



Lund University was founded in 1666 and today is the largest unit for research and higher education in Sweden. Their main focus is on students, teachers and researchers however, they are keeping a keen eye on technological advances which will help them progress into the future. Today's curriculum provides new challenges for the Lund University IT staff.

The Challenge

- 9 servers hosting highly complex software such as Pro/ENGINEER®, ANSYS® and Alias®
- 1300 Lund University students
- 130 students able to simultaneously launch any of the CPU and bandwidth intensive applications
- Reliability and performance criteria must be met
 - No lag in response time
 - No down time

The Solution

- AMCC's 3ware 12-channel 9000 SATA RAID controllers
- RAID 5 array with twelve 74 GB SATA drives
- 2.7 TB of near-line and backup storage
- Support stringent performance requirements with StorSwitch® switched fabric architecture

3ware® SATA RAID Gets Top Scores in Solving University Storage Problems

It's near the end of term at Lund University, the largest institution for research and higher education in Sweden. The students at the Institute of Technology, LTH are preparing for their exams, and as tests covering the use of engineering software near, Rudolf Abelin is feeling nervous. Rudolf isn't a student — he is the Senior Systems Manager, responsible for maintaining the servers that run sophisticated technical software and store student created data files. He's recently switched from SCSI to SATA RAID storage.

"The time is right to move to SATA. I've been watching the development of SATA technology for several years and it now offers the features, performance, and reliability I need. With such huge cost advantages I couldn't delay the decision any longer, and I'm overjoyed at the results."

— Rudolf Abelin,
Sr. Systems Manager, Lund University

No one wants a system problem at exam time — particularly Rudolf. The university has historically relied on SCSI-based servers. Switching to SATA RAID raised some eyebrows amongst his colleagues, meaning all eyes were on Rudolf and his SATA based servers to make the grade.

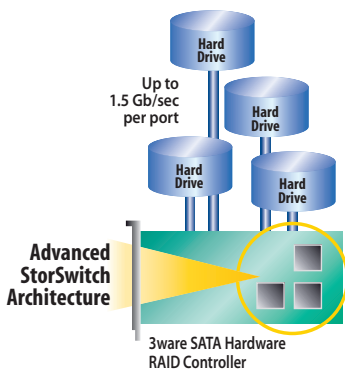
When exams had finished, SATA technology passed with flying colors! Even though test benchmarks had shown good system performance, nothing matches the challenge of students simultaneously firing-up copies of complex software such as Pro/ENGINEER (a CAD package), ANSYS (a finite element analysis package) and Alias (studio design tools). The high-bandwidth SATA storage system coupled with the server's two high-performance gigabit Ethernet links performed well even under the extreme load put on it at exam time.

Rudolf Abelin has installed a total of 9 new servers using SATA RAID storage. These servers support 1300 students who access 130 terminals, which deliver the highly CPU and storage intensive applications, used at the Lund Institute of Technology. The main file and application server is a dual-Opteron Windows server with a 12-channel 3ware 9000 controller from AMCC, configured in a RAID 5 array with twelve 74 GB Western Digital Raptor drives. The system has been designed to grow with the needs of the university and can be configured to double the current storage capacity. The SATA based RAID subsystem offers both high performance and reliability for this mission-critical server, enabling SCSI-like performance for most tasks at a greatly reduced cost.

Maximum Performance with StorSwitch™

The AMCC 3ware® family of high-capacity storage solutions is designed to deliver reliable, enterprise class RAID storage using low cost ATA and SATA drives. The 3ware product family features the only complete family of 12, 8 and 4 port SATA RAID controllers available in the market. With support for up to 4.8 TB of storage these controllers satisfy the demands of the most data-intensive applications.

AMCC is at the forefront of SATA technology with the only switched fabric architecture — StorSwitch™. StorSwitch allows the controller to simultaneously communicate with all drives, scaling linearly as more drives are added, resulting in the highest possible storage subsystem performance. The 3ware 9000 series of hardware RAID controllers deliver in excess of 400 Mbytes per second (MB/sec) sustained RAID 5 reads and over 100 MB/sec RAID 5 sequential writes with less than 3% CPU utilization.



“The Lund Institute of Technology really put SATA performance to the test with their demanding applications and extreme job load put on the systems at exam time. Once again we’re pleased to see that SATA technology can stand up to the most rigorous load-profiles. AMCC is proud that the 3ware 9000 RAID controllers enabled Lund University to achieve their performance and cost goals.”

— Mike Joyce,

Director of Marketing, AMCC

Backing up the main server, and for use as near-line bulk storage, is an identical system but with standard 250 GB SATA drives providing 2.7 TB of storage. Both systems make use of AMCC’s Multi-lane connection system, which interfaces to four drives through a single cable. With high-reliability connectors, and fewer cables, these servers have better airflow and cooling than conventional SATA RAID systems.

With increasing demand for storage capacity, and continued pressure on budgets, Rudolf felt that the move to SATA was a major step forward for Lund University. The cost benefits were unquestionable, SATA demonstrated its performance capabilities during exam time, and the SATA based servers also proved very reliable. Since introducing the SATA systems, none of the servers have had unplanned downtime. Rudolf is confident that his move to SATA will not only be followed by other departments at the university, but also by system managers around the world.

The students at Lund University are unaware of these changes — they are simply happy that they don’t need to worry about system problems when sitting down for their exams!

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