

How to access HPC - CINECA

Pavel Tomšič, University of Ljubljana, Slovenia

07/2021

Univerza v Ljubljani



TECHNISCHE
UNIVERSITÄT
WIEN



VSB TECHNICAL
UNIVERSITY
OF OSTRAVA

IT4INNOVATIONS
NATIONAL SUPERCOMPUTING
CENTER



Co-funded by the
Erasmus+ Programme
of the European Union

This project has been funded with support from the European Commission.

This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

- not-for-profit Consortium, made up of 98 members:
 - the Italian Ministry of Education,
 - the Italian Ministry of Universities and Research,
 - 69 Italian universities,
 - and 27 Italian National Institutions.
- the largest Italian computing centre
- head quarters in Bologna, with offices in Milan, Rome, Naples and Chieti
- Main activities:
 - High performance computing
 - Information systems for Universities and research
 - support to the italian Ministry of Education, Universities and Research



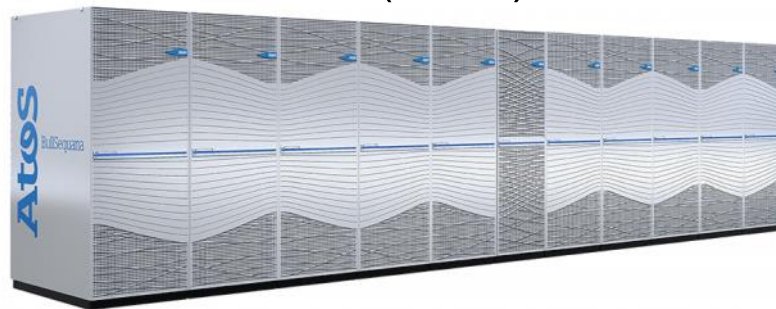
- Established in 1969 by the Italian Ministry of Education together with four Italian universities
- the first Italian supercomputer, a CDC 6600, designed by Seymour Cray
- Aim: to accelerate the scientific discovery by providing high performance computing resources, data management, as well as HPC services and expertise



HPC at CINECA

SYSTEM	YEAR	Top500 Rank	VENDOR	CORES	RMAX (GFLOP/S)	RPEAK (GFLOP/S)
GALILEO - IBM NeXtScale nx360M4, Xeon E5-2630v3 8C 2.4GHz, Infiniband QDR, Intel Xeon Phi 7120P	2015	105	IBM/Lenovo	50232	684252	1103066
Fermi - BlueGene/Q, Power BQC 16C 1.60GHz, Custom IBM	2012	7	IBM	163840	1788878	2097152
Eurora - Eurotech Aurora HPC 10-20, Xeon E5-2687W 8C 3.100GHz, Infiniband QDR, NVIDIA K20, Eurotech	2013	467	Eurotech	2688	100900	175667
Power 575, p6 4.7 GHz, Infiniband IBM	2009	46	IBM	5376	78680	101068.8
BladeCenter HS21 Cluster, Xeon dual core 3.0 GHz, Infiniband IBM	2008	179	IBM	2560	19910	30720
BladeCenter HS21 Cluster, Xeon dual core 3.0 GHz, Infiniband IBM	2008	178	IBM	2560	19910	30720
BladeCenter HS21 Cluster, Xeon dual core 3.0 GHz, Infiniband IBM	2007	48	IBM	5120	19910	61440
BCX - eServer 326 Cluster, Opteron Dual Core 2.6 GHz, Infiniband	2007	71	IBM	10240	15760	53248
BCX - eServer 326 Cluster, Opteron Dual Core 2.6 GHz, Infiniband	2006	44	IBM	5120	12608	26624
eServer pSeries p5 575 1.9 GHz IBM	2005	102	IBM	512	3392	3891,2
xSeries, Xeon 3.06 GHz, Myrinet IBM	2005	107	IBM	1024	3328	6266,9
BladeCenter HS20 Xeon 3.06 GHz, Myrinet IBM	2004	61	IBM	768	3231	4700
BladeCenter LS20, Opteron 2.2 GHz Dual core, Infiniband	2006	298	IBM	1064	2874,5	4681,6
xSeries Xeon 3.06 GHz, Myrinet	2003	107	IBM	512	2223,2	3133,4
pSeries 690 Turbo 1.3GHz	2002	30	IBM	512	1384	2662,4
pSeries 690 Turbo 1.3GHz GigEth	2002	32	IBM	512	826,5	2662,4
T3E1200	1999	36	Cray Inc.	268	221,8	321,6
AlphaServer SC45, 1 GHz	2002	261	HP(Compaq)	128	220,5	256
T3E1200	1998	38	Cray Inc.	172	142,4	206,4
SP Power3 375 MHz 16 way	2001	162	IBM	128	138	192
T3E1200	1998	29	Cray Inc.	160	132,5	192
ORIGIN 3000 500 MHz	2001	327	SGI	128	106,9	128
SP Power3 375 MHz	2000	371	IBM	64	67,8	96
T3E	1996	56	Cray Inc.	128	50,4	76,8
ORIGIN 2000 300 MHz	1999	327	SGI	64	31,3	38,4
T3D MC128-8	1996	155	Cray Inc.	128	12,8	19,2
SP2/32	1995	142	IBM	32	6,6	8,5
T3D MC64-8	1995	132	Cray Inc.	64	6,4	9,6
Y-MP C94/2128	1993	306	Cray Inc.	2	1,7	1,9
Y-MP8/464	1992	226	Cray Inc.	4	1,2	1,3
IBM 3090 600 VF	1989	--	IBM	6	0,83	0,83
Cray Y-MP / 4 64	1989	--	Cray Inc.	4	1,34	1,34
Cray X-MP / 48	1985	--	Cray Inc.	4	0,94	0,94
CDC 7600	1975	--	CDC	1	0,06	0,06
CDC 6600	1969	--	CDC	1	0,03	0,03

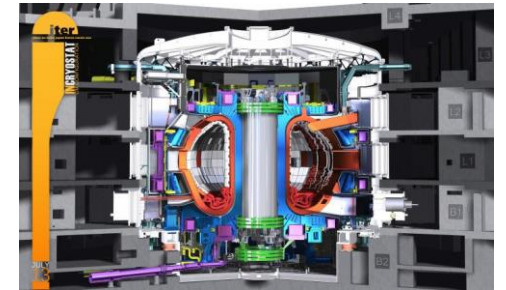
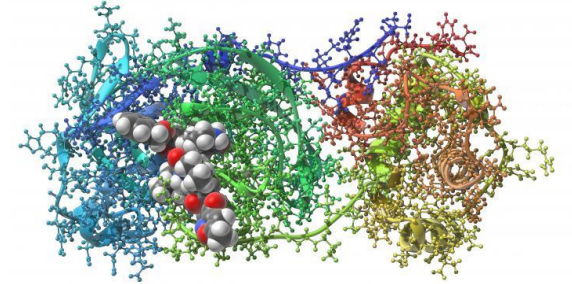
- one of the Large Scale Facilities in Europe
- a PRACE Tier-0 hosting site
- CINECA's HPC systems:
 - MARCONI100
 - MARCONI
 - GALILEO
 - CLOUD.HPC
 - LEONARDO (2021)



	CPU (mhz,core, ...)	Total cores / Total Nodes	Memory per node	Accelerator
<i>MARCONI-A3</i>	Intel SkyLake 2x Intel Xeon 8160 @2.1GHz 24 cores each	72576+38016+43776 / 1512+792+912	192 GB	-
<i>MARCONI100</i>	IBM Power9 AC922 @3.1GHz 32 cores HT 4 each	31360 / 980	256 GB	4x NVIDIA Volta V100 GPUs, NVlink 2.0 16 GB
<i>DGX</i>	AMD 2x Rome 7742 @2.6GHz 32 cores HT 2 each	384/3	980 GB	8x NVIDIA A100 Tensor Core GPUs, NVlink 3.0 80 GB
<i>GALILEO</i>	Intel Broadwell 2x Intel Xeon E5-2697 v4 @2.3GHz 18 cores each	36792 / 1022	128 GB	
<i>CLOUD.HPC</i>	Intel Broadwell 2x Intel Xeon E5-2697 v4 @2.3GHz 18 cores each	2880/ 80	256 GB	

- partner of many European Projects:

- Life Science: Exscalate4CoV
- Nuclear Fusion: EuroFusion
- Humanities and Social Sciences: DARE
- Astrophysics and Plasma Physics: AIDA



- also part of many Center of Excellence:



- register to our UserDB portal (<https://userdb.hpc.cineca.it/>)
- associated to a valid project as:
 - Collaborator or
 - Principal Investigator
- Hot to get projects on Cineca's HPC systems:
 - ISCRA Projects
 - PRACE Projects
 - HPC-Europa3 Projects
 - Agreements
 - General users and Industrial applications
- For more info visit: <https://www.hpc.cineca.it/content/how-get-resources>

Thank you for your attention!

<http://sctrain.eu/>

Univerza v Ljubljani



TECHNISCHE
UNIVERSITÄT
WIEN



VSB TECHNICAL
UNIVERSITY
OF OSTRAVA

IT4INNOVATIONS
NATIONAL SUPERCOMPUTING
CENTER



Co-funded by the
Erasmus+ Programme
of the European Union

This project has been funded with support from the European Commission.

This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.