

Embedded – THE Linux Kernel

5-days session

Title	Embedded – THE Linux Kernel
Overview	This training will allow current students, engineers and Linux enthusiasts to acquire
	the required practical skills and know-how to boot & configure the Linux Kernel for
	an embedded system that will be used in the training sessions (Processor
	Architecture: either ARM Cortex-A5 or Quad Core Cortex-A35). This know-how can
	then be easily extended to use the same learned processes to embed Linux OS
	within other processor architectures and boards.
	The course/training will mainly focus on the following items:
	 Linux Kernel Architecture & Internals
	 Cross Compilers & Toolchains
	 C library
	 Bootloaders: first stage, U-Boot
	 Linux Kernel: configuration, building and booting
	 Device-Tree
	 Kernel modules
	 Filesystems: Block, Flash-based
	 BuildRoot
	 Debugging & Profiling the Linux Kernel
	 Real-time Linux: preempt RT patch, Xenomai
Labs	 Configuring a toolchain for the lab board
	 Configuring the 1st stage bootloader and U-Boot
	 Configuring & Patching the Linux Kernel
	 Compiling Linux images and device-trees
	 Booting Linux over the Network
	 Booting Linux on SD-Card or USB
	 Booting Linux on NandFlash device
	 Mounting Flash Filesystems: UBIFS, YAFFS2, JFFS2
	 Mounting Block Filesystems: SquashFS, ext4, FAT
	 Installing a webserver on the board
	 Installing an audio player on the board
	 Installing an SSH tunnel on the board
	 Configuring the board as a NAS server
	 Configuring the board's WiFi and Bluetooth connections
	 Debugging the Linux Kernel over the network
	 Comparing the timing of Linux vs PREEMPT_RT patch vs Xenomai
Audience	Software & Firmware engineers that intend supporting embedded Linux
Prerequisite	 Basic knowledge of the GNU/Linux commands
	 Basic knowledge of version control (e.g., Git)
	 Basic knowledge in C programming
Seats	[min = 8, max = 16]
Duration	5 days – 40 hours (50% courses, 50% Labs)