25th VI-HPS Tuning Workshop
RWTH Aachen University IT Center, Aachen, Germany

27-31 March 2017

http://www.**vi-hps.org/training/tws/tw25.html**

IT Center

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25th VI-HPS Tuning Workshop (RWTH Aachen University)

- **Tools instructors**
  - **Alexandru Calotoiu (Technische Universität Darmstadt)**
  - **Christian Feld, Marc-André Hermanns & Brian Wylie (Jülich Supercomputing Centre)**
  - **Judit Giménez & Lau Mercadal (Barcelona Supercomputing Center)**
  - **Joachim Protze (RWTH Aachen University)**
  - **Sameer Shende (University of Oregon)**
  - **Cédric Valensi & Emmanuel Oseret (Université de Versailles Saint-Quentin)**
  - **Bert Wesarg (Technische Universität Dresden)**

- **Local organisation**
  - **Agnes Ramalho-Mendes, Dirk Schmidl, etc.**

- **Sponsor: Gauss Centre for Supercomputing PRACE Advanced Training Centre**

Outline

Monday 27 April
- 10:00 [Optional] Individual preparation of participants' own codes
- 12:45 *(provided on-site lunch)*
- 14:00 Welcome [Dirk Schmidl, RWTH]
  - **Introduction to VI-HPS and overview of tools** [Brian Wylie, JSC]
  - **Introduction to parallel performance engineering** [Marc-André Hermanns, JSC]
- 15:30 *(break)*
- 16:00 Lab setup
  - *CLAIX* **computer system and software environment** [Dirk Schmidl, RWTH]
  - **Building & running NPB-MZ-MPI/BT-MZ on** *CLAIX* **cluster** [Brian Wylie, JSC]
  - Preparation of participants' own codes on workshop computer systems
- 17:30 Review of day and schedule for remainder of workshop
- 18:00 *(adjourn)*

For remainder of week:
- 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

Outline of rest of week

Tuesday 28 March
- 09:00-10:30 **Score-P instrumentation & measurement** [Christian Feld & Bert Wesarg]
- 11:00-12:30 **CUBE profile explorer** [Marc-André Hermanns, JSC]
                Scalasca automated trace analysis [Brian Wylie, JSC]
- 19:00-   *PRACE Social Event: Restaurant Macaroni*

Wednesday 29 March
- 09:00-10:30 **Vampir interactive trace analysis** [Bert Wesarg, TUDresden]
- 11:00-12:30 **Paraver tracing tools suite** [Judit Giménez & Lau Mercadal, BSC]

Thursday 30 March
- 09:00-10:30 **MAQAO performance analysis tools** [Cédric Valensi & Emmanuel Oseret, UVSQ]
   11:00-12:30 **TAU performance system** [Sameer Shende, U. Oregon]

Friday 31 March
- 09:00-10:30 **MUST/ARCHER runtime error detection** [Joachim Protze, RWTH]
   11:00-12:30 **Extra-P automated performance modelling** [Alexandru Calotoiu, TUDarmstadt]
- 12:30-12:45 Conclusion & Review

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, 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, ITAC, 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)

Disciaimer

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