Vadivel Murugan

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Envision

Envisioning to develop optimized platform and programmable framework for software defined networks and Sensors.

Summary

Experience

- **18** years *(Aug 1999 - Current)* of experience in software design and programming for Edge Router Platform and network switch silicon Ingress/Egress pipelines.
- Currently Employed with ERICSSON INC for 5 years, and had been employed with BROADCOM CORPORATION and WIND RIVER SYSTEMS.
- Master of Science (MS), Electrical Engineering, San Jose State University.
- Experience in ASIC Switch Programming, Network Virtualization with Mirantis OpenStack, Sensor networks and Wireless LAN.

Programming Skills

- Programming expertise in C, Python and X86_64/VT-x. Programming Skills in C++/STL and ARMv8 Assembly.
- Forwarding Plane programming skills with Openflow and P4. Deep packet Inspection regex programming.
- Development of Broadcom SDK APIs and Programming with Intel DPDK and openVswitch.

Passionate

- Passionate about Linux Kernel Programming, Python Internals, Sensor Networks and DPI.
- Academic experience and interest with RTL, RF and Zigbee, and Hardware Simulation.
- Academic Interest in Data science and Statistics

Significant Contributions

ERICSSON INC

(April 2013 - Current) - Involved in development of Ericsson Smart Service Edge Routers and Ericsson Virtual Routing platform.

- Improved OpenVswitch/DPDK performance by 40% with hyperscaling PMD threads and rte ring buffers, CPU Pinning and NUMA awareness for Intel Niantic 10G and Fortville 25G.

- Customized openstack neutron ovs plugin and ML2 plugin driver for Ericsson cloud platform.
- Optimized Exact match cache and megaflow cache with openflow ACLs.
- Developed Virtual Function (VF) and Physical Function (PF) interfaces for homogeneous access of Data plane fabric and FPGA components in Xen Hypervisor Dom0 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 assignments and calendar resolution, and link partner negotiations.

BROADCOM CORPORATION

(Oct 2010 - April 2013) - Involved in Design and development of Broadcom 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.

WINDRIVER SYSTEMS(INTEL)

(Dec2006 - Oct 2010) - Involved in WindRiver Linux platform framework and tools development.

- 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.
- Developed of exception redirect handler for PPC and X86_VT Hypervisor.

- Developed MIPS and ARM static/shared library loader to load instrumented binary stubs.
- Maintenance of ARM and MIPS stack walk, trace back mechanisms.

Past Projects

WIPRO TECHNOLOGIES (May 2000 - Nov2006) - Development of 802.11b and WindRiver Vxworks Drivers.

- Developed Windriver Vxworks BSP for ARMv6 based network boards.
- Developed 802.11b wireless device stack and access point in Linux
- Design and Development of L2 switch and STP Protocol for Wireless LAN Access point.

EMBEDDED RESOURCES PRIVATE LIMITED (Aug 1999 May 2000) - Development of Solaris, pSOS Network DPLI Drivers.

- Implemented Solaris and pSOS PNA+ Loop back network driver and DLPI STREAMS Driver, and added 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.