GENIVI Hypervisor Project
Automotive Virtual Platform Specification - A standards-based approach to virtualization

Adam Lackorzynski, Kernkonzept

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Evolution of Automotive Architectures

Domain Architecture

Central Architecture

Consolidation of functions into a single system
Virtualization-based ECU

- Adaptive Autosar VM
- Linux VM
- Android IVI VM
- Classic Autosar VM

Safe, Secure and Real-Time Hypervisor

Multi-core Performance Platform
Virtualization Benefits

- Independent software modules, new and old, different domains
- Minimize influence
- Maximize parallel and independent development
- Safety and security domains
Key Role of Virtualization

**Virtualization** is the key enabler for exploiting the performance of today’s and future high-performance automotive systems in a **safe** and **secure** way.
Interoperability and Standardization

Cross-vendor virtual machine and hypervisor interoperability is a key capability to make virtualization easily deployable in automotive environments.

Align the whole automotive community on common requirements with an open licensed specification:

AVPS – Automotive Virtual Platform Specification
Effects of Standardization

- Virtual machines can be ported across hypervisors
- Common code (drivers, etc.)
- Shared validation tests
- Easier multi sourcing
- Standards can be referenced in OEM specifications
- Shortened development cycle
- Software/system re-use
AVPS and Virtio

• AVPS is largely based on Virtio
  • Community and industry approved standard for virtual devices

• AVPS selects and specifies the most appropriate parts for automotive of Virtio

• AVPS covers the whole platform, including boot, power management, and other general requirements for an automotive virtual platform
  • In some areas dedicated drivers take advantage over virtualized devices, e.g., graphics

• Others are taking the same approach: Android Trout, an Android for a fully virtualized platform
AVPS Update

• Version 2 is nearing release, with updates on IOMMU, graphics, audio and other areas.
AVPS Project

• Align with automotive community on common automotive requirements for virtualization
• AVPS is an open licensed specification
• Weekly call every Monday at 10am CET/CEST
  • US-friendly call time is possible (let us know your interest)

• Looking for more contributors and automotive requirements!
• OEMs, suppliers, OS and Hypervisor vendors
  You are welcome!

All documented on GENIVI Public Wiki: Hypervisor Project