Access, disk spaces, accounting
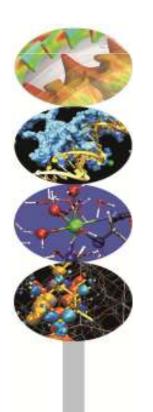
SCAI User Support

MARCONI USER GUIDE
https://wiki.u-gov.it/confluence/display/SCAIUS/UG3.1%3A+MARCONI+UserGuide

How to get projects for MARCONI

❑**ISCRA Projects**: computing time allocation on the basis of a research project.

http://www.hpc.cineca.it/services/iscra

❑**LISA Projects**: computing time allocation on the basis of a research project, with current research bodies in Lombardia.

http://www.hpc.cineca.it/services/lisa

❑**PRACE Projects**: computing time allocation at European level on the basis of a research project.

http://www.prace-project.eu/HPC-access?lang=en

❑**Agreements**: several Italian Research Institutions have special agreements for computing provision

❑**Try Project:** small computing time allocation to performe testing activity

How to get access credentials

FOR A NEW USER:

- Registration to our UserDB site:
    - Go to https://userdb.hpc.cineca.it
    - Create new user

- Associaton to a valid project, as a:
    - "Collaborator"
    - "Principal Investigator" (PI)

How to get access credentials

Log in to userdb

Follow "**HPC access**" menu link to become an HPC user:
- Documents
- Institution Info
- Personal Info

Receive two emails with the hpc credentials (username and password)

Change the password as soon as possible by typing the command "passwd"

    The new password can take up to 2 hours to work

How to login

SSH – to access the cluster from your pc

ssh <username>@login.marconi.cineca.it

- by giving the password
- by a public key (without using the password)

- <u>create the key on your pc:</u>

```
$ ssh-keygen
$ ls –l .ssh

            -rw------- 1 ... 668 Apr 26 14:56 id_rsa
            -rw-r--r-- 1 ... 601 Apr 26 14:56 id_rsa.pub
```

- <u>copy the key to the destination cluster</u>

```
scp id_rsa.pub <username>@login.marconi.cineca.it:/$HOME/
$ cat id_rsa.pub >> $HOME/.ssh/authorized_keys
```

How to login

RCM – to access in a graphical way

Donwload RCM client and launch it
https://hpc-forge.cineca.it/svn/RemoteGraph/branch/multivnc/build/dist/Releases/?p=817

Log in to the cluster through "new login" button

Create a graphic session through "new display" button → **$DISPLAY**

USE CASES
Access to Remote Desktop

Run a GUI application (e.g., totalview):

qsub –v DISPLAY=`hostname`$DISPLAY job.sh

How to login
to transfer data

🔑 **SCP – to copy a small amount of data**

scp <file> <username>@login.marconi.cineca.it:/…/

🔑 **RSYNC – to copy a large amount of data**

rsync --timeout=600 -r -avzHS --bwlimit=80000 --block-size=1048576 –progress <data_path_from>
username@login.marconi.cineca.it:<data_path_to>

🔑 **GridFTP – to copy a large amount of data**

X509 certificate or Cineca certificate (mailto: superc@cineca.it)

Local Disk Spaces

USER SPACES

$HOME →/marconi/home/userinternal/<username>

- Permanent (dipendent of the life of the user) and backed-up
- Quota = 50 GB by default
- For storing source code, executables, configuration files or important input files
- For compiling your program
- Mounted on the login and compute nodes

$CINECA_SCRATCH →/gpfs/scratch/userinternal/<username>

- Temporary (files older than 30 days automatically deleted)
- Not backed-up
- No quota
- For production testing, for temporary output files
- Mounted on the login and compute nodes

PROJECT SPACE

$WORK →/gpfs/work/<project_name>

- Permanent (deleted six months after the end of the corresponding project)
- Backed-up and parallel filesystem (GPFS)
- 1 Tb quota by default
- For production activity
- Mounted on the login and compute nodes

Local Disk Spaces

$WORK

- "chprj" command
  - -l list your PROJECTS
  - -d <project_name> set your default project for $WORK

- Unix file permissions:

  $WORK →/gpfs/work/<default project name>
  Owner: PI
  UNIX group: project_name
  drwxrwx---   29 PI project_name   4096 May 17 15:11 .

  All collaborators of the project and the PI can write into $WORK

  $WORK/subdir or file
  Owner: subdir creator (PI or collaborator)
  UNIX group: interactive
  drwxr-xr-x   29 Collaborator Interactive   4096 May 17 15:11 .

  In order to sharing personal data between all collaborators of the project:
      chgrp –R subdir project_name   # change unix group
      chmod –R 770 subdir   # add rwx permissions to group

Shared Disk Spaces

You need to ask for this kind of resource explicitly, it does not come as part of a project
(mailto: superc@cineca.it)

USER SPACE

$TAPE →/gss/gss_work/tape/userexternal/<username>
- conceived for saving "personal" data on magnetic media
- shared among platforms
- Quota=500 GB
- mounted on the login nodes
- mounted on the compute nodes only of PICO cluster

PROJECT SPACE

$DRES
- conceived for saving "project" data on magnetic media
- shared among platforms and projects
- mounted on the login nodes
- mounted on the compute nodes only of PICO cluster
- FS: normal filesystem access on hight throughput disks
- ARCH: magnetic tape archiving with a disk-like interface via LTFS
- REPO: smart repository based on iRODS

cindata

```
$ cindata
---------------------------------------------------Asyncronous data report----------------------------------------------------
-------------------------------------------------------|--------USER USAGE--------|--------------------TOTAL USAGE--------
USER       AREAID              AREADESCR               FRESH   SPACE     QTA    QTA%   SPACE    MAX     MAX%
----------------------------------------------------------------------------------------------------------------------------
sbuenomi   galileo_hpc-prod        /galileo/prod           -3hou    0        --     --%      790G    1T      77.2%
sbuenomi   work-old_tape       /gss/gss_work/tape          -3hou    0        --     --%      29T     400T    7.4%
sbuenomi   work-cin_staff          /gss/gss_work/cin_staff  -3hou    2M       --     --%      10T     30T     34.3%
sbuenomi   galileo_work-cin_staff  /gpfs/work/cin_staff     -3hou    377M     --     --%      4.5T    10T     45.2%
sbuenomi   galileo_work            /gpfs/work/             -3hou    390M     --     --%      139T    299T    46.5%
sbuenomi   galileo_hpc             /galileo/               -3hou    445M     --     --%      6.7T    8.2T    81.5%
sbuenomi   galileo_hpc-home        /galileo/home           -3hou    445M     50G    0.9%     5.5T    --      --%
sbuenomi   work-DRES_cin_fs    /gss/gss_work/DRES_cin_fs    -3hou    4.3G     --     --%      3.9T    4.9T    79.8%
sbuenomi   work                    /gss/gss_work/          -3hou    4.3G     --     --%      1.1P    1.4P    84.0%
sbuenomi   galileo_scr         /gpfs/scratch/              -3hou    54G      --     --%      249T    299T    83.4%
sbuenomi   galileo_scr             /gpfs/scratch_old/      -8wee    730G     32T    2.2%     227T    284T    79.8%
```

Accounting
saldo

```
#########################

$ saldo –b

-----------------------------------------------------------------------------------------------------------------
account       start        end          total        localCluster  totConsumed  totConsumed   monthTotal   monthConsumed
                                         (local h)    Consumed(local h)  (local h)   %            (local h)    (local h)
-----------------------------------------------------------------------------------------------------------------
cin_staff     20110323     20200323     400000004    496643        24525028     6.1           3649635      9860
cin_external  20150319     20201231     2000         297           297          14.9          28           0
cin_tmpaccG   20150325     20201231     0            0             0            0.0           0            0
```

❑In the CINECA system it is possible to have more than 1 budget ("account") from which you can use time.

❑The accounts available to your UNIX username can be found from the saldo command.

Accounting
saldo

```
###################
$ saldo –r
…...................
………………
20160427   amarani0   cin_priorit        3:12:48         4
20160503   amarani0   cin_staff          0:04:34         1
20160504   amarani0   cin_staff          2:03:36         1
20160509   amarani0   cin_priorit       27:45:04         2
20160513   amarani0   cin_priorit        6:12:16         1
20160517   amarani0   cin_priorit        0:00:48         2


--------------------Total from 201401 to 201612----------------------
     username    account          localCluster      num.jobs
                                  Consumed/h

     amarani0   cin_staff          734:18:35         80
     amarani0   cin_priorit       1657:15:47         162
---------------------------------------------------------------------------------
                Total             2391:34:22         242
```

Accounting
saldo

```
##################
$ saldo –r  -a cin_priorit


...................
....................
20160606   amarani0   cin_priorit          0:00:04          1
20160606   mippolit   cin_priorit          0:05:20          1
20160607   ccavazzo   cin_priorit          3:12:00          1
20160607   mippolit   cin_priorit          8:19:44          5

--------------------Total from 201401 to 201612----------------------
       username    account        localCluster     num.jobs
                                   Consumed/h

       nbesker1   cin_priorit        115:18:45          3
       mguarra1   cin_priorit        11:41:08          12
       nspalla1   cin_priorit      34825:15:01          59
       faffinit   cin_priorit       28:07:36          22
       amarani0   cin_priorit        1657:15:47        162
       mippolit   cin_priorit       342:40:16          48
       mcestari   cin_priorit       648:15:28          19
       cpadrin0   cin_priorit      15211:21:52          88
       ccavazzo   cin_priorit      36278:39:15         228
       aemerson   cin_priorit       1029:16:50          53
--------------------------------------------------------------------
          Total        90147:51:58          694
```

FERMI accounts to MARCONI

The budgets that will be moved from FERMI to MARCONI will be recalculated by applying the following factor:

1 h Marconi = 5-6 h Fermi

Marconi budget = Fermi budget / 5 or 6

Accounting
Billing policy

☞No billing for serial work (command line or batch → queue serial)

☞For batch jobs the billing is based on "elapsed time" and "effective number of cores" (reserved, not used!) by the batch job. The memory request is also taken into account!

accounted hours = WallClockTime   x   ReservedCores

Accounting
Budget linearization

🍄 Monthly quota defined for each account:

monthTotal = (total_budget / total_no_of_months)

🍄 As long as the budget is consumed (**monthConsumed**), the jobs submitted from the account will gradually lose priority, until the monthly budget is fully consumed.

🍄 On MARCONI, there is a finer graduation of the linearization effect on the priority, as the linearization number is a .1 decimal ranging from 1.0 to 0.0, and depends on the percentage of the monthly quota consumed

🍄 The daily budget consumption is updated one time for day (2:00 pm)