Performance Optimisation and Productivity

A Centre of Excellence in HPC

POP Newsletter 11 – Issue June 2019

Welcome to the eleventh newsletter from the EU POP Centre of Excellence. For new requests, please see section "Apply for free help with Code Optimisation" at the bottom of this newsletter.

This issue includes:

- Automatic calculation of POP metrics using Scalasca;
- Specifying code regions using the Intel Trace Analyzer and Collector profiling tool;
- POP out and about – meet POP members face to face at the following events:
  - EAGE conference, London: 3 – 4 June 2019;
  - TERATEC 2019 Forum, Paris: 11 – 12 June 2019;
  - PASC conference, Zurich: 12 – 14 June 2019;
  - International Supercomputing Conference (ISC), Frankfurt: 16 - 20 June 2019.
- PATC POP 33rd VI-HPS Tuning Workshop: 24-28 June 2019;
- Apply for free help with code optimisation;
- The POP Helpdesk.

For information on our services and past editions of the newsletter see the POP website.

Automatic Calculation of POP Metrics Using Scalasca

The POP service uses the POP metrics (described in this article) to measure the performance of parallel applications. This is usually done manually, but this can be tedious and prone to error. However, the calculations of POP metrics can now be simplified using the Scalasca performance measurement tool suite. For further information on how to do this, please click here.

Specifying Code Regions Using the Intel Trace Analyzer and Collector Profiling Tool

The Intel Trace Analyzer and Collector (ITAC) profiling tool allows application developers to profile their MPI applications. The tool provides statistics on the application's MPI profile, a timeline and the application execution on an ideal network, i.e. zero latency and infinite bandwidth. When profiling large applications, it is sometimes useful to just focus on a specific region of the application, e.g. the time iteration loop, which excludes initialisation and finalisation stages. For more information on how to do this, see here.

POP out and about – meet POP members face to face at the following events

POP will be attending the following events. If you would like to meet a member of the POP team, please email pop-helpdesk@bsc.es and we will happily arrange a meeting with you.

EAGE Conference, London: 3 – 4 June 2019

The EAGE Annual 2019 Conference & Exhibition, is the largest and most comprehensive multi-disciplinary geoscience event in the world. The event includes a large conference - in total over 1,000 technical oral and e-Poster presentations - and a technical exhibition presenting the latest developments in geophysics, geology and reservoir/petroleum engineering.

TERATEC 2019 Forum, Paris: 11 – 12 June 2019

The TERATEC Forum 2019 is a major event in France that brings together the best international experts in HPC, Simulation and Big Data. It reaffirms the strategic importance of these technologies for developing industrial competitiveness and innovation capacity.

PASC Conference, Zurich: 12 – 14 June 2019

PASC19 is the sixth edition of the PASC Conference series, an international and interdisciplinary platform for the exchange of competences in scientific computing and computational science, with a strong focus on methods, tools, algorithms, application challenges, and novel techniques and usage of high performance computing.

A member of the POP technical team will be presenting at the "Bringing Scientific Applications Written in Fortran to the Exascale Era" mini symposia. The title of the presentation is "Performance Profiling Fortran Codes using Open-Source Profiling Tools" and is scheduled on Thursday 13 June between 11:15 to 13:15 at location HG F 1. The poster title is "The Performance Optimisation and Productivity (POP) HPC Centre of Excellence: Identifying and Finding the Causes of Inefficiency in Parallel Applications" on Thursday 13 June between 19:50 and 21:50 at location HG EO Nord.

International Supercomputing Conference, Frankfurt: 16 - 20 June 2019

The ISC High Performance conference will bring together over 3,500 researchers and commercial users, and 160 exhibitors, ready to share their experiences with the latest technology and products of interest to the high performance computing community. Visit our experts at the research exhibition booths of BSC (A-1412) or JSC/HLRS (B-1310).

PATC POP 33rd VI-HPS Tuning Workshop

POP experts will give an overview of the VI-HPS programming tools suite, explain the functionality of individual tools, and how to use them effectively, and offer hands-on experience and expert assistance using the tools at the 33rd VI-HPS Tuning Workshop at the Juelich Supercomputing Centre, Germany. This workshop is a PRACE Training Centre (PTC) course. The following topics will be covered in this workshop:

- TAU performance system;
- MAQAO performance analysis & optimisation;

- MUST runtime error detection for MPI;
- ARCHER runtime error detection for OpenMP;
- Score-P instrumentation and measurement;
- Scalasca automated trace analysis;
- Vampir interactive trace analysis;
- Paraver/Extrae/Dimemas trace analysis and performance prediction;
- JUBE script-based workflow execution environment;
- Extra-P automated performance modelling.

The workshop is free to attend for all (including academic, research and commercial attendees), but registration is required. Prerequisite for this workshop are experience with MPI or OpenMP.

Apply for free help with code optimisation

We offer a range of free services designed to help EU organisations improve the performance of parallel software. If you are not getting the performance you need from parallel software or would like to review the performance of a parallel code, please apply for help via the short Service Request Form, or email us to discuss the service further and how it can be beneficial.

These services are funded by the European Union Horizon 2020 research and innovation programme so there is no direct cost to our users.

The POP Helpdesk

Past and present POP users are eligible to use our email helpdesk (pop-helpdesk@bsc.es). Please contact our team of experts for help analysing code changes, to discuss your next steps, and to ask questions about your parallel performance optimisation.