Infortrend®

British University Probes the Nature of Matter and the Universe

"...a very large storage facility to enable 15 Petabytes of data to be analysed annually is a monumental challenge. Thankfully A16U-G1A3-M1 from Infortrend provides the storage solution and was cost-effective as well."

Dr. Peter Love
Lancaster University
Department of Physics

Business:	*Nuclear research into particle physics*
Challenge:	*Develop a very large storage solution for a powerful computing facility*
Solution:	*EonStor® RAID subsystems met the challenge for:* *- high sustained bandwidth* *- high availability* *- 84TB of storage with facilities for later expansion* *- excellent price/performance*

LANCASTER UNIVERSITY

Lancaster University is one of many sites in the EU EGEE (Enabling Grids for eScience in Europe) and European Organisation for Nuclear Research (CERN) Large Hadron Collider (LHC) Computing Grid (LCG). The LHC is a particle accelerator which will probe into the nature of matter more deeply than ever before and is based at CERN on the Swiss/French border. By analysing the huge amounts of data generated when particles collide at high energy levels in an extraordinarily small space, the project researchers will discover more about the fundamentals of matter and the universe itself.

SUPERCOMPUTING CHALLENGES

Dr. Roger Jones from Lancaster University's Department of Physics and a member of the ATLAS experiment led the project and realized that they needed a powerful computing resource combined with large, reliable storage and excellent price/performance to successfully manage this endeavor. "The twin challenges to be faced were the use of high quality commodity computer products and matching the performance and stability of normal supercomputers," said Dr. Jones. "This involved a radical re-think to the normal powerful computing architecture and was coupled with the requirement for significant amounts of data storage which could be expanded at a later date."

HIGH POWERED STORAGE SOLUTION

The LHC is expected to produce 15 Petabytes (15 million Gigabytes) of physics data annually which needs to be accessible for analysis by physicists around the world. To analyse this data, ClusterVision were selected to design a large-scale computer cluster as a cost-effective alternative to traditional supercomputers.

The clusters consist of 209 dual processor computer servers or 'nodes' with Intel Xeon EM64T processors. Data storage is provided by 14 of Infortrend's class-leading EonStor® A16U-G1A3-M1 RAID arrays, each equipped with 16 400GB hard disk drives. These subsystems provide high availability by using hot-swappable drives, power supplies, and fan modules. Dr. Matthijs van Leeuwen of ClusterVision commented, "We configured the A16U-G1A3-M1 as RAID 5 for a high level of data integrity. Additionally, the Infortrend RAID subsystems provided a bandwidth that comfortably matches the projected needs of Lancaster University. The Infortrend RAID subsystems proved very easy to integrate with the ClusterVision clusters."

LARGEST DISK RESOURCE

Dr. Peter Love from Lancaster University's Department of Physics and GridP member said, "We produce simulation data for the four experiments that are running on the LHC. This is then stored on the Infortrend RAID subsystem for comparison with the actual measured results from the LHC.

"With the successful testing of the 84TB of storage, Lancaster University currently has the largest disk resource of any university site in the UK's LCG effort," continued Dr. Love. "The Infortrend A16U-G1A3-M1 RAID subsystems are an absolutely crucial part of the facility and are located at an independent storage facility within the University."

FINALLY

"Infortrend Europe is excited to be associated with the Lancaster University and the work of Dr. Peter Love on the ATLAS project," commented Alex Young, Technical Director of Infortrend Europe Ltd. "Our leading-edge RAID storage subsystems are ideally suited to this type of large scale storage."

ABOUT CLUSTERVISION

ClusterVision are specialists in the design, implementation and support of large-scale computer clusters. ClusterVision's clustering technology provides an alternative to traditional supercomputing by using a method of connecting multiple computers to form a unified and powerful computing system. By using high-quality commodity computer components and proven open source software technology, our clusters can match the performance and stability of traditional supercomputers for a fraction of the cost. Every ClusterVision cluster is delivered as a fully functional turnkey system with all hardware and software integrated and configured for immediate deployment. Each of our clusters is designed to meet customer's specific computational requirements at maximum performance, maximum reliability, and minimum cost.

For more information
Ms Georgina Ellis
ClusterVision Ltd
17 Essington House
Lytton Grove
London SW15 2ET
Tel: +44 (0)870 080 1991
geogina.ellis@clustervision.com

ABOUT THE LHC COMPUTING GRID & THE EGEE PROJECCT

The LHC (Large Hadron Collider) Computing Grid is a flagship Grid project to provide a computational and data intensive grid of resources for collaborative research and scientific exploration, carried forward in partnership with the EGEE (Enabling Grids for eScience in Europe) Project, which is funded through the European Union Framework Programme. For more information go to http://lcg.web.cern.ch/lcg/ and http://public.eu-egee.org.

Americas
Infortrend Corporation
+1 (408) 988-5088
sales@infortrend.com

EMEA
Infortrend Europe Ltd
+44 (0)1256-707700
marketing@infortrend-europe.com

Corporate Headquarters
Infortrend Technology, Inc.
+886-2-2226-0126
sales@infortrend.com.tw