Intel VTune Amplifier and Performance Snapshots

Purpose

Intel Amplifier (aka VTune) supports profiling and evaluation of performance characteristics for single- and multi-threaded programs on all Intel-based hardware platforms. Since 2011, the new name for VTune is Intel Amplifier XE.

With more recent releases, Intel Application Performance Snapshots (APS) is included that provides a quick overview about:

- MPI parallelism (Linux* only)
- OpenMP* parallelism
- Memory access
- FPU Utilization
- I/O efficiency

Amplifier availability on LRZ’s HPC platforms

Amplifier is provided on HPC systems which are based on Intel processors. On non-Intel processors or systems on which no kernel driver is available, only partial functionality may be available.

Usage of Amplifier is restricted by membership to the UNIX group vtune. Please contact the LRZ Service Desk if you wish to make use of this software on LRZ systems, providing the user account name you wish to have enabled. Furthermore, if you encounter any difficulties with the LRZ-specific installations, please contact the LRZ Service Desk for help.

APS can be used without these restrictions.

How to use

Before calling the tool either via the command line interface (command `amplxe-cl`) or the GUI (command `amplxe-gui`), please type the following command:

```bash
module load amplifier_xe
module load amplifier_xe/2018 # or higher for APS
amplxe-gui
```

The GUI allows you to build analysis projects, specify an executable as well as various parameters for execution and analysis modes. In particular, profiling of threaded programs (including scalability analysis and identification of parallelization-induced performance problems) is supported. Please consult the documentation referenced below for a description of the many options this tool offers.

Because the kernel modules for performance-counter based amplifier runs cannot be provided, only a subset of the functionality is available via the Linux perf infrastructure, see this (off-site) article for further details.

Running APS

Run analysis for an application and store results in `<dir>`:

```bash
aps [-result-dir=<dir>] ./myserial.exe
mpiexec aps [-result-dir=<dir>] ./myparallel.exe
```

Show analysis report based on data from `<dir>`, output is text and HTML

```bash
aps --report=<dir>; firefox <dir>.html>
aps-report -a <dir>
```

Documentation

- The documentation for VTune Amplifier is available on the systems via the environment variable $AMPLIFIER_XE_DOC. This includes tutorial material.
- Manual pages for the commands can be consulted when running with the GUI.
- Intel VTune Amplifier XE for Linux