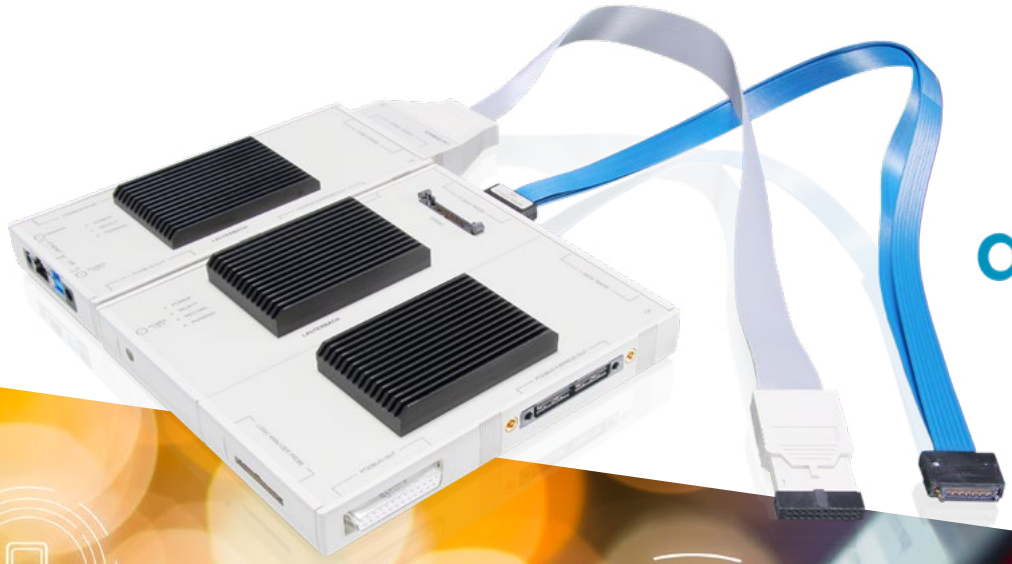
LAUTERBACH
DEVELOPMENT TOOLS

TRACE32®

DEBUG & TRACE TOOLS
for Arm®-based SoCs



arm

Arm®

Arm® support at a glance

More than 25 years of experience in Arm® debugging enable us to provide the best-in-class debug and trace tools for Arm®-based systems:

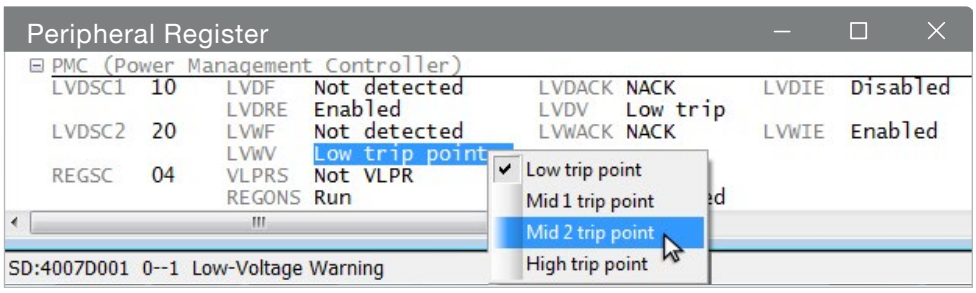
- Multicore debugging and tracing for any mixture of Arm® and DSP cores
- Support for all CoreSight™ components to debug and trace an entire SoC
- Powerful code coverage and run-time analysis of functions and tasks
- OS-aware debugging of kernel, libraries, tasks of all commonly used OSes

DISCOVER MORE: www.lauterbach.com/arm

Debugging Arm®-based Systems

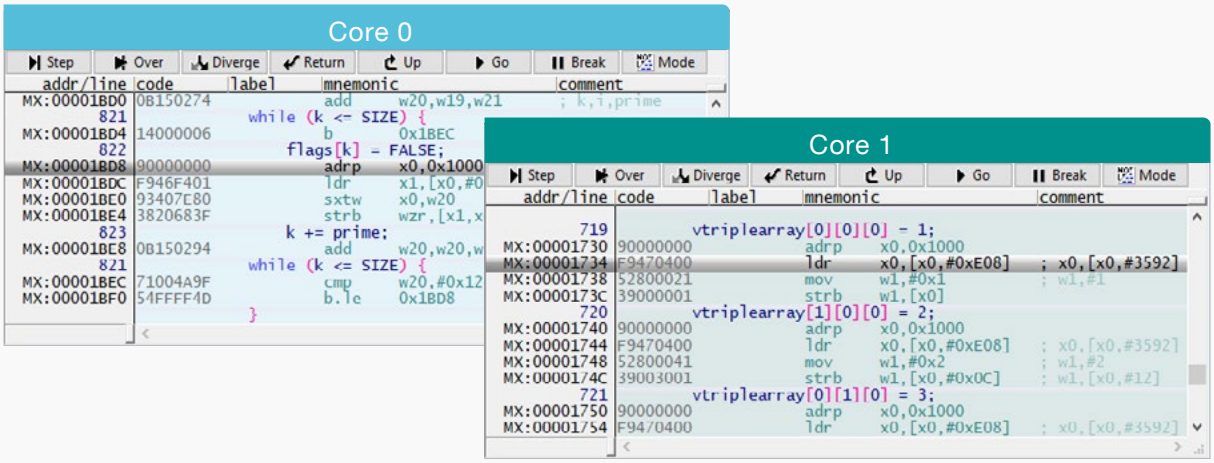
The Lauterbach debug tools for Arm® accompany you throughout the whole development process, from the early pre-silicon phase by debugging on an instruction set simulator or a virtual prototype, over board bring-up, till quality and maintenance work on the final product.

The features range from simple step/go/break, programming of on-chip flash, external NAND, eMMC, parallel and serial NOR flash devices, support for NEON, VFP and SVE units, to OS-aware debug and trace concepts for 32-bit and 64-bit multicore systems that make use of the latest security technologies.



◀ The peripheral registers on the chip are displayed on a logical level. The function bits can easily be interpreted and modified. A pull-down menu helps to select the peripheral module you want to inspect.

Multicore Debugging



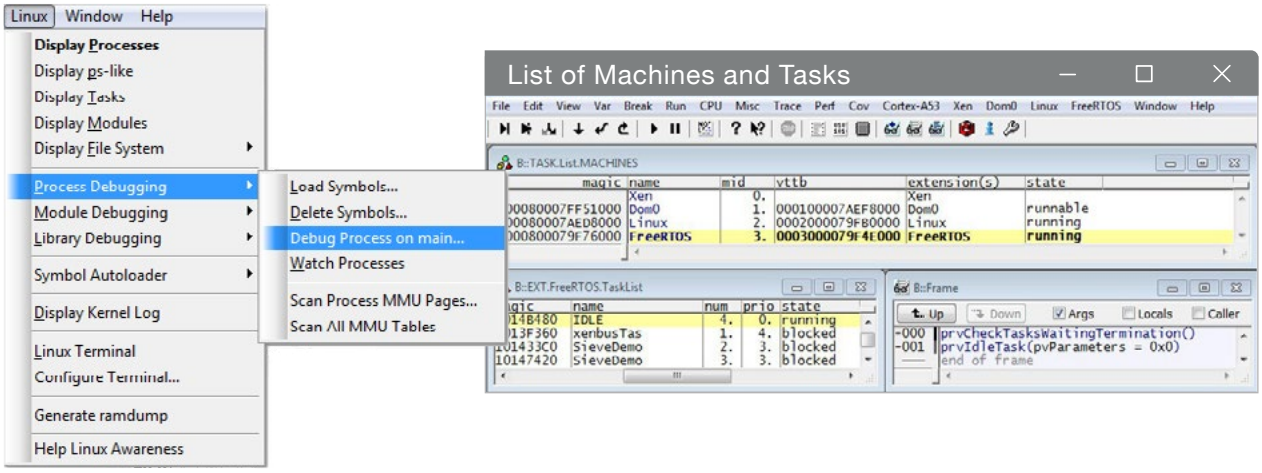
▲ TRACE32® supports simultaneous debug and trace of homogeneous and heterogeneous multicore and multiprocessor systems with one debug tool. Start/stop synchronisation of the cores and a time-correlated display of the traced data gives you a global view of the system's state and the interplay of the cores.

DISCOVER MORE: www.lauterbach.com/features/multicore-debugging-and-tracing

OS-Aware Debugging and Tracing

Lauterbach supports debugging of system and application software of all commonly used operating systems. The hypervisor awareness functionality allows seamless debugging of the overall system if multiple operating systems run in parallel on a single hardware platform:

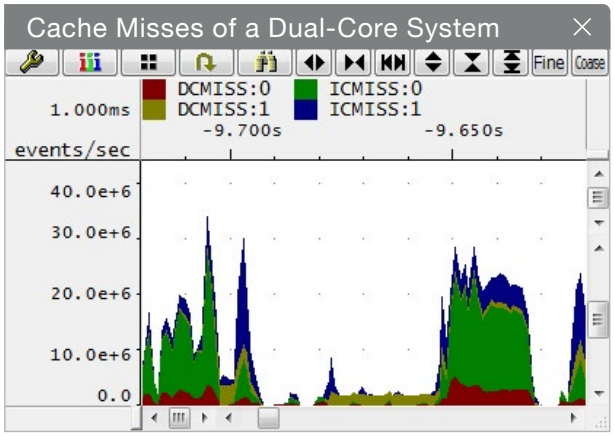
- Non-intrusive access to task lists and other kernel information by OS awareness
- Non-intrusive access to guest (VM) list and guest information by hypervisor awareness
- Full support for symmetric (SMP) and asymmetric (AMP) multiprocessing
- Stack coverage and call hierarchy of waiting tasks
- Statistics and graphic display of task and function run-time
- Support for secure hypervisors

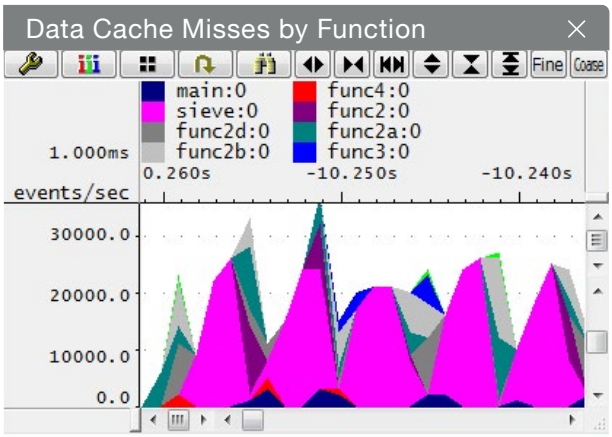


DISCOVER MORE: www.lauterbach.com/os-awareness

Utilization of the Performance Monitors

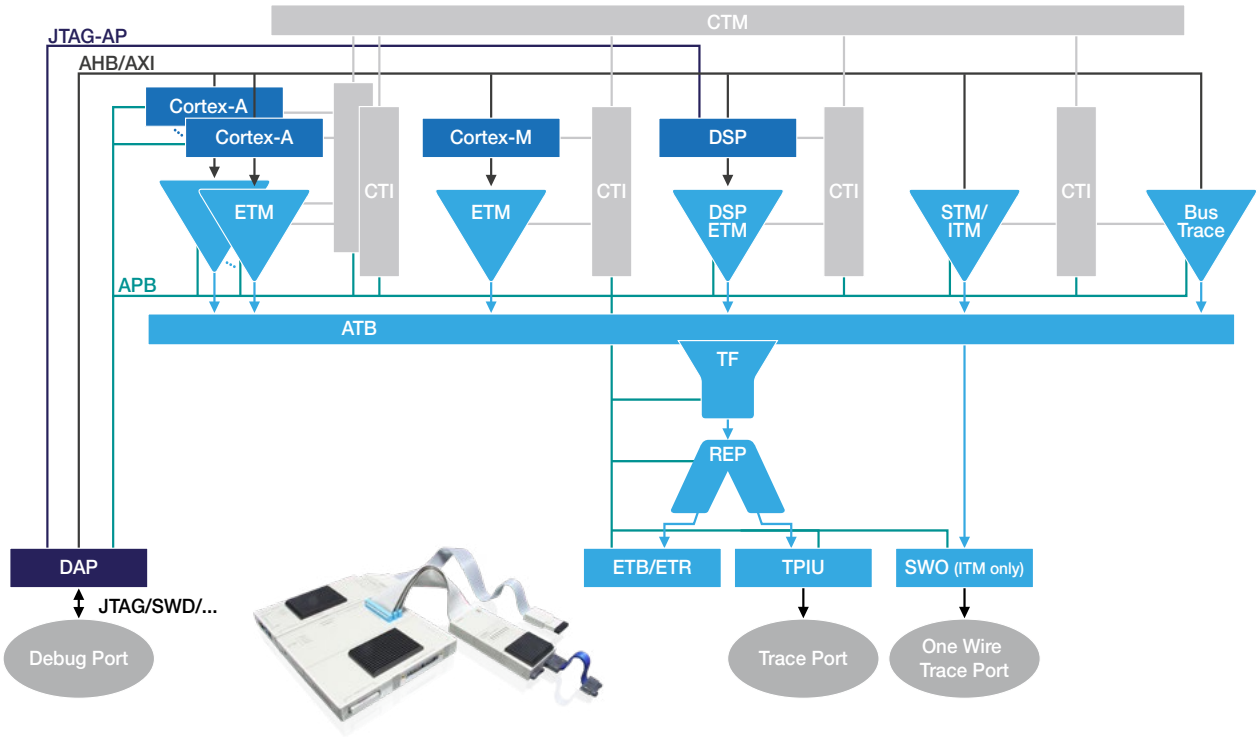
Many Arm® based devices include hardware counters with the ability to count specific hardware events like execution of certain kinds of instructions, cache or TLB events, or stall cycles caused by a specific reason. TRACE32® can sample these counters periodically. The results can be correlated with program trace information. This provides you with statistics on the system behaviour and system performance for finding bottlenecks and tuning the application.





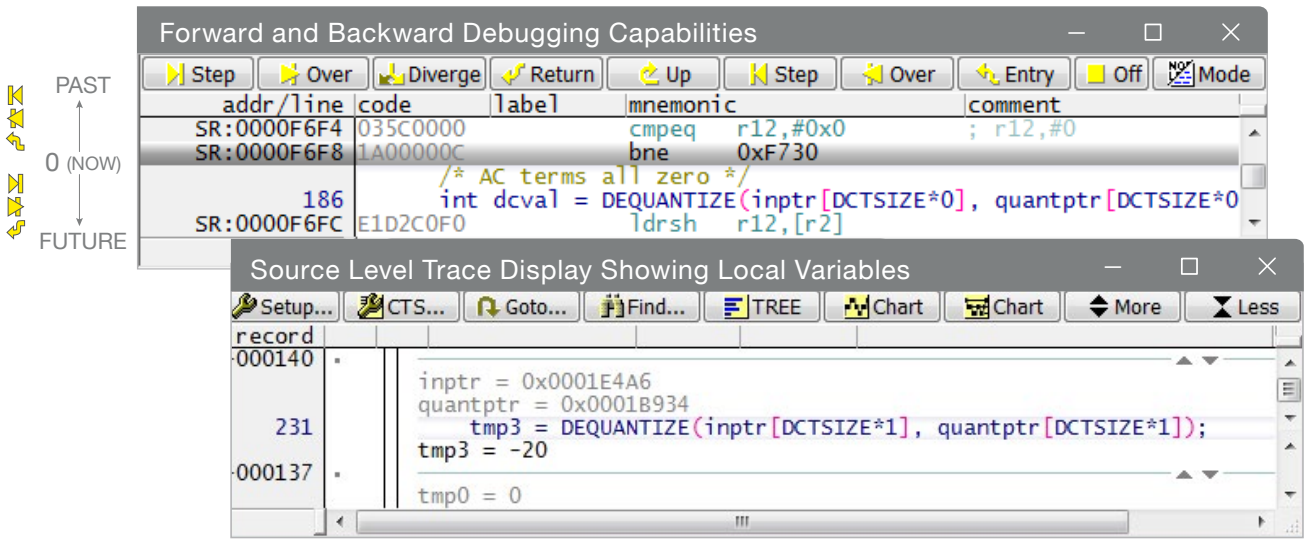
Full Support for Arm® CoreSight™ Technology

Arm® CoreSight™ technology offers the chip designer various components to extend the core's debug functionality with the objective of debugging and tracing an entire system-on-chip. A joint JTAG or Serial Wire Debug interface allows real-time access to the on-chip buses and control of the cores and the CoreSight system itself. A common trace bus combines trace data from multiple sources like processor program and data trace, system trace information and accesses to the memory bus. TRACE32® displays time-correlated traces of multiple sources which had been stored in on-chip trace memory or emitted from a common trace port.



Backward Debugging

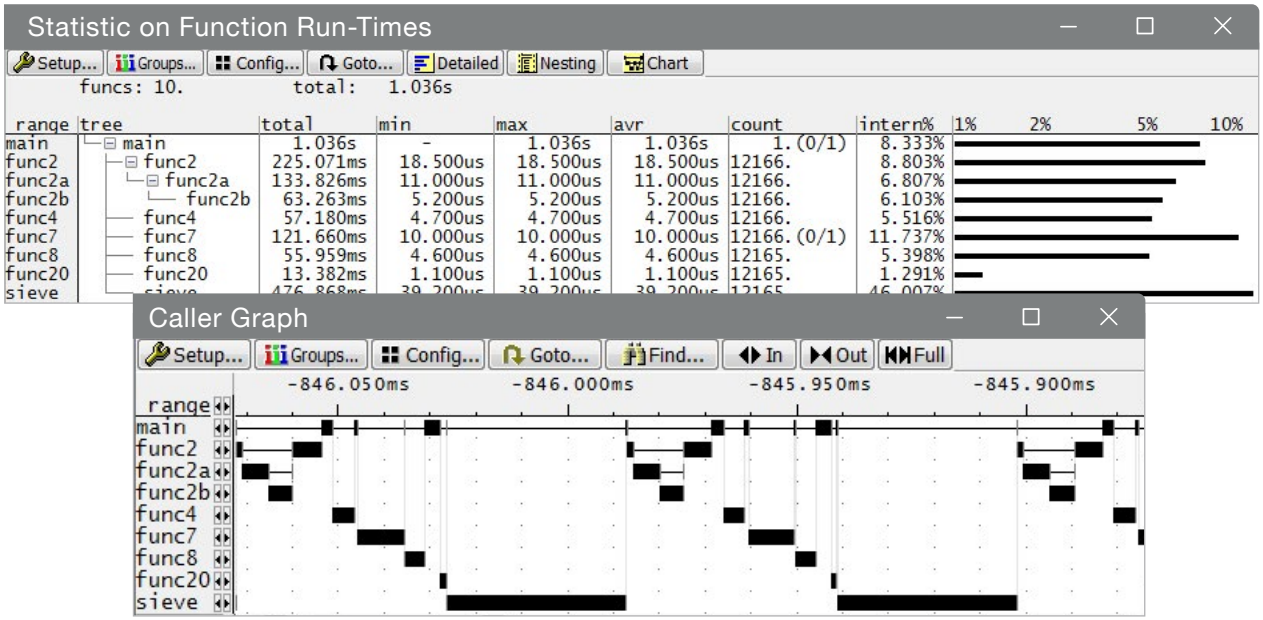
Trace-based debugging allows developers to reconstruct the core context for any trace sampling point. You can re-debug a traced program section and watch how memory, registers and variables are changing. You can even step back in time and get a true high-level language (HLL) trace listing showing register and stack variables.



Tracing and Profiling

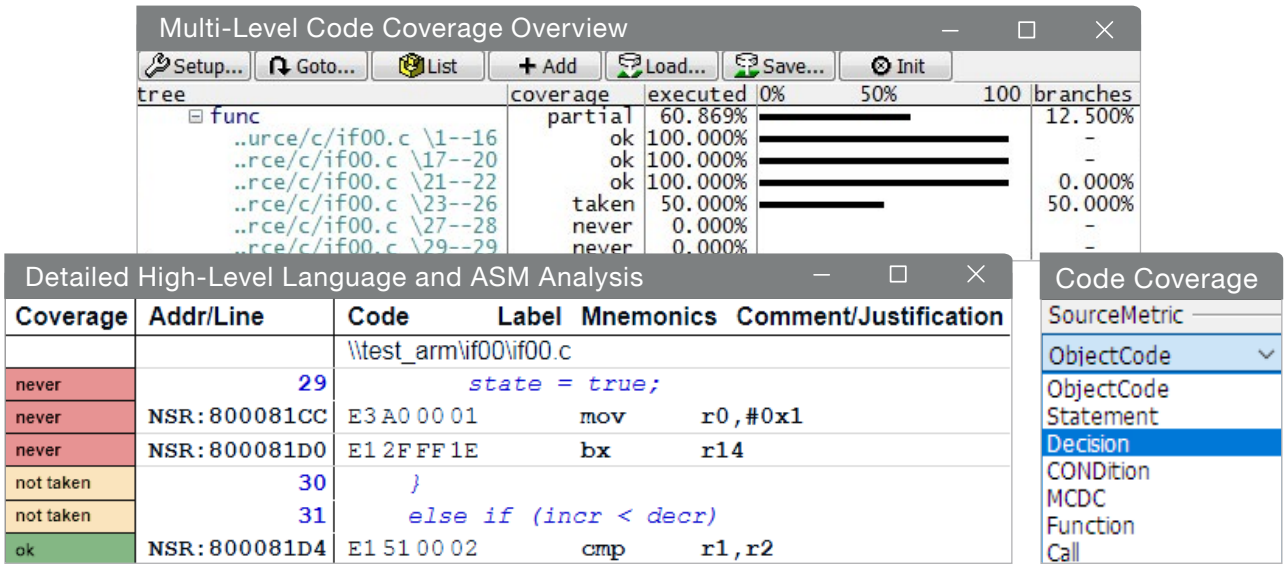
Powerful trace filter and trigger enable you to get the trace information of interest into the few kilobytes of on-chip trace memory or the up to 8 GB of TRACE32's off-chip trace memory. For long-term trace, streaming modes can be used which convey the trace data to the hard disk or to an application running on the host while recording.

This provides the capability of searching for bugs which only show up when running in real-time. In addition, there are various analysis functions, for example: run-time statistics on functions and tasks, analysis of the function nesting, or cache performance.



Trace-based Code Coverage

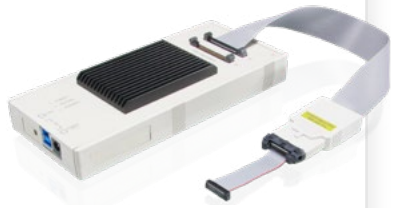
Real-time code coverage verifies even complex metrics like MC/DC without prior code instrumentation. It is suitable to assist in the development of software for safety-related systems in compliance with ISO 26262, DO-178C, IEC 61508, IEC 62304 and EN 50128. Qualification kits are available.



DISCOVER MORE: www.lauterbach.com/use-cases/tool-qualification

HARDWARE-Based Solutions
for all Arm®-Cortex®-Cores

µTrace®



All-in-one Debug- and Trace-Tool for Cortex®-M

PowerDebug System

Powerful, modular, flexible debug system supporting any Arm®-CPU in any chip

PowerTrace System

Highest Performance Trace Recording of entire Arm®-based systems

DISCOVER MORE:
lauterbach.com/debugger

DISCOVER MORE:
lauterbach.com/trace

SOFTWARE-Only Solutions

DEBUG & TRACE
VIA CADI, IRIS, I.A.

FAST MODELS

DEBUG & TRACE
VIA XCP

xcp

DEBUG & TRACE
TRACE32 SIMULATOR

DEBUG & TRACE
VIA USB/CSWP

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