

Eran Duchan

HaVradim 22, POB 7230, Beit Itzhak, Israel :: Born 05.31.1980
+972-54-6653003 :: pavius@gmail.com :: www.pavius.net

Summary of Qualifications

Specialist in real-time, carrier-class embedded networking systems with over 11 years of experience (5 years acting as software director, responsible for hiring and managing 15 engineers). Proficient in all layers of software – from low level drivers, through kernel programming and all the way up to GUI design and implementation.

February 2008 – Present *Miscellaneous*

Embedded systems consultant

- Umicos (C/ASM for ARM, x86): Served as the VP R&D for a 10 man startup. Developed a feature rich, multithreaded RTOS with heavy performance and RAM constraints (wrote the kernel, BSP and networking stack, Ethernet drivers as a one man team). Ports included ARM7/9 for Atmel's AT91SAM devices and an x86 windows simulator (actual context switching in a single windows thread)
- Celtro (C/C++ for PPC, x86): Responsible for supporting the embedded software team in technical issues, designing and implementing large scale system-wide features (MPLS integration, CES, etc), developing Linux based equipment, approving candidates, implementing new features and solving difficult software issues in all code areas
- Tawkon (C/ASM for ARM): In 2 weeks, learned the environment and architecture of Windows Mobile, reverse engineered a field test application and, by studying the ARM assembler code, developed a demo showcasing undocumented baseband functionality
- WebSilicon (C for PPC): Linux and U-Boot board support packages for custom PPC875 based hardware. Implemented custom device drivers, tailored tight file systems/kernel modules and employed NET-SNMP for secured SNMPv3
- Miscellaneous (C/ASM for PIC): Several projects involving designing and writing the software for custom hard real-time microcontroller based hardware

April 2004 - February 2008 *Celtro; a member of ECI Telecom (www.celtro.com)*

Embedded software manager and Lead developer for a cellular multi-service switch

Designed and developed, from scratch, a carrier-class 2G/3G cellular gateway. The system optimizes and prioritizes cellular traffic over E1/T1, SONET/SDH and Ethernet to reduce operator access network transmission costs. Sold tens of thousands of units and achieved an uptime of years in the field. Reported to the VP R&D, hired and managed a team of 15 engineers in 3 teams and was responsible for:

- Working with marketing, system and hardware teams to define the hardware platform
- Defining embedded software requirements, overall architecture, high level and low level design of all software entities (including BSP, drivers, SW modules and the MIB)
- Design of the second generation network management system

As lead developer in the project (C/C++, MPC8247, VxWorks), designed and implemented:

- All C++ OS agnostic software infrastructures (full Win32 simulation), boot application, initialization and provisioning, inter-card communication, utilities (makefiles, log, CLI, flash interface, etc.)
- Application modules such as statistics, software download, software image builder, IP tunneling mechanism, high availability, SONET/SDH management, etc
- Winpath network processor interface (including low level bring-up). Implemented AAL0/AAL2 switching, shaping and policing, AAL5 termination and OAM
- C++ drivers for Freescale Starcore 8122 DSP, Infineon E1/T1 O/Q/FALC framers, Zarlink ZL7507x TDM switch and proprietary FPGA/CPLDs

February 2002 – April 2004 *Terayon Communication systems (www.terayon.com)*

Embedded software lead for a home Voice over Cable multimedia gateway (eMTA)

Redesigned and implemented a Voice over Cable modem based on a custom ASIC. Written in C (BSP/drivers) and C++ (application) for ARM946 over the MQX RTOS. Under extremely short deadlines, the redesigned eMTA sold hundreds of thousands of units. Managed a team

of 2 software engineers, personal tasks included:

- Implementation of all software infrastructure modules
- PacketCable specification implementation of Provisioning (implementing DHCP, TFTP, Secured SNMPv3), Security (X.509 handling, Kerberized SNMPv3, Kerberized IPSec for MGCP security and AES for RTP security) and Media (RTP and RTCP)
- Drivers for Infineon Vinetic DSP, analogue PSTN switch
- Provided close customer support around the globe (spent several months abroad)

May 2003 – February 2005 Consultant (while working at Terayon and Celtro)

Software development for near infra-red devices based on the PIC microcontroller

During employment with Terayon and Celtro, worked with a Motorola division manager on PIC16/18 based NIR devices (for hand held medical devices and diamond colorimeters). Designed and implemented the OS-less software ranging from bootloaders, drivers (EEPROM, external DACs and ADCs, IR spectrometers, I²C controllers, external flash and SRAM, etc.) and the application layer (dot-matrix LCD graphic user interface, complex measurement processes). Written in very tight C with some assembler. In addition, wrote graphical simulators and device automatic testers (for windows in C++Builder).

September 2000 – February 2002 Bungee (Subsidiary of Netro)

Sr. Embedded Software programmer for a WiMAX (802.16) system

Development of a base station and terminal for an IP-based, mesh wireless system based on WiMAX. Working in a team of 3 programmers, designed and implemented a MAC simulator which simulated traffic scheduling and shaping. (C under MSVC for engine, C++Builder for GUI). The simulator included implementations of random early discard, weighted fair queuing, single-rate three color marker and a proprietary mesh-based packet scheduler.

Upon completion of the simulator, worked on the next generation Netro carrier class ATM-based wireless base station written in C/C++ for the Motorola 8260 over VxWorks. Tasks included:

- Software infrastructure
- Shelf management design and implementation – card admission, redundancy management, TCP based inter-card communication, SNMP agent, IP NMS interface
- Next generation CPE design based on the Motorola 860

Previous Employers

Tadiran Electronics: Developed a windows based RF spectrum management system. Was initially part of the MMI team (C++ Builder and SQL for Oracle). Later reassigned to the monitoring engine team (MSVC, DCOM)
July 99 – Sep 00

Hebrew University: Design and implementation of an auto generated website. A tailored Delphi application allowed the customer to modify the database, generate content and automatically update the website
March 99 – July 99

Professional Skills

- Languages: Proficient in C and C++ (OOP/OOD). Knowledgeable in C#, Java, Python, assembly for x86, ARM and PowerPC. Can pick up new languages quickly
- OSs: VxWorks, Linux, Windows, MQX, uC/OS-II
- Networking: IP, MPLS, ATM, E1/T1, SONET/SDH, 802.16, DOCSIS, Telephony (VoIP/GSM)
- Processors: Motorola PowerQUICC I/II family, IBM 4xx, ARM7/9, PIC16, PIC18
- General:
- Self taught and resourceful. Very quick autodidact
 - Experience in all phases of a product cycle. From conception, through hiring staff, implementation, testing, customer demos, initial rollout, mass rollout and long term support
 - Capable of producing high quality code under very short deadlines
 - Fluent in Hebrew and English (grew up in New Jersey, USA)