CASE STUDY

Scientific researchers solve real world problems with Spectra Logic tape archive for UK's fastest supercomputer

> " We've deployed Spectra Logic libraries in several of the world's largest HPC projects because, like Cray, Spectra Logic is a leader in performance, quality and support for its customers. In addition these systems are easy to use, reliable, scalable and affordable... all very attractive features for academic institutions. "
>
> *Barry Bolding, vice president of storage and data management, Cray, Inc.*

Spectra T380 tape library with LTO-6 drives and media

|epcc|

About EPCC

In 1990 EPCC (Edinburgh's Parallel Computing Centre) was founded "to accelerate the exploitation of parallel computing through industry, commerce and academia" and this has entailed developing simulation software that runs on parallel computers, as well as providing consultancy services and training. Today, EPCC houses an exceptional range of supercomputers including ARCHER (Advanced Research Computing High End Resource) and employs a 75-person staff committed to using these machines to find solutions to real-world problems.

In 2011 the UK Minister of Science announced funding for e-infrastructure investment including £43 million earmarked for ARCHER to become the next HPC service at EPCC. The overall storage solution for the ARCHER bid needed to meet a number of requirements set out in the tender documents and responded to by Cray. The competitive procurement was run by the Engineering and Physical Sciences Council (EPSRC).

Fast Facts: the ARCHER system

- The UK's fastest supercomputer, capable of more than one million billion calculations a second
- Three times faster than its predecessor, HECToR
- Named #19 on SC's top500 Top500 list at Supercomputing 2013
- Housed in one of the world's greenest computer centres, with cooling costs of only eight pence for every pound spent on power
- Helps researchers carry out sophisticated, complex calculations in diverse areas such as simulating the Earth's climate, calculating the airflow around aircraft, and designing novel materials
- The £43m ARCHER service enables UK researchers to carry out internationally-competitive work, supporting their UK status as a leader in computational science and engineering

The Challenge:
Affordable, Feature-Rich Archive for UK's Fastest Supercomputer

EPCC hosts three supercomputers in the world's top 50 including ARCHER, which is the UK's primary academic research supercomputer. EPCC needed an archive solution to support its 1367 teraFLOPS Cray XC30 system, the fastest supercomputer in the UK. This deployment was needed to support its ARCHER

project, the newest UK National Super-computing Service and the nation's leading high-performance computing service for academic research.

The Solution:
Enterprise Tape Library with a Small Footprint from Spectra Logic

Supercomputer manufacturer Cray Inc. reviewed several storage options to recommend for the ARCHER joint solution and Spectra Logic's T380 tape library stood out both in terms of technical specifications and economics. The installation of the Spectra Logic T380 was smooth and quick, allowing the EPCC team to relax knowing that the data stored on ARCHER was effectively archived.
The investment EPCC made in the Spectra Logic tape library is further protected by the company's TranScale technology: when an organisation requires more throughput or capacity than its current library can handle TranScale allows it to re-use its existing components in a new Spectra library chassis.

Network Environment
- UK's ARCHER Supercomputer
- 1367 teraFLOPs Cray XC30 system
- Spectra® T380 tape library with LTO-6 drives and media

TECH NOTE

A 1-teraFLOPS computer system can perform one trillion (10^{12}) Floating-Point operations per second.
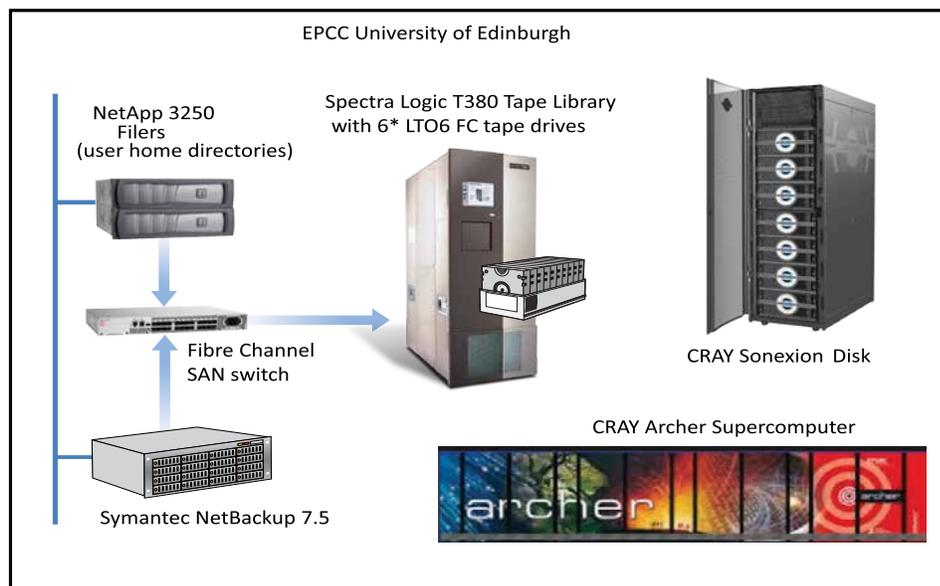*In just one second a 1-teraFLOPS computer system can process the equivalent of a person performing one calculation every second for 31,688.77 years.*

Results

ARCHER, a Cray XC30, and a Spectra T380 tape library are housed at the University of Edinburgh's Advanced Computing Facility. The £43m ARCHER service enables UK researchers to carry out internationally competitive work, supporting the UK's status as a leader in computational science and engineering. Computational Science and Engineering support on ARCHER is provided

> " We are committed to providing top-end advanced computing facilities while maximising energy efficiency; Spectra Logic has helped us on both counts. The BlueScale interface in particular has made encryption and library management overall very easy and moving the tapes is also a smooth process thanks to the TeraPack trays. "

Lesley Thompson, EPSRC's Director of Science and Engineering

EPCC University of Edinburgh

NetApp 3250 Filers (user home directories)

Spectra Logic T380 Tape Library with 6* LTO6 FC tape drives

Fibre Channel SAN switch

CRAY Sonexion Disk

CRAY Archer Supercomputer

Symantec NetBackup 7.5

by EPCC. It includes responsibility for helping users with porting, optimising and developing their codes for ARCHER, ensuring that the correct scientific software is installed on the system to meet user requirements, providing advice and best practices to enable users to exploit ARCHER resources, training and developing scientific software expertise among UK researchers. The Spectra tape library efficiently archives all of the data from this multi-department HPC research environment and significant UK based project.
Spectra Logic is committed to supporting the high performance computing and research fields with products that deliver the required high capacity, low footprint and operational cost attributes.
The Spectra Logic libraries have been designed for ease of use in multi-department research environments and are compatible with both LTO and TS1140 technology tape drives and media.

Why Spectra?
- Technical specifications
- Low operational cost
- Ease of use
- High Capacity
- TeraPack media management system
- TranScale feature
- Multi-department research and HPC industry expertise
- Recommendation by Cray, Inc.