Vadivel Murugan

My Career Goal is to create optimized embedded solutions for software defined Sensors, Networking and Server, with focus on Virtualized Infrastructure as service.

Professional Summary

17 years *(Aug 1999 - Current)* of experience in Software design and programming for Edge Router Platform, ASIC and Network processor, Virtualization, and Embedded Real-Time.
Currently Employed with ERICSSON INC for 4 years, and had been employed with BROADCOM CORPORATION and INTEL.
Master of Science (MS), Electrical Engineering, San Jose State University.

Programming Skills in C++/STL, CPython, C, X86_64/VT-x, PPC Assembly.
Domain Skills in Switching ASIC Programming, Sensor networks, Wireless LAN, Virtualization/Containers, BSP and linux Kernel Programming.
Exposure to L2 Tunnel Protocols, RTL, RF and Zigbee, and Hardware Simulation.

Passionate about Linux Kernel Programming, Python Internals, Sensor Networks and Device to Device (D2D) communication.
Github projects: https://github.com/vadivelmurugank

Significant Contributions

ERICSSON INC *(April 2013 - Current)* - Initiated development of Virtualization Platform Framework for Hardware Object, and lead board bring up of Control plane processor , Data plane NPU and Switch fabric of multi service router.

- Abstract Virtual Function (VF) and Physical Function (PF) interfaces for homogeneous access of Data plane fabric and FPGA components in Xen Hypervisor Dom0 platform. Design chroot jail framework to act as containers for intrusive hardware diagnostics of hypervisor platform.
- Bootstrap Control Plane Processor, Data Plane Spider NPU, and Switch Fabric of 40x10G/4x100G line card. Integration of uboot, mini-kernel, linux drivers, and Configuration of Non Transparent PCI Bridge, FPGA, core and serdes PLL, power and fantray modules. Bare-metal configurations involved Shmoo of DDR4 SDRAM, TLB Mapping of non-transparent PCI bridge slave devices, eTCAM Slice Configuration and Nor-flash Memory Map.
- Extend 12x10G PHY to 1x100G (4x25G) PHY configuratons and SFI lane mappings.
- Integrate open source linux modules with third party SDK, and derive solutions to resolve namespace collisions and initialization sequences.
- Isolate hardware and software issues related to Core PLL, PCI Gen3 hot plug, I2C, GPIO, MDIO, Serdes and PHY.
- Resolve Packet drops, credit and calendar resolution, and link partner negotiations.

BROADCOM CORPORATION *(Oct 2010 - April 2013)* - Involved in Design and development of Broadcom Switch SDK interfaces and Silicon-On-Chip driver interfaces for 32x40G/100+x10G (BCM56850/Trident2), 240Gb/s Switch (BCM56640/Triumph3), HiGig2 Switch (bcm88732/shadow)

- Hash enhancements for Memory tables, for micro and macro packet flows.
- Design and implementation of chunked Memory support for efficient memory table reads and writes.

- Add regex compiler optimizations and configurations of Deep Packet Inspection (DPI) flow table.
- Design and Implementation of Wireless LAN CAPWAP Tunnel SDK Interfaces and support roaming configurations.
- Design and Development of 1588 one-step and two-step time stamping and synchronization modules. Enhancements to PLL programming and recovery clock programming interfaces.
- Development of L2 Tunneling Protocol interfaces for MAC-in-MAC, TRILL and GRE.
- Maintenance of QOS, VLAN and PLL Programming interfaces.

INTEL CORPORATION *(Dec2006 - Oct 2010)* - Involved in Dynamic instrumentation of WindRiver Linux and VxWorks ELF Binary/threads.

- Hash Algorithm and Memory optimizations for dynamic memory pool stack and replishments.
- Design and Implementation of x86_64 dynamic instrumentation (sensorpoint) manager, which includes trap and jmp instrumentation for linux kernel and VxWorks
- Design and Development of MIPS Linux Kernel exception redirects, Memory optimizations of data allocations and atomic operations.
- Development of exception redirect handler for PPC and X86_VT Hypervisor.
- Development of MIPS and ARM static and shared library loader to load instrumented binary stubs.
- Maintenance of ARM and MIPS stack walk, trace back mechanisms.

WIPRO TECHNOLOGIES *(May 2000 - Nov2006)* - Worked with 802.11, IBM, Lucent and WindRiver Products.

- Porting of device diagnostics software, Development of Software Automation Framework, Enhancement of Network END Driver for link partner negotiations.
- Development of 802.11b wireless stack for Embedix Linux, Design and Development of L2 switch and STP Protocol for Wireless LAN Access point.
- Development and Validation of NEC MIPS VxWorks BSP.
- Development of RTL8139C network driver for eCos OS, Design, Development and validation of Firmware preboot diagnostics. Development of Preboot Diagnostics Software for IBM CrossBow board.

***EMBEDDED RESOURCES PRIVATE LIMITED (Aug 1999 May 2000)* - Worked with OSICOM Network products.**

- Involved in Development of pSOS PNA+ Loop back network driver and DLPI STREAMS Driver, and implementation of promiscuous and multicast features.

ACADEMIC PROJECTS

- Master's Project work involved Development of Zigbee Down conversion Receiver based on 45nm Technology. The project involved development of LNA, Filter, Balun and Mixer modules which operates between 2.4-2.483Mhz for channels 11-26.
- Bachelor's Project work involved Development of Fuzzy logic based temperature controller with inputs from industrial pH and temperature sensors.

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