

## IP/MPLS Technologist and Architect

Execution-focused, proven network and product architect with a track record of driving successful product development and network deployment. Background in operations, crisis management, troubleshooting, and design of networks, network hardware, software, and services. Experience with cloud computing, data analytics, and machine learning, always eager to get more. Strong communication, negotiation, and public speaking skills; an educator. Demonstrated project and people leadership. Able to understand both the big picture and the details; can lead teams to success or play a strong support role. Published author; hold several patents with others in flight.

## Skills

- Data networking (IP, MPLS)
- Team and project leadership
- Standards development
- Communication (internal and external)
- Troubleshooting and problem solving
- Network device hardware and software architecture
- Data analytics (moderate experience)
- Cloud computing, virtualization (moderate experience)

## Technical Strengths

Routing & Switching CCIE #4122, October 1998 (Expired)

Network Architectures: IP/MPLS Core and Edge, some IP Data Center.

Network Protocols: MPLS (RSVP-TE, LDP, VPN), BGP, OSPF, ISIS, EIGRP, TCP/IP, QoS

Programming: Python, including lots of Pandas; some scikit-learn and numpy

## Technical Interests

*(these are things I've dabbled in and am interested in learning more about)*

Go, Rust, Erlang, SQL and NoSQL databases

Machine learning

Virtualization (personal use of VMs and Docker containers)

Cloud computing: Free tier use of AWS and Azure, mostly VMs

Free tier use of Cloudflare's CDN.

Git for personal projects

## Experience

Level 3 Communications, 2014-May 2018

*(CenturyLink acquired Level3 in November 2017)*

### **Principal Architect**

As the sole principal Internet architect company-wide, I was ultimately responsible for IP/MPLS architectural decisions for all CenturyLink Internet ASNs. Drove projects with various stakeholders (engineering, operations, executive, product management) to scale, stabilize, and simplify the

networks. Designed and led an RPKI pilot, an IGP scale initiative, BGP scale and convergence work, expansion of the CDN router front-end architecture, Level3/CenturyLink Internet integration, and other large-scale projects. Worked daily with ops and engineering on both the big picture and the details necessary to let one of the world's largest Internet networks live, thrive, and survive.

Cisco Systems, 1998-2014

**Principal Engineer, Network Operating Systems Technology Group (NOSTG): 2011-2013**

Drove MPLS-TE design and deployment activities within Cisco for several large service provider customers. Active IETF participant in the MPLS Working Group and others. Drove feature delivery via IETF drafts, prototype code, functional specs, and training.

**Deployment Engineer, NOSTG: 2010-2011**

Collaborated with development engineers, dev test, customers, and other Cisco stakeholders on the design and deployment of MPLS (primarily MPLS-TE) for various projects.

**Deployment Engineer, CRS1, Core Router Business Unit (CRBU): 2004-2010**

Supported Cisco's largest CRS1 Service Provider customers worldwide in their initial CRS1 rollouts. Handled escalations from both political and technical perspectives.

**Deployment Engineer, MPLS, Internet Technologies Division (ITD): 2001-2004**

Helped customers design and deploy MPLS (mostly MPLS-TE). Delivered training at Networkers (now ciscoLive). Drove a 2-day MPLS Summit for customers, handled escalations from TAC and customers, and generally evangelized MPLS-TE inside and outside of Cisco.

**ISP Team: 1999-2001**

Supported various ISPs in their day-to-day operations and architecture, including AOL, BBN, Digex, and several others. Authored the then-seminal "Life of a packet in the GSR".

**Technical Assistance Center (TAC), Routing Protocols: 1998-1999**

Took cases on routers, router architecture, routing protocols, router crashes, and the like. Handled escalations, mentored junior TAC engineers, maintained the 7500 FAQ.

TerraNet Internet Services, 1995-1998

As the first employee, I helped build a Boston-area ISP from the ground up. Built a backbone based on OSPF and BGP, built out metro access (T1, Frame Relay, dial-up) for business customers. Delivered custom Perl CGI scripts. Wrote the first web page for Spyglass, Inc. entirely by hand.

## Publications

Book: *Traffic Engineering with MPLS*, Cisco Press, 2003, with Ajay Simha

RFCs: 6378, 7271, 7308, 7324

## Patents

Several granted or in flight, all in the area of IP/MPLS networking

## Education

Clark University, Worcester, Massachusetts: MBA (part time program while working full time)

Northeastern University, Boston, Massachusetts: BS (Psychology)