Peter Newman

Fremont, CA 94538
(650) 996-9210
peter.newman@ieee.org
www.pnewman.com

HIGHLIGHTS

- An original inventor of hardware switch fabrics for high-speed packet switching.
- Founding team of Ipsilon Networks, inventors of IP Switching, a precursor to MPLS.
- Original designer of the General Switch Management Protocol, now an IETF standard.
- Some of the most memorable technical presentations you'll ever hear.

AREAS OF EXPERTISE

- Protocol design, specification, validation and implementation.
- Hardware packet switch fabric design.
- IP routers, ATM switches, networking in general, MPLS, quality of service.
- Standards definition, simulation, system performance evaluation.
- Technology evangelism, technical papers, technical presentations.
- Public speaking: conferences, keynote speeches, sales support, etc.

Netillion: Co-Founder and Senior Staff Engineer Mar 2004 – Present

Design, validation, implementation, testing and patenting of a page-based coherence protocol for a distributed shared memory cluster computing system. This is the first directory-based DSM protocol designed to cope with a lossy network. The protocol was fully implemented at the kernel level and ran continuously under stress for periods in excess of a month.

P Newman Consulting: Independent Consultant Sep 2002 – Mar2004

Worked with Cisco Mobile Wireless Group to help define their vision for the industry. Wrote and published an IEEE paper to articulate this vision regarding the use of IP routing within the cellular mobile wireless network. Wrote a technical white paper for Procket on next generation router architecture. Researched prior art to defend networking companies against patent infringement lawsuits in the areas of ATM and MPLS.

Ensim: Chief Scientist Dec 1998 – Nov 2001

Conceived a business plan to combine Virtual Private Networks, Virtual Servers offering private hosted applications, and DSL access for small businesses. Initiated business partnerships regarding the plan with two major equipment vendors. Major national telco customer lined up but plan postponed due to downturn in market.

Nokia *(from acquisition of Ipsilon):* Architect Jan 1998 – Nov 1998

Architecture, switch fabric design, switch fabric arbiter implementation, and performance investigation of high-speed, hardware-based router.

Ipsilon Networks: Architect Jan 1995 – Dec 1997

First engineering hire. Designed and specified the General Switch Management Protocol (rfc 1987). This was the first general purpose protocol to permit separation of switch hardware from network control software. Version 3 was standardized by the IETF.

Wrote a simulation tool to investigate the performance of Ipsilon's flow labeling technique using packet trace data from the Internet. Presented and published results at IEEE Infocom '96, extended version published in IEEE/ACM Transactions on Networking, April 1998.

Much public speaking to evangelize Ipsilon's technology including:
Keynote for the IEEE ATM Workshop, 1997.
Keynote for the Local Computer Networks Conference, 1996.
Keynote for Design SuperCon, 1995.

Architecture, switch fabric design, and performance investigation of a 10 Gb/s capacity IP Switch.

Added generalized quality of service specification to the General Switch Management Protocol, rfc 2297. Edited Ipsilon's flow management protocol specifications, rfc's 1953 and 1954.

Network Equipment Technologies *(from acquisition of Adaptive)* mid 1993 – Jan 1995
Architect

Conceived, patented, and studied by simulation a congestion control scheme for ATM. Participated as a member of the "inner sanctum" of the ATM Forum Traffic Management Group in the rate-versus-credit ATM congestion control debate.

Initial architecture and switch fabric design of a 10 Gb/s capacity ATM switch.

Adaptive Corporation: Architect Jan 1990 – mid 1993
Architecture, system design, and performance investigation of one of the first ATM switches for the enterprise market. This switch implemented the first ATM congestion control scheme and was also the first ATM switch to implement LAN emulation.

Member of the design team for the first ATM segmentation and reassembly network interface silicon. This silicon included both congestion control and traffic shaping features.

Gave a keynote speech at the first McQuillan ATM conference.

Research Fellow, Computer Laboratory of the University of Cambridge Dec 1988 – Jan 1990
Consultant to Adaptive Corp May 1989 – Oct 1989
PhD student, Computer Laboratory of the University of Cambridge Sep 1985 – Dec 1988
"Fast Packet Switching for Integrated Services." As far as I know, the first PhD dissertation to investigate hardware packet switching fabrics for use in telecommunications networks.
Computer Systems Research Laboratory of GEC Hirst Research, UK. Jan 1984 – Sep 1985
Telecommunications Research Laboratory of GEC Hirst Research, UK. Sep 1978 – Dec 1983

I hold 15 patents and 2 pending on ATM switch design, traffic management and protocol design.
I have published 15 papers on ATM switch design, traffic management, IP switching, and mobile wireless.
(Further details are available on my website: pnewman.com.)

EDUCATION

BSc (Tech) Electronics, University of Wales Institute of Science and Technology, 1978.

PhD, *"Fast Packet Switching for Integrated Services,"* Computer Laboratory, University of Cambridge, 1989.

Publications

"In Search of the All-IP Mobile Network," IEEE Communications Magazine, 42 (12), Dec. 2004, pp. S3-S8.

“IP Switching: ATM Under IP,” P. Newman, Greg Minshall and Tom Lyon,
IEEE/ACM Transactions on Networking, 6(2), April 1998, pp. 117-129.

“IP Switching and Gigabit Routers,” P. Newman, Greg Minshall, Tom Lyon and Larry Huston, IEEE Communications Magazine, Jan. 1997.

“Flow Labelled IP: Connectionless ATM Under IP,” P. Newman, Tom Lyon and Greg Minshall, Interop, April 1996.

“Flow Labelled IP: A Connectionless Approach to ATM,” P. Newman, Tom Lyon and Greg Minshall, IEEE Infocom, March 1996.

“Integration of rate and credit schemes for ATM flow control,” K. K. Ramakrishnan and Peter Newman, IEEE Network. Mag. Mar. 1995 pp 49-56.

“Traffic management for ATM local area networks,” IEEE Commun. Mag. Aug. 1994 pp 44-50.

“ATM local area networks,” IEEE Commun. Mag. Mar. 1994 pp 86-98.

“Backward explicit congestion notification for ATM local area networks,” Proc. IEEE Globecom, Houston, Dec. 1993, pp 719-723.

“ATM technology for corporate networks,” IEEE Commun. Mag. Apr. 1992 pp 90-101.

“A slotted ring copy fabric for a multicast fast packet switch,” P. Newman and M. Doar, Proc. XIII Int. Switching Symp. (ISS '90), Stockholm, May 1990, Vol. 5, 205-210.

“Fast packet switching for broadband ISDN,” Proc. IEE Second National Conf. on Telecomm., York, UK, Apr. 1989, 391-396.

“Fast packet switching for integrated services,” PhD Thesis, Technical Report 165, Computer Laboratory, University of Cambridge, Mar. 1989.

“A fast packet switch for the integrated services backbone network,” IEEE J. Selected Areas in Commun., 6 (9), Dec. 1988, 1468-1478.

“A broadband packet switch for multiservice communications,” Proc. IEEE Infocom '88, New Orleans, Mar. 1988, 19-28.

Patents

“Enabling a service provider to provide intranet services,” 6948003, Sep. 20, 2005.

“Method and apparatus for dynamically shifting between routing and switching packets in a transmission network,” 5920705, Jly. 6, 1999.

“Method and apparatus for dynamically shifting between routing and switching packets in a transmission network,” 5892924, Apr. 6, 1999.

“Method and apparatus for reactive congestion control in an asynchronous transfer mode (ATM) network,” 5852601, Dec. 22, 1998.

“Virtual network using asynchronous transfer mode,” 5633869, May 27, 1997.

“Method and apparatus for backward explicit congestion notification (BECN) in an ATM network,” 5457687, Oct. 10, 1995.

“Virtual network using asynchronous transfer mode,” 5444702, Aug. 22, 1995.

“Concurrent multi-channel segmentation and reassembly processors for asynchronous transfer mode,” 5379297, Jan. 3, 1995.

“High-speed determining unit for prioritizing and arbitrating among competing input signals,” 5245603, Sep. 14, 1993.

“Self-routing switching element and fast packet switch,” 5396491, Mar. 7, 1995.

“Self-routing switching element and fast packet switch,” 5367518, Nov. 22, 1994.

“Self-routing switching element and fast packet switch,” 5222085, Jun. 22, 1993.

“Copy fabric for a multicast fast packet switch,” GB 2238934 B, Dec. 22, 1993 (UK).

“Self-routing switch element for an asynchronous time switch,” 4965788 Oct. 23, 1990.
(Also GB 2211697 B Jan. 2, 1992, UK).

“Data signal switching systems,” 4625306, Nov. 25, 1986.
(Also GB 2151880, Dec. 16, 1983, UK).