PRESS RELEASE

Lauterbach and Kernkonzept present Arm Cortex-R82AE Hypervisor Solution

Höhenkirchen/Dresden, 12. November 2024 – Lauterbach and Kernkonzept were the first to develop a hypervisor solution for the Arm® Cortex®-R82AE CPU that gives developers of Software Defined Vehicle (SDV) architectures insight into the full SDV software stack and enables them to start software development before corresponding System-on-a-Chip (SoCs) are available in silicon.

The joint solution consists of Kernkonzept's state-of-the-art and proven L4Re Hypervisor running on Arm Fixed Virtual Platforms (FVPs) and Lauterbach's TRACE32® debug and trace tools, which enable analysis of the entire SDV architecture software stack, including the L4Re Hypervisor itself and all virtual machines (VMs), including heterogeneous operating systems and applications running inside the VMs.

The 64-bit Arm Cortex-R82AE processor provides high single-thread performance in multi-core, multi-cluster systems as the primary processor, or as a real-time safety controller with simplified integration with applications processors in heterogeneous systems. Utilizing MMU as well as MPU support, it blends the benefits of deterministic execution with advanced processor technologies to enable rich software stacks, including coherency and virtualization, which is key to SDV architectures.

As a result of the TRACE32® support for the L4Re Hypervisor executed on Arm Cortex-R82AE, developers of virtualized SDV architectures and automotive applications running on heterogeneous rich and real-time OSes including AUTOSAR-compliant OSes can start their development work immediately by using the Arm FVP even before the corresponding chips are delivered in silicon.

Kernkonzept’s L4Re Hypervisor for MPU-based systems securely separates real-time workloads even on very small chips, making it the perfect application for the automotive industry, avionics, or the IoT. It provides more customers with state-of-the art security software, enhancing their system integrity.

Lauterbach’s TRACE32® tools offer an industry-leading feature set for efficient debugging and test automation while providing complete insight into the software stack for bringing embedded designs to market faster, safer, and more reliably. TRACE32® enables simultaneous debugging of multiple CPUs and other cores in an emulated or silicon SoC, a unique capability that covers the entire system.

On systems running a hypervisor, TRACE32® Hypervisor-aware debugging can perform concurrent OS-aware debugging for each guest OS/virtual machine (VM) and display an overview of the system. In addition to debugging the actual applications, TRACE32® tools provide access to hypervisor and OS structures and data so developers can better understand how they are behaving and utilizing chip resources.

“We are excited to have developed the industry's first solution which fully covers virtualized software architectures on the Arm Cortex-R82AE together with our partner Kernkonzept”, said Norbert Weiss, Managing Director of Lauterbach GmbH. " Virtualization is the key to SDVs and thanks to our solution, automotive developers can start creating world-class software immediately.”

"Virtualization is key to the software-defined vehicle, separating software from hardware with a flexible abstraction layer," said Dr. Adam Lackorzynski, founder and CTO at Kernkonzept. "In collaboration with Lauterbach, we proudly support pre-silicon software development for the Arm Cortex-R82AE automotive processor, offering hardware abstraction via L4Re's hypervisor and enabling full-stack debugging with TRACE32 tools, giving developers a head start and shortening the product development cycle."

“Keeping up with the rapid pace of innovation while maintaining the highest levels of safety and reliability is critical to enabling future SDVs,” said John Kourentis, director of go-to-market, Automotive Line of Business, Arm. “This new virtualization solution from Kernkonzept and Lauterbach is allowing developers to bring safe, reliable solutions to market faster, built on the highest-ever performing real-time Arm processor, Cortex-R82AE.”

As technology leaders in their respective fields, Lauterbach and Kernkonzept support the automotive value chain in the transition to SDVs from the very beginning.

Kernkonzept is a specialist in secure and safe virtualization and operating-system technology. Our customers build complex software products for safety-, security-, and mission-critical applications, often requiring certification or accreditation. Based on our open-source L4Re technology – a scalable, microkernel-based operating-system and hypervisor platform, accredited up to German GEHEIM – we engineer system solutions with a minimal attack surface, real-time capabilities, and virtualization support. Our deeply experienced operating system engineers tailor these solutions to the needs of safety-conscious markets, such as automotive, as well as to high-assurance-security, cloud server and embedded markets. We are committed to support our customers with comprehensive and individual architectural consulting and engineering to facilitate their success. Kernkonzept GmbH is an SME based in Dresden, Germany.

**Lauterbach** is the leading manufacturer of cutting-edge development tools for embedded systems with more than 45 years of experience. Lauterbach is an international, well-established company, serving customers all over the world, partnering with all semiconductor manufacturers and growing steadily. At the headquarters in Hoehenkirchen, near Munich, the engineering team develops and produces highly proficient and specialized, easy-to-use Development Tools under the brand TRACE32®. Branch offices in United Kingdom, Italy, France, Tunisia, on the East and West coasts of the United States, Japan and China and highly qualified sales as well as support engineers in many other countries make Lauterbach’s full product range available worldwide.

Für weitere Informationen besuchen Sie bitte <http://www.lauterbach.com/>

Read more about Kernkonzept’s L4Re Hypervisor: <https://www.kernkonzept.com/l4re-operating-system-framework/>

Read more about Lauterbach’s Hypervisor- and OS-Awareness technology: <https://www.lauterbach.com/features/os-awareness>

Read more about Arm® Automotive FVPs: <https://developer.arm.com/downloads/-/arm-ecosystem-fvps>

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