Update on NIKHEF D0 farm

June 2002

Outline

- Status of D0 farm
  - Upgrades
  - Move into grid network
- Use of EDG testbed and DAS-2 cluster
  - Modifications of mc_runjob
- Some conclusions

Configuration of D0 farm

- All software on server

  – Easy modification of code

- Nodes booted from server

  – Easy replacement of nodes

- Designed for D0 MCC but usable for others

  – Antares
  – L3/cosmics

Upgrades

- Farm server and nodes upgraded to RH 7.2
    - File server still RH 6.2 (no driver for RAID)
- SAM
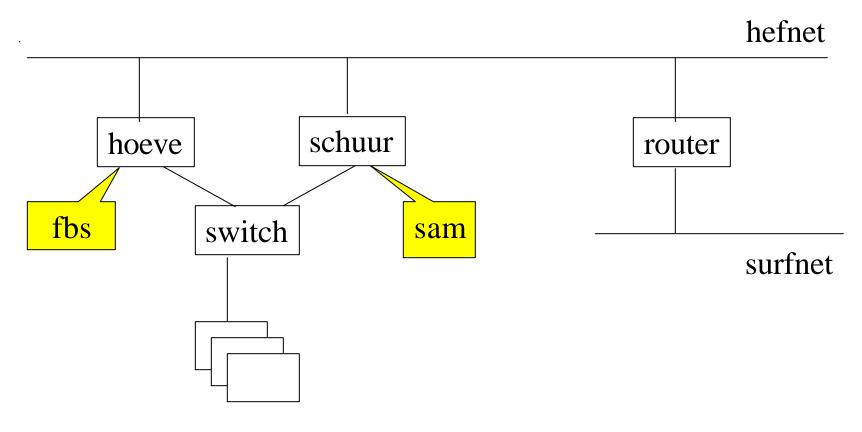- fbsng
- mc_runjob
- p10.15.1

Experiences after upgrade

- Performance of SAM improved
  - Almost no resubmits
- MCC problems
  - Filenames too long
    - Accepted by SAM, rejected by Enstore
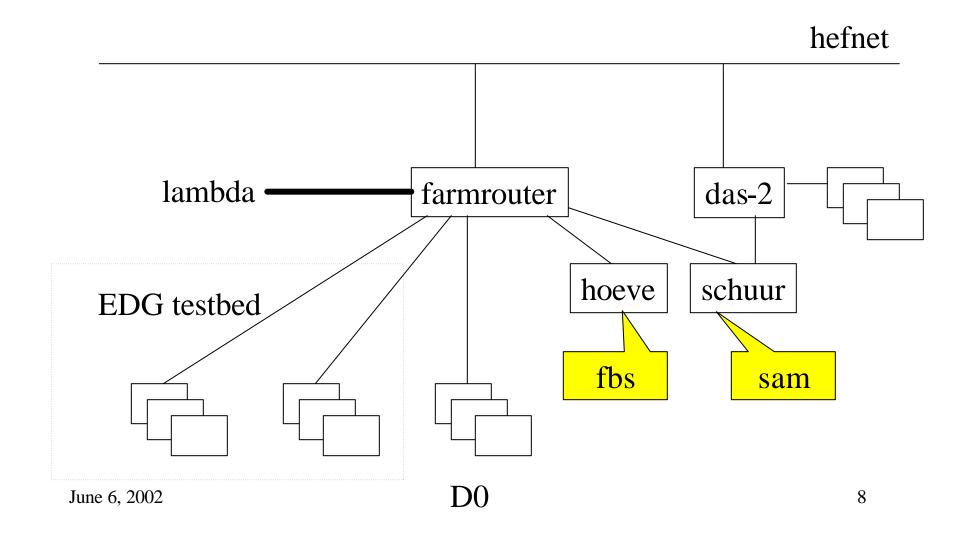 - Complex division by zero in pythia

How to get more cpu's for D0

- Use idling nodes of
  - EDG testbed (now 20 cpu's)
  - DAS-2 cluster (now 64 cpu's)
- Therefore:
  - Move D0 farm into grid network
  - Adapt mc_runjob

Old network layout

hefnet

hoeve   schuur   router

fbs   switch   sam

surfnet

New network layout

hefnet

lambda — farmrouter   das-2

EDG testbed

hoeve   schuur

fbs   sam

D0

New configuration

- All nodes behind router
- Almost all servers behind router
  - DAS-2 must be reachable from outside
- Software now installed on nodes (LCFG)
- SAM station on schuur

Modification of mc_runjob

- remove calls to batch from RunJob.py

- separate code and data

- package code in rpm
  - 1.2 GB
  - takes hours to create RPM

- install rpm on nodes with LCFG

Grid job

PBS job

submit

```
[willem@tbn09 willem]$ cat test.pbs

#PBS -l nodes=1

# Changing to directory as requested by user

cd /home/willem

# Executing job as requested by user

./submit minbias.macro
```

```
#!/bin/sh

macro=$1

pwd=`pwd`

cd /opt/fnal/d0/mcc/mcc-dist
. mcc_dist_setup.sh

cd $pwd
dir=/opt/fnal/d0/mcc/mc_runjob/py_script
python $dir/Linker.py script=$macro
```

RunJob class for grid

```
class RunJob_farm(RunJob_batch) :
 def __init__(self,name=None) :
  RunJob_batch.__init__(self,name)
  self.myType="runjob_farm"

 def Run(self) :
  self.jobname = self.linker.CurrentJob()
  self.jobnaam = string.splitfields(self.jobname,'/')[-1]
  comm = 'chmod +x ' + self.jobname
  commands.getoutput(comm)
  if self.tdconf['RunOption'] == 'RunInBackground' :
   RunJob_batch.Run(self)
  else :
   bq = self.tdconf['BatchQueue']
   dirn = os.path.dirname(self.jobname)
   comm = 'cd ' + dirn + '; sh ' + self.jobnaam + ' `pwd` >& stdout'
   runcommand(comm)
```

First experiences

- Jobs submitted on EDG and DAS-2 with PBS
- Wait between the submission of jobs!
- Don't forget the time limit
  - Specs different on EDG and DAS-2
  - We need dg-job-submit

Some conclusions

- The EDG setup is more scalable but (yet) less flexible
- We have to rethink MCC
  - Smaller tar balls
  - Location of card files
  - Location of minimum bias files
- We started the irreversible road to the Grid