

Compile your MATLAB scripts and submit as a batch job

This tutorial details the procedure to compile your MATLAB script and launch it as an OAR batch job on IGRIDA.

Logging In

Start by connecting the IGRIDA frontend using SSH:

```
mymachine%ssh mylogin@igrida-oar-frontend
```

When at the IGRIDA front-end, start an interactive job:

```
oarsub -I
```

Preparing the Scripts

Let us assume that your main MATLAB function is called `main_foo`. This function has two input parameters and calls another function called `sec_foo`. Remember that output must be stored (for example in `.mat` files) on `/temp_dd/igrida-fs1/mylogin/` and never on your NFS home directory.

`main_foo.m`

```
function main_foo(x,y)
a=x+y;
c=sec_foo(a,x);
matFilename = sprintf('/temp_dd/igrida-fs1/mylogin/results.mat');
save(matFilename,a,b,c);
```

`sec_foo.m`

```
function c = sec_foo(a,x)
c=a*x;
```

In order to compile your scripts, you can use the `mcc` compiler. Note that you should limit MATLAB to a single computational thread (by default, MATLAB makes use of the multithreading capabilities of the computer on which it is running). All your MATLAB scripts should be given as arguments starting with `main_foo.m`. The syntax of the `mcc` command is given hereafter:

```
module load matlab
```

```
/soft/matlab_hd/R2012b/bin/mcc -R -singleCompThread -m main_foo.m sec_foo.m
```

As a good practice, it is recommended that you create a log directory, located in /temp_dd/igrida-fs-1/mylogin, where the run will take place. In particular, your run outputs should never be written to your home directory, which would necessarily drive to an NFS crash at some time. For instance, type:

```
mkdir -p /temp_dd/igrida-fs1/mylogin/log/
```

Then, create an OAR launch script in your home directory /udd/mylogin/matlab-igrida-demo/. In this script, you start by loading the Matlab module. You can also specify the number of cores and the wall time. Do not forget to redirect the output and the error of the OAR job. The launch script ends by calling your Matlab m-file.

oar-launch-script.sh

```
#!/bin/bash
source /etc/profile.d/modules.sh
module load matlab

#OAR -l core=10,walltime=6:00:00
#OAR -O /temp_dd/igrida-fs1/mylogin/log/job.%jobid%.output
#OAR -E /temp_dd/igrida-fs1/mylogin/log/job.%jobid%.error
echo "My job was ran on these nodes:"
cat $OAR_NODEFILE

#Setup MCR cache directory locally
export MCR_CACHE_ROOT=/tmp/mcr_cache_${USER}_OAR_JOBID_${OAR_JOBID}
mkdir -p $MCR_CACHE_ROOT

#cd to your execution directory first
cd /udd/mylogin/matlab-igrida
matlab -r matlab-demo

#Remove temporary MCR cache directory
/bin/rm -rf $MCR_CACHE_ROOT
```

In your Matlab file matlab-demo.m, all the output must be redirected to the /temp_dd/igrida-fs1/mylogin/ filesystem. Here is a simple example:

```
a=1;
b=a+1;
matFilename = sprintf('/temp_dd/igrida-fs1/mylogin/results.mat');
save(matFilename,a,b);
```

Prepare you OAR launch script to be executed:

```
igrida-oar-frontend%chmod +x oar-launch-script.sh
```

Launching the Job

You can now submit eh job using the command oarsub as in the following:

```
igrida-oar-frontend%oarsub -S oar-launch-script.sh  
[ADMISSION RULE] Modify resource description with type constraints  
[ADMISSION RULE] Job walltime greater than 4 hours, adding property  
duration_weight > 2 (large job).  
Generate a job key...  
OAR_JOB_ID=666666
```

Step back and watch your job being executed.

Verifying the Output

If you need to follow the execution of your job, you can check the status of all your jobs:

```
igrida-oar-frontend%oarstat -f | grep mylogin
```

and verify the output or the errors generated using a specific job ID:

```
igrida-oar-frontend%more /temp_dd/igrida-fs1/mylogin/log/job.jobID.output  
igrida-oar-frontend%more /temp_dd/igrida-fs1/mylogin/log/job.jobID.error
```

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