

PRACE Resources

- Acquiring, Accessing & Interacting with them

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Alan O'Cais
a.ocais@fz-juelich.de

What systems are available?

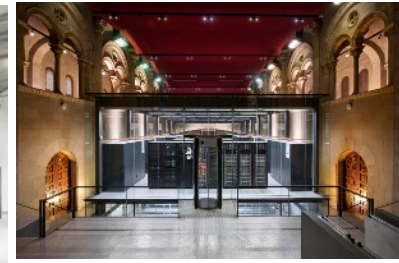
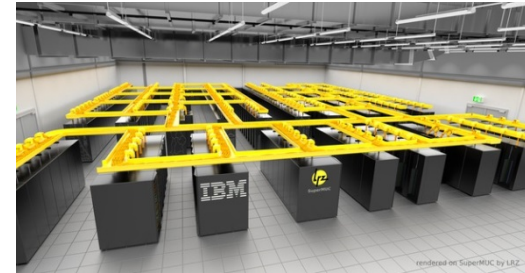
Tier 0:

- 6 Systems
- 3 Germany, 1 Italy, 1 France, 1 Spain
- BG, Cray, NVIDIA, Intel,...
- Performance 1 to 5.87 Pflop/s
- Aggregate Performance > 15 Pflop/s

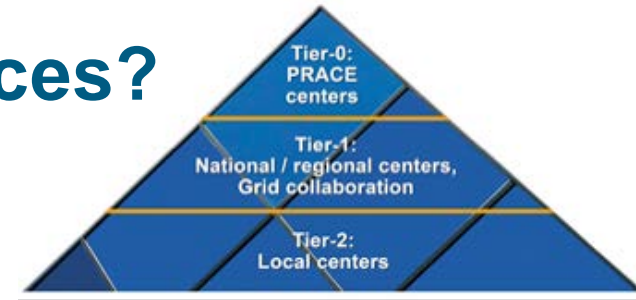


Tier 1: DECI

- 23 different systems across Europe
- Performance 2.5 to 1250 Tflop/s



When to ask for PRACE resources?



PRACE serves the whole of Europe, and therefore has lots of bureaucracy (which means time and effort for **you** and them):

- Do I have a problem that requires *large* scale resources?
 - *If not try a local/national/regional centre*
- Do I have an application that works and scales?
 - *If not then one has to be developed*
- Can I demonstrate that I can use the resources efficiently?
 - *Resources are expensive, wasting them is not an option*
- Have I exhausted all my local/national/regional options?

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How to ask for PRACE resources?

- DECI (Distributed European Computing Initiative)
 - <http://www.prace-ri.eu/DECI-Projects>
 - *Two calls per year*
 - *Each participating country gives ~5% of national resource*
 - *15% of overall allocation is given to non-participating countries*
- PRACE Preparatory Access
 - <http://www.prace-ri.eu/PRACE-Preparatory-Access>
 - *Types A (scaling), B (development), C (with support)*
 - *Continuously open, quarterly cut-off dates*
- PRACE Regular Access
 - <http://www.prace-ri.eu/Regular-Access>
 - *Two calls per year*
 - *Extensive scientific and technical review*
 - *Big allocations to small number of projects*

Got resources, now what?

See <http://www.prace-ri.eu/User-Documentation>

- Accessing resources
 - *How to get on to the systems*
- Moving data to/from systems
 - *Fastest ways to move data around*
- PRACE Common Production Environment
 - *Tries to make the different systems ,look‘ similar*
- User support
 - *What support structures are in place?*
- Quotas, queues and accounting
 - *How you are ,charged‘*
- Training
 - *The training infrastructures available*

Accessing resources

- Interactive Access
 - *Almost all systems provide key-based ssh access exactly like we use for the hands-on*
 - *Can also use X.509 certificates (gssish)*
 - *NB if you access your Execution Site directly from your workstation, then you will employ the public Internet; however, if you employ gssish on a PRACE site to access your Execution Site, using its PRACE network address, then you will employ PRACE's private network.*
 - *Accessing PRACE Door Nodes using gssish*
- UNICORE
 - *No need to know the details of the target platform's batch system*
 - *Requires X.509 Certificate (see <http://www.prace-ri.eu/Certificates-FAQ>)*
 - *Learning curve involved*
 - <http://www.prace-ri.eu/UNICORE6-in-PRACE>

Moving data to/from systems

<http://www.prace-ri.eu/Data-Transfer-with-gtransfer>

<http://www.prace-ri.eu/Data-Transfer-with-GridFTP>

- Above tools are great for doing large transfers of data
 - *Require X.509 certificate*
 - *Maximum bandwidth on PRACE network*
- Over public internet these tools can also be used
- Many sites have other optimised/documentated methods
 - *High performance ssh (scp)*
 - *bbcp*
 - *...*
- Ask for advice from Execution Site **before** doing very large data transfers

PRACE Common Production Environment

<http://www.prace-ri.eu/PRACE-Common-Production>

- Set of software tools and libraries to be made available on all PRACE execution sites
 - *Shells:* `bash, tcsh`
 - *Compilers:* `C, C++, Fortran, Java`
 - *Libraries:* `BLAS, LAPACK, FFTW, HDF5,...`
 - *Tools:* `gmake, Perl, Python, Tcl, Tk`
- Typically **much** more software than this available on systems
 - *Use ,module avail' to explore or ask local support*
- PCPE defines environment variables that may be useful to users
 - `$PRACE_ARCH`
 - `$PRACE_CFLAGS, $PRACE_FFLAGS, $PRACE_LDFLAGS`
 - `$PRACE_SCRATCH`

User support

<http://www.prace-ri.eu/Helpdesk-Guide>

- Ticket based user support facility
 - *PRACE provides documentation when possible*
 - *Has „Best Practice“ guides for many sites: <http://www.prace-ri.eu/Best-Practice-Guides>*
 - *Has a FAQ site <http://www.prace-ri.eu/User-FAQs>*
- PRACE Users are typically treated as standard system users
 - *User support is provided by Execution site through it's standard channels*
 - *Check the website of the Execution site to find details*
- If you are unhappy with something at a PRACE site, contact the PRACE User Forum
 - <http://www.linkedin.com/groups/PRACE-User-Forum-4793989>

Quotas, queues and accounting

- Users are typically all treated alike
 - *PRACE allocates a quota, Execution Sites administer the quota*
 - *Check Execution Site website or ask their user support to discover information on the individual mechanisms*
- Quota policies – example JSC:
 - *Quota divided into months*
 - *3 month window encourages continuous usage, avoids monopolisation*
- Queue policies – example JSC:
 - *Single batch queue, 24 hour hard limit*
 - *Out-of-quota accounts submit jobs with reduced resources & priority*
- DART, the Distributed Accounting Report Tool
 - <http://www.prace-ri.eu/Accounting-Report-Tool>
 - *Requires X.509 certificate*

Training

<http://www.training.prace-ri.eu/>

- „Best Practice Guides“
 - *Available for many systems (& many architectures similar)*
- Slides and videos from many PRACE training events available through Training Portal
- Site specific training is frequently carried out
 - *E.g., JUQUEEN Porting & Tuning Workshops, LinkSCEEM events*
 - *See Execution Site websites or*
- Wealth of HPC training material online:
 - <https://portal.xsede.org/online-training>
 - <http://www.hpcuniversity.org/>
 - <http://linksceem.eu/ls2/component/content/article/198.html>