Kiran Makhijani

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Introduction

I am a network architect, at present working on next-gen network infrastructure and technologies research and standards. My past experience includes platform and protocol development in network operating systems and multi-layer switchign and routing products.

Industry Leadership: I am a data- and tele-communication industry verteran, 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, data-center, mobile-networks, home-networks, industrial networks, IoT networks, etc.). Involved in next-gen low-latency, application-aware, 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 opprtunities 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

Futurewei Technologies, Santa Clara, CA

Nov, 2013 – present ***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 ***Innovations in IP Networks***, Focus on *in-network services* and capabilities for emerging applications in industry automation, and advanced media ('holographic type' and high-precision communications). Analyse challenges in current networks and research new data plane and packet format mechanisms. Designing proof-of-concepts for research in transport and network layer.

Network Slicing ***Operator-centric Architecture for Network Slices***, 5G/B5G Network Slicing configuration, on-boarding, and distributed protocol for resource sharing in a multi-domain, multi-provider network, Early proponent of standardizing Network slice framework.

5G Transport ***3GPP Mobile Backhaul Transport Networks***, An in-depth study and evaluation of end-to-end LTE, 5G/B5G Network Slicing architecture with specific 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 the FG. .
At IETF, developing standards relating to 5G/B5G networks in IETF, specifically in IoT and DETNETs.

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

Cisco Systems, San Jose, CA

July,2005 – Oct,2013 ***Technical Leader***.
Led design & development of Edge routing and switching component 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 such as 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 : Developed architecture to support flow-based infrastructure as well as network programmability (ONEP) for a distributed 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: Designed support for CFM 802.1ag standard over EoMPLS and different Metro Ethernet services. The services included CFM over VFI interfaces.

Pre-2005 ***Software Engineer***, Contributed to network device drivers and RTOS projects 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- **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'