



Setup Desktop Grids and Bridges

Tutorial

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Outline of the SZDG installation process

1. Installing the base operating system
2. Basic configuration of the operating system
3. Installing the SZTAKI LDG packages from eCom4Com
4. Creating a BOINC project
5. Managing the BOINC project
6. Deploying the application on the LDG



Step 0: Installing the OS

- SZTAKI Desktop Grid is supported on Debian/ GNU Linux stable (Lenny) i386 and amd64 platforms
- Hardware mainly depends on the apps, for the infrastructure itself with simple apps up to a few thousand clients any current system is sufficient
- See Debian install documentation for details at <http://www.debian.org/releases/stable/installmanual>
- SZTAKI Desktop Grid distribution and documentation <http://www.desktopgrid.hu/>

Step 1: Basic OS configuration

- Make sure /etc/hosts contains your FQDN

```
127.0.0.1      localhost.localdomain localhost
192.168.192.193 boinc.lpd.sztaki.hu boinc
```

- Make sure e-mail works (MTA installed)

```
apt-get install postfix
apt-get install exim; eximconfig
```

- Set up package repositories:

- Add to /etc/apt/sources.list (as one single line):

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

- Run `apt-get update` to update the repository cache



Step 2: Install SZTAKI Desktop Grid

- Install dependencies:

```
apt-get install apache2-mpm-prefork libapache2-mod-auth-plain  
apt-get install libapache2-mod-php5 php5-cli  
apt-get install mysql-server-5.0 php5-mysql  
apt-get install pwgen
```

- To install BOINC with the standard web interface, type:

```
apt-get install boinc boinc-skin-standard
```

- To install the SZTAKI Local Desktop Grid interface, type:

```
apt-get install boinc boinc-skin-ldg
```

- To install the DC-API development files for BOINC, type:

```
apt-get install libdcapi-boinc-dev
```

- To install the DC-API devel. files for local execution, type:

```
apt-get install libdcapi-local-dev
```



Step 3: Creating a project (as root)

- Creating a new project takes just a single command:

```
boinc_create_project --name=test --long-name="Test Project"
```

 - This will create a UNIX user named **boinc-test** and a MySQL database/user named **boinc_test**
 - All files belonging to the project are under the directory **/var/lib/boinc/test** which is the same as **~boinc-test**
- Create a normal user account (this will be a project admin)

```
adduser pradmin
```
- Make the **pradmin** user a project administrator:

```
boinc_admin --name=test --add pradmin
```

 - Password set here is for admin web interface accessible as **http://<host name>/<project short name>/ops**



Step 4: Managing the BOINC project

- The project is now ready to use
- Root privileges are not needed anymore
 - so log out as **root** and log in as **pradmin**
- You can assume project administrator role by running

```
sudo su - boinc-test
```

- After the above command the environment is set up so that you can issue BOINC administrative commands directly, such as: start, stop, etc.
- You can start the project now typing `start`



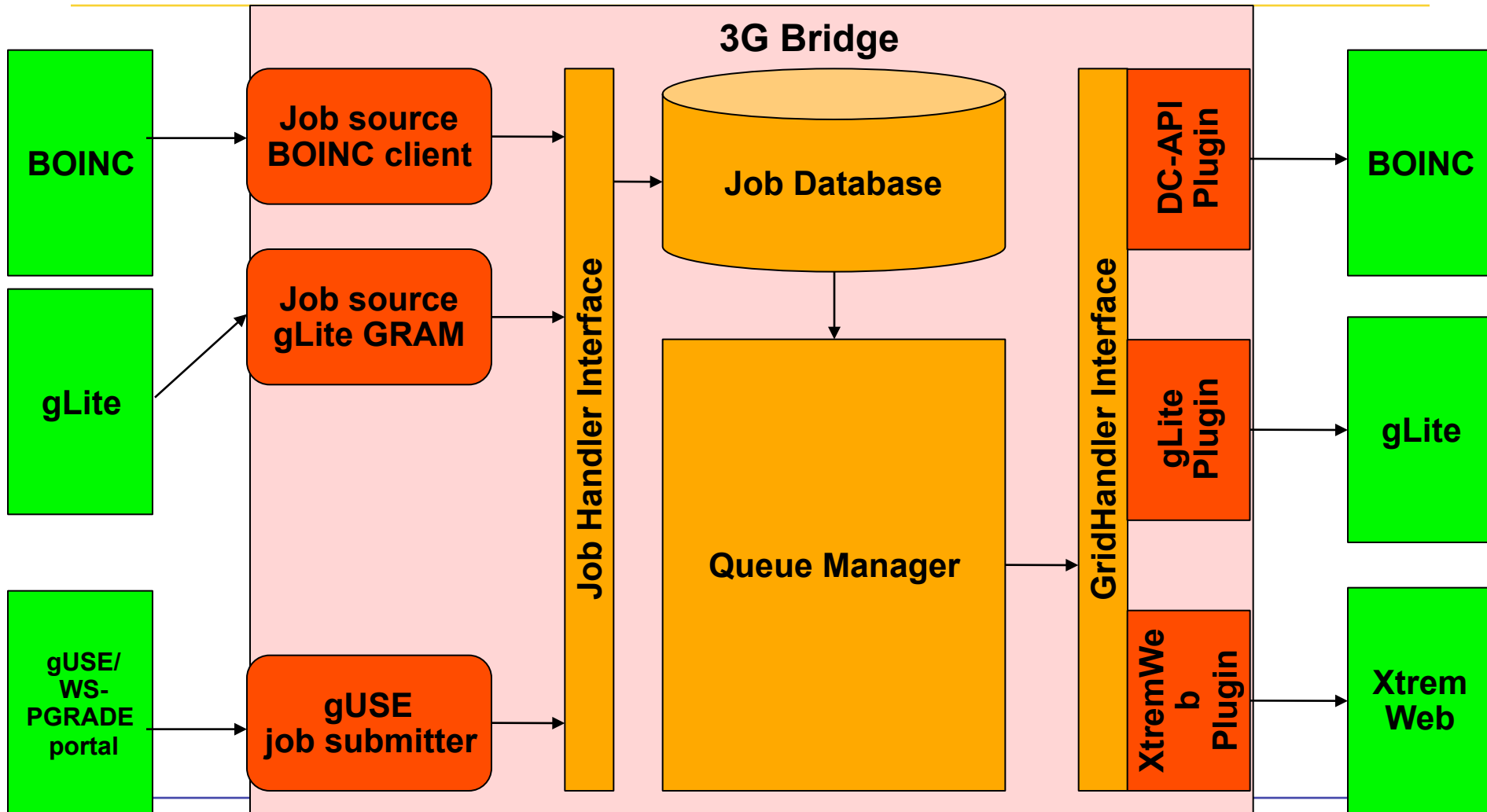
Step 5: Deploying the application on the LDG

- In plain BOINC, application deployment is a many step process
- With SZDG applications can be packaged, deploying a package is just one command:

```
boinc_appmgr --add primesearch.tar.gz
```

- boinc_appmgr uses application descriptors in the package
 - client.xml
 - master.xml

3G Bridge





3G Bridge by zfarkas

Summary Files Reviews Support Develop

The Generic Grid-Grid Bridge (3G Bridge) is a software component used within the EDGeS project that provides the core component of the Service Grid - Desktop Grid interoperability solution.

Project Home
edges-3g-bridge.sf.net

Recommended By
3 users



Develop
sf.net/projects/edges-3g-bridge/develop

Last Update
2010-11-01

Other Versions
[Browse all files](#)

Support
sf.net/projects/edges-3g-bridge/support

License
GNU General Public License (GPL)

More Detail
[Hide](#)

Registered

2009-07-05

Release Date

2010-11-01

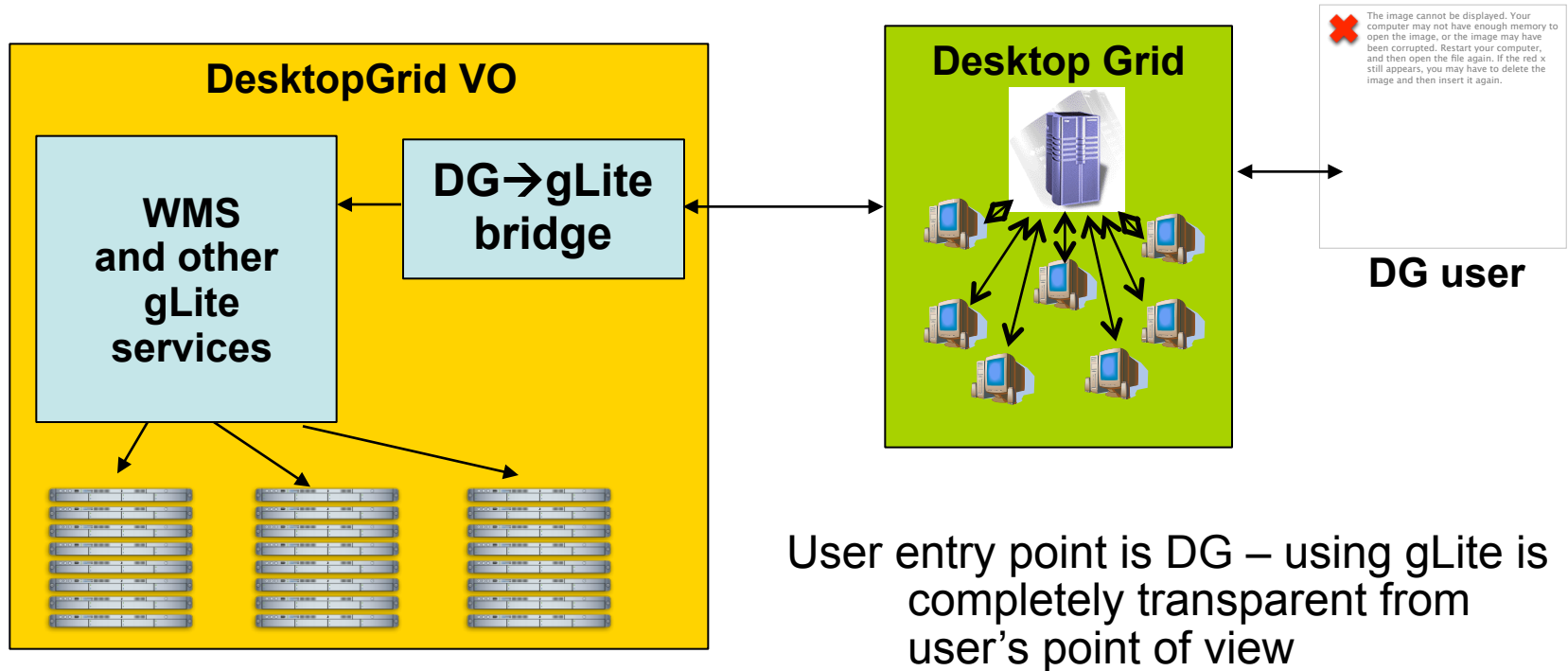
Operating System

All POSIX (Linux/BSD/UNIX-like OSes)

Programming Language

C++

Scenario 1 – DG to gLite via bridge





Outline (Part I)

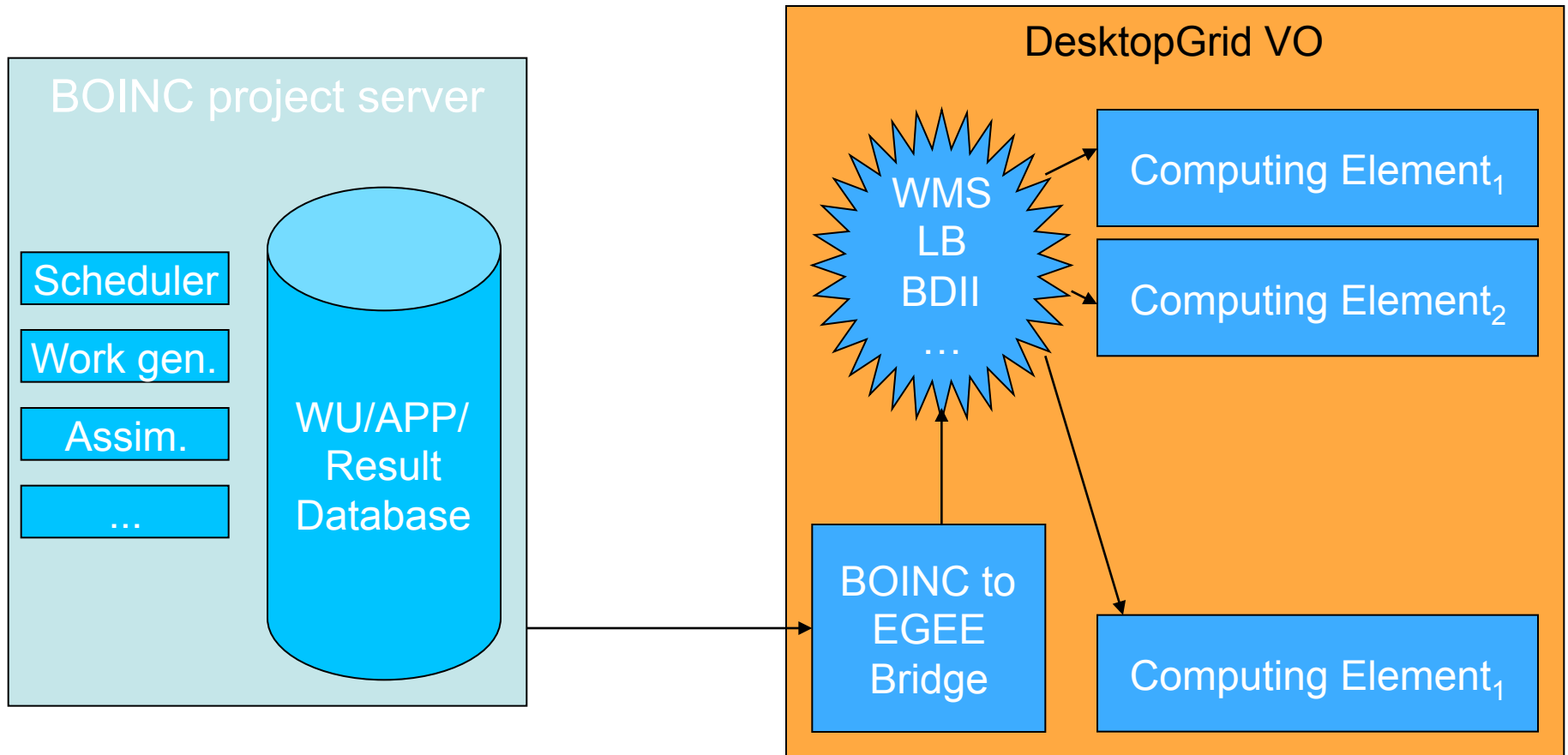
- What this HOWTO is about?
- BOINC → gLite bridge in detail
- Prerequisites
- What this HOWTO is about?
 - Prerequisites



Aim of this HOWTO

- *You are:* a BOINC project admin
- *You want to:*
 - improve the computation performance of your Grid
- Use DesktopGrid
- *With technology:* 3G Bridge
- In a nutshell: run your BOINC workunits on the DesktopGrid VO

System overview





BOINC → gLite bridge details

- Task to be solved:
 - Process BOINC workunits
 - In a gLite-based infrastructure
- Using a bridge that:
 - Is able to handle BOINC workunits
 - And is able to create gLite jobs from the workunits, and run them on gLite-based Grid



BOINC → gLite

Bridge solution concept

- Wrapped workunit execution:
 - Fetch BOINC workunits
 - Parse the workunits' contents instead of starting them, and wrap them into a package
 - Send the package to the 3G Bridge
 - An gLite plugin of the 3G Bridge arranges the package execution on gLite
 - The result of the gLite execution (output package) is unpacked, and results are sent back to the BOINC project
-



BOINC → gLite bridge

Using 3G Bridge concept

- Collect jobs originating from BOINC:
 - Place them in a queue
 - New jobs in the queue are periodically handled by an gLite plugin, that
 - Uses Collection possibilities of gLite to submit many jobs in one request
- This way the usage of the WMS is reduced



Prerequisites

- A BOINC project
- A DesktopGrid VO
- An gLite User Interface machine with:
 - BOINC jobwrapper client installed
 - BOINC jobwrapper installed
 - 3G Bridge with gLite plugin support installed
 - DesktopGrid VO configured



Tasks of the BOINC project admin I.

- Get a grid certificate from your national CA
 - Certificates are essential for accessing gLite services
 - Consists of two parts :
 - Public key
 - Private key protected by a password
 - Usually are valid for a year, can be extended
 - Are used to identify you within the gLite grid infrastructure



Tasks of the BOINC project admin II.

- Upload a long-term proxy to the EDGeS MyProxy server
 - Proxies are generated from your certificate by decoding its key (using the password) and offering usually a short lifetime (few hours)
 - Long-term proxies are stored on trusted entities (MyProxy servers), are used to generate short-term proxies in a trustworthy manner
 - Use this command:

```
GT_PROXY_MODE=old myproxy-init -s  
myproxy.grid.edges-grid.eu -d -n
```



Tasks of the BOINC project admin III.

- Send your certificate's subject to the Bridge Admin
- Create a new BOINC user on the BOINC project
- Send the BOINC project's URL to the Bridge Admin
- Send the new BOINC user's account key to the Bridge Admin



Tasks of the Bridge admin I.

- Wait for the info provided by the BOINC admin
- Update 3G Bridge config file:

```
[new_boinc]
handler = ERF
hostname = desktopgrid.vo.edges-grid.eu
wmpoxy-endpoint = https://wms.grid.edges-grid.eu:7443/glite_wms_wmpoxy_server
myproxy_host = myproxy.grid.edges-grid.eu
myproxy_port = 7512
myproxy_user = /C=HU/... ← Certificate subject
myproxy_authcert = /etc/grid-security/bridge.cert
myproxy_authkey = /etc/grid-security/bridge.key
isb_url = gsiftp://fn2.hpcc.sztaki.hu/dpm/hpcc.sztaki.hu/home/desktopgrid.vo.edges-grid.eu/3g-bridge_ui1.grid.edges-grid.eu/
joblogdir = /var/log/3g-bridge/joblogs
joblogs = error

[jobwrapper-newproject]
grid = new_boinc
log_dir = /var/log/3g-bridge/jobwrapper-newproject-wrapper.log
```

New plugin

Certificate subject

BOINC

jobwrapper



Tasks of the Bridge admin II.

- Create a new algorithm queue in the 3G Bridge database for the 'new_boinc' plugin:

```
mysql> insert into cg_algqueue(grid, alg, batchsize)
values('new_boinc', '', 10);
```

- The above command adds a new queue for the 'new_boinc' plugin using any executable and using collection size 10 during job submission
- Restart the bridge, so the new plugin will be initialized



Tasks of the Bridge admin

III.

- Create a new working directory for the BOINC jobwrapper client
- Create jobwrapper_config.xml in the dir:
 - Use 10 CPUs
 - Use GUI RPC port 10000
 - Specify the jobwrapper binary
 - Also specify the config section

```
<cpu>10</cpu>  
<jobwrapper_binary>/usr/libexec/3g-bridge/jobwrapper</jobwrapper_binary>  
<bridge_conf>/etc/3g-bridge.conf</bridge_conf>  
<conf_section>jobwrapper-newproject</conf_section>  
<gui_rpc_port>10000</gui_rpc_port>
```




Tasks of the Bridge admin IV.

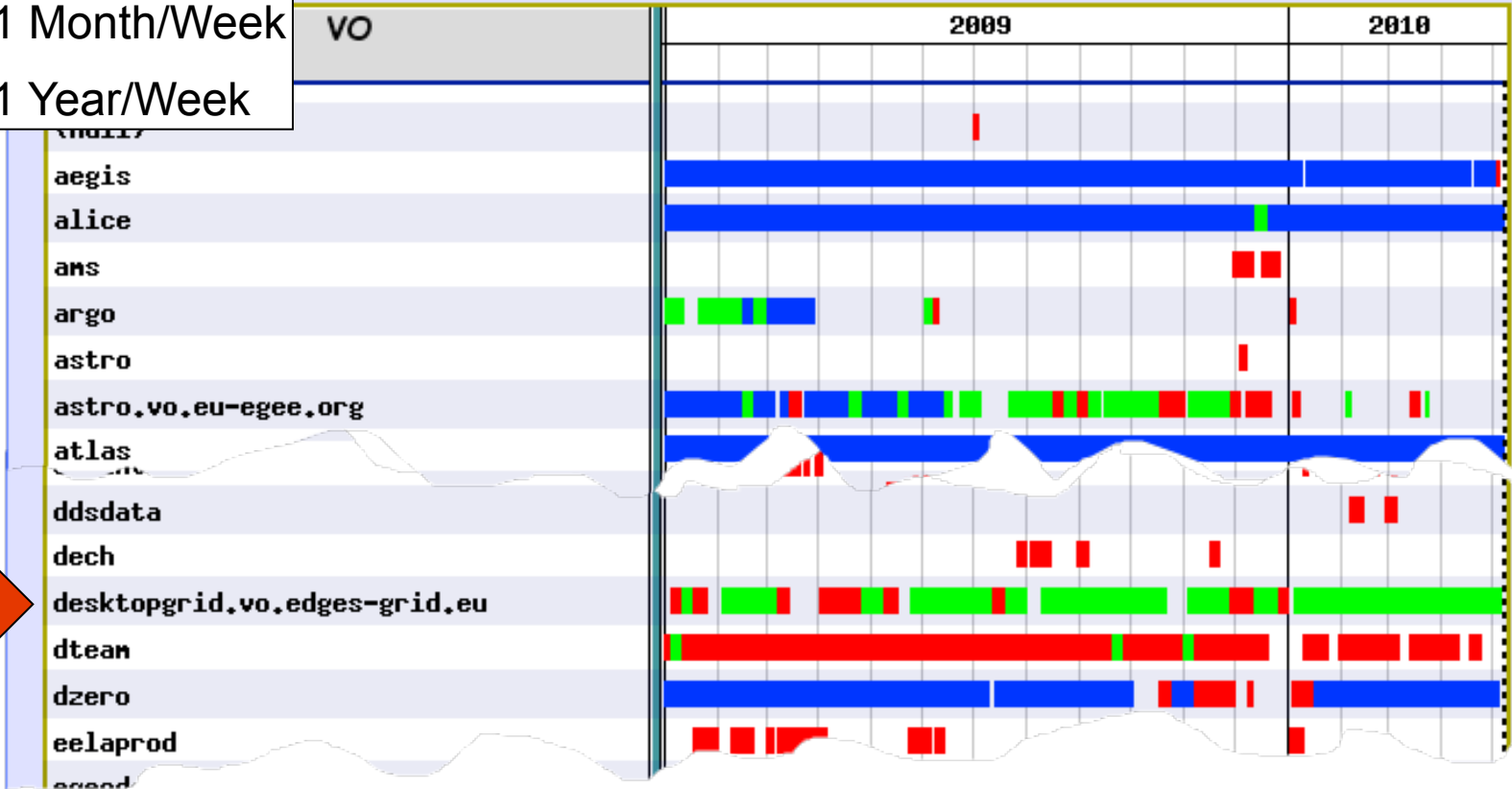
- Attach to the BOINC project
- Restart the BOINC jobwrapper service on the gLite UI machine



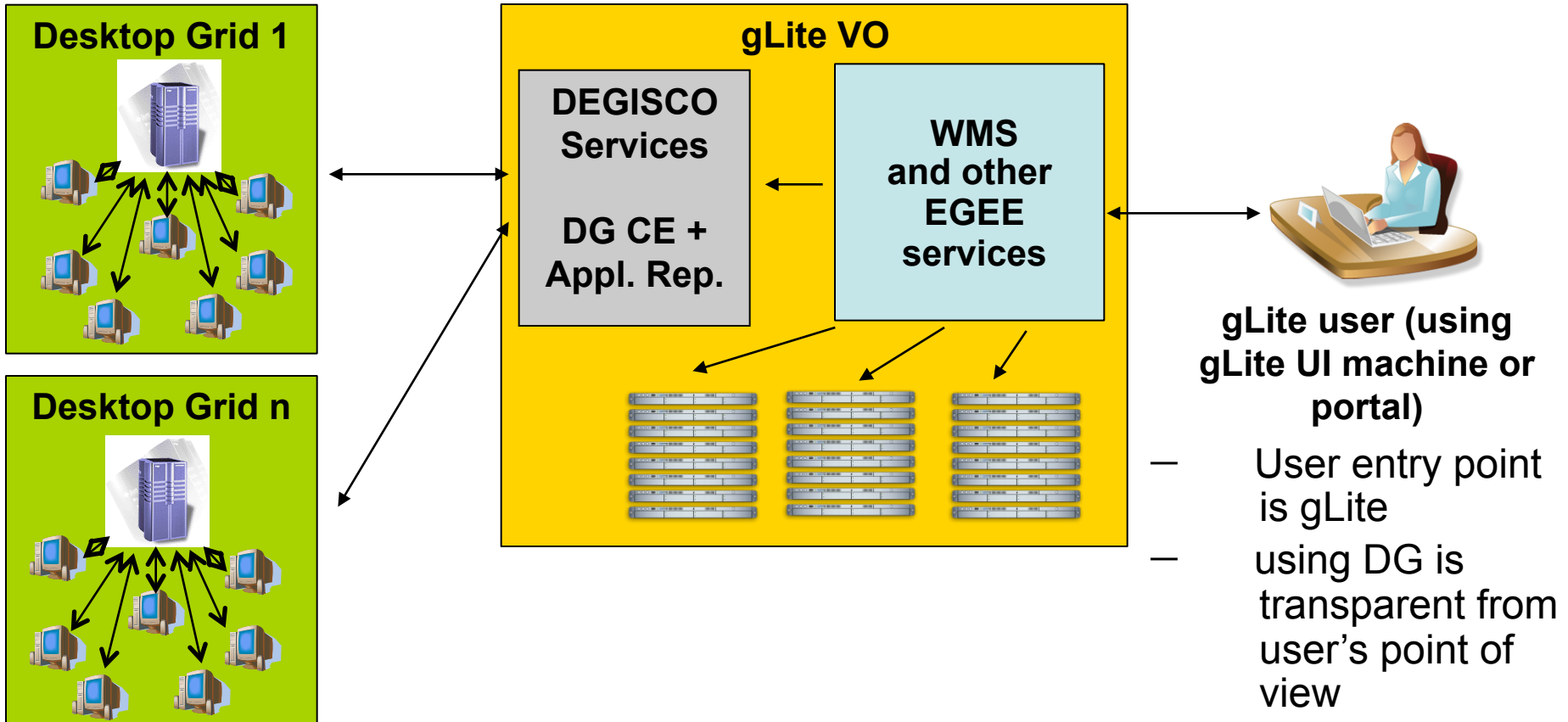
DesktopGrid VO activities

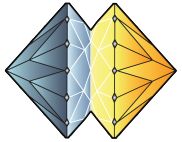
- CPU > 1 Day/Week
- CPU > 1 Month/Week
- CPU > 1 Year/Week

Activity information by VO
January 2009 - May 2010



Scenario 2 – gLite to DG via bridge





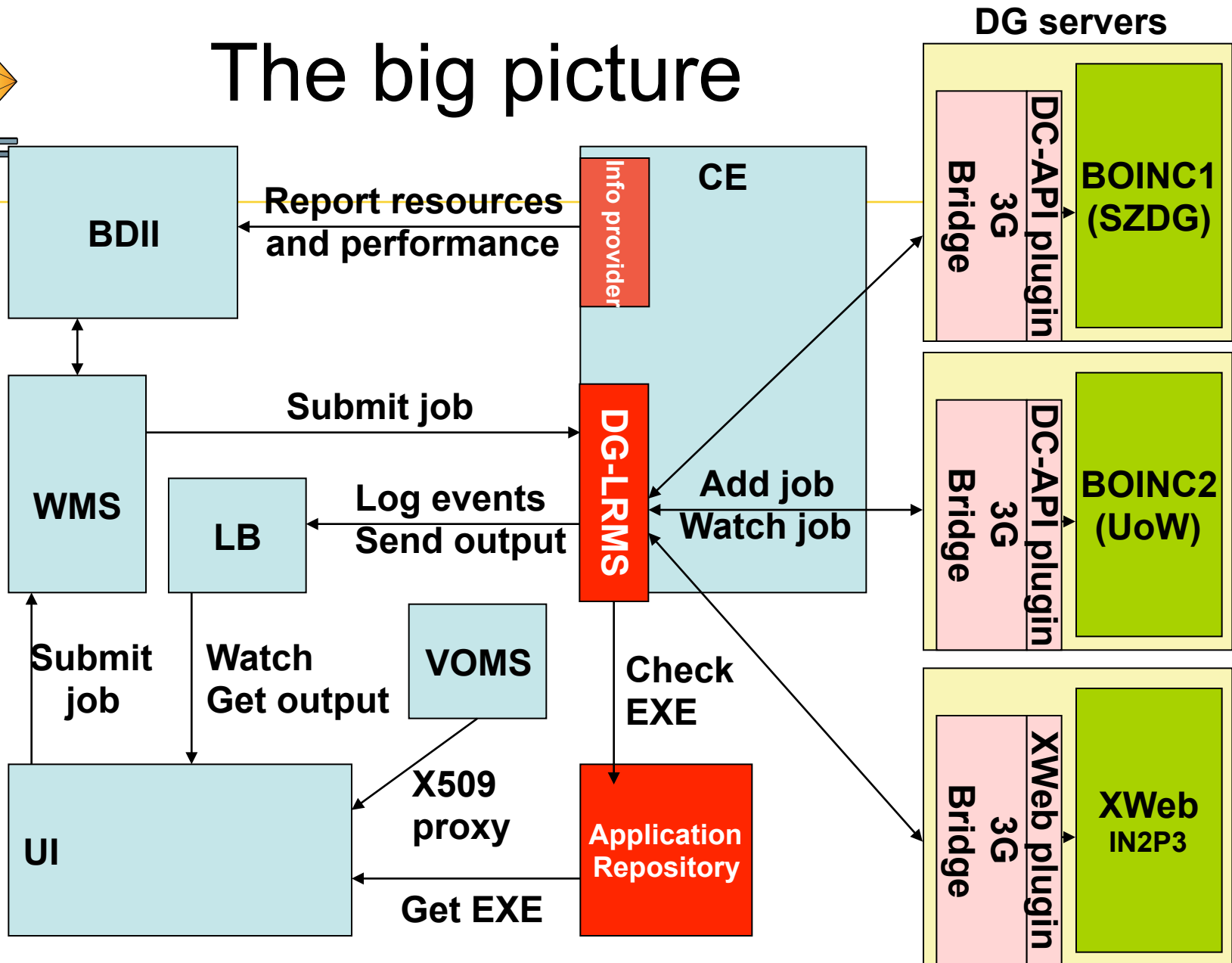
IDGF

How to connect your SG system to EDGI/DEGISCO? (Part II)

- This HOWTO is about setting up the gLite→DG bridge
- The title assumes user view (i.e. you want your jobs in your SG to go to DGs)
- From the admin view it requires more work from the DG admin and may look more like adding DGs to an SG, but don't get confused by this
- In this session you will see how to prepare your DG set up earlier to accept gLite jobs (as a DG admin)



The big picture





What can be bridged?

- Let there be a validated version of an application in the AR with executables for gLite and different DG systems (and on DGs for different platforms)
- This application (the client part) is deployed on a DG that is connected to the bridge and this DG is registered in the AR as supporting the application
- An gLite VO is also registered in the AR as an allowed source of jobs for this application



How does bridging work?



- When a job is submitted to a bridge CE it checks the following:
 - Executable matches the one in the AR for the source VO by MD5 hash
 1. The source VO must be allowed
 2. The application executable must be allowed
 - The target DG is registered as supporting the application (the DG version is deployed there)
- If the above are true the job is bridged
if false then the job is rejected



What needs to be set up?

- On the DG side:
 - 3g-bridge queue manager
 - 3g-bridge wssubmitter service
- To get applications from the AR to be installed locally and to register installed applications:
 - gemlcacli and gridftp clients
- On the gLite side
 - An lcg-CE with edges-BRIDGE
- Connecting the gLite CE to the wssubmitter(s)


Manual

Desktop Grids for International Scientific Collaboration
Contract number: RI-261561

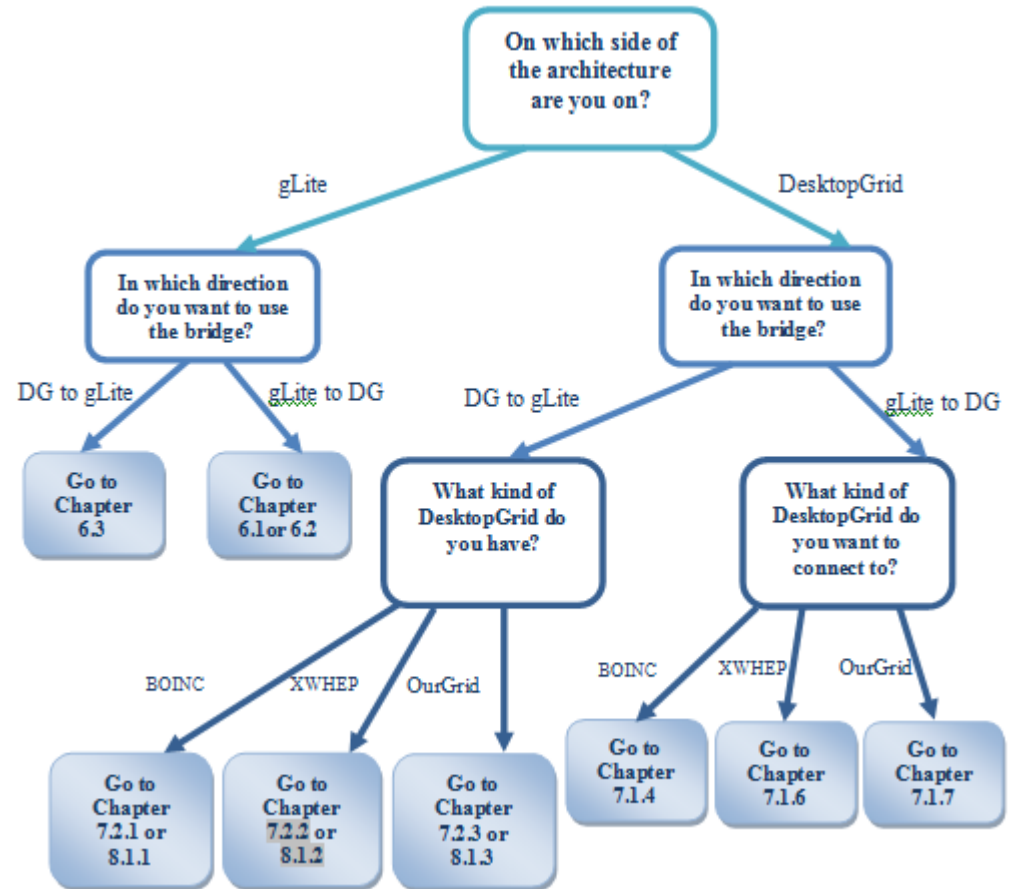
**Policies and setup operations
for Grid operators**

Project deliverable: D2.1.1



Due date of deliverable: 31/08/2010	Actual submission date: 31/08/2010
Lead beneficiary: MTA SZTAKI	Workpackage: WP2 - Infrastructure support
Dissemination Level: PU (Public)	Version: 5.0 (FINAL VERSION)

DEGISCO is supported by the FP7 Capacities Programme under contract nr RI-261561.





Tutorial – BOINC and 3G-Bridge

Virtual gLite, BOINC and 3G-Bridge infrastructure (provided by EDGI project)



Purpose of virtual infrastructure

The purpose of these VMs is to provide a base to easily set up local test or development infrastructure to be used for:

- *getting to know these services or*
- *developing and testing applications and*
- *new middleware components*

in a local usage scenario.



Overview

Virtual machine (VM) images are set up as a test infrastructure for EDGI project. Available “<http://www.edgi-grid.eu/downloads/vmimages/>”

Virtual machines are configured to function as:

→ *a minimal,*

→ *self contained,*

test infrastructure of the SG \Rightarrow DG (service grid to desktop grid) infrastructure.



Remarks

The components are similar to those used in the EDGeS/EDGI production infrastructure however, these VMs are not meant to be used for setting up a public production infrastructure.

The focus while creating these VMs were on:

- ✓ *easy installation and*
- ✓ *simple local usage*

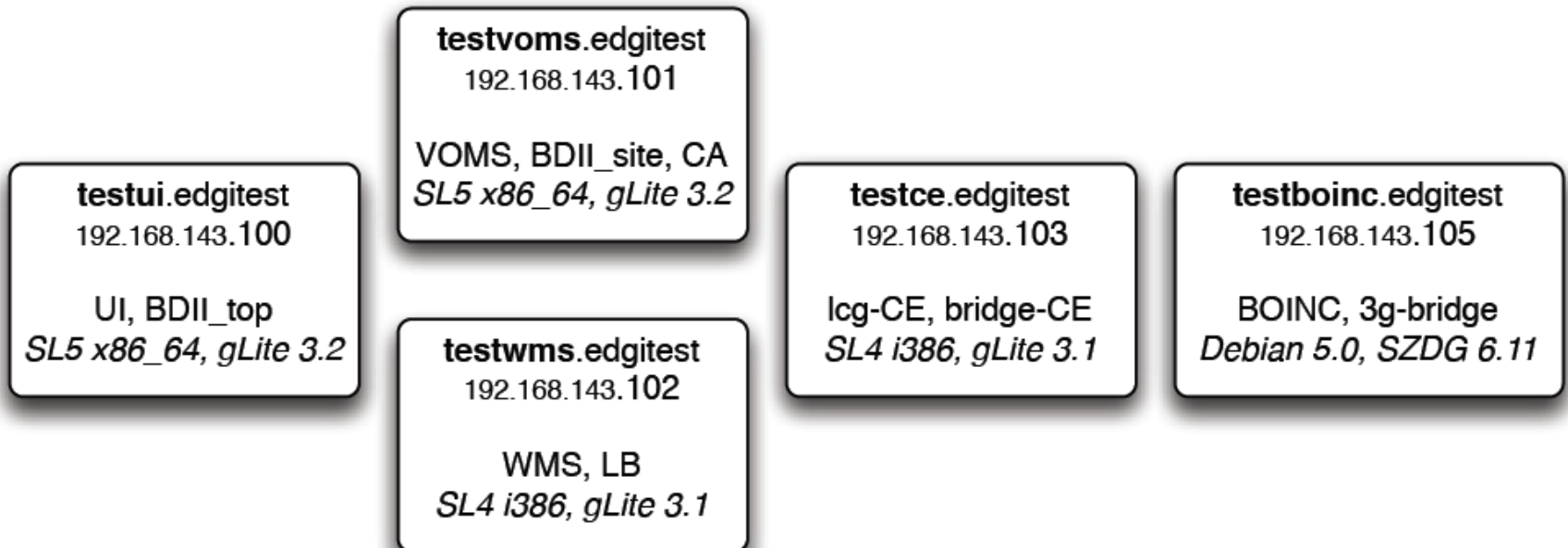
as opposed to :

- ✗ *performance and*
- ✗ *security*

which in this setup do not meet the requirements of production usage.



Overview of Virtual machines





Available with documentation

<http://www.edgi-grid.eu/downloads/vmimages/v1.0/>

