

Workshop

Embedded Open-Source Linux Development

This 2-days workshop is aimed for the FPGA system Developers, embedded system Developers and system architect to impart their knowledge while understanding the concept of installing an open source Linux on a XILINX FPGA Development Board. Beginning with the creation of the hardware platform, a bootable Linux Kernel for PowerPC processor with the peripherals will be arranged. In theory the concept of Linux and its component as open source embedded operating system will be explained e.g. Network support, Debugging and Profiling. The applications are available in the XILINX integration Design Flow.

Applicable technologies

Virtex 4-FXT.

Requirements

Experience in C / C ++ programming
Fundamentals of XILINX FPGA design flows (ISE / EDK)
Basics of Micro Blaze™ or PowerPC® Processor Architecture
Fundamentals of command line syntax in Linux

Duration and Cost

Duration: 2 days

Cost: € 1.300, – net per person, including detailed training material, drinks in the breaks and lunch.

Agenda

Concepts which will be taught

- Creating a Linux Development environment on a before tested FPGA hardware platform
- The basic concept of an embedded Linux Operating system
- Configure the Linux kernel for the XILINX FPGA project
- Determination of scheduling and Synchronization process under the Linux operating system and its Application
- Analysis of the System Process Communications
- System of the Linux Memory Managers As well as application on the FPGA Platform
- Creation and set up Linux Software drivers
- Basics to create Linux programs

Exercises

- **Lab 1:** Building the Environment
The creation of a Linux development system on the FPGA board under the XILINX software suite and open source Components. Script processes under Linux.
- **Lab 2:** Basic Linux system
The kernel configuration, preparation of the Kernel with a root file system, Create a minimal and rootfs Linux login.
- **Lab 3:** bootloader
Analysis of the boot process, creating the Bootloader boot of Linux with U-boat and boot Linux with NFS rootfs.
- **Lab 4:** Peripherals and Drivers
Programming of a Kernel module, compilation of external modules and creation of a simple peripheral driver.