Bibliography

[1] M. Adams, J. Coplien, R. Gamoke, R. Hanmer, F. Keeve, and K. Nicodemus, "Fault-tolerant telecommunication systems patterns," in *Pattern Languages of Program Design*, J. M. Vlissides, J. O. Coplien, and N. L. Kerth (Eds.), Addison-Wesley, pp. 549–562, 1996.

[2] S. Agarwal, C.-N. Chuah, S. Bhattacharyya, and C. Diot, "The impact of BGP dynamics on intradomain traffic," in *Proc. ACM SIGMETRICS'2004*, pp. 319–330, New York, NY, 2004.

[3] G. Agrawal and D. Medhi, "Lightpath topology configuration for wavelength-routed IP/MPLS networks for time-dependent traffic," in *Proc. of IEEE GLOBECOM'2006*, San Francisco, CA, November–December 2006.

[4] H. Ahmadi and W. E. Denzel, "A survey of modern high performance switching techniques," *IEEE Journal of Selected Areas in Communications*, vol. 7, pp. 1091–1103, 1989.

[5] A. V. Aho and D. Lee, "Hierarchical networks and the LSA N squared problem in OSPF routing," in *Proc. IEEE GLOBECOM'2000*, pp. 397–404, San Francisco, CA, November–December 2000.

[6] R. K. Ahuja, T. L. Magnanti, and J. B. Orlin, *Network Flows: Theory, Algorithms, and Applications*. Prentice-Hall, 1993.

[7] J. M. Akinpelu, "The overload performance of engineered networks with nonhierarchical and hierarchical routing," *AT&T Bell Labs Technical Journal*, vol. 63, pp. 1261–1281, 1984.

[8] C. Alaettinoglu, C. Villamizar, E. Gerich, D. Kessens, D. Meyer, T. Bates, D. Karrenberg, and M. Terpstra, "Routing policy specification language (RPSL)," *IETF RFC 2622*, June 1999. http://www.rfc-editor.org/rfc/rfc2622.txt

[9] M. Ali and H. Nguyen, "A neural network implementation of an input access scheme in a high speed packet switch," in *Proc. IEEE GLOBECOM'89*, pp. 1192–1196, 1989.

[10] Alliance for Telecommunications Industry Solutions, "555 Technical service interconnection arrangements (ICCF96-0411-014)," July 1998, ATIS Industry Numbering Committee. http://www.cnac.ca/numres/555/555_96041114.doc

[11] M. Allman, V. Paxson, and W. Stevens, "TCP congestion control," *IETF RFC 2581*, April 1999. http://www.rfc-editor.org/rfc/rfc2581.txt

[12] W. Allsopp, "VoIP—vulnerability over Internet protocol?" March 2004. http://www.continuitycentral.com/feature074.htm

[13] V. Alwayn, *Optical Network Design and Implementation*. Cisco Press, 2004.

[14] Amsterdam Internet Exchange, AMS-IX. http://www.ams-ix.net/

[15] T. Anderson, S. Owicki, J. Saxe, and C. Thacker, "High-speed switch scheduling for local area networks," *ACM Trans. on Computer Systems*, vol. 11, pp. 319–352, November 1993.

[16] L. Andersson, P. Doolan, N. Feldman, A. Fredette, and B. Thomas, "LDP specification," *IETF RFC 3036*, January 2001. http://www.rfc-editor.org/rfc/rfc3036.txt

[17] L. Andersson and T. Madsen, "Provider provisioned virtual private network (VPN) terminology," *IETF RFC 4026*, March 2005. http://www.rfc-editor.org/rfc/rfc4026.txt

[18] L. Andersson and G. Swallow, "The multiprotocol label switching (MPLS) working group decision on MPLS signaling protocols," *IETF RFC 3468*, February 2003. http://www.rfc-editor.org/rfc/rfc3468.txt

[19] T. Anjali, C. M. Scoglio, J. C. de Oliveira, L. C. Chen, I. F. Akyildiz, J. A. Smith, G. Uhl, and A. Sciuto, "A new path selection algorithm for MPLS networks based on available bandwidth estimation." in *Proc. International Workshop on Quality of Future Internet Services (QofIS'2002)*, Zurich, Switzerland, Lecture Notes in Computer Science, Springer, vol. 2511, pp. 205–214, October 2002.

[20] AOL Transit Data Network Settlement-Free Interconnection Policy. http://www.atdn.net/settlement_free_int.shtml

[21] G. Apostolopoulos, R. Guerin, and S. Kamat, "Implementation and performance measurements of QoS routing extensions to OSPF," in *Proc. IEEE INFOCOM'99*, pp. 680–688, New York, NY, March 1999.

[22] G. Apostolopoulos, R. Guerin, S. Kamat, and S. K. Tripathi, "QoS routing: A performance perspective," in *Proc. ACM SIGCOMM'98*, pp. 17–28, Vancouver, Canada, September 1998.

[23] G. Apostolopoulos, S. Kama, D. Williams, R. Guerin, A. Orda, and T. Przygienda, "QoS routing mechanisms and OSPF extensions," *IETF RFC 2676*, August 1999. http://www.rfc-editor.org/rfc/rfc2676.txt

[24] G. Apostolopoulos and S. K. Tripathi, "On reducing the processing cost of on-demand QoS path computation," in *Proc. ICNP'98*, pp. 80–89, Austin, TX, October 1998.

[25] G. Appenzeller, I. Keslassy, and N. McKeown, "Sizing router buffers," in *Proc. ACM SIGCOMM'2004*, Portland, OR, August–September 2004.

[26] G. Armitage, *Quality of Service in IP Networks*. Macmillan Technical Publishing, April 2000.

[27] G. R. Ash, *Dynamic Routing in Telecommunication Networks*. McGraw-Hill, 1997.

[28] G. R. Ash, "Performance evaluation of QoS-routing methods for IP-based multiservice networks," *Computer Communication*, vol. 26, pp. 817–833, 2003.

[29] G. R. Ash, *Traffic Engineering and QoS Optimization of Integrated Voice & Data Networks*. Morgan Kaufmann Publishers, 2006.

[30] G. R. Ash, R. H. Cardwell, and R. P. Murray, "Design and optimization of networks with dynamic routing," *Bell System Technical Journal*, vol. 60, pp. 1787–1820, 1981.

[31] G. R. Ash, K. K. Chan, and J.-F. Labourdette, "Analysis and design of fully shared networks," in *Proc. 14th International Teletraffic Congress (ITC14)*, pp. 1311–1320, Antibes, France, June 1994.

[32] G. R. Ash, F. Chang, and D. Medhi, "Robust traffic design for dynamic routing networks," in *Proc. IEEE INFOCOM'91*, pp. 508–514, Bal Harbour, Florida, April 1991.

[33] G. R. Ash and P. Chemouil, "20 years of dynamic routing in telephone networks: Looking backward to the future," *IEEE Global Communications Newsletter*, pp. 1–4, October 2004, note: appears as insert in the October 2005 issue of *IEEE Communications Magazine*.

[34] G. R. Ash, J. S. Chen, A. E. Frey, and B. D. Huang, "Real time network routing in a dynamic class-of-service network," in *Proc. 13th International Teletraffic Congress (ITC13)*, pp. 187–194, Copenhagen, Denmark, 1991.

[35] G. R. Ash, M. Girish, E. Gray, B. Jamoussi, and G. Wright, "Applicability statement for CR-LDP," *IETF RFC 3213*, January 2002. http://www.rfc-editor.org/rfc/rfc3213.txt

[36] G. R. Ash, A. H. Kafker, and K. R. Krishnan, "Servicing and real-time control of networks with dynamic routing," *Bell System Technical Journal*, vol. 60, pp. 1821–1845, 1981.

[37] G. R. Ash, Y. Lee, P. Ashwood-Smith, B. Jamoussi, D. Fedyk, D. Skalecki, and L. Li, "LSP modification using CR-LDP," *IETF RFC 3214*, January 2002. http://www.rfc-editor.org/rfc/rfc3214.txt

[38] S. Asthana, C. Delph, H. V. Jagadish, and P. Krzyzanowski, "Towards a gigabit IP router," *Journal of High Speed Networks*, vol. 1, no. 4, pp. 281–288, 1992.

[39] ATM Forum, "Private Network-Network Interface specification, version 1.1, af-pnni-0055.001," April 2002.

[40] AT&T Global IP Network Settlement-Free Peering Policy. http://www.att.com/peering/

[41] R. Y. Awdeh and H. T. Mouftah, "Survey of ATM switch architectures," *Computer Networks & ISDN Systems*, vol. 27, pp. 1567–1613, 1995.

[42] D. Awduche, "MPLS and traffic engineering in IP networks," *IEEE Communications Magazine*, vol. 37, no. 12, pp. 42–47, December 1999.

[43] D. Awduche, L. Berger, D. Gan, T. Li, V. Srinivasan, and G. Swallow, "RSVP-TE: Extensions to RSVP for LSP tunnels," *IETF RFC 3209*, December 2001. http://www.rfc-editor.org/rfc/rfc3209.txt

[44] D. Awduche, A. Hannan, and X. Xiao, "Applicability statement for extensions to RSVP for LSP-tunnels," *IETF RFC 3210*, December 2001. http://www.rfc-editor.org/rfc/rfc3210.txt

[45] D. Awduche, J. Malcolm, J. Agogbua, M. O'Dell, and J. McManus, "Requirements for traffic engineering over MPLS," *IETF RFC 2702*, September 1999. http://www.rfc-editor.org/rfc/rfc2702.txt

[46] J. Aweya, "IP router architectures: An overview," *International Journal of Communication Systems*, vol. 14, no. 5, pp. 447–475, May 2001.

[47] F. Baboescu, S. Singh, and G. Varghese, "Packet classification for core routers: Is there an alternative to CAMs," in *Proc. IEEE INFOCOM'2003*, pp. 53–63, April 2003.

[48] F. Baboescu and G. Varghese, "Scalable packet classification," in *Proc. ACM SIGCOMM'2001*, pp. 199–210, San Diego, CA, August–September 2001.

[49] S. Bahk and M. El Zarki, "Dynamic multi-path routing and how it compares with other dynamic routing algorithms for high speed wide area network," in *Proc. ACM SIGCOMM'1992*, pp. 53–64, Baltimore, MD, 1992.

[50] F. Baker, "Requirements for IP version 4 routers," *IETF RFC 1812*, June 1995, http://www.rfc-editor.org/rfc/rfc1812.txt.

[51] F. Baker, B. Lindell, and M. Talwar, "RSVP cryptographic authentication," *IETF RFC 2747*, January 2000. http://www.rfc-editor.org/rfc/rfc2747.txt

[52] K. Bala, I. Cidon, and K. Sohraby, "Congestion control for high speed packet switched networks," in *Proc. IEEE INFOCOM'90*, pp. 520–526, 1990.

[53] D. Banerjee and B. Mukherjee, "A practical approach for routing and wavelength assignment in large wavelength-routed optical networks," *IEEE Journal of Selected Areas in Communication*, vol. 14, no. 5, pp. 903–908, June 1996.

[54] D. Banerjee and B. Mukherjee, "Wavelength-routed optical networks: Linear formulation, resource budgeting tradeoffs, and a reconfiguration study," *IEEE/ACM Trans. on Networking*, vol. 8, no. 5, pp. 598–607, October 2000.

[55] S. Banerjee, J. Yoo, and C. Chen, "Design of wavelength-routed optical networks for packet switched traffic," *Journal of Lightwave Technology*, vol. 15, no. 9, pp. 1636–1646, September 1997.

[56] G. H. Barnes, R. M. Brown, M. Kato, D. J. Kuck, D. L. Slotnick, and R. A. Stokes, "The ILLIAC IV computer," *IEEE Trans. on Computers*, vol. 17, no. 8, pp. 746–757, August 1968.

[57] R. Barr and R. A. Patterson, "Grooming telecommunications networks," *Optical Networks Magazine*, vol. 2, no. 3, pp. 20–23, May/June 2001.

[58] C. Basso and P. Scotton, "Computing the widest shortest path in high-speed networks," U.S. Patent No. 6,370,119, April 9, 2002.

[59] T. Bates and R. Chandra, "BGP route reflection: An alternative to full mesh BGP," *IETF RFC 1966*, June 1996. http://www.rfc-editor.org/rfc/rfc1966.txt

[60] T. Bates, R. Chandra, and E. Chen, "BGP route reflection—an alternative to full mesh IBGP," *IETF RFC 2796*, April 2000, (Made obsolete by [62]). http://www.rfc-editor.org/rfc/rfc2796.txt

[61] T. Bates, R. Chandra, D. Katz, and Y. Rekhter, "Multiprotocol extensions for BGP-4," *IETF RFC 4760*, January 2007. http://www.rfc-editor.org/rfc/rfc4760.txt

[62] T. Bates, E. Chen, and R. Chandra, "BGP route reflection: An alternative to full mesh internal BGP (IBGP)," *IETF RFC 4456*, April 2006. http://www.rfc-editor.org/rfc/rfc4456.txt

[63] T. Bates, Y. Rekhter, R. Chandra, and D. Katz, "Multiprotocol extensions for BGP-4," *IETF RFC 2858*, June 2000. http://www.rfc-editor.org/rfc/rfc2858.txt

[64] A. Bavier, N. Feamster, M. Huang, L. Peterson, and J. Rexford, "In VINI Veritas: Realistic and controlled network experimentation," in *Proc. ACM SIGCOMM'06*, pp. 3–14, Pisa, Italy, September 2006.

[65] N. Beckmann, H. Kriegel, R. Schneider, and B. Seeger, "The R*-tree: An efficient and robust access method for points and rectangles," in *Proc. ACM SIGMOD'90*, pp. 322–331, 1990.

[66] F. Bedard, J. Regnier, and F. Caron, "Dynamically controlled routing using virtual nodes," U.S. Patent No. 5,526,414, June 11, 1996.

[67] M. Belaidouni and W. Ben-Ameur, "Super-additive approach to solve the minimum cost single path routing problem: Preliminary results," in *Proc. International Network Optimization Conference (INOC'2003)*, pp. 67–71, 2003.

[68] R. Bellman, "On a routing problem," *Quarterly of Applied Mathematics*, vol. 16, no. 1, pp. 87–90, 1958.

[69] W. Ben-Ameur, E. Gourdin, B. Liau, and N. Michel, "Optimizing administrative weights for efficient single path routing," in *Proc. Networks'2000*, Toronto, Canada, 2000.

[70] V. E. Beneš, "Rearrangeable three stage connecting networks," *Bell System Technical Journal*, vol. 41, pp. 1481–1492, 1962.

[71] V. E. Beneš, *Mathematical Theory of Connecting Networks and Telephone Traffic*. Academic Press, 1965.

[72] J. Bennett and H. Zhang, "Hierarchical packet fair queueing algorithm," in *Proc. ACM SIG-COMM'96*, pp. 143–156, Palo Alto, CA, August 1996.

[73] L. Berger (Ed.), "Generalized multi-protocol label switching (GMPLS): Signaling functional description," *IETF RFC 3471*, January 2003. http://www.rfc-editor.org/rfc/rfc3471.txt

[74] L. Berger (Ed.), "Generalized multi-protocol label switching (GMPLS) signaling resource reservation protocol-traffic engineering (RSVP-TE) extensions," *IETF RFC 3473*, January 2003. http://www.rfc-editor.org/rfc/rfc3473.txt

[75] L. Berger (Ed.), "GMPLS—communication of alarm information," *IETF RFC 4783*, December 2006. http://www.rfc-editor.org/rfc/rfc4783.txt

[76] Y. Bernet, A. Smith, and B. Davie, "Specification of the Null Service type," *IETF RFC 2997*, November 2000. http://www.rfc-editor.org/rfc/rfc2997.txt

[77] G. Bernstein, B. Rajagopalan, and D. Saha, *Optical Network Control: Architecture, Protocols, and Standards*. Addison-Wesley, 2003.

[78] D. Bertsekas, "Dynamic models of shortest path routing algorithms for communication networks with multiple destinations," in *Proc. 1979 IEEE Conference on Decision and Control*, pp. 127–133, Ft. Lauderdale, FL, 1979.

[79] D. Bertsekas, "Dynamic behavior of shortest path routing algorithms for communication networks," *IEEE Trans. on Automatic Control*, vol. AC-27, pp. 60–74, 1982.

[80] D. Bertsekas, *Network Optimization: Continuous and Discrete Models*. Athena Scientific, 1998.

[81] D. Bertsekas and R. Gallager, *Data Networks, 2nd Edition*. Prentice-Hall, 1992.

[82] R. Bhandari, *Survivable Networks—Algorithms for Diverse Routing*. Kluwer Academic Publishers, 1999.

[83] M. Bhatia, V. Manral, and Y. Ohara, "IS-IS and OSPF difference discussions," Internet draft, 2005.

[84] R. Bhatia, M. Kodialam, and T. Lakshman, "Fast network re-optimization schemes for MPLS and optical networks," *Computer Networks*, vol. 50, pp. 317–331, 2006.

[85] P. K. Bhatnagar, *Engineering Networks for Synchronization, CCS 7, and ISDN: Standards, Protocols, Planning and Testing*. Wiley–IEEE Press, 1997.

[86] A. Bogomolny, "Emergence of chaos (there is order in chaos)." http://www.cut-the-knot.org/blue/chaos.shtml

[87] E. Bouillet, J.-F. Labourdette, R. Ramamurthy, and S. Chaudhuri, "Lightpath re-optimization in mesh optical networks," *IEEE/ACM Trans. on Networking*, vol. 13, pp. 437–447, 2005.

[88] B. Braden, D. Clark, J. Crowcroft, B. Davie, S. Deering, D. Estrin, S. Floyd, V. Jacobson, G. Minshall, C. Partridge, L. Peterson, K. Ramakrishnan, S. Shenker, J. Wroclawski, and L. Zhang, "Recommendations on queue management and congestion avoidance in the Internet," *IETF RFC 2309*, April 1998. http://www.rfc-editor.org/rfc/rfc2309.txt

[89] R. Braden, D. Borman, and C. Partridge, "Computing the Internet checksum," *IETF RFC 1071*, September 1988, http://www.rfc-editor.org/rfc/rfc1071.txt.

[90] R. Braden Ed., L. Zhang, S. Berson, S. Herzog, and S. Jamin, "Resource ReSerVation Protocol (RSVP)—Version 1 functional specification," *IETF RFC 2205*, September 1997. http://www.rfc-editor.org/rfc/rfc2205.txt

[91] D. Braess, "Uber ein paradoxon der verkehrsplanung," *Unternehmensforschung*, vol. 12, pp. 258–268, 1968.

[92] W. S. Brainerd and L. H. Landweber, *Theory of computation*. John Wiley & Sons, 1974.

[93] H.-W. Braun, "Models of policy based routing," *IETF RFC 1104*, June 1989. http://www.rfc-editor.org/rfc/rfc1104.txt

[94] H.-W. Braun, "The NSFNET routing architecture," *IETF RFC 1093*, February 1989. http://www.rfc-editor.org/rfc/rfc1093.txt

[95] A. Bremler-Barr, Y. Afek, and S. Schwarz, "Improved BGP convergence via ghost flushing," in *Proc. IEEE INFOCOM'2003*, San Francisco, CA, 2003.

[96] J. Brewer and J. Sekel, "PCI express technology," *Dell Technology White Paper*, February 2004. http://www.dell.com/content/topics/global.aspx/vectors/en/2004_pciexpress?c=us&l=en&s=corp

[97] B. Briscoe, "Flow rate fairness: Dismantling a religion," Internet Draft, October 2006. http://www.cs.ucl.ac.uk/staff/bbriscoe/pubs.html#rateFairDis

[98] F. Brodersen and A. Klimetschek, "Anatomy of a high performance IP router." http://citeseer.ist.psu.edu/brodersen03anatomy.html

[99] N. Brownlee and M. Murray, "Streams, flows and torrents," in *Passive and Active Measurement Workshop*, April 2001.

[100] D. Brugman, "Call-routing analysis using SS7 data," *Bell Labs Technical Journal*, vol. 9, no. 4, pp. 133–138, 2005.

[101] M. M. Buddhikot, S. Suri, and M. Waldvogel, "Space decomposition techniques for fast layer-4 switching," in *Proc. Conference on Protocols for High Speed Networks*, pp. 25–41, August 1999.

[102] c7.com resource site. http://www.c7.com/

[103] CableLabs, "Packetcable^{TM}." http://www.packetcable.com/

[104] P. Calhoun, J. Loughney, E. Guttman, G. Zorn, and J. Arkko, "Diameter based protocol," *IETF RFC 3588*, September 2003. http://www.rfc-editor.org/rfc/rfc3588.txt

[105] R. Callon, "Use of OSI IS-IS for routing in TCP/IP and dual environments," *IETF RFC 1195*, December 1990. http://www.rfc-editor.org/rfc/rfc1195.txt

[106] G. Camarillo and M. A. García-Martín, *The 3G IP Multimedia Subsystem (IMS), 2nd Edition*. John Wiley & Sons, 2006.

[107] G. Camarillo, A. B. Roach, J. Peterson, and L. Ong, "Integrated Services Digital Network (ISDN) User Part (ISUP) to Session Initiation Protocol (SIP) Mapping," *IETF RFC 3398*, December 2002. http://www.rfc-editor.org/rfc/rfc3398.txt

[108] Canadian ENUM Working Group. http://www.enumorg.ca/

[109] Canadian Steering Committee on Numbering. http://www.cnac.ca/cscn/cscn.htm

[110] J. Carlson, P. Langner, E. Hernandez-Valencia, and J. Manchester, "PPP over simple data link (SDL) using SONET/SDH with ATM-like framing," *IETF RFC 2823*, May 2000. http://www.rfc-editor.org/rfc/rfc2823.txt

[111] M. Carson, J.-H. Hahm, S. Shah, and M. Zink, "MPLS-enabled routing algorithms," December 1999, DARPA Next-Generation Internet Principal Investigators' Meeting. http://www-x.antd.nist.gov/nistswitch/darpa.slides.ps.gz

[112] V. G. Cerf and R. E. Kahn, "A protocol for packet network interconnection," *IEEE Trans. on Communications*, vol. COM-22, pp. 627–641, May 1974.

[113] R. Chandra and J. Scudder, "Capabilities advertisement with BGP-4," *IETF RFC 2842*, May 2000, (Made obsolete by [114]). http://www.rfc-editor.org/rfc/rfc2842.txt

[114] R. Chandra and J. Scudder, "Capabilities advertisement with BGP-4," *IETF RFC 3392*, November 2002. http://www.rfc-editor.org/rfc/rfc3392.txt

[115] R. Chandra, P. Traina, and T. Li, "BGP communities attribute," *IETF RFC 1997*, August 1996. http://www.rfc-editor.org/rfc/rfc1997.txt

[116] J. Chandrashekar, Z. Duan, Z.-L. Zhang, and J. Krasky, "Limiting path exploration in path vector protocols," in *Proc. IEEE INFOCOM'2005*, pp. 2337–2348, Miami, FL, March 2005.

[117] T. J. Chaney, J. A. Fingerhut, M. Flucke, and J. S. Turner, "Design of a gigabit ATM switch," in *Proc. IEEE INFOCOM'97*, pp. 2–11, 1997.

[118] C.-S. Chang, *Performance Guarantees in Communication Networks*. Springer, 2000.

[119] F. Chang, "Routing-sequence optimization for circuit-switched networks," *AT&T Technical Journal*, vol. 68, no. 3, pp. 57–63, May/June 1989.

[120] F. Chang, W. Feng, and K. Li, "Approximate caches for packet classification," in *Proc. IEEE INFOCOM'2004*, pp. 2196–2207, Hong Kong, March 2004.

[121] H. J. Chao, "Next generation routers," *Proceedings of the IEEE*, vol. 90, pp. 1518–1558, 2002.

[122] H. J. Chao, K. L. Deng, and Z. Jing, "A petabit photonic packet switch (P3S)," in *Proc. IEEE INFO-COM'2003*, pp. 775–785, San Francisco, CA, April 2003.

[123] H. J. Chao, K. L. Deng, and Z. Jing, "Petastar: A petabit photonic packet switch," *IEEE Journal of Selected Areas in Communications*, vol. 21, no. 7, pp. 1096–1112, September 2003.

[124] H. J. Chao, C. H. Lam, and E. Oki, *Broadband Packet Switching Technologies*. John Wiley & Sons, 2001.

[125] H. J. Chao, S. Y. Liew, and Z. Jing, "A dual-level matching algorithm for 3-stage Clos-network packet switches," in *Proc. Hot Interconnects 11*, Stanford, CA, August 2003.

[126] B. Chazelle, "How to search in history," *Information and Control*, vol. 64, pp. 77–99, 1985.

[127] B. Chazelle and J. Friedman, "Point location hyperplanes and unidirectional ray shooting," *Computational Geometry: Theory and Applications*, vol. 4, pp. 53–62, 1994.

[128] P. Chemouil, J. Filipiak, and P. Gauthier, "Analysis and control of traffic routing in circuit-switched networks," *Computer Networks and ISDN System*, vol. 11, pp. 203–217, 1986.

[129] E. Chen, "Route refresh capability for BGP-4," *IETF RFC 2918*, September 2000. http://www.rfc-editor.org/rfc/rfc2918.txt

[130] S. Chen and K. Nahrstedt, "An overview of quality-of-service routing for the next generation high-speed networks: Problems and solutions," *IEEE Network*, vol. 12, no. 6, pp. 64–79, November/December 1998.

[131] G. Cheung and S. McCanne, "Optimal routing table design for IP address lookups under memory constraints," in *Proc. IEEE INFOCOM'99*, pp. 1437–1444, 1999.

[132] H. C. Chi and Y. Tamir, "Starvation prevention for arbiters of crossbars with multi-queue input buffers," in *Proc. COMPCON'94*, pp. 292–297, February 1994.

[133] T. Chiueh and P. Pradhan, "High performance IP routing table lookup using CPU caching," in *Proc. IEEE INFOCOM'99*, pp. 1421–1428, April 1999.

[134] F. M. Chiussi, J. G. Kneuer, and V. P. Kumar, "Low-cost scalable switching solutions for broadband networking: The ATLANTA architecture and chipset," *IEEE Communications Magazine*, vol. 35, no. 12, pp. 44–53, 1997.

[135] B.-Y. Choi, S. Moon, R. Cruz, Z.-L. Zhang, and C. Diot, "Practical delay monitoring for ISPs," in *Proc. ACM Conference on Emerging Network Experiment and Technology (CoNEXT'05)*, pp. 83–92, Toulouse, France, October 2005.

[136] J. S. Choi, N. Golmie, F. Lapeyrere, F. Mouveaux, and D. Su, "A functional classification of routing and wavelength assignment schemes in DWDM networks: Static case," in *Proc. of VII International Conference on Optical Communication and Networks*, New Jersey, 2000.

[137] X. Chu and B. Li, "Dynamic routing and wavelength assignment in the presence of wavelength conversion for all-optical networks," *IEEE/ACM Trans. on Networking*, vol. 13, no. 3, pp. 704–715, June 2005.

[138] Cisco Systems, "Policing and shaping overview," in *Tech Notes, Cisco Systems*, 2000.

[139] Cisco Systems, "Comparing traffic policing and traffic shaping for bandwidth limiting," in *Document ID: 19645, Tech Notes, Cisco Systems*, 2005. http://www.cisco.com/warp/public/105/policevsshape.html

[140] Cisco Systems, "Cisco CRS-1 carrier routing 8-slot line card chassis system description," in *Cisco Systems White Paper*, April 2006. http://www.cisco.com/en/US/products/ps5763/products_pre-installation_guide_chapter09186a008036e0d8.html

[141] K. Claffy, "Internet traffic characterization," Ph.D. dissertation, University of California, San Diego, CA, 1994.

[142] D. D. Clark, "What is "architecture"?" v 4.0 of 28 November 2005. http://find.isi.edu/presentation_files/Dave_Clark-What_is_architecture_4.pdf

[143] D. D. Clark, "The design philosophy of the DARPA Internet protocols," *ACM SIGCOMM Computer Communication Review*, vol. 18, no. 4, pp. 106–114, August 1988.

[144] D. D. Clark, "Policy routing in Internet protocols," *IETF RFC 1102*, May 1989. http://www.rfc-editor.org/rfc/rfc1102.txt

[145] K. L. Clarkson, "New applications of random sampling in computational geometry," *Discrete and Computational Geometry*, vol. 2, pp. 195–222, 1987.

[146] C. Clos, "A study of non-blocking switching networks," *Bell System Technical Journal*, vol. 32, no. 2, pp. 406–424, March 1953.

[147] R. Cole and J. Hopcroft, "On edge coloring bipartite graphs," *SIAM Journal on Computing*, vol. 11, pp. 540–546, 1982.

[148] R. Cole, K. Ost, and S. Schirra, "Edge-coloring bipartite multigraphs in $O(E \log D)$ time," *Combinatorica*, vol. 21, no. 1, pp. 5–12, 2001.

[149] R. Coltun, "The OSPF opaque LSA option," *IETF RFC 2370*, July 1998. http://www.rfc-editor.org/rfc/rfc2370.txt

[150] R. Coltun, D. Ferguson, and J. Moy, "OSPF for IPv6," *IETF RFC 2740*, December 1999. http://www.rfc-editor.org/rfc/rfc2740.txt

[151] D. Comer, "Ubiquitous B-tree," *ACM Computing Surveys*, vol. 11, no. 2, pp. 121–137, 1979.

[152] D. Comer, *Internetworking With TCP/IP, Volume 1: Principles Protocols, and Architecture, 4th Edition*. Prentice-Hall, 2000.

[153] M. Conte, *Dynamic Routing in Broadband Networks*. Kluwer Academic Publishers, 2003.

[154] J. P. Coudreuse and M. Servel, "PRELUDE: An asynchronous time-division switched network," in *Proc. IEEE International Conference on Communications (ICC'87)*, pp. 769–772, June 1987.

[155] Counry Code 1 ENUM LLC, "Provider ENUM trial." http://www.enumllc.com/

[156] J. Cowie and A. Ogielski, "Global routing instabilities during Code Red 2 and Nimda worm propagation," in *Presentation at NANOG23 Meeting*, Oakland, CA, October 2001. http://www.renesys.com/tech/presentations/pdf/Renesys-NANOG23.pdf

[157] J. Cowie, A. T. Ogielski, B. J. Premore, and Y. Yuan, "Internet warms and global routing instabilities," in *Proc. SPIE 2002 Conference*, July 2002. http://www.renesys.com/tech/presentations/pdf/renesys-spie2002.pdf

[158] CPLEX, *CPLEX User's Manual*. ILOG, 1999.

[159] P. Crescenzi, L. Dardini, and R. Grossi, "IP address lookup made fast and simple," in *Proc. 7th Annual European Symposium on Algorithms*, pp. 65–76, 1999.

[160] M. E. Crovella and A. Bestavros, "Self-similarity in world wide web traffic: Evidence and possible causes," *IEEE/ACM Trans. on Networking*, vol. 5, pp. 835–846, 1997.

[161] W. J. Dally, "Scalable switching fabrics for Internet routers," in *Avici Systems White Paper*, 2002. http://www.avici.com/technology/whitepapers/TSRfabric-WhitePaper.pdf

[162] W. J. Dally, M.-J. E. Lee, F.-T. An, J. Poulton, and S. Tell, "High performance electrical signaling," in *Proc. 5th International Conference on Massively Parallel Processing using Optical Interconnects*, pp. 11–16, 1998.

[163] W. J. Dally and B. Towles, *Principles and Practices of Interconnection Networks*. Morgan Kaufmann Publishers, 2004.

[164] G. B. Dantzig and M. N. Thapa, *Linear Programming 2: Theory and Extensions*. Springer, 1997.

[165] G. B. Dantzig, "On the shortest route through a network," *Management Science*, vol. 6, pp. 187–190, 1960.

[166] P. Datta and A. K. Somani, "Diverse routing for shared risk resource groups (SRRG) failures in WDM optical networks," in *Proc. BROADNETS'2004*, pp. 120–129, 2004.

[167] B. Davie and Y. Rekhter, *MPLS Technology and Applications*. Morgan Kaufmann Publishers, 2000.

[168] E. Davies and A. Doria, "Analysis of IDR requirements and history," IETF Internet-draft, 2006.

[169] R. De La Briandais, "File searching using variable length keys," in *Proc. Western Joint Computer Conference*, pp. 295–298. Spartan Books, 1959.

[170] R. de Rooij, "Bgphints." http://bgphints.ruud.org/

[171] D. Decasper, Z. Dittia, G. Parulkar, and B. Plattner, "Router plugins: A software architecture for next-generation routers," in *Proc. ACM SIGCOMM'98*, pp. 229–240, Vancouver, Canada, September 1998.

[172] J. J. Deegan, G. W. R. Luderer, and A. K. Vaidya, "Fast packet techniques for future switches," *AT & T Technical Journal*, pp. 36–50, March 1989.

[173] M. Degermark, A. Brodnik, S. Carlsson, and S. Pink, "Small forwarding tables for fast routing lookups," in *Proc. ACM SIGCOMM'97*, pp. 3–14, Cannes, France, 1997.

[174] P. Demeester, M. Gryseels, A. Autenrieth, C. Brianza, L. Castagna, G. Signorelli, R. Clemente, M. Ravaera, A. Jajszczyk, D. Janukowicz, K. V. Doorselaere, and Y. Harada, "Resilience in multi-layer networks," *IEEE Communications Magazine*, vol. 37, no. 8, pp. 70–75, 1999.

[175] M. Devault, J. Y. Cochennec, and M. Servel, "The PRELUDE ATD experiment: Assessments and future prospects," *IEEE Journal on Selected Areas on Communications*, vol. 6, no. 9, pp. 1528–1537, December 1988.

[176] D. DeWitt and J. Gray, "Parallel database systems: the future of high performance database systems," *Communications of the ACM*, vol. 35, no. 6, pp. 85–98, 1992.

[177] A. Dhamdhere, H. Jiang, and C. Dovrolis, "Buffer sizing for congested Internet links," in *Proc. IEEE INFOCOM'2005*, pp. 1072–1083, Miami, FL, March 2005.

[178] E. W. Dijkstra, "A note on two problems in connection with graphs," *Numerische Mathematik*, vol. 1, pp. 269–271, 1959.

[179] E. W. Dijkstra and C. S. Scholten, "Termination detection for diffusing computations," *Information Processing Letters*, vol. 11, pp. 1–4, 1980.

[180] W. Doeringer, G. Karjoth, and M. Nassehi, "Routing on longest matching prefixes," *IEEE Trans. on Networking*, vol. 4, pp. 86–97, February 1996.

[181] Q. Dong, S. Bannerjee, J. Wang, D. Agarwal, and A. Shukla, "Packet classifiers in ternary cams can be smaller," in *Proc. ACM SIGMETRICS'2006*, St. Malo, France, June 2006.

[182] A. Doria, E. Davies, and F. Kastenholz, "Requirements for inter-domain routing," IETF Internet-draft, 2006.

[183] B. Douskalis, *IP Telephony: The Integration of Robust VoIP Services*. Prentice-Hall, 2000.

[184] R. D. Doverspike, "Algorithms for multiplex bundling in a telecommunications network," *Operations Research*, vol. 39, no. 6, pp. 925–944, 1991.

[185] R. D. Doverspike, "A multi-layered model for survivability in intra-LATA transport networks," in *Proc. IEEE GLOBECOMŠ91*, pp. 2025–2031, 1991.

[186] R. D. Doverspike, S. J. Phillips, and J. R. Westbrook, "Transport network architectures in an IP world," in *Proc. IEEE INFOCOM'2000*, pp. 305–314, Tel Aviv, Israel, 2000.

[187] R. D. Doverspike and J. Yates, "Challenges for MPLS in optical network restoration," *IEEE Communications Magazine*, vol. 39, no. 2, pp. 89–96, February 2001.

[188] J. Doyle and J. Carroll, *Routing TCP/IP, Volume II*. Cisco Press, 2001.

[189] J. Doyle and J. Carroll, *Routing TCP/IP, Volume I, 2nd Edition*. Cisco Press, 2006.

[190] L. Dryburgh and J. Hewett, *Signaling System No. 7 (SS7/C7): Protocol, Architecture, and Services*. Cisco Press, 2005.

[191] J. Duato, S. Yalamanchili, and L. Ni, *Interconnection Networks: An Engineering Approach*. Morgan Kaufmann Publishers, 2002.

[192] A. M. Duguid, "Structural properties of switching networks," Brown University, Tech. Rep. BTL-7, 1959.

[193] D. Dunn, W. Grover, and M. MacGregor, "Comparison of k-shortest paths and maximum flow routing for network facility restoration," *IEEE Journal on Selected Areas in Communications*, vol. 12, pp. 88–99, 1994.

[194] B. Dunsmore and T. Skandier, *Telecommunications Technologies Reference*. Cisco Press, 2003.

[195] A. Dutta and J.-I. Lim, "A multiperiod capacity planning model for backbone computer communication networks," *Operations Research*, vol. 40, pp. 689–705, 1992.

[196] R. Dutta and G. N. Rouskas, "A survey of virtual topology design algorithms for wavelength routed optical networks," *Optical Networks Magazine*, vol. 1, no. 1, pp. 73–89, January 2000.

[197] Z. Dziong, M. Pióro, and U. Körner, "State-dependent routing in circuit-switched networks: A maximum reward approach," in *Proc. 12th International Teletraffic Congress(ITC12)*, Turin, Italy, 1988.

[198] W. Eatherton, G. Varghese, and Z. Dittia, "Tree bitmap: hardware/sofware IP lookups with incremental updates," *ACM SIGCOMM Computer Communication Review*, vol. 34, pp. 97–122, April 2004.

[199] N. Endo, T. Kozaki, T. Ohuchi, H. Kuwahara, and S. Gohara, "Shared buffer memory switch for an ATM exchange," *IEEE Trans. on Communications*, vol. 41, no. 1, pp. 237–245, January 1993.

[200] ENUM Forum. http://www.enum-forum.org/

[201] D. Eppstein, "Finding the k shortest paths," in *Proc. 35th IEEE Symposium on Foundations of Computer Science*, pp. 154–165, 1994.

[202] D. Eppstein, "Bibliography on k shortest paths and other "k best solutions" problems." http://www.ics.uci.edu/eppstein/bibs/kpath.bib

[203] M. Ericsson, M. G. C. Resende, and P. M. Pardalos, "A genetic algorithm for the weight setting problem in OSPF routing," *Journal of Combinatorial Optimization*, vol. 6, no. 3, pp. 229–333, 2002.

[204] A. K. Erlang, "The theory of probabilities and telephone conversations," *Nyt Tidsskrift for Matematik B*, vol. 20, 1909.

[205] A. K. Erlang, "Solution of some problems in the theory of probabilities of significance in automatic telephone exchanges," *Elektrotkeknikeren*, vol. 13, 1917.

[206] D. Estrin, "Policy requirements for inter administrative domain routing," *IETF RFC 1125*, November 1989. http://www.rfc-editor.org/rfc/rfc1125.txt

[207] European Radiocommunications Office. http://www.ero.dk/

[208] P. Faltstrom, "E.164 number and DNS," *IETF RFC 2916*, September 2000, (Made obsolete by RFC4632 [209]). http://www.rfc-editor.org/rfc/rfc2916.txt

[209] P. Faltstrom and M. Mealling, "The E.164 to Uniform Resource Identifiers (URI) Dynamic Delegation Discovery System (DDDS) Application (ENUM)," *IETF RFC 3761*, April 2004. http://www.rfc-editor.org/rfc/rfc3761.txt

[210] A. Farago, A. Szentesi, and B. Szviatovszki, "Allocation of administrative weights in PNNI," in *Proc. Networks'98*, pp. 621–625, Sorrento, Italy, 1998.

[211] A. Farrel, *The Internet and Its Protocols: A Comparative Approach*. Morgan Kaufmann Publishers, 2004.

[212] A. Farrel and I. Bryskin, *GMPLS: Architecture and Applications*. Morgan Kaufmann Publishers, 2006.

[213] A. Farrel, J.-P. Vasseur, and G. R. Ash, "A path computation element (PCE)-based architecture," *IETF RFC 4655*, August 2006. http://www.rfc-editor.org/rfc/rfc4655.txt

[214] A. Farrel, J.-P. Vasseur, and A. Ayyangar, "A framework for inter-domain multiprotocol label switching traffic engineering," *IETF RFC 4726*, November 2006. http://www.rfc-editor.org/rfc/rfc4726.txt

[215] A. Farrel (Ed.), D. Papadimitriou, J.-P. Vasseur, and A. Ayyangar, "Encoding of attributes for multiprotocol label switching (MPLS) label switched path (LSP) establishment using Resource ReserVation Protocol-Traffic Engineering (RSVP-TE)," *IETF RFC 4420*, February 2006. http://www.rfc-editor.org/rfc/rfc4420.txt

[216] N. Feamster, H. Balakrishnan, and J. Rexford, "Some foundational problems in interdomain routing," in *Proc. 3rd ACM SIGCOMM Workshop on Hot Topics in Networks (HotNets-III)*, San Diego, CA, November 2004.

[217] N. Feamster, J. Borkenhagen, and J. Rexford, "Guidelines for interdomain traffic engineering," *ACM Computer Communication Review*, vol. 33, no. 5, pp. 19–30, 2003.

[218] A. Feldmann, A. Greenberg, C. Lund, N. Reingold, and J. Rexford, "NetScope: Traffic engineering in IP networks," *IEEE Network*, vol. 14, no. 2, pp. 11–19, March/April 2000.

[219] A. Feldmann, A. Greenberg, C. Lund, N. Reingold, J. Rexford, and F. True, "Deriving traffic demands for operational IP networks: Methodology and experience," *IEEE/ACM Trans. on Networking*, vol. 9, pp. 265–279, 2001, (an earlier version appeared in *Proc. ACM SIGCOMM'2000*).

[220] A. Feldmann and S. Muthukrishnan, "Tradeoffs for packet classification," in *Proc. IEEE INFOCOM'2000*, vol. 3, pp. 1193–1202, March 2000.

[221] A. Feldmann, O. Maennel, Z. M. Mao, A. Berger, and B. Maggs, "Locating Internet routing instabilities," in *Proc. ACM SIGCOMM'04*, pp. 205–218, Portland, OR, 2004.

[222] W. Feng, D. D. Kandlur, D. Saha, and K. G. Shin, "Stochastic fair blue: A queue management algorithm for enforcing fairness," in *Proc. IEEE INFOCOM'2001*, pp. 1520–1529, Anchorage, AK, 2001.

[223] J. Filipiak, *Modeling and Control of Dynamic Flows in Communication Networks*. Springer-Verlag, 1988.

[224] S. Floyd, "Connections with multiple congested gateways in packet-switched networks, Part 1: One-way traffic," *ACM SIGCOMM Computer Communication Review*, vol. 21, no. 5, pp. 30–47, 1991.

[225] S. Floyd and K. Fall, "Router mechanisms to support end-to-end congestion control," February 1997, Networking Research Group, LBL Labs.

[226] S. Floyd and K. Fall, "Promoting the use of end-to-end congestion control in the internet," *IEEE/ACM Trans. on Networking*, vol. 7, pp. 458–472, 1999.

[227] S. Floyd and V. Jacobson, "Random early detection gateways for congestion avoidance," *IEEE/ACM Trans. on Networking*, vol. 1, pp. 397–413, August 1993.

[228] S. Floyd and V. Jacobson, "The synchronization of periodic routing messages," *IEEE/ACM Trans. on Networking*, vol. 2, pp. 122–136, 1994, (an earlier version appeared in ACM SIGCOMM'93).

[229] S. Floyd and E. Kohler, "Profile for datagram congestion control protocol (DCCP) congestion control ID 2: TCP-like congestion control," *IETF RFC 4341*, March 2006. http://www.rfc-editor.org/rfc/rfc4341.txt

[230] S. Floyd, E. Kohler, and J. Padhye, "Profile for datagram congestion control protocol (DCCP) congestion control ID 3: TCP-friendly rate control (TFRC)," *IETF RFC 4342*, March 2006. http://www.rfc-editor.org/rfc/rfc4342.txt

[231] L. R. Ford, "Network flow theory," The Rand Corporation, Santa Monica, Tech. Rep. Paper P-923, 1956.

[232] L. R. Ford and D. R. Fulkerson, "A suggested computation for maximal multicommodity network flows," *Management Science*, vol. 5, pp. 97–101, 1958.

[233] B. Fortz and M. Thorup, "Internet traffic engineering by optimizing OSPF weights," in *Proc. IEEE INFOCOM'2000*, pp. 519–528, Tel Aviv, Israel, March 2000.

[234] B. Fortz and M. Thorup, "Optimizing OSPF/IS-IS weights in a changing world," *IEEE Journal on Selected Areas in Communications*, vol. 20, pp. 756–767, May 2002.

[235] B. Fortz, J. Rexford, and M. Thorup, "Traffic engineering with traditional IP routing protocols," *IEEE Communication Magazine*, vol. 40, no. 10, pp. 118–124, October 2002.

[236] M. Foster, T. McGarry, and J. Yu, "Number portability in the Global Switched Telephone Network (GSTN): An overview," *IETF RFC 3482*, February 2003. http://www.rfc-editor.org/rfc/rfc3482.txt

[237] R. Fourer, "2003 software survey: Linear programming," *ORMS Today*, vol. 30, no. 6, pp. 34–43, December 2003.

[238] E. Fredkin, "Trie memory," *Communications of the ACM*, vol. 3, pp. 490–499, September 1960.

[239] V. Fuller, T. Li, J. Yu, and K.Varadhan, "Classless inter-domain routing (CIDR): An address assignment and aggregation strategy," *IETF RFC 1519*, September 1993, http://www.rfc-editor.org/rfc/rfc1519.txt.

[240] V. Fuller, T. Li, J. Yu, and K. Varadhan, "Supernetting: An address assignment and aggregation strategy," *IETF RFC 1338*, June 1992. http://www.rfc-editor.org/rfc/rfc1338.txt

[241] A. Fumagalli and L. Valcarenghi, "IP restoration vs. WDM protection: Is there an optimal choice?" *IEEE Network*, vol. 14, no. 6, pp. 34–41, November/December 2000.

[242] P. Gajowniczek, M. Pióro, A. Szentesi, J. Harmatos, and A. Jüttner, "Solving an OSPF routing problem with simulated allocation," in *Proc. 1st Polish-German Teletraffic Symposium*, pp. 177–184, Dresden, Germany, 2000.

[243] L. Gao and J. Rexford, "Stable Internet routing without global coordination," *IEEE/ACM Trans. on Networking*, vol. 9, no. 6, pp. 681–692, 2001.

[244] J. J. Garcia-Luna-Aceves, "A distributed, loop-free, shortest-path routing algorithm," in *Proc. IEEE INFOCOM'1988*, pp. 1125–1137, 1988.

[245] J. J. Garcia-Luna-Aceves, "Loop-free routing using diffusing computation," *IEEE Trans. on Networking*, vol. 1, pp. 130–141, 1993.

[246] A. Gencata and B. Mukherjee, "Virtual-topology adaptaion for WDM mesh networks under dynamic traffic," *IEEE/ACM Trans. on Networking*, vol. 11, no. 2, pp. 236–247, April 2003.

[247] T. George, B. Bidulock, R. Dantu, H. Schwarzbauer, and K. Morneault, "Signaling System 7 (SS7) Message Transfer Part 2 (MTP2)—User Peer-to-Peer Adaptation Layer (M2PA)," *IETF RFC 4165*, September 2005. http://www.rfc-editor.org/rfc/rfc4165.txt

[248] D. Ghosh, V. Sarangan, and R. Acharya, "Quality of service routing in IP networks," *IEEE Trans. on Multimedia*, vol. 3, pp. 200–208, 2001.

[249] R. J. Gibbens, P. Hunt, and F. P. Kelly, "Bistability in communication networks," in *Disorder in Physical Systems: a Volume in Honour of John M. Hammersley*. G. Grimmett and D. Welsh (Eds.), Oxford University Press, pp. 113–127, 1990.

[250] R. J. Gibbens and F. P. Kelly, "Dynamic routing in fully connected networks," *IMA Journal of Mathematical Control and Information*, vol. 7, 1990.

[251] R. J. Gibbens, F. P. Kelly, and P. B. Key, "Dynamic Alternate Routing—modeling and behaviour," in *Proc. 12th International Teletraffic Congress (ITC12)*, pp. 3.4A3.1–3.4A3.7, Turin, Italy, 1988.

[252] V. Gill, J. Heasley, and D. Meyer, "The generalized TTL security mechanism (GTSM)," *IETF RFC 3682*, February 2004. http://www.rfc-editor.org/rfc/rfc3682.txt

[253] A. Girard, *Routing and Dimensioning in Circuit-Switched Networks*. Addison-Wesley, 1990.

[254] A. Girard and B. Sansò, "Multicommodity flow models, failure propagation and reliable network design," *IEEE/ACM Trans. on Networking*, vol. 6, pp. 82–93, 1998.

[255] B. Gleeson, A. Lin, J. Heinanen, G. Armitage, and A. Malis, "A framework for IP based virtual private networks," *IETF RFC 2764*, February 2000. http://www.rfc-editor.org/rfc/rfc2764.txt

[256] J. Goldsmith and T. Wu, *Who Controls the Internet?: Illusions of a Borderless World*. Oxford University Press, 2006.

[257] S. J. Golestani, "A self-clocked fair queueing scheme for broadband applications," in *Proc. IEEE INFOCOM'94*, pp. 636–646, Toronto, Canada, June 1994.

[258] Google. http://www.google.com/

[259] S. Gorinsky, A. Kantawala, and J. Turner, "Link buffer sizing: A new look at the old problem," in *Proc. IEEE Symposium on Computers and Communications (ISCC 2005)*, pp. 507–514, June 2005.

[260] J. Gottlieb, A. Greenberg, J. Rexford, and J. Wang, "Automated provisioning of BGP customers," *IEEE Network*, vol. 17, no. 6, pp. 44–55, November/December 2003.

[261] E. Gourdin, "Optimizing Internet networks," *ORMS Today*, vol. 28, no. 2, pp. 48–49, April 2001.

[262] L. Gouveia, P. Amaro, A. F. de Sousa, and R. Valadas, "MPLS over WDM network design with packet level QoS constraints based on ILP models," in *Proc. IEEE INFOCOM'2003*, pp. 576–586, San Francisco, CA, 2003.

[263] E. Gray, *MPLS: Implementing the Technology*. Addison-Wesley, 2001.

[264] T. Griffin and G. Huston, "BGP wedgies," *IETF RFC 4264*, November 2005. http://www.rfc-editor.org/rfc/rfc4264.txt

[265] T. G. Griffin, F. B. Shepherd, and G. Wilfong, "The stable paths problem and interdomain routing," *IEEE/ACM Trans. on Networking*, vol. 10, pp. 231–243, 2002.

[266] B. Groskinsky, D. Medhi, and D. Tipper, "An investigation of adaptive capacity control schemes in a dynamic traffic environment," *IEICE Tran. on Communications*, vol. E84-B, pp. 263–274, February 2001.

[267] W. D. Grover, *Mesh-based Survivable Networks: Options and Strategies for Optical, MPLS, SONET and ATM Networking*. Prentice-Hall, 2004.

[268] M. Gryseels, K. Struyve, M. Pickavet, and P. Demeester, "Survivability design in multi-layer transport networks," in *Proc. 6th ICTS*, 1998.

[269] R. Guerin and A. Orda, "QoS-based routing in networks with inaccurate information: Theory and algorithms," *IEEE/ACM Trans. on Networking*, vol. 7, pp. 350–364, 1999.

[270] R. Guerin, A. Orda, and D. Williams, "QoS routing mechanisms and OSPF extensions," in *Proc. 2nd IEEE Global Internet Mini-Conference*, pp. 1903–1908, Phoenix, AZ, November 1997.

[271] J. Guichard, F. Le Faucheur, and J.-P. Vasseur, *Definitive MPLS Network Designs*. Cisco Press, 2005.

[272] L. Guo and I. Matta, "The war between mice and elephants," in *Proc. 9th IEEE International Conference on Network Protocols (ICNP'2001)*, pp. 180–188, Riverside, CA, November 2001.

[273] P. Gupta, "Algorithms for routing lookups and packet classification," Ph.D. dissertation, Stanford University, Palo Alto, CA, 2000.

[274] P. Gupta, S. Lin, and N. McKeown, "Routing lookups in hardware at memory access speeds," in *Proc. IEEE INFOCOM'98*, pp. 1240–1247, April 1998.

[275] P. Gupta and N. McKeown, "Packet classification on multiple fields," in *Proc. ACM SIGCOMM'99*, pp. 147–160, Cambridge, MA, 1999.

[276] P. Gupta and N. McKeown, "Packet classification using hierarchical intelligent cuttings," in *Proc. Hot Interconnects'99*, 1999.

[277] P. Gupta and N. McKeown, "Algorithms for packet classification," *IEEE Network*, vol. 15, no. 2, pp. 24–32, March/April 2001.

[278] A. Guttman, "R-trees: A dynamic index structure for spatial searching," in *Proc. ACM SIGMOD'84*, pp. 47–57, 1984.

[279] D. Haenschke, D. A. Kettler, and E. Oberer, "Network management and congestion in the U.S. telecommunications network," *IEEE Trans. on Communications*, vol. COM-29, pp. 376–385, 1981.

[280] J. Hagstrom, "Braess's paradox—web-site." http://tigger.uic.edu/˜hagstrom/Research/Braess/index.html

[281] T. Hain, "An IPv6 provider-independent global unicast address format," August 2006, Internet Draft. http://tools.ietf.org/wg/ipv6/draft-hain-ipv6-pi-addr-10.txt

[282] S. Halabi (with D. McPherson), *Internet Routing Architectures, 2nd Edition*. Cisco Press, 2000.

[283] R. Hanmer and M. Wu, "Traffic congestion patterns," in *Proc. 6th Annual Conference on Pattern Languages of Programs (PLoP99)*, Urbana, IL, August 1999.

[284] E. Hashem, "Analysis of random drop for gateway congestion control," Laboratory for Computer Science, Massachusetts Institute of Technology, Cambridge, MA, Tech. Rep. MIT-LCS-TR-465, 1989.

[285] B. M. Hauzeur, "A model for naming, addressing, and routing," *ACM Trans. Office Information Systems*, vol. 4, pp. 293–311, 1986.

[286] J. Hawkinson and T. Bates, "Guidelines for creation, selection, and registration of an autonomous system (AS)," *IETF RFC 1930*, March 1996. http://www.rfc-editor.org/rfc/rfc1930.txt

[287] J. F. Hayes, R. Breault, and M. K. Mehmet-Ali, "Performance analysis of a multicast switch," *IEEE Trans. on Communications*, vol. 39, no. 4, pp. 581–587, 1991.

[288] J. He, M. Bresler, M. Chiang, and J. Rexford, "Towards multi-layer traffic engineering: Optimization of congestion control and routing," to appear in *IEEE Journal on Selected Areas in Communications*.

[289] J. He, M. Chiang, and J. Rexford, "Can congestion control and traffic engineering be at odds?" in *Proc. IEEE GLOBECOM'2006*, San Francisco, CA, November/December 2006.

[290] C. L. Hedrick, "Routing Information Protocol," *IETF RFC 1058*, June 1988. http://www.rfc-editor.org/rfc/rfc1058.txt

[291] J. Heinanen and R. Guerin, "A single rate three color marker," *IETF RFC 2697*, September 1999, http://www.rfc-editor.org/rfc/rfc2697.txt.

[292] J. Heinanen and R. Guerin, "A two rate three color marker," *IETF RFC 2698*, September 1999, http://www.rfc-editor.org/rfc/rfc2698.txt.

[293] J. L. Hennessy and D. A. Patterson, *Computer Architecture: A Quantitative Approach, 4th Edition*. Morgan Kaufmann Publishers, 2006.

[294] M. Hidell, P. Sjodin, and O. Hagsand, "Router architectures," May 2004. http://www.imit.kth.se/~mahidell/pubs/networking04_tutorial_final.pdf

[295] C. V. Hollot, Y. Liu, V. Misra, and D. Towsley, "Unresponsive flows and AQM performance," in *Proc. IEEE INFOCOM'2003*, San Francisco, CA, 2003.

[296] J. E. Hopcraft and R. M. Karp, "An $n^{5/2}$ algorithm for maximum matching in bipartite graphs," *SIAM Journal of Computing*, vol. 2, pp. 225–231, 1973.

[297] P. Hosein, "An improved congestion control algorithm for telecommunications signaling networks," *Telecommunication Systems*, vol. 16, pp. 379–398, 2001.

[298] D. J. Houck, K. S. Meier-Hellstern, F. Saheban, and R. A. Skoog, "Failure and congestion propagation through signaling controls," in *Proc. 14th International Teletraffic Congress (ITC14)*, pp. 367–376, Antibes, France, 1994.

[299] A. Huang and S. Knauer, "Starlite: A wideband digital switch," in *Proc. IEEE GLOBECOM'84*, pp. 121–125, 1984.

[300] J. Y. Hui and T. Renner, "Queueing analysis for multicast packet switching," *IEEE Trans. on Communications*, vol. 42, no. 2-4, pp. 723–731, Febraury 1994.

[301] C. Huitema, *Routing in the Internet, 2nd Edition*. Prentice-Hall, 2000.

[302] G. Huston, Personal Communication, May 2006.

[303] G. Huston, "BGP routing table analysis reports," 2006. http://bgp.potaroo.net/

[304] G. Huston, "CIDR report," 2006. http://www.cidr-report.org/

[305] G. Huston, "Where's the money?—Internet interconnection and financial settlements," January 2005, The ISP Column (Internet Society). http://ispcolumn.isoc.org/2005-01/interconns.html

[306] R.-H. Hwang, "LLR routing in homogeneous VP-based ATM networks," in *Proc. IEEE INFOCOM'95*, pp. 587–593, 1995.

[307] R.-H. Hwang, J. F. Kurose, and D. F. Towsley, "MDP routing in ATM networks using the virtual path concept," in *Proc. IEEE INFOCOM'94*, pp. 1509–1517, 1994.

[308] G. Iannaccone, C.-N. Chuah, S. Bhattacharyya, and C. Diot, "Feasibility of IP restoration in a tier-1 backbone," *IEEE Network*, vol. 18, no. 2, pp. 13–19, March/April 2004.

[309] Industrial Numbering Committee/Alliance for Telecommunications Industry Solution. http://www.atis.org/inc/

[310] Industrial Numbering Committee/Alliance for Telecommunications Industry Solutions, "Numbering and dialing plan within the United States," ATIS-0300076; last issue date: August 19, 2005. http://www.atis.org/inc/Docs/Finaldocs/US-Numbering-Dialing-Plan-08-19-05.doc

[311] Intel, "Public network signalling tutorial." http://resource.intel.com/telecom/support/ss7/SS7tutorial/tutorial.html

[312] International Dialing Codes. http://www.timeanddate.com/worldclock/dialing.html

[313] Internet Assigned Number Authority (IANA), "Address family numbers." http://www.iana.org/assignments/address-family-numbers

[314] Internet Assigned Number Authority (IANA), "BGP capability codes." http://www.iana.org/assignments/capability-codes

[315] Internet Assigned Number Authority (IANA), "BGP parameters." http://www.iana.org/assignments/bgp-parameters

[316] Internet Assigned Number Authority (IANA), "IS-IS TLV codepoints." http://www.iana.org/assignments/isis-tlv-codepoints

[317] Internet Assigned Number Authority (IANA), "OSPF traffic engineering TLVs." http://www.iana.org/assignments/ospf-traffic-eng-tlvs

[318] Internet Assigned Number Authority (IANA), "RSVP parameters." http://www.iana.org/assignments/rsvp-parameters

[319] Internet Assigned Number Authority (IANA), "Special-use IPv4 addresses," *IETF RFC 3330*, September 2002. http://www.rfc-editor.org/rfc/rfc3330.txt

[320] P. Iovanna, M. Settembre, and R. Sabella, "A traffic engineering system for multi-layer networks based on the GMPLS paradigm," *IEEE Network*, vol. 17, no. 2, pp. 28–37, March/April 2003.

[321] ISO, "Intermediate system to intermediate system routing information exchange protocol for use in conjunction with the protocol for providing the connectionless-mode network service (iso 8473)," *ISO/IEC 10589*, February 1990, (also see [537]).

[322] ITU-T, "List of Signalling Area/Network Codes (SANC): Position on 1 December 2004—complement to ITU-T recommendation Q.708 (03/99)." http://www.itu.int/itudoc/itu-t/ob-lists/icc/q708_767.html

[323] ITU-T Recommendation E.164, "The International Public Telecommunication Numbering Plan," February 2005, International Telecommunications Union–Telecommunication Standardization Sector.

[324] ITU-T Recommendation E.171, "International Telephone Routing Plan," 1993, International Telecommunications Union–Telecommunication Standardization Sector.

[325] ITU-T Recommendation Q.706, "Specifications of Signaling System No. 7: Message transfer part signalling performance," March 1993, International Telecommunications Union–Telecommunication Standardization Sector.

[326] ITU-T Recommendation Q.709, "Specifications of Signaling System No. 7: Hypothetical signalling reference connection," March 1993, International Telecommunications Union–Telecommunication Standardization Sector.

[327] ITU-T Recommendation Q.761, "Signalling System No. 7—ISDN User Part: Functional description," September 1997, International Telecommunications Union–Telecommunication Standardization Sector.

[328] ITU-T Recommendation Q.762, "Signalling System No. 7—ISDN User Part: General functions of messages and signals," December 1999, International Telecommunications Union–Telecommunication Standardization Sector.

[329] ITU-T Recommendation Q.763, "Signalling System No. 7—ISDN User Part: Formats and codes," December 1999, International Telecommunications Union–Telecommunication Standardization Sector.

[330] ITU-T Recommendation Q.769.1, "Signalling System No. 7—ISDN User Part: Enhancements for the support of number portability," December 1999, International Telecommunications Union–Telecommunication Standardization Sector.

[331] ITU-T Recommendation Q.850, "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part," May 1998, International Telecommunications Union–Telecommunication Standardization Sector.

[332] S. Iyer and N. McKeown, "Techniques for fast shared memory switches," Stanford University, Stanford, CA, Tech. Rep. TR01-HPNG-081501, August 2001.

[333] A. R. Jacob, "A survey of fast packet switches," *ACM SIGCOMM Computer Communication Review*, vol. 20, no. 1, pp. 54–64, January 1990.

[334] V. Jacobson, "Congestion avoidance and control," in *Proc. ACM SIGCOMM'88*, pp. 314–329, 1988.

[335] V. Jacobson, "Modified TCP congestion control algorithm," April 1990, end2end-interest mailing list.

[336] J. Jaffe and F. Moss, "A responsive distributed routing algorithm for computer networks," *IEEE Trans. on Communications*, vol. 30, pp. 1758–1762, 1982.

[337] B. Jamoussi, Ed., L. Andersson, R. Callon, R. Dantu, L. Wu, P. Doolan, T. Worster, N. Feldman, A. Fredette, M. Girish, E. Gray, J. Heinanen, T. Kilty, and A. Malis, "Constraint-based LSP setup using LDP," *IETF RFC 3212*, January 2002. http://www.rfc-editor.org/rfc/rfc3212.txt

[338] Japan Internet Exchange: JPIX. http://www.jpix.ad.jp/

[339] L. Jereb, T. Jakab, and F. Unghváry, "Availability analysis of multi-layer optical networks," *Optical Networks*, vol. 3, pp. 84–95, 2002.

[340] L. Jereb, F. Unghváry, and T. Jakab, "A methodology for reliability analysis of multi-layer communication networks," *Optical Networks Magazine*, vol. 2, pp. 42–51, 2001.

[341] A. Johnston, S. Donovan, R. Sparks, C. Cunningham, and K. Summers, "Session initiation protocol (SIP) public switched telephone network (PSTN) call flows," *IETF RFC 3666*, December 2003. http://www.rfc-editor.org/rfc/rfc3666.txt

[342] Y. M. Joo and N. McKeown, "Doubling memory bandwidth for network buffers," in *Proc. IEEE INFOCOM'98*, pp. 808–815, April 1998.

[343] M. Joshi, A. Mansata, S. Talauliker, and C. Beard, "Design and analysis of multi-level active queue management mechanisms for emergency traffic," *Computer Communications*, vol. 28, pp. 162–173, February 2005.

[344] A. Jüttner, B. Szviatovszki, I. Mécs, and Z. Rajkó, "Lagrange relaxation based method for the QoS routing problem," in *Proc. IEEE INFOCOM'2001*, pp. 859–868, Anchorage, AK, April 2001.

[345] R. E. Kalaba and M. L. Juncosa, "Optimal design and utilization of communication networks," *Management Science*, vol. 3, no. 1, pp. 33–44, October 1956.

[346] H. Kanakia, "Datapath switch," AT&T Bell Labs Internal Memorandum, 1999.

[347] H. Kaplan, "Resilient IP network design," tutorial, 3rd IEEE International Workshop on IP Operations & Management, Kansas City, MO, October 2003.

[348] H. Kaplan, "NSR^{TM}: Non-stop routing technology," 2002. http://www.avici.com/technology/whitepapers/reliability_series/NSRTechnology.pdf

[349] K. Kar, M. Kodialam, and T. V. Lakshman, "Minimum interference routing of bandwidth guaranteed tunnels with MPLS traffic engineering applications," *IEEE Journal on Selected Areas in Communications*, vol. 18, pp. 2566–2579, 2000.

[350] T. Karagiannis, M. Molle, M. Faloutsos, and A. Broido, "A nonstationary Poisson view of Internet traffic," in *Proc. IEEE INFOCOM'2004*, Hong Kong, March 2004.

[351] M. Karol and M. Hluchyj, "Queueing in high performance packet switching," *IEEE Journal of Selected Areas in Communications*, vol. 6, pp. 1587–1597, Decemeber 1988.

[352] M. Karol, M. Hluchyj, and S. Morgan, "Input vs output queuing on a space division switch," *IEEE Trans. on Communications*, pp. 1347–1356, Decemeber 1987.

[353] R. Karp, U. Vazirani, and V. Vazirani, "An optimal algorithm for on-line bipartite matching," in *Proc. 22nd Annual ACM Symposium on Theory of Computing*, pp. 352–358, May 1990.

[354] D. Katz, "OSPF and IS-IS—a comparative anatomy," June 2000. http://www.nanog.org/mtg-0006/ppt/katz.ppt

[355] D. Katz, K. Kompella, and D. Yeung, "Traffic engineering (TE) extensions to OSPF version 2," *IETF RFC 3630*, September 2003. http://www.rfc-editor.org/rfc/rfc3630.txt

[356] J. S. Kaufman, "Blocking in a shared resource environment," *IEEE Trans. on Communications*, vol. COM-29, pp. 1474–1481, 1981.

[357] F. P. Kelly, "Blocking probabilities in large circuit-switched networks," *Advances in Applied Probability*, vol. 18, pp. 473–505, 1986.

[358] F. P. Kelly, "Routing in circuit-switched networks: Optimization, shadow prices and decentralization," *Advances in Applied Probability*, vol. 20, pp. 112–144, 1988.

[359] F. P. Kelly, "Routing and capacity allocation in networks with trunk reservation," *Mathematics of Operations Research*, vol. 15, pp. 771–793, 1990.

[360] F. P. Kelly, "Loss networks," *Annals of Applied Probability*, vol. 1, pp. 319–378, 1991.

[361] F. P. Kelly, "Network routing," *Philosophical Transactions of the Royal Society*, vol. A337, pp. 343–367, 1991.

[362] F. P. Kelly, "Charge and rate control for elastic traffic," *European Trans. on Telecommunications*, vol. 8, pp. 33–37, 1997.

[363] F. P. Kelly, "Fairness and stability of end-to-end congestion control," *European Journal of Control*, vol. 9, pp. 159–176, 2003.

[364] F. P. Kelly, A. K. Mauloo, and D. H. K. Tan, "Rate control for communication networks: Shadow prices, proportional fairness and stability," *Journal of the Operations Research Society*, vol. 49, pp. 2006–2017, 1997.

[365] S. Keshav, *An Engineering Approach to Computer Networking: ATM Networks, the Internet, and the Telephone Network*. Addison-Wesley, 1997.

[366] S. Keshav, "Naming, addressing, and forwarding reconsidered," August 2005. http://blizzard.cs.uwaterloo.ca/keshav/home/Papers/data/05/naming.pdf

[367] S. Keshav and R. Sharma, "Issues and trends in router design," *IEEE Communications Magazine*, vol. 36, no. 5, pp. 144–151, May 1998.

[368] A. Khanna and J. A. Zinky, "The revised ARPANET routing metric," in *Proc. ACM SIGCOMM'89*, pp. 45–56, September 1989.

[369] J. Klensin (Ed.), "The history and context of telephone number mapping (ENUM) operational decisions: Informational documents contributed to ITU-T Study Group 2 (SG2)," *IETF RFC 3245*, March 2002. http://www.rfc-editor.org/rfc/rfc3245.txt

[370] D. E. Knuth, *The Art of Computer Programming, Volume 3, Sorting and Searching, 3rd Edition*. Addison-Wesley, 1998.

[371] E. Kohler, M. Handley, and S. Floyd, "Datagram congestion control protocol (DCCP)," *IETF RFC 4340*, March 2006. http://www.rfc-editor.org/rfc/rfc4340.txt

[372] K. Kompella, Y. Rekhter, and L. Berger, "Link bundling in MPLS traffic engineering (TE)," *IETF RFC 4201*, October 2005. http://www.rfc-editor.org/rfc/rfc4201.txt

[373] K. Kompella and Y. Rekhter (Eds.), "Intermediate system to intermediate system (IS-IS) extensions in support of generalized multi-protocol label switching (GMPLS)," *IETF RFC 4205*, October 2005. http://www.rfc-editor.org/rfc/rfc4205.txt

[374] K. Kompella and Y. Rekhter (Eds.), "OSPF extensions in support of generalized multi-protocol label switching (GMPLS)," *IETF RFC 4203*, October 2005. http://www.rfc-editor.org/rfc/rfc4203.txt

[375] K. Kompella and Y. Rekhter (Eds.), "Routing extensions in support of generalized multi-protocol label switching (GMPLS)," *IETF RFC 4202*, October 2005. http://www.rfc-editor.org/rfc/rfc4202.txt

[376] K. Kompella and Y. Rekhter (Eds.), "Virtual private LAN service (VPLS) using BGP for auto-discovery and signaling," *IETF RFC 4761*, January 2007. http://www.rfc-editor.org/rfc/rfc4761.txt

[377] T. Korkmaz and M. Krunz, "Routing multimedia traffic with QoS guarantees," *IEEE Trans. on Multimedia*, vol. 5, pp. 429–443, 2003.

[378] A. Kortebi, L. Muscariello, S. Oueslati, and J. Roberts, "On the scalability of fair queueing," in *Proc. Third Workshop on Hot Topics in Networks (HotNets-III)*, San Diego, CA, November 2004.

[379] A. Kortebi, S. Oueslati, and J. Roberts, "Implicit service differentiation using deficit round robin," in *Proc. 19th International Teletraffic Congress (ITC19)*, Beijing, China, August 2005.

[380] B. Kraimeche and M. Schwartz, "Analysis of traffic access control strategies in integrated service networks," *IEEE Trans. on Communications*, vol. COM-33, pp. 1085–1093, 1985.

[381] D. Krioukov, "Routing → AS types." http://www.caida.org/analysis/routing/astypes/

[382] K. R. Krishnan, "Routing of telephone traffic to minimize network blocking," in *Proc. IEEE Conference on Decision and Control*, vol. 21, pp. 375–377, 1982.

[383] K. R. Krishnan, R. D. Doverspike, and C. D. Pack, "Improved survivability with multi-layer dynamic routing," *IEEE Communications Magazine*, vol. 33, no. 7, pp. 62–68, July 1995.

[384] B. Krithikaivasan, Y. Zeng, K. Deka, and D. Medhi, "ARCH-based traffic forecasting and dynamic bandwidth provisioning for periodically measured nonstationary traffic," *IEEE/ACM Trans. on Networking*, vol. 15, August 2007.

[385] R. S. Krupp, "Stabilization of alternate routing networks," in *Proc. IEEE ICC'82*, pp. 31.2.1–31.2.5, June 1982.

[386] J. Kurose and K. Ross, *Computer Networking: A Top-Down Approach Featuring the Internet: 3rd Edition*. Addison-Wesley, 2004.

[387] C. Labovitz, "Scalability of the Internet backbone routing infrastructure," Ph.D. dissertation, University of Michigan, Ann Arbor, MI, 1999.

[388] C. Labovitz, A. Ahuja, A. Bose, and F. Jahanian, "Delayed Internet routing convergence," *IEEE/ACM Trans. on Networking*, vol. 9, no. 3, pp. 293–306, 2001.

[389] C. Labovitz, A. Ahuja, and F. Jahanian, "Experimental study of Internet stability and wide-area network failures," in *Proc. Twenty-Ninth Annual International Symposium on Fault-Tolerant Computing (FTCS99)*, pp. 278–285, Madison, WI, June 1999.

[390] C. Labovitz, A. Ahuja, R. Wattenhofer, and S. Venkatachary, "The impact of Internet policy and topology on delayed routing convergence," in *Proc. IEEE INFOCOM'2001*, pp. 537–546, Anchorage, AK, 2001.

[391] C. Labovitz, G. R. Malan, and F. Jahanian, "Internet routing instability," *IEEE/ACM Trans. on Networking*, vol. 6, pp. 515–528, 1998.

[392] T. V. Lakshman and D. Stidialis, "High-speed policy based packet forwarding using efficient multidimensional range matching," in *Proc. ACM SIGCOMM'98*, pp. 203–214, Vancouver, Canada, September 1998.

[393] K. Lakshminarayanan, A. Rangarajan, and S. Venkatachary, "Algorithms for advanced packet classification with ternary CAMs," *ACM SIGCOMM Computer Communication Review*, vol. 35, no. 4, pp. 193–204, 2005.

[394] R. O. LaMaire and D. N. Serpanos, "Two dimensional round robin schedulers for packet switches with multiple input queues," *IEEE/ACM Trans. on Networking*, vol. 2, no. 5, pp. 471–482, October 1994.

[395] B. Lampson, V. Srinivasan, and G. Varghese, "IP lookups using multiway and multicolumn search," in *Proc. IEEE INFOCOM'98*, pp. 1248–1256, April 1998.

[396] J. Lang (Ed.), "Link management protocol (LMP)," *IETF RFC 4204*, October 2005. http://www.rfc-editor.org/rfc/rfc4204.txt

[397] L. Lasdon, *Optimization Theory for Large Systems*. Macmillan, 1970.

[398] M. Lasserre and V. Kompella (Eds.), "Virtual private LAN service (VPLS) using label distribution protocol (LDP) signaling," *IETF RFC 4762*, January 2007. http://www.rfc-editor.org/rfc/rfc4762.txt

[399] A. M. Law and W. D. Kelton, *Simulation Modeling and Analysis, 3rd Edition*. McGraw Hill, 2000.

[400] D. N. Lee, K. T. Medhi, J. L. Strand, R. G. Cox, and S. Chen, "Solving large telecommunications network loading problems," *AT&T Technical Journal*, vol. 68, no. 3, pp. 48–56, May/June 1989.

[401] W. Lee, M. Hluchyi, and P. Humblet, "Routing subject to quality of service constraints in integrated communication networks," *IEEE Network*, vol. 9, no. 4, pp. 46–55, July/August 1995.

[402] B. Leiner, "Policy issues in interconnecting networks," *IETF RFC 1124*, September 1989, (available only as postscript or PDF file). http://www.faqs.org/rfc/rfc1124.pdf

[403] B. M. Leiner, V. G. Cerf, D. D. Clark, R. E. Kahn, L. Kleinrock, D. C. Lynch, J. Postel, L. G. Roberts, and S. Wolff, "A brief history of the Internet," version 3.32, last revised 10 December, 2003. http://www.isoc.org/internet/history/brief.shtml

[404] W. E. Leland, M. S. Taqqu, W. Willinger, and D. V. Wilson, "On the self-similar nature of Ethernet traffic," in *Proc. ACM SIGCOMM'93*, pp. 183–193, September 1993.

[405] G. Li, D. Wang, C. Kalmanek, and R. Doverspike, "Efficient distributed restoration path selection for shared mesh restoration," *IEEE Trans. on Networking*, vol. 11, pp. 761–771, 2003.

[406] J. Li, H. Liu, and K. R. Sollins, "AFBV: a scalable packet classification algorithm." *ACM Computer Communication Review*, vol. 32, no. 3, p. 24, 2002.

[407] K. Li, F. Chang, D. Berger, and W. Fang, "Architectures for packet classification caching," in *Proc. IEEE ICON*, 2003.

[408] W. Liang and X. Shen, "Improved lightpath (wavelength) routing in large WDM networks," *IEEE Transactions on Communications*, vol. 48, pp. 1571–1579, 2000.

[409] W. Liang and X. Shen, "Finding multiple routing paths in wide-area WDM networks," *Computer Communications*, vol. 28, pp. 811–818, 2005.

[410] D. Lin and R. Morris, "Dynamics of random early detection," in *Proc. ACM SIGCOMM'97*, pp. 127–137, Cannes, France, September 1997.

[411] R. J. Lipton and J. F. Naughton, "Query size estimation by adaptive sampling," in *PODS 1990*, pp. 40–46, 1990.

[412] R. J. Lipton, J. F. Naughton, and D. A. Schneider, "Practical selectivity estimation through adaptive sampling," in *Proc. ACM SIGMOD'90*, pp. 1–11, 1990.

[413] Y. Liu, D. Tipper, and P. Sinpongwutikorn, "Approximating optimal spare capacity allocation by successive survivable routing," in *Proc. IEEE INFOCOM'2001*, pp. 699–798, Anchorage, AK, April 2001.

[414] Y. Liu, H. Zhang, W. Gong, and D. Towsley, "On the interaction between overlay routing and underlay routing," in *Proc. IEEE INFOCOM'2005*, pp. 2543–2553, Miami, FL, March 2005.

[415] J. Livingood and R. Shockey, "IANA registration for an enumservice containing public switched telephone network (PSTN) signaling information," *IETF RFC 4769*, November 2006. http://www.rfc-editor.org/rfc/rfc4769.txt

[416] Local Number Portability Administration Working Group. http://www.npac.com/cmas/

[417] Local Number Portability Administration Working Group, "LNPA WG interpretation of $N - 1$ carrier architecture, Version 5.0," January 17, 2005. http://www.npac.com/cmas/co_docs/ LNPA_WG_N-1_INTERPRETATION_v5.doc

[418] Local Number Portability Administration Working Group, "NP best practices matrix," 2005. http://www.npac.com/cmas/co_docs/LNPA_NP_Best_Practices_November_2005.doc

[419] London Internet Exchange, LINX. http://www.linx.net/

[420] K. Long, R. Tucker, S. Cheng, J. Ma, and R. Zhang, "A new approach to multi-layer network survivability: strategies, model and algorithm," *Journal of High Speed Networks*, vol. 10, no. 2, pp. 127–134, 2001.

[421] B. T. Loo, T. Condie, M. Garofalakis, D. E. Gay, J. M. Hellerstein, P. Maniatis, R. Ramakrishnan, T. Roscoe, and I. Stoica, "Declarative networking: Language, execution and optimization," in *Proc. ACM SIGMOD International Conference on Management of Data*, Chicago, June 2006.

[422] B. T. Loo, J. M. Hellerstein, and I. Stoica, "Customizable routing with declarative queries," in *Proc. 3rd Workshop on Hot Topics in Networks (ACM SIGCOMM HotNets-III)*, San Diego, CA, November 2004.

[423] B. T. Loo, J. M. Hellerstein, I. Stoica, and R. Ramakrishnan, "Declarative routing: Extensible routing with declarative queries," in *Proc. ACM SIGCOMM'05*, pp. 289–300, Philadelphia, PA, August 2005.

[424] E. Lorenz, "Predictability: Does the flap of a butterfly's wings in Brazil set off a tornado in Texas?" Washington, DC, December 1972, meeting of the American Association for the Advancement of Science.

[425] G. Lorenz, T. Moore, G. Manes, J. Hale, and S. Shenoi, "Securing SS7 telecommunications networks," in *Proc. 2001 IEEE Workshop on Information Assurance and Security*, pp. 273–278, West Point, NY, June 2001.

[426] P. Lothberg, "Sprintlink optical IP network," Joint NLANR Internet2 Techs Meeting, Las Cruces, NM, March, 1999. http://www.ncne.org/training/techs/1999/990307/Talks1/lothberg/sprint-i2/index.htm

[427] J. Lou and X. Shen, "Frame-based packet-mode scheduling for input-queued switches," *IEEE/ACM Trans. on Networking*, vol. 15, 2007.

[428] K. Lougheed and Y. Rekhter, "A border gateway protocol (BGP)," *IETF RFC 1105*, June 1989. http://www.rfc-editor.org/rfc/rfc1105.txt

[429] K. Lougheed and Y. Rekhter, "A border gateway protocol 3 (BGP-3)," *IETF RFC 1267*, October 1991. http://www.rfc-editor.org/rfc/rfc1267.txt

[430] J. Loughney, "Diameter command codes for third generation partnership project (3GPP) Release 5," *IETF RFC 3589*, September 2003. http://www.rfc-editor.org/rfc/rfc3589.txt

[431] J. Loughney, M. Tuexen (Ed.), and J. Pastor-Balbas, "Security considerations for signaling transport (SIGTRAN) protocols," *IETF RFC 3788*, June 2004. http://www.rfc-editor.org/rfc/rfc3788.txt

[432] K.-S. Lui and K. Nahrstedt, "Topology aggregation and routing in bandwidth-delay sensitive networks," in *Proc. IEEE GLOBECOM'2000*, pp. 410–414, San Francisco, CA, November–December 2000.

[433] C. Lund, S. Philips, and S. Reingold, "Fair prioritized scheduling in an input-buffered switch," in *Proc. International IFIP-IEEE Conference on Broadband Communications*, pp. 358–369, April 1996.

[434] J. Luo, J. Xie, R. Hao, and X. Li, "An approach to accelerate convergence for path vector protocol," in *Proc. IEEE GLOBECOM'2002*, pp. 2390–2394, Taipei, Taiwan, November 2002.

[435] Q. Ma and P. Steenkiste, "Quality-of-service routing for traffic with performance guarantees," in *Proc. IFIP Fifth International Workshop on Quality of Service (IWQoS'97)*, pp. 115–126, New York, May 1997.

[436] Q. Ma and P. Steenkiste, "Supporting dynamic inter-class resource sharing: A multi-class QoS routing algorithm," in *Proc. IEEE INFOCOM'99*, pp. 649–660, New York, March 1999.

[437] A. Magi, A. Szentesi, and B. Szviatovszki, "Analysis of link cost functions for PNNI routing," *Computer Networks*, vol. 34, no. 1, pp. 181–197, July 2000.

[438] P. Mahadevan, D. Krioukov, M. Fomenkov, B. Huffaker, X. Dimitropoulos, k.c. Claffy, and A. Vahdat, "The Internet AS-level topology: Three data sources and one definitive metric," *ACM SIGCOMM Computer Communication Review*, vol. 36, no. 1, pp. 17–26, January 2006.

[439] R. Mahajan, D. Wetherall, and T. Anderson, "Towards coordinated interdomain traffic engineering," in *Proc. 3rd ACM SIGCOMM Workshop on Hot Topics in Networks (HotNets-III)*, San Diego, CA, November 2004.

[440] A. Malis and W. Simpson, "PPP over SONET/SDH," *IETF RFC 2615*, June 1999. http://www.rfc-editor.org/rfc/rfc2615.txt

[441] G. Malkin, "RIP version 2 protocol applicability statement," *IETF RFC 1722*, November 1994. http://www.rfc-editor.org/rfc/rfc1722.txt

[442] G. Malkin, "RIP Version 2," *IETF RFC 2453*, November 1998. http://www.rfc-editor.org/rfc/rfc2453.txt

[443] G. Malkin and R. Minnear, "RIPng for IPv6," *IETF RFC 2080*, January 1997. http://www.rfc-editor.org/rfc/rfc2080.txt

[444] T. Mallory and A.Kullberg, "Incremental updating of the Internet checksum," *IETF RFC 1141*, January 1990, http://www.rfc-editor.org/rfc/rfc1141.txt.

[445] D. A. Maltz, G. Xie, J. Zhan, H. Zhang, G. Hjálmtýsson, and A. Greenberg, "Routing design in operational networks: A look from the inside," in *Proc. ACM SIGCOMM'2004*, pp. 27–40, Portland, OR, August 2004.

[446] P. Manohar, D. Manjunath, and R. K. Shevgaonkar, "Routing and wavelength assignment in optical networks from edge disjoint paths algorithms," *IEEE Communication Letters*, vol. 6, no. 5, pp. 211–213, May 2002.

[447] J. D. Marchland, "Braess's paradox of traffic flow," *Transportation Research*, vol. 4, pp. 391–394, 1970.

[448] P. Marques, R. Bonica, L. Fang, L. Martini, R. Raszuk, K. Patel, and J. Guichard, "Constrained route distribution for border gateway protocol/multiprotocol label switching (BGP/MPLS) internet protocol (IP) virtual private networks (VPNs)," *IETF RFC 4684*, November 2006. http://www.rfc-editor.org/rfc/rfc4684.txt

[449] L. Martini (Ed.), E. Rosen, N. El-Aawar, and G. Heron, "Encapsulation methods for transport of Ethernet over MPLS networks," *IETF RFC 4448*, April 2006. http://www.rfc-editor.org/rfc/rfc4448.txt

[450] M. Mathis, J. Semke, J. Mahdavi, and T. Ott, "The macroscopic behavior of the TCP congestion avoidance algorithm," *ACM SIGCOMM Computer Communication Review*, vol. 27, no. 3, pp. 67–82, July 1997.

[451] M. May, J. Bolot, C. Diot, and B. Lyles, "Reasons not to deploy RED," in *Proc. 7th International Workshop on Quality of Service (IWQoS'99)*, London, UK, 1999.

[452] R. Mazumdar, L. G. Mason, and C. Douligeris, "Fairness in network optimal flow control: optimality of product forms," *IEEE Trans. on Communications*, vol. 39, pp. 775–782, 1991.

[453] A. McAuley and P. Francis, "Fast routing table lookup using cams," in *Proc. IEEE INFOCOM'93*, pp. 1382–1391, 1993.

[454] C. J. McCallum, "An algorithm for finding the *k* shortest paths in a network," *Bell Laboratories Technical Memorandum*, 1973.

[455] S. McCreary and K. C. Claffy, "Trends in wide area IP traffic patterns," Cooperative Association for Internet Data Analysis - CAIDA, Tech. Rep., 2000.

[456] D. McIntosh, "Building a PacketCable network: A comprehensive design for the delivery of VoIP services," in *Society of Cable Telecommunications Engineers (SCTE) Cable Tec-Expo 2002*, 2002. http://www.packetcable.com/downloads/SCTE02_VOIP_Services.pdf

[457] D. McIntosh and M. Stachelek, "VoIP services: PacketCable delivers a comprehensive system," in *National Cable & Telecommunications Association—National Meeting (NCTA 2002)*, New Orleans, LA, 2002. http://www.packetcable.com/downloads/NCTA02_VOIP_Services.pdf

[458] N. McKeown, "Scheduling algorithms for input-queued cell switches," Ph.D. dissertation, University of California, Berkeley, CA, May 1995.

[459] N. McKeown, "A fast switched backplane for a gigabit switched router," *Business Communications Review*, vol. 27, no. 12, pp. 188–201, December 1997.

[460] N. McKeown, "The iSLIP scheduling algorithm for input-queued switches," *IEEE/ACM Trans. on Networking*, vol. 7, no. 2, pp. 188–201, April 1999.

[461] J. McQuillan, "Adaptive routing algorithms for distributed computer networks," BBN Report No. 2831, Bolk Beranek & Newman, May 1974.

[462] J. M. McQuillan, G. Falk, and I. Richer, "A review of the development and performance of the ARPANET routing algorithm," *IEEE Trans. on Communications*, vol. COM-26, pp. 1802–1811, 1978.

[463] J. M. McQuillan, I. Richer, and E. Rosen, "The new routing algorithm for the ARPANET," *IEEE Trans. on Communications*, vol. COM-28, pp. 711–719, 1980.

[464] J. M. McQuillan and D. C. Walden, "The ARPA network design decisions," *Computer Networks*, vol. 1, pp. 243–289, 1977.

[465] D. Medhi, "Traffic restoration design for self-healing networks," *AT&T Bell Laboratories—Technical Memorandum*, 1989.

[466] D. Medhi, "Diverse routing for survivability in a fiber-based sparse network," in *Proc. IEEE ICC'91*, pp. 672–676, Denver, Colorado, June 1991.

[467] D. Medhi, "A unified framework for survivable telecommunications network design," in *Proc. IEEE ICC'92*, pp. 411–415, Chicago, Illinois, June 1992.

[468] D. Medhi, "A unified approach to network survivability for teletraffic networks: Models, algorithms and analysis," *IEEE Trans. on Communications*, vol. 42, pp. 534–548, 1994.

[469] D. Medhi, "Quality of Service (QoS) routing computation with path caching: A framework and network performance," *IEEE Communications Magazine*, vol. 40, no. 12, pp. 106–113, December 2002.

[470] D. Medhi, "Network restoration," in *Handbook of Optimization in Telecommunications*, M. G. C. Resende and P. Pardalos (Eds.), Springer, pp. 801–836, 2006.

[471] D. Medhi and S. Guptan, "Network dimensioning and performance of multi-service, multi-rate loss networks with dynamic routing," *IEEE/ACM Trans. on Networking*, vol. 5, pp. 944–957, 1997.

[472] D. Medhi, S. Jain, D. Shenoy Ramam, S. R. Thirumalasetty, M. Saddi, and F. Summa, "A network management framework for multi-layered network survivability: An overview," in *Proc. IEEE/IFIP Conference on Integrated Network Management (IM'2001)*, pp. 293–296, Seattle, WA, May 2001.

[473] D. Medhi and R. Khurana, "Optimization and performance of network restoration schemes for wide-area teletraffic networks," *Journal of Network and Systems Management*, vol. 3, no. 3, pp. 265–294, 1995.

[474] D. Medhi and C.-T. Lu, "Dimensioning and computational results for wide-area broadband networks with two-level dynamic routing," *IEICE Trans. on Communications*, vol. E80-B, no. 2, pp. 273–281, 1997.

[475] D. Medhi and S. Sankarappan, "Impact of a transmission facility link failure on dynamic call routing circuit-switched networks under various circuit layout policies," *Journal of Network and Systems Management*, vol. 1, pp. 143–169, 1993.

[476] D. Medhi and I. Sukiman, "Admission control and dynamic routing schemes for wide-area broadband networks: Their interaction and network performance," in *Proc. IFIP-IEEE International Conference on Broadband Communications*, pp. 99–110, Montreal, Canada, April 1996.

[477] D. Medhi and I. Sukiman, "Multi-service dynamic QoS routing schemes with call admission control: A comparative study," *Journal of Network & Systems Management*, vol. 8, no. 2, pp. 157–190, June 2000.

[478] D. Medhi and D. Tipper, "Multi-layered network survivability—models, analysis, architecture, framework and implementation: An overview," in *Proc. DARPA Information Survivability Conference and Exposition (DISCEX'2000)*, vol. I, pp. 173–186, Hilton Head Island, South Carolina, USA, January 2000.

[479] D. Medhi and D. Tipper, "Some approaches to solving a multi-hour broadband network capacity design problem with single-path routing," *Telecommunication Systems*, vol. 13, pp. 269–291, 2000.

[480] D. Medhi, A. van de Liefvoort, and C. S. Reece, "Performance analysis of a digital link with heterogeneous multislot traffic," *IEEE Trans. on Communications*, vol. 43, pp. 968–976, March 1995.

[481] J. Medhi, *Stochastic Models in Queueing Theory, 2nd Edition*. Academic Press, 2003.

[482] A. Mekkittikul and N. McKeown, "A starvation-free algorithm for achieving 100% throughput in an input-queued switch," in *Proc. IEEE ICCCN'96*, pp. 226–231, October 1996.

[483] A. Mekkittikul and N. McKeown, "A practical scheduling algorithm to achieve 100% throughput in input-queued switches," in *Proc. IEEE INFOCOM'98*, pp. 792–799, March 1998.

[484] P. Merlin and A. Segall, "A failsafe distributed routing protocol," *IEEE Trans. on Communications*, vol. COM-27, pp. 1280–1288, 1979.

[485] D. Meyer and K. Patel, "BGP-4 protocol analysis," *IETF RFC 4274*, January 2006. http://www.rfc-editor.org/rfc/rfc4274.txt

[486] D. Meyer, J. Schmitz, C. Orange, M. Prior, and C. Alaettinoglu, "Using RPSL in practice," *IETF RFC 2650*, August 1999. http://www.rfc-editor.org/rfc/rfc2650.txt

[487] MFA Forum, "Voice over MPLS bearer transport implementation agreement," MPLS Forum 1.0, July 27, 2001. http://www.mfaforum.org/tech/MPLS1.0.pdf

[488] D. L. Mills, "A maze of twisty, turney passages–routing in the Internet swamp (and other adventures)," last updated May 18, 2005. http://www.cis.udel.edu/mills/database/brief/goat/goat.pdf

[489] D. L. Mills, "Exterior gateway protocol formal specification," *IETF RFC 904*, April 1984. http://www.rfc-editor.org/rfc/rfc904.txt

[490] D. L. Mills, "Autonomous confederations," *IETF RFC 975*, February 1986. http://www.rfc-editor.org/rfc/rfc975.txt

[491] Ministry of Communications and Information Technology, Department of Telecommunications, Government of India, "National numbering plan," April 2003. http://www.dot.gov.in/numbering_plan/nnp2003.pdf

[492] M. Minoux, "Optimal synthesis of a network with non-simultaneous multicommodity flow requirements," in *Studies in Graphs and Discrete Programming*, P. Hansen (Ed.), North-Holland, pp. 269–277, 1981.

[493] M. Minoux, "Discrete cost multicommodity network optimization problems and exact solution methods," *Annals of Operations Research*, vol. 106, pp. 19–46, 2001.

[494] N. F. Mir, *Computer and Communication Networks*. Prentice Hall, 2007.

[495] V. Misra, W.-B. Gong, and D. Towsley, "Fluid-based analysis of a network of AQM routers supporting TCP flows with an application to RED," in *Proc. ACM SIGCOMM'2000*, pp. 151–160, Stockholm, Sweden, August–September 2000.

[496] D. Mitra and J. B. Seery, "Comparative evaluations of randomized and dynamic routing strategies for circuit-switched networks," *IEEE Trans. on Communications*, vol. 39, pp. 102–116, 1990.

[497] P. V. Mockapetris, "Domain names—Concepts and facilities," *IETF RFC 1034*, November 1987, (originally as RFC882, published in November 1983). http://www.rfc-editor.org/rfc/rfc1034.txt

[498] G. Mohan, C. Siva Ram Murthy, and A. K. Somani, "Efficient algorithms for routing dependable connections in WDM optical networks," *IEEE/ACM Trans. on Networking*, vol. 9, pp. 553–566, 2001.

[499] E. F. Moore, "The shortest path through a maze," in *Proc. International Symposium on the Theory of Switching*, pp. 285–292, Cambridge, MA, April 1959.

[500] T. Moore, J. Kosloff, J. Keller, G. Manes, and S. Shenoi, "Signaling system 7 (SS7) network security," in *45th Midwest Symposium on Circuits and Systems (MWSCAS-2002)*, vol. 3, pp. 496–499, August 2002.

[501] K. Morneault, R. Dantu, G. Sidebottom, B. Bidulock, and J. Heitz, "Signaling System 7 (SS7) Message Transfer Part 2 (MTP2)—user adaptation layer," *IETF RFC 3331*, September 2002. http://www.rfc-editor.org/rfc/rfc3331.txt

[502] D. R. Morrison, "PATRICIA—practical algorithm to retrieve information coded in alphanumeric," *Journal of ACM*, vol. 15, pp. 514–534, October 1968.

[503] J. Moy, "The OSPF specification," *IETF RFC 1131*, (available only as postscript or PDF file). http://www.faqs.org/rfc/rfc1131.pdf

[504] J. Moy, *OSPF: Anatomy of An Internet Routing Protocol*. Addison-Wesley, 1998.

[505] J. Moy, "OSPF version 2," *IETF RFC 2328*, April 1998. http://www.rfc-editor.org/rfc/rfc2328.txt

[506] W. Mühlbauer, A. Feldmann, O. Maennel, M. Roughan, and S. Uhlig, "Building an AS-topology model that captures route diversity," in *Proc. ACM SIGCOMM'2006*, Pisa, Italy, September 2006.

[507] A. Mukherjee, "On the dynamics and significance of low frequency components of Internet load," *Journal of Internetworking: Research and Experience*, vol. 5, pp. 163–205, 1994.

[508] A. Mukherjee, L. H. Landweber, and J. C. Strikwerda, "Simultaneous analysis of flow and error control strategies with congestion-dependent errors," in *Proc. ACM SIGMETRICS'90*, pp. 86–95, Boulder, CO, 1990.

[509] B. Mukherjee, *Optical Communication Networks*. McGraw-Hill, 1997.

[510] B. Mukherjee, *Optical WDM Networks*. Springer, 2006.

[511] B. Mukherjee, D. Banerjee, S. Ramamurthy, and A. Mukherjee, "Some principles for designing a wide-area WDM optical network," *IEEE/ACM Trans. on Networking*, vol. 4, pp. 684–696, 1996.

[512] B. Mukherjee and H. Zang, "Survey of State of the Art," in *WDM Optical Networks: Principles and Practice*, K. M. Sivalingam and S. Subramaniam (Eds.), Springer, 2002.

[513] S. Murphy, "BGP security vulnerabilities analysis," *IETF RFC 4272*, January 2006. http://www.rfc-editor.org/rfc/rfc4272.txt

[514] S. Murphy, M. Badger, and B. Wellington, "OSPF with digital signatures," *IETF RFC 2154*, June 1997. http://www.rfc-editor.org/rfc/rfc2154.txt

[515] K. Murty, *Linear Programming*. Wiley, 1983.

[516] R. Nagarajan, "Threshold-based congestion control for SS7 signaling network in the GSM digital cellular network," *IEEE Trans. Vehicular Technology*, vol. 48, pp. 385–396, 1999.

[517] A. Nagarajan (Ed.), "Generic requirements for provider provisioned virtual private networks (PPVPN)," *IETF RFC 3809*, June 2004. http://www.rfc-editor.org/rfc/rfc3809.txt

[518] K. Nahrstedt and S. Chen, "Coexistence of QoS and best effort flows—routing and scheduling," in *Proc. 10th IEEE Tyrrhenian International Workshop on Digital Communications: Multimedia Communications*, Ischia, Italy, September 1998.

[519] Y. Nakagome and H. Mori, "Flexible routing in the global communication network," in *Proc. 7th International Teletraffic Congress (ITC7)*, pp. 426.1–426.8, Stockholm, Sweden, 1973.

[520] K. S. Narendra, "Recent developments in learning automata: Theory and applications," in *Proc. 3rd Yale Workshop on Applications of Adaptive Systems Theory*, vol. 3, pp. 90–99, 1983.

[521] K. S. Narendra, E. A. Wright, and L. G. Mason, "Application of learning automata to telephone traffic routing schemes," *IEEE Trans. on Systems, Man and Cybernatics*, vol. SMC-7, pp. 785–792, 1977.

[522] National Communication Systems, "SMS over SS7," Technical Information Bulletin 03-2, December 2003.

[523] National Emergency Number Association. http://www.nena.org/

[524] S. Nelakuditi, Z.-L. Zhang, R. P. Tsang, and D. H. C. Du, "Adaptive proportional routing: a localized QoS routing approach," *IEEE/ACM Trans. on Networking*, vol. 10, pp. 790–804, 2002.

[525] Network Simulator—ns-2. http://www.isi.edu/nsnam/ns/

[526] NeuStar, "ETNS register: European telephone numbering space." http://www.etns.org/

[527] P. Newman, G. Minshall, and L. Houston, "IP switching and gigabit routers," *IEEE Communications Magazine*, January 1997.

[528] J. Nievergelt, H. Hinterberger, and K. C. Sevcik, "The grid file: An adaptable, symmetric multikey file structure," *ACM Trans. Database Systems*, vol. 9, no. 1, pp. 38–71, 1984.

[529] S. Nilsson and G. Karlsson, "IP-address lookup using LC-tries," *IEEE Journal of Selected Areas in Communications*, vol. 17, pp. 1083–1092, June 1999.

[530] North American Network Operators' Group. http://www.nanog.org/

[531] North American Numbering Plan Administration (NANPA). http://www.nanpa.com/

[532] A. Nucci, B. Schroeder, S. Bhattacharyya, N. Taft, and C. Diot, "IGP link weight assignment for transient link failures," in *Proc. 18th International Teletraffic Congress (ITC18)*, pp. 321–330, Berlin, Germany, September 2003.

[533] T. Oetiker and D. Rand, "MRTG: Multi Router Traffic Grapher." http://www.mrtg.org/

[534] Y. Oie, T. Suda, M. Murata, D. Kolson, and H. Miyahara, "Survey of switching techniques in high speed networks and their performance," in *Proc. IEEE INFOCOM'90*, pp. 1242–1251, June 1990.

[535] Open Network Laboratory. http://onl.arl.wustl.edu/

[536] OPNET. http://www.opnet.com/

[537] D. Oran, "OSI IS-IS intra-domain routing protocol," *IETF RFC 1142*, February 1990, (re-publication of [321]). http://www.rfc-editor.org/rfc/rfc1142.txt

[538] S. Orlowski and R. Wessäly, "Comparing restoration concept using optimal network configurations with integrated hardware and routing decisions," in *Proc. Design of Reliable Communication Networks (DRCN'2003)*, pp. 15–22, Banff, Canada, 2003.

[539] T. J. Ott and K. R. Krishnan, "State dependent routing of telephone traffic and the use of separable routing schemes," in *Proc. 11th International Teletraffic Congress (ITC13)*, pp. 5.1.A.5.1–5.1A.5.6, Kyoto, Japan, 1985.

[540] A. Ozdaglar and D. Berteskas, "Routing and wavelength assignment in optical networks," *IEEE/ACM Trans. on Networking*, vol. 11, no. 2, pp. 259–272, April 2003.

[541] P. Pan, G. Swallow, and A. Atlas (Eds.), "Fast reroute extensions to RSVP-TE for LSP tunnels," *IETF RFC 4090*, May 2005. http://www.rfc-editor.org/rfc/rfc4090.txt

[542] L. Papadimitriou (Ed.), "Generalized multi-protocol label switching (GMPLS) signaling extensions for G.709 optical transport networks control," *IETF RFC 4328*, January 2006. http://www.rfc-editor.org/rfc/rfc4328.txt

[543] A. K. Parekh and R. G. Gallager, "A generalized processor sharing approach to flow control in integrated services networks: The single node case," *IEEE/ACM Trans. on Networking*, vol. 1, pp. 344–357, June 1993.

[544] A. K. Parekh and R. G. Gallager, "A generalized processor sharing approach to flow control in integrated services networks: The multiple node case," *IEEE/ACM Trans. on Networking*, vol. 2, pp. 137–150, April 1994.

[545] K. Park and W. Willinger (Ed.), *Self-Similar Network Traffic and Performance Evaluation*. Wiley-Interscience, 2000.

[546] W. R. Parkhurst, *Cisco BGP-4 Command & Configuration Handbook*. Cisco Press, 2001.

[547] C. Partridge, P. P. Carvey, E. Burgess, I. Castineyra, T. Clarke, L. Graham, M. Hathaway, P. Herman, A. K. S. Kohalmi, T. Ma, J. Mcallen, T. Mendez, W. C. Milliken, R. Pettyjohn, J. Rokosz, J. Seeger, M. Sollins, S. Storch, B. Tober, G. D. Troxel, D. Waitzman, and S. Winterble, "A 50-Gb/s IP router," *IEEE/ACM Trans. on Networking*, vol. 6, pp. 237–248, 1998.

[548] C. Partridge, *Gigabit Networking*. Addison-Wesley, 1994.

[549] M. M. B. Pascoal, V. Captivo, and J. C. N. Climaco, "An algorithm for ranking quickest simple paths," *Computers & Operations Research*, vol. 32, pp. 509–520, 2005.

[550] V. Paxson, "End-to-end routing behavior in the Internet," *IEEE/ACM Trans. on Networking*, vol. 5, pp. 601–615, 1997.

[551] V. Paxson and S. Floyd, "Wide-area traffic: The failure of Poisson modeling," *IEEE/ACM Trans. on Networking*, vol. 3, pp. 226–244, 1995.

[552] Peering Database. http://www.peeringdb.com/

[553] D. Pei, M. Azuma, D. Massey, and L. Zhang, "BGP-RCN: Improving BGP convergence through root cause notification," *Computer Networks*, vol. 48, no. 2, pp. 175–194, 2005.

[554] D. Pei, B. Zhang, D. Massey, and L. Zhang, "An analysis of convergence delay in path vector routing protocols," *Computer Networks*, vol. 50, no. 3, pp. 398–421, 2006.

[555] D. Pei, X. Zhao, L. Wang, D. Massey, A. Mankin, F. Wu, and L. Zhang, "Improving BGP convergence through assertions approach," in *Proc. IEEE INFOCOM'2002*, 2002.

[556] Performance Technologies, Inc., "SS7/IP Interworking Tutorial," 2001. http://www.pt.com/tutorials/iptelephony/

[557] Performance Technologies, Inc., "Tutorial on Signaling System 7 (SS7)," 2003. http://www.pt.com/tutorials/ss7/

[558] R. Perlman, "What is the fundamental difference between OSPF and IS-IS," August 31, 2002. http://archives.neohapsis.com/archives/microsoft/various/ospf/2002-q3/0303.html

[559] R. Perlman, *Interconnections, 2nd Edition*. Addison-Wesley, 2000.

[560] H. G. Perros, *Connection-Oriented Networks: SONET/SDH, ATM, MPLS and Optical Networks*. John Wiley & Sons, 2005.

[561] J. Peterson, "enumservice registration for session initiation protocol (SIP) addresses-of-record," *IETF RFC 3764*, April 2004. http://www.rfc-editor.org/rfc/rfc3764.txt

[562] L. Peterson and B. Davie, *Computer Networks—A Systems Approach, 4th Edition*. Morgan Kaufmann Publishers, 2007.

[563] M. Pickavet and P. Demeester, "Long-term planning of WDM networks: A comparison between single-period and multi-period techniques," *Photonic Network Communications*, vol. 1, no. 4, pp. 331–346, December 1999.

[564] M. Pióro and D. Medhi, *Routing, Flow, and Capacity Design in Communication and Computer Networks*. Morgan Kaufmann Publishers, 2004.

[565] M. Pióro, A. Szentesi, J. Harmatos, A. Jüttner, P. Gajowniczek, and S. Kozdrowski, "On open shortest path first related network optimization problems," in *Proc. IFIP ATM IP 2000*, Ilkley, England, July 2000, (see also [566]).

[566] M. Pióro, A. Szentesi, J. Harmatos, A. Jüttner, P. Gajowniczek, and S. Kozdrowski, "On open shortest path first related network optimization problems," *Performance Evaluation*, vol. 48, pp. 201–223, 2002, (see [565] for a preliminary version).

[567] D. M. Piscitello and A. L. Chapin, *Open Systems Networking: TCP/IP and OSI*. Addison-Wesley, 1993.

[568] Planetlab. http://www.planet-lab.org/

[569] PMC-Sierra, Inc., "A new architecture for switch and router design," v2r1, December 22, 1999. http://www.pmc-sierra.com/pressRoom/pdf/lcs_wp.pdf

[570] B. Prabhakar, N. McKeown, and R. Ahuja, "Multicast scheduling for input-queued switches," *IEEE Journal of Selected Areas in Communications*, vol. 15, no. 5, pp. 855–866, 1997.

[571] R. Pužmanová, *Routing and Switching*. Addison-Wesley, 2002.

[572] L. Qiu, G. Varghese, and S. Suri, "Fast firewall implementations for software-based and hardware-based routers," in *Proc. ACM SIGMETRICS'2001*, pp. 344–345, 2001.

[573] B. Rajagopalan, J. Luciani, and D. Awduche, "IP over optical networks: A framework," *IETF RFC 3717*, March 2004. http://www.rfc-editor.org/rfc/rfc3717.txt

[574] K. G. Ramakrishnan and M. A. Rodrigues, "Optimal routing in shortest-path data networks," *Bell Labs Technical Journal*, vol. 6, no. 1, pp. 117–138, 2001.

[575] K. K. Ramakrishnan and R. Jain, "A binary feedback scheme for congestion avoidance in computer networks with a connectionless network layer," in *Proc. ACM SIGCOMM'88*, pp. 303–313, August 1988.

[576] R. Ramamurthy and A. Ramakrishnan, "Virtual topology reconfiguration of wavelength-routed optical WDM networks," in *Proc. of IEEE GLOBECOM'2000*, pp. 1269–1275, San Francisco, CA, November 2000.

[577] K. Ramasamy, "Efficient storage and query processing of set-valued attributes," Ph.D. dissertation, University of Wisconsin, Madison, WI, 2001.

[578] K. Ramasamy, J. M. Patel, R. Kaushik, and J. F. Naughton, "Set containment joins: The good, the bad and the ugly," in *Proc. 26th International Conference on Very Large Databases (VLDB)*, September 2000.

[579] R. Ramaswami and K. N. Sivarajan, "Design of logical topologies for wavelength-routed networks," *IEEE Journal of Selected Areas in Communication*, vol. 14, no. 5, pp. 840–851, June 1996.

[580] R. Ramaswami and K. N. Sivarajan, *Optical Networks: A Practical Perspective, 2nd Edition*. Morgan Kaufmann Publishers, 2002.

[581] U. Ranadive and D. Medhi, "Some observations on the effect of route fluctuation and network link failure on TCP," in *Proc. 10th IEEE International Conference on Computer Communications and Networks (ICCCN'01)*, pp. 460–467, Scottsdale, AZ, October 2001.

[582] Y. Rapp, "Planning of a junction network in a multi-exchange area I," *General Principles Ericsson Tech.*, vol. 20, no. 1, pp. 77–130, 1964.

[583] Y. Rapp, "Planning of a junction network in a multi-exchange area II," *Extensions of the Principles and Applications. Ericsson Tech.*, vol. 21, no. 2, pp. 187–240, 1965.

[584] Y. Rapp, "Planning of a junction network in a multi-exchange area III," in *Proc. 5th International Teletraffic Congress (ITC5)*, New York, 1967.

[585] A. Rattanadilokochai, "QoS routing with inaccurate link-state information," M.S. Thesis, University of Missouri–Kansas City, May 2000.

[586] V. C. Ravikumar, R. Mahapatra, and J. C. Liu, "Modified LC-trie based efficient routing lookup," in *Proc. 10th IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS'02)*, 2002.

[587] Y. Rekhter, "EGP and policy based routing in the new NSFNET backbone," *IETF RFC 1092*, February 1989. http://www.rfc-editor.org/rfc/rfc1092.txt

[588] Y. Rekhter, R. Bonica, and E. Rosen, "Use of provider edge to provider edge (PE-PE) generic routing encapsulation (GRE) or IP in BGP/MPLS IP virtual private networks," *IETF RFC 4797*, January 2007. http://www.rfc-editor.org/rfc/rfc4797.txt

[589] Y. Rekhter, S. Hotz, and D. Estrin, "Constraints on forming clusters with link-state hop-by-hop routing," University of Southern California, Tech. Rep. 93-536, August 1993.

[590] Y. Rekhter and T. Li, "A Border Gateway Protocol 4 (BGP-4)," *IETF RFC 1771*, March 1995, (Made obsolete by [591]). http://www.rfc-editor.org/rfc/rfc1771.txt

[591] Y. Rekhter, T. Li, and S. Hares, "A Border Gateway Protocol 4 (BGP-4)," *IETF RFC 4271*, January 2006. http://www.rfc-editor.org/rfc/rfc4271.txt

[592] Y. Rekhter, B. Moskowitz, D. Karrenberg, G. J. de Groot, and E. Lear, "Address allocation for private internets," *IETF RFC 1918*, February 1996. http://www.rfc-editor.org/rfc/rfc1918.txt

[593] Y. Rekhter (Ed.), "BGP protocol analysis," *IETF RFC 1265*, October 1991. http://www.rfc-editor.org/rfc/rfc1265.txt

[594] J. Rexford, Personal Communication, 2005.

[595] J. Rexford, "Route optimization in IP networks," in *Handbook of Optimization in Telecommunications*, M. G. C. Resende and P. Pardalos (Eds.), Springer, 2006.

[596] R. F. Rey (Ed.), *Engineering and Operations in the Bell System, 2nd Edition*. AT&T Bell Laboratories, 1983.

[597] J. W. Roberts, "A service system with heterogeneous user requirements: application to multi-services telecommunications systems," in *Performance of Data Communication Systems, and Their Applications*, G. Pujolle (Ed.), North-Holland, pp. 423–431, 1981.

[598] G. Rogers, D. Medhi, W.-J. Hsin, S. Muppala, and D. Tipper, "Performance analysis of multicast and priority-based routing under a failure in differentiated-services Internet," in *Proc. of IEEE MILCOM'99*, pp. 897–901, Atlantic City, NJ, October 1999.

[599] E. Rosen, "The updating protocol of ARPANET's new routing algorithm," *Computer Networks*, vol. 4, no. l, pp. l–19, 1980.

[600] E. Rosen, "Exterior gateway protocol (EGP)," *IETF RFC 827*, October 1982. http://www.rfc-editor.org/rfc/rfc827.txt

[601] E. Rosen and Y. Rekhter, "BGP/MPLS VPNs," *IETF RFC 2547*, March 1999, (Made obsolete by [602]). http://www.rfc-editor.org/rfc/rfc2547.txt

[602] E. Rosen and Y. Rekhter, "BGP/MPLS IP virtual private networks (VPNs)," *IETF RFC 4364*, February 2006. http://www.rfc-editor.org/rfc/rfc4364.txt

[603] E. Rosen, D. Tappan, G. Fedorkow, Y. Rekhter, D. Farinacci, T. Li, and A. Conta, "MPLS label stack encoding," *IETF RFC 3032*, January 2001. http://www.rfc-editor.org/rfc/rfc3032.txt

[604] E. Rosen, A. Viswanathan, and R. Callon, "Multiprotocol label switching architecture," *IETF RFC 3031*, January 2001. http://www.rfc-editor.org/rfc/rfc3031.txt

[605] E. Rosen, "Vulnerabilities of network control protocols: An example," *IETF RFC 789*, July 1981. http://www.rfc-editor.org/rfc/rfc789.txt

[606] G. Rosenbaum, C.-T. Chou, S. Jha, and D. Medhi, "Dynamic routing of restorable QoS connections in MPLS networks," in *Proc. 30th IEEE Conference on Local Computer Networks(LCN)*, Sydney, Australia, November 2005.

[607] M. Roughan, J. Li, R. Bush, Z. Mao, and T. Griffin, "Is BGP update storm a sign of trouble: Observing the Internet control and data planes during Internet worms," in *Proc. International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS)*, Calgary, Canada, 2006.

[608] T. Roughgarden and E. Tardos, "How bad is selfish routing?" *Journal of the ACM*, vol. 49, no. 2, pp. 236–259, March 2002, (A preliminary version of this paper appeared in *Proc. 41st Annual IEEE Symposium on Foundations of Computer Science*, November 2000).

[609] G. Rouskas and M. Ammar, "Dynamic reconfiguration in multihop WDM networks," *Journal of High Speed Networks*, vol. 4, pp. 221–238, 1995.

[610] H. Rudin, "On routing and "delta routing": A taxonomy and performance comparison of techniques for packet-switched networks," *IEEE Trans. on Communications*, vol. 24, pp. 43–59, January 1976.

[611] M. A. Ruiz-Sanchez, E. W. Biersack, and W. Dabbous, "Survey and taxonomy of IP address lookup algorithms," *IEEE Network*, vol. 15, no. 2, pp. 8–23, March/April 2001.

[612] M. P. Rumsewicz and D. E. Smith, "A comparison of SS7 congestion control options during mass call-in situations," *IEEE/ACM Trans. on Networking*, vol. 3, pp. 1–9, 1995.

[613] T. Russell, *Signaling System # 7, 4th Edition*. McGraw-Hill, 2002.

[614] R. Sabella, P. Iovanna, G. Oriolo, and P. D'Aprile, "Routing and grooming of data flows into lightpaths in new generation network based on the GMPLS paradigm," *Photonic Network Communications*, vol. 7, no. 2, pp. 131–144, 2004.

[615] R. Sabella, M. Settembre, G. Oriolo, F. Razza, F. Ferlito, and G. Conte, "A multi-layer solution for path provisioning in new-generation optical/MPLS networks," *IEEE Journal on Lightwave Technology*, vol. 21, no. 5, pp. 1141–1155, 2003.

[616] S. Sahni and K. Kim, "Efficient construction of fixed-stride multibit tries for IP lookup," in *Proc. 8th IEEE Workshop on Future Trends of Distributed Computing Systems*, 2001.

[617] S. Sahni and K. Kim, "Efficient construction of variable-stride multibit tries for IP lookup," in *Proc. IEEE Symposium on Applications and the Internet (SAINT)*, pp. 220–227, 2002.

[618] J. Saltzer, "On the naming and binding of network destinations," *IETF RFC 1498*, August 1993. http://www.rfc-editor.org/rfc/rfc1498.txt

[619] H. Samet, "The Quadtree and related hierarchical data structures," *ACM Computing Surveys*, vol. 16, no. 2, pp. 187–260, 1984.

[620] S. Sangli, E. Chen, R. Fernando, J. Scudder, and Y. Rekhter, "Graceful restart mechanism for BGP," *IETF RFC 4724*, January 2007. http://www.rfc-editor.org/rfc/rfc4724.txt

[621] S. Sangli, D. Tappan, and Y. Rekhter, "BGP extended communities attribute," *IETF RFC 4360*, February 2006. http://www.rfc-editor.org/rfc/rfc4360.txt

[622] V. Sarangan, D. Ghosh, and R. Acharya, "Capacity-aware state aggregation for interdomain QoS routing," *IEEE Trans. on Multimedia*, vol. 8, pp. 792–808, 2006.

[623] L. J. Seamonson and E. Rosen, ""Stub" exterior gateway protocol," *IETF RFC 888*, January 1984. http://www.rfc-editor.org/rfc/rfc888.txt

[624] R. Sedgewick and R. Flajolet, *An Introduction to the Analysis of Algorithms*. Addison-Wesley, 1996.

[625] R. Sedgewick, *Algorithms in Java, Part 5: Graph Algorithms, 3rd Edition*. Addison-Wesley, 2004.

[626] S. Seetharaman and M. Ammar, "On the interaction between dynamic routing in the native and overlay layers," in *Proc. IEEE INFOCOM'2006*, Barcelona, Spain, April 2006.

[627] A. Segal, "Advances in verifiable fail-safe routing procedures," *IEEE Trans. on Communications*, vol. COM-29, pp. 491–497, 1981.

[628] T. K. Sellis, N. Roussopoulos, and C. Faloutsos, "The R+−tree: A dynamic index for multi-dimensional objects," in *Proc. 13th International Conference on Very Large Data Bases (VLDB)*, pp. 507–518, Brighton, England, 1987.

[629] C. Semeria, "Internet backbone routers and evolving internet design," in *Juniper Networks White Paper*, 1997.

[630] C. Semeria, "Internet processor II ASIC: Rate limiting and traffic-policing features," in *Juniper Networks White Paper, Part Number 200005-001*, 2000.

[631] C. Semeria, "T-series routing platforms: System and packet forwarding architecture," in *Juniper Networks White Paper, Part Number 200027-001*, 2002.

[632] C. Semeria, "RFC 2547bis: BGP/MPLS VPN fundamentals," in *Part Number 200012-001 03/01, Juniper network*, 2001. http://www.juniper.net/solutions/literature/white_papers/200012.pdf

[633] S. Sen, R. D. Doverspike, and M. S. Dunatunga, "Unified facilities optimizer," University of Arizona, Department of Systems and Industrial Engineering, Tech. Rep., January 1989.

[634] T. Seth, A. Broscius, C. Huitema, and H. P. Lin, "Performance requirements for signaling in Internet telephony," November 1998, Internet Draft. http://www.cs.columbia.edu/sip/drafts/draft-seth-sigtran-req-00.txt

[635] S. A. Shah and D. Medhi, "Performance under a failure of wide-area datagram networks with unicast and multicast traffic routing," in *Proc. IEEE MILCOM'98*, pp. 939–945, Bedford, MA, October 1998.

[636] A. Shaikh, A. Varma, L. Kalampoukas, and R. Dube, "Routing stability in congested networks: Experimentation and analysis," in *Proc. ACM SIGCOMM'2000*, pp. 163–174, Stockholm, Sweden, August–September 2000.

[637] S. Shenker, C. Partridge, and R. Guerin, "Specification of guaranteed quality of service," *IETF RFC 2212*, September 1997. http://www.rfc-editor.org/rfc/rfc2212.txt

[638] K. G. Shin and M. Chen, "Performance analysis of distributed routing strategies free of ping-pong-type looping," *IEEE Trans. on Computers*, vol. 36, pp. 129–137, 1987.

[639] J. Shoch, "Inter-network naming, addressing, and routing," in *Proc. IEEE Computer Conference (COMPCON)*, pp. 72–79, Washington, DC, 1978.

[640] M. Shreedhar and G. Varghese, "Efficient fair queueing using deficit round robin," in *Proc. ACM SIGCOMM'95*, pp. 231–242, Cambridge, MA, August–September 1995.

[641] S. Sibal and A. DeSimone, "Controlling alternate routing in general-mesh packet flow networks," in *Proc. ACM SIGCOMM'94*, pp. 168–179, London, United Kingdom, 1994.

[642] G. Sidebottom, K. Morneault, and J. Pastor-Balbas (Eds.), "Signaling System 7 (SS7) Message Transfer Part 3 (MTP3)—User Adaptation Layer (M3UA)," *IETF RFC 3332*, September 2002. http://www.rfc-editor.org/rfc/rfc3332.txt

[643] S. Singh, F. Baboescu, G. Varghese, and J. Wang, "Packet classification using multidimensional cutting," in *Proc. ACM SIGCOMM'2003*, pp. 213–224, Karlsruhe, Germany, August 2003.

[644] R. J. Sivasankar, S. Ramam, S. Subramaniam, T. S. Rao, and D. Medhi, "Some studies on the impact of dynamic traffic in QoS based dynamic routing environment," in *Proc. IEEE ICC'2000*, pp. 959–963, New Orleans, LA, June 2000.

[645] K. Sklower, "A tree-based packet routing table for berkeley unix," in *Proc. 1991 Usenix Winter Conference*, pp. 93–99, 1991.

[646] R. A. Skoog, "Engineering common channel signaling networks for ISDN," in *Proc. 12th International Teletraffic Congress (ITC12)*, pp. 915–921, Torin, Italy, 1988.

[647] D. Slepian, "Two theorems on a particular crossbar switching networks," 1952, unpublished manuscript.

[648] D. L. Slotnick, W. C. Borck, and R. C. McReynolds, "The soloman computer," in *Proc. AFIPS Sprint Joing Computer Conference*, vol. 22, pp. 97–107. Spartan Books, 1967.

[649] H. Smit and T. Li, "Intermediate System to Intermediate System (IS-IS) extensions for traffic engineering (TE)," *IETF RFC 3784*, June 2004. http://www.rfc-editor.org/rfc/rfc3784.txt

[650] B. R. Smith and J. J. Garcia-Luna-Aceves, "Efficient policy-based routing without virtual circuits," in *Proc. First International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QSHINE'04)*, pp. 242–251, 2004.

[651] B. R. Smith and J. J. Garcia-Luna-Aceves, "A new approach to policy-based routing in the internet," in *Performance Evaluations and Planning Methods for the Next Generation Internet*, A. Girard, B. Sansò, and F. Vázquez-Abad (Eds.), Springer, pp. 99–124, 2005.

[652] SMS/800 Management Team, "Introduction to toll free services." http://www.sms800.com/

[653] R. Souza, P. Krishnakumar, C. Ozveren, R. Simcoe, B. Spinney, R. Thomas, and R.Walsh, "GIGAswitch: A high performance packet switching platform," *Digital Technical Journal*, vol. 27, no. 1, pp. 9–22, 1994.

[654] E. Spitznagel, D. Taylor, and J. Turner, "Packet classification using extended TCAMs," in *Proc. 11th IEEE International Conference on Network Protocols (ICNP)*, pp. 120–131, Washington, DC, 2003.

[655] E. W. Spitznagel, "Compressed data structures for recursive flow classification," Department of Computer Science and Engineering, Washington University, St. Louis, MO, Tech. Rep. WUCSE-2003-65, 2003.

[656] Sprintlink's BGP Policy. http://www.sprintlink.net/policy/bgp.html

[657] P. R. Srikantakumar, "Learning models and adaptive routing in telecommunication networks," Ph.D. dissertation, Yale University, New Haven, CT, 1980.

[658] V. Srinivasan, "Fast and efficient Internet lookups," Ph.D. dissertation, Washington University, Saint Louis, MO, August 1999.

[659] V. Srinivasan, "A packet classification and filter management system," in *Proc. IEEE INFOCOM'2001*, pp. 1464–1473, 2001.

[660] V. Srinivasan, S. Suri, and G. Varghese, "Packet classification using tuple space search," in *Proc. ACM SIGCOMM'99*, pp. 135–146, Cambridge, MA, 1999.

[661] V. Srinivasan and G. Varghese, "Fast address lookups using controlled prefix expansion," *ACM Trans. on Computer Systems*, vol. 17, pp. 1–40, February 1999.

[662] V. Srinivasan, G. Varghese, S. Suri, and M. Waldvogel, "Fast and scalable layer four switching," in *Proc. ACM SIGCOMM'98*, pp. 191–202, Vancouver, Canada, August 1998.

[663] S. Srivastava, G. Agrawal, and D. Medhi, "Dual-based link weight determination towards single shortest path solutions for OSPF networks," in *Proc. 19th International Teletraffic Congress (ITC19)*, pp. 829–838, Beijing, China, August–September 2005.

[664] S. Srivastava, G. Agrawal, M. Pióro, and D. Medhi, "Determining link weight system under various objectives for OSPF networks using a Lagrangian relaxation-based approach," *IEEE eTrans. on Network & Service Management*, vol. 2, no. 1, pp. 9–18, 2005.

[665] S. Srivastava, S. R. Thirumalasetty, and D. Medhi, "Network traffic engineering with varied levels of protection in the next generation internet," in *Performance Evaluations and Planning Methods for the Next Generation Internet*, A. Girard, B. Sansò, and F. Vázquez-Abad (Eds.), Springer, pp. 99–124, 2005.

[666] W. Stallings, *Data and Computer Communications, 8th Edition*. Prentice-Hall, 2007.

[667] M. Steenstrup (Ed.), *Routing in Communications Networks*. Prentice-Hall, 1995.

[668] W. R. Stevens, *TCP/IP Illustrated, Volume 1*. Addison-Wesley, 1994.

[669] J. W. Stewart III, *BGP4: Inter-Domain Routing in the Internet*. Addison-Wesley, 1999.

[670] D. Stiliadis and A. Varma, "Frame-based fair queueing: a new traffic scheduling algorithm for packet-switched networks," in *Proc. ACM SIGMETRICS'96*, pp. 104–115, 1996.

[671] J. Stokes, "PCI express: An overview," in *Arstechnica Web Site*, July 2004. http://arstechnica.com/articles/paedia/hardware/pcie.ars/1

[672] M. Stonebraker, "The case for shared nothing," *Database Engineering Bulletin*, vol. 9, no. 1, pp. 4–9, 1986.

[673] J. Strand, "Transport networks & technologies," 2001, Tutorial presentation, Optical Fiber Communication Conference (OFC 2001).

[674] J. Strand and A. Chiu, (Eds.), "Impairments and other constraints on optical layer routing," *IETF RFC 4054*, May 2005. http://www.rfc-editor.org/rfc/rfc4054.txt

[675] J. Strand, R. Doverspike, and G. Li, "Importance of wavelength conversion in an optical network," *Optical Networks Magazine*, vol. 2, no. 3, pp. 33–44, May/June 2001.

[676] H. Sullivan and T. R. Bashkow, "A large scale, homogeneous, fully distributed parallel machine," in *Proc. International Symposium on Computer Architecture (ISCA)*, pp. 105–124, March 1977.

[677] J. W. Suurballe, "Disjoint paths in a network," *Networks*, vol. 4, pp. 125–145, 1974.

[678] J. W. Suurballe and R. E. Tarjan, "A quick method for finding shortest pairs of disjoint paths," *Networks*, vol. 14, pp. 325–336, 1984.

[679] Syniverse Technologies, "A global perspective on number portability," May 2004. http://www.syniverse.com/pdfs/MNPReport.pdf

[680] E. Szybicki and M. Lavigne, "Alternate routing for a telephone system," U.S. Patent No. 4,284,852, August 18, 1981.

[681] Y. Tamir and H. C. Chi, "Symmetric crossbar arbiters for vlsi communication switches," *IEEE Trans. Parallel and Distributed Systems*, vol. 4, no. 1, pp. 13–27, January 1993.

[682] Y. Tamir and G. Frazier, "High performance multi-queue buffers for VLSI communication networks," in *Proc. 15th Annual Symposium on Computer Architecture*, pp. 343–354, June 1988.

[683] A. Tanenbaum, *Computer Networks, 4th Edition*. Prentice-Hall, 2003.

[684] A. Tang and S. Scoggins, *Open Networking with OSI*. Prentice-Hall, 1992.

[685] J. Tapolcai, T. Cinkler, and A. Recski, "On-line routing algorithms with shared protection in WDM networks," in *IFIP ONDM 2003, Budapest*, 2003.

[686] D. E. Taylor, "Survey and taxonomy of packet classification techniques," *ACM Computing Surveys*, vol. 37, no. 3, pp. 238–275, 2005.

[687] D. E. Taylor and J. S. Turner, "Scalable packet classification using distributed crossproducting of field labels," in *Proc. IEEE INFOCOM'2005*, pp. 269–280, March 2005.

[688] R. Teixeira, A. Shaikh, T. Griffin, and G. Voelker, "Network sensitivity to hot-potato disruptions," in *Proc. ACM SIGCOMM'2004*, pp. 231–244, Portland, OR, August–September 2004.

[689] Telcordia, "Telcordia Technologies specification of Signalling System number 7," GR-246-CORE, Issue 10, December 2005.

[690] Telecom Regulatory Authority of India, "Consultation paper on mobile number portability," July 2005. http://www.trai.gov.in/conpaper22jul05.pdf

[691] Telecom Regulatory Authority of India, "Recommendation on mobile number portability," March 2006. http://www.trai.gov.in/recomm8mar06.pdf

[692] TeleGeography, *Hubs and Spokes: A TeleGeography Internet Reader*. TeleGeography, Inc., 2000.

[693] TeleGeography, "Global communication submarine map," 2004. http://www.telegeography.com/products/map_cable/index.php

[694] S. Thiagarajan and A. K. Somani, "Optimal wavelength converter placement in arbitrary topology wavelength-routed networks," *Computer Communications*, vol. 26, pp. 975–985, 2003.

[695] S. R. Thirumalasetty and D. Medhi, "On the performance and behavior of QoS routing schemes," Technical Report, University of Missouri–Kansas City, 2000.

[696] K. Thompson, G. Miller, and R. Wilder, "Wide-area Internet traffic patterns and characteristics," *IEEE Network*, vol. 11, no. 6, pp. 10–23, November/December 1997.

[697] R. A. Thompson, *Telephone Switching Systems*. Artech House, 2000.

[698] M. Thorup and M. Roughan, "Avoiding ties in shortest path first routing," Technical Report, AT&T Labs-Research, 2003.

[699] F. Tobagi, "Fast packet switching architectures for broadband integrated services digital networks," *Proceedings of the IEEE*, vol. 78, pp. 133–167, 1990.

[700] D. M. Tow, "Network management—recent advances and future trends," *IEEE Journal on Selected Areas in Communications*, vol. 6, no. 4, pp. 732–741, 1988.

[701] P. Traina, "Autonomous system confederations for BGP," *IETF RFC 1965*, June 1996. http://www.rfc-editor.org/rfc/rfc1965.txt

[702] P. Traina, D. McPherson, and J. Scudder, "Autonomous system confederations for BGP," *IETF RFC 3065*, February 2001. http://www.rfc-editor.org/rfc/rfc3065.txt

[703] P. Traina (Ed.), "BGP-4 protocol analysis," *IETF RFC 1774*, March 1995. http://www.rfc-editor.org/rfc/rfc1774.txt

[704] J. Tünnissen, "BGP: the Border Gateway Protocol: Advanced Internet routing resources." http://www.bgp4.as/

[705] J. Turner and N. Yamanaka, "Architectural choices in large scale ATM switches," *IEICE Trans. on Communications*, vol. E81-B, no. 2, pp. 120–137, 1998.

[706] J. S. Turner, "New directions in communications (or which way to the information age)," *IEEE Communications Magazine*, vol. 24, no. 10, pp. 8–15, October 1986.

[707] University of Oregon Route Views Project, "Route views." http://www.routeviews.org/

[708] L. G. Valiant and G. J. Brebner, "Universal schemes for parallel communication," in *Proc. ACM Symposium of the Theory of Computing*, pp. 263–277, May 1981.

[709] I. van Beijnum, *BGP*. O'Reilly, 2002.

[710] P. van Mieghem, F. A. Kuipers, T. Korkmaz, M. Krunz, M. Curado, E. Monteiro, X. Masip-Bruin, J. Solé-Pareta, and S. Sánchez-López, "Quality of service routing," in *Quality of Future Internet Services: COST Action 263 Final Report* M. Smirnov et al. (Eds.), Springer, 2003.

[711] R. J. Vanderbei, *Linear Programming: Foundations and Extensions, 2nd Edition*. Kluwer Academic Publishers, 2001.

[712] G. Varghese, *Network Algorithmics*. Morgan Kaufmann Publishers, 2005.

[713] J.-P. Vasseur, M. Pickavet, and P. Demeester, *Network Recovery: Protection and Restoration of Optical, SONET-SDH, IP, and MPLS*. Morgan Kaufmann Publishers, 2004.

[714] J.-P. Vasseur (Ed.), Y. Ikejiri, and R. Zhang, "Reoptimization of multiprotocol label switching (MPLS) traffic engineering (TE) loosely routed label switched path (LSP)," *IETF RFC 4736*, November 2006. http://www.rfc-editor.org/rfc/rfc4736.txt

[715] A. Vemuri and J. Peterson, "Session initiation protocol for telephones (SIP–T): Context and architectures," *IETF RFC 3372*, September 2002. http://www.rfc-editor.org/rfc/rfc3372.txt

[716] VeriSign, "Intelligent database services." http://www.verisign.com/products-services/communications-services/intelligent-database-services/index.html

[717] VeriSign, "Future-proofing LNP architecture," 2004. http://www.verisign.com/stellent/groups/public/documents/white_paper/001949.pdf

[718] Verizon Business Policy for Settlement-Free Interconnection with Internet Networks. http://www.verizonbusiness.com/uunet/peering/

[719] D. Verma, *Supporting Service Level Agreements on IP Networks*. Macmillan Technical Publishing, 1999.

[720] C. Villamizar, R. Chandra, and R. Govindan, "BGP route flap damping," *IETF RFC 2439*, November 1998. http://www.rfc-editor.org/rfc/rfc2439.txt

[721] C. Villamizar and C. Song, "High performance TCP in ANSNET," *Computer Communications Review*, vol. 24, no. 5, pp. 45–60, October 1994.

[722] VINI—A Virtual Network Environment. http://www.vini-veritas.net/

[723] K. Vinodkrishnan, N. Chandhok, A. Durresi, R. Jain, R. Jagannathan, and S. Seetharaman, "Survivability in IP over WDM networks," *Journal of High Speed Networks*, vol. 10, no. 2, pp. 79–90, 2001.

[724] D. C. Walden, "Routing," BBN Memorandum, Bolk Beranek & Newman, June 1972.

[725] D. C. Walden, "The Bellman–Ford algorithm and "distributed Bellman–Ford algorithm"," 2003. http://www.walden-family.com/public/bf-history.pdf

[726] M. Waldvogel, "Fast longest prefix matching: Algorithms, analysis and applications," Ph.D. dissertation, Swiss Federal Institute of Technology, Zurich, 2002.

[727] M. Waldvogel, G. Varghese, J. Turner, and B. Plattner, "Scalable high-speed prefix matching," *ACM Trans. on Computer Systems*, vol. 19, pp. 400–482, November 2001.

[728] L. Wang, X. Zhao, D. Pei, R. Bush, D. Massey, A. Mankin, S. F. Wu, and L. Zhang, "Observation and analysis of BGP behavior under stress," in *Proc. ACM SIGCOMM Internet Measurement Workshop (IMW'2002)*, November 2002.

[729] W.-P. Wang, D. Tipper, B. Jæger, and D. Medhi, "Fault recovery routing in wide area packet networks," in *Proc. 15th International Teletraffic Congress (ITC15)*, pp. 1077–1086, Washington, DC, June 1997.

[730] Y. Wang, Z. Wang, and L. Zhang, "Internet traffic engineering without full mesh overlaying," in *Proc. IEEE INFOCOM'2001*, pp. 565–571, Anchorage, AK, 2001.

[731] Z. Wang and J. Crowcroft, "Quality-of-service routing for supporting multimedia applications," *IEEE Journal on Selected Areas in Communications*, vol. 14, pp. 1228–1234, 1996.

[732] J. G. Wardrop, "Some theoretical aspects of road traffic research," *Proc. Inst of Civil Engineers, Part-2*, vol. 1, no. 2, pp. 325–378, 1952.

[733] Y. Watanabe and T. Oda, "Dynamic routing schemes for international networks," *IEEE Communications Magazine*, vol. 38, no. 8, pp. 70–75, 1990.

[734] D. Watson, G. R. Malan, and F. Jahanian, "An extensible probe architecture for network protocol performance measurement," *Software Practice & Experience*, vol. 34, no. 1, pp. 47–67, 2004.

[735] J. H. Weber, "Some traffic characteristics of communication networks with automatic alternate routing," *Bell Systems Technical Journal*, vol. 41, pp. 769–792, 1962.

[736] J. H. Weber, "A simulation study of routing and control in communication networks," *Bell Systems Technical Journal*, vol. 43, pp. 2639–2676, 1964.

[737] M. Welzl, *Network Congestion Control: Managing Internet Traffic*. John Wiley & Sons, Ltd, 2005.

[738] R. White, D. McPherson, and S. Sangli, *Practical BGP*. Addison-Wesley, 2004.

[739] Wikipedia, the free encyclopedia. http://www.wikipedia.org/

[740] W. Willinger and V. Paxson, "Where mathematics meets the Internet," *Notices of the American Mathematical Society*, vol. 45, no. 8, pp. 961–970, August 1998.

[741] W. Willinger, M. S. Taqqu, and A. Erramilli, "A bibliographical guide to self-similar traffic and performance modeling for high-speed networks," in *Stochastic Networks: Theory and Applications*, F. P. Kelly, S. Zachary and I. Ziedins (Eds.), pp. 339–366. Clarendon Press, 1996.

[742] A. Winnicki and J. Paczynski, "An approach to design three-layer controlled telephone networks," *Large Scale Systems*, vol. 1, pp. 245–256, 1980.

[743] Wireshark. http://www.wireshark.org/

[744] Wireshark Sample Capture Files. http://wiki.wireshark.org/SampleCaptures

[745] T. C. Woo, "A modular approach to packet classification: Algorithms and results," in *Proc. IEEE INFOCOM'2000*, pp. 1213–1222, 2000.

[746] World Telephone Numbering Guide. http://www.wtng.info/

[747] J. Wroclawski, "Specification of the controlled-load network element service," *IETF RFC 2211*, September 1997. http://www.rfc-editor.org/rfc/rfc2211.txt

[748] T.-H. Wu, *Fiber Network Service Survivability*. Artech House, 1992.

[749] T. Wu, "Network neutrality, broadband discrimination," *Journal of Telecommunications and High Technology Law*, vol. 2, pp. 141–179, 2005.

[750] X. Xiao, A. Hannan, B. Bailey, and L. Ni, "Traffic engineering with MPLS in the Internet," *IEEE Network*, vol. 14, no. 2, pp. 28–33, March/April 2000.

[751] X. Xiao, T. Telkamp, V. Fineberg, C. Chen, and L. Ni, "A Practical Approach for Providing QoS in the Internet," *IEEE Communications Magazine*, vol. 40, no. 12, pp. 56–62, December 2002.

[752] B. Yaged, "Minimum cost routing for dynamic network models," *Networks*, vol. 3, pp. 193–224, 1973. (See also, B. Yaged, "Minimum cost routing for static network models," *Networks*, vol. 1, pp. 139–172, 1971.)

[753] X. Yang, "NIRA: A new Internet routing architecture," Ph.D. dissertation, Massachusetts Institute of Technology, September 2004.

[754] X. Yang, D. Clark, and A. Berger, "NIRA: A new inter-domain routing architecture," *IEEE/ACM Trans. on Networking*, vol. 15, December 2007.

[755] Y. Yeh, M. Hluchyj, and A. Acampora, "The Knockout Switch: A simple modular architecture for high performance packet switching," *IEEE Journal of Selected Areas in Communications*, pp. 1426–1435, October 1987.

[756] J. Y. Yen, "Finding the *k* shortest loopless paths in a network," *Management Science*, vol. 17, pp. 712–716, 1971.

[757] S. Yilmaz and I. Matta, "On the scalability-performance tradeoffs in MPLS and IP routing," in *Proc. SPIE ITCOM'2002: Scalability and Traffic Control in IP Networks*, Boston, MA, August 2002.

[758] N. Zadeh, "On building minimum cost communication networks," *Networks*, vol. 3, pp. 315–331, 1973.

[759] N. Zadeh, "On building minimum cost communication networks over time," *Networks*, vol. 4, pp. 19–34, 1974.

[760] F. Zane, G. Narlikar, and A. Basu, "CoolCAMs: Power–efficient TCAMs for forwarding engines," in *Proc. IEEE INFOCOM'2003*, pp. 42–52, April 2003.

[761] H. Zang, C. Ou, and B. Mukherjee, "Path-protection routing and wavelength assignment in WDM mesh networks under duct-layer constraints," *IEEE/ACM Trans. on Networking*, vol. 11, pp. 248–258, 2003.

[762] L. Zhang, "A new architecture for packet switching network protocols," Laboratory for Computer Science, Massachusetts Institute of Technology, Cambridge, MA, Tech. Rep. MIT-LCS-TR-455, 1989.

[763] L. Zhang, M. Andrews, W. Aiello, S. Bhatta, and K. R. Krishnan, "A performance comparison of competitive on-line routing and state-dependent routing," in *Proc. IEEE GLOBECOM'97*, pp. 1813–1819, December 1997.

[764] R. Zhang and M. Bartell, *BGP Design and Implementation*. Cisco Press, 2003.

[765] R. Zhang and J.-P. Vasseur, "MPLS inter-autonomous system (AS) traffic engineering (TE) requirements," *IETF RFC 4216*, November 2005. http://www.rfc-editor.org/rfc/rfc4216.txt

[766] W. Zhao and S. Tripathi, "Routing guaranteed quality of service connections in integrated services packet networks," in *Proc. of IEEE International Conference on Network Protocols (ICNP'97)*, pp. 175–182, Atlanta, GA, 1997.

[767] Y. Zhu, C. Dovrolis, and M. Ammar, "Dynamic overlay routing based on available bandwidth estimation: A simulation study," *Computer Networks*, vol. 50, pp. 742–762, 2006.