

Part I: Getting Started with Grid Computing



Introduction

The aim of this guide is to introduce new users to grid concepts and terminology and to walk through a typical grid job submission using grid-tools.

The grid promises to allow organisations and institutions shared access to computer, database and instrument resources securely across the web greatly improving infrastructure utilisation and research output.

As the emphasis of the grid is security, certain procedures and protocols are in place to ensure that the grid is only used by authorised and approved groups and individuals. Once the initial application is approved and certain grid-enabling tools are installed and configured, using the grid becomes an easy and routine task.

An overview of the grid

Ultimately, the grid aims to be as transparent as possible to the average user, whereby the user can submit a computational job as easily as using a web browser. It is useful for the new user to understand the basic grid layout and protocols especially when initially applying for grid accounts and installing grid-tools.

Grid Terminology

Grid certificates. - once you are approved to use the grid, you will be given an electronic certificate which you can use to generate proxys which are used to submit the actual grid jobs. There are two sorts of proxys: **LocalProxy** and **MyProxy**. It is very important to keep your grid certificate **secure!**

LocalProxy. - the local proxy is a sort of local train ticket with a limited validation (of hours to weeks) that you generate using your grid certificate, to sit on your computer, to launch grid jobs. As long as the LocalProxy is still valid, you can launch jobs to the grid. Typically, one sets this to a few weeks at a time to ensure that your grid job will launch before the ticket expires. You can only use LocalProxy from the computer where your certificate is stored.

MyProxy. - is similar to LocalProxy, except it is stored elsewhere on a MyProxy server. This allows users to submit jobs from other computers by referring to the MyProxy server rather than using the localproxy. As before, the MyProxy has to be valid for jobs to launch.

VOs. - (Virtual organisations). VOs are groups of trusted users which are authorized to use various grid resources. For instance, if you are a user from Monash University with a valid grid certificate, you should apply to be part of the Monash-VO (this can be done via the grid tool "grisu" - more of that in a moment). Any resource the Monash-VO is approved for then members of that particular VO can use.

Getting started

The first thing you need to do is download the grid-tool **grix** from the following location: <http://grix.vpac.org>. Under “Users”, download the binary packages.

Once you run **grix** you will see this:



Simply fill in your details, a pass phrase of at least 12 characters, and make sure to pick the appropriate Organizational Unit from the list. (i.e. pick VPAC if you are a VPAC user), then press the “Request” button. This sends a request to your Grid representative who then validates who you are. As you will be required to present yourself **in person** with the appropriate photo ID after making a formal application, expect this process to take a few days.

You will be notified when you are approved and then you can use **grix** to upload your certificate to your computer. This will be stored under a hidden .globus directory.

Once you have your certificate, you will want to create a proxy so that you can apply to be part of a **VO**. In **grix**, click on the **MyProxy** tab and create a proxy valid for 7 days or more, using your long password. Now click on the **VO** tab and in the bottom right hand box select

an appropriate VOs to apply to. You may apply to more than one VO depending on your position. Press 'Apply' and this will send off a request to join that VO. You will have to wait for approval which might take up to one or two days to verify.

Once your VO membership is confirmed the hard part is over. You are now ready to submit a grid job.

To summarize the grid application process:

- 1) Download and install **Grix** (<http://grix.vpac.org>)
- 2) Using **Grix**, apply for a **grid certificate**.
- 3) Validate who you are in person to your Certificate representative. (this may take 1-2 days)
- 4) Using **Grix**, upload your certificate and create a proxy.
- 5) Using **Grix**, apply to join a **VO!** (1-2 days approval)

You are now ready to start using the grid!