RIKEN AICS

20th VI-HPS Tuning Workshop

RIKEN AICS, Kobe, Japan

24-26 Feb 2016

http://www.**vi-hps.org/tws/tw20.html**

20th VI-HPS Tuning Workshop (RIKEN AICS)

- **Tools presenters**
  - Christian Feld (Jülich Supercomputing Centre)
  - Judit Gimenez (Barcelona Supercomputing Center)
  - Jesus Labarta (Barcelona Supercomputing Center)
  - Sameer Shende (University of Oregon)
  - Brian Wylie (Jülich Supercomputing Centre)

- **Local organisation**
  - Miwako Tsuji, Itaru Kitayama, Tomotake Nakamura
  - *pi* FX10 sysadmins
- **Additional sponsors**

KOBE UNIVERSITY 神戸大学 大学院 システム情報学研究科 Graduate School of System Informatics

GSIC 学際大規模情報基盤共同利用・共同研究拠点 東京工業大学 学術国際情報センター Global Scientific Information and Computing Center, Tokyo Institute of Technology

Outline

Wednesday 24 February

- 09:00 Welcome [Murai, RIKEN AICS]
  - **Introduction to VI-HPS and overview of tools [Wylie, JSC]**
  - **Introduction to parallel performance engineering [Feld, JSC]**
  - **Building and running NPB-MZ-MPI/BT-MZ on *pi* FX10**
- 10:30 (break)
- 11:00 **TAU performance system** [Shende, UOregon]
  - **TAU hands-on exercises**
- 12:30 (lunch)
- 14:00 Hands-on coaching to apply tools to analyze your own code(s)
- 17:00 Review of day and schedule for remainder of workshop
- 17:30 (adjourn)

Outline of rest of week

Thursday 25 February [Christian Feld & Brian Wylie, JSC]

- 09:00-10:30 **Score-P instrumentation & measurement**
  CUBE execution profile analysis exploration
- 11:00-12:30 **Score-P configuration & customization**
  Scalasca automated trace analysis
- 14:00-17:00 Hands-on coaching to apply tools
- 17:00-17:30 Review of day and schedule for tomorrow

Friday 26 February [Judit Gimenez & Jesus Labarta, BSC]

- 09:00-10:30 **BSC tools: Extrae, Paraver, Dimemas**
- 11:00-12:30 Hands-on coaching to apply tools
- 14:00-14:30 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?
  - K computer, Fujitsu FX10/100, Cray, IBM BlueGene, 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, Paraver, 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

- 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