The multicore challenge to embedded real-time systems

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Abstract text Trends in semiconductor technology evolution are constantly enabling the design and manufacturing of processors with more and more cores. In the future, the workload on a multicore processor will be multiprogrammed, containing a mixture of best effort and high throughput applications together with applications that has been migrated from legacy embedded RTOS environments with potentially high real-time requirements. This, together with the fact that it will simply be harder to even buy single-core processor SoC:s, will finally force the industry to take on the challenge.
The preferred Operating System for most types of embedded applications is Linux, but since standard Linux today does not meet real-time requirements it is required to further develop the interfaces and concepts in and around Linux in order to be able to provide real-time capabilities in an OS platform for embedded devices.

This talk discusses various OS solutions and their different tradeoffs in the areas of performance, latency, functionality and complexity. These spans from the most common one, the PREEMPT_RT patch, to different AMP solutions where Linux is complemented by a realtime RTOS runtime environment.