www.eu-egee.org

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 именеим **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 брузера в формате PKCS12.
"My certificate" Необязательный параметр.

- Включение сертификата в браузер:
использовать механизм импортрования 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 proxy-сертификата

.**Grid proxy**: grid-proxy-init

.**Voms proxy:** voms-proxy-init

Примечание: если уже есть готовый proxy-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.

-vomslife <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.

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

3 вариант

[lxplus058] ~ > **gliteui**
[lxplus058] ~ > **cat ~/.glite/vomses**
"EGEE""Victor Galaktionov""7912" "/C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912›
"EGEE""22"

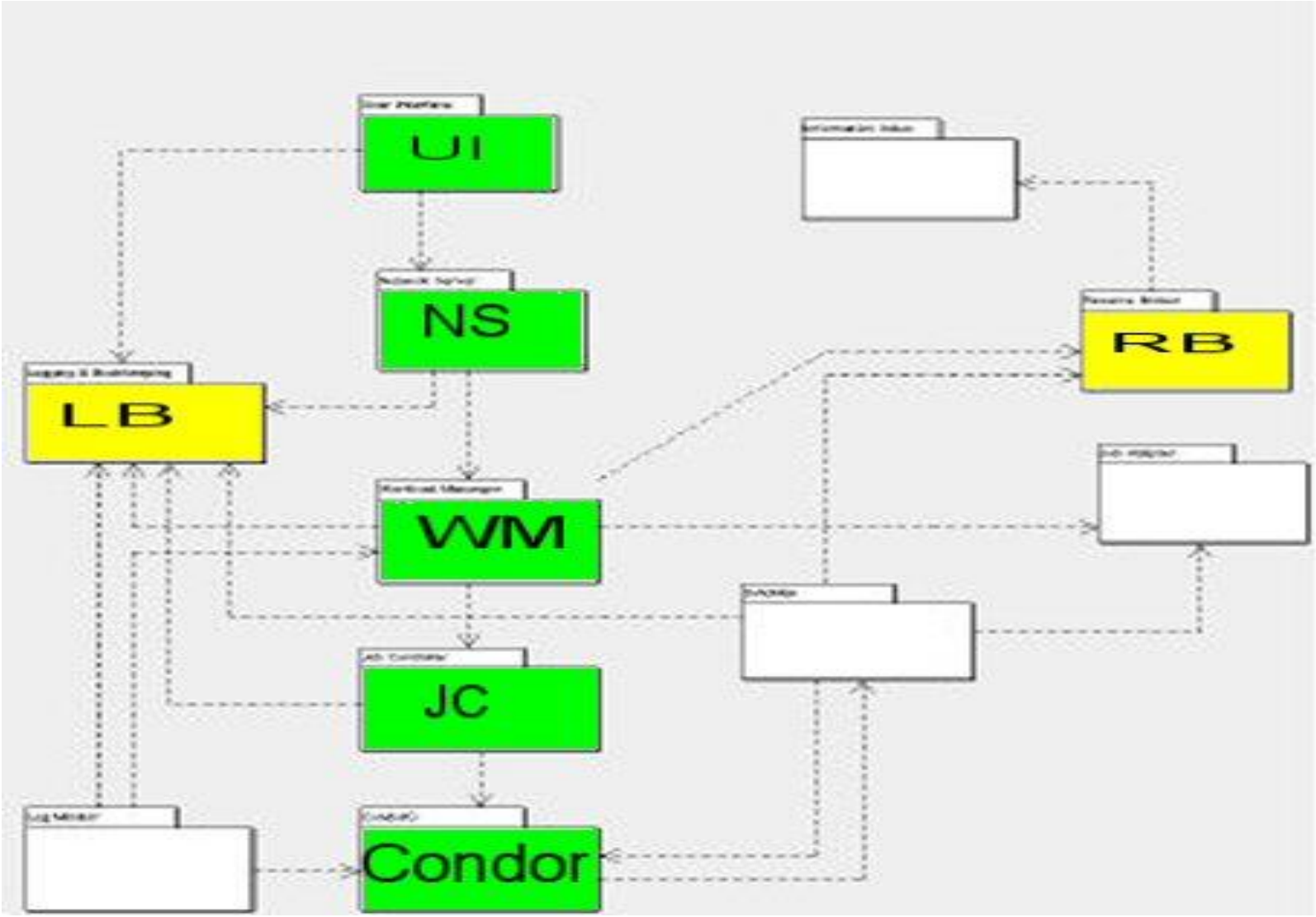
[lxplus058] ~ > **voms-proxy-init -confile .glite/vomses**
Your identity: /C=CH/O=CERN/OU=GRID/CN=Victor Galaktionov 7912
Enter GRID pass phrase for this identity:
Creating temporary proxy ..... Done
Creating proxy ..... Done
Your proxy is valid until Fri Mar 18 01:37:00 2005

[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"};
```

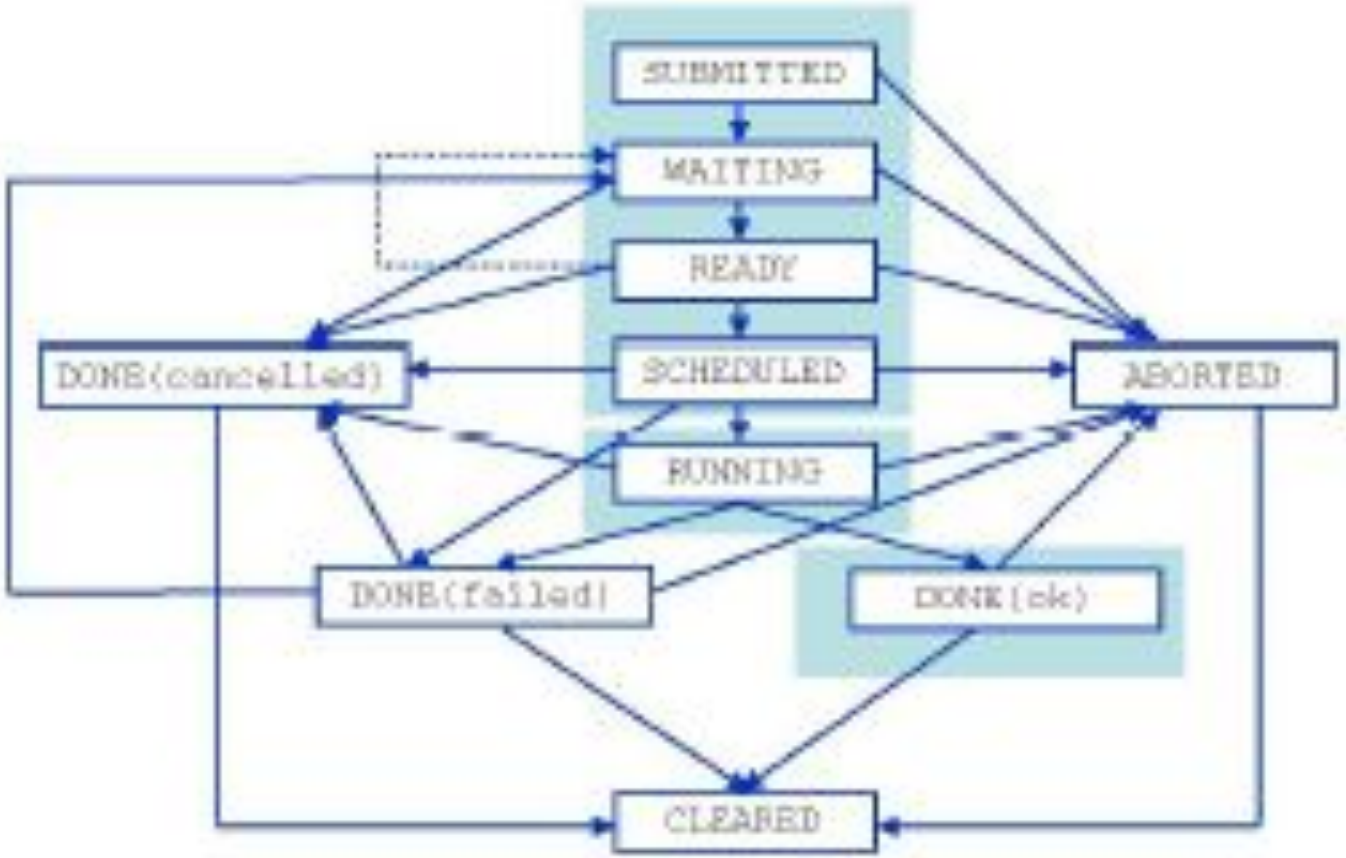
Полная спецификация JDL: https://edms.cern.ch/document/555796/

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
```

lxplus013] ~/INFN > **mkdir jobs**
[lxplus013] ~/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

****

[lxplus013] ~/INFN > **ls jobs**
vgalakti_81LL1URCdQ_lwdZrf6c81Q
[lxplus013] ~/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

****

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/gtw7sOFbn

****

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

****

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'")
```

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/E
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 17:16:31.000
```

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