Upscale your business with high performance data analytics

Image: IES

IES develops the world's leading integrated building-performance modelling software system. As a planning tool for cities this allows relevant stakeholders to assess, for example, the energy efficiency of a building or city along with other factors such as quality of living. The tool can be used at any stage of a city's life, and can be used in cities beginning the journey towards 'Smart' City, or those that are well on their way towards sustainable advancement and integration with a 'Smart' Technology ecosystem.

The challenge

Very large amounts of data are required to model multiple buildings and their interaction within the urban context. The data requirements grow as the scope of analysis moves from a single building to an urban scale, or when deep, detailed analysis of an individual building is required. And the demands on the computational platform grow proportionately. High performance computing (HPC) infrastructure is required to process the very large amounts of detailed modelling data. This is a prohibitive cost for IES and its customers.

How we helped

The solution was two-fold. Firstly, EPCC partnered with IES to accelerate the performance of the tool by allowing the software to run on large-scale HPC systems. And secondly EPCC provided the HPC-platform-on-demand service that allows simulations to be run, as a service, on a pay-per-use basis, drastically reducing the relevant HPC infrastructure cost. It is now possible to decrease significantly the run-time of simulations while substantially increasing the number of buildings in a simulation.

The benefits

The major benefit is that simulations taking unrealistically long compute times of days or weeks on a local workstation could run in a few hours or days using the Cloud-based HPC system with clear commercial benefits.

Indeed, based on the successful experiment, IES is now offering an HPC-based service to its customers. This service embodies a pay-as-you-go approach which is underpinned by HPC systems available from EPCC. It has produced a significant cost benefit. A 64-core in-house system costing £33k would have an annual running cost of around £22k (support, maintenance, electricity, housing, etc). Amortised over three years, this gives a total cost per core hour of £0.10, compared with a cost of £0.05 for Cloud-based HPC cycles. Of course the in-house system would never be used continuously and so would be even less competitively priced than this calculation indicates.

"The partnership enabled us to leverage the skills of EPCC. The business benefits are two-fold. One, it keeps us ahead of our competition. Secondly it opens a new business model to us – now we are able to sell through the cloud on a pay-per-use, which certainly enhances our ability to grow." **Craig Wheatley, Technical Director at IES**

EPCC: the UK's leading supercomputing centre

Supercomputing capability straight to your desktop

Introducing Cirrus: our latest computational service for industry.

Cirrus is an SGI ICE XA supercomputer comprising more than 5,000 cores – the equivalent of hundreds of desktop computers.

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Our Accelerator service: supercomputing on demand

ACCELERATOR

Cirrus is just one part of our Accelerator service, which delivers high-performance computing capability at a fraction of the cost of buying and operating in-house HPC services.

Accelerator can be used as a:

- Transformative HPC resource accelerating development and discovery lifecycles
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- Contingency over internal HPC infrastructure failure

Accelerator provides access to:

- ARCHER and Blue Gene: our high-end compute systems for large-scale simulation and modelling challenges
- Cirrus: a midrange, industry-standard Linux cluster. An ideal platform for applying commercial software tools to solve a range of CFD and FEA simulation and modelling problems
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- General HPC support
- Training & consultancy

- Data management and analytics
- Software development

- Computational modelling & simulation

To discuss our services for business, contact George Graham at EPCC:

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