

Grid Resources

www.nesc.ac.uk/resources

UK e-Science Grid

The UK Grid Engineering Task Force (ETF) has deployed one of the first national-scale Grids anywhere in the world. The membership of the ETF comes from the e-Science Centres, including NeSC, and CCLRC. It has deployed the Globus GT2 Grid middleware and a number of additional tools from UK e-Science projects, on a range of machines from these institutions. This almost certainly makes the UK e-Science Grid the most heterogeneous operational Grid in the world. The UK e-Science Grid supports the UK's applied e-Science activities, running a variety of pre-installed applications. Its digital certification authority is run by the UK Grid Support Centre, which also provides a portal for the Grid, and support for new users. Training is provided by the Grid Support Centre and the e-Science Institute.

Access Grid

The Access Grid is the ensemble of resources that can be used to support human interaction across the grid. It consists of multimedia display, presentation and interactive environments, interfaces to grid middleware, and interfaces to visualisation environments. The Access Grid complements the computational grid. It is specifically targeted at providing "group" access to the Grid. This access may be for remote visualisation or interactive applications, or for utilising the high-bandwidth environment for virtual meetings and events. NeSC currently runs three Access Grid nodes at the E-Science Institute, Edinburgh, EPCC, Edinburgh and the Kelvin e-Science Hub, Glasgow. Each node uses three projectors to display the images on a display wall, and either two and four cameras. Compute power comes from two Windows machines that manage the display, and two Linux machines for video and audio capture.

NeSC Resources on the UK Grid

NeSC has (or will soon have) the following machines on the UK e-Science Grid. See <http://www.nesc.ac.uk/resources> for details of how to register for accounts.

Gilmour: The main test machine at Edinburgh is a Netfinity 7600 on loan from IBM. This machine has 4 Processors, 7GB RAM, and 1TB of disk, and runs Linux. This is used for a variety of purposes.

Lomond: The EPCC is one of the founding departments of NeSC, and runs a major Sun HPC service. Lomond is a Sun Fire e15000 with 52 processors and 52GB RAM, running Solaris, which was funded by a SHEFC JREI grant. A portion of its CPU time is allocated for Grid use.

BlueDwarf: IBM have donated a p690 "Regatta" server to the University of Edinburgh from their Shared University Research Programme. This machine is configured to support applications that require a large amount of memory per processor. It has 16 processors, 128GB RAM and 2.1TB of disk, and runs AIX. It is administered by NeSC on behalf of the School of Informatics.

Neptune: The main test machine at Glasgow is a 4-processor Sun Enterprise 450 running Solaris.

ScotGRID: ScotGrid is a £800k centre funded by SHEFC for the analysis of data primarily from the ATLAS and LHCb experiments at the Large Hadron Collider. The centre includes a 128 processor Monte Carlo production facility run by the Glasgow PPE group.



We plan to add more resources to the UK Grid. These will include both compute servers and data storage.

An OGSA-based Grid

The next stage of the UK e-Science Grid is a gradual migration to the Open Grid Services Architecture (OGSA). As part of this migration, NeSC is joining UCL, Imperial College and the University of Newcastle to deploy an experimental OGSA Grid using version 3 of the Globus Toolkit. This Grid will test the deployment of GT3 across multiple institutions and operating environments and the use of selected applications from other UK e-Science projects.

The test Grid project will use integration test scripts and monitoring systems analogous to those in the existing production Grid, leveraging the experience already gained in UK e-Science. It will develop and test migration paths from GT2-based projects and from those based on Web Services.

We are supported in our OGSA work by IBM. In return, we will evaluate IBM's OGSA-based software, providing reports back to their development team based on our experience of using it in the field.



HPCx

The HPCx system is the UK national facility for capability computing. It is being used by the leading research groups in the UK in studies covering a wide range of Computational Science and Engineering. HPCx is run jointly by EPCC and CCLRC, and is accessible from the UK e-Science Grid. See <http://www.hpcx.ac.uk/>.