

Cluster-user meeting

Jeroen van Beeck
Tom de Geus
Bart Vossen
Leo Wouters

MaTecluster@tue.nl
L.H.G.Wouters@tue.nl



Cluster manual

2

`www.mate.tue.nl/~cluster`

- ▶ cluster manual
- ▶ this and previous presentations
- ▶ ...

This meeting is supposed to be interactive:

Feel free to interrupt at any time

Cluster-user meeting goal


3

**increase knowledge
and
stimulate discussion/collaboration**

- ▶ Computing cluster, the basics...
- ▶ Monitoring jobs
- ▶ Etiquette
- ▶ Getting help

Overview of cluster users

4

 Cluster manual
 Site ▾ Page ▾ « Language specific... Source

Cluster users

[User overview](#)
[MSC.Marc](#)
[Abaqus](#)
[TFEM](#)
[Mathematica](#)
[C++](#)
[Python](#)
[Linux/Bash](#)
[SEPRAN](#)
[MATLAB](#)
[Source](#)

Cluster users

Help wanted

Not listed? Are you missing a user? Is something incorrect or outdated?

Please contact: MaTeCluster@tue.nl

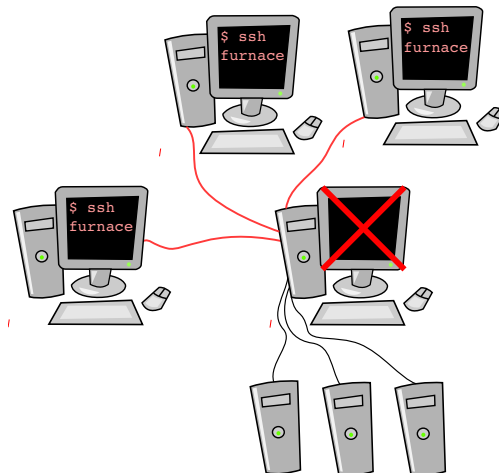
- [User overview](#)
- [MSC.Marc](#)
- [Abaqus](#)
- [TFEM](#)
- [Mathematica](#)
- [C++](#)
- [Python](#)
- [Linux/Bash](#)
- [SEPRAN](#)
- [MATLAB](#)

User overview

First name	Last name	username	email address	software
Richard	Lopata		rlopata@tue.nl	MATLAB; Abaqus+Python
Anastasia	Krushynska	akrushyn	a.o.krushynska@tue.nl	MSC.Marc+subroutines; MATLAB
Alberto	Salvadori	alberto	a.salvadori@tue.nl	Mathematica; Abaqus
Andre	Ruybalid	andre	a.p.ruybalid@tue.nl	MATLAB; Python (limited); MSC.Marc
Anne	Romgens	aromgens	a.m.romgens@tue.nl	Abaqus
Bart	Vossen	bart	b.g.vossen@tue.nl	Linux/Bash; MATLAB; MSC.Marc+subroutines
Bart	Welling	bjwelling	b.j.welling@student.tue.nl	MSC.Marc
Emiel	van Disseldorp	emieli	e.m.j.v.disseldorp@student.tue.nl	Abaqus
Jeroen	van Beeck	jeroen	j.v.beeck@tue.nl	Python; Linux/Bash; MATLAB; MSC.Marc+subroutines
Marit	Hermens	marit	m.hermens@student.tue.nl	MSC.Marc
Mariëke	Pluijmer	mpluijmer	m.h.pluijmer@tue.nl	SEPRAN; MATLAB

Computing cluster

5



to connect: `ssh jeroen@furnace.wfw.wtb.tue.nl`

Job submission

6

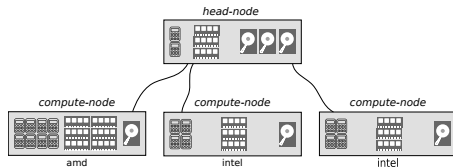
- ▶ Jobs are submitted to the queue through .pbs files.
- ▶ .pbs contains
 - scheduler directives
 - program
- ▶ `qsub myjob.pbs` submits the job

Example:

```
#!/bin/bash
#PBS -S /bin/bash
#PBS -j oe
#PBS -o pbs.out
#PBS -l nodes=1:ppn=1:intel
#PBS -l pmem=20gb
#PBS -l pvmem=20gb

# print the working directory
pwd

# print a personal string
echo "Hello world"
```



Job monitoring

7

- ▶ myqstat when logged in on furnace

```

jid      , owner      , job name      , host , cpus  , mem  , S  , time , score
----- , ----- , ----- , ---- , ----- , ---- , -- , ---- , -----
202169 , tdegeus  , myjob.pbs    , 11   , 1:1:i , 1mb  , R  , 10s  , 1.00

```

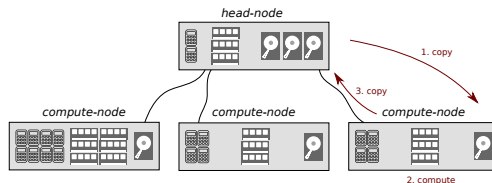
...

- ▶ Log in to a compute-node via `ssh compute-0-n`
 - go to running directory: `cd /state/partition1/username/`
 - `top` → process list
 - `df -h` and `du -h` → hard disk space
- ▶ www.furnace.wfw.wtb.tue.nl/ganglia

Etiquette

8

- ▶ Claim what you use and use what you claim!
 - ▶ Everything is shared between users
 - ▶ If a node runs out of memory, all jobs on it fail
 - ▶ Claim more CPU's than necessary: blocking part of the cluster
 - ▶ Claim less CPU's than necessary: every job slows down
-
- ▶ Monitor available resources: `myqstat -N --long`
 - ▶ Run heavy I/O jobs locally on the compute-node by copying all data necessary before start and after the run.



Intermezzo: questions?

9

For more information:

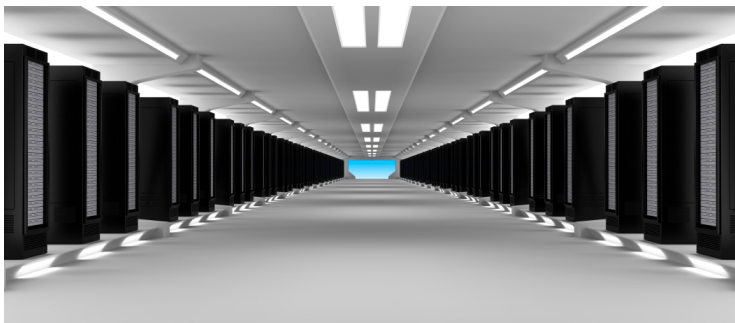
- ▶ `www.mate.tue.nl/~cluster`
- ▶ To be announced:
in-depth presentation for new or future users.



New cluster

10

- ▶ Furnace is 5 years old
- ▶ A replacement cluster will be acquired this year
- ▶ Anyone with knowledge and interest can provide input
- ▶ A meeting will be organized for those interested



Hands on demonstration

11

- ▶ `www.furnace.wfw.wtb.tue.nl/ganglia`
- ▶ `myqstat` and `compute-node` job monitoring

Open discussion

12

Any open questions or topics to discuss?

- ▶ Jeroen van Beeck
- ▶ Tom de Geus
- ▶ Bart Vossen
- ▶ Leo Wouters

- ▶ `MaTeccluster@tue.nl`
- ▶ `L.H.G.Wouters@tue.nl`