

## Enea Operating System Solutions for Xilinx Powering High Performance Applications

Enea provides a broad portfolio of embedded Linux and real-time operating system solutions and tools for Xilinx SoCs, covering use cases in a number of application areas including telecom, industrial, medical, and aerospace/defense.

The runtime solutions can be used as stand-alone environments for application processors or as integrated solutions connecting the different processing units.

### Overview

- ▶ Broad portfolio of supported and maintained embedded operating system solutions for Xilinx SoCs:
- ▶ Zynq UltraScale+ MPSoC
  - ▶ Enea Linux
  - ▶ Accelerated Linux
  - ▶ Enea OSE RTOS
- ▶ Zynq UltraScale+ RFSoc
  - ▶ Enea Linux
  - ▶ Accelerated Linux
  - ▶ Enea OSE RTOS
- ▶ Zynq 7000 SoC
  - ▶ Enea Linux
  - ▶ Enea OSE RTOS
- ▶ MicroBlaze
  - ▶ Enea OSE RTOS

The partnership between Xilinx and Enea is a long-term commitment to continuously update and enhance OS solutions support for Xilinx devices. Enea provides BSPs and drivers for Xilinx boards and SDKs, as well as FPGA re-writes and updates.

### Enea OSE

Enea OSE is a POSIX compliant, high-performance, real-time operating system. It is optimized for applications requiring true deterministic real-time behavior and high availability on Xilinx SoCs and soft cores.

On Xilinx SoCs, Enea OSE runs on the ARM Cortex-A application processors, providing a runtime environment for computing intense applications with stringent real-time requirements in a wide range of systems, from telecom infrastructure and wireless equipment, to medical instruments and industrial applications.

Supported device families:

- Zynq UltraScale+ MPSoC
- Zynq UltraScale+ RFSoc
- Zynq 7000 SoC
- MicroBlaze

### Enea Linux

Enea Linux powers applications on Xilinx SoCs with the reliability and low risks that come with a distribution that is maintained and supported by the world's leading embedded Linux provider.

Enea Linux is closely aligned with the Yocto project, and is easily extended for a specific use-case through Enea's market-specific profiles for real-time, networking, virtualization, and embedded. A Carrier Grade Linux (CGL) certified solution is also available.

Our strategic involvement in the OSS Security Group enables early awareness of vulnerabilities and rapid deployment of security patches. Detected vulnerabilities are handled through an established security incident management process that includes constant monitoring and assessment, quick resolution, and secure report and delivery.



Main components include:

- Linux Kernel
- BSP for Xilinx UltraScale+ or Zynq 7000 SoCs
- Application packages
- Board support packages
- Development tools
- Build and configuration system

Supported device families:

- Zynq UltraScale+ MPSoC
- Zynq UltraScale+ RFSoc
- Zynq 7000 SoC

## Accelerated Linux

Accelerated Linux is a software acceleration of Linux, intended for high performance real-time applications. It includes a light-weight partitioning hypervisor to give access to Linux and Enea OSE, each dynamically allocated to one or more cores of the Xilinx SoC Cortex-A53 (APU) cluster. Linux and the real-time domain are connected through high speed IPC, big data transfer between domains, and access to shared resources such as file systems.

The solution also includes APIs which allow integration, cooperation and system management between the APU and the Xilinx Cortex R5, real-time processing cores.

Accelerated Linux is very flexible. It has been designed to transparently improve the real-time capabilities of different Yocto-compliant configurations such as Xilinx Linux, Enea Linux, and other embedded distributions.

It can easily be “dropped” into an existing Linux deployment to improve real-time capabilities.

Supported device families:

- Zynq UltraScale+ MPSoC
- Zynq UltraScale+ RFSoc

## OpenAMP Integration

OpenAMP is a framework providing software components to enable development on asymmetric multi-processor systems. It is supported by Enea’s runtimes primarily to integrate the runtime environments on the ARM Cortex-R5s on the UltraScale+ devices, typically running FreeRTOS or a bare metal application. Enea implements remoteproc for program load on FreeRTOS when running on the ARM Cortex-R5 and RPMsg for IPC between the processor clusters. The standard Xilinx SDK is available on the ARM Cortex-R5 side.

## Design Services

Through our software design and development services we provide timely access to skilled engineering resources, program and project management capabilities, mutually beneficial long-term partnerships and the highest of quality standards - across multiple locations and industries.

## Global Support

Enea’s skilled and experienced support engineers provides ISO:9001 certified support from seven support centers located in different time zones, available to provide support and guidance anytime, anywhere. Multilingual capabilities makes local support even easier and more efficient.

Enea also provides long-time support including functionality backports and legacy kernel support for long-lived products.

## Markets

Enea’s operating system solutions for Xilinx devices targets applications with a need for high performance real-time applications.

Target markets include:

### *Telecom and networking*

- 3G/4G/5G radio access networks, i.e. base stations and radio.
- Network switches and routers.

### *Industrial, Scientific and Medical*

- Real-time environments for industrial automation, industrial IoT and medical devices.
- Sensor data processing and control applications for industrial robotics
- Intelligent control applications, networking and HMI for smart grids

### *Test and Measurement*

- Telecom test equipment with high real-time performance on multicore devices for post-processing and analysis of captured data, control, and HMI.

### *Automotive and Transportation*

- Connected gateways networking and control plane.
- High performance control and communications in powertrain applications.

### *Aerospace and Defense*

- Real-time environments for post-processing of high resolution data streams from multiple sensors including radar and video, and control applications.
- Enea is an independent high-reliability software company performing Federal Aviation Administration (FAA) certification (RTCA DO-178B and DO-254).

## Contact Us

We are always close to you with sales and project management offices across the globe. Find your local representative here: [www.enea.com/contact-us](http://www.enea.com/contact-us)



Enea develops the software foundation for the connected society with a special emphasis on reducing cost and complexity at the network edge. We supply open-source based NFVI software platforms, embedded DPI software, Linux and Real-Time Operating Systems, and professional services. Solution vendors, Systems Integrators, and Service Providers use Enea to create new networking products and services faster, better and at a lower cost. More than 3 billion people around the globe already rely on Enea technologies in their daily lives. For more information: [www.enea.com](http://www.enea.com)