



Linux Internals

Day 1

Scheduling in Linux

Interprocess-/Interprocessor communication

Posix IPC (Shared Memory, Semaphores, Signals, Sockets (MessageQueues), Pipes, Dbus)

„Best Practice “recommendations for application development

Do's and don'ts

Analysis of applications and structured layering of applications

Kernel – roll your own (ryo) Linux kernel

Cross development for ARM architecture

Driver development

Kernel build-system / integration of your own device driver

Driver model (structure) of Linux

Driver details – shown on the character device driver



Day 2

Real-time and Linux

- Presentation of different approaches (RTAI, Xenomai, Preempt-RT)
- Design principles and structure of Preempt-RT patch
- Test programs for user- and kernel space
- Real-time application development (process, thread, driver, ...)
- „Best Practice “recommendations
- Do's and don'ts
- Analysis of applications and structured layering of applications

Day 3

Error analysis / debugging of Linux with build-in tools

- Use of ftrace - debugging, tracing
- Performance analysis; appropriate tools and methods

Introduction to packet management systems for Linux, shown on Debian

- Principles and idea of a packet management system
- Structural design of Debian as an example

Reasonable HW infrastructure for Linux development

Reasonable SW Infrastructure for Linux development (Build System, version control system, distributed development ...)

Software:

Linutronix provides an USB HDD with an x86 64-bit based Debian system for the host system, a Debian and a toolchain and for the target system an ARM Linux (running in a virtual machine). The HDD is a gift for the participant and can be taken home for further studies.

Hands-On training:

Scheduled are hands-on examples for the following themes: shell, cross compiling, and cross debugging (hardware could be provided by Linutronix; please contact us if wished).

Hands-on examples might be limited to 2 persons for a single device

Number of participants:

Due to our experience we know that a single instructor could coach a maximum of 6 persons. Our courses are therefore limited to this number of individuals.