



PRACE 11th Call for Proposals for Project Access including Multi-year and Data Storage Service Pilot Case.

Opening date: 9 February 2015

Closing date: 18 March 2015, 12:00 (noon) CET

Response of applicants to reviews: 27 May 2015 – 3 June 2015

Anticipated allocation decisions: last week of July 2015

Allocation start date of awarded proposals: 1 September 2015

Allocation end date of award: 31 August 2016

Type of access: Project Access, Multi-Year Project Access, Pilot on data

PRACE HPC systems available:

“Fermi”, IBM Blue Gene/Q (CINECA, Italy)

“MareNostrum”, IBM System X iDataplex (BSC, Spain)

Introduction

The Partnership for Advanced Computing in Europe (PRACE) is an international non-profit association with its seat in Brussels. The PRACE Research Infrastructure provides a persistent world-class high performance computing service for scientists and researchers from academia and industry in Europe. The computer systems and their operations accessible through PRACE are provided for this 11th call by 2 PRACE members (BSC representing Spain and CINECA representing Italy). The Implementation Phase of PRACE receives funding from the EU's Seventh Framework Programme (FP7/2007-2013) under grant agreement RI-312763.

The mission of PRACE is to enable high impact scientific discovery and engineering research and development across all disciplines to enhance European competitiveness for the benefit of society. PRACE seeks to realize this mission by offering world class computing and data management resources and services through a peer review process.

Scientists and researchers from around the world can apply for access to PRACE resources.

Industrial users can apply if they have their head offices or substantial R&D activity in Europe.

The Call is open to:

***Project Access:** Proposals can be based on a 12-months schedule, or, for Multi-year Projects, on a 24- or 36-months schedule. The allocation of awarded resources is made for 1 year at a time with provisional allocations awarded for the 2nd and 3rd year.

Additionally, the Call:

*offers the opportunity to launch a pilot **call for joint data storage** services and resources. Its call is a pilot and its future continuation shall be subject to evaluation.

*reserves 0.5% of the total resources available for this call for **Centres of Excellence (CoE)** as selected by the EC under the E-INFRA-5-2015 call for proposals.

The PRACE Access Committee, composed of leading European scientists and engineers, ranks the project proposals that will be awarded access to PRACE resources.

Further details on the standard application procedure can be found on the [PRACE website](#) ("How to apply" menu).

1. Scope of the Call

The PRACE 11th Call for Proposals is intended for large-scale projects of excellent scientific merit and for which a significant European added-value and major impact at international level is anticipated.

Applications to PRACE computing resources must use codes that have been previously tested and that demonstrate high scalability and optimisation to multi-core architectures or that demonstrate a requirement for ensemble simulations that need a very large amount of CPU overall. The need for PRACE computing performance must be clearly spelled out in the proposal. Further details on the minimal requirements for using each system are available on the [PRACE website](#) ("Call Announcement" – document titled 'Technical Guidelines for Applicants to PRACE Call').

Proposals for code testing and optimisation are outside of the scope of this call. A separate call for Preparatory Access is continuously open (see the "Call Announcement" page on the [PRACE website](#) for further details about Preparatory Access calls).

Proposals must demonstrate scientific excellence and include elements of novelty and transformative aspects. They must have a recognised scientific impact, validated in a coherent dissemination plan. Possible practical and timely applications are therefore desirable. The proposal should demonstrate the potential of achieving results which will be published in high impact scientific peer-reviewed journals and conferences.

Proposals requesting resources on a single system or on more than one system are allowed. Please note that a proposal asking for resources on more than one system has to clearly justify the need for those resources. The proposal will be either awarded or rejected as a whole (no part(s) of the proposal can be proposed for awards).

1.1. Projects Access

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.

The 11th PRACE Call for Proposals is intended for large-scale projects of excellent scientific merit and for which a significant European added-value and major impact at international level is anticipated.

Proposals for Project Access must have computer codes and data ready to run on the Tier-0 systems. They must demonstrate the need for Tier-0 resources. They must demonstrate scientific excellence and focus on topics of major relevance for European research and include elements of novelty, transformative aspects. They must have a recognised scientific impact, validated in a coherent dissemination plan. Possible practical and timely applications are therefore desirable. The proposal should demonstrate the possibility of achieving results which will be published in high impact scientific peer-reviewed journals and conferences.

For proposals requesting access as a follow-up to a previous Project Access, **it is mandatory to present the final report (or a progress report) of the previous project at the time of the closure of the Call.** This report should be sent to the PRACE peer-review team at peer-review@prace-ri.eu by the Call deadline date. The report will be analysed by the scientific reviewers and Access Committee members to evaluate the status of the on-going access and whether the need for the follow-up project is acceptable or not.

The template document for this report is available on the [PRACE website](#) ("Information for PRACE Awardees"), and it must be carefully respected.

1.1.1- 1-Year Project Access

Allocations for standard 1-year access will be starting on September 1, 2015.

1.1.2- Multi-Year Project Access

This PRACE 11th Call for proposals is open to Multi-Year Project Access inviting applications lasting 2 or 3 years. Multi-Year Projects Access are subject to the same eligibility and assessment criteria as applications for standard 1-year Project Access. In addition, the proposals will have to demonstrate their need for a resource allocation of more than a year.

Allocation of resources is made for one year at a time, with provisional allocations awarded for the second and/or third year. All Multi-year Access Projects are subject to annual peer review, based on a progress report and a face-to-face meeting. Allocation of resources shall be adjusted accordingly.

The total resources allocated to the Multi-year Access Projects cannot exceed 10% of the total resources available for *for each system* by yearly period.

1.2. Support to CoE

0.5% of the total resources available for this call is reserved for Centres of Excellence (CoE) as selected by the EC, under the E-INFRA-5-2015 call for proposals.

CoE don't need to apply to this PRACE call – if funded by the EC, CoE requesting access to PRACE resources will be awarded PRACE resources from this reserve.

Resources will be equally distributed among the EC-selected CoE. They will be asked to provide a description of their usage of the resources for technical validation, and a final report with the obtained results. All forms will be sent in due time.

The CoE have the same rights and obligations as any other user, as stated in the paragraph on the "Terms of access".

1.3. Pilot case for joint data storage [services]

PRACE is opening a pilot call for joint data storage [services] and resources which offers the opportunity to award projects with storage capacity needs and its associated data services. This call is to be considered as a pilot and its continuation shall be subject to evaluation.

The aim of this pilot call is to:

- Explore the possibility to implement a joint call for data storage service to be awarded/allocated to selected projects, following the PRACE model of scientific excellence.
- Explore a new model of resources provision and deployment.

PIs can request storage capacity and related services. The duration of the access to this data resources and services will be limited depending on the pilot case. The maximum duration for each storage service provider will be detailed below.

This pilot case will be proposed jointly with PRACE associated members and partners willing to provide storage and associated services under the PRACE umbrella including:

EUDAT

A pilot for joint PRACE and EUDAT storage services and resources is open, offering the possibility to couple EUDAT storage capacity to PRACE HPC resources. Around 1 PB (1000 TB) storage capacity is available within this call, for 150TB per project awarded. EUDAT guarantees data storage at one or several of the 12 EUDAT sites for at least 24 months after the end of the PRACE grant, free of charge. Projects are invited to indicate a preferred EUDAT site. Some computing resources for analysis purposes may be negotiated as well.

More information about EUDAT: <http://www.eudat.eu>

EU-T0

A pilot for joint PRACE and EU-T0 storage services and resources is open, offering the opportunity to reinforce the links between HPC and HTC at the service of science. The research funding agencies members of EU-T0 support this collaboration to allow resources to be jointly awarded. It would be a pilot project in the direction of harmonising the two major existing EU infrastructures of HPC and HTC. For this call the access to these resources is limited to European institutions. Each project will be able to ask for a maximum of 150TB of storage capacity, and a total of 1PB for all projects. The access to this data is limited to 30 months from the beginning of the granting period at PRACE (from 1 September 2015 until 28 February 2018). Modest computing resources for analysis purposes may be negotiated as well.

More information about EU-T0: <http://www.eu-t0.eu/?lang=en>

BSC

A pilot for joint PRACE and BSC storage services and resources is open, offering the opportunity to maintain the data generated at MareNostrum for a maximum of 24 months after the finalization of the PRACE granting period. BSC will provide up to 400TB of data for this pilot with a maximum of 150 TB per project. The access to the data will be done by the following data transfer/access services: ssh/scp, gridFTP and bbcp. Modest computing resources for pre and post processing purposes will be provided as well.

SURFsara, Nikhef

A pilot for joint PRACE and The Dutch e-infrastructure (SURFsara, Nikhef) storage service and resources is open, offering up to 250 TB of storage in total within the context of this PRACE call, preferably to projects of Dutch Principal Investigators. The access to the data will be provided through ssh/scp and/or gridftp. Modest computing resources for pre and post processing purposes will be provided as well.

EPCC/EPsrc

A pilot for joint PRACE and EPCC/EPsrc storage services and resources, offering up to 100TB per project, up to two projects, on the UK Research Data Facility (UK-RDF) which is collocated with the ARCHER Cray XC-30 HPC service and up to 1 Mio ARCHER core-hours per project and/or access to appropriate local EPCC systems, for pre and post processing purposes.

CaSToRC

A pilot for joint PRACE and CaSToRC is interested to participate in the pilot project for joint PRACE and CaSToRC storage services and resources offering up to 100TB per project, up to two projects, for a maximum of 24 months after the finalization of a new PRACE granting period. The access to the data will be done by the following data transfer/access services: ssh/scp, gridFTP and bbcp.

The projects accepted will have to accept the conditions and terms of use of each data service provider.

2. Tier-0 Systems

Please note that any of the Tier-0 system may be upgraded during the 1-Year or Multi-Year allocation period. The awarded projects will be given access to the new machine for the remaining part of the budget with appropriate technical support.

Fermi – IBM Blue Gene/Q – hosted by CINECA in Casalecchio di Reno, Italy.

Details and terms of usage can be found [here](#).

The IBM BG/Q system Fermi is composed of 10 240 PowerA2 sockets running at 1,6 GHz, with 16 cores each, for a total of 163 840 compute cores and a system peak performance of 2 petaflops. Each processor comes with 16 GB of RAM (1 GB per core). The total available capacity in this call for Fermi is **390 million** compute core hours.

Fermi is available for 1-year, Multi-Year Project Access and selected CoE.

MareNostrum – IBM System X iDataplex - hosted by BSC in Barcelona, Spain.

Details and terms of usage can be found [here](#).

Mare Nostrum is composed of 2 partitions:

- MareNostrum is based Intel Sandy Bridge EP processors 2,6 GHz (eight-core), 2 GB/core (32 GB/node) and around 500 GB of local disk acting as local /tmp. A total of 36 racks, each with 84 compute nodes, each with two Sandy Bridge EP processors. All nodes are interconnected through an Infiniband FDR10 network, with a no-blocking fat tree network topology. MareNostrum has a peak performance of 1,1 petaflops.
- MareNostrum Hybrid is composed of 42 nodes with 16 cores, 64 GB of main memory, 2 Xeon Phi processors and two IB FDR10 link per node, for a peak performance of 100 teraflops.

The total available capacity in this call for MareNostrum is:

- On MareNostrum: **120 million** compute core hours
- On the hybrid node partition: **200.000** compute hybrid hours

MareNostrum is available for 1-year, Multi-Year Project Access and selected CoE.

3- Eligibility criteria

Scientists and researchers from around the world can apply for access to PRACE resources.

Only proposals with a civilian purpose will be eligible to participate in PRACE calls for proposals.

Only proposals written in English will be eligible.

PRACE HPC centres may have further restrictions on who is eligible to access their own systems. It is the responsibility of the applicant to ensure that they are eligible to access the system(s) they have applied for. In case of doubts, the applicant is advised to contact the HPC centre(s) for clarifications prior to applying (see contacts at www.prace-ri.eu/Resources).

3.1 Eligibility criteria for Project Access (1-year and multi-year)

3.1.1- Eligibility criteria for academia and public research organisations

Researchers from academia and public research organisations are eligible to apply as long as:

- a) The project leader has an employment contract as a researcher in the organisation
- b) The employment contract of the project leader must be valid for at least 3 months after the end of the allocation period

3.1.2- Eligibility criteria for commercial companies

Commercial companies may apply on their own or in collaboration with academia/public research organisation (as principal investigators or collaborators). Commercial companies are eligible to apply if:

- a) The company has its head office or substantial R&D activity in Europe
- b) The employment contract of the project leader must be valid for at least 3 months after the end of the allocation period
- c) Access is devoted solely for open R&D research purposes
- d) Commercial companies applying on their own will be limited to a maximum of 5% of the total computing resources of a single PRACE system, subject to the approval of the constraints imposed by state-aid regulations

3.2 Additional eligibility criteria for the data storage pilot call

- The call is open to proposals looking for solutions to store and/or perform computations with research data, or for a robust data service provider to manage, access use, re-use and preserve their data.
- Applicants are requested to provide a short description of their data requirements and information about their data management plan following the template available in the on-line application form.

Proposals will be shortlisted according to the following criteria:

- o Technical feasibility with regard to the availability of storage and network capacities and capabilities which can be provided,
 - o Expected benefits of the project for the immediate research community,
 - o Expected benefits for European researchers beyond the immediate research community from which the project originates,
 - o Contribution to Open Access.
- PRACE HPC centres may have further restrictions on who is eligible to access their own systems. It is the responsibility of the applicant to ensure that they are eligible to access the system(s) they have applied for. In case of doubts, the applicant is advised to contact the HPC centre(s) for clarifications prior to applying (see contacts at www.prace-ri.eu/Resources).

4- Terms of access

The Principal Investigator (PI) shall direct the project and is expected to be an essential participant in its implementation. The PI will have the overall responsibility for the management of the project and interactions with PRACE.

The PI commits to:

- a) **Provide** to PRACE within the period established in the Guide for Applicants a final report, using the proper PRACE template, with the results obtained through the access to the PRACE Research Infrastructure, as well as a qualitative feedback on the use of the resources

b) **Acknowledge** the role of the HPC Centre and PRACE and of the relevant partners involved in the pilot use case for joint data storage in all publications which include the results above mentioned. Users shall use the following (or equivalent) wording in such acknowledgement in all such papers and other publications:

“We acknowledge PRACE for awarding us access to [resource-name at site]¹»

Respecting the words in bold above is very important since PRACE will use this word pattern when searching for bibliographic references in scientific articles

c) **Allow** PRACE to publish the mentioned report as of one year from the termination of the allocation period

d) **Collaborate** with PRACE, upon its request, in the preparation of dissemination material

e) **Allow** the relevant partners involved in the pilot use case for joint data storage to publish references to the report as of one year from the termination of the allocation period of HPC resources

Access to PRACE resources is for open R&D research purposes and is free of charge provided that the eligibility criteria and terms of access described herein and in the On-line Application Form are fulfilled/respected. If this differs from the terms of access that the relevant Centre may have in place, it is the terms of access of the relevant Centre that will prevail.

Users will hold harmless PRACE and the relevant Centre, including their Directors and staff, from and against any claim and expense arising out of the use of the resources.

From the start to the end of the access period, the applicant should direct questions and requests for support to the user support of the HPC Centre(s) where resources have been allocated.

Applicants must inform promptly the peer review team (peer-review@prace-ri.eu) and the centre where the resources are allocated of any changes to a successful proposal, namely a decrease in the amount of resources needed or on the distribution of the usage of the resources within the agreed time plan with the centre.

Requests for the extension of the allocation period need to be fully justified, and sent to the HPC centre where the resources are allocated. They will be analysed by PRACE on a case by case basis. Extension will only be considered in the event of unforeseen technical issues at the HPC hosting site which would prevent the user from accessing the awarded HPC resources. The awarded resources (total computer time) cannot be increased.

5- Process details and deadlines

5.1- How to Apply

All proposals must be submitted via the PRACE website at: <https://prace-peer-review.cines.fr/>

¹ Use as many instants of the pattern [resource-name at site] as the number of systems awarded via PRACE. The word ‘site’ can be replaced by ‘BSC, Spain’, ‘CINECA, Italy’, as applicable.

All proposals must be fully completed and submitted by the closing date. The submission website 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 completed and submission is accepted.

Further details on the standard application procedure can be found on the [PRACE website](http://www.prace-ri.eu) ("How to Apply" <http://www.prace-ri.eu/application-guide/>).

5.1.1- Applications for 1-year and Multi-Year Project Access including the pilots on data.

All proposals for 1-year and Multi-Year Project Access consist of 2 documents: an on-line form and a "Detailed Project Document", both available via the above mentioned website. For the pilots on data, an extra PDF document has to be provided (available also in the mentioned website).

All mandatory fields of the on-line application form must be completed before it can be submitted. 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 more changes can be made, unless the applicant un-submits the proposal, performs all necessary changes, saves the changes, and re-submits the proposal. Each time the applicant submits or un-submits the proposal, he/she will receive an e-mail with the status of the proposal (un-submitted or submitted). Please note that only submitted proposals will be put forward for peer-review.

The template of the compulsory "Detailed Project Document" of the proposal (pdf to be attached to the online application form) must be carefully respected (Headings, Length of Paragraphs, Tables and Figures). Proposals that do not follow the template or that are incomplete cannot be considered for peer-review. The PRACE support team is available to answer questions by email while the Call is open (peer-review@prace-ri.eu).

For proposals requesting access as a follow-up to a previous project access, it is mandatory to present a final or progress report of the previous access at the time of the closure of the current Call. This report should be sent to the PRACE peer-review team at peer-review@prace-ri.eu by the Call deadline date. The report will be analysed by the scientific reviewers and Access Committee members to evaluate the status of the on-going access and whether the need for the follow-up project is acceptable or not.

The template document for this report is available on the [PRACE website](http://www.prace-ri.eu) ("Information for PRACE Awardees"), or on request to peer-review@prace-ri.eu, and must be carefully respected.

5.2- Peer Review assessment procedure

The assessment procedure (referred as peer review process) abides to the PRACE peer-review principles stated on the [PRACE website](http://www.prace-ri.eu) ("Peer-Review").

From **18 to 25 March 2015**, the PRACE Peer-Review Team will perform an administrative check. Proposals not complying with PRACE eligibility criteria will be rejected at this stage.

From **25 March 2015 onwards**, the proposals will be technically and scientifically peer-reviewed by recognised experts.

From **27 May to 3 June 2015**, during the right to reply phase, applicants are strongly recommended to use the opportunity to comment on these assessments.

The reviewers' reports and the applicants' responses will be analysed by the Prioritisation Panel who will produce the final ranking list. In case of conflicting reviews and responses, the Prioritization Panel will analyse the proposal.

Proposals will be awarded by moving down the ranking list in order until resources run out. If necessary, the Prioritisation Panel may agree on a scientific quality cut-off threshold. Proposals ranked under this threshold will not be awarded even if there are resources available on the systems.

By the **end of July 2015**, all applicants can expect to be notified of the outcome although efforts will be made to notify successful applicants as soon as possible.

5.2.1- Criteria for assessment

Only fully completed proposals will be subject to the hereinafter peer-review evaluation process.

5.2.1.1- Technical review

It is essential that proposals submitted are at a high level of technical maturity and demonstrate the need for Tier-0 resources. Further details on the minimal requirements for using each Tier-0 system are available on the [PRACE website](#) ("Call Announcement" page – document titled 'Technical Guidelines for Applicants to PRACE 11th Call (Tier-0)').

The computer codes used during the project should have been previously tested and a high level of scalability and development must be demonstrated. These computer codes must be ready to run on Tier-0 systems.

5.2.1.2- Scientific review

Successful proposals must demonstrate scientific excellence and focus on topics of major relevance for European research explaining the novelty, transformative aspects and expected scientific impact, and must include a dissemination plan. The results of the project should lead to committed publication in one or more high-quality journals and conferences.

The identification of possible practical and timely applications resulting from the project is desirable and must be made clear in the application.

The scientific review assessment form is available to applicants and can be downloaded from the [PRACE website](#) (see documents at bottom of the page with title "Information for reviewers" <http://www.prace-ri.eu/information-for-reviewers/>).

5.2.1.3-Additional assessment procedure for Data Storage services pilot call

Each project requesting data store resources through the Data Storage Service pilot call and accepted by the PRACE allocation committee will be technically evaluated by the data service provider selected for the pilot call. This evaluation will be only for the data resources and services required. The final decision about these data resources will be done by the data service provider independently of the compute hours provided by PRACE.

Terminology

Core hour: Elapsed time (wall clock time) in which a core is allocated to the user.

GPU hour: Elapsed time in which a graphical processing unit (GPU) is allocated to the user.

Hybrid hour: Elapsed time in which a co-processor unit is allocated to the user.

Contacts

For any queries related to applications, please contact: peer-review@prace-ri.eu