(+1) 408-410-2484

Kiran Makhijani

kiranmak@gmail.com

Introduction

I am a network architect, working on next-gen network technologies research and standards. My experience spans platform, services and protocol development on network operating systems and multi-layer switching and routing products.

Industry Leadership

I am a data/tele-communication industry veteran, having developed carrier-grade software for ISP markets (MPLS, VPLS, QoS, Policy based routing). I have a deep knowledge of different types of network architectures and protocols (e.g. ISP, datacenter, mobile-networks, home networks, industrial networks, IoT networks, etc.).

Am involved in next-gen low-latency, application automation, data plane technologies for 5G, 6G, industrial networks and have a working knowledge of toolsets XDP, eBPF, P4 etc. I am known for successful collaborations with internal and external partners, hold leadership roles in standards (IETF, ITU, ETSI) and research community (IEEE, ACM).

I have a number of patents my work is peer-reviewed & published in both academic and industry standard organizations.

Strategy & Planning:

Reporting into the OCTO, I contribute to long-term technology roadmap, identifying opportunities and timing; collaborated with executives and managers to architect from incubated ideas to realization, strategic initiatives, defining targets, requirements, and actionable recommendations.

Leadership | Mentor:

Guided and trained graduate students through industry proof-of-concept projects; mentored students at my alma mater during covid times on career, development projects, and soft skills as part of a level-up program.

Professional Experience

Present

As an ***independent***, I am working on open-source routing software projects involving routing configurations, Linux forwarding path across namespaces and test topologies.

Nov 2013 – Apr 2024

Futurewei Technologies, Santa Clara, CA

Principal Engineer

Working with the office of the CTO, involved in the industry research on next-generation (5G/B5G/6G) network technologies and protocols in service provider and large-scale network markets. Day to day work involves equal parts research, standardization and collaboration. It entails academic and public presentations on topics, meeting partners and customers explaining unique value propositions from our research; solution feasibility through technical design and PoCs.

Cloudcasting

A scalable virtual routing architecture for cloud centric applications, Developed an overlay routing architecture and multi-protocol dataplane auto-provisioning of tenant networks, specifically for cloud centric networks.

5G/B5G dataplanes

Focus on in-network services and capabilities for emerging applications in industry automation, advanced media, and high-precision communications. Analyze challenges in current networks and research new data plane and packet format mechanisms. Designed PoC for IIoT transport and network layer.

Network Slicing

Operator-centric Architecture for Network Slices, 5G/B5G Network Slice configuration, on-boarding, and distributed protocol for resource sharing in a multi-domain, multi-provider network, Instrumental to standardization of Network slice framework at IETF.

5G Transport

3GPP Mobile Backhaul Transport Networks, An in-depth study and evaluation of end-to-end LTE, 5G/B5G with focus on mobility and protocol overheads in mobile networks.

Leadership in Standards: ***ITU FG-NET-2030**, is a focus group on network technologies for 2030 and beyond in ITU*. Was instrumental to the establishment and conception of this study.
At IETF, developed standards relating to 5G networks, specifically in IoT and DETNETs.

Management ***University Collaborations***, collaborated with professors on next-gen research topics; reviewed, analyzed, partnered in research activities.

Cisco Systems, San Jose, CA

July,2005 – Oct,2013 ***Technical Leader***
Led design & development of Edge routing and switching components on IOS-XR, IOS. Including first in-house support of an OpenFlow agent, policy-based routing, Lawful intercept, etc. Solved high-availability and scalability challenges on a distributed system (IOS-XR).
At Cisco, I have mentored new hires, resolved customer issues and worked with platform-hardware and core operating system teams.

Policy services layer: An architecture to support flow-based infrastructure as well as network programmability. (ONEP) for a distribution system. **Platform Stability:** Provided HA solution for lawful intercept as a part of L2L3 services team. Developed hybrid architecture endian aware message translation methods.

Edge Router Services: Developed platform-dependent slow-path forwarding module, added performance tweaks for QoS, selectively drop packets, prioritizing control packets, and bug fixes.

L2 functions: Support for CFM 802.1ag over EoMPLS and different Metro Ethernet services.

Pre-2005 ***Software Engineer***, device driver dev at HCL Tech, Futuresoft, Alcatel, Tasman Networks.

Education

1994–1997: **Master of Computer Applications**, *Computer Science Department,* Pune University).

1991–1994: **Bachelor of Science**, *Delhi University*, Delhi, India.

Technical skills

Programming *Experienced:* C, C++, *Familiar:* Python, Bash, Java

Network Technologies Network Architecture, Protocols, 5G Arch, 5G-Backhaul, Edge computing, Network Slices, Service Provider and Data Center Networks

Network Protocols *Developed:* STP, CFM, BFD, QoS, PBR, lawful-intercept, *Fluency:* BGP, IS-IS, Segment Routing, and MPLS, IIoT and IoT protocols.

Platforms IOS, IOS-XR, ASR9K, 7600 series, XDP, Linux networking - namespaces

External Positions of Responsibility

2021-2025 **IETF WG Chair** for the SNAC-WG: Stub Networks using IPv6.

2017-23 **General Chair** of the Workshops at IEEE ICNP: NIPAA'20, NIPAA'21, NIB'22 and workshops at ACM SIGCOMM NEAT'18, NEAT'19 and IIoT-NETS'23.

2017 **ETSI Rapporteur** for Network Slicing Architecture, Next-generation Protocols group (NGP).

2019, 21 **Invited delegate** to annual ITU's CXO Advisory Board meetings for Telecommunication Standardization Bureau (ITU-TSB).

References

Available on Request
Public Profiles: see embedded links 'Google Scholar' and 'IETF person'