LQTS Documentation

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# Introduction

LQTS is a light weight job queuing system. It is meant to be very easy to run. There is no setup required, but some options may be controlled through environment variables or a *.env* file.

# The Server

LQST is a client/server app. The server runs on localhost (IP address is 127.0.0.1) and port 9200. The server has process pool and a queue that it uses to manage jobs that are submitted to it. The server is started using the *qstart.exe* program.

## qstart

On windows *qstart* causes a new cmd prompt to be created where the server starts up and run. The option *--no-popout* causes the server to start up and block the current shell.

Execute:

$ ./qstart.exe

The server will start up and display:

Starting up LoQuTuS server - 1.0.8+5bc479c

Worker pool started with 32 workers

Visit http://127.0.0.1:9200/qstatus to view the queue status

Attempting to resume queue

## Configuration

There are several environment variables that can control aspects of how LQTS runs. These environment variables are:

* LQTS\_PORT – which port to run the server on (default is 9200)
* LQTS\_NWORKERS – number of workers to use (default is number of CPUs minus 2)
* LQTS\_COMPLETED\_LIMIT – number of completed jobs for the server to “remember”. Periodically information about completed jobs is purged from memory (default is 1000)
* LQTS\_RESUME\_ON\_START\_UP – Whether or not to resume jobs that were in the queue when the server was last stopped (default is True)

# Submitting Jobs

There are four commands for submitting jobs

* qsub : submits one job to the queue
* qsub-argfile : submits multiple jobs to the queue
* qsub-cmulti : submits multiple jobs to the queue
* qsub-multi : submits multiple jobs to the queue

## qsub

The qsub command submits one job to the queue.

$ qsub --help

Usage: qsub [OPTIONS] COMMAND [ARGS]...

  Submits one job to the queue

Options:

  --priority INTEGER  [default: 1]

  --logfile TEXT      Name of log file  [default: ]

  --log               Create a log file based on the command name  [default:

                      False]

  -d, --depends LIST  Specify one or more jobs that these batch of jobs depend

                      on. They will be held until those jobs complete

                      [default: <class 'list'>]

  --debug             Produce debug output  [default: False]

  --walltime TEXT     A amount of time a job is allowed to run.  It will be

                      killed after this amount [NOT IMPLEMENTED YET]

  --cores INTEGER     Number of cores/threads required by the job  [default:

                      1]

  --port INTEGER      The port number of the server  [default: 9200]

  --ip\_address TEXT   The IP address of the server  [default: 127.0.0.1]

  --help              Show this message and exit.

Additional arguments/options are passed on to the job itself. To clearly delineate between arguments for the qsub command and the arguments for the command being submitted, use a double dash ‘--‘ . For example, consider the simple script “echoit.bat” which contains the following:

REM echoit.bat

echo %1

sleep %2

To submit this job you could issue the following command:

$ qsub --log --cores 1 echoit.bat -- "Hello, there." 5

7.000

*qsub* will echo the Job ID of the newly submitted job (7.000 in this case). The executed command would then be ‘echoit.bat "Hello, there." 5’

The log file for this job would look like:

Executed with LQTS (the Lightweight Queueing System)

LQTS Version 0.1.0

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Job ID:  7.000

WorkDir: C:/Users/CampbellBL/src/python/rebuild\_local

Command: echoit.bat "Hello, there." "5"

Started: 2020-01-07T12:18:12.145335

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STDOUT

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C:\Users\CampbellBL\src\python\rebuild\_local>echo "Hello, there."

"Hello, there."

C:\Users\CampbellBL\src\python\rebuild\_local>sleep "5"

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STDERR

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Job Performance

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Started: 2020-01-07T12:18:12.145335

Ended:   2020-01-07T12:18:17.332756

Elapsed: 0:00:05.187421

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## qsub-argfile

*qsub-argfile* is used when you have one program you want to execute multiple times. The different sets of arguments are given in a text file where each line contains the arguments for one job. A 10 line file would then cause 10 jobs to be submitted to the queue. Taking our echoit.bat example, consider an arg file (argfile.txt) that contains the following:

"Hello from 1" 2

"Hello from 2" 2

"Hello from 3" 2

"Hello from 4" 2

"Hello from 5" 2

To submit this file, you would issue the following command.

$ qsub-argfile .\echoit.bat .\argfile.txt --log

9.000 9.001 9.002 9.003 9.004

As can be seen from the output, 5 jobs have been submitted.

The log file for job 9.002 looks like this:

Executed with LQTS (the Lightweight Queueing System)

LQTS Version 0.1.0

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Job ID:  9.002

WorkDir: C:/Users/CampbellBL/src/python/rebuild\_local

Command: .\echoit.bat "Hello from 3" 2

Started: 2020-01-07T12:26:13.293260

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STDOUT

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C:\Users\CampbellBL\src\python\rebuild\_local>echo "Hello from 3"

"Hello from 3"

C:\Users\CampbellBL\src\python\rebuild\_local>sleep 2

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STDERR

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Job Performance

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Started: 2020-01-07T12:26:13.293260

Ended:   2020-01-07T12:26:15.357803

Elapsed: 0:00:02.064543

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