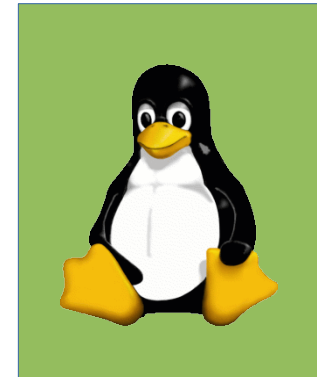


Demo: Timing Aware Hardware Virtualization on the L4Re Microkernel System

Adam Lackorzynski (Kernkonzept &TUD), Alex Warg (Kernkonzept)

Demo

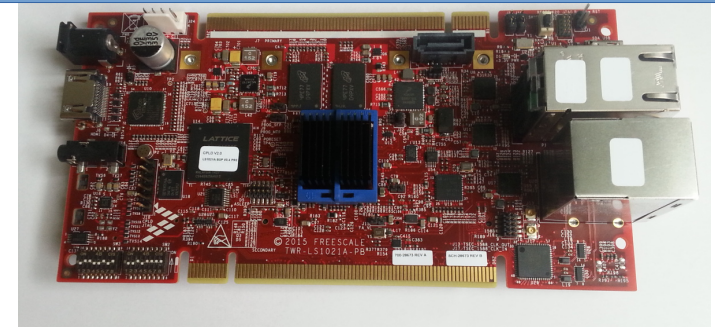
- **NXP/Freescale LS1021A TWR**
 - Dual-core ARM Cortex-A7
- **Two Virtualization technologies**
 - Hardware-assisted virtualization: Linux
 - Para-Virtualization: FreeRTOS
- **VMs execute independent of each other**
 - Using both CPUs
 - Temporal and spacial isolation
- **Interactive: Reboot / Kill / Crash VMs as you like**
 - Independent of other activities in the system
 - Restart VMs
 - LEDs demonstrate VM and system liveliness and secure hardware access



FreeRTOS

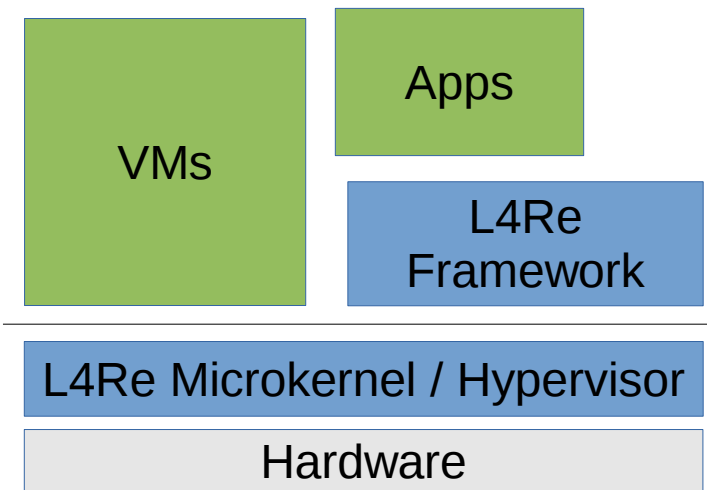
L4Re
Framework

L4Re Microkernel / Hypervisor



The L4Re Microkernel System

- Technology demonstration of our L4Re system
- OS / HV Framework for Security, Real-Time and Virtualization
 - L4Re Microkernel / Hypervisor
 - L4Re user-level environment
- Integration of isolated subsystems
 - Spatial isolation: security, safety
 - Temporal isolation: real-time
- Capability-based design
- Component-based, small Trusted Computer Base (TCB)
- Multi-architecture: ARM, x86-32/64, more to come
- SMP, Multi-flavor virtualization functionalities
- Open source



l4re.org