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gprofng - The next generation GNU profiler

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Prepared presentation

In this talk we present an overview of gprofng, a next generation profiling tool for Linux.

This profiler has its roots in the Performance Analyzer from the Oracle Developer Studio product. Gprofng is a standalone tool however and specifically targets Linux. It includes several tools to collect and view the performance data. Various processors from Intel, AMD, and Arm are supported.

The focus is on applications written in C, C++, Java, and Scala. For C/C++ we assume gcc has been used to build the code. In the case of Java and Scala, OpenJDK and compatible implementations are supported.

Among other things, another difference with the widely known gprof tool is that gprofng offers full support for shared libraries and multithreading using Posix Threads, OpenMP, or Java Threads.

Unlike gprof, gprofng can also be used in case the source code of the target executable is not available. Another difference is that gprofng works with unmodified executables. There is no need to recompile, or instrument the code. This ensures that the profile reflects the actual run time behaviour and conditions of a production run.

After the data has been collected, the performance information can be viewed at the function, source, and disassembly level. Individual thread views are supported as well. Through command line options, the user specifies the information to be displayed. In addition to this, a simple, but yet powerful scripting feature can be used to produce a variety of performance reports in an automated way. This may also be combined with filters to zoom in on specific aspects of the profile.

One of the very powerful features of gprofng is the ability to compare two or more profiles. This allows for an easy way to spot regressions for example.

In the talk, we start with a description of the architecture of the gprofng tools suite. This is followed by an overview of the various tools that are available, plus the main features. A comparison with gprof will be made and several examples are presented and discussed. We conclude with the plans for future developments. This includes a GUI to graphically navigate through the data.

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