

ESS Linux: Yocto based linux on MicroTCA CPUs

Wednesday 3 December 2025 17:00 (15 minutes)

The European Spallation Source will be the most powerful accelerator-based neutron source, and the standard chosen for the ESS Linear accelerator fast data acquisition systems is MicroTCA.

The ESS accelerator has a big set of different MicroTCA based systems: Machine Protection, Low Level RF, Beam Diagnostics, Motion systems based on Ethercat and more. Besides that, different models of CPUs are in use on ESS MicroTCAs : Concurrent AMC90x and AMG6x (x86) and IOxOS IFC1410 (PowerPC).

To access the most of our CPUs and support all requirements from the different applications we choose to use Yocto as the base of our OS: The ESS Linux. Even though the OS name may not be the most original, the performance and improvements we achieve with ESS Linux are quite remarkable.

On this presentation we will go through the basics of Yocto and ESS Linux, the challenges, our migration process from CentOS 7, biggest achievements and future plans.

Author: FEDEL, Gabriel (European Spallation Source)

Presenter: FEDEL, Gabriel (European Spallation Source)

Session Classification: Session 6