University of Westminster and University of Portsmouth, private desktop grids in academy environments

Title

Overview

Server Side

Clientside

Private DG

User Interfaces

Apps

End

University of Westminster and University of Portsmouth, private desktop grids in academy environments

Dario Ferrer

FST Faculty of Science and Technology
School of Electronics and Computer Science
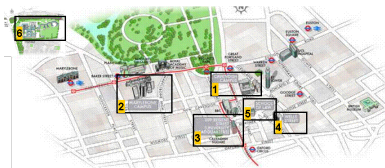University of Westminster

25 September 2013

Overview

UoW and University of Portsmouth Desktop Grids

The Local Desktop Grids connect laboratory PCs of the universities into their respective BOINC based Desktop Grid infrastructures
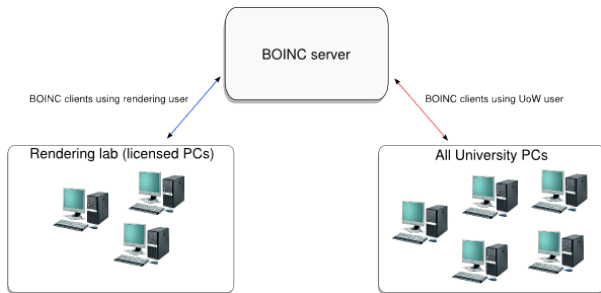
It includes over 3000 registered machines over all the campuses.

Server Side

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

Debian packages

We use .deb packages compiled by SZTAKI optimized for local Desktop grids.

```
deb http://www.desktopgrid.hu/debian/ squeeze szdg
```

The 3G-Bridge middleware run as BOINC daemons:

```
DAEMON pid status lockfile disabled  commandline
1 23477 running  locked   no feeder -d 3
2 23479 running  locked   no transitioner -d 3
3 23481 running  locked   no file_deleter -d 3
4 23483 running  locked   no 3g-bridge
5 23487 running  locked   no wssubmitter
6 23504 running  locked   no wsmonitor
7 23508 running  locked   no validator_autodock -app autodock_vina
...
```

Title

Overview

Server Side

Clientside

Private DG

User
Interfaces

Apps

End

3G-Bridge

3G-Bridge

We use a special submitting interface called 3G-Bridge.
This middleware was been developed by SZTAKI (Hungary)
within the EDGES and EDGI European projects.

The bridge is able to connect lots of different grid technologies.
It has interface for EGI (Globus & gLite) infrastructure,
interface for cloud submission, interface portal based
submission, etc

3G BRIDGE

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

Title
Overview
Server Side
Clientside
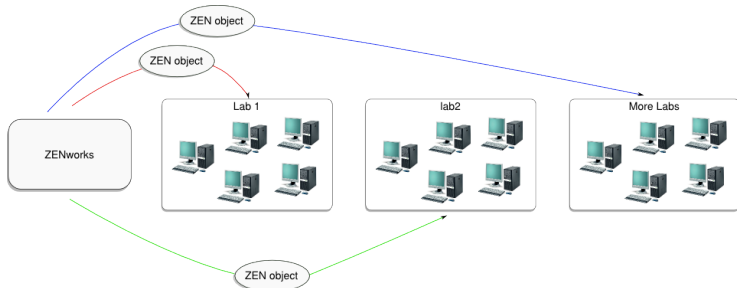Private DG
User
Interfaces
Apps
End

Server Side

Users

We use "BOINC users" to distribute different applications to specific labs, specially for licensed apps.

Ex: Those licensed Desktops able to run a particular rendering app are registered in the project as user "render".

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

Title
Overview
Server Side
Clientside
Private DG
User
Interfaces
Apps
End

Boinc Clients

ZENworks

Every single desktop at the Universities is managed using
ZENworks or similar automatic software deploy systems.

BOINC clients are preconfigured in a so called "ZEN object".
We customize the version and parameters of the BOINC client
depending on the lab it's going to be installed.
All the rest is done automatically.

Credits, Statistics

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

Title
Overview
Server Side
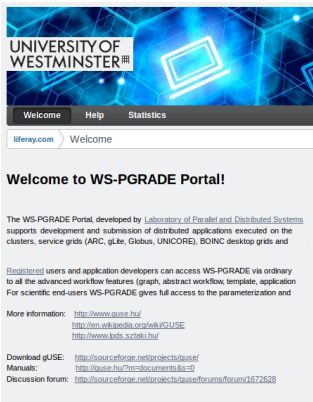Clientside

Private DG

User
Interfaces
Apps
End

No Credits

As our desktop grids are formed only by the University computers, we do not grant credits.

We also do not spend effort in decorating the apps with progress bars, we neither take care about large input/output sizes.
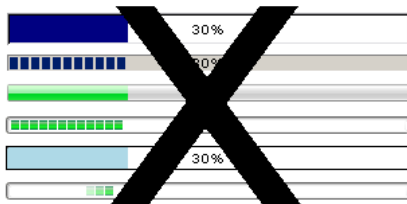
Green IT

As the majority of PC labs are used by students, the policy is to completely switch off BOINC during class time.

We also have environmental policies and scripts that switch off the machines if there are no BOINC jobs running.

WS-PGRADE portal

University of Westminster and University of Portsmouth, private desktop grids in academy environments

Title
Overview
Server Side
Clientside
Private DG
User Interfaces
Apps
End

Is a web portal capable of submitting jobs in BOINC and many other grids.
Has been developed by the SZTAKI, Hungary in collaboration with many partners under the umbrella of a number of European projects such as EDGI, SCI-BUS, SHIWA ...
It does communicate with desktop grids using the 3G-Bridge

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

Title
Overview
Server Side
Clientside
Private DG
User
Interfaces
Apps
End

WS-PGRADE Specific Portlets

Most of users are students who submit trough app oriented specific GUIs.

They are extremely easy to use, such as upload input $\rightarrow$ download output.

Users are mainly video production students and bio-computing PhDs

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

WS-client command line tool

wsclient is a command line tool.
Some WminDG users prefer this method to submit their jobs,
this way they can also integrate it with their own scripts.

UoW developed its own scripts based on this tool and they
have been used by some scientists.

```
COMMAND="wsclient --mode=add --endpoint=${WSSUBMITTER_URL}"
for i in ${INPUT_LOGICAL_NAMES}
do
    FILE_NAME="${i}_${EXP_NUMBER}_${WU_NUMBER}"
    ln -s `pwd`/$1

     ${DIRECTORY_TO_BASE_URL}/${APPLICATION_NAME}_${EXP_NUMBER}/${FILE_NAME}
    URL="${BASE_URL}/${APPLICATION_NAME}_${EXP_NUMBER}/${FILE_NAME}"

    COMMAND="${COMMAND} --in=${i}=${URL}"

 done

...
```

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

Title
Overview
Server Side
Clientside
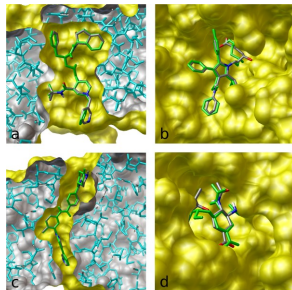Private DG
User
Interfaces
Apps
End

Mentalray

Used in teaching to render student projects
Specific testbed of 40 PCs fully licensed for the AutoDesk
package
Custom user interface in the WS-PGRADE portal
Browse and upload the project zip file

University of Westminster and University of Portsmouth, private desktop grids in academy environments

AutoDock Vina
Outputs possible ligands of a family 38 mannosidase. Approximately 180.000 small molecules have been docked consuming one computer year of processing within a couple of weeks.

University of
Westminster
and
University of
Portsmouth,
private
desktop grids
in academy
environments

exit(0);