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The NorduGrid toolkit user interface
User's manual

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Abstract

This is the user's manual to the NorduGrid toolkit user interface.

Table of Contents

1 The NorduGrid user interface commands

The user interface part of the NorduGrid toolkit consists of a set of command line commands. These are described in the following sections.

1.1 *ngsub*

The `ngsub` command is used for submitting jobs to the NorduGrid. The jobs are described using the extended resource description language (xrsl).

Usage: `ngsub [options] [xrsl ...]`

Options:

`-c,`	`-cluster`	[-]*name*	explicitly select or reject a specific cluster
`-C,`	`-clustlist`	[-]*filename*	list of clusters to select or reject
`-g,`	`-giisurl`	*url*	url to a central GIIS
`-G,`	`-giislist`	*filename*	list of GIIS urls
`-f,`	`-file`	*filename*	xrslfile describing the job to be submitted
`-o,`	`-joblist`	*filename*	file where the jobids will be stored
	`-dryrun`		add dryrun option to the xrsl
	`-dumpxrsl`		do not submit – dump transformed xrsl to stdout
`-t,`	`-timeout`	*time*	timeout for MDS queries in seconds (default 40)
`-d,`	`-debug`	*debuglevel*	0 = none, 1 = some, 2 = more, 3 = a lot
`-x,`	`-anonymous`		use anonymous bind for MDS queries
`-X,`	`-gsi`		use gsi-gssapi bind for MDS queries
`-v,`	`-version`		print version information
`-h,`	`-help`		print this help

Arguments:

`xrsl ...`	xrslstrings describing the jobs to be submitted

The `ngsub` command locates the available clusters by querying a globus information index server (GIIS). Which GIIS to query can be specified by giving the `-giisurl` option to the command. The url to the GIIS should be given in the format

`ldap://hostname[:port]/basedn`

If the port number is omitted the default 2135 is used. Two different syntax for the base dn of the ldap query are accepted, e.g. can the NorduGrid GIIS in Copenhagen be specified in either of the two following ways:

```
ldap://grid.nbi.dk:2135/O=Grid/Mds-Vo-name=NorduGrid
ldap://grid.nbi.dk:2135/Mds-Vo-name=NorduGrid,O=Grid
```

Several GIISes can be specified by repeating the `-giisurl` option:

`ngsub -giisurl` *url1* `-giisurl` *url2* `...`

The GIIS urls can also be read from a file if the `-giislist` option is used. If neither the `-giisurl` option nor the `-giislist` option is given a list of urls is read from a default giislist file. The first existing file in the following list is used:

1. ${HOME}/.nggiislist
2. ${NORDUGRID_LOCATION}/etc/giislist
   or /opt/nordugrid/etc/giislist if ${NORDUGRID_LOCATION} is undefined
3. /etc/giislist

The `-cluster` option can be used to force the job to be submitted to a particular cluster, or to reject submission to a particular cluster. If the `-clustlist` option is used the the names of the clusters to select or reject are read from a file. The `-cluster` and `-clustlist` options can be repeated several times.

Examples:

```
ngsub -c grid.nbi.dk -c grid.tsl.uu.se ...
```
submit the job to either grid.nbi.dk or grid.tsl.uu.se

```
ngsub -c -grid.quark.lu.se -c -grid.nbi.dk ...
```
don't submit the job to grid.quark.lu.se or grid.nbi.dk

The xrsl that describes the job can be given either as an argument on the command line or can be read from a file by using the `-file` option. Several jobs can be requested at the same time by giving more than one xrsl argument or by repeating the `-file` option. It is also possible to mix xrsl arguments and `-file` options in the same `ngsub` command.

The user interface transforms the xrsl into a format that can be understood by the grid-manager to which it is being submitted. By specifying the `-dumpxrsl` option the transformed xrsl is written to stdout instead of being submitted to the remote cluster.

If the job is successfully submitted a jobid is printed to stdout. This jobid uniquely identifies the job while it is being executed. If the `-joblist` option is given the jobid is also written to a file with the specified filename. This file can later be used with the `-joblist` option of the other user interface commands.

For setting defaults, see the section about .ngrc (section 2.5).

1.2 ngstat

The `ngstat` command is used for obtaining the status of jobs that have been submitted to NorduGrid and the status of the clusters in the grid.

Usage: `ngstat [options] [job ...]`

Options:
```
 -a, -all                       all jobs
 -i, -joblist     filename      file containing a list of jobids
 -c, -cluster     [-]name       explicitly select or reject a specific cluster
 -C, -clustlist   [-]filename   list of clusters to select or reject
 -s, -status      statusstr     only select jobs whose status is statusstr
 -g, -giisurl     url           url to a central GIIS
 -G, -giislist    filename      list of GIIS urls
 -q, -queues                    show information about clusters and queues
 -l, -long                      long format (more information)
 -t, -timeout     time          timeout for MDS queries in seconds (default 40)
 -d, -debug       debuglevel    0 = none, 1 = some, 2 = more, 3 = a lot
 -x, -anonymous                 use anonymous bind for MDS queries
 -X, -gsi                       use gsi-gssapi bind for MDS queries
 -v, -version                   print version information
 -h, -help                      print this help
```

Arguments:
```
 job ...                        list of jobids and/or jobnames
```

The ngstat command gives the status of a job submitted to NorduGrid. The job can be referred to either by the jobid that was returned by ngsub at submission time or by its jobname if the xrsl that was submitted contained a jobname attribute.

More than one jobid and/or jobname can be given. If several jobs were submitted with the same jobname the status of all those jobs are shown. If the -joblist option is used the list of jobids is read from a file with the specified filename. By specifying the -all option, the status of all active jobs will be shown. If the -long option is given more detailed information is given.

The -cluster and -clustlist options can be used to select or reject jobs at specific clusters. The -status option can be used to select jobs in a specific state. For finished jobs the -status option will match FINISHED or FAILED depending on weather the job finished successfully or not. These options can be repeated several times.

If the -queues option is used, ngstat gives the status of the clusters and queues available rather than of the jobs submitted. In this case the -cluster and -clustlist options can be used to select or reject clusters for which the status should be returned. For a description of the -giisurl and -giislist options the ngsub section (section 1.1). Also in this case the -long option can be used to obtain more detailed information.

For setting defaults, see the section about .ngrc (section 2.5).

1.3 ngcat

The `ngcat` command can be used to view the stdout or stderr of a running job. It can also be used to show the grid manager's error log of a job.

Usage: `ngcat [options] [job ...]`

Options:
```
 -a, -all                              all jobs
 -i, -joblist      filename            file containing a list of jobids
 -c, -cluster      [-]name             explicitly select or reject a specific cluster
 -C, -clustlist    [-]filename         list of clusters to select or reject
 -s, -status       statusstr           only select jobs whose status is statusstr
 -o, -stdout                           show the stdout of the job (default)
 -e, -stderr                           show the stderr of the job
 -l, -gmlog                            show the grid manager's error log of the job
 -t, -timeout      time                timeout for MDS queries in seconds (default 40)
 -d, -debug        debuglevel          0 = none, 1 = some, 2 = more, 3 = a lot
 -x, -anonymous                        use anonymous bind for MDS queries
 -X, -gsi                              use gsi-gssapi bind for MDS queries
 -v, -version                          print version information
 -h, -help                             print this help
```

Arguments:
```
 job ...                               list of jobids and/or jobnames
```

The `ngcat` command displays the stdout or stderr of running jobs. It can also display the grid manager's error log of a job. The job can be referred to either by the jobid that was returned by `ngsub` at submission time or by its jobname if the xrsl that was submitted contained a jobname attribute.

More than one jobid and/or jobname can be given. If several jobs were submitted with the same jobname the stdout, stderr or grid manager error log of all those jobs are shown. If the `-joblist` option is used the list of jobids is read from a file with the specified filename. By specifying the `-all` option, the stdout, stderr or grid manager error log of all active jobs will be shown.

The `-cluster` and `-clustlist` options can be used to select or reject jobs at specific clusters. The `-status` option can be used to select jobs in a specific state. For finished jobs the `-status` option will match FINISHED or FAILED depending on weather the job finished successfully or not. These options can be repeated several times.

Only jobs where the stdout, stderr and gmlog arguments were given in the xrsl can display the contents of those files.

For setting defaults, see the section about .ngrc (section 2.5).

1.4 ngget

The `ngget` command is used for retrieving the results from a job.

```
Usage: ngget [options] [job ...]
```

Options:

-a, -all		all jobs
-i, -joblist	*filename*	file containing a list of jobids
-c, -cluster	[-]*name*	explicitly select or reject a specific cluster
-C, -clustlist	[-]*filename*	list of clusters to select or reject
-s, -status	*statusstr*	only select jobs whose status is *statusstr*
-dir	*dirname*	download directory (the job directory will be created in this directory)
-j, -usejobname		use the jobname instead of the short ID as the job directory name
-keep		keep files on gatekeeper (do not clean)
-t, -timeout	*time*	timeout for MDS queries in seconds (default 40)
-d, -debug	*debuglevel*	0 = none, 1 = some, 2 = more, 3 = a lot
-x, -anonymous		use anonymous bind for MDS queries
-X, -gsi		use gsi-gssapi bind for MDS queries
-v, -version		print version information
-h, -help		print this help

Arguments:

job ...	list of jobids and/or jobnames

This command downloads the results after a job has completed on the NorduGrid. Only the results of jobs that have finished can be downloaded. The job can be referred to either by the jobid that was returned by `ngsub` at submission time or by its jobname if the xrsl that was submitted contained a jobname attribute.

More than one jobid and/or jobname can be given. If several jobs were submitted with the same jobname the results of all those jobs are downloaded. If the `-joblist` option is used the list of jobids is read from a file with the specified filename. By specifying the `-all` option, the results of all active jobs are downloaded.

The `-cluster` and `-clustlist` options can be used to select or reject jobs at specific clusters. The `-status` option can be used to select jobs in a specific state. For finished jobs the `-status` option will match FINISHED or FAILED depending on weather the job finished successfully or not. These options can be repeated several times.

For each job that is downloaded a subdirectory will be created in the download

directory that will contain the downloaded files.

If the download was successful the job will be removed from the remote cluster unless the -keep option was specified.

For setting defaults, see the section about .ngrc (section 2.5).

1.5 ngkill

The ngkill command is used to kill running jobs in the NorduGrid.

Usage: ngkill [options] [job ...]

Options:
```
 -a, -all                         all jobs
 -i, -joblist      filename       file containing a list of jobids
 -c, -cluster      [-]name        explicitly select or reject a specific cluster
 -C, -clustlist    [-]filename    list of clusters to select or reject
 -s, -status       statusstr      only select jobs whose status is statusstr
     -keep                        keep files on gatekeeper (do not clean)
 -t, -timeout      time           timeout for MDS queries in seconds (default 40)
 -d, -debug        debuglevel     0 = none, 1 = some, 2 = more, 3 = a lot
 -x, -anonymous                   use anonymous bind for MDS queries
 -X, -gsi                         use gsi-gssapi bind for MDS queries
 -v, -version                     print version information
 -h, -help                        print this help
```

Arguments:
```
 job ...                          list of jobids and/or jobnames
```

This command kills a running job on the NorduGrid. The job can be referred to either by the jobid that was returned by ngsub at submission time or by its jobname if the xrsl that was submitted contained a jobname attribute.

More than one jobid and/or jobname can be given. If several jobs were submitted with the same jobname all those jobs are killed. If the -joblist option is used the list of jobids is read from a file with the specified filename. By specifying the -all option, all jobs can be killed.

The -cluster and -clustlist options can be used to select or reject jobs at specific clusters. The -status option can be used to select jobs in a specific state. For finished jobs the -status option will match FINISHED or FAILED depending on weather the job finished successfully or not. These options can be repeated several times.

If the job was successful killed the job will be removed from the remote cluster unless

the `-keep` option was specified.

For setting defaults, see the section about .ngrc (section 2.5).

1.6 ngresub

The `ngresub` command is used for resubmitting jobs on the NorduGrid.

Usage: `ngresub [options] [job ...]`

Options:
`-a, -all`		all jobs
`-i, -joblist`	*filename*	file containing a list of jobids
`-c, -cluster`	[-]*name*	explicitly select or reject a specific cluster
`-C, -clustlist`	[-]*filename*	list of clusters to select or reject
`-s, -status`	*statusstr*	only select jobs whose status is *statusstr*
`-k, -kluster`	[-]*name*	explicitly select or reject a specific cluster as resubmission target
`-K, -klustlist`	[-]*filename*	list of clusters to select or reject as resubmission target
`-g, -giisurl`	*url*	url to a central GIIS
`-G, -giislist`	*filename*	list of GIIS urls
`-o, -joblist`	*filename*	file where the jobids will be stored
`-dryrun`		add dryrun option to the xrsl
`-dumpxrsl`		do not submit – dump transformed xrsl to stdout
`-keep`		keep files on gatekeeper (do not clean)
`-t, -timeout`	*time*	timeout for MDS queries in seconds (default 40)
`-d, -debug`	*debuglevel*	0 = none, 1 = some, 2 = more, 3 = a lot
`-x, -anonymous`		use anonymous bind for MDS queries
`-X, -gsi`		use gsi-gssapi bind for MDS queries
`-v, -version`		print version information
`-h, -help`		print this help

Arguments:
`job ...`	list of jobids and/or jobnames

The `ngresub` command resubmits a previously submitted job to the NorduGrid. If the xrsl describing the job contained input file locations specified as relative paths, the command must be issued in the same working directory as the original `ngsub` submission.

More than one jobid and/or jobname can be given. If several jobs were submitted with the same jobname all those jobs will be resubmitted. If the `-joblist` option is used the list of jobids is read from a file with the specified filename. By specifying the `-all` option, all jobs can be resubmitted.

The `-cluster` and `-clustlist` options can be used to select or reject jobs at specific clusters. The `-status` option can be used to select jobs in a specific state. For finished jobs the `-status` option will match FINISHED or FAILED depending on weather the job finished successfully or not. These options can be repeated several times.

The `-kluster` and `-klustlist` options on the other hand are used to define the clusters to which the resubmitted jobs will be sent. The cluster to which the job was previously submitted will be excluded from the list of possible clusters for resubmission. Also these options can be repeated several times. For a description of the `-giisurl` and `-giislist` options see the `ngsub` section (section 1.1).

If the resubmission was successful the old job will be removed from the remote cluster unless the `-keep` option was specified.

Only jobs where the gmlog argument was given in the xrsl can be resubmitted.

For setting defaults, see the section about .ngrc (section 2.5).

1.7 ngclean

The `ngclean` command removes the job from the remote cluster.

Usage: `ngclean [options] [job ...]`

Options:

`-a, -all`		all jobs
`-i, -joblist`	*filename*	file containing a list of jobids
`-c, -cluster`	[-]*name*	explicitly select or reject a specific cluster
`-C, -clustlist`	[-]*filename*	list of clusters to select or reject
`-s, -status`	*statusstr*	only select jobs whose status is *statusstr*
`-f, -force`		removes the job from the local list of jobs even if the job is not found in the MDS
`-t, -timeout`	*time*	timeout for MDS queries in seconds (default 40)
`-d, -debug`	*debuglevel*	0 = none, 1 = some, 2 = more, 3 = a lot
`-x, -anonymous`		use anonymous bind for MDS queries
`-X, -gsi`		use gsi-gssapi bind for MDS queries
`-v, -version`		print version information
`-h, -help`		print this help

Arguments:

`job ...`	list of jobids and/or jobnames

The `ngclean` command removes a job from the remote cluster. Only jobs that have finished can be removed. The job can be referred to either by the jobid that was returned by `ngsub` at submission time or by its jobname if the xrsl that was

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submitted contained a jobname attribute.

More than one jobid and/or jobname can be given. If several jobs were submitted with the same jobname all those jobs are removed. If the `-joblist` option is used the list of jobids is read from a file with the specified filename. By specifying the `-all` option, all active jobs can be removed.

The `-cluster` and `-clustlist` options can be used to select or reject jobs at specific clusters. The `-status` option can be used to select jobs in a specific state. For finished jobs the `-status` option will match FINISHED or FAILED depending on weather the job finished successfully or not. These options can be repeated several times.

The `-force` option removes the job from your local list of jobs (see section 2.4) even if the job can not be found in the MDS.

For setting defaults, see the section about .ngrc (section 2.5).

1.8 ngrenew

The `ngrenew` command can be used to renew the proxies of NorduGrid jobs.

Usage: ngrenew [options] [job ...]

Options:
-a,	-all		all jobs
-i,	-joblist	*filename*	file containing a list of jobids
-c,	-cluster	[-]*name*	explicitly select or reject a specific cluster
-C,	-clustlist	[-]*filename*	list of clusters to select or reject
-s,	-status	*statusstr*	only select jobs whose status is *statusstr*
-t,	-timeout	*time*	timeout for MDS queries in seconds (default 40)
-d,	-debug	*debuglevel*	0 = none, 1 = some, 2 = more, 3 = a lot
-x,	-anonymous		use anonymous bind for MDS queries
-X,	-gsi		use gsi-gssapi bind for MDS queries
-v,	-version		print version information
-h,	-help		print this help

Arguments:
  job ...   list of jobids and/or jobnames

This command renews the proxy of a job on the NorduGrid. The job can be referred to either by the jobid that was returned by `ngsub` at submission time or by its jobname if the xrsl that was submitted contained a jobname attribute.

More than one jobid and/or jobname can be given. If several jobs were submitted with the same jobname the proxies of all those jobs are renewed. If the `-joblist` option

is used the list of jobids is read from a file with the specified filename. By specifying the `-all` option, the proxies of all jobs can be renewed.

The `-cluster` and `-clustlist` options can be used to select or reject jobs at specific clusters. The `-status` option can be used to select jobs in a specific state. For finished jobs the `-status` option will match FINISHED or FAILED depending on weather the job finished successfully or not. These options can be repeated several times.

For setting defaults, see the section about .ngrc (section 2.5).

1.9 ngsync

The `ngsync` command synchronizes your local list of jobs with the information in the MDS.

Usage: `ngsync [options]`

Options:
`-c, -cluster`	[-]*name*	explicitly select or reject a specific cluster
`-C, -clustlist`	[-]*filename*	list of clusters to select or reject
`-g, -giisurl`	*url*	url to a central GIIS
`-G, -giislist`	*filename*	list of GIIS urls
`-f, -force`		don't ask for verification
`-t, -timeout`	*time*	timeout for MDS queries in seconds (default 40)
`-d, -debug`	*debuglevel*	0 = none, 1 = some, 2 = more, 3 = a lot
`-x, -anonymous`		use anonymous bind for MDS queries
`-X, -gsi`		use gsi-gssapi bind for MDS queries
`-v, -version`		print version information
`-h, -help`		print this help

The NorduGrid toolkit user interface keeps a local list of active jobs in the users home directory (see section 2.4). If this file is lost, or the user wants to recreate the file on a different computer, the `ngsync` command can be used to recreate the file from the information available in the MDS.

Since the information about a job in the MDS can be slightly out of date if the user very recently submitted or removed a job a warning is issued when this command is run. The `-force` option disables this warning.

The `-cluster` and `-clustlist` options can be used to select or reject clusters that should be considered in the synchronization. These options can be repeated several times. For a description of the `-giisurl` and `-giislist` options the `ngsub` section (section 1.1)

For setting defaults, see the section about .ngrc (section 2.5).

2 User configuration files

There are a few files located in the user's home directory that are used for configuring the NorduGrid user interface. These files all start with .ng.

2.1 .ngalias

In this file a user can specify a set of aliases that can be used instead of hostnames to identify clusters. An alias can represent a single cluster or a set of clusters. An alias definition can contain another alias defined earlier in the file. With this sample `.ngalias` file:

```
# Sample .ngalias file
# Comments starts with #
nglund=quark.hep.lu.se
ngoslo=grid.uio.no
myng=nglund ngoslo
```

the option `-c myng` resolves to `-c quark.hep.lu.se -c grid.uio.no`.

2.2 .nggiislist

The user can specify a personal giislist file different from the system wide default by creating the file .nggiislist in the home directory. See the discussion in the ngsub section (section 1.1) for the format of this file.

2.3 .nghistory

This file contains the jobids of the jobs the user has submitted together with the time of submission. This file is purely informational.

2.4 .ngjobs

This a local list of the user's active jobs. When a job is successfully submitted it is added to this list and when it is removed from the remote cluster it is removed from this list. This list is used as the list of all active jobs when the user specifies the `-all` option to the various NorduGrid toolkit user interface commands. For information about how to reconstruct this file if it is lost or on a different computer see the section about the `ngsync` command (section 1.9).

2.5 .ngrc

This file contains the users default settings for the debug level, the MDS query timeout and the download directory used by `ngget` (see section 1.4). A sample file could be the following.

```
# Sample .ngrc file
# Comments starts with #
NGDEBUG=1
NGTIMEOUT=60
NGDOWNLOAD=/tmp
```

If the file is missing or some options are not specified in the file, the default defaults are used. The default debug level is 0, the default MDS timeout is 40 seconds and the default download directory is the current working directory.

If the environment variables NGDEBUG, NGTIMEOUT or NGDOWNLOAD are defined these take precidence over the values defined in .ngrc. Any command line options overrides the defaults.