DS-5

Streamline Performance Analyzer

Overview

The growing need for high-performance and energy-efficient consumer products has changed the shape of embedded systems and consequently the requirements of software developers.

The ARM® Development Studio 5 (DS-5™) toolchain, through its ARM Streamline™ Performance Analyzer component, delivers a simple and intuitive way to analyze and optimize complex Linux and Android™ based platforms.

Key Features and Benefits

- Locate ARM application processor hotspots at process, thread and source code level
- Analyze the efficiency of parallel code on multicore platforms
- Find and optimize bottlenecks across Cortex processors and ARM Mali™ GPUs
- Zero-in on the top functions causing performance-penalty events (e.g. cache misses, and branch mispredictions)
- Improve energy efficiency with actual power measurement data
- Long term data capture over TCP/IP interface
- Simultaneous analysis of multiple applications.

Timeline Analysis

Collected data is displayed on a timeline that enables viewing of software and system-level activity over time. This helps to identify performance issues that arise from the interaction of the software with the hardware blocks on the SoC.

Key features:

- Multicore-aware performance charts, process and thread activity, and instrumented annotations synchronized over time
- Over 40 core-dependant PMU counters, over 300 Mali GPU counters, plus several OS performance metrics available for monitoring
- Time-based filtering on software profile analysis
- Thread activity mapping per core on SMP systems.

Flexible Architecture

Easily customize the Streamline Performance Analyzer to collect and visualize SoC specific data. This flexibility can be used to monitor statistics from peripherals, fabric, and other processors interconnected with the Cortex processor.

ARM Mali GPU Support

The Streamline Performance Analyzer gives you visibility of performance data across the Cortex processor and Mali GPU, so that bottlenecks on either side can be easily spotted. It enables developers to easily balance the overall computing load to make efficient usage of system resources.
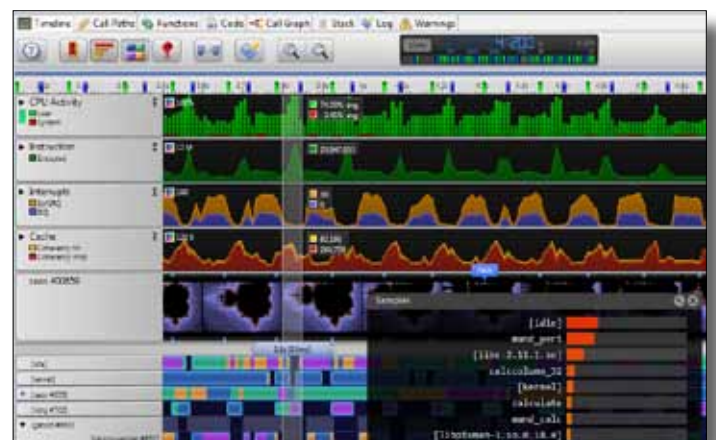
CPU, GPU, and OS-level performance graphs are time-correlated with process/thread activity per core and software profiling.

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The Call Paths view displays CPU time or PMU event count (e.g., cache misses), per process, thread, and function call tree.

Software Profiling

Profiling reports offer process-to-source-code drill-down analysis of the hotspots on your CPU. The three available views can be based on either processor time or PMU counters such as instructions, cycles, cache misses.

- **Call Paths** - powerful hierarchical software profile view that can be used to see statistics per process, thread, library and functional call chain

- **Functions** - flat function level list of hotspots

- **Code** - the ultimate resource to pin-point hotspots within functions at both source code and disassembly levels.

Annotations

Reconcile debug and performance analysis with a simple and powerful solution; code annotations. From simply tracking machine state changes on a timeline or cross-relating the screen content with performance issues, this simple code instrumentation links your software to the Streamline Performance Analyzer.
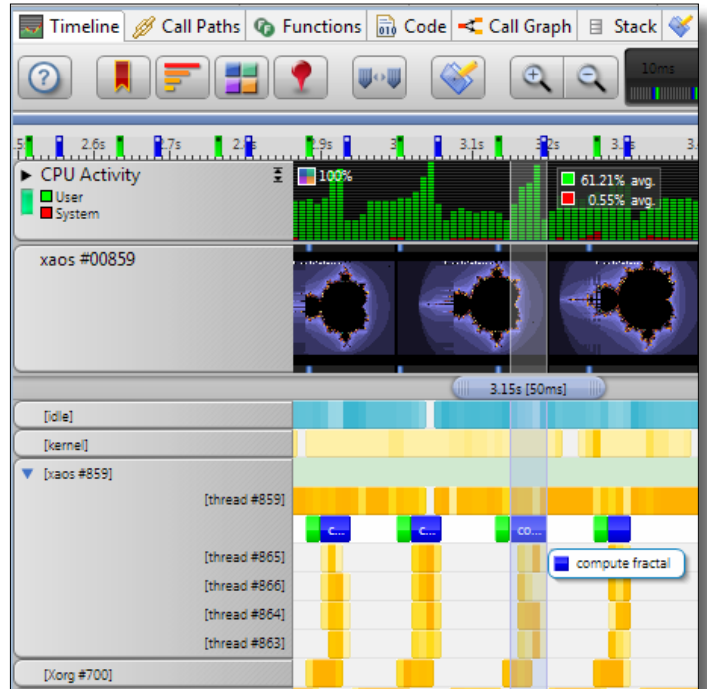
Applications and the kernel can write text messages or graphics frames into the Streamline driver for visualization.

Energy Analysis

The ARM Energy Probe is an easily deployable USB accessory that can sample voltage, current and power from up to three probe points in the system. It then synchronizes the data with system performance metrics and the software execution trace.

Key Benefits:

- **Low Total Cost of Ownership** - no additional debug hardware is required. All you need is the Streamline Performance Analyzer and the Energy Probe.

- **Everything in one place** - make informed decisions based on an integrated view of the ARM application processor and Mali GPU performance counters, software profiling, code annotations and power consumption data.

Power, current and voltage data can be displayed alongside thread activity and other performance metrics to enable energy optimization

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