Open Source Operating Systems: FreeRTOS and Genode OS

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The number of connected IoT devices worldwide is in the billions and growing rapidly. Many of these edge devices — from fitness trackers to sensors to washing machines to automotive transmissions — use low-cost, low-powered microcontrollers with extremely limited memory and compute capability. For some IoT use cases, very predictable response times can also be critical (think: automotive). A standard operating system won’t work here: you need a real-time operating system (RTOS) that works in very constrained systems.

In contrast to most releases, which are focused on one or two major themes, the development during the release cycle of version 17.11 was almost entirely driven by the practical use of Genode as a day-to-day OS by the entire staff of Genode Labs. The basis of this endeavor is an evolving general-purpose system scenario - dubbed "sculpt" - that is planned as an official feature for the next release 18.02. The name "sculpt" hints at the approach to start with a minimalistic generic live system that can be interactively shaped into a desktop scenario by the user without any reboot. This is made possible by combining Genode's unique dynamic reconfiguration concept with the recently introduced package management, our custom GUI stack, and the many ready-to-use device-driver components that we developed over the past
Genode OS 17.11 Reworks Its "Nitpicker" GUI Server [5]

Genode is the open-source operating system framework designed for "highly secure" special-purpose operating systems from embedded platforms to desktops while subscribing to a Unix philosophy and going for an L4 micro-kernel approach. The Genode OS 17.11 represents another quarter's worth of changes.

A lot of the work represented by Genode OS 17.11 is on beating the operating system platform into shape to be a day-to-day OS. Among the changes to find is its GUI stack being reworked, scroll-wheel emulation and pointer acceleration finally, other input handling improvements, all x86 micro-kernels now using the GRUB2 boot-loader, Nim programming language usage, and more.