

# Ravikiran K.S.

ravikirandotks@gmail.com | +91.988.682.8569 | <https://www.linkedin.com/in/ravikiranks/>

Ravi is **programmer, author, and freelancer** residing in Bangalore. Over 13 years of **hands-on career**, he has developed over **#9 products** for companies **Cisco, Juniper, CCPU**. He provides consultation in areas of design validation, critical bugs, scaling and optimization for startups. In academia, he **ranks #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 *new techs* in his spare time. He is awarded **#6** times for **timely delivery** of products, **solving critical problems**, and help in securing **design wins**.

## Authored Articles

- *Increasing Carrier-Class High Availability* - TechOnline, PICMG-Embedded
- *Load balancing between server blades within ATCA platforms* - TelecomAsia, Radisys Blog.

## Core Competencies

DC Networks . Linux Kernel Network Stack . Platform Infra . Resiliency . Load Balancer . Docker . Bonding Driver . Spring MVC . Bootstrap . AJAX . GWT . MySQL . SAHI . JSP . J2ME . CGI . JSF . Hibernate . Java . Node.js . NXOS . JUNOS . DPI . VLAN . VNTAG . FC-NPV . VRRP . IS-IS . SCTP . MLAG . FCoE . LLDP . SAF . LXC . C . Broadcom Trident2 . Netlogic XLR/XLP . Fulcrum Bali . 6Wind FastPath . MSPD Comcerto 2K . Proprietary ASIC

## Professional Summary

Since 2015      *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.

2004 - 2006

*Technology Consultant* for multiple **[Bangalore based startups]**

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

- [TalentPlus](#) is a Hiring Management web application built using JAVA/J2EE. Multiple frameworks are used. Jakarta Struts as business layer, Spring+Hibernate and MySQL as model layer, JSP & Javascript for view layer.
  - Ravi adds AJAX/xmlhttprequest feature along with DOM integration for View layer
  - Optimization of SQL queries for fast retrieval of large result-sets for generic queries
  - Evaluation of Google GWT toolkit and SAHI test-automation frameworks for integration
- [Cloud Sync Platform](#) is a cloud-based services for seamless sync of mobile data (geo-tagged photographs, binary data) to Cloud server over internet. Uses Funambol as sync-server, runs J2ME application on mobile as client, and JSF/J2EE Web Server as data store.
  - Ravi implements J2ME client, adds geotagging, SMS, DB compression, and sync logic to client.
- [Stoke SSX-5000/SSX-3000](#) is a line-rate IPsec encryption Gateway with deployment at NTT-Japan. They use Netlogic XLP and Intel IXP NPUs respectively for fastpath processing of encryption/decryption using built-in crypto engine and fast lookup using TCAM (KBP). It uses Linux for control-plane processing.
  - Ravi is involved in solving packet-engine issues, DMA issues, and optimization of packet-path.
  - Ravi implements 64-bit counter infra over PCIe-aperture mapped from NPU registers onto CPU
- [SCTP L4 load-balancer](#) is stateful SCTP proxy, which is capable of providing out-of-box transport load-balance for SS7 services including tunneling, session management, and identity management services.
  - Ravi is tasked with developing workable design without any changes for applications involved.

## 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

- Fix critical kernel bugs for [real-time mirroring file-system](#) and related resilience infra on Solaris servers.
- [MANET protos](#) for ad-hoc mobile gaming without internet, sensor protos using Gumstix for agri sector.
- [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 architecture 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

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