

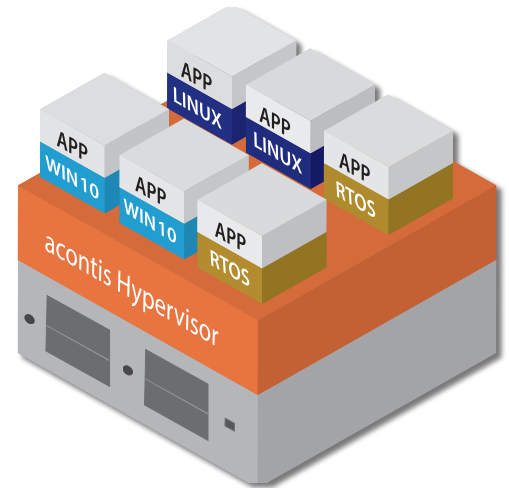
acontis Real-time Hypervisor

Run Multiple Operating Systems on a Single Hardware Platform

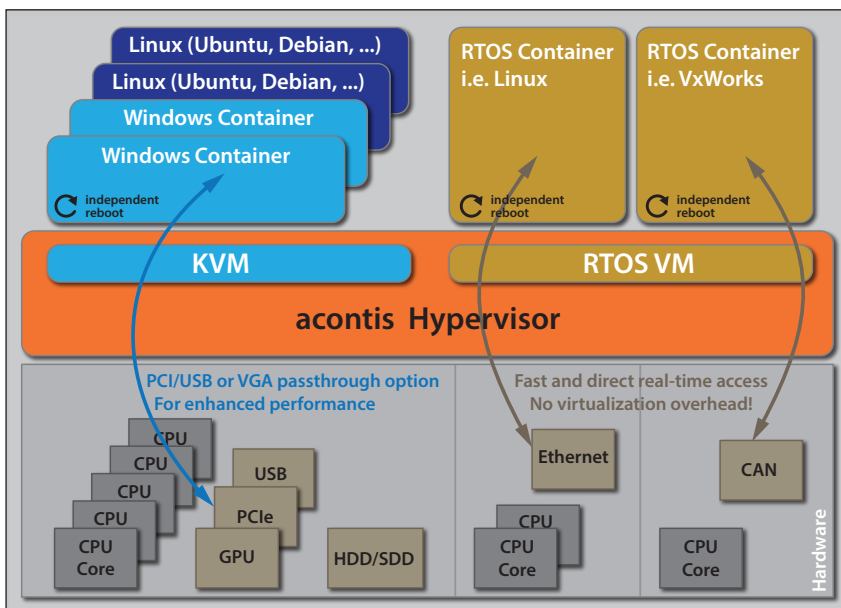
Hardware and Workload Consolidation

Today, real-time virtualization has become an important part to consolidate hardware in industrial and other hard real-time demanding environments. The acontis Type 1 Hypervisor expands the existing Type 2 Hypervisor solutions to target more sophisticated use cases. This solution is a perfect fit for IIOT devices, Edge Controllers, and high-end real-time workload consolidation. Using the existing, industry proven acontis real-time RTOS-VM virtualization technology, multiple hard real-time operating systems (Real-time Linux, VxWorks, etc.) can run in native speed. In addition, based on the proven KVM virtualization solution, multiple standard operating systems like Windows and Linux (Ubuntu, Debian, Fedora, etc.) operate in parallel. KVM provides para-virtualization as well as PCI/USB and VGA passthrough for highest possible performance. Each guest OS is fully independent and separated and can be rebooted or shutdown while the other guests continue without being affected.

Real-Time Virtualization



Architecture Overview



After executing the BIOS, the acontis Hypervisor will be booted. The hypervisor will initialize the RTOS Virtual Machine and boot the RTOS containers on the respective cores. Direct and non-virtualized hardware access guarantee fast real-time response. Windows and standard Linux guests will be running under control of the KVM hypervisor. All guests can communicate with each other and have access to the hard disk.

Technical Features

- Multiple Windows and/or standard Linux instances
- Multiple real-time Operating Systems (Linux, VxWorks, On Time RTOS-32, etc.)
- RTOS containers including applications run on bare metal core with no virtualization overhead and direct hardware access
- Windows/Linux containers with snapshot support to easily switch between different application situations without the need to install multiple OS instances.
- Fully separated and independent guest operation
- User defined guest startup sequence
- Utilize any number of CPU cores per single guest
- Independent reboot of all guests while others continue operation
- Fast interrupt handling and short thread latencies
- Virtual Network between all guests
- Inter-OS Communication: Shared Memory, Events, Interlocked data access, Pipes, Message Queues and Real-time sockets for high speed application level communication
- Hypervisor provided fileserver for all guests



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