



# Risorse CINECA per il calcolo scientifico @UniBG

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CINECA - HPC and Innovation Unit  
Italy



*23 Gennaio 2014*  
*Università degli Studi di Bergamo*

# Agenda

- CINECA 2.0
- Accesso alle risorse di calcolo HPC
- Convenzione di Ateneo UniBG
- Accesso alle risorse: dettagli
- Esempio di utilizzo di applicativi ed ambienti presenti
- Domande aperte



# CINECA 2.0



## CINECA

è un Consorzio non profit costituito da 69 università italiane, l'Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), il Consiglio Nazionale delle Ricerche (CNR) e il Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR).



**CINECA** è il maggior centro di calcolo in Italia, uno dei più importanti nel mondo.

Il Dipartimento SuperCalcolo, Applicazioni e Innovazione (SCAI):

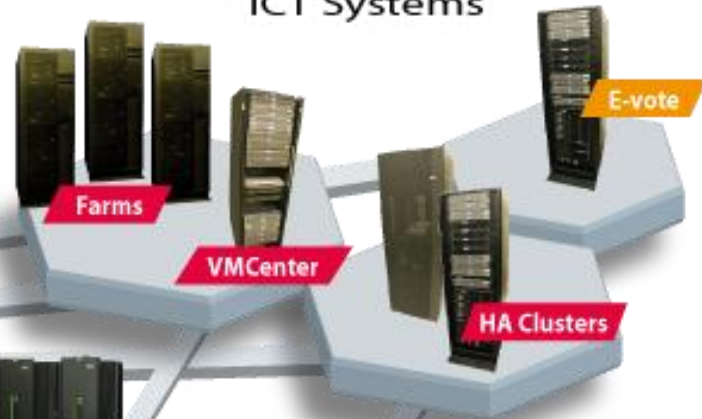
- gestisce l'infrastruttura HPC,
- fornisce supporto e risorse alla ricerca italiana e europea,
- promuove iniziative di trasferimento tecnologico per l'industria.



**Data Storage**



**ICT Systems**



**Graphics**



**HPC Scientific**



**Front End Cluster**



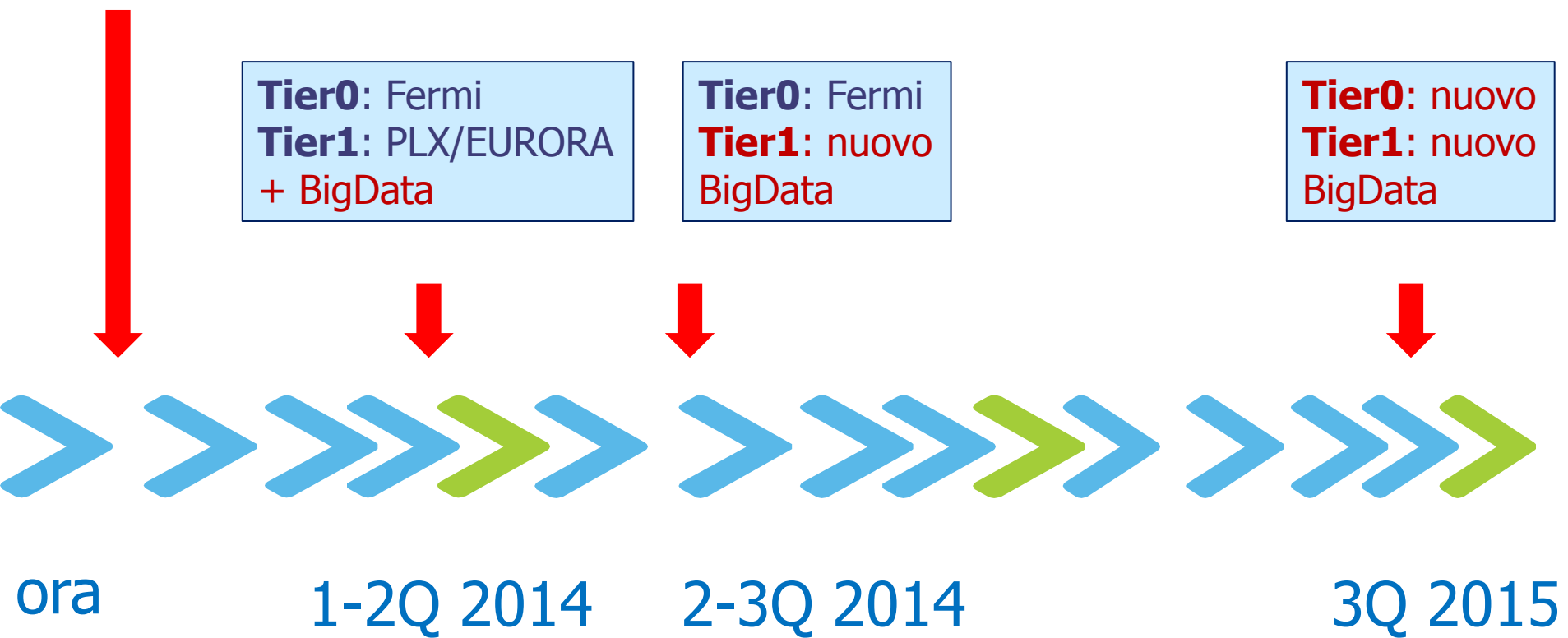
**HP Proliant**



**HPC Technical**



**Tier0:** Fermi  
**Tier1:** PLX/EURORA



**Name:** Fermi  
**Architecture:** BlueGene/Q (10 racks)  
**Processor type:** IBM PowerA2 @1.6 GHz  
**Computing Nodes:** 10.240  
**Each node:** 16 cores and 16GB of RAM  
**Computing Cores:** 163.840  
**RAM:** 1GByte / core (163 TByte total)  
**Internal Network:** 5D Torus  
**Disk Space:** 2PByte of scratch space  
**Peak Performance:** 2PFlop/s  
**Power Consumption:** 820 kWatts  
**N. 12 in Top 500 rank** (June 2013)  
National and PRACE Tier-0 calls

Sistema di punta, solo  
per applicativi  
estremamente scalabili



Sistema sperimentale,  
dotato di acceleratori di  
ultima generazione

**Architecture:** Hybrid cluster by EUROTECH

**Processor type:** Intel Xeon Sandy Bridge 3.1GHz

**Computing Nodes:** 64

**Each node:** 16 cores, 16GB/32 of RAM + 2 acceler

**Computing Cores:** 1.024

**RAM:** 1GB/core

**Accelerators:** 64 NVIDIA Tesla K20 +  
64 Intel Xeon-Phi 5120D (MIC)

**Internal Network:** Infiniband & Custom

**Peak performance:** 110 TFlops

**Power consumption:** 30 kWatts

**N. 1 in Green 500 rank** (June 2013)

National and PRACE PrepAccess calls



**Name:** PLX

**Architecture:** IBM Hybrid Cluster

**Processor type:** Intel Xeon Westmere @ 2.4 GHz

**Computing Nodes:** 274

**Each node:** 12 cores, 48GB of RAM, 2 GPUs

**Computing Cores:** 3.288

**RAM:** 14TByte

**Internal Network:** Infiniband 4xQDR switches (40 Gb/s)

**Accelerators:** 548 GPUs:

**Peak Performance:** 32 TFlops

565 TFlops SP GPUs

283 TFlops DP GPUs

Sistema classico,  
produzione codici  
più tradizionali



National and PRACE Tier-1 calls



- finalizzare l'installazione nel primo semestre del 2014
- cluster di piccole – medie dimensioni (ordine 64 nodi) per analisi/storage dati di grandi dimensioni e hosting applicativi per il post-processing (anche web-based)
- circa 5PB di storage on-line e 5PB di archive (TAPE).

**Name:** ???

**Architecture:** Hybrid Cluster

**Processor type:** Intel Xeon Ivy Bridge (2.4 – 3GHz)

**Computing Nodes:** 500

**Computing Cores/cpu:** 8 - 12

**RAM/core:** 1GB (partizione con più RAM)

**Internal Network:** Infiniband QDR (o FDR)

**Accelerators:** >500 GPUs Nvidia K40:

**Peak Performance:** 1PFlops (300TF solo cpu)

**Cooling:** liquid/ free cooling

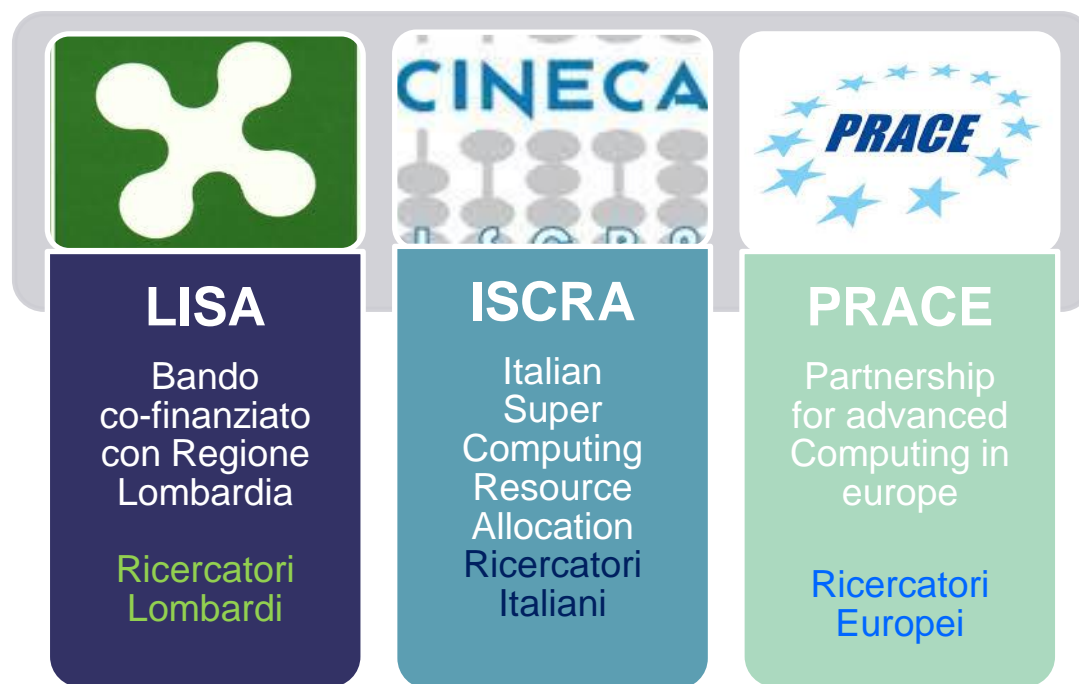
**Energy consuming:** < 400KW

- Fermi, attuale sistema di punta – tier0 – giunge a naturale scadenza
- Sarà sostituito con altro sistema di analoga potenza per rispettare gli impegni italiani ed europei (ordine di 50PFlops -or- 50M€)
- *L'architettura BG/Q non verrà ulteriormente sviluppata da IBM , la scelta terrà conto della tecnologia più aggiornata*

# Accessi HPC

- Modalità con selezione:
  - Regionali (Lombardia)
  - Nazionali
  - Europee
- Modalità senza selezione:
  - Convenzione d'Ateneo 2013

# Piattaforme con Selezione



**LISA:**

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

**ISCRA:**

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

**PRACE:**

<http://www.prace-ri.eu/Call-Announcements>

# Piattaforma senza selezione

## Convenzione d'Ateneo 2013:

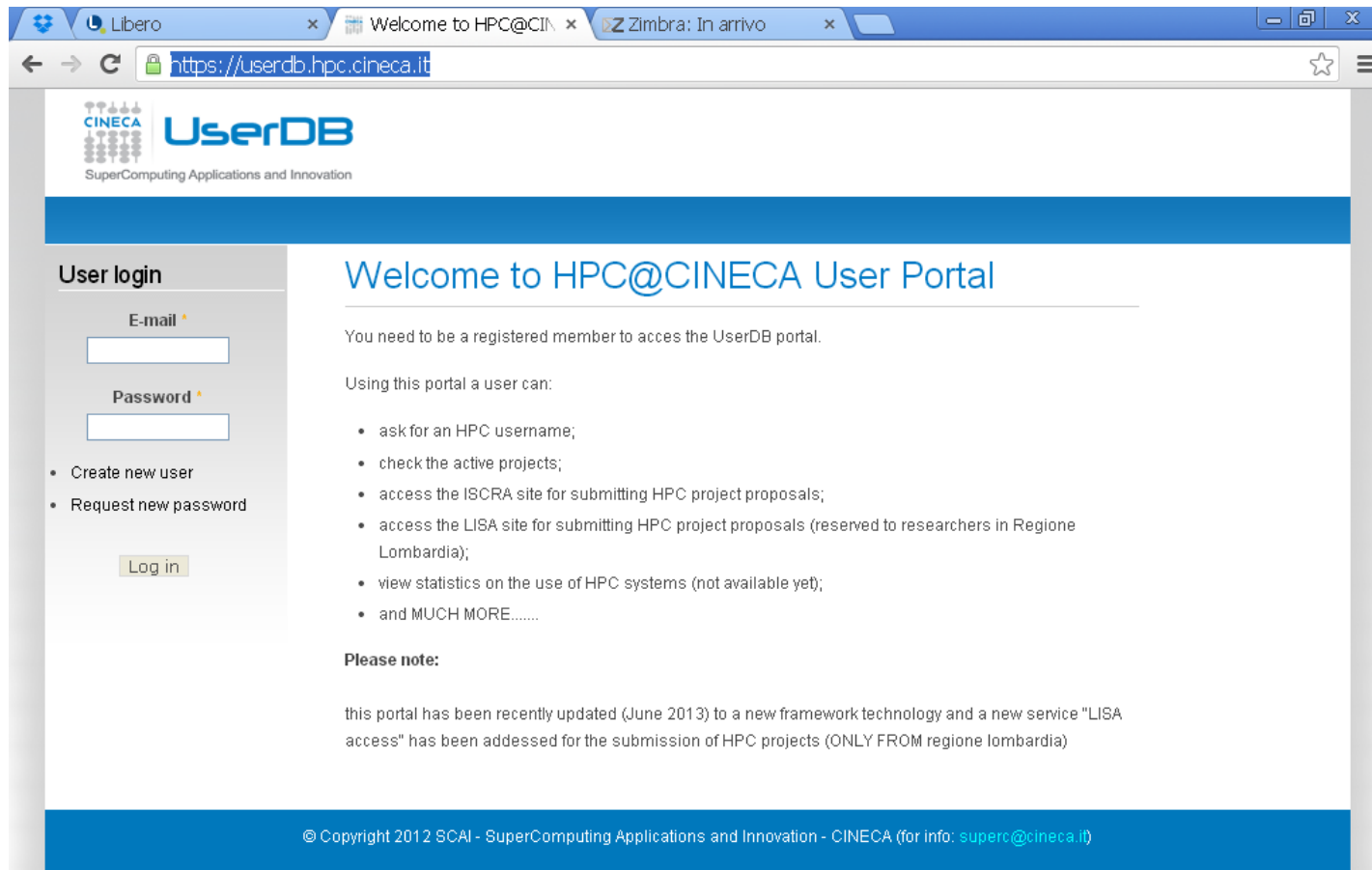
- Monte ore: 93 k ore su Eurora/PLX + 1.000 k ore su Fermi
- Scadenza: maggio 2014
- Servizi inclusi: user support

Il referente per la distribuzione del monte ore è il prof. Enrico Cavalli.

Al momento sono state assegnate 10 + 2 k ore su Eurora/PLX

1. **Iscrizione UserDB CINECA** (<https://userdb.hpc.cineca.it/>)
  - (... solo se non si possiede già uno username)
  - Registrazione
2. *Ottenere l'assegnazione ad un progetto*
  - Chiedere al referente della convenzione (**E.Cavalli**) di attivare un progetto a proprio nome
  - Chiedere al PI di un progetto già attivato di essere nominato collaboratore
3. **Richiesta accesso HPC (da UserDB)**
  - (... solo se non si possiede già lo username)
  - Link "HPC access" (elenco azioni da completare)
  - Una mail automatica comunica coordinate per l'accesso (il gg dopo)
4. **I referenti (PI) dei progetti che hanno ottenuto del monte ore possono aggiungere autonomamente i propri collaboratori**
  - PI si connette allo UserDB sotto myprojects ed aggiunge il nuovo collaboratore (edit/save)
5. **Accesso alla piattaforma (ssh o web interface)**
6. **Job submission**

# Iscrizione userDB CINECA



The screenshot shows a web browser window with the URL <https://userdb.hpc.cineca.it>. The page features the CINECA logo and the text "UserDB SuperComputing Applications and Innovation". On the left, there is a "User login" section with input fields for "E-mail" and "Password", and links for "Create new user" and "Request new password". A "Log in" button is located below these links. The main content area displays the heading "Welcome to HPC@CINECA User Portal" and a message stating that users need to be registered. A list of capabilities is provided, including requesting HPC usernames, checking active projects, and accessing project proposal submission sites (ISCRA and LISA). A "Please note" section mentions a recent update in June 2013. The footer contains copyright information for SCAI and CINECA, along with the email [superc@cinca.it](mailto:superc@cinca.it).

<https://userdb.hpc.cineca.it/>



<http://www.hpc.cineca.it>

<http://www.hpc.cineca.it/content/hpc-user-guide-2012>

Libero x HPC User Guide 20 x RemoteGraph - R x Zimbra: In arrivo x RUN YOUR JOB - x

[www.hpc.cineca.it/content/hpc-user-guide-2012](#)

**CINECA** **SCAI** SuperComputing Applications and Innovation  
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Search

ABOUT US RESOURCES SERVICES **FOR USERS** TRAINING PROJECTS

**For users**

- » My portal
- » Getting started
- » Get in touch
- » Help desk
- » Documentation
  - HPC User Guide 2012**
    - Introduction
    - General Info
    - HPC Portal
    - System Specific
  - FAQ
  - Other Documents
  - Services
  - One-page manuals
  - Quick help

**FERMI status** **PLX status**

Home > For users > Documentation

## HPC User Guide 2012

**Content:**

- [Introduction](#)
- [General Info](#)
- [HPC Portal](#)
- [System Specific](#)

**A User Guide for HPC systems in CINECA**  
(last release: August 2012)

- Tramite mail a [superc@cineca.it](mailto:superc@cineca.it)
  - Sistema di ticketing
  - Sempre un consulente in orario lavorativo
  - Possibilità di consulenza specialistica

Libero x Help desk | SCAI x RemoteGraph - R x Z Zimbra: In arrivo x RUN YOUR JOB - x

www.hpc.cineca.it/content/help-desk

**CINECA SCAI** SuperComputing Applications and Innovation

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- Documentation

Help desk

**Support**

Silvia Giuliani

Center news

28/10/2013  
**Fermi Scratch nearly full**

FERMI status PLX status

Home > For users

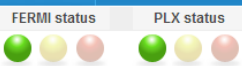
## Help desk

The **Help Desk** is provided during working days.

Please send requests by e-mail to [superc@cineca.it](mailto:superc@cineca.it) and we will answer as soon as possible.

The consultant "**on-duty**" in a given period is represented by the image visible under the top-left menu. Our team is presently composed by:

- Isabella Baccarelli
- Mirko Cestari
- Fabrizio Cinquini
- Francesco Falciano
- Silvia Giuliani
- Alessandro Grottesi
- Giusy Muscianisi
- Nicola Spallanzani
- Elda Rossi



**For users**

- » My portal
- » Getting started
- » **Get in touch**
- » Help desk
- » Documentation

**Help desk**



Alessandro Grottesi

**Center news**

- 30/10/2013  
**Crush of some running jobs on FERMI**
- 28/10/2013  
**Fermi Scratch nearly full**
- 23/10/2013  
**Fermi back to production**
- 23/10/2013  
**Fermi temporarily unavailable**

» more Center News

[Home](#) > [For users](#)

## Get in touch

### How to get Center's announcements (HPC-news)

We manage a mailing list (HPC-news) for posting announcements, scheduled downs, software updates, any problems and so on, about our HPC computing resources. It is advisable for HPC users to be included in that list!

You can subscribe (or unsubscribe) to HPC-news by sending an email from the address you want to subscribe. You can consult the archive browsing the archive web site.

To subscribe to HPC-new:

send a mail to [listserv@list.cineca.it](mailto:listserv@list.cineca.it)  
in the body --> "subscribe hpc-news"  
in the subject --> any string...

To unsubscribe to HPC-new:

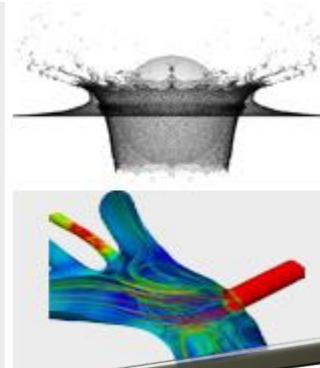
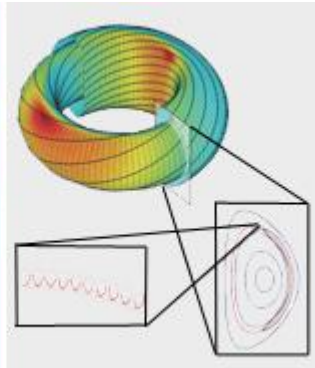
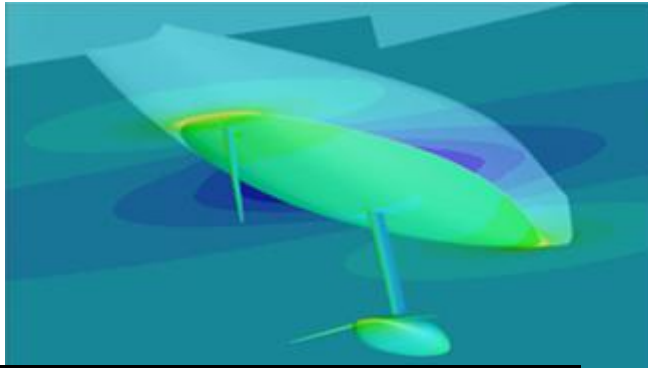
send a mail to [listserv@list.cineca.it](mailto:listserv@list.cineca.it)  
in the body --> "unsubscribe hpc-news"  
in the subject --> any string...

To consult the archive:

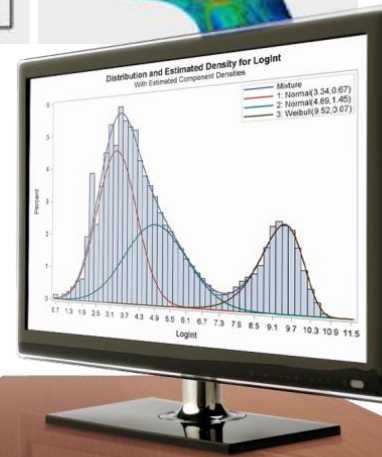
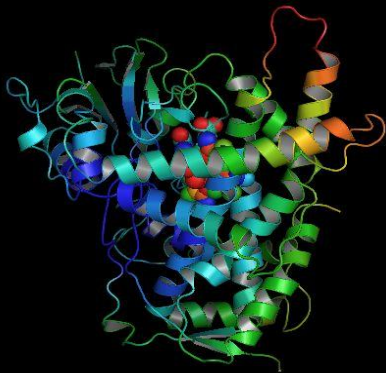
for the recent archive go to → [Center News](#)  
for the full archive go to → <http://list.cineca.it/archives/hpc-news.html>

# Get in touch: HPCnews

# Cosa può fare CINECA per I suoi utenti



engineering



others

# Premessa workflow CAE

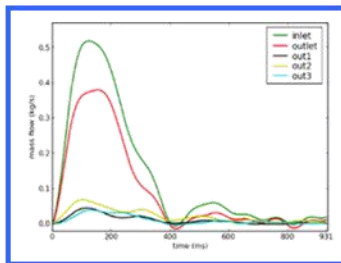
PRE-PROCESSING

COMPUTATION

POST PROCESSING

COMPUTATIONAL

PHYSICS



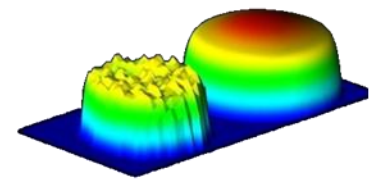
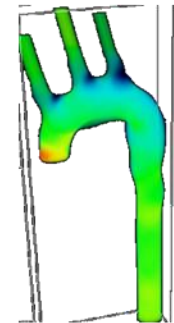
MODEL

SOLVING



HPC  
ENVIRONMENT

VISUALIZATION



RESULTS

# Pre/computing/post

Computing:

Non richiede interazione, BATCH processing.

Pre/Post possono richiedere interazione (GUI):

- RCM (Remote Connection Manager)
- Webcompute (su framework engineframe)

# Applicativi disponibili

- Solutori
- Pre-processing (meshatori)
- Post-processing (visualizzazione)

## Solutori

FERMI

- OpenFoam
  - Partial Diff Eq
  - OpenSource (per tutti)
- Ansys (CFD/mechanical)
  - General sw for Mech (Ansys) and CFD (Fluent, CFX)
  - 1 Licenza accademica contemporanea fino a 64 cores
  - Priorità utenti LISA (fare richiesta a superc)
- Abaqus
  - Finite Element Analyzer
  - licenza accademica
  - Priorità utenti LISA (fare richiesta a superc)
- StarCCM+
  - CFD (anche pre e post-processing)
  - 16 licenze accademiche fino a 128 cores
  - Priorità utenti LISA (fare richiesta a superc)
- Elmer/Code\_Saturne/ ...
  - Finite element Sw for multiPhys
  - Open Source (per tutti)

PLX



# Pre-processing

PLX



- Pointwise
  - Mesh Generation Software for CFD
  - Due licenze (una con priorità calcolo industriale)
  - Priorità utenti LISA (fare richiesta a superc)
  - Utilizzabile via webcompute e RCM (interfaccia grafica) o tramite script

# Post-processing

PLX

- Paraview
  - Open Source Scientific Visualisation
  - Utilizzabile via webcompute e RCM
  - OpenSource (per tutti)
- Tecplot 360
  - CFD Visualization software
  - Due licenze accademiche (fare richiesta a superc)
  - Utilizzabile via RCM

# Computing: Accesso alle macchine

Modalità di accesso previste:

1. Accesso interattivo: ssh client
2. Accesso tramite interfaccia:
  - Web-based via WebCompute
  - RCM: remote connection manager
3. Trasferimento dati: sftp client

# Ssh (Secure Clients)

Shell per utenti Linux (scp, ssh)

per utenti windows:

- Putty (ssh)
- TECTIA client (ssh)
- Winscp per utenti windows (sftp)

# Esempio utilizzo

- Moduli e loro caricamento
- Utilizzo openfoam batch
- Utilizzo Ansys/Fluent batch
- Utilizzo paraview con GUI

# PLX login: *ssh login.plx.cineca.it*

```
Last login: Wed Oct 30 08:35:17 2013 from 131.175.80.185
```

```
*****  
*  
* Welcome to PLX DataPlex Cluster @ CINECA - RedHat EL 5.6! *  
*  
* Qlogic QDR (40Gb/s) Infiniband high-performance network *  
*  
* 274 Compute node *  
* - 2 esa-core Intel(R) Xeon(R) CPU E5645 @2.40GHz per Compute node *  
* - 48 GB RAM per Compute node *  
* - 2 Nvidia Tesla M2070 GPU per Compute node *  
* 8 Fat node *  
* - 2 quad-core Intel(R) Xeon(R) CPU X5570 @2.93GHz per Fat node *  
* - 128 GB RAM per Fat node *  
* 3352 Total cores *  
*  
* 6 Remote Visualization Login *  
* 2 Nvidia QuadroPlex 2200 S4 *  
*  
* PBSpro 10.4 batch scheduler *  
*  
* http://www.hpc.cineca.it/content/ibm-plx-gpu-user-guide-0 *  
* for a guide on PLX *  
*  
* mailto:superc@cinca.it for support *  
*  
*****  
[rponzini@node342 ~]$ █
```



# Moduli disponibili: *module avail*

```
[rponzini@node342 ~]$ module avail  
----- /cineca/prod/modulefiles/profiles -----  
profile/advanced          profile/base(default)  profile/engineering
```

## \$ module available

```
----- /cineca/prod/modulefiles/profiles -----
profile/advanced          profile/base (default)          profile/engineering
.....
----- /cineca/prod/modulefiles/base/libraries -----PETSc/3.0.0--openmpi--1.3.3--
gnu--4.1.2
PETSc/3.0.0--openmpi--1.3.3--intel--11.1--binary (default)

----- /cineca/prod/modulefiles/base/compilers -----
IntelMPI/4.0--binary          gnu/4.1.2 (default)
gnu/4.5.2                    intel/11.1--binary (default)
openmpi/1.3.3--gnu--4.1.2    openmpi/1.3.3--intel--11.1--binary

----- /cineca/prod/modulefiles/base/applications -----
R/2.10.1                    gromacs/4.6.1
abinit/6.12.3              meep/1.1.1 (default)
adf/2010.02b (default)     molcas/7.6
amber/11 (default)         mopac/2009 (default)
amber/12                   namd/2.8 (default)
cp2k/2.3 (default)         pyfrag/2007.02 (default)
desmond/3.0.3             stata/10
....
```



```
$ module load profile/engineering  
$ module available
```

```
----- /cineca/prod/modulefiles/profiles -----  
profile/advanced      profile/engineering  profile/base(default)
```

.....

```
----- /cineca/prod/modulefiles/engineering/tools -----  
paraview/4.0.1--gnu--4.5.2  tecplot/2012R1  python/2.7.3--gnu--4.5.2
```

```
----- /cineca/prod/modulefiles/engineering/applications -----  
abaqus/6.12-1      elmer/2011      pointwise/17.0_R1  
ansys/145          openfoam/2.2.1-gnu-4.7.2  starccm+/8.04.010/Acd
```

## \$ module help abaqus

abaqus-6.12-1

The Abaqus Unified FEA product suite offers powerful and complete solutions for both routine and sophisticated engineering problems covering a vast spectrum of industrial applications.

-----  
Example of a batch job for running on 4 nodes 8 procs for node (cpus=32) using the input my\_data

```
#!/bin/bash
#PBS -N abq_parallel
#PBS -j oe
#PBS -l walltime=0:10:00
#PBS -l select=4:ncpus=8:mpiprocs=8
#PBS -A <Account_number>
#PBS -q parallel
cd $PBS_O_WORKDIR
module load autoload abaqus
cp $ABAQUS_HOME/Documentation/example_cineca/my_data.inp .
cp $ABAQUS_HOME/Documentation/example_cineca/my_data.f .
echo "Running on " `hostname`
echo "Working dir is $PBS_O_WORKDIR"
echo "Job started at " `date`
abaqus job=my_data user=my_data cpus=32 interactive
echo "Job finished at " `date`
```

```
-----
This application is restricted access. To be enabled please
contact superc@cinca.it.
To check license server status:
abaqus licensing lmstat -a -c 7400@license02-a.cineca.it
```

```
$ module load abaqus
```

```
WARNING: abaqus/6.12-1 cannot be loaded due to missing prereq.
```

```
HINT: the following modules must be loaded first: intel/11.1-binary
```

```
$ module load autoload abaqus
```

```
### auto-loading modules intel/11.1--binary
```

```
### auto-loading modules openmpi/1.4.5--intel--11.1--binary
```

```
$
```

```
$ module show abaqus
```

```
-----  
/cineca/prod/modulefiles/engineering/applications/abaqus/6.12-1:
```

```
module-whatism The Abaqus Unified FEA product suite offers ...
```

```
conflict       abaqus
```

```
setenv         ABAQUS_HOME /cineca/prod/applications/abaqus/6.12-1/binary
```

```
prepend-path   PATH      /cineca/prod/applications/abaqus/6.12-1/binary/Commands :
```

```
prepend-path   LIBPATH  /cineca/prod/.../6.12-1/code/lib :
```

```
prepend-path   LD_LIBRARY_PATH /cineca/prod/.../6.12-1/code/lib :
```

```
prepend-path   MANPATH  /cineca/prod/.../6.12-1/binary/Documentation/docs/v6.12/pdf_boo  
-----
```



```
[rponzini@node342 rponzini]$ more carica220
```

```
module purge
```

```
module load profile/engineering
```

```
module load autoload openfoam
```

```
[rponzini@node342 rponzini]$ more carica-ansys145
```

```
module purge
```

```
module load profile/engineering
```

```
module load autoload ansys/145
```



# Caricamento ambiente CFD

## Fluent (Ansys)

```
[rponzini@node342 rponzini]$ source carica-ansys145  
[rponzini@node342 rponzini]$ which fluent  
/cineca/prod/applications/ansys/145/intel--12.1--binary/v145/fluent/bin/fluent
```

## OpenFoam

```
[rponzini@node342 rponzini]$ source carica220  
[rponzini@node342 rponzini]$ which pisoFoam  
/cineca/prod/applications/openfoam/2.2.0-gnu-4.7.2/openmpi--1.6.3--gnu--4.7.2/OpenFOAM-2.2.0/platforms/linux64GccDPOpt/bin/pisoFoam
```

- La produzione si svolge normalmente “*in batch*”
  - Un file contiene lo script completo del lavoro
  - Il file viene “sottomesso” ad uno schedulatore che allocherà le risorse richieste appena disponibili
  - FERMI: LoadLeveler; PLX/EURORA: PBS
- *E’* possibile prenotare tramite lo schedulatore anche sessioni “interattive”
- Lavorando con le interfacce, la modalità batch e gli schedulatori sono “mascherati”
- Per lavorare in batch (per la produzione) è necessario avere anche un progetto valido con budget (account\_no)

- Username
  - Personale (erossi00, rponzini, mcremone)
  - Permette l'accesso e l'utilizzo interattivo
  - viene chiuso dopo un anno senza progetti
- Account\_no
  - Budget per l'utilizzo batch
  - Periodo di validità, budget, hosts, PI, collaboratori
  - "saldo -b" fornisce info aggiornate

```
$ saldo -b
```

account	start	end	total (local h)	localCluster Consumed(local h)	totConsumed (local h)	totConsumed %
try11_test	20110301	20111201	10000	2000	5000	50.0
cin_staff	20110323	20200323	200000000	479621	8933910	4.5

```
$ saldo -ba try11_test
```

```
erossi00 ffalcian mcestari fvitale0 sgiulian
```

account	start	end	total (local h)	localCluster Consumed(local h)	totConsumed (local h)	totConsumed %
try11_test	20110301	20111201	10000	2000	5000	50.0

# Job batch (PLX)

```
$ cat job
#!/bin/bash
#PBS -l select=1:ncpus=4
#PBS -l walltime=20:00
#PBS -e myJob.err
#PBS -o myJob.out
#PBS -A cin_staff

cd $PBS_O_WORKDIR
module load g09
export GAUSS_SCRDIR=$CINECA_SCRATCH/g09/tmp
...
g09 < test000.com > test000.out

$ qsub job
1485921.node351.plx.cineca.it

$ qstat
```



# Job interattivi

```
[rponzini@node342 rponzini]$ qsub -l  
qsub: ERROR: Account number None is not valid for user rponzini
```

```
[rponzini@node342 rponzini]$ qsub -l -A cin_staff  
qsub: waiting for job 1344006.node351.plx.cineca.it to start  
qsub: job 1344006.node351.plx.cineca.it ready
```

# Job list

```
[rponzini@node004 ~]$ qstat -n -u $USER
```

```
node351.plx.cineca.it:
```

Job ID	Username	Queue	Jobname	SessID	NDS	TSK	Req'd Memory	Req'd Time	Elap S	Time
1343893.node351 node097ib0/1	rponzini	visual	rponzini-p	7087	1	1	--	12:00	R	01:09
1344001.node351 node098ib0/1	rponzini	dcv_visu	XTerm	14722	1	1	--	06:00	R	00:08
1344003.node351 node098ib0/2	rponzini	dcv_visu	ParaView	16633	1	1	--	06:00	R	00:06
1344004.node351 node098ib0/3	rponzini	dcv_visu	ParaView	22661	1	1	--	06:00	R	00:02
1344006.node351 node004ib0/3	rponzini	debug	STDIN	27624	1	1	4gb	00:30	R	00:00
1344007.node351 node196ib0/0*12+node197ib0/0*12+node198ib0/0*12+node199ib0/0*12 +node201ib0/0*12+node202ib0/0*12+node205ib0/0*12+node206ib0/0*12 +node207ib0/0*12+node208ib0/0*12	rponzini	privatel	HL_18kt	30341	10	120	470gb	48:00	R	00:00

# Fluent Job submission

```
#!/bin/sh
#PBS -N test32
#PBS -j oe
#PBS -q parallel
#PBS -l select=4:ncpus=12:mpiprocs=8
#PBS -l walltime=24:0:0
#PBS -A cin_staff
#PBS -V

cd $PBS_O_WORKDIR
module load profile/engineering
module load autoload ansys
NPROCS=`wc -l < $PBS_NODEFILE`
echo "Job started at `date` on nodes: `cat $PBS_NODEFILE` "

EXEC=`which fluent`

time $EXEC 3ddp -i journal.jou -t$NPROCS -g -ssh -pinfiniband.ofed -mpi=intel >& myout4x8.out -
    cnf=${PBS_NODEFILE}
wait
echo "Job finished at `date` "
```

# OpenFoam Job submission

```
#!/bin/sh
#PBS -j oe
#PBS -m abe
#PBS -M r.ponzini@cineca.it
#PBS -l select=6:ncpus=12:mpiprocs=6:mem=10gb
#PBS -A cin_staff
#PBS -V

cd $PBS_O_WORKDIR
module load profile/advanced
module load autoload openfoam

NPROCS=`wc -l < $PBS_NODEFILE`

echo "Job started at `date` on nodes: `cat $PBS_NODEFILE` "
decomposePar
EXEC=`which multiphaseEulerFoam`

time mpirun -machinefile $PBS_NODEFILE -np $NPROCS $EXEC -parallel >& out-36-
simple_spare_lowU.log

echo "Job finished at `date` "
```



# Pre/computing/post

Computing:

Non richiede interazione, BATCH processing.

**Pre/Post possono richiedere interazione (GUI):**

- **RCM (Remote Connection Manager)**
- **Webcompute (su framework engineframe)**

# Applicativi con GUI e visualizzazione remota

- Due differenti strumenti, entrambi utilizzano gli acceleratori grafici su PLX, entrambi si basano su grafica “remota”
  - **RCM: Remote Connection Manager**
  - **Webcompute**
- *Utili per pre e post-processing*

# Remote Connection Manager

<http://www.hpc.cineca.it/content/remote-visualization>



- Sito di dipartimento  
[www.hpc.cineca.it](http://www.hpc.cineca.it)
- Seguire il link  
services → RemoteVisualiz →  
download
- Scaricare il client corretto per la  
propria workstation
- eseguirlo

# Remote Connection Manager

The image displays the Remote Connection Manager (RCM) interface. On the left is the 'RCM Login' window, which includes the CINECA logo and fields for 'Sessions' (rponzini@login.plx.cineca.it), 'Host' (login.plx.cineca.it), 'User' (rponzini), and 'Password' (masked with asterisks). A 'LOGIN' button is at the bottom. A red arrow points from the login window to the main RCM window.

The main 'Remote Connection Manager 1.1.365 - CINECA' window features a table of active connections and control buttons. The table has columns for 'CREATED', 'DISPLAY', 'NODE', 'STATE', 'TIMELEFT', 'USERNAME', and 'WALLTIME'. One connection is listed with the following details:

CREATED	DISPLAY	NODE	STATE	TIMELEFT	USERNAME	WALLTIME
20131030-10:06:32	5	node097	valid	11:00:57	rponzini	12...

Buttons for 'CONNECT', 'KILL', 'NEW DISPLAY', and 'REFRESH' are visible. The status 'Idle' is shown below the table. A red arrow points from the 'NEW DISPLAY' button to the TurboVNC window.

The TurboVNC window, titled 'TurboVNC: node097:6 (erossi00) [Tight + JPEG 1X Q95]', shows a remote desktop environment. The desktop background is dark red. A 'Konqueror' file manager window is open, displaying the contents of a directory: /cineca/prod/tools/RCM/1.1/gnu--4.1.2/bin/server/Desktop\_setup/common\_tools. The files listed are:

- paraview3.14.desktop
- paraview3.98.desktop
- paraview4.0.1.desktop
- paraview\_demo1.desk...
- tecplot.desktop
- UnigineGraph icTest.desk...
- Vaa3D.desktop

The status bar at the bottom of the Konqueror window indicates '7 Items - 7 Files (2.9 KB Total) - No Folders'. A red arrow points from the TurboVNC window back to the main RCM window.

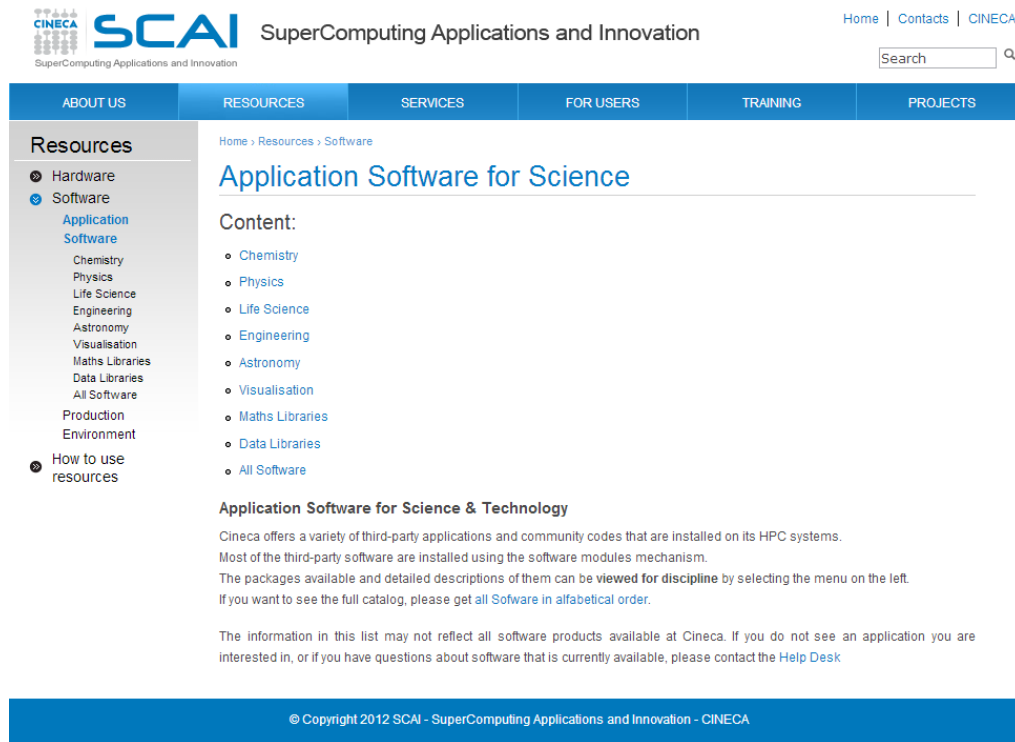


- Sito [webcompute.cineca.it](http://webcompute.cineca.it)
- Scaricare il client corretto per la propria workstation (solo al prima volta)
- *Selezionare il servizio di interesse (Xterm o applicativo)*
- *Selezionare il progetto per accounting + submit*

The image shows a screenshot of the webcompute.cineca.it website interface and a VNC viewer window. The website is titled "SCAI SuperComputing Applications and Innovation" and has a navigation menu with "Home", "My Sessions", "My Data", and "My Jobs". Under "HPC Services", there is a list of services: "XTerm", "Pointwise", "Pointwise 16", and "ParaView". A red arrow points from the "XTerm" service to a terminal window in the VNC viewer. The VNC viewer window is titled "node098:2 (erossi00) - VNC Viewer" and shows a terminal window with the prompt "[erossi00@node098:~]\$".

# Applicativi pre-istallati

<http://www.hpc.cineca.it/content/application-software-science>



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Cineca offers a variety of third-party applications and community codes that are installed on its HPC systems. Most of the third-party software are installed using the software modules mechanism. The packages available and detailed descriptions of them can be **viewed for discipline** by selecting the menu on the left. If you want to see the full catalog, please get all [Software](#) in alphabetical order.

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# Sw engineering

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## Resources software - Engineering

Name	Version	Description	Topic	Availability	Target user
Abaqus	6.12-1	Finite Element Analyzer	Engineering	EURORA, IBM PLX	academic
	12.0, 12.1,				
ANSYS	13.0, 13.4, 14.0, 14.5	General purpose software for mechanical engineering	Engineering	IBM PLX	restricted
ELMER	2011	Open Source Finite Element Software for Multiphysical Problems	Engineering, Physics	IBM PLX	all
OpenFOAM	2.1.1	The OpenFOAM® (Open Field Operation and Manipulation) CFD Toolbox can simulate anything from complex fluid flows involving chemical reactions, turbulence and heat transfer, to solid dynamics, electromagnetics and the pricing of financial options.	Engineering, Physics	IBM BG/Q, FERMI, IBM PLX	all
parFE - parallel mu-FE	0.2	A fully-parallel mu-FE code	Engineering, Maths Libraries	IBM PLX	all
R - statistical computing and graphics	3.0.2, 2.15.1	Statistical computing and graphics	Engineering, Life Science	EURORA, IBM PLX	all
stata - statistics	10.0.0	Fast, powerful statistical package designed for researchers of all disciplines.	Engineering, Life Science, Physics	IBM PLX	all

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