

Sridhar K. N. Rao

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SUMMARY

A Professional with a **PhD from NUS, Singapore**, and over 24 years of experience in the field of Computer Networking, of which more than 15 years in Industry. Over past 10-years, I have been working as a hands-on Architect in the domain of SDN-NFV with NEC and Spirent. In NFV-SDN ecosystem, I have been part of **vendor, test-and-measurement, standardization, research, and opensource** communities, working on the challenges faced by service-providers across the globe. Prior to NEC and Spirent, I have spent around 12 years working on research, design, development, and deployment of wireless and wired networks. At Spirent, I was consulting on Multi-Vendor Edge-Cloud Deployments, End-2-End Test Automation for India/APAC Telco(s).
Current: Working with Linux Foundation as Technical Architect and Program Manager, managing multiple opensource projects and contributing (source-code) to projects such as **Anuket ViNePERF, Thoth, DENT, O-RAN-SC, etc.**

OBJECTIVE

I aim to become a technical consultant on design, development and deployment of systems and protocols for computer communication networks. I want to involve in product, experiment-driven, and application-oriented research activities that will utilize my skills in the best possible way.

WORK EXPERIENCE

- 2022 –** **Working with Linux Foundation as Technical Program Manager.** Bangalore
- 2015 – 2022** **Working with Spirent Communication as Senior Architect SDN/NDV.**
Bangalore
- 2010 – 2015** **Working with NEC**
June 2013 – Sep 2015: AGM, NTIL, Bangalore.
April 2010 - June 2013: Research Lead at SRM Research Institute, Bangalore.
- 2008 – 2010** **Research Fellow at Microsoft Innovation Center,** Turin, Italy
- 2007 – 2008** **Research Fellow at Institute of Infocomm Research,** Singapore.
- 2000 – 2002** **Senior Research Engineer**
Himachal Futuristic Communications Limited,
Bangalore

EDUCATION

- 2002 – 2007** **Doctorate of Philosophy in Computer Science.** National University of Singapore
- 1998 – 2000** **Master of Technology in Computer Science**
National Institute of Technology, Surathkal
- 1993 – 1997** **Bachelor of Engineering in I & E.**
SIT, Tumkur, Bangalore University.

HIGHLIGHTS

- * **Manage Opensource Projects**
- * **TSC, Member Anuket and PTL of Anuket-ViNePerf and Anuket-Thoth**
- * **Contributor to GSMA-CNTT**
- * **Contributor to ETSI-NFV TST 009**
- * **Technology Consultant to Telcos**
- * **Multi-Vendor Real-World Edge-Cloud Deployment Experience.**
- * **End-2-End NFV Test Automation.**
- * **Specialize in building technical capability in organization.**
- * **Design solutions in the domain of Cloud, NFV & SDN**
- * **Attended Machine Learning Summer School, Madrid-2018**
- * **Certification in Next Generation Data Center Design.**
- * **Write SDN-based articles for www.thenewstack.io and www.opennetsummit.org**
- * **Proficiency in Wireless technologies – Wi-Fi.**
- * **Research Publications in reputed conference and journal**
- * **Work closely with Academia.**
- * **Conduct trainings and workshops in Networking & ML**
- * **Open Source Contributions**

INTERESTS

Software Defined Networking, Network Function Virtualization (NFV), Network Virtualization, Open-flow Networks, Machine Learning, and Cloud Computing.

SKILLS

Programming Languages :
C, C++, Python, golang,
ML Frameworks : Tensorflow
Open-Source Softwares Domains :
Openstack (deployments), SDN controllers, NFV, ML, LMA (ELK, Prometheus, Grafana etc.), Containerization (Kubernetes),

PERSONAL

Date of Birth **28 June 1975**
Marital Status **Married**

IMPORTANT WORKS

- **Recent Works on SDN/NFV**
 - **Deployment of multi-vendor Edge-Cloud for vEPC for Major Telco in India.**
 - **Technology Consultant for 10+ Telcos across the globe.**
 - Kubernetes CNI Benchmarking for Telco Usecases.
 - NFV infrastructure benchmarking.
 - Live monitoring and End-to-End test automation for Telco clouds.
 - Edge-cloud Lifecycle Management – Automated Deployment and testing with Airship and OPNFV.
 - CNTT-RI – Deployment, Validation and Testing.
- **State of Art Technology Analyses – Independent Contributions.**
 - Defining SDN and NFV product roadmap
 - Contribution to OPNFV-VSPERF, OPNFV-CIRV, OPNFV-AIRSHIP
 - Demo at ONS-NA 2019. **Talks at all LFN events over past 2 years.**
 - Reverse-engineering of OpenStack Neutron Implementation – can be found at <https://github.com/opensource-tnbt/openstack-neutron-revengg>
 - Analysis of Bare-metal switches and its role in software-defined networking. Analysis of SDN-ecosystem development with respect to APIs, SDK, prospective products for interoperability, etc.
 - Analysis of Open-source SDN Controllers – Trema, NOX/POX, RYU, ODL, ONOS, Floodlight.
 - Following the NFV Standardization (Ecosystem) Process at ETSI and Openflow standardization at ONF. Technical Blogs at <http://www.newstack.io> and www.opennetsummit.org
- **Working on Programmable-Flow Controllers – Design, PoC Development, and Technical Guidance for development team.**
 - Worked Extensively in Network Virtualization support in programmable flow-controllers – Hop-by-hop and Virtual Overlays.
 - Reverse engineering of the complete controller architecture.
 - Feature additions – Designs for scalability, Northbound APIs,
 - Reusability of openflow-libraries across multiple controllers.
- **Working on Virtual Switches - Design, PoC Development, and Technical Guidance.**
 - Enhancements of OpenVswitch – statistics, remote configuration, rest-API support, etc.
 - VSwitches for Hyper-V – OVS in Microsoft Hyper-V.
- **SDN-application development – Application Proposal and Technical Guidance.**
 - In-house development of various SDN-applications for OpenDayLight Platform: Yet Another Overlay Network, The Cable Guy, The Usher, etc.
 - In-house development work on Openstack - Neutron agent, Events Management and Visualization.
- **On-Site Solution Designing – Independent Contributions.**
 - Communication architecture for Automatic Passenger Movers.
 - Openflow in Handheld devices.
 - Programmable Flow in Microsoft VSEM.
- **Wireless Network Deployments - Design, development and deployment.**
 - WiMAX - IEEE 802.16 WiMaX Wireless Mesh Networks, for maritime communications.
 - Wi-Fi – Long-distance Wifi network for Rural Education.
 - ZigBee – developing proof-of-concept products, based on Microsoft's new .NET Microframework, for vehicle-to-vehicle and vehicle-to-infrastructure communications.
- **Research Projects while pursuing the PhD degree at NUS, Singapore.**
 - Channel assignment schemes for multi-radio wireless networks

- Resource management schemes – for mobile ad hoc networks
- Formal Verification of IEEE 802.11 Using process algebras.
- **Legacy Networking – Prior to PhD.**
 - Worked on OSPF, MEGACO and RSVP protocols as part of a project, which aimed at developing a low-cost router.
 - Development works on Zebra-OSPF and RIP protocols. Complete development and testing of MGCP. Interoperability with Cisco Routers.

RESEARCH PUBLICATIONS

- Sridhar K. N. Rao, Al Morton, Federica Paganelli, "Benchmarking Kubernetes Container-Networking for Telco Usecases, Globecom 2021
- Sridhar K. N. Rao "SDN and its Use-Cases: NV and NFV", Technical Report, NEC Technologies India Limited, 2015.
- Sridhar K. N., Usha Devi, "Real-time classroom sharing between schools: A novel distance education application to support rural education in India", IATED 2013,
- Sridhar K. N., Mun Choon Chan, "Modeling link lifetime data with parametric regression models in MANETs", in IEEE Communication Letters, December 2009.
- Sridhar K. N., Claudio Casetti, Carla-fabia Chiaserrini, "Localized and distributed channel assignment scheme for IEEE 802.11 based MCMR networks," in the proceedings of LCN 2009, Zurich, Switzerland, October 20-23, 2009 (Acceptance 30%).
- Sridhar K. N., Mun Choon Chan, "Link Lifetimes: Distribution, Estimation and Applications," Technical Report, Center for Internet Research, June 2008.
- Sridhar K. N., Mun Choon Chan, "Channel-aware Scheduling for Mobile Adhoc Networks," in the proceedings of *IEEE WoWMoM 2008*, New Port, USA (Acceptance 20%).
- Sridhar K. N., Hao Shuai, Mun Choon Chan, A.L., Ananda, "EGRESS: Environment for Generating REalistic Scenarios for Simulations," in the proceedings of *IEEE/ACM DS-RT 2006*, Malaga, Spain (Acceptance 28%).
- Sridhar K. N., Mun Choon Chan, "Interference based Call Admission Control for Wireless Ad Hoc Networks," in the proceedings of *IEEE/ACM MOBIQUITOUS 2006*, San Jose, USA (Acceptance 17%).
- Sridhar K.N., Ciobanu G., "Specification and Verification of Network Protocols by Process Algebra," in the *proceedings of SYNASC'05*, Romania, Timisoara. 25-29 Sep 2005 (Acceptance 30%).
- Sridhar K. N., Mun Choon Chan, "Stability and Hopcount based Routing Mechanism for Mobile adhoc networks," *in the proceedings of ICCCN 2005*, San Diego, USA (Acceptance 27%).
- Sridhar K. N., Gabriel Ciobanu, "Describing IEEE 802.11 Wireless Mechanisms by Using the pi-Calculus and Performance Evaluation Process Algebra," *LNCS 3236*, FORTE workshops, EPEW 2004, Toledo, Spain (Acceptance 25%).
- Sridhar K. N., Lillykutty Jacob, Rajeev Shorey, "Performance Evaluation and Enhancement of Link Stability Based Routing for MANETs," in *proceedings of ICPP Workshops 2004*, August 15-18 2004, Montreal, Quebec, Canada (Acceptance 20%, also published in journal- IJHPCN).
- Sridhar K. N., Lillykutty Jacob, "Interplay of Service differentiation and routing protocols: A performance study", *in proceedings of IPCCC 2004*, April 2004, Phoenix (Acceptance 26%).

OTHER ACTIVITIES

- Writing Technical Blogs – Networking in General and SDN in particular.
- SDN Meetup management, Talks on SDN/Openflow, Openstack and various Engineering Colleges.
- Honorary Faculty at CIT, Gubbi.
- Reviewer for various conferences and journals

REFERENCES

- **Dr. Raffaele Menolascino**
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Email: raffaelemeno@alice.it
- **Dr. Jayashankar S/O Pathmasuntharam**
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