Accelerating RISC-V Software with Prebuilt Developer Images

Libraries and toolchains for building RISC-V software are evolving at a rapid pace. This creates challenges for developers adding support to open-source software as there are currently no mainstream linux distributions that offer up-to-date packages for development on RISC-V. However the lack of mature RISC-V software is often the reason linux vendors give for not providing support. To break this chicken-and-egg cycle, the RISC-V Software Ecosystem (RISE) prepared and distributed pre-built Gentoo Linux images for a variety of developer boards that have the latest point releases of gcc, clang, llvm, rust and other systems tooling. These turn-key images provide a stable platform for development and avoid incompatibilities from using buggy or out of date software. Because Gentoo is a source based linux distribution, ebuilds are often available the same day as upstream software releases. Moreover the fact that the entire image is built from sources allows bespoke targeting of RISC-V SOCs. This talk will cover how these images are configured and built, how to integrate existing and future RISC-V hardware and lessons learned enabling RISC-V software development.