High availability at Ostwestfalen-Lippe University

S(kim) stands for “Service: Communication Information Media” and thus for the supply of an entire university with everything related to IT. The central IT department provides IT-infrastructure both for students and university staff, offers help with all questions concerning data processing (helpdesk, tutorials) and operates computer training rooms.

Moreover, the IT department offers literature and information material both printed and digital, is contact for all questions concerning the gathering of information and offers courses on library use and search techniques.

Central IT also means providing data for 3500 e-mail users, WEB and Internet services. All these services are made available by a cluster of five SUN Fire systems virtualizing 40 servers by means of Xen, with some additional Windows- and Gentoo servers.

The task consisted of providing a storage solution for these high-performance servers, offering not only the necessary performance to sustain all services simultaneously, but which also provides adequate capabilities to the clusters.

Solution:

The clusters are set up in two separately located server cabinets. They have access to a highly redundant ES-9200 Remote Redundant RAID via Fibre Channel host adapters and FC switches. In order to achieve this, two RAID systems are pooled in such a way that allows them to operate as a virtual Dual Controller RAID. Advantage over a conventional Dual Controller RAID: here not only the controllers but also the housing with the backplane are redundant. The controllers reflect the disks of one side to those of the other side, pooling them to a RAID 0 assembly, thus creating an overall RAID 10.

A complete unit of this high availability solution may fail without causing an interruption of the data stream. Compared to a normal replication solution not even a short interruption occurs in this case, since real mirroring takes place.

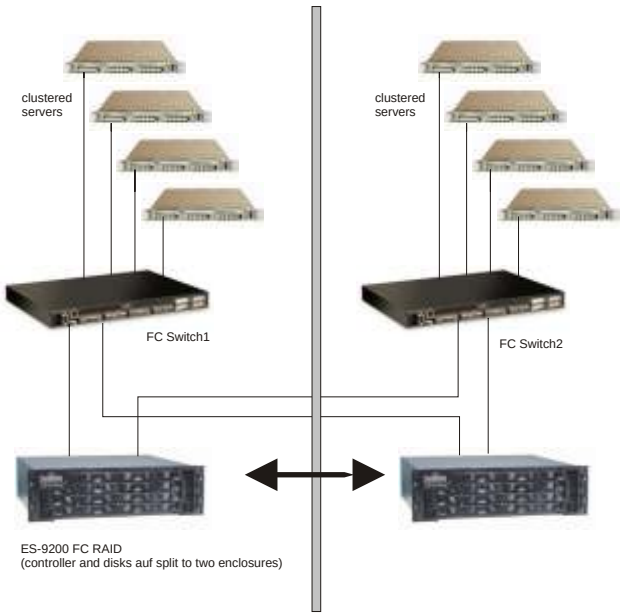
Communication between the controllers is ensured by redundant Fibre Channel connections.

Individual volumes are put specifically at the disposal of the respective servers by RAID. Access is controlled by the WWNs of the Fibre Channel host adapters.

An additional SATA RAID system with Fibre Channel interface is available for logging and monitoring of two Sun Fire systems with Gentoo Linux and Xen virtualization.

ES-9200 Remote Redundant RAID

- **All components are redundantly designed: switches, RAID controllers, RAID housings and hard disks.**
- **The disks of both RAIDs are mirrored against each other no interruption even in a complete RAID failure**
- **Both heads operate as a Dual Controller RAID system, with the components spread over two locations**
- **Fibre Channel hard disks ensure high performance, even for data bases.**



Remote Redundant RAID concept: Highly available data mirroring across server cabinets or computer rooms. (Location: Lemgo)

Costomer’s voice: S(kim)

Service | Kommunikation Information Medien

“Work at a university today is hardly conceivable without reliable data availability“, says Carsten Halm, responsible for the IT services of S(kim). “E-mails of approximately 3500 users need to be received, stored and forwarded around the clock, in addition to all the other media which are offered via the Internet.
With e-learning an important part of the teaching activity is dependent on the availability of the data. You can imagine that we may not even think of an interruption of the S(kim) services. Therefore we needed a highly available solution.
With her Remote Redundant RAID solution EUROstor provided us with a fast and centrally manageable fail-safe storage that optimally supports the concept of high availability and is nevertheless cost-saving.“

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