Ravikiran K.S.

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Ravi is **programmer, author,** and **tech evangelist** residing in *Bangalore, IN*. Over 16 years of **hands-on** career, he has developed *#8 products* from conception-to-deployment for companies **Versa, Cisco, Juniper, CCPU**. In academia, he **ranked #1** with **82% aggregate in Masters** under faculty of Computer Science at *RD University, Jabalpur*. He **pens papers** on *technology topics*, contributes to *open-source*, and hacks *tech* in spare time. He is awarded **#8** times for **timely delivery** of products, **solving critical problems**, and help in securing **design wins**.

Authored Articles & Patents

- *Increasing Carrier-Class High Availability* - **TechOnline**, **PICMG-Embedded**
- *Load balancing between server blades within ATCA platforms* - **TelecomAsia**, **Radisys Blog**.
- *Method for split-brain avoidance in sub-secondary HA systems* - USPTO Application **#16557715**

Core Competencies

Linux/FreeBSD Kernel . Mirroring File-System . Network Stack . Platform Infra . High Availability . Load Balancer Virtualization/Docker . DPI . Bonding Driver . VNTAG . VRRP . SCTP . MLAG . FCoE . SAF. LXC . FC . TWAMP Broadcom Trident2 . Netlogic XLR/XLP . Fulcrum Bali . 6Wind FastPath . MSPD Comcerto 2K . Proprietary ASIC

Professional Summary

Since 2018   *Principle Engineer SME for HA, Infra, and IP-SLA areas* for **Versa Networks, Ltd.**

As Technical Leader, delivers and owns High Availability & TWAMP features on *Versa FlexVNF SD-WAN router*. Features are sub-secondary HA with sub-second failover, IP SLA measurement with **15K sessions** and **<20ms inter packet gap**, improving service-ability infra in jemalloc.

- Develops innovative way to avoid split-brain in HA systems. Solution is applied for patent at USPTO.
- Ravi is often called for **troubleshooting customer escalations**, giving tech-talks on his area of expertise.

2015 - 2017   *Storage Networks Developer* for **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.

2012 - 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

2007 - 2011   *Network Solutions Developer* for **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**.
- *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 file-system mirroring 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.

2004 - 2006   *Software Developer* for multiple **Bangalore based startups**

As a Technology Consultant, he has helped in **feasibility analysis, prototyping**, **solving design & coding challenges**, **timebound resolution of critical bugs**, **optimization**, and **deployment engineering** assistance. Majority work is ghost-writing, no attribution. References are provided when possible. Contact me, for details.

Open Source 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.
- Random Playbook. Tech hacks, protos, and eval tests. Mostly used for feasibility analysis, for ramping up on technology, quick-n-dirty checks, and miscellaneous stuff.

Consultation Jobs

- SCTP based out-of-box, stateful, *L4 load-balancer design* for SS7 tunneling and services protocols.
- *Line-rate IPSec Encryption Gateway* optimization and debugging packet-path. It uses Netlogic XLP NPUs.
- LTE ENodeB stack porting, optimization on low-powered *Mindspeed ARM processors* using 4GMX OS.
- Fix critical kernel bugs for *real-time mirroring file-system* and related resilience infra on Solaris servers.
- *J2ME Mobile App and JSF Web platform* for seemless sync of mobile DB to Cloud server over internet.
- *MANET protos* for ad-hoc mobile gaming without internet, sensor protos using Gumstix for agri sector.
- AJAX/xmlhttprequest & DOM integration for *HR Management Java Web App*. Used are Struts, Spring, JSP.

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

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