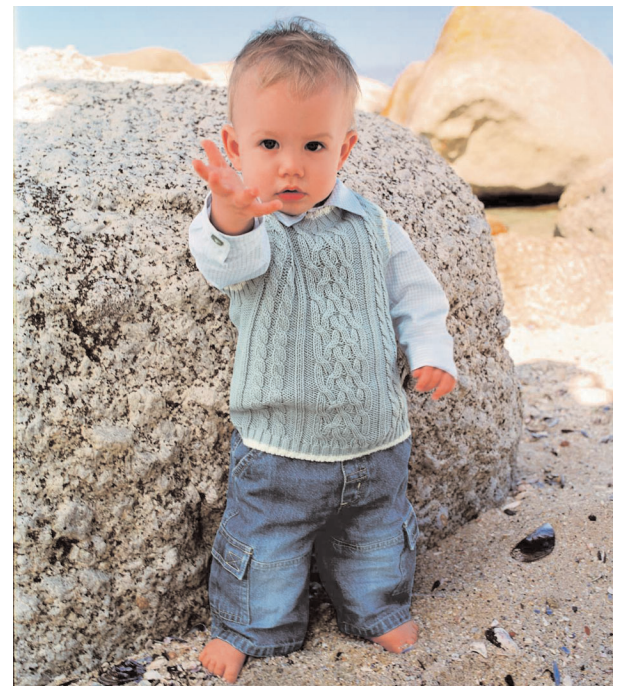
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