EGEE site administration made easy

Bruno Oliveira, António Pina, Alberto Proença

~~EGEE~~ EGI SITE ADMINISTRATION MADE EASY

Bruno Oliveira, António Pina, Alberto Proença

Each DAG
RPM ar
Pre ar
Machi
DAG is
Defi
Def
Any

EGEE ROLL

a (almost) fully automatic system for installation of EGEE sites

why?

EGEE

one simple recipe (for one serving)

EGEE

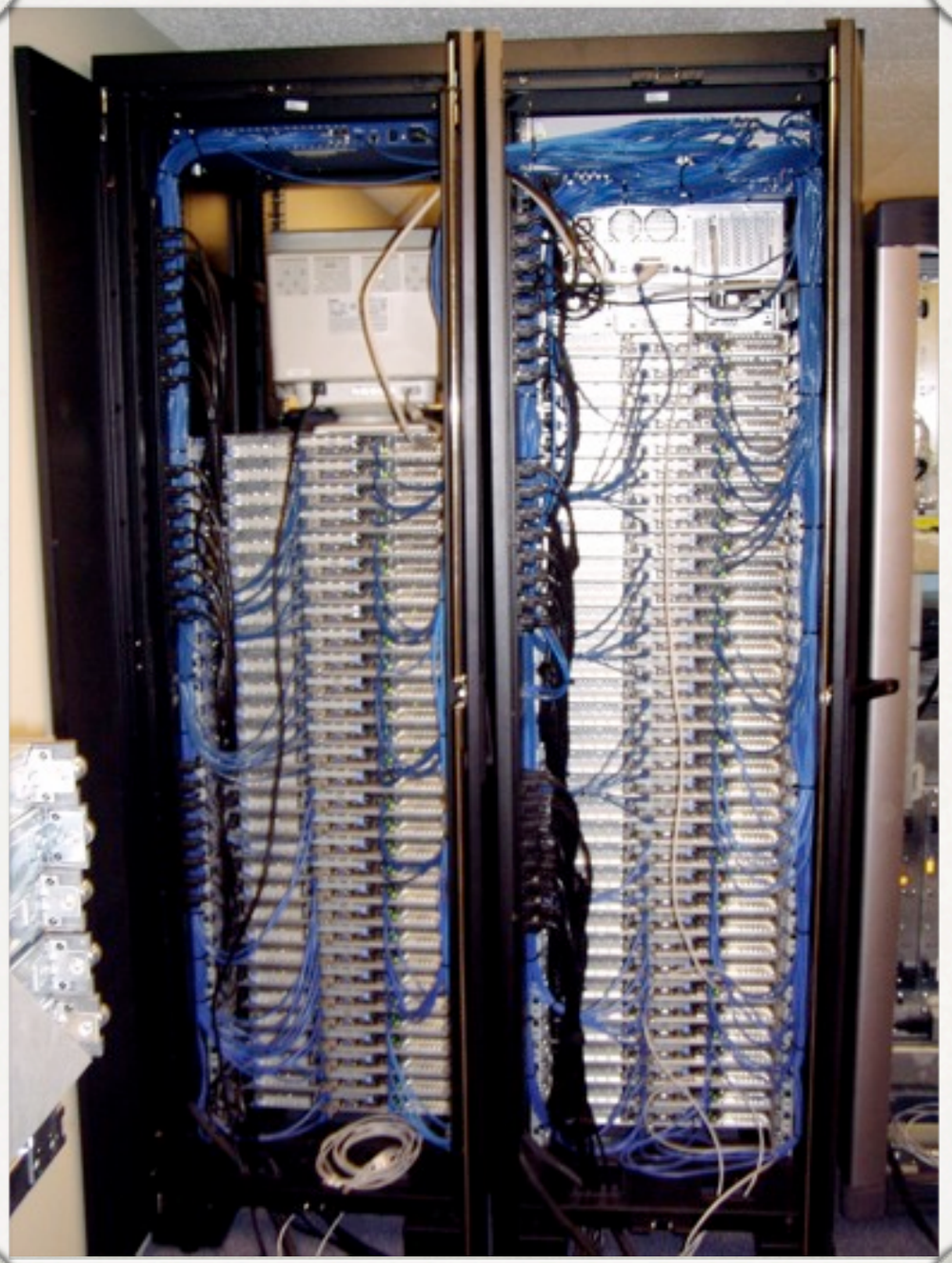


image used under Creative Commons from phrenologist

EGEE

computing element

storage element

bdii

mon box

worker nodes

EGEE

EGEE

```
LCG_REPOSITORY="rpm http://glitesoft.cern.ch/EGEE/gLite/APT/R3.0/ rhel30 externals Release3.0 updates"
CA_REPOSITORY="rpm http://linuxsoft.cern.ch/LCG-CAs/current production"
REPOSITORY_TYPE="yum"
INSTALL_ROOT=/opt
OUTPUT_STORAGE=/tmp/jobOutput
JAVA_LOCATION="/usr/java/default"
CRON_DIR=/etc/cron.d
GLOBUS_TCP_PORT_RANGE="20000 25000"
MYSQL_PASSWORD=uminho1
APEL_DB_PASSWORD="APELDB_PWD"
GRIDICE_SERVER_HOST=$MON_HOST
SITE_EMAIL=admin-uminho-cp@di.uminho.pt
SITE_CRON_EMAIL=$SITE_EMAIL
SITE_SUPPORT_EMAIL=$SITE_EMAIL
SITE_NAME=UMinho-CP
SITE_LOC="Braga, Portugal"
SITE_LAT=41.561213 # -90 to 90 degrees
SITE_LONG=-8.397510 # -180 to 180 degrees
SITE_WEB="http://www.di.uminho.pt/cp"
SITE_TIER="TIER 3"
SITE_SUPPORT_SITE="http://www.lip.pt"
SITE_HTTP_PROXY=""
SITE_BDII_HOST=ce.$MYDOMAIN
JOB_MANAGER=lcgpbs
CE_BATCH_SYS=pbs
BATCH_BIN_DIR=/opt/torque/bin
BATCH_VERSION=torque-2.1.9-4cri
BATCH_LOG_DIR=/opt/torque/server_priv/accounting
CE_CPU_MODEL=XEON
CE_CPU_VENDOR=intel
CE_CPU_SPEED=2000
CE_LOGCPU=8
CE_PHYSCPU=2
CE_OS_ARCH=i386
CE_OS="ScientificCERNSLC"
CE_OS_RELEASE=4.6
CE_OS_VERSION="SLC"
-:---  site-info.def   12% (22,0)    (Shell-script[bash])
```

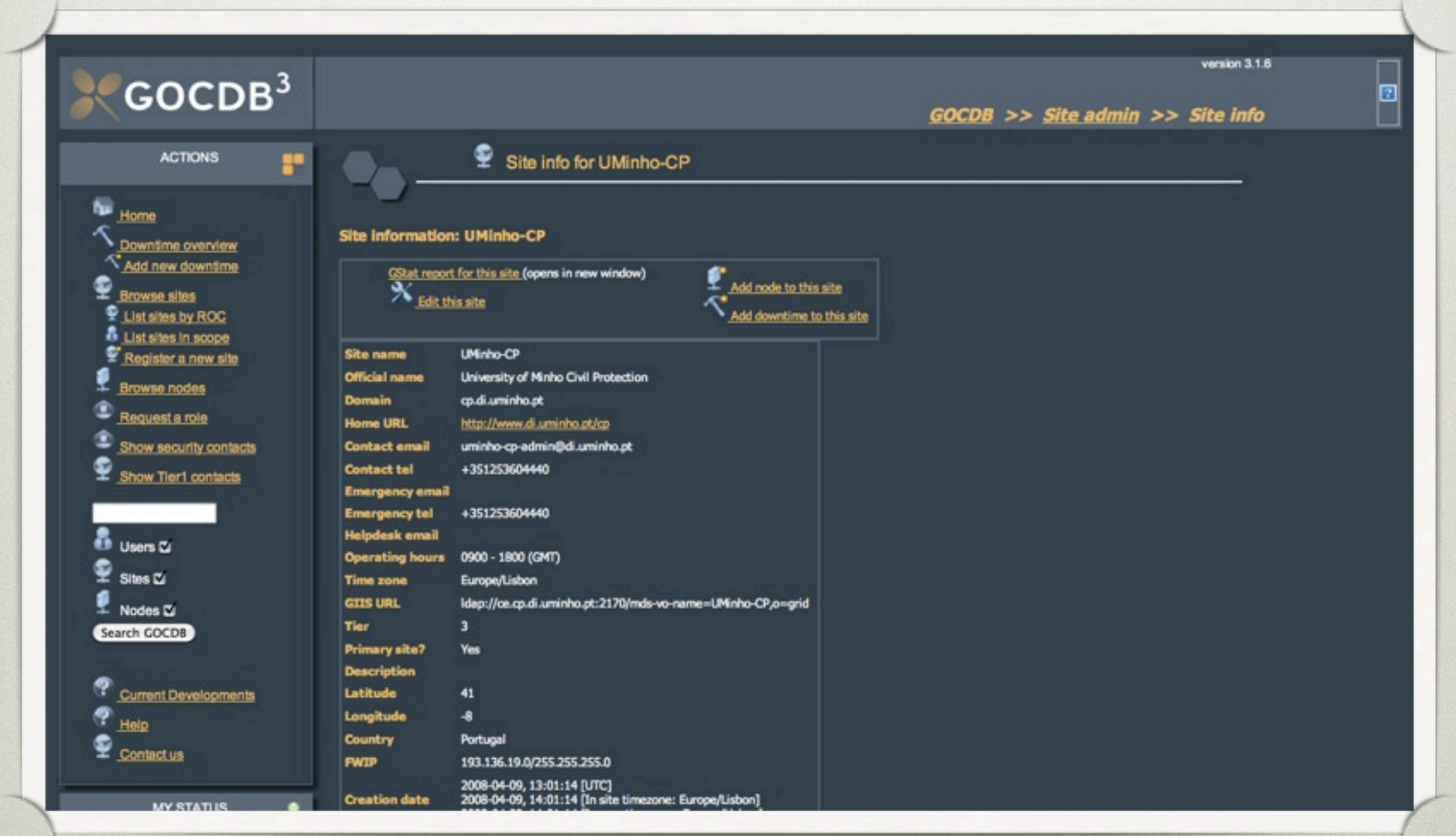
EGEE

```
Certificate:
   Data:
       Version: 1 (0x0)
       Serial Number: 7829 (0x1e95)
       Signature Algorithm: md5WithRSAEncryption
       Issuer: C=ZA, ST=Western Cape, L=Cape Town, O=Thawte Consulting cc,
               OU=Certification Services Division,
               CN=Thawte Server CA/emailAddress=server-certs@thawte.com
       Validity
           Not Before: Jul  9 16:04:02 1998 GMT
           Not After : Jul  9 16:04:02 1999 GMT
       Subject: C=US, ST=Maryland, L=Pasadena, O=Brent Baccala,
                OU=FreeSoft, CN=www.freesoft.org/emailAddress=baccala@freesoft.org
       Subject Public Key Info:
           Public Key Algorithm: rsaEncryption
           RSA Public Key: (1024 bit)
               Modulus (1024 bit):
                   00:b4:31:98:0a:c4:bc:62:c1:88:aa:dc:b0:c8:bb:
                   33:35:19:d5:0c:64:b9:3d:41:b2:96:fc:f3:31:e1:
                   66:36:d0:8e:56:12:44:ba:75:eb:e8:1c:9c:5b:66:
                   70:33:52:14:c9:ec:4f:91:51:70:39:de:53:85:17:
                   16:94:6e:ee:f4:d5:6f:d5:ca:b3:47:5e:1b:0c:7b:
                   c5:cc:2b:6b:c1:90:c3:16:31:0d:bf:7a:c7:47:77:
                   8f:a0:21:c7:4c:d0:16:65:00:c1:0f:d7:b8:80:e3:
                   d2:75:6b:c1:ea:9e:5c:5c:ea:7d:c1:a1:10:bc:b8:
                   e8:35:1c:9e:27:52:7e:41:8f
               Exponent: 65537 (0x10001)
   Signature Algorithm: md5WithRSAEncryption
       93:5f:8f:5f:c5:af:bf:0a:ab:a5:6d:fb:24:5f:b6:59:5d:9d:
       92:2e:4a:1b:8b:ac:7d:99:17:5d:cd:19:f6:ad:ef:63:2f:92:
       ab:2f:4b:cf:0a:13:90:ee:2c:0e:43:03:be:f6:ea:8e:9c:67:
       d0:a2:40:03:f7:ef:6a:15:09:79:a9:46:ed:b7:16:1b:41:72:
       0d:19:aa:ad:dd:9a:df:ab:97:50:65:f5:5e:85:a6:ef:19:d1:
       5a:de:9d:ea:63:cd:cb:cc:6d:5d:01:85:b5:6d:c8:f3:d9:f7:
       8f:0e:fc:ba:1f:34:e9:96:6e:6c:cf:f2:ef:9b:bf:de:b5:22:
       68:9f
```

EGEE

YAIM

EGEE


GOCDB3
version 3.1.6
GOCDB >> Site admin >> Site info
ACTIONS
Home
Downtime overview
Add new downtime
Browse sites
List sites by ROC
List sites in scope
Register a new site
Browse nodes
Request a role
Show security contacts
Show Tier1 contacts
Users
Sites
Nodes
Search GOCDB
Current Developments
Help
Contact us
MY STATUS
Site info for UMinho-CP
Site information: UMinho-CP
GStat report for this site (opens in new window)
Edit this site
Add node to this site
Add downtime to this site
Site name UMinho-CP
Official name University of Minho Civil Protection
Domain cp.di.uminho.pt
Home URL http://www.di.uminho.pt/cp
Contact email uminho-cp-admin@di.uminho.pt
Contact tel +351253604440
Emergency email
Emergency tel +351253604440
Helpdesk email
Operating hours 0900 - 1800 (GMT)
Time zone Europe/Lisbon
GIIS URL ldap://ce.cp.di.uminho.pt:2170/mds-vo-name=UMinho-CP,o=grid
Tier 3
Primary site? Yes
Description
Latitude 41
Longitude -8
Country Portugal
FWIP 193.136.19.0/255.255.255.0
Creation date 2008-04-09, 13:01:14 [UTC]
2008-04-09, 14:01:14 [In site timezone: Europe/Lisbon]

EGEE

preparation time: 1 week

difficulty:

why?

ONE MORE EXCUSE

fast (and easy) installation by non-tech savvies, in a Civil Protection context

what is the EGEE roll?

ROCKS
www.rocksclusters.org
TM

ROCKS

RHEL-based, cluster-oriented operating system

ROCKS

grab the installation disk

install the *FrontEnd*

cluster nodes are installed from the *FrontEnd*

what *kind* of nodes will be installed?

appliance

APPLIANCE

specifies the software and configuration of the cluster node

APPLIANCE

specifies which *rolls* to install

what is a *roll*?

ROLL

software and configuration *bundle*

ROLL

RPM packages

configuration files

configuration scripts

FrontEnd is installed with a set of *rolls*
(OS, HPC, Torque, ...)

~

rolls also define which *appliances* will be available

~

appliances define the kind of cluster node

rolls can be created by anyone

EGEE roll

appliances for each element

provides *site-info.def*

installs gLite middleware

runs *yaim*

EGEE (ROLL METHOD)

install FrontEnd with EGEE roll

~

provide site specific information
(during installation)

~

provide certificates

~

install cluster nodes (through FrontEnd)

EGEE (ROLL METHOD)

preparation time: 1 ~ 2 days

difficulty:

but this only concerns installation...

administration

EGEE site administration

virtual organisations

updates to gLite

VIRTUAL ORGANISATIONS

full reconfiguration is required

VIRTUAL ORGANISATIONS

change *users.conf* and *groups.conf*

change *site-info.def*

create *vo* configuration files

copy these files to all nodes

run *yaim* (according to each element)

gLite updates

may introduce changes to *site-info.def*

may require reconfiguration

gLite updates

run *yum*

change *site-info.def*

copy this file to all nodes

run *yaim* (according to each element)

restart service(s)

lather,

rinse,

repeat...

wouldn’t be nice if we could do this in a *single* command?

egeeCli

MAIN OBJECTIVE

site administration from the *FrontEnd*'s command line

how to merge in a *single* command all the processes involved?

inspiration...

rocks

ROCKS

provide a simple, unified user command
for cluster administration

ROCKS

rocks **<verb>** <object> <subject> <parameters>

syntax based in verbs

e.g.: add, set, activate, list

ROCKS

rocks <verb> **<object>** <subject> <parameters>

verbs are applied to objects

e.g.: host, network

ROCKS

rocks <verb> <object> **<subject>** <parameters>

subjects are properties of the object

e.g.: interface, nas, tile

```
# rocks list host interface wn0-0
```

```
SUBNET  IFACE MAC               IP             NETMASK   GATEWAY MODULE  NAME
private eth0  00:0c:29:c0:d6:e5 10.255.255.252 255.0.0.0 ------- pcnet32 worker-node-0-0
```

ROCKS

dynamically expandable *Python* API

new verbs, objects, subjects can be added

"Object-oriented programming is an exceptionally bad idea which could only have originated in California"

Edsger Dijkstra

what to manage?

site-info.def

virtual organisations

gLite middleware

three new *objects* created

`siteinfo`

`vo`

`glite`

which *verbs* would be useful?

SITE-INFO.DEF

variable = value

e.g.: `MY_DOMAIN="cp.di.uminho.pt"`

SITE-INFO.DEF

add, remove, set variables

```
# egeecli add siteinfo variable
INSTALL_ROOT “/opt”

# egeecli set siteinfo variable RBHOST
“rb02.lip.pt”
```

SITE-INFO.DEF

dump the file

```
# egeecli add siteinfo variable
INSTALL_ROOT “/opt”

# egeecli set siteinfo variable RBHOST
“rb02.lip.pt”
```

```
# egeecli dump siteinfo > site-info.def
```

SITE-INFO.DEF

sync the file

```
# egeecli add siteinfo variable
INSTALL_ROOT “/opt”

# egeecli set siteinfo variable RBHOST
“rb02.lip.pt”
```

```
# egeecli dump siteinfo > site-info.def

# egeecli sync siteinfo
```

SITE-INFO.DEF

restore a previous file

SITE-INFO.DEF

Six *verbs* can be used

`add/remove`

`set`

`dump`

`sync`

`restore`

VIRTUAL ORGANISATIONS

add, remove virtual organisations

```
# egeecli add vo iber.vo.ibergrid.eu 100
10 10
```

VIRTUAL ORGANISATIONS

disable/enable virtual organisation

what about variables specific to virtual organisations?

VIRTUAL ORGANISATIONS

add, remove and *set* variables for virtual organisations

```
# egeecli add vo variable swetest VOMSCADN
”/DC=es/DC=irisgrid /CN=IRISGridCA”
```

```
# egeecli sync siteinfo
```

site-info.def

users.conf

vo.d/*

gLite

gLite

each element corresponds to a number of meta-packages

e.g.: Computing Element: glite-TORQUE_server, lcg-CE

gLite

add, remove meta-packages

version

release date

may require reconfiguration

```
# egeecli add glite lcg-CE yes 3.1.35-0
20090831
```

gLite

add, remove associations between physical machines and meta-packages

```
# egeecli add glite machine ce lcg-CE
```

```
# egeecli add glite machine ce glite-
TORQUE_server
```

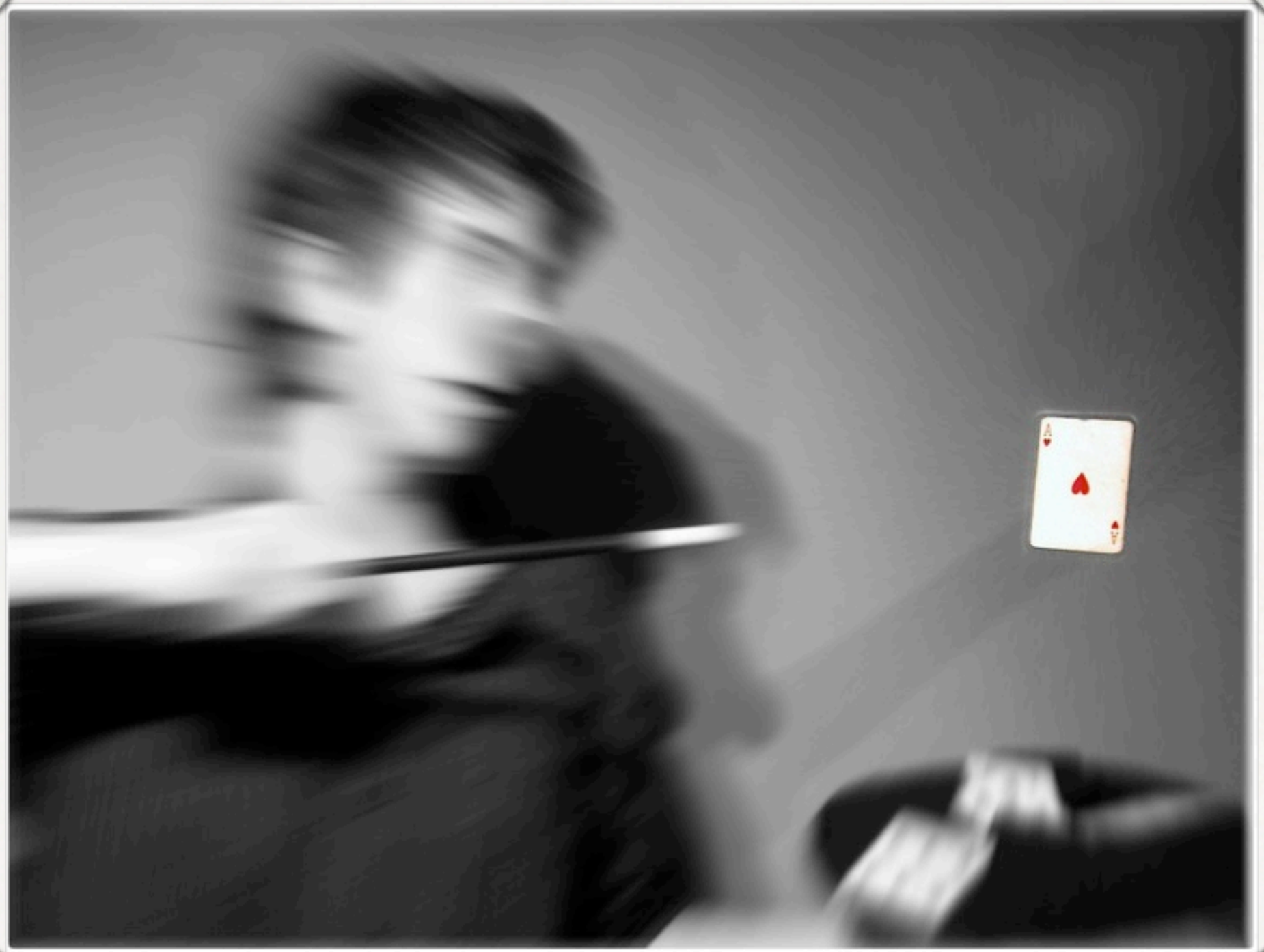


image used under Creative Commons from mrpunto

gLite

sync the site

```
# egeecli sync glite
```

new configuration files generated

~

copy to all nodes

~

yum executed

~

yaim executed (according to configuration)

where to get this?

EGEE roll

database comes pre-loaded with *all* information used to install the site

how this was done

```
class Command(rocks.commands.VirtualOrganisationArgumentProcessor,
        rocks.commands.add.command):
        def run(self, params, args):
                if len(args) != 1:
                        self.abort('must supply one virtual organisation')
                vo_name = args[0]

                if vo_name in self.getVirtualOrganisationNames():
                        self.abort('virtual organisation "%s" exists' % app_name)

                (numberOfUsers, numberOfSGMUsers, numberOfPRDUsers, isActive) = \
                        self.fillParams(
                                [('number-of-users', '100'),
                                ('number-of-sgm-users', '1'),
                                ('number-of-prd-users', '1'),
                                ('is-active', 'N')])

        isActive = self.bool2str(self.str2bool(isActive))
        rows = self.db.execute ("""select buid from VirtualOrganisations order by idVO desc limit 1""")

        if rows == 1:
                (buid,) = self.db.fetchall()[0]
        else:
                buid = 0


        self.db.execute ("""insert into VirtualOrganisations
                 (voName, numberOfUsers, numberOfSGMUsers, numberOfPRDUsers, isActive, buid)
                 values ('%s', '%s', '%s', '%s', '%s', '%d')""" %
                 (vo_name, numberOfUsers, numberOfSGMUsers, numberOfPRDUsers, isActive, buid + 1000))
```

supporting database

secure shell

411 service

what now?

support for *groups.conf*

gLite 3.2

EGI/NGI

decide what to do with the extra time

questions?

thank you