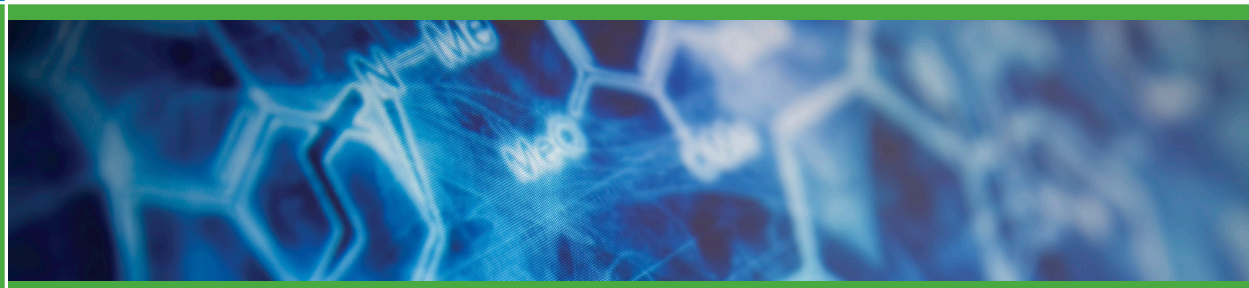
Oxford Supercomputing Centre

CASE STUDY

SGI® Altix® Supercomputers Deliver High Performance Density to Researchers at the University of Oxford



Key Facts

Organization – Oxford Supercomputing Centre

Location – University of Oxford, Oxford, England

Applications – HPC services

Solutions – SGI® Altix® 4700 and SGI® Altix® ICE

Background

The Oxford Supercomputing Centre (OSC) provides high performance computing (HPC) services to researchers at the University of Oxford. The facility is now also open to commercial users, who lease the computational capabilities as well as the in-house expertise of the OSC. To support this service expansion, the OSC needed to upgrade its existing hardware to gain additional performance and memory capabilities for both Oxford researchers and the OSC's commercial customers.

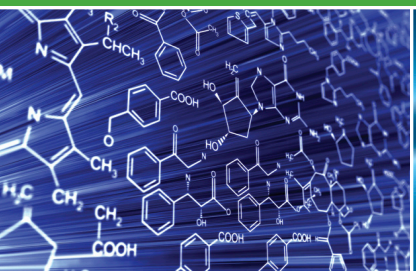
Business Challenge

The OSC was founded in 1997 and provides the central HPC service for Oxford. The supercomputing center assists with visualization across a wide range of multidisciplinary collaborations and serves academic research in astronomy, chemistry, biology and increasingly, bio-informatics and humanities.

In order to satisfy the university's increasing data intensive research demands and also to extend the OSC's computing offering to commercial users, the center needed to increase its computational capabilities. OSC's computing demands varied widely between university research projects and a broad array of commercial users' needs. The center required a particularly flexible solution that could quickly process vast amounts of data, and provide high performance shared memory for running demanding technical applications such as Gaussian. With SGI Altix, the OSC now has a balance of distributed and shared memory platforms that lend themselves to many different high-end applications.

"The reliability of the SGI Altix equipment means that we can spend more of our time with our users, enhancing their research."

– Jon Lockley, OSC manager




Technology Solution

When initially considering what hardware to purchase, the OSC reviewed a broad range of solutions that were not all capable of providing the extensive computing power required for the university's most demanding HPC applications. The OSC selected the SGI Altix 4700 and Altix ICE because these SGI products easily outperformed competing HPC offerings; Altix 4700 delivered the best benchmark results in its class.

"When working with the broad range of applications, data and computational requirements demanded by university research, it is essential that our equipment can meet our exacting demands. In addition, the center has equally rigorous requirements for reliability and energy efficiency—SGI Altix delivers on all fronts," said Jon Lockley, manager of the OSC.

The SGI Altix 4700 is optimized to assure versatile processing for the most demanding data intensive workloads. Featuring modular blades —with interchangeable compute, memory and I/O components—the system provides comprehensive and unmatched configuration flexibility.

The modular blade design of the Altix 4700 delivers high performance density—over one Teraflop per rack. It was equally important for the OSC to implement an easily scalable solution to keep pace with the evolving technology needs of their user community.

Altix ICE can be configured with up to 512 processor cores per rack —delivering up to six Teraflops of computing power. It can scale to thousands of nodes. In addition, to help keep OSC operating costs down, the Altix platform is designed to radically reduce power and cooling overhead.

"SGI Altix enables the OSC to tackle complex research projects that were not previously possible," continued Lockley. "SGI's designed-to-order model means that the SGI systems we rely on exactly meet our own, very specific needs for highly scalable, high-performance solutions."

Business Results

Since the opening of the OSC, SGI Altix has enabled researchers to make significant advances in academic fields and has assisted in forwarding a wide range of studies. Widely diverging research projects have included the study of mantle flow under mid-ocean ridges to modeling and assessing complex social trend data.

Furthermore, the OSC is now fully equipped to deliver HPC services over the cloud. By capitalizing on the operating efficiencies that have resulted from this large scale service deployment, the university is offering competitive rates for its compute-on-demand services.

"We have experienced great progress in our research capabilities since implementing the SGI HPC systems. Now, as we begin to undertake commercial projects, we are enabling local businesses to capitalize on the university's and SGI's HPC resources and expertise," continued Lockley. "Our partnership with SGI is helping the OSC to become a leading facility for supercomputing for both academic and commercial purposes."

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