# Bucharest ATLAS Analysis Facility

# BAAF

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**BAAF** – consist of a non-homogeneous PROOF cluster

**BAAF** – computing cluster driven by Condor

**BAAF** – use CernVM File System

**BAAF** – dedicated to members of Bucharest ATLAS group

Hardware overview:

1 Masternode – with 8 cores and 7TB storage

5 Slavenodes - 3 with 8 cores

- 2 with 4 cores

Total of 40 cores

Network – 1Gbps in a private network

## Software overview

Masternode – it has root v5.26.00e +pythia6, pythia8

– installed and configured Delphes-1.9

– installed and configured HepMC

– installed and configured Athena 16.0.2 and 16.6.4 via pacman-3.29

– installed and configure Athena 17.0.4 via CVMFS

# Software overview

Masternode – access to the latest Athena and root versions via CVMFS

– configured as glite-UI with the dq2-tools

– configured as masternode of the Proof cluster(for analysis)

– manager of the Condor cluster; submitting and scheduling jobs(for simulations)

– configured to store data via xrootd

Software overview:

Slavenodes – all of the nodes are configured with root-v5.26.00e +pythia6, pythia8, Delphes and HepMC

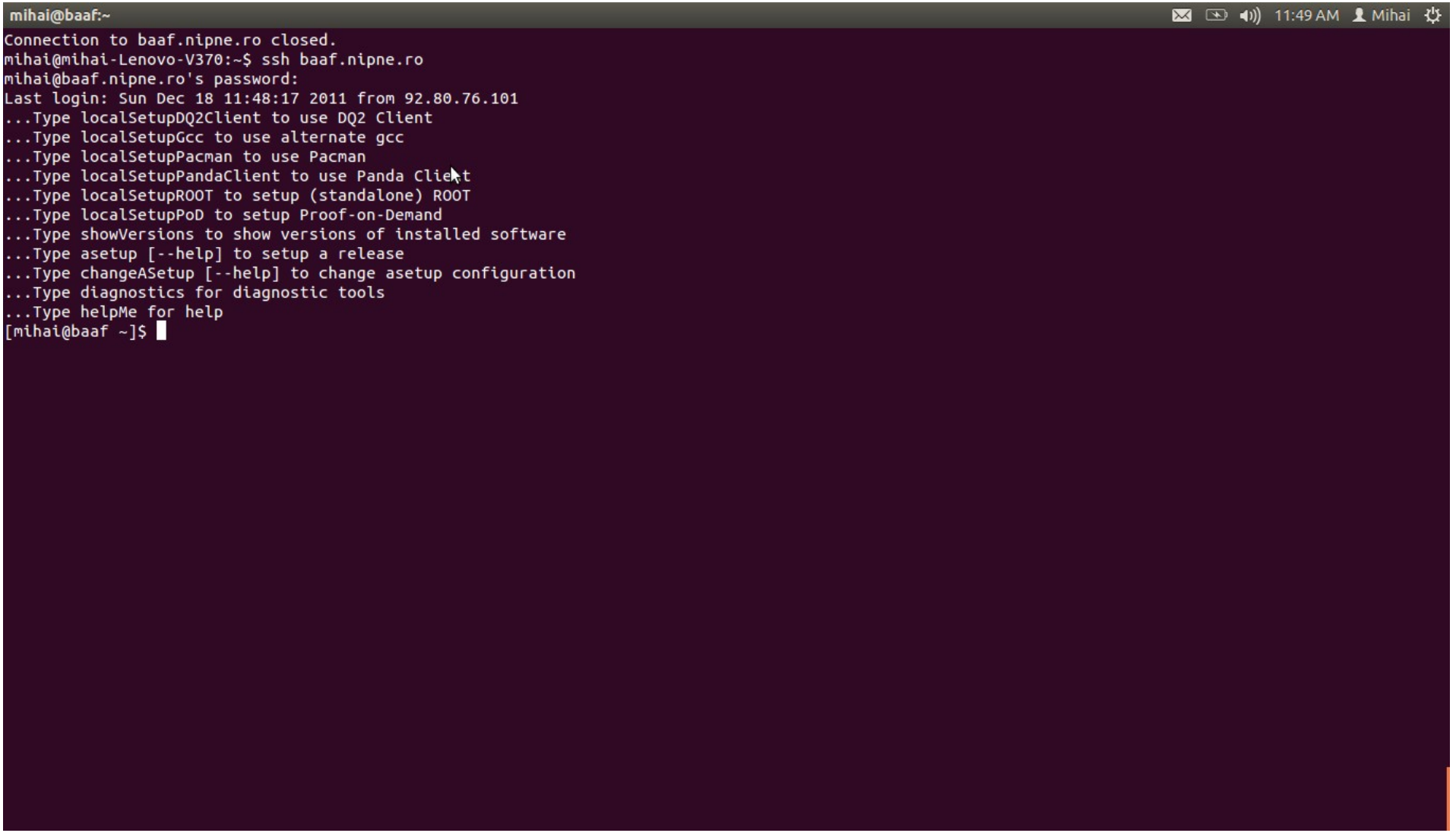
Slavenodes – configured as executant of Condor jobs

Slavenodes – are connected via a private network to baaf.nipne.ro, masternode; only the masternode can be accessed from Internet

CVMFS – is a network file system based on HTTP and optimized to deliver experiment software in a fast, scalable, and reliable way; files and file metadata are cached and downloaded on demand

CVMFS at BAAF – once the users are logged in baaf.nipne.ro they are able to access and use the ATLAS software

– the data are accessed via a squid (proxy) server installed locally

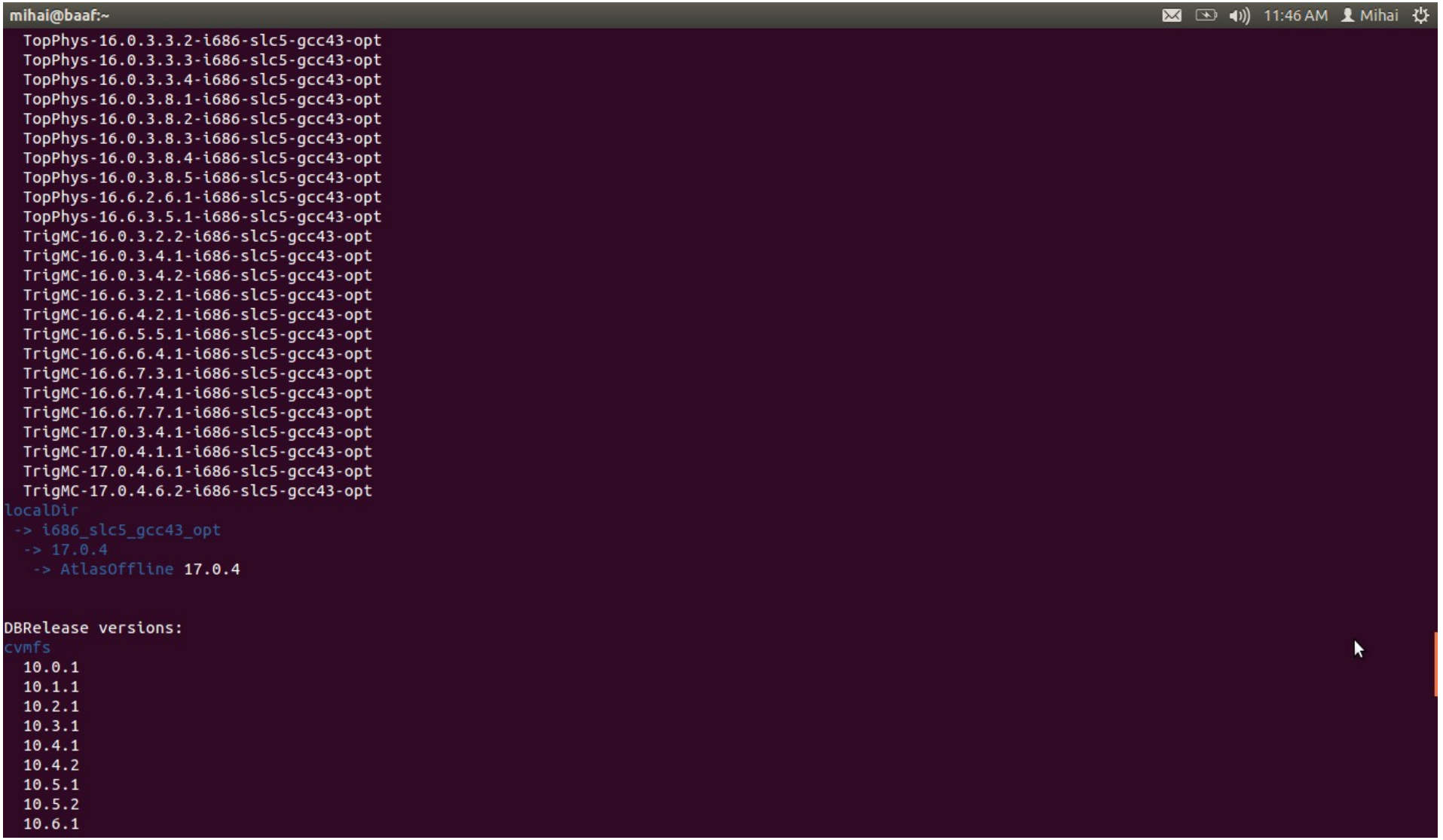

mihai@baaf:~
11:49 AM
Mihai
Connection to baaf.nipne.ro closed.
mihai@mihai-Lenovo-V370:~$ ssh baaf.nipne.ro
mihai@baaf.nipne.ro's password:
Last login: Sun Dec 18 11:48:17 2011 from 92.80.76.101
...Type localSetupDQ2Client to use DQ2 Client
...Type localSetupGcc to use alternate gcc
...Type localSetupPacman to use Pacman
...Type localSetupPandaClient to use Panda Client
...Type localSetupROOT to setup (standalone) ROOT
...Type localSetupPoD to setup Proof-on-Demand
...Type showVersions to show versions of installed software
...Type asetup [--help] to setup a release
...Type changeASetup [--help] to change asetup configuration
...Type diagnostics for diagnostic tools
...Type helpMe for help
[mihai@baaf ~]$

root@baaf:~ 12:01 PM Mihai

```
# Don't edit here.  Create /etc/cvmfs/default.local.
# As a rule of thumb, overwrite only parameters you find in here.
# If you look for any other parameter, check /etc/cvmfs/domain.d/<your_domain>.(conf|local)
# and /etc/cvmfs/config.d/<your_repository>.(conf|local)
#
# Parameter files are sourced in the following order
# /etc/cvmfs/default.conf
# /etc/cvmfs/default.local
# /etc/cvmfs/domain.d/<your_domain>.conf
# /etc/cvmfs/domain.d/<your_domain>.local
# /etc/cvmfs/config.d/<your_repository>.conf
# /etc/cvmfs/config.d/<your_repository>.local
#
# Use cvmfs_config showconfig to get the effective parameters.
#

CVMFS_REPOSITORIES=atlas.cern.ch,atlas-condb.cern.ch
CVMFS_HTTP_PROXY="http://atrogr008.nipne.ro:3128"

#CVMFS_CACHE_BASE=/var/cache/cvmfs2
CVMFS_CACHE_BASE=/data/cvmfs2
CVMFS_QUOTA_LIMIT=30000
CVMFS_DEFAULT_DOMAIN=cern.ch
CVMFS_TIMEOUT=5
CVMFS_TIMEOUT_DIRECT=10
CVMFS_STRICT_MOUNT=yes
CVMFS_FORCE_SIGNING=yes
CVMFS_NFILES=32768

# Don't touch the following values unless you're absolutely
# sure what you do.  Don't copy them to default.local either.
if [ "x$CVMFS_BASE_ENV" == "x" ]; then
  readonly CVMFS_USER=cvmfs
  readonly CVMFS_MOUNT_DIR=/cvmfs
#  readonly CVMFS_MOUNT_DIR=/data/cvmfs
  readonly CVMFS_OPTIONS=allow_other,entry_timeout=60,attr_timeout=60,negative_timeout=60,use_ino
  readonly CVMFS_BASE_ENV=1
fi
~
~
```

# Installing software via CVMFS

- Once the cvmfs is working the software is installed via Tier3SW package
- Running updateManageTier3SW.sh script will install ATLASLocalRootBase directory
- To install or remove a version of Athena is use the createConfigurationFiles.sh script which is generating a few files containing the lists of software which is installed or to be installed/removed
- The last step in installation is running the following command: ./parseConfigFiles.sh --mirror=am-CERN –doRun


mihai@baaf:~
11:46 AM
Mihai
TopPhys-16.0.3.3.2-i686-slc5-gcc43-opt
TopPhys-16.0.3.3.3-i686-slc5-gcc43-opt
TopPhys-16.0.3.3.4-i686-slc5-gcc43-opt
TopPhys-16.0.3.8.1-i686-slc5-gcc43-opt
TopPhys-16.0.3.8.2-i686-slc5-gcc43-opt
TopPhys-16.0.3.8.3-i686-slc5-gcc43-opt
TopPhys-16.0.3.8.4-i686-slc5-gcc43-opt
TopPhys-16.0.3.8.5-i686-slc5-gcc43-opt
TopPhys-16.6.2.6.1-i686-slc5-gcc43-opt
TopPhys-16.6.3.5.1-i686-slc5-gcc43-opt
TrigMC-16.0.3.2.2-i686-slc5-gcc43-opt
TrigMC-16.0.3.4.1-i686-slc5-gcc43-opt
TrigMC-16.0.3.4.2-i686-slc5-gcc43-opt
TrigMC-16.6.3.2.1-i686-slc5-gcc43-opt
TrigMC-16.6.4.2.1-i686-slc5-gcc43-opt
TrigMC-16.6.5.5.1-i686-slc5-gcc43-opt
TrigMC-16.6.6.4.1-i686-slc5-gcc43-opt
TrigMC-16.6.7.3.1-i686-slc5-gcc43-opt
TrigMC-16.6.7.4.1-i686-slc5-gcc43-opt
TrigMC-16.6.7.7.1-i686-slc5-gcc43-opt
TrigMC-17.0.3.4.1-i686-slc5-gcc43-opt
TrigMC-17.0.4.1.1-i686-slc5-gcc43-opt
TrigMC-17.0.4.6.1-i686-slc5-gcc43-opt
TrigMC-17.0.4.6.2-i686-slc5-gcc43-opt
localDir
-> i686_slc5_gcc43_opt
-> 17.0.4
-> AtlasOffline 17.0.4
DBRelease versions:
cvmfs
10.0.1
10.1.1
10.2.1
10.3.1
10.4.1
10.4.2
10.5.1
10.5.2
10.6.1

# Data analysis with Proof:

– after creating the chain start the Proof:

TProof *proof = Tproof::Open (“baaf.nipne.ro”)

chain->SetProof()

– to analyze a tree create a skeleton:

tree->MakeSelector(“Analyzer”)

– edit the generated files Analyzer.h and Analyzer.C and process the data:

chain->Process(“Analyzer.C”)

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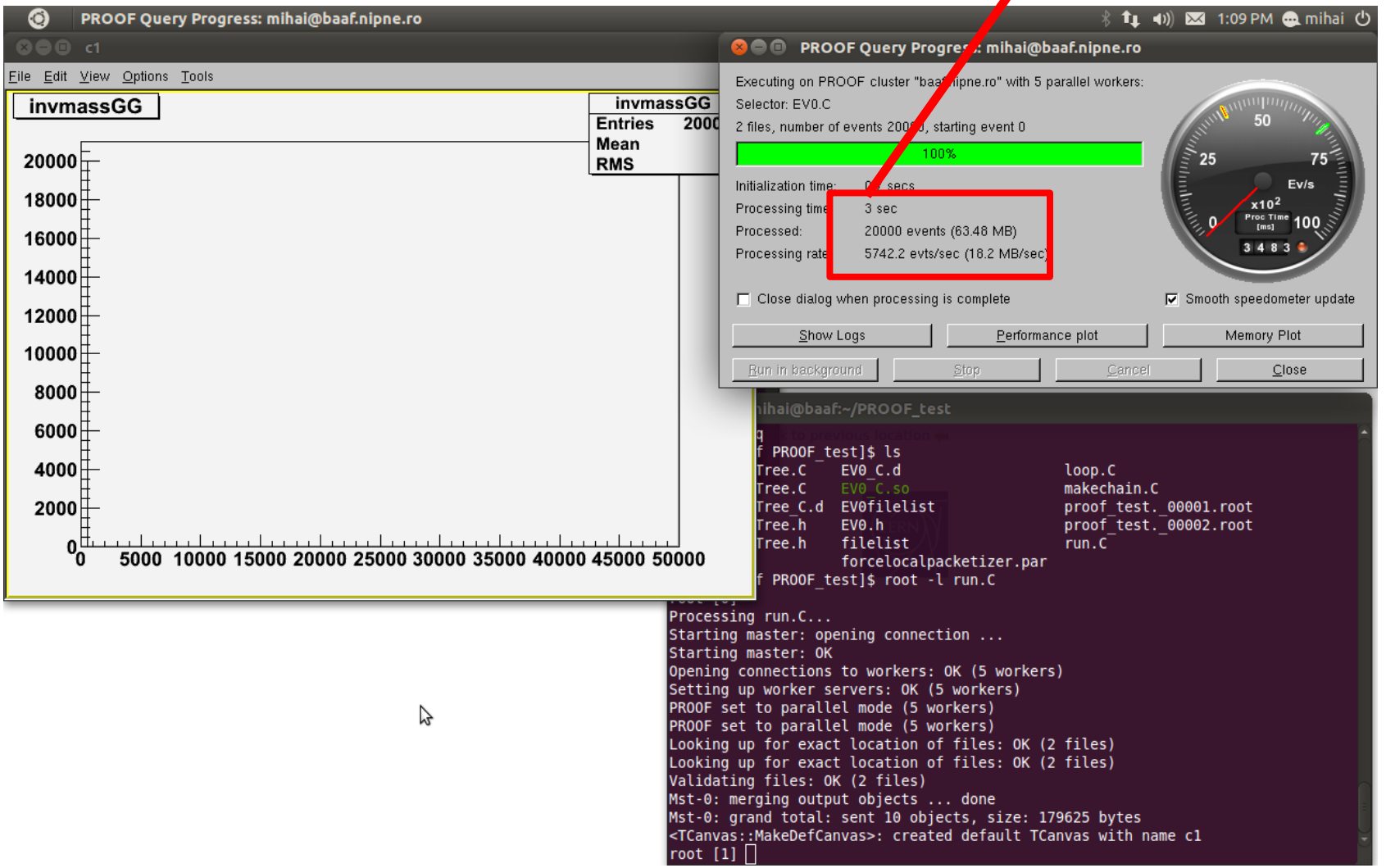


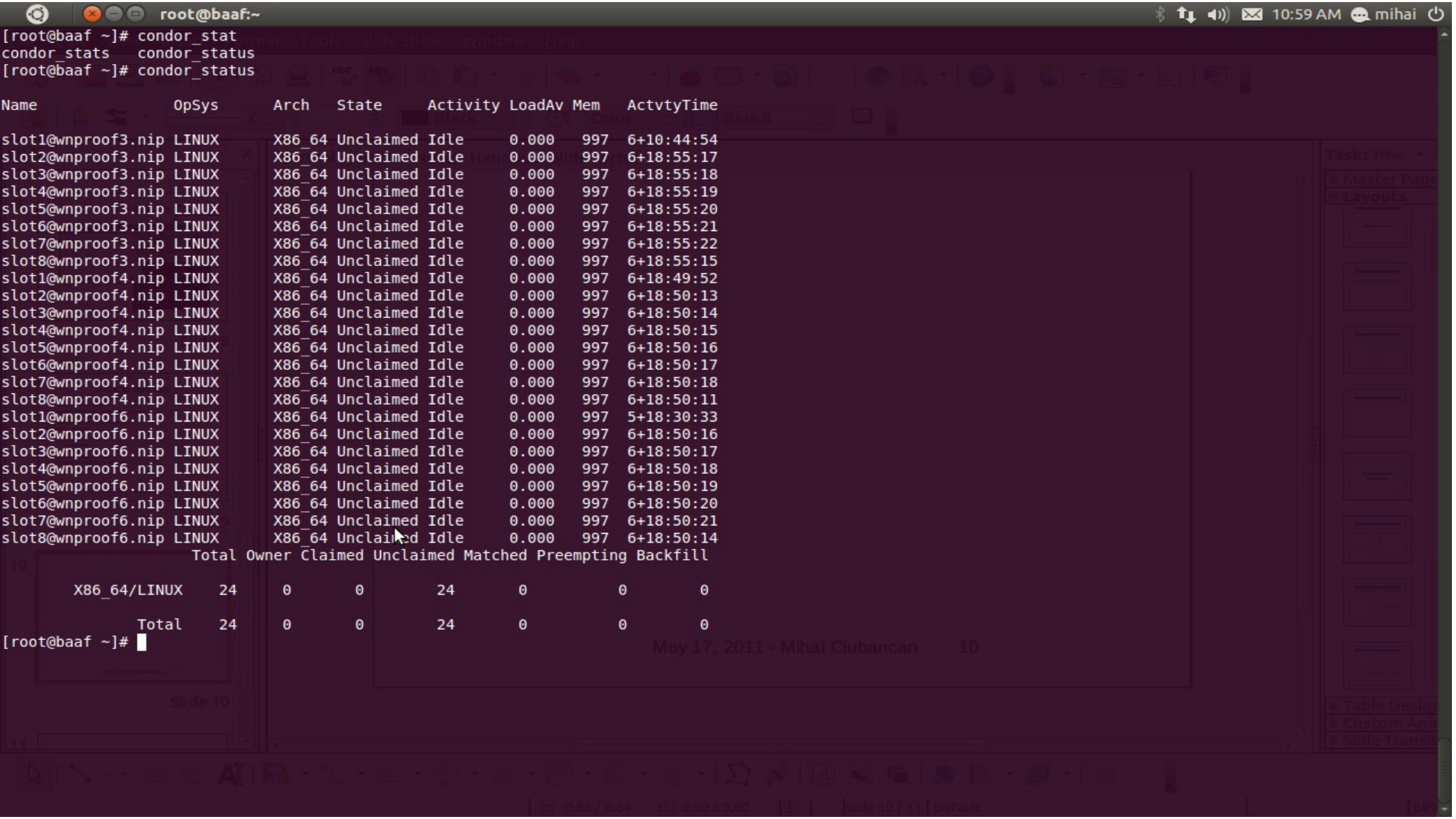
# Running simulations via Condor:

– runnig jobs via condor using condor_submit command:

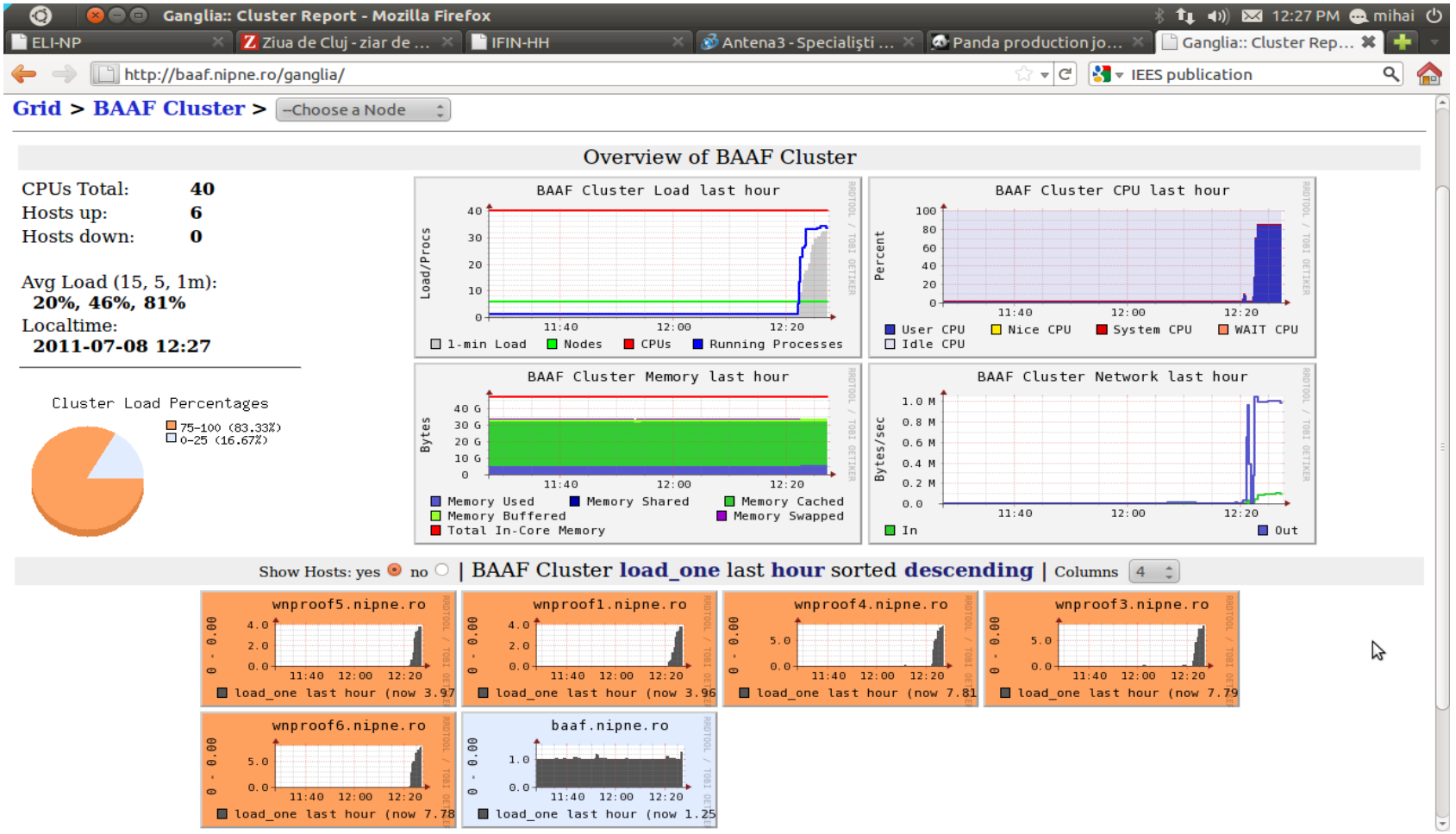
condor_submit pythia6.job

– the submit file consists of a set of commands:

```
Executable = run_pythia
Output      = main45.out
Error       = main45.err
Log         = main45.log
should_transfer_files = YES
when_to_transfer_output = ON_EXIT
transfer_input_files = main45.exe, libPythia6.so
Queue
```


root@baaf:~
10:59 AM
mihai
[root@baaf ~]# condor_stat
condor_stats condor_status
[root@baaf ~]# condor_status
Name OpSys Arch State Activity LoadAv Mem ActvtyTime
slot1@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+10:44:54
slot2@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:55:17
slot3@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:55:18
slot4@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:55:19
slot5@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:55:20
slot6@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:55:21
slot7@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:55:22
slot8@wnproof3.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:55:15
slot1@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:49:52
slot2@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:13
slot3@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:14
slot4@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:15
slot5@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:16
slot6@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:17
slot7@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:18
slot8@wnproof4.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:11
slot1@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 5+18:30:33
slot2@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:16
slot3@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:17
slot4@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:18
slot5@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:19
slot6@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:20
slot7@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:21
slot8@wnproof6.nip LINUX X86_64 Unclaimed Idle 0.000 997 6+18:50:14
Total Owner Claimed Unclaimed Matched Preempting Backfill
X86_64/LINUX 24 0 0 24 0 0 0
Total 24 0 0 24 0 0 0
[root@baaf ~]#

# Monitoring the cluster with ganglia:



Future plans:

To become a Tier3g facility

– has Grid connectivity - able to get ATLAS data from the Grid

- has no ability to accept jobs from outside itself

- will be able to analyze ATLAS data-sets(AODs, DPDs, Raw data)

THANK YOU!