Embedded Linux Training

Overview :

This 5 days training is intended for developers that want to build an Embedded Linux system from scratch or from commercial Embedded Linux solutions.
The training covers the various components of an embedded Linux target, the development choices and the different debugging possibilities, as well as the Linux kernel architecture and important issues such as cross compilation and building of the main components. The training finishes with some more specific subjects to the choice of the participants (such as SDL multimedia, GTK development or building from distribution of choice).
During this course all participants get the opportunity to build and experiment with a multifunctional small-footprint embedded target (which can be kept after the training).

Knowledge prerequisites :

- Good IT Background
- Good working experience with Linux (Power User or similar).
- Linux System Administration or similar practical experience (knowledge of Linux kernel compilation, file system structure and vim are prerequisites)
- C/C++ Programming experience on Linux or Unix

Method :

Course/Workshop, classical educations with practical exercises.

Course Flow :

Day 1 & 2:

Welcome and Walkthrough

In-depth look at the system architecture

- Kernel
- File systems
- Processes
- Networking
- More on Bash
- Text Editors

Development

Development tools

- GNU make, gas, gcc, ld, gdb (exercise)
- Compiler options
- Remote debugging
- Options, built-ins and defaults

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- ldscript
- Build hierarchy - structure, scripts and make files
- Setting up the cross compiler environment toolchain
- Busybox

Day 3:
Advanced Development
Kernel architecture

- Processes and the scheduler
- Interrupts
- Memory management (exercise) Drivers
- Modules, kernel (exercise)
- char, block, network Networking - architecture common services
- How to optimize the kernel for latency
- Realtime Linux

Day 4 & 5:
Embedded Development
Host / Target relationship

- Cross compilation
- Compiler preparation (exercise)
- Linker preparation - ldscript, crt0
- Building an embedded kernel
- Building the root file system
- Most important components
- Booting – u-boot, redboot, grub, lilo, others
- Linuxheart
- A running system
- Upgrading your target

Additional subjects
Additional subjects chosen by participants, such as:

- Networked targets updating techniques
- Deeper look into the SDL multimedia framework
- Deeper look at building from a distribution of choice (Debian, Red Hat/Fedora, Linux From Scratch, Knoppix, Slackware, Damn Small Linux,...)
- GTK development and footprint reducing
- Summary of what has been covered
- Etc…

Courseware :
Course materials provided, complemented with 2 books and one HW development board.

Course Dates & Location:
Please contact us for available dates and locations.

Price :
2.750,- € + VAT per attendee (incl. HW development board, 2 books, and lunches during the 5 days).

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