Mentor Embedded
Hypervisor

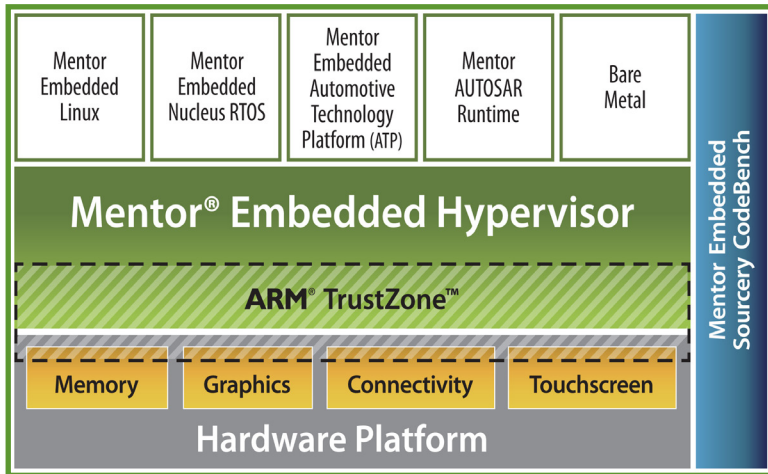| Mentor Embedded Linux	Mentor Embedded Nucleus RTOS	Mentor Embedded Automotive Technology Platform (ATP)	Mentor AUTOSAR Runtime	Bare Metal	
Mentor® Embedded Hypervisor					
ARM® TrustZone™					Mentor Embedded Sourcery CodeBench
Memory	Graphics	Connectivity	Touchscreen		
Hardware Platform					

Mentor Embedded Hypervisor includes comprehensive support for the ARM TrustZone (providing a secure environment for critical information and software to operate in) along with support for numerous guest operating systems in addition to tools and reference BSPs.

Addressing a growing design and business dilemma

Business managers and software developers alike face increased challenges when building today's intelligent embedded systems. They must successfully develop and deliver an increasingly complex, connected, and consolidated product, while meeting the escalating business demands of security, cost, performance, and tight market windows.

Complex and highly integrated SoCs are quickly becoming the common choice these days as demands increase for more performance, improved security, and reliable connectivity options – with less power. Many options have emerged to address these demands and one of the most effective is embedded virtualization. What was once the sole domain of desktop and server environments is now an accepted practice in the constrained space of embedded systems. Mentor® Embedded Hypervisor allows developers to meet the design needs of a complex system, especially those systems that require open source flexibility, real-time performance, or adherence to industry standards.

Virtualization by means of the Mentor Embedded Hypervisor, allows users to:

- Build secure, high performance embedded devices
- Reuse existing IP
- Take advantage of HW virtualization with the latest single-core and multicore application processors
- Leverage a consistent set of tools to configure, build, debug, analyze, and tune complex embedded systems

Whether building a system for automotive, medical, industrial, or any other industry segment, Mentor Embedded Hypervisor helps development teams satisfy complex product requirements while meeting critical security, cost, and time-to-market business concerns.

PRODUCT FEATURES:

- Secure by design with integrated support for the ARM® TrustZone™

- Type 1 hypervisor with a small footprint for high performance and reliable devices

- Choice of guest operating systems including: Mentor Embedded Linux®, Mentor Embedded Nucleus® RTOS, Mentor Embedded Automotive Technology Platform (ATP), and Mentor AUTOSAR runtime

- Includes Mentor Embedded Sourcery™ CodeBench and Sourcery Analyzer for a complete integrated design environment

- Mentor Embedded Professional Services available to assist from high-level architectural design to virtualizing the operating environment and hardware

BENEFITS:

- **Build highly reliable and high performance systems** on the latest multicore processor architectures

- **Consolidate and isolate critical and non-critical functions** for enhanced system performance

- **Reuse existing code, software IP, and subsystems** – reducing design time

- **Maximize developer productivity** with a comprehensive set of tools

- **Lower BOM and overall risk** while improving time to market

mentor
embedded

Built exclusively for embedded applications

Mentor Embedded Hypervisor is a small footprint Type 1 hypervisor designed and built specifically for embedded applications. The high performance capability of the Mentor Embedded Hypervisor enables systems to boot quickly while minimizing the impact on guest operating system execution.

The framework of Mentor Embedded Hypervisor is extremely flexible, allowing it to run on single-core or multicore processor architectures supporting asymmetric multi-processing (AMP), symmetric multiprocessing (SMP), or a combination of both. With dynamic scheduling of virtual machines, it allows for the load balancing of the payload and priority-based execution to support stringent real-time and performance constrains.

In addition, Mentor Embedded Hypervisor features a flexible device model that supports virtualized device access and direct device access for performance critical applications and provides various mechanisms for inter-guest communications.

Secure by design

Today's devices are more connected than ever, which means issues around security are a paramount concern. Mentor Embedded Hypervisor addresses these security issues and challenges by enabling strong isolation and

The ARM TrustZone allows for both normal and secure operations within a single embedded application.

containment of guest operating environments. Functioning at the highest privilege level in a system, the hypervisor can enforce the partitioning of memory and devices to ensure that misbehaving applications, either intentional or malicious, cannot disrupt or corrupt other areas of the system.

Mentor Embedded Hypervisor includes integrated support for the ARM TrustZone system security architecture. For applications requiring hardware-based partitioning of resources such as memory, crypto blocks, and keyboard/screens the hypervisor supports a completely separate secure-world operating environment. Mentor Embedded Hypervisor effectively addresses a broad range of embedded device security requirements by extending the limitations of hardware-only system partitioning.

Improve your return on investment

Historically, systems used multiple processors to separate functionality while improving performance. Today embedded virtualization can be used to maintain this necessary separation by allowing the previously separate and disparate functions to be consolidated onto a single compute platform. The benefits of consolidation include reduced bill of materials of the device or system, which eliminates the need to purchase new tools for test and debug. And because virtualization uses the software already in operation, minimal time is needed to re-engineer or re-write the software – saving design teams and companies the costs typically associated with software and subsystem creation. Ultimately this means lowering your development risk while improving time to market.

Part of a comprehensive embedded solution – only from Mentor Embedded

Mentor Embedded offers the choice of several guest operating environments to complement Mentor Embedded Hypervisor. Guest OS options include the Yocto Project™ compliant Mentor Embedded Linux, GENIVI™ compliant Automotive Technology Platform (ATP), Mentor's Nucleus Real-Time Operating System (RTOS), or Mentor's AUTOSAR solution. Mentor Embedded Professional Services can assist customers in all aspects of development from virtualizing a preferred operating environment to virtualizing specific hardware.
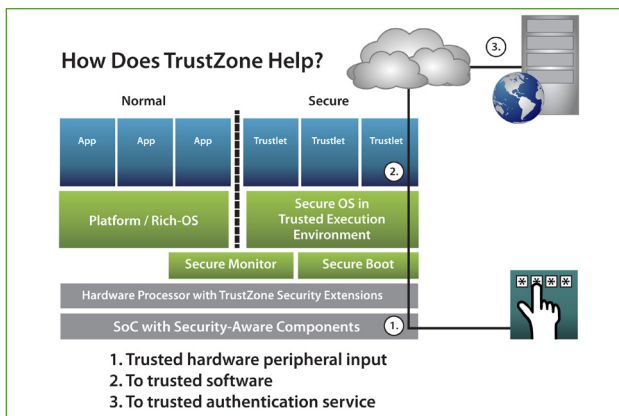
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