

Tom Worster

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Skilled in definition, architecture and specification of communications systems for public and enterprise networks. Able to develop product concepts, author architecture documents, and develop detailed requirements specifications. Accustomed to working with customers in complex technical relationships and in both large corporations and small ventures.

- communications systems
- high speed interconnects
- system management
- high availability systems
- packet processing
- switch fabrics
- network and host security
- distributed fault-tolerant computing
- general computing
- resource management
- network protocols

Career History

Motorola Embedded Communications Computing, Marlborough, MA 2003 – 2008 **System Architect**

System architecture and requirements specification for AdvancedTCA products for telecom and datacom applications. Pre-sales technical consulting.

- Increased sales by architecting a new class of product: the ACTA-9301 dual-Cavium OCTEON processing blade overcoming broad misunderstandings of this new technology.
- Improved resilience of customer applications by designing a fault-tolerant layer-two system-internal network architecture and control protocol suitable for the diverse heterogeneous environments of ATCA-based systems.
- Reduced customers' development effort and increased application availability by authoring a distributed fault management system with HW and SW fault detection, messaging, user scripted fault management policy automation that integrates with the standard Service Availability frameworks.

Default Deny, Boston, MA 2002 – 2002 **Founder**

Default Deny was a start-up building a security management tool for corporate networks.

- Devised the product concept of using a network management approach based on distributed flat transaction models to security incident management in enterprise networks.
- Provided market analysis, product definition, system specification, software architecture, competitive analysis, and technical presentations to VCs and potential customers.

Gotham Networks, Acton, MA 2001 – 2002 **Consulting Engineer** (independent contractor)

System analysis and software specification.

- Boosted the value of Gotham's switch by specifying the software for their resource management and admission control algorithms that cope with the switch's complex hardware design and multi-service capabilities while supporting appropriate service level guarantees.
- Enhanced Gotham's design capabilities by developing models of their product allowing quantitative prediction of the behavior of bandwidth, memory and other shared resource management policies.

Ennovate Networks, Boxborough, MA **2000 – 2001**

Senior Consulting Engineer

Architecture and requirements for product development. External technical communications such as conferences and standards activities.

- Improved customer network efficiency and performance by specifying the MPLS-in-IP tunneling protocol that became an IETF standard in the face of resistance from Cisco and Juniper.
- Specified the V-LDP protocol for control of network based virtual private networks.

Nokia, Burlington, MA **1999 – 2000**

Senior Technical Consultant

Network architecture and technology planning.

- Developed a novel and practicable IP QoS management architecture for Nokia's diverse network access products and promulgated the architecture through product and research groups.
- Participated in Nokia's annual corporate strategic planning round.

General DataComm, Inc, Marlborough, MA **1995 – 1999**

Senior Scientist

Product definition, architecture and specification.

- Instigated the IP Switching effort at GDC in collaboration with Ipsilon. Architected the ATM interworking in the implementation (resulted in a patent application and a publication).
- Architected and implemented the connection admission control and internal resource management for GDC Apex™ which involved researching, designing and specifying the features. Also successfully developed the embedded software in C, managing a staff of four.
- Managed system performance modeling projects for the APEX ATM switches using Opnet simulation and analytical models.

Siemens AG, Munich, Germany **1990 – 1995**

System engineer and research engineer

Member of system engineering and performance teams working on ATM switches and other telecommunications products.

Plessey Research, Romsey, UK **1987 – 1990**

Research Engineer

Designed, specified and developed a major computer simulation of a road traffic network.

Education

University of Edinburgh, UK. B.Sc. 1st class honors in Electronics and Physics (joint degree) **1987**

Interests

Long distance cycling, radio (DJ at WZBC 90.3 Newton), music, photography.

Addendum to Resume: Patents, standards, publications

Patents

US application for VPN-LDP. Two US and four European patents on ATM switch buffering and flow controls. US and European patent on leaky bucket implementation methods. US and European patent on the first deterministic processing time ATM traffic shaper. One US application filed in the US on the Apex CAC. Three German and one European patent on hitless ATM switch redundancy mechanisms. One European patent on a road network navigation system.

Standards work (sample)

MPLS-in-IP. Initial author, now co-authored with Eric Rosen and Yakov Rekhter. Proposed standard RFC 4023.

GSMPv3. I was document editor for the bulk of the v3 work. I wrote chapter 10, most new text elsewhere and revised most of the text for the new requirements. Currently proposed standard RFC 3292. Lead author of GSMP encapsulation specification RFC 3293.

CR-LDP. Juha Heinänen and I wrote the resource management parts of proposed standard RFC 3212.

V-LDP. While at Ennovate, France Telecom asked us to propose a better alternative to RFC 2547 BGP/MPLS VPNs. I designed the resulting signaling protocol V-LDP using ideas from LDP and reliable multicast. V-LDP was presented at several conferences and the MPLS Forum and while it received significant support its was basically too late to have a chance of industry adoption. Documents available upon request.

ATM Forum TM 4.1. I made major contributions to the GFR work, especially in the conformance definition area.

Publications

T. Worster and A. Doria; "Levels of Aggregation in Flow Switching Networks," invited paper IEEE Electronics Industries Forum, Boston May 1997.

E. Wallmeier, S. Davis, S. Schneeberger and T. Worster, "Traffic control in an ATM system with large buffers," invited paper 9th ITC Specialist Seminar, Teletraffic Modeling and Measurement, Leidschendam, November 7-9, 1995.

W. Fischer, E. Wallmeier, T. Worster, S. Davis and A. Hayter, "Data communications using ATM: architectures, protocols and resource management," IEEE Commun. Magazine Vol. 23, No. 8, pp 24-33, August 1994.

T. Worster, W. Fischer, S. Davis and A. Hayter, "Buffering and flow control for statistical multiplexing in an ATM switch," ISS 95 Proc. 15th Int. Switching Symposium, pp 273-277, Berlin, April 1995.

T. Worster, "Modeling deterministic queues: the leaky bucket as an arrival process," ITC 94, Proc. 14th Int. Teletraffic Congress, Antibes, June 1994.

W. Fischer, R. Stiefel and T. Worster, "An ATM system and network architecture in field trial," Proc. IEEE Globecom 93, pp. 1476-1480, Houston, December 1993.

T. Worster, "Resource allocation for bursty data traffic on ATM," Proc. 3rd Joint Workshop on High Speed Networks, Paris, March 1993.

T. Worster, W. Fischer and S. Davis, "Resource allocation for packet data traffic on ATM: problems and solutions," in Kommunikation in Verteilten Systemen (Communication in distributed systems), N. Gerner, H.-G. Hegering and J. Swoboda (eds.), pp. 100-113, Springer Verlag, Berlin, 1993.

E. Wallmeier and T. Worster, "The spacing policer, an algorithm for efficient peak bit rate control in ATM networks," ISS 92 Proc. 14th Int. Switching Symposium., Vol. 2, pp. 22-26, Yokohama, October 25-30 1992.

T. Worster, "Neural network based controllers for connection acceptance," Proc. 2nd RACE Workshop on Traffic and Performance Aspects in IBCN, Aveiro, January 23-24 1992.

G. Gallassi, H. Hofstetter and T. Worster, "Teletraffic studies on ATM in the Broadband Local Network Technology RACE project," ITC 13 Proc. 13th Int. Teletraffic Congress, pp. 41-46, Copenhagen, June 19-26 1991.

E. Wallmeier and T. Worster, "A cell spacing and policing device for multiple virtual connections on one ATM pipe," Proc. RACE Network Planning and Evolution Workshop, London, April 16-17 1991.

T. Worster, "Non-linear dispersive source model for ATM," Proc. RACE Workshop on Traffic and Performance Aspects in IBCN, Munich 3-4, July 1990.

T. Worster, "Non-linear predictive source model for ATM," Proc. IEE 7th UK Teletraffic Symp., Durham, April 4-6 1990.