Rob Shakir

HISTORY

PERSONAL With over 20 years experience, I am a technical leader and engineer specialising in building communication systems STATEMENT for both consumer and business users. My background spans startups, cloud providers, application providers, and telcos, providing me with a deep understanding of the challenges involved. My focus has been on revolutionising network control and management, including spearheading OpenConfig development, rethinking SDN deployment, and modernising key protocols. I am passionate about tackling ambitious problems, developing practical solutions, and delivering them to production environments. I am a hands-on engineer, building both software and network infrastructure, as well as an experienced leader - defining roadmaps, leading technical teams, and mentoring engineers. I am known by my colleagues as approachable, adaptable, and results-driven.

CAREER Senior Staff SWE, Google, Inc. (AS15169)

San Francisco, CA, USA. August 2016 - Present

- Software and network engineering role in Google's Global Networking team. Acted as a senior technical individual contributor driving the architecture and implementation of network and software infrastructure supporting Google's global footprint.
 - Increased flexibility and introduced supplier optionality for network devices in Google's WAN and datacentre networks by inventing and leading implementation of modern gRPC-based device APIs for device control and management (gNMI, gNOI, gRIBI), structured device data models (OpenConfig) and accelerating their qualification through open source, programmatic testing (ONDATRA, featureprofiles). Acted as the internal and external-facing lead for these projects driving their adoption and usage across the industry.
 - Led a group of ≈50 software and network engineers owning network device specification, qualification and introduction into Google's networks, and providing the software layer abstracting them to the network management stack – improving development velocity, reducing production defects, and paying-down accumulated technical debt. Notably, introduced multi-vendor COTS devices to B4, and built a unified network device profile in use across Google networking.
- Enabled innovative new approaches to on-device network applications through co-founding a team driving *decentralized SDN*. Acted as the tech lead to take dSDN from concept to production deployments.
- Led and contributed to many technology evolutions across Google networking supporting Google's internal networks, and Cloud customers. Directly defind the technical direction for a team of >200 software and network engineers, supporting and influencing leaders across Google's WAN and datacentre network infrastructure.
- Acted as a senior technical leader across Google networking, including acting a lead for the Network Engineering career ladder within Google at a time of major change in the discipline. Formally and informally mentored numerous network and software engineers, and drove collaboration with engineering management to develop strategies for recruitment, improve team effectiveness, and drive individual's career development.

Senior IP Architect, Jive Communications (AS6643)

Orem, UT, USA. October 2015 - August 2016

- Technical leadership role focused on defining the architecture, implementation and operational practices associated with Jive's infrastructure which provided a platform for real-time communications services across North/Latin America, and Europe. Jive was acquired by LogMeIn in late 2017.
- Acted as lead architect for programmes to evolve flexibility of Jive's infrastructure. Architected, designed and implemented MPLS-based connectivity between network infrastructure, virtual machines, and Kubernetes containers allowing direct customer interconnection into private topologies, extension of Jive's private IP network connectivity into new markets, and improved network security.
- Drove new approaches to automation of network operation through use of model-driven interactions with network infrastructure and management platforms exploiting open source models (OpenConfig), and YANG-based service models to allow automated provisioning, validation, and testing of network services, resulting in improved quality of experience for Jive's customers.
- Led a programme with the development and executive teams to improve service stability, infrastructure security, and disaster recovery approaches aligning Jive with industry best practices, and supporting commercial aims.

End-to-End Network Architect, BT (AS2856/AS5400/AS3300)London, UK. December 2011 - July 2015

- Technology leadership role within BT's Chief Network Architect's office with primary responsibility for the architecture, technology strategy and investment planning for networks supporting Openreach, Retail, Wholesale and Global Services product capabilities.
- Initiated and led a programme to significantly improve the flexibility and efficiency of BT's UK network infrastructure - exploiting lower cost technologies, introducing new approaches to subscriber termination and radically transforming the 21CN IP/MPLS core network infrastructure. Developed and agreed strategies with CxO-level personnel - driving programmes delivering >50% unit cost reduction for Broadband services, and realising >£150M capital expenditure savings, whilst improving commercial flexibility, network availability and performance.
- Led architecture and peering strategy for BT's global Internet networks reducing the unit cost of delivery >60%, and improving service quality for content delivery, and enterprise connectivity to XaaS/Cloud services.
- Acted as end-to-end architectural lead for IP and packet core capabilities in BT Mobile (covering WiFi, LTE and roaming to 3rd party RAN), developing approaches to integrate EPC and IMS capabilities into 21CN to underpin consumer and business (including VoLTE) propositions, and replace legacy PSTN services.
- Developed and agreed strategic architectures for the delivery of linear TV and video-on-demand across the BT net-

works - supporting BT Vision, BT Sport, over-the-top media and broadcast services. Led an architectural programme to implement a converged CDN platform to optimise delivery costs, and improve QoE.

Drove development programmes inside BT to introduce new technology - improving service flexibility by converging
global L2/L3VPN edge routers; simplifying the Broadband architecture through implementation of policy and traffic
management on BRAS devices; expanding UK footprint through a low-cost seamless MPLS architecture; ensuring
service continuity through introducing IPv6; and reducing cost and complexity through multi-layer optimisation.

Network Designer, Cable&Wireless Worldwide (AS1273/AS4445) London, UK. June 2010 - December 2011 Design/Architecture role - primarily focused on the C&W Multi-Service Platform (MSP) - translating 5+ year technology strategies into robust scalable network architectures. Within a team acting as the TDA for C&W's IP/MPLS deployments, personally acted as TDA for core technologies, network robustness and scalability and contributed to the technical strategy for C&W's Internet networks.

- Technical lead for the MSP P/PE infrastructure, including key projects significantly reducing network outages, and increasing service availability by implementing best-practice deployments and more robust protocol functionality. Developed scaling models, test strategies and protocol/tooling requirements to support network growth whilst optimising the deployment and operational costs.

Network Development Engineer, Vialtus Solutions (AS5413) London, UK. June 2008 - June 2010

 Contributed to the network development team of an EU-wide NSP - with primary responsibility for the architecture and design of an 60+ node MPLS-TE network. Supported the company's change of focus towards business services by leading projects to consolidate network infrastructure - including service migrations away from, and closure of a legacy ATM network; integration of numerous acquisitions; redesigning business Internet and L3VPN connectivity products; and implementing strategic OSS tools for network infrastructure.

Technical Architect, Catalyst2 Services (AS29636)

Led technical operations for a startup hosting provider's infrastructure - including architecting, designing, implementing and operating public Internet and metro networks, and Linux-based hosting platforms.

London, UK. 2003 - 2008

- Designed, implemented and launched an early Linux VM hosting service based on User-Mode Linux including maintaining CPU time capping kernel patches for 2.4.x and porting this functionality to 2.5 and 2.6 Linux kernels.
- Supported commercial elements of the company, including providing pre-sales consultancy, to ensure the continued growth and success of the company.

Systems Administrator, UH Hosting	London, UK. 2001 - 2003
- Developed and managed server infrastructure delivering HTTP/e-mail and communication	ation services.

Education	Physics, Imperial College LondonBSc (Hons) and Associate of the Royal College of Science2:1 Classification. Tessella Prize for Software for Final Year Project.	2005 - 2008
	A-Level , Greenhead College, Huddersfield 5 A-Levels (3A, 2B) and 1 AS-Level (A).	2003 - 2005
	GCSE, The Crossley Heath School, Halifax 11 GSCEs (7A* and 4A). Halifax plc Award for Academic Achievement (Autumn, 1999)	1998 - 2003
Academic Experience & Publications	Co-Instructor, University of California, Berkeley20&Guest lecturer (2022) and co-instructor with Prof. Sylvia Ratnasamay (Spring '24, Fall '24) for IntroductionNSInternet: Architecture and Protocols, CS168.	
	Guest Lecturer , École Polytechnique, Paris, France Guest lecturer for INF566, and the "Future Internet" course at Telecom ParisTech - lecturer on protocol de and implementation challenges for network operators to post-graduate students.	2014-2019 evelopment,
	Standards & Publications	

- Published 13 RFCs.
- Published papers at SIGCOMM '24 and HotNets '24.
- Co-chair of the IETF SPRING (Segment Routing) working group from 2017-2019.
- Co-author of 4 patents, with a number of pending applications.
- Open source contributions, particularly related to OpenConfig.