

GLite - EGEE middleware. Практический курс пользователя

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Система безопасности информации

Privacy

Шифрование

Integrity

Цифровая подпись

Authentication

Сертификаты

Authorisation

Сертификат пользователя

Получение сертификата

Для Церна руководство по адресу:

http://service-grid-ca.web.cern.ch/service-grid-ca/help/user_req.html

Для ОИЯИ:

```
lxpub01:~ > grid-cert-request
```

- A certificate request and private key is being created
- You will be asked to enter a PEM pass phrase.
- This pass phrase is akin to your account password,
 - and is used to protect your key file.
 - If you forget your pass phrase, you will need to
 - obtain a new certificate.

- Using configuration from /etc/grid-security/globus-user-ssl.conf
- Generating a 1024 bit RSA private key
-++++++
- writing new private key to '/afs/jinr.ru/user/g/gvv/.globus/userkey.pem'
- **Enter PEM pass phrase:**
- **Verifying password - Enter PEM pass phrase:**
- -----
- You are about to be asked to enter information that will be incorporated
- into your certificate request.
- What you are about to enter is what is called a Distinguished Name or a DN.
- There are quite a few fields but you can leave some blank
- For some fields there will be a default value,
- If you enter '!', the field will be left blank.
 - -----
- Country Name (2 letter code), do not change! [RU]:Level 0 Organization, do not change!
[DataGrid]:
- Your institution domain name (e.g. jinr.ru) [jinr.ru]:Your full name (e.g. Ivan Petrov) []:

A private key and a certificate request has been generated with the subject:

/C=RU/O=DataGrid/OU=jinr.ru/CN=Galaktionov Victor

If the CN=Galaktionov Victor is not appropriate, rerun this script with the -force -cn "Common Name" options.

Your private key is stored in

/afs/jinr.ru/user/g/gvv/.globus/userkey.pem

Your request is stored in

/afs/jinr.ru/user/g/gvv/.globus/usercert_request.pem

Please e-mail the request to the Russian DataGrid CA danila@jinr.ru

You may use a command similar to the following:

```
cat /afs/jinr.ru/user/g/gvv/.globus/usercert_request.pem |  
mail danila@jinr.ru
```

Only use the above if this machine can send AND receive e-mail.

if not, please

mail using some other method.

Your certificate will be mailed to you within two working days.

If you receive no response, contact Russian DataGrid CA at

danila@jinr.ru

Результат:

В HOME-директории создается поддиректория **.globus** с 3 файлами:

usercert.pem

usercert_request.pem

userkey.pem

ИЛИ

usercert.pem

userkey.pem

userreq.pem

!!! Установите код доступа 400 для файла userkey.pem

Подпись сертификата

Процедура подписи сертификата устанавливается в каждой организации, выполняется через соответствующих уполномоченных.

Ему пересылается файл **usercert_request.pem** или **userreq.pem**

Результат: полученный файл (подписанный сертификат) под именем **usercert.pem** с правами доступа 644 запишите в директорию **.globus**

Регистрация в виртуальной организации

1. Генерация сертификата для браузера

генерация сертификата:

Инструкция: http://lcg-registrar.cern.ch/load_certificates.html

```
openssl pkcs12 -export -inkey userkey.pem \  
-in usercert.pem \  
-out my_cert.p12 -name "My certificate"
```

userkey.pem Путь к закрытому ключу (доступ 400)

usercert.pem Путь к файлу сертификата

my_cert.p12 Путь к создаваемому сертификату браузера в формате PKCS12.

"*My certificate*" Необязательный параметр.

- Включение сертификата в браузер:

использовать механизм импортирования сертификатов.

- Вход в WEB-портал для регистрации членства в VO

Доступ через браузер с установленным сертификатом

<https://lxb2023.cern.ch:8443/edg-voms-admin/EGEE/index.html>

- Получить извещения о регистрации в VO

Полезные ссылки

JRA1: Middleware

<http://egee-jra1.web.cern.ch/egee-jra1/>

gLight: Lightweight Middleware for Grid Computing

<http://glite.web.cern.ch/glite/>

Presentations

<http://egee-jra1.web.cern.ch/egee-jra1/Presentations/All.html>

Prototype testbed

<http://egee-jra1.web.cern.ch/egee-jra1/Prototype/testbed.htm>

I. Подключение к GLite

Предустановка

- Установить сертификаты в `/.globus`
- Регистрация в VO EGEE (`voms`)

Начало сеанса с ЦЕРН AFS

```
ssh vgalakti@lxplus.cern.ch
```

Подключение к GLite UI

```
source /afs/cern.ch/project/egee/jra1/prototype/ui/glite-env.sh
```

ИЛИ

```
source
```

```
/afs/cern.ch/project/egee/jra1/prototype/ui/glite-env.csh
```

```
GLITE_LOCATION=/afs/cern.ch/project/egee/jra1/prototype/ui/opt/glite
GLOBUS_LOCATION=/afs/cern.ch/project/egee/jra1/prototype/ui/opt/globus
GLOBUS_PATH=/afs/cern.ch/project/egee/jra1/prototype/ui/opt/globus
```

II. Создание проху-сертификата

.Grid проху: grid-проху-init

.Voms проху: voms-проху-init

Примечание: если уже есть готовый проху-сертификат, установить в переменной `X509_USER_PROXY` путь доступа к файлу

Voms proxy

Для работы с VOMS proxy после первого запуска **voms-proxy-init** образуется файл `$HOME/.glite/vomses` со строкой

```
"EGEE" "kuiken.nikhef.nl" "15001"
```

```
"/O=dutchgrid/O=hosts/OU=nikhef.nl/CN=kuiken.nikhef.nl" "EGEE" "22"
```

Можно работать и так, но можно заменить строку на свои данные, например:

```
"EGEE" "Victor Galaktionov" "7912"
```

```
"/C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912" "EGEE" "22"
```

Операции с VOMS proxy

voms-proxy-init

voms-proxy-info

voms-proxy-destroy

[lxplus011] ~/.glite > **voms-proxy-init -help**

voms-proxy-init:

Options

- help, -usage Displays usage
- version Displays version
- debug Enables extra debug output
- q Quiet mode, minimal output
- verify Verifies certificate to make proxy for
- pwstdin** **Allows passphrase from stdin**
- limited Creates a limited proxy
- hours H Proxy is valid for H hours (default:12)
- bits B Number of bits in key {512|1024|2048|4096}
- cert <certfile> Non-standard location of user certificate
- key <keyfile> Non-standard location of user key
- certdir <certdir> Non-standard location of trusted cert dir
- out <proxyfile> Non-standard location of new proxy cert
- voms <voms[:command]>> Specify voms server. :command is optional.**
- order <group[:role]>> Specify ordering of attributes.
- target <hostname> Targets the AC against a specific hostname.
- vomslifetime <H> Try to get a VOMS pseudocert valid for H hours.
- include <file> Include the contents of the specified file.
- conf <file> Read options from <file>.
- confile <file> Non-standard location of voms server addresses.**
- userconf <file> Non-standard location of user-defined voms server addresses.
- globus Globus version.
- noregen Doesn't regenerate a new proxy for the connection.

GLite - EGEE

Middleware

cat /afs/cern.ch/project/egee/jra1/prototype/ui/opt/glite/etc/vomses

```
"test" "gridit-wn-010.cnaf.infn.it" "50001" "/C=IT/O=INFN/OU=Host/L=CNAF/CN=gridit-wn-010.cnaf.infn.it"
```

```
"testVO" "22"
```

```
"EGEE" "kuiken.nikhef.nl" "15001" "/O=dutchgrid/O=hosts/OU=nikhef.nl/CN=kuiken.nikhef.nl»
```

```
"EGEE" "22"
```


1 вариант

```
lxplus011] ~/.glite > voms-proxy-init
```

```
Invalid configuration filename:
```

```
/afs/cern.ch/project/egee/jra1/prototype/ui/opt/glite/etc/vomses
```

```
Your identity: /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
```

```
Enter GRID pass phrase for this identity:
```

```
Creating temporary proxy ..... Done
```

```
Creating proxy ..... Done
```

```
Your proxy is valid until Thu Mar 17 02:15:46 2005
```

lxplus013] ~/INFN > **voms-proxy-info**

subject : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912/CN=proxy
issuer : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
identity : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
type : proxy
strength : 512 bits
path : /tmp/x509up_u19747
timeleft : 11:55:35

2.вариант

```
[lxplus071] ~ > gliteui
```

```
[lxplus071] ~ > cat ~/.glite/vomses
```

```
"EGEE" "kuiken.nikhef.nl" "15001" "/O=dutchgrid/O=hosts/OU=nikhef.nl/CN=kuiken.nikhef.nl" "EGEE" "22
```

```
[lxplus071] ~ > voms-proxy-init -confile .glite/vomses
```

```
Your identity: /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
```

```
Enter GRID pass phrase for this identity:
```

```
Creating temporary proxy ..... Done
```

```
Creating proxy ..... Done
```

```
Your proxy is valid until Fri Mar 18 01:48:26 2005
```

```
[lxplus071] ~ > voms-proxy-info
```

```
subject : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912/CN=proxy
```

```
issuer : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
```

```
identity : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
```

```
type : proxy
```

```
strength : 512 bits
```

```
path : /tmp/x509up_u19747
```

```
timeleft : 11:59:50
```

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Middleware

3 вариант

```
[lxplus058] ~ > gliteui
```

```
[lxplus058] ~ > cat ~/.glite/vomses
```

```
"EGEE""Victor Galaktionov""7912" "/C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912">  
"EGEE""22"
```

```
[lxplus058] ~ > voms-proxy-init -confile .glite/vomses
```

```
Your identity: /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
```

```
Enter GRID pass phrase for this identity:
```

```
Creating temporary proxy ..... Done
```

```
Creating proxy ..... Done
```

```
Your proxy is valid until Fri Mar 18 01:37:00 2005
```

[lxplus058] ~ > **voms-proxy-info**

subject : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912/CN=proxy
issuer : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
identity : /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
type : proxy
strength : 512 bits
path : /tmp/x509up_u19747
timeleft : 11:59:49

```
[lxplus011] ~/.glite > voms-proxy-init -confile vomses -voms EGEE
```

```
Your identity: /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
```

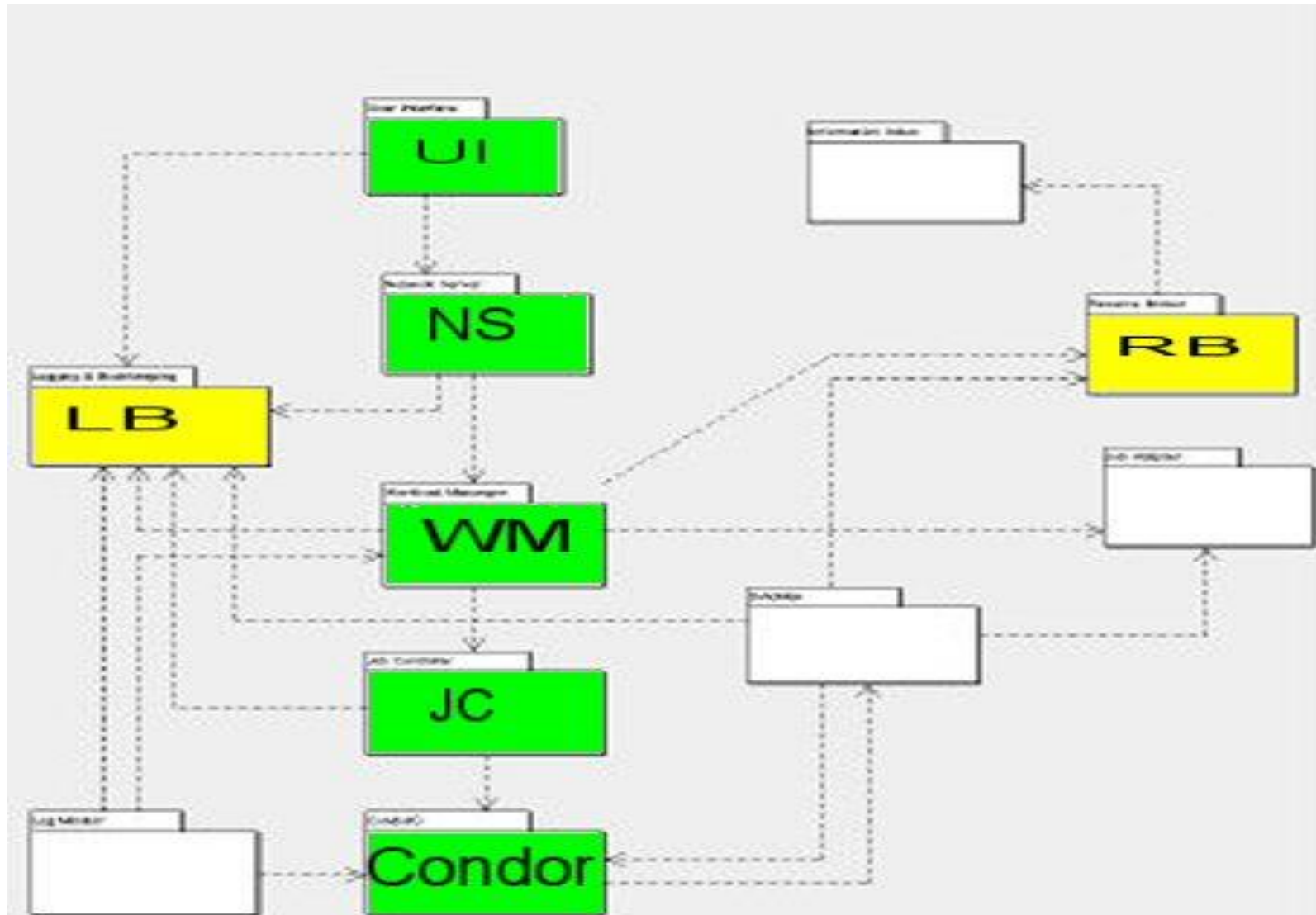
```
Enter GRID pass phrase for this identity:
```

```
Creating temporary proxy ..... Done
```

```
Trying for old (1.1.x) server
```

```
Trying for old (1.1.x) server
```

III. Workload Management System, WMS



Job Management

<http://egee-jra1-wm.mi.infn.it/egee-jra1-wm/>

<http://egee-jra1.web.cern.ch/egee-jra1/Prototype/afs-ui.html>

ОСНОВНЫЕ КОМАНДЫ:

glite-job-list-match <idl-file>

glite-job-submit <idl-file>

glite-job-status <job-id>

glite-job-cancel <job-id>

glite-job-output <job-id>

glite-job-logging-info <job-id>

Пример jdl-файла:

hello.jdl

```
Executable = "/bin/echo";  
Arguments = "Hello World";  
StdOutput = "Message.txt";  
StdError = "stderr.log";  
OutputSandbox = {"Message.txt", "stderr.log"};
```

Полная спецификация JDL: <https://edms.cern.ch/document/555796/>

Рекомендуемый формат команды submit:

glite-job submit –config-vo <EGEE VO config> <idl file>

Пример VO config файла:

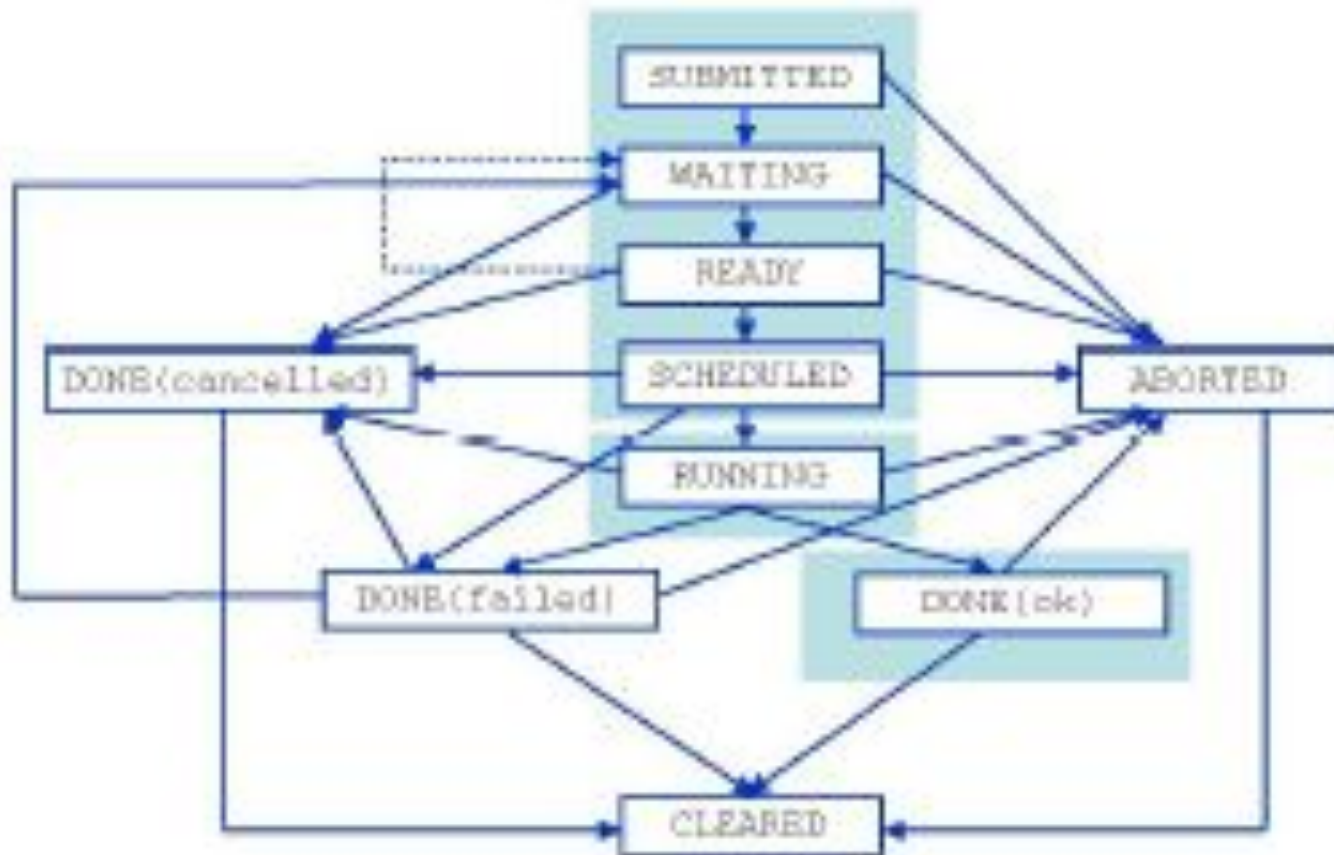
egee.cfg

```
VirtualOrganisation = "EGEE";
```

```
NSAddresses = {"gundam.cnaf.infn.it:7772"};
```

```
LBAddresses = {"gundam.cnaf.infn.it:9000"};
```

Состояние задач



Передача задач

Пример 1

```
[lxplus013] ~/INFN > glite-job-submit hello.jdl
```

```
**** Error: UI_NO_VOMS ****
```

```
Unable to determine a valid user's VO
```

```
[lxplus013] ~/INFN > glite-job-submit --config-vo egee.cfg hello.jdl
```

```
Selected Virtual Organisation name (from --config-vo option): egee
```

```
Connecting to host gundam.cnaf.infn.it, port 7772
```

```
Logging to host gundam.cnaf.infn.it, port 9002
```

```
*****
```

JOB SUBMIT OUTCOME

```
The job has been successfully submitted to the Network Server.
```

```
Use glite-job-status command to check job current status.
```

```
Your job identifier is:
```

```
- https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A
```

```
*****
```

[lxplus013] ~/INFN > **glite-job-status**

<https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A>

BOOKKEEPING INFORMATION:

Status info for the Job : <https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A>

Current Status: **Ready**

Status Reason: unavailable

Destination: lxb2022.cern.ch:2119/blah-lsf-jra1_low

Submitted: Thu Mar 17 13:03:56 2005 CET

[lxplus013] ~/INFN > **glite-job-status**

<https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A>

BOOKKEEPING INFORMATION:

Status info for the Job : <https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A>

Current Status: **Done (Success)**

Exit code: 0

Status Reason: Job terminated successfully

Destination: lxb2022.cern.ch:2119/blah-lsf-jra1_low

Submitted: Thu Mar 17 13:03:56 2005 CET

[lxplus013] ~/INFN > **glite-job-output**

<https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A>

Retrieving files from host: gundam.cnaf.infn.it

(for <https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A>)

JOB GET OUTPUT OUTCOME

Output sandbox files for the job:

- <https://gundam.cnaf.infn.it:9000/mCg6yqUsdua2iKdYujFt-A>

have been successfully retrieved and stored in the directory:

[/tmp/vgalakti_mCg6yqUsdua2iKdYujFt-A](#)

```
ls /tmp/vgalakti_mCg6yqUsdua2iKdYujFt-A  
Message.txt stderr.log
```

```
cat /tmp/vgalakti_mCg6yqUsdua2iKdYujFt-A/Message.txt  
Hello World
```

Пример 2

```
[lxplus013] ~/INFN > glite-job-submit --config-vo egee.cfg -o jobID hello.jdl
```

```
Selected Virtual Organisation name (from --config-vo option): egee
```

```
Connecting to host gundam.cnaf.infn.it, port 7772
```

```
Logging to host gundam.cnaf.infn.it, port 9002
```

```
===== glite-job-submit Success =====
```

```
The job has been successfully submitted to the Network Server.
```

```
Use glite-job-status command to check job current status. Your job identifier is:
```

```
- https://gundam.cnaf.infn.it:9000/81LL1URCdQ\_lwdZrf6c81Q
```

```
The job identifier has been saved in the following file:
```

```
/afs/cern.ch/user/v/vgalakti/INFN/jobID
```

[lxplus013] ~/INFN > **cat jobID**

###Submitted Job Ids###

https://gundam.cnaf.infn.it:9000/81LL1URCdQ_lwdZrf6c81Q

[lxplus013] ~/INFN > **glite-job-status -i jobID**

BOOKKEEPING INFORMATION:

Status info for the Job : https://gundam.cnaf.infn.it:9000/81LL1URCdQ_lwdZrf6c81Q

Current Status: **Ready**

Status Reason: unavailable

Destination: lxb2022.cern.ch:2119/blah-lsf-jra1_low

Submitted: Thu Mar 17 13:15:38 2005 CET

```
[lxplus013] ~/INFN > glite-job-status -i jobID
```

```
*****
```

```
BOOKKEEPING INFORMATION:
```

```
Status info for the Job : https://gundam.cnaf.infn.it:9000/81LL1URCdQ\_lwdZrf6c81Q
```

```
Current Status: Done (Success)
```

```
Exit code: 0
```

```
Status Reason: Job terminated successfully
```

```
Destination: lxb2022.cern.ch:2119/blah-lsf-jra1_low
```

```
Submitted: Thu Mar 17 13:15:38 2005 CET
```

```
*****
```

```
[lxplus013] ~/INFN > glite-job-output --dir ~/jobs -i jobID
```

```
**** Warning: UI_DIR_NOT_FOUND ****
```

```
Unable to find the directory "/afs/cern.ch/user/v/vgalakti/jobs"
```

```
OutputSandbox files will be copied in /tmp. Do you wish to continue? [y/n]n :n  
bye
```

```
lplus013] ~/INFN > mkdir jobs
```

```
[lplus013] ~/INFN > glite-job-output --dir ~/INFN/jobs -i jobID
```

Retrieving files from host: gundam.cnaf.infn.it

(for https://gundam.cnaf.infn.it:9000/81LL1URCdQ_lwdZrf6c81Q)

JOB GET OUTPUT OUTCOME

Output sandbox files for the job:

- https://gundam.cnaf.infn.it:9000/81LL1URCdQ_lwdZrf6c81Q

have been successfully retrieved and stored in the directory:

[/afs/cern.ch/user/v/vgalakti/INFN/jobs/vgalakti_81LL1URCdQ_lwdZrf6c81Q](https://afs.cern.ch/user/v/vgalakti/INFN/jobs/vgalakti_81LL1URCdQ_lwdZrf6c81Q)

```
[lplus013] ~/INFN > ls jobs
```

```
vgalakti_81LL1URCdQ_lwdZrf6c81Q
```

```
[lplus013] ~/INFN > ls jobs/vgalakti_81LL1URCdQ_lwdZrf6c81Q/
```

```
Message.txt stderr.log
```

```
cat jobs/vgalakti_81LL1URCdQ_lwdZrf6c81Q/Message.txt
```

```
Hello World
```

Примечание: Вы можете использовать EDG-команды
`edg-job-{submit, status, cancel, get-output}`

Пример 3

cat perltest.jdl

```
Executable="perltest.pl";  
InputSandbox={"perltest.pl"};  
Arguments="Grid";  
StdOutput="std.out";  
StdError="std.err";  
OutputSandbox={"std.out", "std.err"};
```

cat perltest.pl

```
#!/usr/bin/perl -s  
if($ARGV[0]) {$argument=$ARGV[0];}  
print "Your argument is $argument", "\n";
```

glite-job-submit --config-vo egee.cfg perltest.jdl

Selected Virtual Organisation name (from --config-vo option): egee

Connecting to host gundam.cnaf.infn.it, port 7772

Logging to host gundam.cnaf.infn.it, port 9002

JOB SUBMIT OUTCOME

The job has been successfully submitted to the Network Server.

Use glite-job-status command to check job current status. Your job identifier is:

- <https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw>

glite-job-status https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw

BOOKKEEPING INFORMATION:

Status info for the Job : <https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw>

Current Status: **Ready**

Status Reason: unavailable

Destination: lxb2077.cern.ch:2119/blah-pbs-short

Submitted: Tue Mar 22 15:22:45 2005 CET

glite-job-status

<https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw>

BOOKKEEPING INFORMATION:

Status info for the Job : <https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw>

Current Status: **Done (Success)**

Exit code: 0

Status Reason: Job terminated successfully

Destination: lxb2077.cern.ch:2119/blah-pbs-short

Submitted: Tue Mar 22 15:22:45 2005 CET

glite-job-output

<https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw>

Retrieving files from host: gundam.cnaf.infn.it
(for <https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw>)

JOB GET OUTPUT OUTCOME

Output sandbox files for the job:

- <https://gundam.cnaf.infn.it:9000/ZLGd49oiQeny73sstND0cw>

have been successfully retrieved and stored in the directory:

/tmp/vgalakti_ZLGd49oiQeny73sstND0cw

ls /tmp/vgalakti_ZLGd49oiQeny73sstND0cw/

std.err std.out

cat /tmp/vgalakti_ZLGd49oiQeny73sstND0cw/std.out

Your argument is Grid

Пример 4

cat ruJava.sh

```
#!/bin/sh
echo "Welcome to Java!"
java -version
if test -n "${JAVA_HOME}"; then
    echo "Java exists on this WN, start Java process"
    echo "Run Java class"
    java hello
    exit 0
else {
    echo "No JVM"
    exit 2
}
fi
```

cat tuJava.jdl

```
Executable="ruJava.sh";
InputSandbox={"ruJava.sh", "hello.class"};
StdOutput="std.out";
StdError="std.err";
OutputSandbox={"std.out", "std.err"};
```

glite-job-submit --config-vo egee.cfg -o JID tuJava.jdl

Selected Virtual Organisation name (from --config-vo option): egee

Connecting to host gundam.cnaf.infn.it, port 7772

Logging to host gundam.cnaf.infn.it, port 9002

===== glite-job-submit Success =====

The job has been successfully submitted to the Network Server.

Use glite-job-status command to check job current status. Your job identifier is:

- https://gundam.cnaf.infn.it:9000/7t2cjWmNSVz_ZZgW3bBhWw

The job identifier has been saved in the following file:

/afs/cern.ch/user/v/vgalakti/lcg/JID

=====

glite-job-status -i JID

BOOKKEEPING INFORMATION:

Status info for the Job : https://gundam.cnaf.infn.it:9000/7t2cjWmNSVz_ZZgW3bBhWw

Current Status: **Ready**

Status Reason: unavailable

Destination: lxb2077.cern.ch:2119/blah-pbs-short

Submitted: Tue Mar 22 16:57:14 2005 CET

glite-job-status -i JID

BOOKKEEPING INFORMATION:

Status info for the Job : https://gundam.cnaf.infn.it:9000/7t2cjWmNSVz_ZZgW3bBhWw

Current Status: **Done (Success)**

Exit code: 0

Status Reason: Job terminated successfully

Destination: lxb2077.cern.ch:2119/blah-pbs-short

Submitted: Tue Mar 22 16:57:14 2005 CET

glite-job-output -i JID

Retrieving files from host: gundam.cnaf.infn.it

(for https://gundam.cnaf.infn.it:9000/7t2cjWmNSVz_ZZgW3bBhWw)

JOB GET OUTPUT OUTCOME

Output sandbox files for the job:

- https://gundam.cnaf.infn.it:9000/7t2cjWmNSVz_ZZgW3bBhWw

have been successfully retrieved and stored in the directory:

/tmp/vgalakti_7t2cjWmNSVz_ZZgW3bBhWw

GLite - EGEE

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Middleware

```
ls /tmp/vgalakti_7t2cjWmNSVz_ZZgW3bBhWw/  
std.err std.out
```

```
cat /tmp/vgalakti_7t2cjWmNSVz_ZZgW3bBhWw/std.out  
Welcome to Java!
```

```
Java exists on this WN, start Java process  
Run Java class  
Hello, World!
```

```
cat /tmp/vgalakti_7t2cjWmNSVz_ZZgW3bBhWw/std.err  
java version "1.4.2_06"  
Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.2_06-b03)  
Java HotSpot(TM) Client VM (build 1.4.2_06-b03, mixed mode)
```

Пример 5

cat Get.jdl

```
Executable = "Get.sh";  
StdOutput = "stdout.log";  
StdError = "stderr.log";  
InputSandbox = {"Get.sh"};  
OutputSandbox = {"stdout.log", "stderr.log", "testFile"};  
Requirements = other.GlueCEInfoLRMSType == "LSF";
```

cat Get.sh

```
source /afs/cern.ch/project/egEE/jra1/prototype/ui/glite-env.sh  
glite-get /tmp/plot.py testFile  
cat testFile
```


glite-job-submit --config-vo egee.cfg -o jd Get.jdl

glite-job-status -i jd

BOOKKEEPING INFORMATION:

Status info for the Job : <https://gundam.cnaf.infn.it:9000/gtw7sOFbmGmNcK8US1t2FA>

Current Status: Done (Success)

Exit code: 0

Status Reason: Job terminated successfully

Destination: lxb2022.cern.ch:2119/blah-lsf-jra1_low

Submitted: Thu Mar 24 16:02:29 2005 CET

glite-job-output -i jd

Retrieving files from host: gundam.cnaf.infn.it (for <https://gundam.cnaf.infn.it:9000/gtw7sOFbmGmNcK8US1t2FA>

JOB GET OUTPUT OUTCOME

Output sandbox files for the job:

- <https://gundam.cnaf.infn.it:9000/gtw7sOFbmGmNcK8US1t2FA>

have been successfully retrieved and stored in the directory:

[/tmp/vgalakti_gtw7sOFbmGmNcK8US1t2FA](https://tmp/vgalakti_gtw7sOFbmGmNcK8US1t2FA)

ls /tmp/vgalakti_gtw7sOFbmGmNcK8US1t2FA

stderr.log stdout.log testFile

cat /tmp/vgalakti_gtw7sOFbmGmNcK8US1t2FA/stdout.log

[glite_get] Total 0.00 MB |=====| 100.00 % [0.0 Mb/s]

Transfer Completed:

LFN : /tmp/plot.py

GUID : 0039355a-549c-1238-8362-898a0544beef

SURL : srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user/g/g

Data Written [bytes] : 228

Eff.Transfer Rate[Mb/s] : 0.000088

#!/usr/bin/env python2.2

#--- Galaktionov Victor victor.galaktionov@cern.ch

import os

os.popen("gnuplot '/afs/cern.ch/user/v/vgalakti/INFN/plot.cfg'")

os.popen("gnuplot '/afs/cern.ch/user/v/vgalakti/INFN/percentPlot.cfg'")

cat /tmp/vgalakti_gtw7sOFbmGmNcK8US1t2FA/testFile

#!/usr/bin/env python2.2

#--- Galaktionov Victor victor.galaktionov@cern.ch

import os

os.popen("gnuplot '/afs/cern.ch/user/v/vgalakti/INFN/plot.cfg'")

os.popen("gnuplot '/afs/cern.ch/user/v/vgalakti/INFN/percentPlot.cfg'")

GLite - EGEE

Middleware

Data Management

Ссылки:

<http://egee-jra1-dm.web.cern.ch/egee-jra1-dm/quickstart.htm>

<http://egee-jra1-dm.web.cern.ch/egee-jra1-dm/rc1-doc.htm>

<http://egee-jra1-dm.web.cern.ch/egee-jra1-dm/lcg-utils-glite.htm>

Работа с каталогом:

**glite-catalog-{chmod, create, ls, mkdir, rm,
rmdir, symlink}**

Работа с файлами:

glite-{put, get}

1 шаг – посмотреть help и корневой каталог:

glite-catalog-ls -h

Usage: glite-catalog-ls [options] DIR [DIR...]

Available options:

- h Print this help text and exit.
- q Quiet operation.
- s URL Use the catalog service at the specified URL.
- v Be more verbose.
- V Print the version number and exit.
- c Display the creation time instead of the modification time
- d List directory entries, not their contents
- g Also display GUIDs
- l Long output format
- R Recursive listing
- S Sort by file size
- t Sort by time
- u Do not sort the output

glite-catalog-ls -l /

Запись файла в SE

glite-put local_file_name remote_file_name

glite-put -help

<glite_put> Version 1.1 by (C) EGEE

usage: glite_put <localfilename> <remotefilename> [-m <mode>]

Optional parameters:

- m <mode> : the permission to use for the new file (default is 0640).
- c <name> : configuration name to be used (Override glite-io-client configuration)
- s : silent mode
- h : print this screen

glite-put wms-plot.py /tmp/plot.py

[glite_put] Total 0.00 MB |=====| 100.00 % [0.0 Mb/s]

Transfer Completed:

LFN : /tmp/plot.py
GUID : 0039355a-549c-1238-8362-898a0544beef
SURL : srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user/g/gproduct/EC
Data Written [bytes] : 228
Eff.Transfer Rate[Mb/s] : 0.000062

glite-catalog-ls -l /tmp/plot.py

-pdrwlxgs----- 228 2005-03-16 16:45:38 /tmp/plot.py

glite-catalog-mkdir /vgalakti

glite-catalog-ls -l /vgalakti

glite-put wms-plot.py /vgalakti/plot.py

[glite_put] Total 0.00 MB |=====| 100.00 % [0.0 Mb/s]

Transfer Completed:

LFN : /vgalakti/plot.py

GUID : 00320c94-5bde-1238-90c0-898a0544beef

SURL : srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user/g/gproduct/E

Data Written [bytes] : 228

Eff.Transfer Rate[Mb/s] : 0.000053

glite-catalog-ls -l /vgalakti

-pdrwlxgs----- 228 2005-03-16 17:16:36 /vgalakti/plot.py

Чтение файла из *Storage Element*:

glite-get remote_file_name new_local_file

glite-get -help

<glite_get> Version 1.1 by (C) EGEE

usage: glite_get <remotefilename> <localfilename>

Optional parameters:

-c <name> : configuration name to be used (Override glite-io-client configuration)

-s : silent mode

-h : print this screen

glite-get /vgalakti/plot.py remote.py

[glite_get] Total 0.00 MB |=====| 100.00 % [0.0 Mb/s]

Transfer Completed:

LFN : /vgalakti/plot.py

GUID : 00320c94-5bde-1238-90c0-898a0544beef

SURL : srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user/g/gproduct/EGEE

Data Written [bytes] : 228

Eff.Transfer Rate[Mb/s] : 0.000067

Таблица соответствия команд работы с файлами в LCG и GLite

LCG	GLITE
lcg-aa	glite-catalog-symlink
lcg-cp	glite-get
lcg-cr	glite-put
lcg-del	glite-rm
lcg-la	glite-catalog-stat

glite-catalog-stat /vgalakti

LFN: /vgalakti

Created: 2005-03-16 17:15:42.000

Modified: 2005-03-16 17:15:42.000

Size: 0

Type: Directory

Expires: Never

GUID: F27174F2-14FC-23C3-E030-11AC04137FB2

User: egee

Group: egee-group

User rights: pdrwlxgs

Group rights: --r-lx--

Other rights: -----gs

glite-catalog-stat /vgalakti/plot.py

LFN: /vgalakti/plot.py

Created: 2005-03-16 17:16:31.000

Modified: 2005-03-16 17:16:36.000

Size: 228

Type: File

Expires: Never

GUID: 00320c94-5bde-1238-90c0-898a0544beef

Created: 2005-03-16 17:16:31.000

Modified: 2005-03-16 17:16:36.000

Size: 228

Checksum: 00000000

Status: 0

User: egee

Group: egee-group

User rights: pdrwlxgs

Group rights: -----

Other rights: -----

Replicas:

srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user/g/gproduct/EGEETEST/SE/vgalakti/pl

Master replica

Created: 2005-03-16 17:16:31.000

Modified: 2005-03-16 17:16:31.000

glite-catalog-stat lfn:///vgalakti/plot.py

LFN: /vgalakti/plot.py

Created: 2005-03-16 17:16:31.000

Modified: 2005-03-16 17:16:36.000

Size: 228

Type: File

Expires: Never

GUID: 00320c94-5bde-1238-90c0-898a0544beef

Created: 2005-03-16 17:16:31.000

Modified: 2005-03-16 17:16:36.000

Size: 228

Checksum: 00000000

Status: 0

User: egee

Group: egee-group

User rights: pdrwlxgs

Group rights: -----

Other rights: -----

Replicas:

srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user/g/gproduct/EGEETES

Master replica

Created: 2005-03-16 17:16:31.000

Modified: 2005-03-16 17:16:36.000

glite-get lfn:///vgalakti/plot.py mytest1

[glite_get] Total 0.00 MB |=====| 100.00 % [0.0 Mb/s]

Transfer Completed:

LFN : /vgalakti/plot.py

GUID : 00320c94-5bde-1238-90c0-898a0544beef

SURL : srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user

Data Written [bytes] : 228

Eff.Transfer Rate[Mb/s] : 0.00

glite-get guid:00320c94-5bde-1238-90c0-898a0544beef mytest3

[glite_get] Total 0.00 MB |=====| 100.00 % [0.0 Mb/s]

Transfer Completed:

LFN :
GUID : 00320c94-5bde-1238-90c0-898a0544beef
SURL : srm://gridftp05.cern.ch:8443/srm/managerV1?SFN=/castor/cern.ch/user/g/
Data Written [bytes] : 228
Eff.Transfer Rate[Mb/s] : 0.000095