Business data processing specialists show confidence in Open-E software

The storage component for a virtualization project of the business informatics chair 1 of the **Friedrich-Alexander-University Erlangen-Nuremberg** is based on the Open-E storage server

Memory Full

One of the most important components in a large number of virtualization projects is the storage field. Virtualization systems cannot give their optimum performance without highcapacity and dependable storage. In worst case scenarios this could lead to a complete outage of the solution. These requirements also hold good for the collective project of a number of chairs at Erlangen-Nürnberg University which is presented here. In particular, this project placed considerable demands on both the servers and storage solution.

The planning and realization of the project was in the hands of Dipl. Inf. Jens-Henrik Söldner who had to ensure both the purely organizational assignments in coordination between the sectors and the selection of the optimum hardware and software. "As it is often the case in university projects, the requirements to be met included not only technical factors but also a preferably attractive price/benefit relationship," said Mr. Jens-Henrik Söldner. "In addition the server infrastructure and storage system are to be preferably scalable and growth-oriented."

The Initial Situation

The point of the collective project with other business informatics chairs at Erlangen-Nürnberg University was to set up a virtual cluster system for the low-cost virtualization of lab server systems. This was to be based on the VMware ESX Server 3.5 with a total of 3 server systems. As, if required, the machines are to be moved to heterogeneous ESX servers, a central storage is indispensable for these server systems.

To this end, the solutions for load balancing and high availability had to be provided and set up in a particularly dependable and performance optimized manner. This also included the storage systems. It was not easy selecting the storage systems, as work is often done at universities with Open Source.

Storage Selection

The first step involved planning the operation with the iSCSI target of SUSE Enterprise 10. However, the evaluation then produced a number of limitations which could have caused considerable problems for the project. "We then opted for the Open-E solution following further evaluation rounds," explained Mr. Söldner. "The Open-E DSS operating system supplies all the requisite functions and performance parameters as defined under our project."

Data Storage Server

The Open-E DSS (Data Storage Server) is a complete IP and FC storage operating system (FC Fiber Channel) providing NAS, iSCSI and FC functionality (target and initiator) in a single application complete with straightforward operation and a high resilience for companies of any size. The storage server solution provides a rapid, dependable and scalable platform for IP storage permitting collective file access, storage consolidation, backup and recovery. Another field of considerable relevance in today's world is virtualization or replication – something covered by the DSS.

Since the operating system has been optimized for environments with dedicated storage and company networks, the solution is especially suited for network environments with an array of clients or utilities with high memory requirements. Thanks to the support of Windows, NIS or LDAP domains, the existing IT infrastructure can be easily extended. The Web-supported graphics user interface for management and administration ensures dependable control of the storage unit and processes for backing up vital data.

Technical infrastructure

Storage

- 3 TByte RAID gross
- Open-E DSS operating system
- HP Proliant DL 320s
- Backup possibly via VMware VCB is currently being evaluated

Environment

- 3 ESX Servers with approx. 60 virtual machines in all
- Homogeneous VMware ESX 3.5, possibly later a Windows Server 2008
- No active users, lab server cluster for calculations, simulations and tests

Storage-Hardware

The HP ProLiant DL320s Server was to be deployed. In the first stage the iSCSI storage unit was equipped with six 500 GByte SATA disks which were then connected to the servers in a RAID interconnection (Raid 6).

The server represents a solution for small and medium-sized concerns requiring a high capacity and extendability for future expansions. Together with the Intel dual-core processors, the dual processor functionality ensures that the requisite server performance comes about and, at the same time, provides considerable scope for extension and expansion plans.

Realization

There was nothing standing in the way of implementing matters once the general conditions had been defined and the products selected. Installing the VMware Software on the servers went very smoothly. The integration which followed, of the Open-E iSCSI storage solution on the HP Proliant servers, was much easier than had been expected. "The Open-E DSS operating system installed on a USB flash module was simply inserted into the HP server. That was all and a fully-fledged storage server complete with intuitive operation and web front-end was then available," said Mr. Söldner. "Following volume setup, incorporation into the VMware ESX server via the iSCSI-Initiator was quick and easy."

Cost/Benefit

The solution has been in operation for some time now and the chair's expectations were fully met. "The performance of both the server infrastructure and storage solution covers all our requirements," says Mr. Söldner. "The other institutes, too, have also realized their assignments on the cluster."

The data is secured to a very high degree on the systems, and, thanks to its high capacity, availability is ensured at all times. As both the server landscape with VMware and storage infrastructure can be rapidly and easily extended, there is nothing to stand in the way of an extension to the system. Backup and disaster recovery are the next fields to be put into practice under the collective project.