

Dale Rahn

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Qualifications Summary

Software engineering developer experienced in working in fast-paced environments demanding strong organizational, technical, and interpersonal skills. Productive, trustworthy, and committed to quality. Confident and poised in interactions with individuals at all levels. Detail-oriented and resourceful in completing projects; able to multitask effectively. Extensive experience in:

- BSD / Linux / Solaris / AIX
- Directed testing
- Hardware Debug
- Simulation / Virtual environments: processor, device modeling and infrastructure
- System/project Architect
- Device Driver development
- C, Go, C++, Python, ksh, ARM, PowerPC, x86, SH, SPARC assembly
- Embedded Software
- Waveform/Trace analysis
- Debugging / Bring-up on many architectures
- Mentoring / Leadership
- Git, CVS, Subversion, Clearcase, Perforce
- Scrum

Experience Highlights

Software Development

- Developed test code to validate ARM SOC and verify performance against expectations.
- Developed enhancements and testing for cell phone application protection environment.
- BTCDD Developer: a reimplement of bitcoin protocols and applications in Go(golang).
- Architect and lead developer for Cyphertite backup tool and back end server.
- Device driver development on multiple architectures: OpenBSD, Linux, AIX.
- LINUX development: WiMax driver modification, CRAMFS configuration, system builds.
- Porting OpenBSD to many different platforms and architectures: ARM systems: AArch64, omap3/4, IOP i80xxx, pxa270, StrongARM. PowerPC systems: macppc, pegasos.
- Maintained and developed compiler, linker and dynamic linker tools. Including a prelinking system for OpenBSD to securely accelerate dynamic application startup.
- Worked with Skype to build the first prototype WiFi Cell Phone with a Skype client.
- Headed team to develop ARM710 based PDA and Cortex-A8 simulations: ARM7, ARM11 cores, UARTs, touchscreen, display.

Employment History

Senior Staff Engineer, Qualcomm Inc, San Diego, CA 2016-Present

Software Engineer, Grammatech Inc, Ithaca, NY 2015-2016

Software Engineer, Arxan Technologies Inc, Lafayette, IN 2014-2015

Software Engineer/Architect, Conformal Systems, Chicago, IL 2010-2014

Senior Developer/Chief Advisor, Bitrig, www.bitrig.org. 2012-current

Senior OpenBSD developer, www.openbsd.org. 1995-2012

Software Engineer, Australian Semiconductor Technology Comp., Champaign, IL, 2008-2010

Game Developer, Volition INC, Champaign, IL, 2007-2008

Principal Staff Engineer, Mobile Devices Sector, Motorola Inc, Champaign, IL, 2004-2007

Systems Programmer, University of Pennsylvania, Distributed Systems Lab 2001-2003

Software Engineer, Motorola Inc, Urbana, IL 1993-2001

Education

Purdue University, West Lafayette, IN – Bachelors in Computer Science, School of Science 1993

Detailed History

Qualcomm Inc, March 2016 – Present

SVE/VI pre and post silicon validation of Snapdragon 835 and following chipsets. Developed tests to evaluate performance and test for failures in the ARM CPUs. Worked closely with CPU architectural performance team to validate memory latency at L1, L2, L3, interconnect, Last Level Cache, and DDR using software timing and waveform analysis. Found and wrote specific test cases for several RTL failures so that the fixed RTL could be retested. Worked with ARM LTD on reporting some of these failures.

OpenBSD Developer Feb 2017 – Present

Contributed AARCH64 port, Improved and stabilized new platform. Developed nearly complete SMP support for this new architecture.

Bitrig Developer, February 2012 - 2017

Working on a port of Bitrig to aarch64 (arm64). Port is running well enough to produce self hosting system.

Lead effort to get xlocale merged from FreeBSD into Bitrig, along with switching to libc++ for both clang and gcc.

Lead effort to bring Clang(LLVM) into src and switching system compilers to use clang as the primary system compiler and have cc default to Clang.

Significant progress in getting arm platform updated to run on recent arm (armv7) hardware and switch newer ABI.

Grammatech Inc, August 2015-March 2016

Contributed to binary rewriting tool to rewrite programs to detect or eliminate buffer overflows and other types of specific error types. Added routines to parse the exception handling code and save it into a data structure so that the asm rewriter would be able to reconstruct the error handling semantics of the C++ program. Project funded by DARPA under CFAR project.

Arxan Technologies INC, August 2014 – June 2015

Feature development and maintenance, test development and testing of a cell phone application protection environment. Implemented features in the core of the protection. Wrote test programs and suites for new features for nightly testing. Monitored nightly testing and ran specified manual testing for multiple releases.

Conformal Systems, January 2010 – August 2014

Designed and implemented REST based interface in CoinVoice (www.coinvoice.com) to allow E-commerce plugins to directly communicate to payment system.

Contributed to the btcd (bitcoin daemon developed in go), prototyped the block chain download/server code and script validation engine. Primary developer on btcdb (github.com/conformal/btcdb)

Transformed epitome into the currently released Cyphertite (www.cyphertite.com) application. Initially was sole developer on this project but became architect as the project was redesigned and 8 additional developers were added to the project, then continued to enhance the project as the team was scaled back. Full product lifecycle experience.

Designed the Cyphertite server architecture (closed source) and led it's development.

OpenBSD Developer December 1995 – February 2012

Port Maintainer for PowerPC/macppc, pegasos, cats, zaurus, armish, and beagle platforms.

Wrote and maintained numerous device drivers, dynamic linker, compiler/assembler/linker, VM subsystem, platform bring up, performance measuring and improvement.

ASTC Australian Semiconductor Technology Company January 2008- January 2010

Simulation development, integration of System C peripheral models into the existing MOOSE simulation environment. Adapted Qemu processor model as an alternative CPU core for an ASTC simulation environment. Peripheral development, including graphics interfaces and SDMMC peripherals.

Volition, a division of THQ INC, September 2007- January 2008

Game development for PS3 and Xbox360.

Motorola Mobile Devices Sector, Technology Office October 2004-August 2007

Worked with Future Wireless Mobile Group (WiMax), porting the Linux based WiMax driver to an embedded OS: MAPAL/TTPCom, Additionally performed maintenance work on the Linux driver and the associated debug software and flash tools. Trained coworkers on use of prototype boards.

Lead Engineer in UI Prototyping group. Implemented a desktop and hand-held version of a UI specification in a rapid prototyping environment in Qt to test and improve the UI design.

Worked with Skype, used their voice engine stack along with their embedded interface to build a Qt based application to run on a Linux-based WiFi enabled phone.

Ported Microsoft DRM to Linux/ARM for a DLNA (Digital Living Network Alliance) demonstration.

Assisted simulation group by adding ARM11 features (core specific and floating point) to ARM simulation, also simulation model debugging and maintenance.

Ported OpenBSD to PXA270, Freescale MXC, and OMAP chipsets as potential future phone platforms.

Acted as resident UNIX/BSD/Linux expert when there were questions in the operating system group to assist them in determining if bugs reported against the operating system were Linux errors or user land errors.

WhyWire Inc April 2004- October 2004 (contract)

Adapted an open source IAPP, a WiFi Access Point roaming protocol, to OpenBSD based access points.

Modified PRISM WiFi OpenBSD driver wi(4) to work on a similar downloadable firmware WiFi card.

Adapted OpenBSD PRISM WiFi driver wi(4) to function with downloadable firmware devices.

University of Pennsylvania, Distributed Systems Lab September 2001- November 2003

This position was funded by the POSSE DARPA grant to OpenBSD.

Implemented dynamic linker and compiler/linker changes to allow W^X (Write xor eXecute) support for several OpenBSD platforms, i386/amd64/sparc/sparc64.

Updated OpenBSD/i386 to newer compiler/linker tool chain, moving it from the old a.out executable format to the more common ELF executable format, with custom modifications to allow W^X security feature.

Rewrote PowerPC virtual memory management code to optimize/simplify it. System build time reduced 20% as a result of the rewrite, some specific benchmark tasks increased in speed by 700%

Motorola Mobile Devices Sector, Simulation Team June 1997 - September 2001

Simulation modeling and core development. Developed an ARM710 CPU model and headed team which developed all peripherals for a phone device.

Developed technique to simulate a CPU which runs a different endian than the host CPU efficiently.

Motorola Computer Group, AIX Fault Tolerant development, Feb 1996 - June 1997

Developed IOFixup driver for fault tolerant AIX system to detect if an IO error occurred while talking to a peripheral device, giving the system a chance to recover from device failure.

Motorola Computer Group, Languages and Tools, June 1993 - February 1996

Maintained existing SVR4 assembler, linker and compiler front end.

Performed compiler and system benchmarking to compare m88k SVR3/4 systems to other SVR4/UNIX systems available in the market.