

How to submit jobs on the INFN-CNAF cluster

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Introduction

- 12 dedicated nodes on the CNAF HPC cluster which run in LSF → 32 cores per node with HT
(more information will be provided during the next ABP-CWG meeting)

HOST_NAME	STATUS	JL/U	MAX	NJOBS	RUN	SSUSP	USUSP	RSV
hpc-201-11-01-a	closed	-	64	64	64	0	0	0
hpc-201-11-01-b	closed	-	64	0	0	0	0	0
hpc-201-11-02-a	closed	-	64	64	64	0	0	0
hpc-201-11-02-b	closed	-	64	64	64	0	0	0
hpc-201-11-03-a	closed	-	64	64	64	0	0	0
hpc-201-11-03-b	closed	-	64	64	64	0	0	0
hpc-201-11-04-a	closed	-	64	64	64	0	0	0
hpc-201-11-04-b	closed	-	64	64	64	0	0	0
hpc-201-11-05-a	closed	-	64	64	64	0	0	0
hpc-201-11-05-b	closed	-	64	64	64	0	0	0
hpc-201-11-06-a	closed	-	64	64	64	0	0	0
hpc-201-11-06-b	closed	-	64	64	64	0	0	0

Introduction

- For information about getting an account, please send an email to abp-cwg-admin@cern.ch
Once your account has been setup, log in on the ssh client using the command
[\[username\]@bastion.cnaf.infn.it](mailto:[username]@bastion.cnaf.infn.it)

```
Last login: Wed Jul  5 13:48:24 on ttys000
[annalisa:~ annalisa$ ssh giadarol@bastion.cnaf.infn.it
[giadarol@bastion.cnaf.infn.it's password:
Last login: Wed Jul  5 13:33:02 2017 from 194.12.167.239

+-----+
                INFN CNAF - Bastion Host
                (login03.cnaf.infn.it)
        In case of problems, mail to: sysop@cnaf.infn.it
+-----+

N.B.: Home directory content is not backedup and a quota is applied.

soft quota = 100 MB (guaranteed)
hard quota = 200 MB (exceeding data may be periodically deleted to reach
                soft limit, in function of home dir space)

"/scratch"  is temporary unavailable.

+-----+
```

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+-----+

[-bash-4.1$ ssh ui-hpc2.cr.cnaf.infn.it
```

← To access the cluster log into

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 - To access to the cluster from bastion log into: ui-hpc2.cr.cnaf.infn.it
- Information on how to setup python (including mpi4py) without admin rights in the working folder can be found at : [https://github.com/PyCOMPLETE/PyELOUD/wiki/Setup-python-\(including-mpi4py\)-without-admin-rights](https://github.com/PyCOMPLETE/PyELOUD/wiki/Setup-python-(including-mpi4py)-without-admin-rights)

```
(py2.7) [giadarol@ui-hpc2 sim_workspace_PyECPyHT]$ ls
BG017_HLLHC_450GeV_dipOFF_quadON_Qpscan_oct-2_damperON_ppbscan      PyELOUD      python27
BG017_HLLHC_450GeV_dipOFF_quadON_Qpscan_oct-2_damperON_ppbscan_WRONG PyHEADTAIL   python_src
download_and_install_PyECPyHT.sh                                     PyKLU        test_sims
example_PyECPyHT_CNAF_study                                         PyPARIS      virtualenvs
git                                                                    PyPIC
LHC_450GeV_dipOFF_quadON_Qp0_oct0_damperOFF_ppbscan_lengthscan     PySUSSIX
```

How to submit jobs

- Example for submitting single batch jobs

Options to submit
a job to LSF

```
#BSUB -J int_0009
#BSUB -o %J.out
#BSUB -e %J.err
#BSUB -N
#BSUB -B
#BSUB -q hpc_acc
#B -a openmpi
#BSUB -n 16
#BSUB -R span[ptile=16]
```

Dedicated queue

How to submit jobs

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source setup_env_cnaf
```

Dedicated queue

Python
environment setup

How to submit jobs

- Example for submitting single batch jobs

Options to submit
a job to LSF

```
#BSUB -J int_0009
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#BSUB -N
#BSUB -B
#BSUB -q hpc_acc      Dedicated queue
#B -a openmpi
#BSUB -n 16
#BSUB -R span[ptile=16]
```

Python
environment setup

```
source setup_env_cnaf
```

```
CURRDIR=/home/HPC/giadarol/sim_workspace_PyECPyHT/BG017_HLLHC_450GeV_dipOFF_quadON_Qp
scan_oct-2_damperON_ppbscan/simulations/ch15.0_0.8e11ppb_ecdipOFF_ecquadON
cd $CURRDIR
pwd
```

RUN command

```
stdbuf -oL python ../../../../PyPARIS/multiprocexec.py -n 8 sim_class=Simulation_with_ec
louds.Simulation >> opic.txt 2>> epic.txt
```

More information can be found at:

https://wiki.infn.it/strutture/cnaf/clusterhpc/using_the_cnaf_hpc_cluster


```
(py2.7) [giadaro1@ui-hpc2 simulations]$ bjobs
JOBID  USER    STAT  QUEUE          FROM_HOST  EXEC_HOST  JOB_NAME    SUBMIT_TIME
78197  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0033    Jul  5 08:37
78198  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0013    Jul  5 08:37
78199  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0048    Jul  5 08:57
78283  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0012    Jul  5 13:16
78200  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0017    Jul  5 09:07
78202  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0003    Jul  5 09:39
78203  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0016    Jul  5 09:46
78205  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0005    Jul  5 09:52
78204  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0042    Jul  5 09:48
78227  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0008    Jul  5 12:46
78242  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0006    Jul  5 12:53
78252  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0019    Jul  5 12:59
78206  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0025    Jul  5 10:01
78207  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0023    Jul  5 10:10
78209  giadaro RUN    hpc_acc        hpc-201-11- 16*hpc-201- int_0049    Jul  5 10:29
```

Thanks for your attention!