Running Matlab on Mamaku

A beginners guide
(with thanks to SAW)

Mamaku: Some Details

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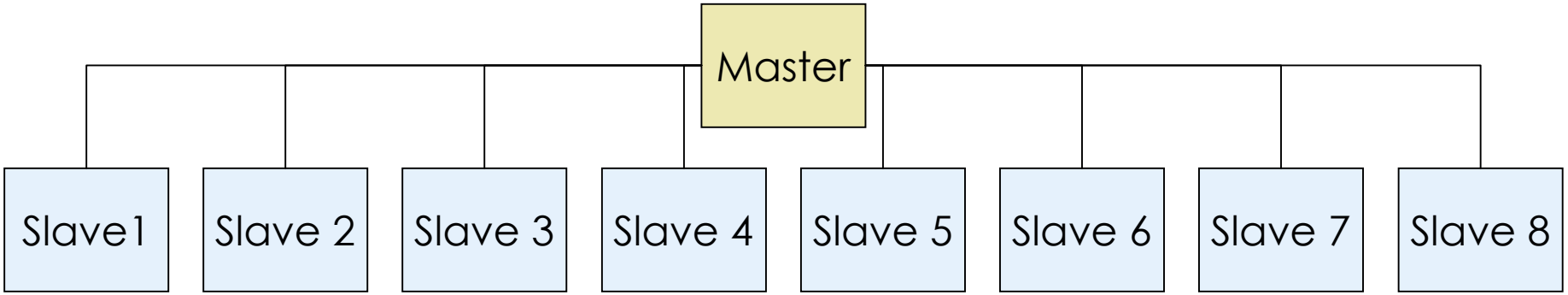
- New AtMol cluster, consisting of 1 **master node** and 8 **slave nodes**.
- 1 TB storage capacity.
- Each node has 2 dual core 2.4 GHz processors (AMD Opteron 280) and 4 GB RAM.

Structure of Mamaku



- Role of master node is to **control** slave nodes.
- Role of slave nodes is to carry out **computations** (serial, not parallel).
- 8 slave nodes * 2 processors * 2 cores = maximum of **32 simultaneous jobs**.

Logging into Mamaku

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- You may need to email Mark Short to set up an account: <mark.short@durham.ac.uk>.

- A **secure connection** is required. From a unix/linux machine, or a Mac using X11,

  ```
  ssh -X dph0sag@mamaku.phyatph.dur.ac.uk
  ```

  you will then be prompted for your **password**.

- This will bring you to the master node. However, you **should not** use the master node for intensive computation.

Running Matlab

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- If you have a matlab script **grind.m**, you can in principle run this by

```
/usr/local/bin/matlab < grind.m
```

- However, for any sizable computation you should submit **grind.m** as a **batch job**.

- This involves writing a **script**.

Writing the Script **grind.csh**

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```
#!/bin/csh
# use current working directory
#$ -cwd
# combine error and output files
#$ -j y
# send email at start (s) and end (e)
#$ -m se
# email address
#$ -M s.a.gardiner@durham.ac.uk
# execute command(s)
setenv DISPLAY ""
/usr/local/bin/matlab < grind.m
```

- Leave a **carriage return** at the end (this is important!)

Making **grind.csh** Executable

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- On the command line, type in

```
chmod u+x grind.csh
```

- This is to **ch**ange the **mod**e of the file for the **u**ser (you) to be e**x**ecutable.

Submitting **grind.csh**

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- On the command line, type in

  ```
  qsub grind.csh
  ```

- Check the **progress** of the job with

  ```
  qstat
  ```

- You will receive an **email**, with some statistics (how much cpu time used etc) upon the conclusion of the job

Notification Email

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```
From:    root@mamaku.phyatph.dur.ac.uk
Subject: Job 609 (grind.csh) Complete
Date: 16 April 2007 09:25:54 BDT
To:    s.a.gardiner@durham.ac.uk

Job 609 (grind.csh) Complete
User              = dph0sag
Queue             = all.q@node8.cluster
Host              = node8.cluster
Start Time        = 04/16/2007 09:25:46
End Time          = 04/16/2007 09:25:54
User Time         = 00:00:04
System Time       = 00:00:01
Wallclock Time    = 00:00:08
CPU               = 00:00:05
Max vmem          = 1.600G
Exit Status       = 0
```

File Transfer

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- It is possible to edit files on mamaku using **vi** or **emacs** or the matlab editor, but in general you should develop programs on your desktop machine

- Such files **must** also be transferred securely (requiring a password), using **scp**, **winscp3**, or similar. The same goes for data transferred back to your desktop

- If all your matlab files on mamaku are in the directory **matlabprogs**:

```
scp grind.m dph0sag@mamaku.phyatph.dur.ac:matlabprogs/
scp dph0sag@mamaku.phyatph.dur.ac.uk:matlabprogs/grinddata.dat .
```

Things to Note

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- The matlab installation on mamaku does not allow eg **grind.m** to call another matlab script eg **subgrind.m**

- However, **grind.m** may call a self-written function file eg **grindfunction.m**

- We presently have **10** floating Matlab licenses