



# Risorse CINECA per il calcolo scientifico @polimi

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CINECA - HPC and Innovation Unit  
Italy



*5 e 11 novembre 2013  
Politecnico di Milano*

[www.cineca.it](http://www.cineca.it)

# Agenda

- CINECA 2.0
- Accesso alle risorse di calcolo HPC
- Convenzione di Ateneo POLIMI
- 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.

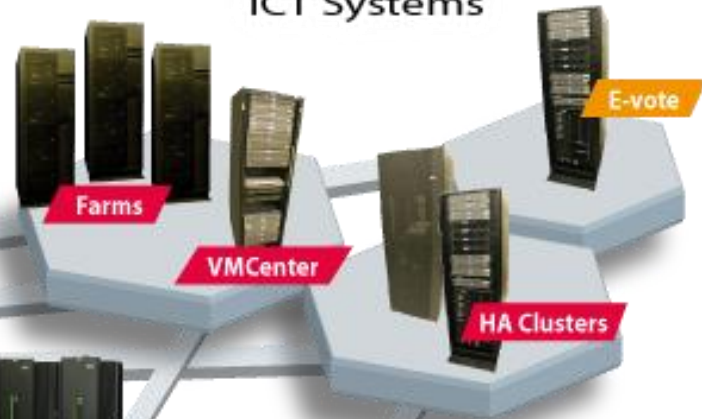




**Data Storage**



**ICT Systems**



**Graphics**



**HPC Scientific**



**Front End Cluster**



**HP Proliant**



**HPC Technical**





## FERMI

**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

**N. 12 in Top 500 rank** (June 2013)

National and PRACE Tier-0 calls



## EURORA

**Architecture:** Hybrid cluster by EUROTECH

**Processor type:** Intel Xeon E5-2687W Sandy Bridge-EP 3.1GHz

**Computing Nodes:** 64

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

**Computing Cores:** 1.024

**RAM:**

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

**Internal Network:** Infiniband & Custom

**Peak performance:** 110 TFlops

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

National and PRACE PrepAccess calls



**Name:** PLX

**Architecture:** IBM Hybrid Cluster

**Processor type:** Intel Xeon (Exa-Core Westmere) X 5645 @ 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

**PLX**



National and PRACE Tier-1 calls

# Accessi HPC

- Piattaforme con selezione:
  - Regionali
  - Nazionali
  - Europee
- Piattaforme 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?lang=en>

# Piattaforma senza selezione

## Convenzione d'Ateneo 2013:

- Monte ore: 600 k ore su Eurora/PLX + 6.000 k ore su Fermi
- Scadenza: giugno 2014
- Servizi inclusi: user support

Per accedere POLIMI ha stabilito di identificare dei referenti Dipartimentali a cui vengono accreditati dei monte-ore associati a macro-progetti. *I referenti inseriscono le persone all'interno del loro monte-ore come collaboratori.*

# Referenti di Ateneo

Dipartimento	Referente	FERMI (Kh)	EURORA (Kh)	Attivato
ENERGIA	D'ANGELO GIOVANNI	500	50	SI
TECNOLOGIE AEROSPAZIALI	MANTEGAZZA PAOLO	500	50	SI
INGEGNERIA CIVILE	GHISI ALDO FRANCESCO	500	50	SI
MECCANICA	MICCOLI STEFANO	500	50	SI
MATEMATICA	PAGLIERI LUCA	500	50	SI
INGEGNERIA GESTIONALE	MOSCONI ROCCO ROBERTO	500	50	NO
ELETTRONICA	BREVEGLIERI LUCA	500	50	SI
CHIMICA	CAVALLOTTI CARLO ALESSANDRO	500	50	SI

Tot assegnate:

4.0 mln -- 400 k

Da assegnare:

2.0 mln -- 200 k

# Accesso alla convenzione

1. Iscrizione User DB CINECA (<https://userdb.hpc.cineca.it/>)
  - <https://userdb.hpc.cineca.it/hpc-access> (elenco azioni da completare)
2. Contattare referente di Dipartimento POLIMI chiedendo di essere inserito come collaboratore nel progetto di interesse
  - Referente si connette allo userDB sotto myprojects ed edita il nuovo collaboratore (edit/save)
3. Accesso alla piattaforma
4. Job submission



# Iscrizione userDB CINECA

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

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 a "Log in" button. Below the login fields are links for "Create new user" and "Request new password". The main content area is titled "Welcome to HPC@CINECA User Portal" and contains the following text:

You need to be a registered member to access the UserDB portal.

Using this portal a user can:

- ask for an HPC username;
- check the active projects;
- access the ISCRA site for submitting HPC project proposals;
- access the LISA site for submitting HPC project proposals (reserved to researchers in Regione Lombardia);
- view statistics on the use of HPC systems (not available yet);
- and MUCH MORE.....

**Please note:**

this portal has been recently updated (June 2013) to a new framework technology and a new service "LISA access" has been addressed for the submission of HPC projects (ONLY FROM regione lombardia)

At the bottom of the page, there is a copyright notice: © Copyright 2012 SCAI - SuperComputing Applications and Innovation - CINECA (for info: [superc@cinca.it](mailto:superc@cinca.it))

# Informazioni generali

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

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

The screenshot shows a web browser window with the URL [www.hpc.cineca.it/content/hpc-user-guide-2012](http://www.hpc.cineca.it/content/hpc-user-guide-2012). The page header includes the CINECA logo and the SCAI (SuperComputing Applications and Innovation) logo. A navigation menu is visible with categories: ABOUT US, RESOURCES, SERVICES, FOR USERS (selected), TRAINING, and PROJECTS. A search bar is located in the top right corner. The main content area features a status section with 'FERMI status' and 'PLX status' indicators, each represented by three colored circles (green, yellow, red). Below this, the breadcrumb trail reads 'Home > For users > Documentation'. The main heading is 'HPC User Guide 2012'. Under the heading, there is a 'Content:' section with a list of links: Introduction, General Info, HPC Portal, and System Specific. At the bottom of the page, it states 'A User Guide for HPC systems in CINECA (last release: August 2012)'. A left sidebar menu is also visible, listing various user resources like 'My portal', 'Getting started', 'Help desk', and 'Documentation'.

# Helpdesk

<http://www.hpc.cineca.it/content/help-desk>

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

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

**SCAI** SuperComputing Applications and Innovation  
Home | Contacts | CINECA

Search

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

**For users**

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



# Get in touch

SuperComputing Applications and Innovation

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[ABOUT US](#)

[RESOURCES](#)

[SERVICES](#)

[FOR USERS](#)

[TRAINING](#)

[PROJECTS](#)

**For users**

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

FERMI status

PLX status

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>

**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

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# Premessa workflow CAE

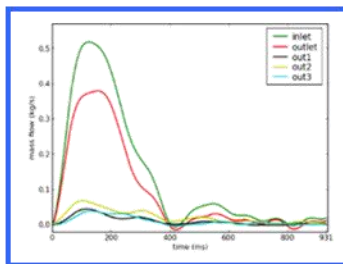
PRE-PROCESSING

COMPUTATION

POST PROCESSING

COMPUTATIONAL

PHYSICS



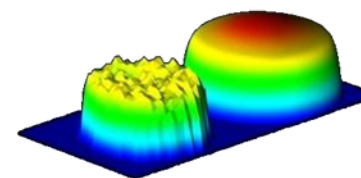
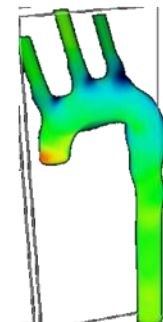
MODEL

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

**PLX/  
EURORA**

**FERMI**

- OpenFoam
  - Partial Diff Eq
  - OpenSource (per tutti)
- Ansys (CFD/mechanical/ ...)
  - General sw for mech and CFD
  - 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
  - Finite element Sw for multiPhys
  - Open Source (per tutti)





# Pre-processing

**PLX/  
EURORA**

- 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/  
EURORA**

- 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. ssh client
2. sftp client
3. Web-based via Engineframe (Nice Tech.)
4. Grafica (GUI):
  - RCM
  - webcompute

# 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 load profile/engineering

```
$ 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
```



# 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)**

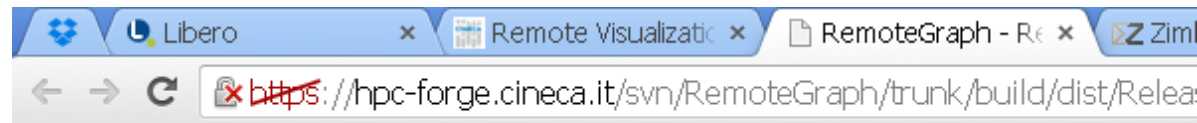
# Applicativi con GUI e visualizzazione remota

- Due differenti strumenti, entrambi utilizzano gli acceleratori grafici su PLX/EURORA, 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>



## RemoteGraph - Revision 382: /trunk/build/dist/Releases

- 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
- ..
  - [RCM\\_darwin\\_64bit](#)
  - [RCM\\_linux2\\_32bit\\_Ubuntu\\_10.04](#)
  - [RCM\\_linux2\\_32bit\\_Ubuntu\\_12.04](#)
  - [RCM\\_linux2\\_32bit\\_openSUSE\\_11.2](#)
  - [RCM\\_linux2\\_64bit\\_RHEL\\_5.6](#)
  - [RCM\\_linux2\\_64bit\\_Ubuntu\\_12.04](#)
  - [RCM\\_linux2\\_64bit\\_openSUSE\\_11.4](#)
  - [RCM\\_linux2\\_64bit\\_openSUSE\\_12.2](#)
  - [RCM\\_win32\\_32bit.exe](#)
  - [RCM\\_win32\\_64bit.exe](#)

# Remote Connection Manager

The image displays the Remote Connection Manager (RCM) interface, which is used for managing remote connections to a cluster. It is divided into several main sections:

- RCM Login:** A window for logging into the system. It features the CINECA logo and the text "REMOTE CONNECTION MANAGER version: 1.1.365". The login fields include:
  - Sessions: `rponzini@login.plx.cineca.it`
  - Host: `login.plx.cineca.it`
  - User: `rponzini`
  - Password: `*****`
  - A **LOGIN** button.
- Remote Connection Manager 1.1.365 - CINECA:** The main management window. It contains:
  - CONNECT** and **KILL** buttons.
  - A table showing connection details:
 

CREATED	DISPLAY	NODE	STATE	TIMELEFT	USERNAME	WALLTIME
20131030-10:06:32	5	node097	valid	11:00:57	rponzini	12:00:00
  - NEW DISPLAY** and **REFRESH** buttons.
  - The status is currently **Idle**.
- TurboVNC:** A remote desktop window titled "TurboVNC: node097:6 (erossi00) [Tight + JPEG 1X Q95]". It shows a Linux desktop environment with a Konqueror file manager window open. The Konqueror window displays the contents of a directory:
  - Location: `/cineca/prod/tools/RCM/1.1/gnu--4.1.2/bin/server/Desktop_setup/common_toc`
  - Files: `paraview3.14.desktop`, `paraview3.98.desktop`, `paraview4.0.1.desktop`, `paraview_demo1.desk...`, `tecplot.desktop`, `UnigineGraph icTest.desk...`, and `Vaa3D.desktop`.
  - Status bar: **7 Items - 7 Files (2.9 KB Total) - No Folders**

- 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 screenshot shows the web interface for CINECA's computing services. The browser address bar displays <https://webcompute.cineca.it/engineframe/runyourjob/it.cineca.runyourjob>. The page header includes the CINECA logo and the SCAI (SuperComputing Applications and Innovation) logo. A navigation menu contains links for Home, My Sessions, My Data, and My Jobs. On the left, a sidebar lists services: XTerm, Pointwise, Pointwise 16, and ParaView. The main content area features a 'Welcome to CINECA's Computing Services' message, a prompt to 'Pick an application from the menu on the left.', and instructions for downloading and installing VNC clients for Windows, Linux, and Mac OS X.

The screenshot shows a VNC Viewer window titled 'node098:2 (erossi00) - VNC Viewer'. Inside the viewer, there is a terminal window titled 'erossi00@node098:~' with a prompt '[erossi00@node098 ~]\$' and a cursor. The terminal window is currently empty. The VNC Viewer window also shows a taskbar at the bottom with a 'VNC Server (Vi...)' icon and a system tray area.

# Domande aperte

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

The screenshot shows the SCAI (SuperComputing Applications and Innovation) website. At the top, there is a navigation bar with links for Home, Contacts, and CINECA, along with a search box. Below this is a main menu with categories: ABOUT US, RESOURCES, SERVICES, FOR USERS, TRAINING, and PROJECTS. The 'RESOURCES' section is expanded to show 'Resources', which includes Hardware, Software, and How to use resources. Under 'Software', there is a sub-menu for 'Application Software' with various scientific disciplines listed: Chemistry, Physics, Life Science, Engineering, Astronomy, Visualisation, Maths Libraries, Data Libraries, and All Software. The 'Application Software for Science' page is displayed, featuring a 'Content:' section with a list of links for each discipline. Below this, there is a section titled 'Application Software for Science & Technology' with a paragraph explaining that Cineca offers third-party applications and community codes installed on its HPC systems. It notes that most software is installed using a software modules mechanism and that packages can be viewed by discipline. A final paragraph states that the information in the list may not reflect all available software products and provides contact information for the Help Desk.

# Sw engineering

SuperComputing Applications and Innovation

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**Resources**

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  - Life Science
  - Engineering
  - Astronomy
  - Visualisation
  - Maths Libraries
  - Data Libraries
  - All Software
  - Production Environment
- ⊖ How to use resources

Home > Resources > Software > Application Software > Resources software - Engineering

## 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
		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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