

# Embedded Linux

## Debugging / Tracing / Profiling



### Training Description

The participants will be given a basic overview of debugging/tracing/profiling facilities with (embedded) GNU/Linux.

Hands-on exercises provide you with the necessary practical experience to go ahead and choose the right tool for your debugging needs.

As a basic we recommend the training „Embedded Linux in Theory and Practice“.

### Target Group

Software architects, software developers, software project manager, system architects

### Prerequisites

Theoretical and practical knowledge in how to use embedded Linux is assumed.

### Training Content

#### 1st day: debugging

- Debugging with easy methods: e.g. errno, shell debugging, lsof, netstat, procs, sysfs, debugfs, syslog, ltrace...
- Gdb and friends: e.g. gdb, gdbserver, gdb and threads, core dump, zero pointer, log segmentation faults, crash ...
- TOP and friends: top, latencytop, powertop, powerdebug, iotop, atop, htop
- Boot-up time optimization: grabserial, bootgraph, bootchart

#### 2nd day: profiling, tracing und relevant tools

- Profiling and Tracing: e.g. time, gcov, gprof, oprofile, systemtap, perf, ftrace, trace printk, kernelshark ...
- Tools for debugging, profiling and tracing - the Yocto-Project: e.g. Eclipse plugin, tcf-agent, User space Debugging, perf, ftrace ...

## Method and Training Materials

Presentation and hands-on exercises with host (laptops with Ubuntu 14.04.x LTS and target system (e.g. Beagle)

Bone Black Rev. C - <http://beagleboard.org/BLACK>). The two electronic devices will be provided during the training. There will be one workspace for two participants.

You will receive a workbook (in English), a Beagle Bone Black Rev. C with standard FTDI 3.3V to USB cable. After the training you will be given a download link with examples for more in-depth study.

## Duration and Training Fee

2 days, 1.190 Euro plus VAT tax per person. The fee includes the training certificate, the training material, snacks, beverages and lunch.

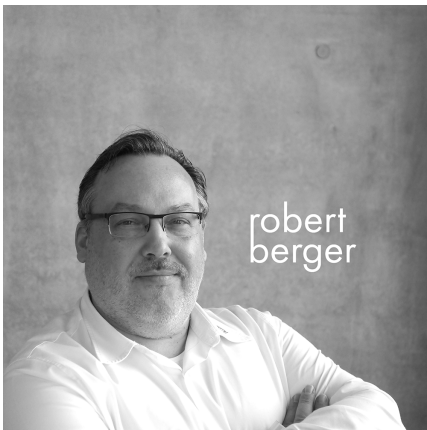
## Number of Participants

6 to 12 participants

## Location

Technology center TechBase, Franz-Mayer-Straße 1, D-93053 Regensburg

## Trainer



Robert Berger

Since 1993, Robert Berger gathered experience in software design and development for embedded systems. He has used GNU/Linux on desktop and server class machines, but mainly for embedded system (automotive, industrial control, robotics, telecom, consumer electronics, etc.). Robert's expertise ranges from the smallest real-time systems (FreeRTOS) to set-ups with multiple processors/cores and embedded GNU/Linux (user-, kernel-space, device drivers, hardware interfacing, debugging, multi-core, Yocto Project) with a focus on free and open source software.

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