



Challenges,
problems and
solutions for
institutional
desktop grids

Title

Overview

Server Side

Clientside

Private DG

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Challenges, problems and solutions for institutional desktop grids

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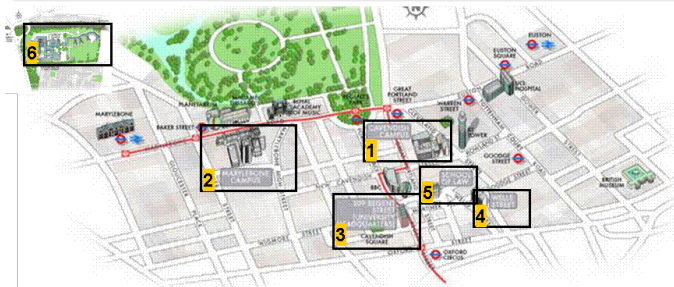
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UoW Desktop Grid

The University of Westminster Local Desktop Grid connects laboratory PCs of the university into a BOINC based Desktop Grid infrastructure

It includes over 1900 registered machines over all the campuses.





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Debian packages

WminDG uses .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
...
```



3G-Bridge

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3G-Bridge

WminDG uses 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





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Using Different projects (not any more)

WminDG used different BOINC projects for licensed and unlicensed applications.

Labs with the licensed software installed were subscribed to a particular project.



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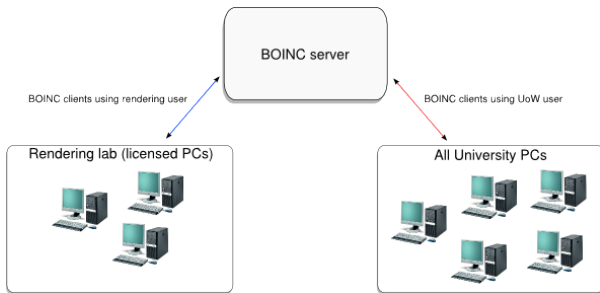
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Users

WminDG uses "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".





Boinc Clients

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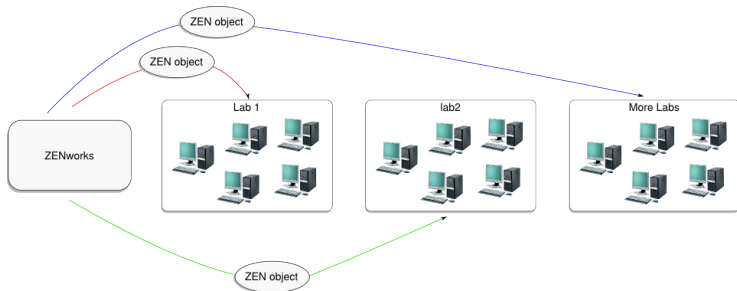
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ZENworks

Every single desktop in the University is managed using ZENworks

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

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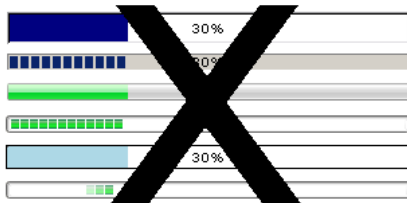
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No Credits

As our desktop grid is 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

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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.





Quality of Service

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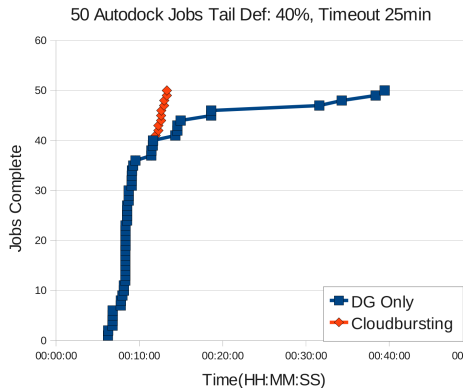
End

No Tail problem

In the last months, thanks to Speculos, developed within EDGI. We have added QoS to the DG.

The system monitors the remaining results and launches instances on our own cloud infrastructure (Openstack) when 90% are over.

This technology is still in testing phase.





WS-PGRADE portal

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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 in the framework of European projects such as EDGI, SCI-BUS, SHIWA ...

It does communicate with desktop grids using the 3G-Bridge

The screenshot shows the top part of the WS-PGRADE Portal website. At the top left is the University of Westminster logo. The main header features a blue background with a glowing laptop icon and the text 'UNIVERSITY OF WESTMINSTER'. Below the header is a navigation bar with 'Welcome', 'Help', and 'Statistics' links. A search bar contains the text 'liferay.com' and 'Welcome'. The main content area starts with the heading 'Welcome to WS-PGRADE Portal!' followed by a paragraph describing the portal's development and supported applications. It also includes links for registered users, more information, and download manuals.

UNIVERSITY OF WESTMINSTER

Welcome Help Statistics

liferay.com Welcome

Welcome to WS-PGRADE Portal!

The WS-PGRADE Portal, developed by [Laboratory of Parallel and Distributed Systems](#) supports development and submission of distributed applications executed on the clusters, service grids (ARC, gLite, Globus, UNICORE), BOINC desktop grids and

[Registered](#) users and application developers can access WS-PGRADE via ordinary to all the advanced workflow features (graph, abstract workflow, template, application). For scientific end-users WS-PGRADE gives full access to the parameterization and

More information: <http://www.guse.hu/>
<http://en.wikipedia.org/wiki/GUSE>
<http://www.lads.sztaki.hu/>

Download gUSE: <http://sourceforge.net/projects/guse/>
Manuals: <http://guse.hu/?m=documents&g=0>
Discussion forum: <http://sourceforge.net/projects/guse/forums/forum/1672620>



WS-client command line tool

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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
```

...



WminDG apps ex

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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





WminDG apps ex

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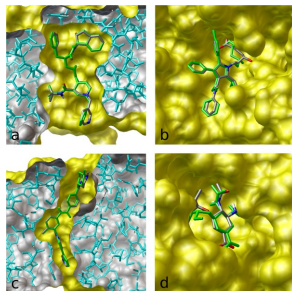
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AutoDock Vina

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.





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```
exit(0);
```