Ravikiran K.S.

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Ravi is a **programmer, author,** and **consultant** residing in *Bangalore, IN*. Over 18 years of **hands-on** software development career, he has delivered over ***#9 products*** from concept-to-deployment for companies like **Versa, Cisco, Juniper and CCPU**. In academia, he **ranked #1** with **81% aggregate in Masters** under the faculty of Computer Science at the *RD University, Jabalpur*. He **pens papers** on *tech topics*, contributes to *open-source*, and hacks *tech* in spare time. He is awarded **#11** times for **timely product delivery**, **solving critical problems**, and help in securing **customer design wins**. He also provides *freelance consultation* to startups on need basis.

Core Competencies

Industry Trend Analysis . Fire-Fighting . RFP . Customer Engagement . Patents . Articles . Tech Talk . Mentoring . Demos . Product Ownership . Feasibility Analysis . Standards tracking . Cross Team/Geography Collaboration . Distributed System . SD-WAN . SASE . DC Network . Load Balancer . High Availability . Container . NFV . Infra . VOS . NXOS . JUNOS . TWAMP . DPI . VNTAG . VRRP . SCTP . MLAG . LLDP . STP . DPDK . Bonding Driver . C . Bash . Python . Java . Automation . Linux/FreeBSD Network Stack . VFS . Performance . DPU Offload . Ixia . Broadcom Trident3 . Netlogic XLP/R . Fulcrum Bali . Cavium Octeon . MSPD Comcerto 2K . Proprietary ASICs . Docker . LXC . 6Wind FastPath . QNX . Spirent . Solaris . Mirroring File-System . Trillium Stack . SAF .

Authored Articles & Patents

- *Method for split-brain avoidance in sub-secondary HA systems* - **Versa 75th Patent**
- *Increasing Carrier-Class High Availability* - **TechOnline**, **PICMG-Embedded**
- *Load balancing between server blades within ATCA platforms* - **TelecomAsia**, **Radisys Blog**.

Professional Summary

Since Feb/2018 *Principle Engineer, SME for Cloud Performance, HA Infra, and SLA* at **Versa Networks, Ltd.**

As a Engineering Leader, delivers and owns High Availability, I/O + Services Scaling, and SLA areas on *Versa FlexVNF SD-WAN router*. Key highlights are split-brain avoidance in sub-secondary HA, SLA scaling upto **64K sessions** with performance of **<20ms inter packet gap**.

- Helps with performance and scalability changes to meet increasing demands for **20X higher throughput**.
- Spearheads effort to measure end-user quality-of-experience from Versa SASE Clients to Cloud Gateways.
- Develops innovative way to avoid split-brain in HA systems. Solution is granted patent, **USPTO #10972337**.
- Implements feature to solve runtime config & state validation to avoid race-conditions among HA pairs.
- Ravi is called for **troubleshooting customer escalations** and for tech-talks on his expertise areas.

Sep/2014 - Feb/2018 *Storage Networks Developer* at **Cisco Systems, Inc.**

As Individual Contributor, delivers FEX access features on *N9000 DC Leaf/Spine* and *N7000 DC Core* switches. Features are FCoE support for Fabric Extender, FEX Active-Active, vPC/MLAG, Phy-Port vPC, and FabricPath. Also delivers Linux *LXC container based NXOS ISSU* support for network services, KLMs on N9K ToR switches.

- Develops innovative feature for system-wide runtime debug trace logging without affecting performance.
- Ravi is **invited for presenting it to NXOS Architecture Forum** and feature is used on all product lines.

May/2012 - Aug/2014 *Core Router Developer* for **Juniper Networks, Inc.**

As Individual Contributor, develops control-plane infra, inter-chassis topology monitoring, chassis management and protocol role assignment for *PTX family* multi-chassis core router. Develops the **fault detection, isolation, and recovery framework** for high-speed SERDES based ASIC interconnects in *T-series standalone* products.

- Develops innovative method of **reusing IS-IS as loop-free topo-mgmt solution** without overhead of STP

Aug/2011 - May/2012 *Security Session Exchange Developer* for **Stoke Networks, Inc.**

As Individual Contributor, develops statistics harvest infra on Netlogic XLP processors, implements clock synchronization mechanisms for *SSX3000 Security Exchange Gateway*.

- Implements 64-bit counter infra over PCIe-aperture mapped from NPU registers onto Management CPU
- Solves packet-engine and DMA issues, optimizes packet-path on XLP for higher throughput.
- Optimizes the packet-path using Netlogic XLP NPUs to achieve Line-rate IPSec Encryption Gateway.

Feb/2007 - Jul/2011 *Network Solutions Developer* at **Continuous Computing, Ltd.**

As a Technical Leader, delivers **#2** carrier-grade and **#2** enterprise-grade solutions mentoring a **team of 6**.

- *FastPath SCTP* is a carrier-grade, highly optimized, stateful gateway solution. It gives bi-di throughput of **1M pps** of 1500B SCTP packets over 10G links. It extends 6Wind FastPath stack on NetLogic XLR NPUs. Ravi delivers complex zero-copy packet forwarding & scheduler, in-place IPSec, DMA and DNS support.
- *Layer2 HA* is an enterprise-grade network resilience solution. It gives **sub-msec** failover, weighted traffic mapping as hub-n-spoke, and faster convergence by VRRP enhancement. It is implemented as extension to Fulcrum ControlPoint on Switch and Bonding Driver enhancement on x86 Blades. Ravi delivers entire product, from ideation to deployment, pens white papers, customer support. It generates **>$3M** revenue.
- *FlexBalance* is an enterprise-grade server load balancer. It does **statistical hashing** of traffic marked by **L4 flows**, MPLS tags, physical port-groups using DWRR & CBQ schedulers. It is implemented as pattern-match & scheduler enhancement using FFU, TCAM. Ravi delivers entire product from code to docs single handedly, works with architect and QA in different geographies, helps in deployment, customer support. Huge commercial success, generated **>$8M** in revenue, and helped in more than **12 design wins**.
- *LTE ENodeB on Mindspeed ARM processors* using 4GMX OS. Mindspeed has ARM family of processors with very low power usage. U-CPU/L-CPU dual CPU achitecture is suitable for distributing Phy and stack layers across two different CPUs, both of which are connected by a message bus. Ravi is tasked with porting, optimization of stack on these low-powered devices
- *FlexTCA* is a carrier-grade, service availability product that pre-integrates Trillium stacks with GoAhead Saffire middleware to run out-of-box on ATCA chassis. It implements OAM interface over SNMP/Web, Compute blade resilience using SAF SAI, Protocol HA using DFTHA layer, Control plane HA using SAF checkpoint service, and Chassis management using SAF HPI. Ravi is responsible for design, code and testing of **complex SAF-Trillium integration layer** that represents core value-add of product offering.
- *UpSuite* is a high-availability middleware providing fault identification, isolation, and recovery along with **real-time mirroring file-system** for Solaris based servers. It implements heartbeat framework, application monitoring framework, kernel file-system for mirroring, and **NIC resiliency driver**. Ravi is involved in doing upgrade of file-system to Solaris 10, supporting zones, and providing bug-fixes on Solaris servers.

Jul/2004 - Jan/2007 *Software Consultant* at **[Various Bangalore Startups]**

As a Technology Consultant, he has helped in **feasibility analysis, new tech integration & prototyping/PoC**, *solving design & coding challenges*, **timebound resolution of critical bugs**, *deployment engineering assistance*, and **Application optimization for scale & performance**.

- AJAX/xmlhttprequest & DOM integration for *HR Management Java Web App*. Used are Struts, Spring, JSP.
- Seamless sync of user application data to Cloud services using integration of *Funambol* sync-server and J2ME application on Symbian S40 & S60 phones.

Open Source Contributions

Ravi developed his like for FOSS after he was involved in Linux kernel driver related development activities in 2006. Since then, he has contributed to open-source by identifying & fixing bugs, making own work available as open-source and free under liberal license. Here are some of his early contributions.

- Ethernet Channel Bonding Driver enhancements. Stock driver consumes >18% bandwidth for keep-alives. The failover time is in order of several seconds. Attempt is to reduce total bandwidth usage to less than 5% and improve failover time to 3msec. Also, enhance failure detection to identify external network failures.
- OpenSAF bug-fixes. During bringup and performance validation of Open-SAF in initial days of release, had multiple bugs in the areas of tipc, sai, checkpoint and event services. Those issues are identified and fixed.
- OpenSolaris bug-fixes. Real-time mirroring FS and NIC-teaming driver is built around Solaris DDI/DKI API. OpenSolaris announcement brings opportunity to study solaris kernel, harden our code, as well as fix bugs found in OpenSolaris code. Bugs around DLPI metadata, raw socket mirroring, RX-ring scheduling fixed.
- Personal Wiki, Resume & Code. This resume is auto-generated using markdown notes, pandoc utility, Bootstrap JS & CSS, and some javascript. Similarly, the wiki is also auto-generated from markdown notes. The repo also has tech hacks, protos, and eval tests. Mostly used for feasibility analysis, for ramping up on technology, and quick-n-dirty trials.

Curious coder, who delivers under *tight deadlines*, *automates as hobby*, *listens to understand*, **gets job done**.

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