

# **Intel® Software Development Tools for HPC (Webinar)**

## **Report of Contributions**

Contribution ID: 2

Type: **not specified**

## The Intel® Architecture for Software Developers

*Wednesday 11 November 2020 10:15 (45 minutes)*

This session will offer insights into Intel® hardware platforms tailored to the needs of software developers, software architects and HPC experts. Learn how Intel® Software Development Tools will help you to achieve optimal performance via vectorization, memory access tuning, and threading.

**Session Classification:** Introduction to Intel® Tools

Contribution ID: 3

Type: **not specified**

## **Intel® oneAPI –the Future of Intel Software Development**

*Wednesday 11 November 2020 11:00 (1 hour)*

Modern workloads are incredibly diverse—and so are architectures. No single architecture is best for every workload. Maximizing performance takes a mix of scalar, vector, matrix, and spatial (SVMS) architectures deployed in CPU, GPU, FPGA, and other future accelerators. Intel® oneAPI products will deliver the tools you need to deploy your applications and solutions across SVMS architectures.

**Session Classification:** Introduction to Intel® Tools

Contribution ID: 12

Type: **not specified**

## Intel® MPI Library

*Thursday 12 November 2020 10:15 (1 hour)*

Get the best performance out of your MPI application by leveraging the Intel MPI library. Besides a general introduction on how to use Intel MPI properly, approaches for tuning the Intel MPI library will be shown.

**Session Classification:** Optimizing your Software

Contribution ID: 13

Type: **not specified**

## Application Performance Snapshot - Intel® VTune™ Profiler

*Thursday 12 November 2020 11:15 (45 minutes)*

Intel Application Performance Snapshot (APS) is the first step in a systematic analysis using Intel tools. APS identifies the hotspots of an application and recommends the most appropriate Intel tool for detailed analysis. A small demo will explain the basic steps of APS usage and result interpretation

**Session Classification:** Optimizing your Software

Contribution ID: 14

Type: **not specified**

## Intel® Advisor - Optimize high-performing code on modern computer architectures- with demos

*Thursday 12 November 2020 13:00 (1 hour)*

SIMD (Single Instruction Multiple Data) instructions are crucial for optimal performance on modern Intel CPUs. On x86 architecture these extensions are known as SSE, AVX, AVX-2 and AVX-512. In general developers will rely on the compiler vectorization capabilities. But the automatic vectorization often needs support from the developer to deal with dependencies, alignment, data type conversions and other topics we will cover here. Compiler optimization reports provide some analysis but don't give much guidance. Intel Advisor XE delivers an easy and precise way of vectorization analysis plus an evaluation of maximal potential performance for each loop (Roofline Analysis).

**Session Classification:** Optimizing your Software

Contribution ID: 15

Type: **not specified**

## Intel® VTune™ Profiler - Locate performance bottlenecks fast - with demos

*Thursday 12 November 2020 14:00 (1 hour)*

Without the right data, you're guessing about how to improve software performance and are unlikely to make the most effective improvements. The VTune Profiler collects key profiling data and presents it with a powerful interface that simplifies its analysis and interpretation. This talk will provide a general introduction to VTune while diving deeper using a memory bandwidth analysis example.

**Session Classification:** Optimizing your Software

Contribution ID: 16

Type: **not specified**

## **Intel® Trace Analyzer and Collector - MPI profiling for cluster applications -with Demos**

*Thursday 12 November 2020 15:00 (1 hour)*

Intel Trace Analyzer and Collector provides a detailed analysis and visualization of MPI usage in your application. The graphical display will help to understand bottlenecks of the application. It can also help to understand an unknown MPI algorithm. Another mode of ITAC is called Message-Checker (mc). Running your application with mc will produce error messages or warnings when MPI related issues are detected. Both modes of ITAC are easy to be used but configuring for trace file reduction and user events are more advanced topics.

**Session Classification:** Optimizing your Software



Contribution ID: 17

Type: **not specified**

## **Intel® Compilers –an Overview - with demos**

*Wednesday 11 November 2020 13:00 (1h 30m)*

C++ and Fortran compilers from Intel produce optimized code that takes advantage of the ever-increasing core count and vector register width in Intel® processors. You will learn most important compiler optimizations helping to boost the performance of your application. A short demo will complement the talk and show a possible speed-up you can gain by controlling compiler options only.

**Session Classification:** Introduction to Intel® Tools

Contribution ID: **18**Type: **not specified**

## **Intel® MKL –The Math Kernel Library - with demos**

*Wednesday 11 November 2020 14:30 (1 hour)*

Intel Math Kernel Library is a key element in many applications for scientific, engineering, and data applications and many others. The session will cover the newest features implemented into the latest version and some of the newest coming updates. We will also describe to you the most efficient ways how to use Intel MKL properly and how to get the best performance out of your MKL applications.

**Session Classification:** Introduction to Intel® Tools

Contribution ID: **20**

Type: **not specified**

## Q&A – Try yourself

*Wednesday 11 November 2020 15:30 (1 hour)*

During this session you can try the Intel tools yourself on your favorite cluster or workstation. The Intel trainers are online and will answer your questions.

**Session Classification:** Introduction to Intel® Tools

Contribution ID: 21

Type: **not specified**

## Q&A – Try yourself

*Thursday 12 November 2020 16:00 (1 hour)*

During this session you can try the Intel tools yourself on your favorite cluster or workstation. The Intel trainers are online and will answer your questions.

**Session Classification:** Optimizing your Software