German digital-media institute tunes up with HP technology

Fraunhofer Institute for Digital Media Technology

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– Juergen Koller, Information Technology Manager, Fraunhofer Institute for Digital Media Technology

Organizational need:
Founded in January 2004 as the 58th prestigious Fraunhofer Institute, the Fraunhofer Institute for Digital Media Technology IDMT develops new media technologies for professional and home entertainment markets. To research multimedia and compression algorithms, Fraunhofer IDMT requires quick, reliable access to generous amounts of storage and powerful file-serving systems. Therefore, the research institute sought a company to deliver integrated solutions and services to help its staff support the IT platform without increasing staff.

Solution overview:
Fraunhofer IDMT chose a proven solution with single-point support from HP. HP StorageWorks 5000 Enterprise Virtual Array systems provide flexibility, resource sharing, and virtualization – enabling the staff to easily manage storage as a single pool in response to the organization's storage needs. Clustered HP AlphaServer systems running HP Tru64 UNIX deliver reliability and high availability for office applications.

Composing a harmonious IT framework with HP StorageWorks solutions
Fraunhofer organizations throughout Germany focus on fields such as applied electronics, medical technology, digital broadcasting, and audio/multimedia. Fraunhofer IDMT is renowned for its developments in consumer electronics, virtual acoustics, metadata, and audio-coding schemes. Audio-compression/decompression (codec) technology originated with the institute's director, Professor Karlheinz Brandenburg, who garnered the "German Future Award" in 2000 for developing and commercializing the MP3 music format at the Fraunhofer Institute for Integrated Circuits. In May 2004, he also received the "IEEE Masaru Ibuka Consumer Electronic Award" for his major contributions to digital-audio source coding.

Besides applied electronics, approximately 50 Fraunhofer full-time employees and 50 students work on such projects as improving flat-panel speaker technology, enabling automated search of illegal content on the Internet via the AudioID application, improving sound quality in movie theatres and at live events, and providing coding for special applications.

In their work, Fraunhofer researchers listen to a great deal of music from all genres to pinpoint versions with the best audio quality and to improve the sound even further. Their algorithm modifications and analytical activities produce many files and massive volumes of multimedia data, which must be quickly stored, accessed, controlled, and shared. Fraunhofer's Juergen Koller, Information Technology Manager, first solved his organization's storage challenges with an HP StorageWorks storage-area network (SAN) built in 2002 with the HP StorageWorks 5000 Enterprise Virtual Array.

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"Our storage requirements were exploding," Koller explains. "We knew that an HP StorageWorks EVA5000 would provide a comprehensive storage solution with excellent performance – and it has."

This innovative storage solution provides 8 TB of storage capacity and delivers consistently high transaction I/O and MB data rate performance. "I was convinced that the HP StorageWorks EVA5000 was right for us when I saw its performance benchmarks," Koller relates. "Once HP Services deployed the storage array in our environment, we immediately noticed a definitive performance increase of four times our older HP storage array. The EVA5000 solution meets our performance demands with consistently high transaction throughput and file-transfer rates."

The flexibility and management ease of chart-topping virtualization technology

The EVA5000 system provides storage virtualization; this improves utilization and enables the staff to transform RAID sets, create snapshots rapidly, and conduct data cloning in the background. With the EVA5000, it's easy to create virtual RAID disks, which are helpful in apportioning storage. Fraunhofer users normally store data in directory structures and – due the functionality of the EVA5000 – the IT staff doesn't have to dedicate additional servers to specific applications and can assign resources where users need them. "I simply mount the disk on my cluster and port it to a server," Koller explains. "The HP StorageWorks EVA5000 is an excellent, efficient solution, which is engineered to help me get the most from my storage environment."

Koller and his colleague use the HP OpenView Storage Management Appliance to allocate capacity dynamically to individual applications based on business priorities. "The EVA5000 is easy to configure, and I don't worry about it draining our support and maintenance resources," Koller comments. "We do little to manage our HP storage environment on a weekly basis."

When it became necessary to expand the array due to the institute's data deluge, Koller took advantage of the EVA5000 system's scalability and extended its capacity to 16 TB. "Our users are always able to fill the storage capacity I provide to them," Koller says. "It was no problem to expand the HP StorageWorks EVA5000. I took the new drives, put them in the EVA5000, and configured the extra space. It was so easy – like putting fuel into a car tank."

Because institute researchers consume so much storage, eventually Fraunhofer IDMT needed to add more capacity. Koller went back to HP for a second enterprise-class system, which provides another 4 TB of storage capacity. "I can rely on the StorageWorks EVA5000," Koller says, explaining his decision. "When we buy HP, we know we're getting reliability, easy management, and responsive support for our money. Plus, we always get the full lifecycle from HP systems."

Integrated HP portfolio strikes a chord in research activities

Along with orchestrating a virtualized storage foundation for its research activities, Fraunhofer IDMT uses HP servers for technical computing. Attached to the EVA5000-based

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SAN, HP AlphaServer systems run the HP Tru64 UNIX operating system and Microsoft® Windows® 2003 operating systems. HP Services deployed the servers with HP TruCluster Server software, which is designed to promote application fault tolerance and high availability, and handle file serving, e-mail, web serving, and faxing tasks. Although all servers in the cluster contribute to the workload, the IT staff can manage the servers as one single system, which reduces management.

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"Our HP AlphaServer systems fit in perfectly with the EVA5000 systems, and we love the servers' clustering capabilities," Koller acknowledges. "HP AlphaServer cluster technology provides powerful performance for the HP Tru64 UNIX platform and high availability. If one server in the cluster ever has a problem, the system is constructed so that another will take over."

Koller is looking to consolidate the institute's Microsoft Windows platform on the SAN with new industry-standard HP ProLiant servers featuring the high-powered AMD Opteron processors. "We expect the HP ProLiant servers with Opteron processors to give us enterprise-class performance with outstanding server management features," Koller says.

Outstanding services set an upbeat tempo
Koller credits HP Services for a rapid, smooth deployment and helping to maintain the institute's IT environment. "HP's implementation services are excellent," says Koller. "We have saved money and time by having HP Services manage our hardware implementations and provide us with technical support. The HP experts enable us to focus our resources and energies on other projects."

As a non-profit organization, Fraunhofer IDMT must keep a watchful eye on its resources and use IT as efficiently as possible in research. Koller believes that by incorporating HP technology and services in the institute's platform, IT helps to engender creative possibilities for consumer and industrial multimedia purposes. "We're providing a powerful IT infrastructure that keeps pace with our demanding research work," Koller concludes.

About Fraunhofer Institute for Digital Media Technology (Fraunhofer-Institut für Digitale Medientechnologie)

The Fraunhofer Institute for Digital Media Technology IDMT (www.idmt.fraunhofer.de) started as a working group of the Erlangen, Germany-headquartered Fraunhofer Institute for Integrated Circuits. In January 2004, the working group became a full-fledged research institute consisting of the home-theater systems, metadata, and audio-applications departments. Based in Ilmenau, Germany, Fraunhofer IDMT develops new media technologies for professional and home-entertainment markets in close association with industry and science partners.

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At a glance

Hardware:
- 2 HP StorageWorks 5000 Enterprise Virtual Arrays (EVA5000)
- HP AlphaServer DS20E systems (two clusters) attached to the HP SAN
- HP AlphaServer DS25 systems (one cluster) attached to the HP SAN
- HP StorageWorks Modular Array 8000 (MA8000)
- ADIC libraries attached to the EVA5000 systems
- HP OpenView Storage Management Appliance

Software:
- HP OpenView Storage Management Appliance software
- HP TruCluster Server software
- HP Tru64 UNIX operating system
- Microsoft Windows NT® and Microsoft Windows 2000 operating systems

HP Services:
- SAN implementation
- Hardware and software warranty

Challenges

- Provide users with quick, reliable access to generous amounts of storage

- Deliver IT reliability, performance, and high availability

- Improve storage management and configuration flexibility

Solution

- Established a storage environment based on HP StorageWorks 5000 Enterprise Virtual Arrays

- Integrated high-performance HP technical computers with the virtualized storage environment

- Deployed server clustering software for fault tolerance and the HP storage-management interface to administer storage capacity

- Contracted with HP Services for SAN implementation and hardware/software warranty

Results

- Flexible, virtualized storage environment with outstanding server-clustering technology to support file serving, advanced research, and computational transactions

- Four-fold performance increase, better resource sharing, and substantial storage capacity

- Increased storage capacity managed centrally and easily by existing staff

- Storage virtualization capabilities designed for dynamic provisioning of hardware to applications and users as needed

For more information on how working with HP can benefit you, contact your local HP representative, or visit us at www.hp.com.