Bright Computing

Why Bright is the Infrastructure Management Solution of Choice at the University of Leicester

CASE STUDY

The University of Leicester runs a campus-wide HPC service that is managed centrally from within IT Services. This system has a diverse user base covering three academic colleges across Science and Engineering, Medicine, Arts & Humanities and Social Science. Whilst the largest use of the service comes from the traditional HPC areas in Science and Engineering, there is significant use in other areas such as Economics and increasingly, the medical science disciplines including Health Sciences, Genetics and Cardiovascular Science departments. The campus service, called ALICE, was launched in 2010 and had its first major upgrade in 2013. In 2016, the University carried out a significant upgrade to the processing capability, to provide nearly 5,000 compute cores and will shortly complete a storage upgrade to expand capacity to 1.3PB.

The University also operates one of five supercomputers distributed across four universities (Leicester, Cambridge, Durham, Edinburgh), which form the DiRAC national HPC service for Astrophysics and Particle Physics. This system, with 4,300 cores and 0.75PB of storage was launched in December 2012. Both complex IT systems are managed by Bright technology.

The Need for Infrastructure Management

According to Dr Chris Rudge, Head of Infrastructure Services at the University of Leicester; "Cluster management software is one of the key differentiators, along with storage, when looking for mid-size HPC systems where the core compute/network elements have standardised on x86 (largely Intel) and Infiniband." When the University first tendered for the ALICE service in late 2009, Rudge knew that HPC was no longer a pile of bits cobbled together into a system, but was now an off-the-shelf commodity system which needed a robust management solution.

The Research Computing staff who were to support the HPC service had experience of a range of different HPC management tools, and had a very clear set of requirements which would ensure that a reliable, stable service could be provided whilst being highly flexible to support the varied and changing needs of a broad user base. Rudge explains; "Other solutions we'd experienced were, for example, very robust but geared towards the system having a very static configuration optimised once for well-defined workloads,

which would only change on long timescale; potentially just from one system to the next. Bright Cluster Manager allowed us the flexibility we knew we would need whilst still ensuring a reliable service was provided to support research and teaching activity." Furthermore, it was important for the University to select an HPC management solution that enabled the support staff to serve end users efficiently while getting the most out of the system and making the best use of the available resources. This was particularly important given the range of skills and HPC experience within the user base.

The Solution

The initial implementation in 2010 was in fact the first use of Bright on HP hardware, which uses a custom hardware management (iLO) instead of the more standard IPMI. Staff from the University, HP and Bright worked together as a dedicated team to deploy the system and resolve any issues which arose. Further deployments of Bright technology, both for DiRAC and on ALICE upgrades have been increasingly straightforward. For the latest ALICE upgrade, University staff were able to carry out the entire build themselves; only encountering minor issues which were quickly resolved through Bright's support team.

The Role of Bright

Bright Cluster Manager was chosen in 2009 over and above alternative solutions, as part of a competitive selection process. The very positive experience that the University team has had with Bright technology led to the most recent tender, in May 2016, for the ALICE technology refresh specifying Bright as the solution to be used.

The Benefits

The University hasn't quantified the staff support savings provided by Bright but Rudge is confident that the benefits provided justify the cost relative to open source solutions such as xCAT. When asked why he chose Bright, Rudge commented; "it just works!"

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— Dr. Chris Rudge
Head of Infrastructure Services,
University of Leicester