

OMII-UK LiveCD Instructions

Introduction

The LiveCD is a Linux install that boots from CD and uses only system memory (i.e. RAM). It allows our users to run software demos without having to install and configure the software.

Two software packages are demonstrated on the LiveCD. *Campus Grid Toolkit* (CGT) is an easy-to-install and easy-to-use software package that makes it straightforward to access and control all of the computational and data resources that are available to you. *Rapid* is a unique way of quickly designing and delivering web portal interfaces to applications that require computational resources, such as utility computing infrastructures or high-performance computing facilities.

Four demonstrations are available on the LiveCD:

- **Fractal** uses CGT and local, cluster or NGS resources to calculate a Mandelbrot.
- **Primes** uses CGT and local resources to calculate prime numbers.
- **RapidDemo** is Rapid-created portal that takes a protein sequence, models it and looks in a database for a protein match.
- **MinemDemo** is a Rapid-created portal that models a charge distribution in a plasma.

Instructions

When the CD has booted, the machine starts up the windowing environment as the root user. A normal user, 'demo' exists, and a terminal belonging to this user is automatically opened. All normal demo operations can be performed as this demo user.

There are a number of directories in the demo user's home directory, these relate to software demonstrations, either relating to Campus Grid Toolkit & GridSAM, or to Liferay & Rapid.

Campus Grid Toolkit (CGT)

There are 3 CGT server installations on the CD, each configured to demonstrate a different configuration.

cgt-fork - This install is set up to simply execute jobs on the local machine by way of the 'fork' connector. This server is automatically started at boot.

cgt-pbs-local - This install is set up to submit jobs to a local PBS Torque installation, because of the simple nature of the CD, all jobs are run locally, it is in effect a cluster of 1.

cgt-pbs-remote - This install is set up to submit to a PBS cluster located at OMII-UK, this is done via an SSH link between the CD and the remote cluster.

NB: This server is only available in the booth version of the CD and will not be installed on the version downloadable from the OMII-UK website.

campus-grid-toolkit-client - This is the client used to drive any of the above CGT servers.

The main examples to note are under the gridsam/fractal and gridsam/primes sub-directories.

gsi-sshterm - An installation of the GSI SSH Terminal application, useful for interacting with the NGS and only installed on the booth version of the CD.

workdir - This is a working directory for GridSAM and can be ignored.

Liferay

liferay-portal-5.3.2 - The liferay server install, this is automatically started at boot

blast-data, rapid-demo & rapid-portlet-db - Working directories for Liferay and Rapid demos.

Starting and stopping the servers

When the CD boots, the cgt-fork and liferay servers will be started automatically.

All the CGT servers run on <https://localhost:18443>, so only one can be started at once.

However it is very easy to start and stop the servers. Each server has a startomii.sh and a stopomii.sh script, to manage the server. I.e;

/home/demo/cgt-fork/bin/startomii.sh and stopomii.sh

/home/demo/cgt-pbs-local/bin/startomii.sh and stopomii.sh

/home/demo/cgt-pbs-remote/bin/startomii.sh and stopomii.sh

The Liferay server runs on <http://localhost:8080>. This can be managed if required by running

/home/demo/liferay-portal-5.2.3/tomcat-5.5.27/bin/startup.sh or

/home/demo/liferay-portal-5.2.3/tomcat-5.5.27/bin/shutdown.sh

Running the examples

Campus Grid Toolkit Client

“Fractal example”

To use ‘fractal’, cd campus-grid-toolkit-client/gridsam/fractal and run ./fractal_file.pl

This will submit a number of jobs to the local GridSAM instance currently running.

To change the parameters to fractal_file.pl, ie the number of jobs, edit width and height settings at the top of the file.

To change the Mandelbrot parameters, a number of pre-canned parameter sets have been supplied, and these can be accessed by passing a command line argument to fractal_file.pl of 1, 2, 3, 4 or 5. The default is 1.

To submit fractal jobs to the NGS, you can use fractal_nginx.pl in exactly the same way as fractal_file.pl. NB: This version is only available in the booth version of the CD and will not be installed on the version downloadable from the OMII-UK website.

“Primes example”

To use primes, cd campus-grid-toolkit-client/gridsam/primes and run primes_file.pl

This will submit a number of jobs to the local GridSAM instance currently running.

The change the parameters to primes_file.pl, ie the number or size of the jobs, edit the settings at the top of primes_file.pl, eg:

```
my $range_min = 0;
```

```
my $range_max = 20000;
```

```
my $number_of_jobs = 10;
```

Liferay & Rapid

Open up the Firefox browser by clicking on the logo at the bottom-left of the screen.

Set the browser to point at <http://localhost:8080>.

Log into the portal using username test@liferay.com and password test.

Using the menus in the top-right of the browser window, navigate to:

Welcome -> My Places -> Rapid Demo -> Public Pages

From here you can access the “RapidDemo” or “MinemDemo” portlets. Icons for each of these are displayed in the menu bar under the Liferay banner.

“RapidDemo”

This portlet will load by default. You will be presented with a file browser. Click on the examples directory, then select the “demo.fasta” file by double clicking on the file name. Then click “Submit job”.

You will now be taken to the job status page, this will show your job, click the radio button in the left-hand column to show more information about the job.

Once the job has completed (you can press Refresh to update the status report), you can click on PBD link to see a 3D rendering of the demo protein via JMOL. Or click on Search Result link to view the job output.

“MinemDemo”

To use this portlet, select the number of ‘charges’ and the number of ‘files’, these are 5 and 2 respectively by default. Submit the job. You will be taken to a page with a list of jobs on, including your new job. Click on the left hand column to show more information about your job. Once the job has run to completion (press Refresh to update the status report), click on Graphical view or Text view to see the results.

* Other information about this CD

This CD is based around the Slax LiveCD distribution, see www.slax.org for details.

It is designed to run completely from system memory (RAM), and won’t use the local hard disks at all. This makes it ideal for using as a software demonstrator. Users can simply boot their normal desktop or laptop using the CD. Or alternatively boot the CD or CD image file (.iso) image in a virtual machine.

It is recommended that the host machine have at least 2Gb of RAM.