



## PRACE Project Access

### 4<sup>th</sup> call for proposals for Tier-0 and Synchronized Call for Tier-1

Opening date: 2<sup>nd</sup> November 2011

Closing date: 10<sup>th</sup> January 2012, 1600 CEST

Start date: 1<sup>st</sup> May 2012

Allocation period: 1 year

Type of access: Project access

Tier-0 machines available:

IBM Blue Gene/P “JUGENE” (GCS@Jülich, Germany)

Bull Bullx cluster “CURIE” (GENCI@CEA, France)

Cray XE6 “HERMIT” (GCS@HLRS, Germany)

SuperMUC (GCS@LRZ, Germany)

MareNostrum (BSC, Spain)

FERMI (CINECA, Italy)

Tier-1: IBM Blue Gene/P, Cray XT and XE, IBM Power 6, range of large clusters including GPU resources made available from Finland, France, Germany, Ireland, Italy, Poland, Sweden, The Netherlands, Serbia, Switzerland, Turkey, and United Kingdom.

### Introduction

PRACE (Partnership for Advanced Computing in Europe) is a Research Infrastructure that allows researchers from across Europe to apply for time on high-performance computers from a series of hosting nations via a central peer review process. This call is the fourth PRACE-RI Regular call for Project access, inviting applications for high-end (Tier-0) computing resources to carry out projects which have high scientific quality and impact. Allocation will be for 1 year starting from 1<sup>st</sup> May 2012.

The call also invites proposals for project access to Tier-1 resources, via DECI, the Distributed European Computing Initiative, providing single project cross-national access to national (Tier-1) HPC-resources. The DECI call is synchronized in preparation for future integrated calls for Tier-0 and Tier-1 resources. The DECI Call, its processes, the procedures and mechanisms are explained in detail in section “**DECI Call**”.

The deadline for submission of proposals both for Tier-0 and for Tier-1 is **10<sup>th</sup> January 2012 at 1600 CET**.



## Tier-0 call

The PRACE on-line system for Tier-0 proposals will not accept proposals submitted after 1600 CET on 10<sup>th</sup> January (please read the paragraph “**Process details and deadlines**” for further details on the deadlines).

Applicants to the 4<sup>th</sup> PRACE Regular call can only submit proposals for project access. For information on the types of access, please visit <http://www.prace-ri.eu/Calls-for-Proposals>.

Project access is for access to PRACE Tier-0 computing resources for projects which use codes that may have been previously tested and must have demonstrated high scalability and optimisation. Access to the PRACE HPC resources will be given for 1 year starting on 1<sup>st</sup> May 2012 (see on Tier-0 System section the availability of each system).

Proposals for code testing and optimisation are not covered by this call. A separate call for Preparatory access is continuously open. Further details about the preparatory access are available in the PRACE website, <http://www.prace-ri.eu/Calls-for-Proposals>.

## Scope of the Tier-0 call

The 4<sup>th</sup> PRACE Regular call is intended for large-scale projects of high scientific quality and for which a significant impact at European and international level is anticipated. High scalability of the code (at least 8k compute cores for JUGENE; at least 512 cores for the fat nodes partition and above 2048 cores for the thin nodes partition for CURIE, 2048 cores for HERMIT; at least 4096 cores for SuperMUC and 2048 as well for MareNostrum) must be demonstrated. Proposals for project access must be ready to run. The projects must demonstrate scientific excellence and should cover topics of major relevance for European research. They should also include elements of novelty, transformative aspects, have a recognised scientific impact and include a dissemination plan. Possible practical and timely applications resulting from the project are also desirable. The projects should also demonstrate the possibility of achieving results which will be publishable in journals of recognised scientific impact.

Any project requesting access as continuation to previous access is required to present the final report or a progress report at the time of the closure of the call. This report will be analysed by the Access Committee evaluate the status of on-going access. The template document for the report can be requested to [peer-review@prace-ri.eu](mailto:peer-review@prace-ri.eu)

## Process details and deadlines for Tier-0 proposals

The call will close at 1600 CET on the 10<sup>th</sup> of January 2012. The PRACE peer-review team will perform an administrative validation check. In case of administrative inaccuracies, the applicant will receive, on January 11<sup>th</sup>, an email asking for administrative details. The deadline for the applicant to provide such details is January 16<sup>th</sup> at 1200 CET. Anything received after January 16<sup>th</sup> at 1200 CET will NOT be accepted nor considered in the review process.

Between January 11<sup>th</sup> and January 16<sup>th</sup> the PRACE peer-review team will accept ONLY details in reply to the requested issues.

On January 16<sup>th</sup> at 1200 CET all applicants will receive a confirmation about the correct submission of the proposal and about the eligibility.

From January 16<sup>th</sup> the projects will be technically and scientifically peer reviewed by recognised experts. Applicants have the right to reply to the comments of the reviewers. The proposals, together with the reviewers' reports and the applicants' responses, will be analysed by the Prioritisation Panel who will produce the final ranking list. Proposals will be awarded by moving



down the ranking list in order until quality or resources run out. If necessary, the Prioritisation Panel may agree on a quality cut-off threshold. Proposals ranked under the cut-off threshold will not be awarded even if there is resource left on the machine. For more information, please check <http://www.prace-ri.eu/hpc-access>.

### Tier-0 Systems

- IBM Blue Gene/P – JUGENE – hosted by GCS in Jülich, Germany. Details and terms of usage can be found at <http://www.fz-juelich.de/jsc/jugene>.

JUGENE has a peak performance of 1 Petaflops. It is composed of 294,912 processing cores with 4 cores forming a node with 2 GB of memory for a total of 147 TB.

The total available capacity in this call is 300 million compute core hours. Some maintenance period is expected during the allocation period, and will be announced in due time by GCS@Juelich.

- Bull Bullx cluster – CURIE – hosted by GENCI in TGCC/CEA, Bruyères-Le-Châtel, France. Details and terms of usage can be found at <http://www-hpc.cea.fr/en/complexes/tgcc-curie.htm>.

CURIE is composed by 3 different partitions:

- A fat node partition open to PRACE calls since January 2011 and composed by 360 nodes with 32 cores per nodes, for a peak performance of 105 TeraFlops
- A thin node partition, open to PRACE calls in Q1 2012 and composed by 5040 blades with 16 cores per node, for a peak performance of up to 1.5 PetaFlops
- A hybrid node partition, open to PRACE preparatory Access Calls only and composed by 144 blades with 8 scalar cores and 2 GPU per node, for a peak performance of 200 TeraFlops

The total available capacity in this call for CURIE is:

- On the thin node partition: 188 million compute core hours, with a one year allocation starting from May 1<sup>st</sup>, 2012.
- On the fat node partition: 28 million compute core hours, with a one year allocation starting from May 1<sup>st</sup>, 2012.
- Cray XE6 – HERMIT – hosted by GCS in HLRS, Stuttgart, Germany. Details and terms of usage can be found at <http://www.hlrs.de/systems/platforms/cray-xe6-hermit/>.

HERMIT has a peak performance of 1 Petaflops and is designed for sustained application performance and highly scalable applications. It is composed of 3552 dual socket nodes equipped with AMD Interlagos Processors leading to overall 113664 processing cores. Nodes are equipped with 32GB or 64GB main memory.

The total available capacity in this call is 120 million compute core hours.

- SuperMUC – hosted by GCS in LRZ, Garching, Germany. Details and terms of usage can be found at <http://www.lrz.de/services/compute/supermuc/systemdescription/>.

SuperMUC is based on the Intel Xeon-Architecture and will provide a peak performance of about 3 Petaflops. SuperMUC consists of 18 Thin Node Islands and a Fat Node Island



which is at first also used as the Migration System SuperMIG. Each Island contains more than 6,000 cores. All compute nodes within an individual Island are connected via a fully non-blocking Infiniband network (FDR10 for the Thin nodes / QDR for the Fat Nodes).

The total available capacity in this call is 200 million compute core hours in an 8 month period, starting September 1<sup>st</sup>, 2012.

- MareNostrum – hosted by BSC in Barcelona, Spain. Details and terms of usage will be made available at [www.bsc.es/MareNostrum](http://www.bsc.es/MareNostrum)

MareNostrum will be announced shortly and the configuration of the system cannot be disclosed at the time of this call, it will be disclosed at proper time before the end of 2011. It will be a system with 1 PetaFlops peak performance, equipped with general-purpose processors.

The total available capacity in this call is 135 million compute core hours in a 9 month period, starting August 1<sup>st</sup>, 2012.

- FERMI – hosted by CINECA in Casalecchio di Reno, Italy. Details and terms of usage will be made available at [www.cineca.it/en/hardware/FERMI](http://www.cineca.it/en/hardware/FERMI)

FERMI will be a highly scalable system without accelerators. The configuration will be disclosed at proper time before the end of 2011. The system will deliver 2 PetaFlops peak performance, configured with in excess of 150.000 cores processors, with 1 GByte of main memory per core.

The total available capacity in this call is 300 million compute core hours in a 9 months, starting August 1<sup>st</sup>, 2012.

For this call, proposals asking for resources on a single machine or on multiple machines are allowed.

Please note that a proposal asking for resources on multiple machines has to justify the need to access several machines. The proposal will be awarded or rejected in totality (no subpart of the proposal will be awarded).

### **Eligibility for Tier-0 resources**

For this call, proposals from academia are eligible, as long as the project leader is a researcher employed in a research organisation. The employment contract of the project leader with the research organisation must be valid to at least 3 months after the end of the allocation period.

Industry will be eligible for access through collaborations with academia, i.e. industry must have the role of collaborators in academic projects. Full access to industry may begin later in 2012 and will be announced at the PRACE website.

PRACE HPC centres may have further restrictions on who is eligible to use the machines. For example, due to US export rules. It is the responsibility of the applicant to ensure that they are eligible to use the system.

### **How to Apply for Tier-0 resources**

All proposals must be submitted via the PRACE website at: <http://www.prace-ri.eu/hpc-access>. All mandatory fields must be filled in before the application form can be submitted. Mandatory fields



are marked with a red square. After the form has been saved, applicants can continue to access it and update it before they finally submit it. Once an application has been submitted no changes can be made, unless you un-submit the proposal. After un-submitting the proposal, you can make all necessary changes. Then you will have to save your changes, and submit again the proposal. Each time you submit or un-submit your proposal, you will receive an e-mail with the status of your proposal (un-submitted or submitted). Please note that only submitted proposals will be put forward for peer review. All applications must be submitted by **1600 CET on January 10<sup>th</sup>, 2012**. The system will not accept applications that are submitted after this time. In the case of technical difficulties, the decision of PRACE as to whether an application can be accepted is final. However, applicants are advised to make sure that they submit proposals as early as possible before the given deadline in order to ensure that all mandatory fields are filled in and submission is accepted.

Further details on the standard application procedure can be found on the PRACE website <http://www.prace-ri.eu/hpc-access>.

### **Assessment Procedure for Tier-0 applications**

All proposals will undergo PRACE technical and scientific assessment. Applicants will have the opportunity to comment on these assessments until March 22<sup>nd</sup>. All applicants should expect to be notified of the outcome by March 12<sup>th</sup>, 2012 although efforts will be made to notify successful applicants as soon as possible after the outcome so that they can begin to schedule work on the system.

The assessment procedure will adhere to the PRACE principles of peer review:

- Transparency
- Ensure fairness to the science proposed
- No parallel assessment
- Managing interests
- Expert assessment
- Confidentiality
- Prioritisation
- Right to reply

More information on the principles of peer review can be found on the PRACE website <http://www.prace-ri.eu/hpc-access>

### **Criteria for Assessment to Tier-0 resources**

It is essential that proposals submitted are at high level of scientific and technical maturity. The results of the project should lead to the anticipated publication of results in one or more high-quality journals.

The proposal must demonstrate scientific excellence and focus on topics of major relevance for European research. They must also demonstrate the need for Tier-0 resources. They should explain the novelty, transformative aspects, and expected scientific impact of the project, and include a dissemination plan. The identification of possible practical and timely applications resulting from the project is also desirable. All of this must be made clear by the information submitted to support the application.

The codes used during the project should have been previously tested and a high level of scalability and development must be demonstrated. The codes should be ready to run.



## Further information

A continuous call for applications for preparatory access on Tier-0 systems is also open. Further information about the preparatory access call is available on the PRACE website.

## Tier-1/DECI Call

The deadline for submission of proposals for Tier-1 systems is 10<sup>th</sup> January 2012, at 1600 CET. DECI provides single project cross-national access to European Tier-1 resources. Access will be awarded for a period of 12 months, beginning 1 May 2012. Resources are available on the following architectures: Cray XT, IBM Blue Gene/P, IBM Power 6, Intel and PowerPC Clusters (various processor and memory configurations) and hybrid systems (clusters with GPGPU accelerators).

## Eligibility for Tier-1

For this call, proposals from academia are eligible, as long as the project leader is a senior researcher employed in a research organisation homed in a European Union country or a PRACE Association member country. The employment contract of the project leader with the research organisation must be valid to at least 3 months after the end of the allocation period. Industry will be eligible for access through collaborations with academia, i.e. industry must have the role of collaborators in academic projects. Individual HPC centres may have further restrictions on who is eligible to use the machines. For example, due to US export rules.

## Scope of the Tier-1 call

DECI enables European researchers to obtain access to the most powerful national (Tier-1) computing resources in Europe, regardless of their country of origin or work and to enhance the impact of European science and technology at the highest level. Proposals must deal with complex, demanding, innovative simulations that would not be possible without Tier-1 access. They should explain the novelty, transformative aspects, and expected scientific impact of the project, and include a dissemination plan. The identification of possible practical and timely applications resulting from the project is also desirable. All of this must be made clear by the information submitted to support the application. The codes used during the project should have been previously tested and an appropriate level of scalability and development must be demonstrated.

Please note that in addition to offering access to computing resources, applications-enabling assistance from experts at the leading European HPC centres is offered to enable projects to be run on the most appropriate Tier-1 platforms in PRACE.

## Process details and deadlines for Tier-1 proposals

All DECI-8 (Tier-1) proposals should be submitted by email to [deci-support@prace-ri.eu](mailto:deci-support@prace-ri.eu). The template for proposals is available at

<http://www.prace-ri.eu/IMG/doc/DECI8-PROPOSAL-ACRONYM.doc>  
and must be carefully respected.

The call will close at 1600 CET on the 10<sup>th</sup> of January 2012. The PRACE peer-review team will perform an administrative validation check. In case of administrative inaccuracies, the applicant will receive, on January 11<sup>th</sup>, an email asking for administrative details. The deadline for the applicant to provide such details is January 16<sup>th</sup> at 1200 CET. Anything received after January 16<sup>th</sup> at 1200 CET will NOT be accepted nor considered in the review process.

Between January 11<sup>th</sup> and January 16<sup>th</sup> the PRACE peer-review team will accept ONLY details in reply to the requested issues.



Several submissions of the same proposal before the submission deadline are permitted, but only the last one will be considered.

On January 16<sup>th</sup> at 1200 CET all applicants will receive a confirmation about the correct submission of the proposal and about the eligibility.

From January 16<sup>th</sup> the projects will be technically and scientifically peer reviewed. The DECI proposals submitted by Principal Investigator (PI) affiliated to institutions located in one of the Tier-1 contributing countries will be peer-reviewed by their own national peer-review system. The DECI proposals submitted by PI affiliated to institutions located in countries NOT acting as Tier-1 will be peer-reviewed by the HPC-Europa2 SUSP Panel. The applicants will be informed of the review results in the third week of April 2012.

### **Tier-1 computer resources**

Four classes of architecture are available for DECI projects.

- Cray XT4/5/6 and Cray XE6 – four large Cray XE and XT systems are available at EPCC (UK), KTH (Sweden), CSC (Finland), and CSCS (Switzerland). The largest of these machines has a peak performance of 829 TeraFlops and a total of 90,112 cores. 50 million compute core hours are available on this architecture (normalized to Power 4+).
- IBM Blue Gene/P – two BG/P systems are available at IDRIS (France) and RZG (Germany). The largest of these machines has a peak performance of 139 TeraFlops and a total of 40,960 cores. 3 million compute core hours are available on this architecture (normalized to Power 4+).
- IBM Power 6 – three IBM Power 6 systems are available at RZG (Germany), SARA (Netherlands), and CINECA (Italy). The largest of these machines has a peak performance of 8 TeraFlops. 10 million compute core hours are available on this architecture (normalized to Power 4+).
- Clusters – clusters are available at FZJ (Germany, Bull Nehalem cluster), LRZ (Germany, Xeon cluster), HLRS (Germany, NEC Nehalem cluster plus GP/GPU cluster), CINES (France, SGI EX8200), CINECA (Italy, Westmere cluster plus GPGPU), PSNC (Poland, AMD plus GPGPU cluster), WCNS (Poland, HP cluster), ICHEC (Ireland, SGI EX8200), IPB (Serbia, AMD plus GPGPU cluster), and UYBHM (Turkey, Nehalem cluster). The largest cluster has a peak performance of 267 TeraFlops and a total of 23,040 cores. 38 million compute core hours are available on this architecture (normalized to Power 4+).



**Timetable for both Tier-0 and Tier-1 proposals**

<b>Closing date</b> for the submission of proposals:	<b>10<sup>th</sup> January 2012, 1600 CET</b>
<b>Request</b> for administrative clarification:	<b>11<sup>th</sup> January 2012</b>
<b>Deadline for sending administrative clarifications requested:</b>	<b>16<sup>th</sup> January 2012, 1200 CET</b>
<b>Response of applicants to reviews:</b> (Only for Tier-0 applicants)	<b>12<sup>th</sup> – 20<sup>th</sup> March, 2012, 1200 CET</b>
<b>Anticipated allocation decisions:</b>	<b>Third week of April 2012</b>
<b>Start date of awarded proposals:</b>	<b>1<sup>st</sup> May 2012</b>
<b>End date of award:</b>	<b>30<sup>st</sup> April 2013</b>

**Contacts**

**For queries related to Tier-0 peer review please contact:** peer-review@prace-ri.eu

**For any queries related to Tier-1 applications please contact:** deci-support@prace-ri.eu

**About PRACE:** The Partnership for Advanced Computing in Europe (PRACE) is an international non-profit association with its seat in Brussels. The PRACE Research Infrastructure (RI) provides a persistent world-class High Performance Computing (HPC) service for scientists and researchers from academia and industry. The PRACE leadership systems form the apex of the performance pyramid and are well integrated into the European HPC ecosystem. The implementation of the PRACE RI receives funding from the EU's Seventh Framework Programme (FP7/2007-2013) under grant agreements n° RI-261557 and n° RI-283493.

**Changes from original version**

- Eligibility criteria for Tier-0, not limited to European and PRACE countries.
- Eligibility criteria for Tier-1, specified as differs from Tier-0
- Scope of the Tier-1 call, including assessment criteria for Tier-1
- Process details and deadline for Tier-1, specify the template location and email address