



THE WHITE ROSE GRID

e-Science Centre

Frequently Asked Questions

Why should I use Grid?

Grid offers an infrastructure to support e-Research for scientists and non-scientists alike.

Key advantages are:

- Discovery of and access to computing and information resources not previously available
- Making access to resources simpler
- The ability to collaborate with others more easily
- New ways of working that facilitate research

This is designed to allow researchers to get the resources they need to enhance their research efficiency, and to get things done today that might previously have taken weeks on small, local resources.

What is Grid exactly?

The grid is not so much an entity as a collection of technologies. The aim of these is to allow collaboration in the realm of computing and data whilst ensuring security of computing systems and data.

Common themes in grid computing are:

- Geographical distribution – the resources (computers, storage, data), and individuals involved may be spread across the globe
- Virtual Organisations – groups of individuals or companies that come together and collaborate on a particular project or task
- Aggregation of computing – making a set of distributed resources usable without detailed knowledge of remote sites being necessary, i.e. work is simplified and task based
- Work flows – joining together resources so that the results of one stage feed into the next
- Ease-of-use – tying together all these strands so that using supercomputing power spread across the globe is as easy as

using a desktop

- Open standards for achieving all of these
- The ultimate aim of grid computing is to make best use of computing and data resources by aggregating them and making them as easy to use as plugging something into an electrical socket, i.e. using the power grid

What is e-Science/e-Research?

E-Science is the use of Grid and related computing concepts to enhance the ability to do science or other research. The ability to access data, compute, and other resources in an easily accessible way offers the possibility to do much more exciting things.

E-Research is the activity, Grid is the tool and the White Rose Grid is the resource.

What is White Rose Grid (WRG)?

The White Rose Grid was the first regional grid set up in the UK. It is designed to allow sharing of resources between the universities of the White Rose University Consortium, i.e. Leeds, Sheffield, and York. It has been operational from 2002 and now has an associated e-Science Centre (from 2006).

Why was the WRG set up?

There are a number of reasons:

- To give the White Rose Universities experience of using grid, allowing the White Rose Universities to develop valuable expertise and potential spin offs
- To support e-Research within the White Rose Universities by providing facilities for enhancing collaboration and coping with peak demands in computing needs
- To provide users with access to heterogeneous resources that would otherwise require significant additional funding on behalf of each institution to achieve the same level of service
- To provide for research continuity



in case of disaster

What facilities does the WRG offer?

Each site offers a number of computing machines and data storage and other facilities such as web services containers and application servers. There are over 1500 CPU cores in total across the White Rose Grid.

How do I access the local facilities?

To access your local service simply contact the system administration team at your local site.

How do I access other sites?

To access the other machines there is an application form to complete which covers Acceptable Use Policies for cross-site usage.

How much time can I get on a machine?

At each local site you will be allocated a share of resources according to the local policies. In general you will be allocated resources on a "fair share" policy. This allows you to use more resources some days than others provided that over time you use roughly the share you are allocated.

By default each site reserves 80% of its resources for local users with 20% being shared across the White Rose Grid.

How much does it cost?

Policies regarding charging and full economic costing across the White Rose Grid are under discussion. Local sites are responsible for charging policies for local users.

What is the NGS?

The NGS is like a larger version of the White Rose Grid which includes a number of sites spanning the UK. You may get access to this by registering at www.ngs.ac.uk. An NGS core node is hosted by the White Rose Grid.

What is Cloud?

Cloud has many similarities with Grid.

Cloud compute can be used to create a virtual cluster on an existing set of computers, and so can be used as a compute resource within a grid.

There is ongoing work on unifying cloud computing APIs.

What is Campus Grid?

This is a way to harness otherwise

underutilised computers across campus (e.g. clusters owned by individual departments) to create a low-cost, high-throughput computing facility.

What are digital certificates?

Digital certificates are means of uniquely identifying a user so that you don't have to keep entering passwords to access individual resources. These are required for the NGS and very useful for some types of work on the White Rose Grid. The UK e-Science Certification Authority provides certificates for the UK e-Science community (www.ngs.ac.uk). Users' identities are vetted by local site Registration Authority staff.

The upcoming SARONGS service may obviate the need for these certificates in future.

How does Access Grid fit in?

Access Grid is a video conferencing system and is somewhat distinct from grid computing. Please see the WRG flyer about Access Grid for more information.

Where can I find more information about the WRG?

The main White Rose Grid web site is at www.wrgrid.org.uk from which each site's own web pages can be accessed.

Where can I find out more about Grid?

Useful web sites include:

- UK National e-Science Centre – www.nesc.ac.uk
- UK NGS – www.ngs.ac.uk
- UK Open Middleware Infrastructure Institute – grid middleware tools – www.omii.ac.uk
- Globus Toolkit home page (de facto standard grid programming tools) – www.globus.org
- Storage Resource Broker – distributed data tool – www.npaci.edu/DICE/SRB/index.html
- Open Grid Forum – <http://www.ogf.org>
- Grid Cafe – an overview site – gridcafe.web.cern.ch
- Home page of Carl Kesselman, on of the founders of grid Computing, a good source for milestone papers on grid – www.isi.edu/~carl