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World-Famous Scientific Institute Uses FlashDisk in a Highly Available iSCSI Environment

The Max-Planck-Institutes are world-renowned scientific and educational institutions located throughout Europe, with each site specializing in different disciplines in the social and physical sciences. The institute at Stuttgart, Germany, conducts research in the area of solid-state physics, which involves semiconductor technology and the chemistry and physics of metal research. Employing an international group of approximately 1,000 scientists, engineers, and technicians, MPI-Stuttgart was using a fiber optic gigabit data network mostly running TCP/IP to support all of its scientific and administrative services.

Restricted Growth

Over time, Peter Winker, MPI-Stuttgart's Networking Manager, and his IT team realized the need to expand the network; but they came up against the limitations of the current architecture. The system used a couple of stand-alone Linux and MS (Windows) servers with direct attached storage to do the basic tasks of networking support. This architecture required the name service, user authentication, dynamic address allocation, and other tasks to be distributed over several servers. The team wanted to consolidate these applications using shared storage in a single reliable system with failover capabilities. This requirement led the team to explore different RAID disk array products.

Red Hat Partnership

While considering several RAID systems for his clustered environment, Winker was introduced to Winchester Systems by Red Hat. Winkler discovered that software engineers at Red Hat worked with Winchester Systems to develop the cluster suite directly on FlashDisk® OpenRAID. Thus, it seemed only natural for Winker to seriously consider using FlashDisk for the network's data storage requirements since the product had been Red Hat certified for clustering.

Cisco iSCSI Connectivity

It took Winker's IT team less than an hour to install FlashDisk, and the entire system was completely operational within a week. The installation was facilitated by the Red Hat partnership because all of the necessary hardware drivers were already on the Red Hat installation CD. Winker was especially pleased because the LUNs (logical unit numbers) of both channels of the FlashDisks were recognized instantly after connecting to the pair of

Cisco iSCSI routers. Winker notes that this was an important connection because he was committed to connecting a storage system using iSCSI.

FlashDisk Passes the Test

After the installation, the test period lasted three months. The system was tested by initially running all of the applications on a single cluster. These applications included the name service, which translates the domain name into IP addresses; user authentication using DHCP (dynamic host configuration protocol) to automatically assign IP addresses to remote users and eliminate the need to manually assign permanent IP addresses; and Samba software, which allows the Linux server to act as a file server for Windows clients. Although speed was not a major factor for MPI-Stuttgart's net-

working needs, Winker found the Winchester Systems storage solution to be four times faster than its nearest competition, which Winker says is a "nice side benefit."

No Single-Point-of-Failure

According to Winker, "The single most important criterion for operating our network is reliability. In other words, there can be no single-point-failure within the storage system while several hosts access the system simultaneously." This criterion made FlashDisk's dual controllers very attractive because it speaks to the solution's high reliability. In the event of a controller problem, FlashDisk seamlessly fails over to its second controller without incurring an interruption to the users. And it does this with no additional software on the hosts. Winker notes, "The system has been up and running for 13 months now without any failures. We are pleased because it has reduced our support costs and has given us the freedom to manage other tasks."

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>
> Peter Winker,
> Networking Manager

Scalable & Fault-Tolerant

Winker sums up the benefits of adding FlashDisk to the network: "We now have a solution that is completely fault-tolerant, fast, and low cost compared with a native Fibre Channel connection. We have the iSCSI gateways running on a Red Hat High Availability Cluster with access to the shared disks over MPI-Stuttgart's existing Ethernet connection using the TCP/IP network protocols. The advantage of using iSCSI is the ability to build on existing IP networks to connect FlashDisk without requiring additional host adapters. In short, our requirements are fully met with FlashDisk using 11 disks with a capacity of 600 gigabytes."

Today, MPI-Stuttgart operates a fully switched Ethernet network connecting more than 3,000 devices, including computers and workstations, as well as shared printers and other peripherals. The system has the capability of connecting upward of 20,000 devices. Winker concludes, "A huge advantage of this solution is its scalability. We know it will be a snap to implement a second cluster (and even more) should the need arise."

For more information on the FlashDisk line of products and Winchester Systems go to:

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