MaiMoSiNE

18th VI-HPS Tuning Workshop

LJK, Université Grenoble Alpes

PRACE

LJK CIMENT

18-22 May 2015

http://www.**vi-hps.org/tws/tw18.html**

18th VI-HPS Tuning Workshop (UGA)

- **Tools presenters**
  - Christophe Berthelot (Bull)
  - Andres Charif-Rubial (Université de Versailles St-Quentin-en-Yvelines)
  - Emmanuel Oseret (Université de Versailles St-Quentin-en-Yvelines)
  - Marc Schlütter (Jülich Supercomputing Centre)
  - Sameer Shende (University of Oregon)
  - Bert Wesarg (Technische Universität Dresden)

- **Local organisation**
  - Laurence Viry (Laboratoire Jean Kuntzmann)
  - Bruno Bzeznik (CIMENT)

- **Sponsor**
  - Michel Kern (Maison de la Simulation, French PRACE Advanced Training Centre)

Outline

Monday 18 May

- 09:30 (registration & set-up of course accounts on workshop computers)
  - [Optional] Individual preparation of participants' own codes on Froggy
- 12:30 (lunch)
- 14:00 Welcome
  - **Introduction to VI-HPS and overview of tools**
  - **Introduction to parallel performance engineering**
- 15:30 (break)
- 16:00 Lab setup
  - **Building and running MPI+OpenMP NPB-MZ-MPI/BT-MZ on Froggy**
- 17:30 (adjourn)

Outline of rest of week

Tuesday 19 May
- 09:00-10:30 **Bullx performance tools**
- 11:00-12:30 **MAQAO analyses & optimisation**

Wednesday 20 May
- 09:00-10:30 **Score-P instrumentation & measurement**
- 11:00-12:30 CUBE analyses, Score-P scoring & filtering

Thursday 21 May
- 09:00-10:30 **Scalasca automated trace analysis**
- 11:00-12:30 **Vampir interactive trace analysis**

Friday 22 May
- 09:00-10:30 **TAU performance system**
- 11:00-12:30 Conclusion & Review

- Hands-on exercises part of each presentation to familiarise with tools every morning session
- Hands-on coaching to apply tools to analyse and tune your own codes each afternoon

Participant survey

We'd like to know a little background information about you, your application code(s), and your expectations and desires from this workshop

- What programming language(s) do you use?
  - Fortran, C, C++, multi-language, ...
- What parallelisation mode(s) do you use?
  - only MPI, only OpenMP, mixed-mode/hybrid MPI+OpenMP, ...
- What platforms/systems *must* your code run well on?
  - Cray XT/XE/XK/XC, IBM BlueGene, SGI Altix, Linux cluster, ...
- Are you already familiar with *serial* performance analysis? Using which tools?
  - time, print/printf, prof/gprof, VTune, ...
- Are you already familiar with *parallel* performance analysis? Using which tools?
  - time, print/printf, prof/gprof, Scalasca, TAU, Vampir, ...

Prepare to analyse your own application code(s)

- Ensure that your application code(s) build and run correctly 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, but perhaps overnight

- Compare your application performance on other computer systems
  - VI-HPS tools are already installed on many HPC systems
    - if not, ask your system administrator to install them (or install a personal copy yourself)

Disclaimer

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.

Evaluation / Feedback

- PRACE Advanced Training Centre workshop sponsorship
  - All participants required to complete on-line evaluation form on portal
  - **http://events.prace-ri.eu/event/274**

- Please also complete and return the VI-HPS workshop paper form, which provides valuable feedback
  - to tools developers for improving their tools and training material
  - to improve future workshops and training events
  - can be anonymous if desired

- Tools support queries and bug reports are also welcome
  - should be submitted to respective support mailing lists