

NorduGrid Tutorial



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Install software

Following information is available in "The NorduGrid user guide" at http://www.nordugrid.org/papers.html#man-user

• NorduGrid provides "standalone client" which contains all necessary software, public keys and configuration files to start User Interface. Procedure to install:

- Download from http://ftp.nordugrid.org/download/index.php suitable package.
- Unpack tarball:
- tar -zxvf nordugrid-standalone-<version>.<architecture>.tgz
 - Make shell process execute setup script

cd nordugrid-standalone-0.4.4

source setup.sh

 Now environment is ready for basic ARC and Globus commands



Start from obtaining recognised certificate

- Most sites which are members of NorduGrid infrastructure recognise CAs accepted by the European Policy Management Authority for Grid Authentication in e-Science http://marianne.in2p3.fr/datagrid/ca/ca-table-ca.html
- Always use Your national or organizational CA.
- After choosing Your CA follow procedure:
 - Run grid-cert-request -int -ca
 - Read and follow instructions on screen carefully.
- After You received certificate store it at proper place
- Now You will be recognised at remote sites
- Run grid-cert-info -subject -enddate
 - Subject of certificate is Your name on the Grid
 - Enddate tells You when to ask for new certificate



• To be allowed user must join VO

- Normally that shouldn't be a problem unless You are first Grid user in a neighborhood
- NorduGrid Guest VO is good start for those who want to try
- Send letter to nordugrid-support@nordugrid.org
 - Provide information about Your affilation, subcject of the certificate and anything to persuade VO maintainer that You need Grid (not a problem at all)



Available commands

• User	Interface consists of command line utilities							
ngsub	sub submit a task							
ngstat	${f t}$ obtain the status of jobs and clusters							
ngcat	display the stdout or stderr of a running job							
ngget	retrieve the result from a finished job							
ngkill	cancel a job request							
ngclean	delete a job from a remote cluster							
ngrenew	renew user's proxy							
ngsync	synchronize the local job info with the MDS							
ngcopy	transfer files to, from and between clusters							
ngremove	remove files							

 Before doing anything "login into Grid" grid-proxy-init once per 12 hours. Do not forget clock of You computer must be set properly.

2004-11-17



How to write description of a job

 For complete information read "XRSL (Extended Resource Specification Language)" at http://www.nordugrid.org/papers.html

- In short, RSL consists of attributes
 - (name=values)
 - glued together with logical and
- Example of simple *Hello World* job

```
&
```

(executable=/bin/echo)
(arguments="Hello World")
(cputime=1m)
(stdout=out.txt)

```
(jobname=hello)
```

main executable
arguments for main executable
request 1 minute of CPU time
store output into out.txt
name OF a job for convenience



Run Your first job

- Try to submit simplest Hello World job
 - \$ ngsub '&(executable=/bin/echo)(arguments="Hello World")(cputime=1m)
 (stdout=out.txt)(jobname=hello)'

> Job submitted with jobid gsiftp://fire.ii.uib.no:2812/jobs/ 3931100530940877714581

Check for status of the job time to time till it turns into finished

\$ ngstat hello

> Job gsiftp://fire.ii.uib.no:2812/jobs/

3931100530940877714581

Jobname: hello

Status: FINISHED 2004-11-15 16:20:01

Retrive produced results

\$ ngget hello

- > ngget: downloading files to /home/SanjaK/3931100530940877714581 ngget: download successful - deleting job from gatekeeper.
- \$ cat 3931100530940877714581/out.txt
- > Hello World



Monitoring of job

ngstat

 Grid Monitor - web based job monitoring tool. It's Your best friend in a netcafe.

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www.nordugrid.org



Sophisticated job

 Let's run job with input and output data, Runtime Environements, etc.

Wrapper script - runpov.sh

#! /bin/sh

povray +H600 +W800 +omonolith.png monolith.pov

RSL – povray.rsl

&(executable=runpov.sh)

```
(runtimeenvironment=POVRAY)
```

(inputfiles=

```
("monolith.pov"
```

```
"http://www.nordugrid.org/tutorial/dapsys_tutorial/povraydemo/monolith.pov")
("front.png" "http://www.nordugrid.org/tutorial/dapsys_tutorial/povraydemo/front.png"))
(outputfiles=("monolith.png" ""))
(stdout=out.txt)(stderr=err.txt)
(gmlog=logs)
(cputime=1h)
```

```
(jobname=povray)
```



Sophisticated job (continued)

Job uses

- Preinstalled software package POW-Ray
- Input files monolith.pov and front.png from external HTTP server www.nordugrid.org.
- Executable file from user's computer runpov.sh

Job produces

- Printed output out txt
- Errors err.txt
- Diagnostics information in subdirectory log
- Rendered picture monolith.png

This example was derived from one by Leif Nixon which also shows how to split task into multiple jobs by rendering image in slices. http://www.nsc.liu.se/~nixon/ng-povray/