Joachim Nilsson

UNIX developer with a passion for style and simplicity, down to the last bit

Education

1999—2000 **MSc, Real-Time Systems, Computer Engineering**; University of Mälardalen (Västerås)

Thesis title: Modular Scheduling in RTLinux, supervisors: Prof. Gerhard Fohler, MdH, and Mikael Bergqvist, Frontec AB

1995—1999 **BSc, Computer Engineering**; University of Mälardalen (Västerås)

Experience

2005—Present: Westermo R&D

Software Architect for WeOS, at Westermo R&D, Västerås.

- Invented, engineered, and designed the WeOS network operating system, which is an in-house embedded Linux distribution with CLI, WebUI, SNMP
- Introduced advanced version control using Subversion (now GIT is used)
- Introduced collaborative issue tracking using Mantis
- Systems administration for Linux servers
- Project lead and scrum master

2002—2005: Ångpanneföreningen, ÅF

Consultant, Linux and embedded systems, at ÅF-System AB, Västerås

2004 *ABB Force Measurement — Network Security Analysis*

Security analysis and firewall recommendations for connecting a time critical industrial network to an office network with Internet access. The Stressometer flatness measuring system is an advanced flatness system for rolling mills with high demands on network load predictability and quality of service.

2002–2005 *EssNet AB — Misc Linux USB drivers*

Development of several Linux kernel device drivers for a highly advanced lottery system. In particular a Cypress FX2 (USB 2.0) based high–speed scanner with functions for scanning, calibration, branding of printed receipts, cashdrawer and dedicated serial port interface.

First devleoped for Linux kernel 2.4 and later ported to Linux 2.6.

Also responsible for continous maintenance of drivers and Linux system software, at EssNet.

2000—2002: RealFast Operating Systems

R&D Engineer, RealFast Operating Systems AB, Västerås.

2002 *Mentor Graphics Inc. — Port Linux to HW microkernel*

Similar to the VxWork project, but for the Linux kernel using the RealFast HW microkernel. Testbench (SW simulator of microkernel), complete system w/ drivers, redesign of the Linux scheduler etc., fully developed in a GNU/Linux environment.

Development was done on the ARM Integrator platform using the Arm AxD debugger with a MultiICE JTAG probe.

2001 *Mälardalen University, Västerås — Lecturer*

Lecturer and examiner for a course in C programming at the Department of Computer Engineering, IDt. http://www.idt.mdh.se/kurser/cd5020/jnnht01/

2001 *RealFast/Mälardalens Högskola, Västerås — Sierra S16*

Project lead and developer for the Sierra real-time operating sytem. A minimalistic OS based on the RealFast HW microkernel wrapped with a small API to the hardware, coupled with GCC and an adaptation of NewLib to provide a limited C library. Used in courses given at Mälardalen University, e.g. Sumo robots.

2001 *Ericsson Radio Systems AB, Nacka Strand — RTLinux Demo*

Investigation and demonstration of how Linux, and RTLinux in particular, RTLinux can replace Enea OSE in Ericsson telephone switches based on the GPB2, General Purpose Board 2.

2001 *Applied Linux & Embedded Internet Show, 5th April, Kista — Presenter*

Presented Linux and other free kernels for embedded and real-time systems. Overview of non-realtime eCos and uClinux, as well as the real-time RTLinux and RTAI. Elaborated on how each could be used, streangth and weaknesses, and what to watch out for.

2000 *Ericsson Mobile, Gothenburg — Port VxWorks to HW microkernel*

Extensive modifications of the VxWorks operating system internals, the Wind microkernel, to support the HW microkernel developed by RealFast, a VHDL kernel core prototyped on a PMC card using an FPGA.

Performance of VxWorks packet forwarding was evaluated with and without the hardware acceleration on the Ericsson GIC (General Interface Carrier) board using an advanced IP packet generator.

Also, debugging and auditing of Ericsson drivers and base platform for the IBM PowerPC 750 using IBM RISCWatch, SingleStep, and Vmetro PCI bus analyzer.

2000–2002 *RealFast — internal work*

Network and systems administration of Linux, OpenBSD and Solaris machines.

Technical Experience

Extensive knowledge of UNIX. Both for systems administration and development. Intimate knowledge of C, Make and the GNU configure & build system. Intermediate knowledge of Python, Perl, Lua, and C++.

Some Open Source projects maintained at https://github.com/troglobit:

finit — A fast init with process supervision, plugin system, and conditions. Focused on small and embedded systems, yet fully usable on server and desktop installations. Used in Westermo WeOS, a network operating system.

https://github.com/troglobit/finit

uftpd — Simple FTP/TFTP server

- FTP with basic anonymous support
- TFTP with block-size negotiation for increased xfer speed

https://github.com/troglobit/uftpd

watchdogd — Advanced watchdog daemon for Linux. Supports loadavg, file descriptor and RAM usage monitoring. Also, advanced heartbeat monitoring API for process instrumentation and supervision.

https://github.com/troglobit/watchdogd

libuEv — Simple event based library for file descriptors, timers and signals. Used in `uftpd`, `finit`, and `watchdogd`, as well as some other projects.

https://github.com/troglobit/libuev

inadyn — Internet automated dynamic DNS client.

https://github.com/troglobit/inadyn

SMCRoute — A static multicast routing daemon.

https://github.com/troglobit/smcroute

mcjoin — Tiny multicast testing tool, generator and sink

https://github.com/troglobit/mcjoin

mg — Micro Emacs clone, useful simple editor for embedded systems.

https://github.com/troglobit/mg

tetris — Micro Tetris clone, neat ASCII/VT100/ANSI easter egg game.

https://github.com/troglobit/tetris

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