Balakumaran Kannan

System Programmer

Linux system programmer having 9 years of experience with a Bachelor of Engineering degree specialized in computer science and engineering. Open source contributer, hobby blogger and a proud fan of Vim

kumaran.4353@gmail.com ₩

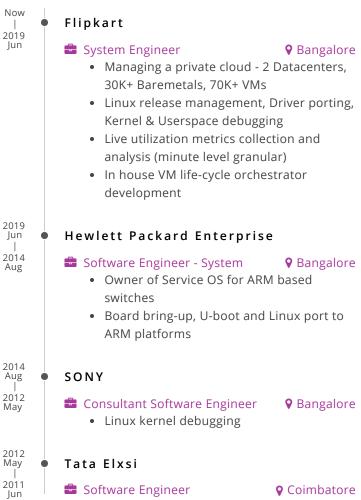
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Bangalore ♥

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www.eastrivervillage.com 🚱





Skills



P Patents

Patents Granted

1. [10862859] High available DHCP service by running DHCP servers on a BlockChain network

Patents Filed

- [20200195431] Multiple-site Virtual Private Network secured by IPsec, using Blockchain application for key exchange to optimize number of IPsec rules
- [202141004517] Common IP based network communication between VM and Host
- System and method of optimizing VM disk data transfer time for cold migration by preloading page-cache

Education



Projects

2020

Utilization metric collector - Minute level granularity



Bangalore

- Collect CPU, Memory, Network and Disk utilizaton every minute from 70K+ VMs across 2 DCs
- Architectured the project end-to-end from design to delivery
- Developed a new method for VM-Host communication and patented it

2020 May 2020 Mar

Performance evaluation of virtual L3cache



Bangalore

- Througly analysed the performance impact of expsing L3-cache information via Qemu
- Analysed the IPI (InterProcessor Interrupt) and corresponding VM_EXIT overhead of exposing L3-cache
- Found out a loss of ~8% performance on scheduler intensive tasks

2019 Jun

Other significant activities

Flipkart

Bangalore

- Evaluated AMD EPYC and ARM64 processors and NVIDIA GPUs. Introduced AMD EPYC and NVIDIA ampere hardware into the fleet
- Defining new VM types for customer needs - compute, storage, graphics-SIME, etc.,
- Costomising Debian for different Baremetals - Volume management, RAID configuration, Network configuration, etc., based on their capacity serving
- Debian OS release cycle
- VMC (Virtual Machine Controller) development. It runs on every Baremetal and manages the VMs' creation-start-stopdestroy cycle based on requests from central orchestrator
- Custom Image Builder development. Customer can build custom images on top of the image provided by us and use it on their VMs. Similar to Google custom images.

Now 2017 May

Linux OS development for ARM & ARM64

Hewlett Packard Enterprise

- Bangalore
- Brought-up two boards. One is an ARM64 based SoC provided by NXP, another is an in-house developed ARM32 SoC
- Prepared our own Linux distribution using
- Worked on kernel config and userland package selection
- Managed device-tree changes for the
- Fixed multiple compile-time and bring-up issues

Now 2018

Bootloader development for ARM32

Hewlett Packard Enterprise

Bangalore

- Developed First Stage Loader (FSL) for the in-house build ARM32 platform
- U-boot is configured, built and kept as an integral part of FSL
- After console and DRAM initilization, control will be given to u-boot
- Worked closely with hardware team for DRAM inialization sequence and BIST enablement

Now 2017

Other significant activities

Hewlett Packard Enterprise

Bangalore

- Updated syscon-reboot driver to set DDR in self-refresh mode before reboot. It required a procfs file cretion, an ideal mapping section in kernel and careful alignment of reset code.
- Enabled D-cache in kexec purgatory code, which reduced boot time
- Debugged multiple early-boot issues with early printk and JTAG
- Spent significant amount of time with ARM, ARM64 Assembly code
- Designed a core-dump capture system to capture kernel-core dump via NFS

Projects

2017 May 2014

HA/RFS module development



Hewlett Packard Enterprise Bangalore

- Owner of High-Availability [HA] and Redundant File System [RFS] modules for a range of HPE procurve switches
- Played a key role in the core-team that developed Fron Plane Stacking [FPS] switches
- Re-architectured HA/RFS modules to make it work seamless in both BPS and FPS environment
- Participated in complete development cycle - Design, Develop, Test and Maintanence

Aug 2013

Preperation of SONY Linux



SONY

Bangalore

- Part of a team that developed a Linux distribution for SONY devices
- Ported open source network packages like Curl, OpenSSL, Squid, IPSEC tools
- Performed IPv6 Ready Logo tests with TAHI test framework
- · Identified bugs with Linux kernel. Contributed fixes kernel community

2013 2012

Networking library development



SONY

♀ Bangalore

- Developed a network library with wired and wireless support
- It was used in SONY TVs and Blueray DVD players and are still in use
- Participated in all phases of development cycle

2012 May 2011

Application development for connected devices



Tata Elxsi

Coimbatore

• Developed two prototype applications -BigFlix and Flikr - on Samsung Smart TV, Panasonic VIErA connect TV, ROKU and **BOXEE** streaming player