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gLite 3.1. Практический курс 2. Workload Management

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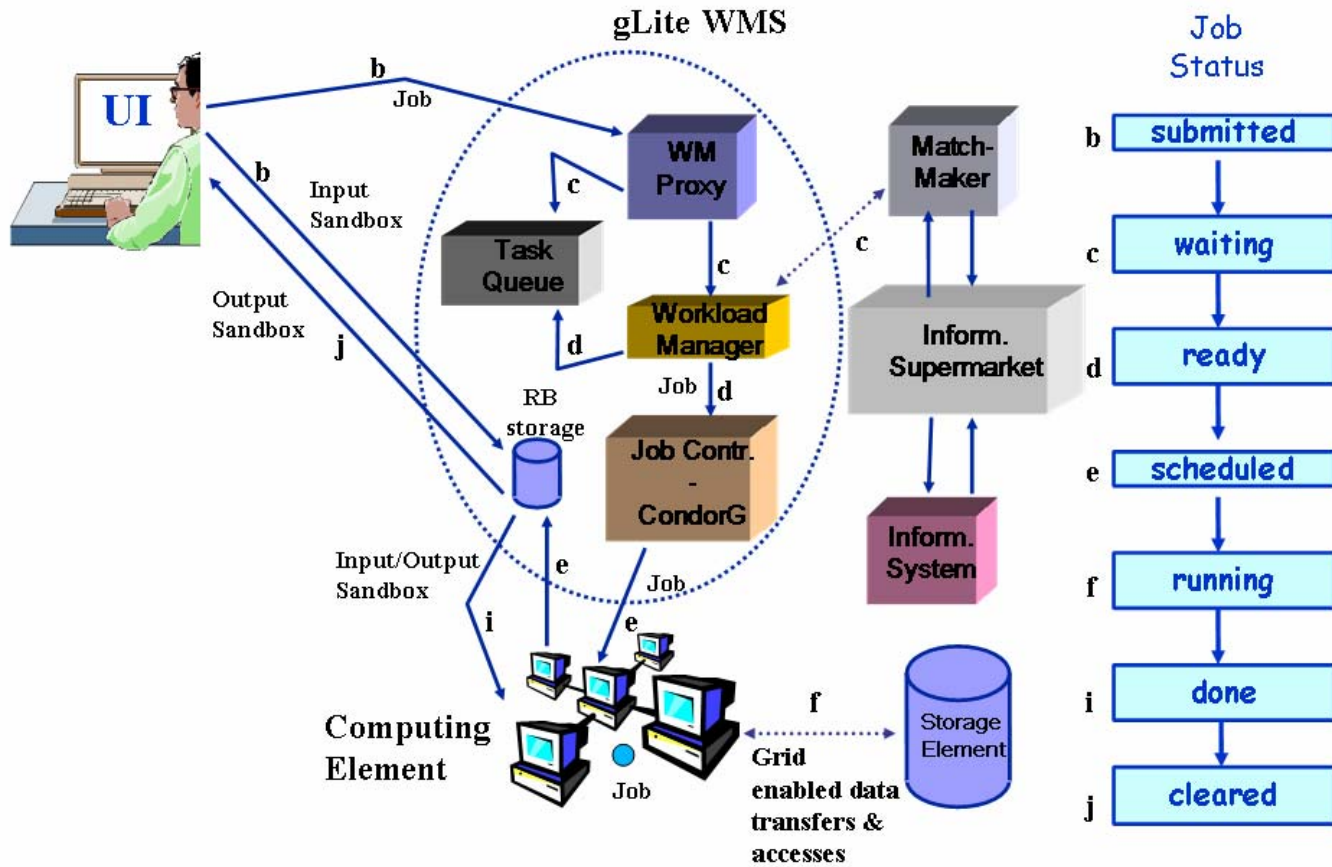
glite 3.1. Workload Management

1

Workload Management

-управление задачами

- Подготовка задач
- Передача задач
- Слежение за состоянием задач
- Получение результатов счета



1. ОСНОВНЫЕ КОМАНДЫ:

glite-wms-job-submit <idl-file>

glite-wms-job-status <job-id>

glite-job-output <job-id>

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

glite-wms-job-cancel <job-id>

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

glite-wms-job-delegate-proxy -d delegId

2. Язык описания задач

JDL, Job Description Language.

Полная спецификация JDL:

<https://edms.cern.ch/document/555796/>

Синтаксис задания параметров:

Attribute = value;

Пример jdl-файла:

hello.jdl

Type = "Job";

JobType = "Normal";

Executable = "/bin/echo";

Arguments = "Hello World";

StdOutput = "Message.txt";

StdError = "stderr.log";

OutputSandbox = {"Message.txt","stderr.log"};

```
Type = "job";
JobType = "normal";
VirtualOrganisation = "cms";
Executable = "test.sh";
Arguments = "1 20000 sim1";
StdInput = "file2";
StdOutput = "sim.out";
StdError = "sim.err";
OutputSandbox = {"sim.out", "sim.err"};
// disable job re-submission in case of failure
RetryCount = 0;
InputData = {
    "lfn:/mydata/file1",
    "guid:135b7b23-4a6a-11d7-87e7-9d101f8c8b70 " };
7/21/2008 glite 3.1. Workload Management
```

```

DataAccessProtocol = {"gridftp", "file"};
OutputSE = "grid011.pd.infn.it";
InputSandbox = {
    "/home/fpacini/JNI/test.sh",
    "/home/fpacini/DATA/file2",
    "/home/fpacini/HandsOn-0409/WP1testA"
};
rank = - other.GlueCEStateEstimatedResponseTime;
// Do not send my job to a CE located at NIKHEF
requirements =
    (!(RegExp("*nikhef*", other.GlueCEUniqueID))) &&
    (other.GlueCEInfoLRMSType=="lsf");

```

3. Конфигурация WMPoxy

Файл конфигурации может быть задан:

- Параметром `-config`
- Переменной `$GLITE_WMS_CLIENT_CONFIG`
- `$HOME/.glite/<vo>/glite_wms.conf`,
- `$GLITE_LOCATION/etc/<vo>/glite_wms.conf`
- `$GLITE_LOCATION/etc/glite_wms.conf`.

Пример файла в ОИЯИ

```
[  
  WmsClient = [  
    virtualorganisation = "dteam";  
    requirements = other.GlueCEStateStatus == "Production";  
    MyProxyServer = "lcgpx01.jinr.ru";  
    WMPProxyEndpoints = {  
      "https://lcgrb02.jinr.ru:7443/glite_wms_wmproxy_server"  
    };  
    ListenerStorage = "/tmp/glite/glite-ui";  
    ErrorStorage = "/tmp/glite/glite-ui";  
    ShallowRetryCount = 10;  
    AllowZippedISB = true;  
    PerusalFileEnable = false;  
    rank =- other.GlueCEStateEstimatedResponseTime;  
    OutputStorage = "/tmp/glite/glite-ui";  
    RetryCount = 3;  
  ];  
]
```

4. Типы задач

- **JobType = “Normal”**
- **Групповые передачи задач**
параметр –collection
JobType = “Collection”
- **JobType = “DAG”** **direct acyclic graph**
- **JobType = “Parametric”**
- **JobType = “Interactive”**
- **JobType = “MPI”** **Message Passing Interface**

5. Примеры работы с задачами

5.1. Передача задач

Пример 1.

```
lxpub04: > glite-wms-job-submit hello.jdl
```

Error - Missing Information

a mandatory attribute is missing:

--delegationid, -d <id_string>

to use a proxy previously delegated or

--autm-delegation, -a

to perform automatic delegation

Пример 2.

lxpub04: > **glite-wms-job-submit -a hello.jdl**

Connecting to the service

https://lcgrb02.jinr.ru:7443/glite_wms_wmproxy_server

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

The job has been successfully submitted to the WMPProxy

Your job identifier is:

https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_-DoE6g

=====

5.2. Проверка состояния

lxpub04: > [glite-wms-job-status](https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh_-_DoE6g)
https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh_-_DoE6g

BOOKKEEPING INFORMATION:

Status info for the Job :

https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh_-_DoE6g

Current Status: **Scheduled**

Status Reason: **Job successfully submitted to Globus**

Destination: ce1.egee.fr.cgg.com:2119/jobmanager-lcgpbs-dteam

Submitted: **Wed May 21 18:05:35 2008 MSD**

lxpub04 > [glite-wms-job-status
https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_DoE6g](https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_DoE6g)

BOOKKEEPING INFORMATION:

Status info for the Job : https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_DoE6g

Current Status: **Running**

Status Reason: Job successfully submitted to Globus

Destination: ce1.egee.fr.cgg.com:2119/jobmanager-lcgpbs-dteam

Submitted: Wed May 21 18:05:35 2008 MSD

lxpub04:~/glite31 > **glite-wms-job-status**
https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_DoE6g

BOOKKEEPING INFORMATION:

Status info for the Job : https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_DoE6g

Current Status: **Done (Success)**

Exit code: 0

Status Reason: Job terminated successfully

Destination: ce1.egee.fr.cgg.com:2119/jobmanager-lcgpbs-dteam

Submitted: Wed May 21 18:05:35 2008 MSD

5.3. Получение результата

Пример 1.

lxpub04:> **glite-wms-job-output**

https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_-DoE6g

Error - Configuration Error

**Output Storage pathname doesn't exist (check the configuration file):
/tmp/glite/glite-ui**

Пример 2.

```
lxxpub04: > glite-wms-job-output --dir ~/glite31/output  
https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_-DoE6g
```

Connecting to the service

```
https://159.93.39.210:7443/glite_wms_wmproxy_server
```

JOB GET OUTPUT OUTCOME

Output sandbox files for the job:

```
https://lcglb01.jinr.ru:9000/N3EzWow0o0bPNh-_-DoE6g  
have been successfully retrieved and stored in the directory:  
/afs/jinr.ru/user/g/gvv/glite31/output
```

```
lxxpub04:> ls /afs/jinr.ru/user/g/gvv/glite31/output
```

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

```
lxxpub04: > cat /afs/jinr.ru/user/g/gvv/glite31/output/Message.txt  
Hello World
```

6. Расширенные возможности передачи задач

- Делегирование прокси
 1. `glite-wms-job-delegate-proxy -a`
 2. `glite-wms-job-delegate-proxy -d mydelegID`
`glite-wms-job-submit -d mydelegID test.jdl`
- Передача группы JDL-файлов из одной директории
`glite-wms-job-submit -a --collection jdldir`
- Указание CE
`glite-wms-job-submit -r <CEID>`
CEID = <gg_hostname>:<port>/<gg_type>-<LRMS_type>-<batch_queue_name>
ce1.egee.fr.cgg.com:2119/jobmanager-lcgpbs-dteam
- Буферизация jobID:
`$ glite-wms-job-submit -o <file>`

7. Более сложные примеры

Пример 7.1.

perltest.pl

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

perltest.jdl

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

glite-wms-job-submit -a perltest.jdl

Пример 7.2 (3 файла)

testJava.jdl

```
Executable="runJava.sh";
InputSandbox={"$HOME/jobInput/runJava.sh",
  "$HOME/jobInput/hello.java"};
Arguments="Grid";
Requirements=other.GlueCEUniqueID=="lcgce01.jinr.ru:2119/jobmanag
  er-lcgpbs-dteam";
StdOutput="std.out";
StdError="std.err";
OutputSandbox={"std.out", "std.err"};
```

hello.java

```
public class hello {
  public static void main(String args[]) {
    System.out.println("Hello, World!");
  }
}
```

runJava.sh

```
#!/bin/sh
echo "Welcome to Java!"
java -version
if test -n "${JAVA_HOME}"; then
  echo ""
  echo "Java exists on this WN, start Java process"
  echo "Compile Java program:"
  javac hello.java
  echo "retcode=$?"
  if test $?=0
  then
    echo "Run Java programm:"
    java hello
    exit 0
  fi
  echo "Error in compiling"
  exit 1
else {
  echo "No JVM"
  echo "Compile Java program"
  javac hello.java
  echo "retcode=$?"
  java hello
  exit 2
}
fi
```

Конец 2 части