

VI-HPS



12th VI-HPS Tuning Workshop

Jülich Supercomputing Centre

7-11 October 2013

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- Presenters
 - David Boehme (German Research School for Simulation Sci.)
 - Andres Charif-Rubial & Emmanuel Oseret (UVSQ)
 - Judit Gimenez & Harald Servat (BSC)
 - Yury Oleynik (TU Munich)
 - Joachim Protze & Felix Münchhalfen (RWTH)
 - Sameer Shende (University of Oregon PRL)
 - Ronny Tschüter & Bert Wesarg (TU Dresden)
 - Wolfgang Frings, Markus Geimer, Alexandre Strube, Brian Wylie (Jülich Supercomputing Centre)
- Thanks
 - Sponsors: GCS PRACE Advanced Training Centre

Monday 7 October

- 09:00 (early registration & set-up, individual preparation)
- 12:30-13:30 (lunch)
- Welcome & introduction to VI-HPS
- Introduction to parallel performance engineering
- Parallel file I/O bottlenecks and solutions
- 15:30-16:00 (break)
- Lab setup: computer systems & software environment
- Building & running NPB-MZ-MPI/BT-MZ example code
- 17:30 (adjourn)

Tuesday 8 October

- 09:00-10:30 **Score-P & CUBE**
- 11:00-12:30 **Score-P & ParaProf/PerfExplorer**

Wednesday 9 October

- 09:00-10:30 **Vampir & Scalasca**
- 11:00-12:30 **Periscope & Score-P**

Thursday 10 October

- 09:00-10:30 **Paraver**
- 11:00-12:30 **TAU**

Friday 11 October

- 09:00-10:30 **STAT, MUST, MAQAO**

- Hands-on exercises part of each tool presentation every morning session

- Hands-on coaching to apply tools to analyse & tune your own codes each afternoon to 17:30

- Ensure your application codes build and run to completion with appropriate datasets
 - initial configuration should ideally run in less than 15 minutes with 1-4 compute nodes
 - ▶ to facilitate rapid turnaround and quick experimentation
 - larger/longer scalability configurations are also interesting
 - ▶ turnaround may be limited due to busyness of batch queues
- Compare your application performance on other systems
 - VI-HPS tools already installed on a number of HPC systems
 - ▶ if not, ask your system administrator to install them (or install a personal copy yourself)

Tools will ***not*** automatically make you,
your applications or computer systems
more *productive*.

However, they can help you understand
how your parallel code executes and
when / where it's necessary to work on
correctness and *performance* issues.

DON'T PANIC!

The workshop presenters are here to assist you.

NB: On the assumption that nothing terrible is going to happen and everything's suddenly going to be alright really, all advice may be safely ignored.

System	<i>juqueen</i>	<i>juropa</i>	<i>juropagpfs</i>
Domain	fz-juelich.de	fz-juelich.de	fz-juelich.de
Vendor	IBM	Bull/Sun	Bull
Network	5D torus	Infiniband	
Processors	PowerPC A2	Intel X5570	Intel X5675
Frequency	1.6 GHz	2.93 GHz	3.07 GHz
Compute nodes	896	3,288	(4)
Chips per node	32	2	2
Cores per chip	16	4	6
Threads per core	4	2	2
Memory per node	16 GB	24 GB	192 GB

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Filesystem	<i>GPFS</i>	<i>Lustre</i>	<i>GPFS/Lustre</i>
Parallel filesys	\$WORK	\$WORK	\$GPFSWORK
Compiler	<i>IBM XL</i>	<i>Intel</i>	
OpenMP flag	-qsmp=omp	-openmp	
MPI	<i>IBM BG</i>	<i>ParaStation</i>	
C compiler	mpixlc	mpicc	
C++ compiler	mpixlcxx	mpicxx	
F77 compiler	mpixlf77	mpif77	
F90 compiler	mpixlf90	mpif90	
Queue	<i>LoadLeveler</i>	<i>Torque/Moab</i>	
job submit	lsubmit job	msub job	
list jobs	llq -u \$USER	qstat -u \$USER	