# The Nimrod Portal

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Nimrod/G is a widely adopted Grid middleware environment for building and managing large computational experiments over distributed resources. Users specify a parameter sweep application using a concise declarative specification language, and Nimrod/G manages the task of distributing, scheduling and executing the tasks. Traditionally, users had to install Nimrod/G locally on their client machine, and this requires a significant amount of other infrastructure software (such as Globus, Python, etc) to be present. In order to simplify Nimrod/G access, we have developed a Web based portal that allows users to log into a central Nimrod/G point-of-presence rather than launching it from their own machine. The portal contains features that allow a user to manage their entire Grid workspace, including files and access certificates. It also provides high level graphical tools for creating and monitoring experiments.

Users often acquire accounts on resources independently of their organisation and thus create their own ad-hoc grid of computational resources. However, it is possible to build an ad-hoc grid in which no single certificate authority is trusted by all of the resources. To solve this problem, the Nimrod portal maintains several different certificates plus mapping information about which certificates apply to which resources. This allows a user to maintain their own ad-hoc grid without the need for all resources to trust a single authority.

Grid experiments often run for many days; having the portal interface allows the user to log off and return to their experiments later. The user uploads files at the start of the experiment and downloads the files at the end or as they are being produced. This also reduces the problem of firewall configurations between the user's computer and their resources as all their files are transferred from the Nimrod installation.

We are extending Nimrod to augment the existing remote invocation facilities, and in particular, we are adding a web services interface. This has the advantage that recent portal development toolkits (portlets) can easily integrate with Nimrod web services through remote procedure calls using the credentials either from the portal or provided by the user. This also allows many portals to utilise one Nimrod installation.

A novel version of Nimrod/G called Nimrod/O supports parameter optimization on the Grid, and both the Nimrod portal and web services provides support for reporting the progress of the optimization algorithm to the user as well as involving them in the search process.

The current Nimrod/G portal is based on standard CGI technology using UNIX scripting and C++ code and is optimised to run on a production quality web server. It outputs HTML code with some minor, but not required, JavaScript to over come some of HTML unfriendly short comings allowing compatibility with most web browsers. There are two GUI components to the Nimrod portal written as Java Applets where a graphical interface is required. We are currently developing a version based on portlets (JSR168) and using the new Nimrod web services to offer APIs based on recent standards.