

## Bibliography

- [1] W. Adams and L. Rider. Circular Polar Constellations Providing Continuous Single and Multiple Coverage Above a Specified Latitude. *Journal of Astronautical Sciences*, 35(2):155–192, April 1987.
- [2] M. Allman. TCP Byte Counting Refinements. *ACM Computer Communications Review*, 29(3):14–22, July 1999.
- [3] M. Allman et al. Ongoing TCP Research Related to Satellites. *Internet Draft: draft-ietf-tcpsat-res-issues-06.txt*, March 1999.
- [4] M. Allman, S. Floyd, and C. Partridge. Increasing TCP’s Initial Window. *Internet RFC 2414*, 1998.
- [5] M. Allman, D. Glover, and L. Sanchez. Enhancing TCP Over Satellite Channels using Standard Mechanisms. *Internet RFC 2488*, 1981.
- [6] M. Allman, H. Kruse, and S. Ostermann. An Application-Level Solution to TCP’s Satellite Inefficiencies. *Proceedings of 1st Workshop on Satellite-Based Information Systems (WOS-BIS ‘96)*, 1996.
- [7] E. Amir. An Agent-based Approach to Multimedia Transmission over Heterogeneous Environments. *Ph.D. Thesis, University of California, Berkeley*, 1998.
- [8] S. Bajaj et al. Improving Simulation for Network Research. *Technical Report, University of Southern California*, 1999.
- [9] H. Balakrishnan. Challenges to Reliable Data Transport Protocols over Heterogeneous Wireless Networks. *Ph.D. Thesis, University of California, Berkeley*, 1998.
- [10] H. Balakrishnan, V. Padmanabhan, E. Amir, and R. Katz. Improving TCP/IP Performance over Wireless Networks. *Proceedings of First ACM/IEEE MobiCom Conference*, November 1995.
- [11] H. Balakrishnan, V. Padmanabhan, and R. Katz. The Effects of Asymmetry on TCP Performance. *Proceedings of Third ACM/IEEE MobiCom Conference*, pages 77–89, September 1997.
- [12] T. Berners-Lee et al. The World Wide Web. *Communications of the ACM*, 37(8):76–82, August 1994.

- [13] D. Beste. Design of Satellite Constellations for Optimal Continuous Coverage. *IEEE Transactions on Aerospace and Electronic Systems*, 14(3):466–473, 1978.
- [14] R. Binder et al. Crosslink Architectures for a Multiple Satellite System. *Proceedings of the IEEE*, 75(1):74–82, 1987.
- [15] R. Braden. T/TCP– TCP Extensions for Transactions, Functional Specification. *Internet RFC 1644*, 1994.
- [16] L. Brakmo, S. O’Malley, and L. Peterson. TCP Vegas: New Techniques for Congestion Avoidance. *Proceedings of ACM SIGCOMM ‘94*, pages 24–35, October 1994.
- [17] L. Brakmo and L. Peterson. Performance Problems in BSD4.4. TCP. *ACM Computer Communications Review*, 25(5):69–86, October 1995.
- [18] H-W. Braun. Architecture and Performance of Large Internets, Based on Terrestrial and Satellite Based Infrastructure. *Presentation at 1997 ACM Sigmetrics Conference*, 1997.
- [19] K. Brayer. Packet Switching for Mobile Earth Stations Via Low-Orbit Satellite Network. *Proceedings of the IEEE*, pages 1627–36, 1984.
- [20] E. Brewer et al. A Network Architecture for Heterogeneous Mobile Computing. *IEEE Personal Communications*, 5(5):8–24, October 1998.
- [21] K. Brown and S. Singh. M-TCP: TCP for Mobile Cellular Networks. *ACM Computer Communications Review*, 27(5):19–43, October 1997.
- [22] P. Brunt. IRIDIUM– Overview and Status. *Space Communications*, 14(2):61–68, 1996.
- [23] D. Chakraborty. Survivable Communication Concept via Multiple Low Earth Orbiting Satellites. *IEEE Transactions on Aerospace and Electronic Systems*, 25(6):879–89, 1989.
- [24] H. Chang, B. Kim, C. Lee, Y. Choi, S. Min, H. Yang, and C. Kim. Topological Design and Routing for LEO Satellite Networks. *Proceedings of IEEE Globecom ‘95*, pages 529–35, 1995.
- [25] C. Charalambous et al. Experimental and Simulation Performance Results of TCP/IP over High-Speed ATM over ACTS. *Proceedings of Int. Conf. on Communications (ICC)*, 1:72–78, 1998.
- [26] C. Charalambous, V. Frost, and J. Evans. Performance of TCP Extensions on Noisy High BDP Networks. *IEEE Communications Letters (to be published)*, 1999.
- [27] D. Chitre. A Selective-Repeat ARQ Scheme and its Throughput Analysis. *Proceedings of Int. Conf. on Communications (ICC)*, 3:6G4.1–6G4.6, 1982.
- [28] D. Chiu and R. Jain. Analysis of the Increase and Decrease Algorithms for Congestion Avoidance in Computer Networks. *Computer Networks and ISDN Systems*, 17:1–14, 1989.
- [29] L. Clare, C. Wang, and M. Atkinson. Multiple Satellite Networks: Performance Evaluation via Simulation. *Proceedings of MILCOM ‘87*, pages 404–10, 1987.

- [30] D. Clark, M. Lambert, and L. Zhang. NETBLT: A Bulk Data Transfer Protocol. *Internet RFC 998*, 1987.
- [31] W. Doeringer et al. A Survey of Light-Weight Transport Protocols for High-Speed Networks. *IEEE Transactions on Communications*, 38(11):2025–38, November 1990.
- [32] R. Donnan. Method and System for Retransmitting Incorrectly Received Numbered Frames in a Data Transmission System. *U.S. Patent No. 4439859*, 1984.
- [33] B. Doshi et al. Error and Flow Control Performance of a High Speed Protocol. *IEEE Transactions on Communications*, 41(5):707–19, May 1993.
- [34] R. Durst, G. Miller, and E. Travis. TCP Extensions for Space Communications. *Wireless Networks*, 3(5):389–403, 1997.
- [35] G. Dutton. Polyhedral Hierarchical Tessellations: The Shape of GIS to Come. *Geo Info Systems*, 1(2):35–42, February 1991.
- [36] K. Fall and S. Floyd. Simulation-based Comparisons of Tahoe, Reno, and SACK TCP. *ACM Computer Communications Review*, 26(3):5–21, July 1996.
- [37] R. Fielding, J. Gettys, J. Mogul, H. Prystyk, and T. Berners-Lee. Hypertext Transfer Protocol– HTTP/1.1. *Internet RFC 2068*, 1997.
- [38] E. Fitzpatrick. SPACEWAY System Summary. *Space Communications*, 13(1):7–23, 1995.
- [39] S. Floyd. Connections with Multiple Congested Gateways in Packet-Switched Networks, Part 1: One-way Traffic. *ACM Computer Communications Review*, 21(5):30–47, October 1991.
- [40] S. Floyd. Connections with Multiple Congested Gateways in Packet-Switched Networks, Part 2: Two-way Traffic. *Unpublished draft*, 1991.
- [41] S. Floyd. A Proposed Modification to TCP’s Window Increase Algorithm. *Unpublished draft, cited for acknowledgement purposes only*, August 1994.
- [42] S. Floyd and T. Henderson. The NewReno Modification to TCP’s Fast Recovery Algorithm. *Internet RFC 2582*, 1999.
- [43] S. Floyd and V. Jacobson. On Traffic Phase Effects in Packet Switched Gateways. *Internet-working: Research and Experience*, 3(3):115–156, September 1992.
- [44] S. Floyd and V. Jacobson. Random Early Detection Gateways for Congestion Avoidance. *IEEE/ACM Transactions on Networking*, 3(3):115–156, September 1993.
- [45] C. Fossa. A Performance Analysis of the IRIDIUM Low Earth Orbit Satellite System with a Degraded Satellite Constellation. *Mobile Computing and Communications Review*, 2(4):54–61, 1997.
- [46] R. Fowler, M. Paterson, and S. Tanimoto. Optimal Packing and Covering in the Plane are NP-Complete. *Information Processing Letters*, 12(3):133–37, 1981.

- [47] J. J. Garcia-Lunes-Aceves. Loop-Free Routing Using Diffusing Computations. *IEEE/ACM Transactions on Networking*, 1(1):130–41, February 1993.
- [48] M. Garey and D. Johnson. *Computers and Intractability: A Guide to the Theory of NP-Completeness*. W.H. Freeman, 1979.
- [49] B. Gavish and J. Kalvenes. The Impact of Satellite Altitude on the Performance of LEOS-based Communication Systems. *Wireless Networks*, 4(2):199–212, 1998.
- [50] G. Gordon and W. Morgan. *Principles of Communications Satellites*. John Wiley, 1986.
- [51] S. Gribble and E. Brewer. System Design Issues for Internet Middleware Services: Deductions from a Large Client Trace. *Proceedings of the 1997 Usenix Symposium on Internet Technologies and Systems*, December 1997.
- [52] J. Grubb. IRIDIUM Overview. *IEEE Communications Magazine*, 29(11), November 1991.
- [53] Z. Haas and M. Pearlman. The Performance of Query Control Schemes for the Zone Routing Protocol. *Proceedings of ACM Sigcomm '98*, pages 167–77, 1998.
- [54] E. Hashem. Analysis of Random Drop for Gateway Congestion Control. *Report LCS TR-465, Laboratory for Computer Science, MIT, Cambridge, MA*, 1989.
- [55] Y. Hashimoto and B. Sarikaya. Design of IP-based Routing in a LEO Satellite Network. *Proceedings of Third International Workshop on Satellite-Based Information Services (WOSBIS '98)*, pages 81–88, 1998.
- [56] J. Heidemann. Performance Interactions Between P-HTTP and TCP Implementations. *ACM Computer Communications Review*, 27(2):65–73, April 1997.
- [57] J. Heidemann, K. Obraczka, and J. Touch. Modeling the Performance of HTTP Over Several Transport Protocols. *ACM/IEEE Transactions on Networking*, 5(5):616–630, October 1997.
- [58] T. Henderson. Design Principles and Performance Analysis of SSCOP: A New ATM Adaptation Layer Protocol. *ACM Computer Communications Review*, 25(2):47–59, April 1995.
- [59] T. Henderson and R. Katz. Satellite Transport Protocol (STP): An SSCOP-based Transport Protocol for Datagram Satellite Networks. *Proceedings of 2nd Workshop on Satellite-Based Information Systems (WOSBIS '97)*, 1997.
- [60] J. Hoe. Improving the Start-up Behavior of a Congestion Control Scheme for TCP. *Proceedings of ACM SIGCOMM '96 Conference*, pages 270–280, 1996.
- [61] D. Hoffman. personal communication, 1998.
- [62] Y. Hubbel. A Comparison of the IRIDIUM and AMPS Systems. *IEEE Network*, 11(2):52–59, March 1997.
- [63] Internet Software Consortium. Domain Survey. <http://www.isc.org>, 1999.

- [64] ITU-T Recommendation Q.2110. B-ISDN Signaling ATM Adaptation Layer– Service Specific Connection Oriented Protocol (SSCOP), 1994.
- [65] I. Jacobs, R. Binder, and E. Hoversten. General Purpose Packet Satellite Networks. *Proceedings of the IEEE*, 66(11):1448–67, 1978.
- [66] V. Jacobson. Congestion Avoidance and Control. *Proceedings of ACM SIGCOMM '88 Conference*, pages 314–329, 1988.
- [67] V. Jacobson, R. Braden, and D. Borman. TCP Extensions for High Performance. *Internet RFC 1323*, 1992.
- [68] A. Jamalipour. *Low Earth Orbital Satellites for Personal Communication Networks*. Artech House, 1998.
- [69] D. Johnson and D. Maltz. Protocols for Adaptive Wireless and Mobile Networking. *IEEE Personal Communications*, 3(1):34–42, February 1996.
- [70] R. Katz. Satellites and the Next Generation Internet. *Keynote Address, Second International Workshop on Satellite-Based Information Services (WOSBIS '97)*, 1997.
- [71] H. Keller and H. Salzwedel. Link Strategy for the Mobile Satellite System Iridium. *Proceedings of the 1996 IEEE Vehicular Technology Conference*, 2:1220–1224, 1996.
- [72] S. Keshav. REAL: A Network Simulator. *Technical Report 88/472, University of California, Berkeley*, 1988.
- [73] T. Lakshman and U. Madhow. The Performance of TCP/IP for Networks with High Bandwidth-Delay Products and Random Loss. *IEEE/ACM Transactions on Networking*, 5(3):336–350, June 1997.
- [74] T. Lakshman, U. Madhow, and B. Suter. Window-based Error Recovery and Flow Control with a Slow Acknowledgment Channel: A Study of TCP/IP Performance. *Proceedings of INFOCOM '97*, pages 1199–1209, 1997.
- [75] R. Leopold and A. Miller. The IRIDIUM Communications System. *IEEE Potentials*, 12(2):6–9, April 1993.
- [76] D. Lin and R. Morris. Dynamics of Random Early Detection. *Proceedings of ACM Sigcomm '97*, pages 127–37, 1997.
- [77] M. Liron. U.S. Patent No. 5740164: Traffic Routing for Satellite Communication System, 1998.
- [78] G. Lundy and H. Tipici. Specification and Analysis of the SNR High-Speed Transport Protocol. *IEEE Transactions on Networking*, 2(5):483–96, October 1994.
- [79] B. Mah. An Empirical Model of HTTP Network Traffic. *Proceedings of INFOCOM '97*, 1997.

- [80] A. Mankin. Random Drop Congestion Control. *Proceedings of ACM SIGCOMM '90 Conference*, pages 1–7, 1990.
- [81] G. Maral and M. Bousquet. *Satellite Communications Systems*. John Wiley, 1993.
- [82] G. Maral, J. de Ridder, B. Evans, and M. Richharia. Low Earth Orbit Satellite Systems for Communications. *International Journal of Satellite Communications*, pages 209–25, 1991.
- [83] M. Mathis, J. Mahdavi, S. Floyd, and A. Romanow. TCP Selective Acknowledgment Options. *Internet RFC 2018*, 1996.
- [84] R. Mauger. QoS Guarantees for Multimedia Services on a TDMA-Based Satellite Network. *IEEE Communications Magazine*, 35(7):56–65, July 1997.
- [85] S. McCanne. Private communications, 1997.
- [86] S. McCanne and V. Jacobson. The BSD Packet Filter: A New Architecture for User-Level Packet Capture. *Proceedings of the 1993 Winter USENIX Conference*, pages 259–69, 1993.
- [87] E. McCluskey. Minimization of Boolean Functions. *Bell Systems Technical Journal*, 35:1417–44, November 1956.
- [88] K. Mills, D. Chitre, H. Chong, and A. Agarwal. A Joint COMSAT/NBS Experiment on Transport Protocol. *Proceedings of 7th International Conference on Digital Satellite Communications (ICDSC)*, May 1986.
- [89] J. Mo and J. Walrand. Fair End-to-End Window-based Congestion Control. *Proceedings of SPIE '98 International Symposium on Voice, Video, and Data Communications*, 1998.
- [90] J. Mogul and S. Deering. Path MTU discovery. *Internet RFC 1191*, 1990.
- [91] J. Mogul and J. Postel. Internet Standard Subnetting Procedure. *Internet RFC 950*, 1985.
- [92] M-J. Montpetit. personal communication, 1998.
- [93] S. Murthy and J. J. Garcia-Lunes-Aceves. An Efficient Routing Protocol for Wireless Networks. *Journal of Special Topics in Mobile Networks and Applications (MONET)*, 1(2):183–97, October 1996.
- [94] J. Musey. Presentation. *29th Annual Banc of America Securities Investment Conference, San Francisco*, September 1999.
- [95] A. Myles, D. Johnson, and C. Perkins. A Mobile Host Protocol Supporting Route Optimization and Authentication. *IEEE Journal on Selected Areas in Communications*, 13(5):839–49, June 1995.
- [96] S. Nanda, R. Ejzak, and B. Doshi. A Retransmission Scheme for Circuit-Mode Data on Wireless Links. *IEEE Journal on Selected Areas in Communications*, 12(8):1338–52, October 1994.

- [97] A. Netravali, W. Roome, and K. Sabnani. Design and Implementation of a High-Speed Transport Protocol. *IEEE Transactions on Communications*, 38(11):2010–24, November 1990.
- [98] M. Noakes et al. An Adaptive Link Assignment Algorithm for Dynamically Changing Topologies. *IEEE Transactions on Communications*, pages 694–706, 1993.
- [99] V. Padmanabhan. Addressing the Challenges of Web Data Transport. *Ph.D. Thesis, University of California, Berkeley*, 1998.
- [100] V. Padmanabhan et al. Networking Using Direct Broadcast Satellite. *Proceedings of the First International Workshop on Satellite-Based Information Services (WOSBIS '96)*, 1996.
- [101] V. Padmanabhan and R. Katz. TCP Fast Start: A Technique for Speeding Up Web Transfers. *Proceedings of IEEE Globecom '98 Internet Mini-Conference*, 1998.
- [102] V. Padmanabhan and J. Mogul. Improving HTTP Latency. *Proceedings of the Second International World Wide Web Workshop*, October 1994.
- [103] E. Papapetrou, I. Gragopoulos, and F. Pavlidou. Performance Evaluation of LEO Satellite Constellations with Inter-Satellite Links under Self-Similar and Poisson Traffic. *International Journal of Satellite Communications*, 17(1):51–64, 1999.
- [104] C. Partridge and T. Shepard. TCP Performance over Satellite Links. *IEEE Network*, 11(5):44–49, September 1997.
- [105] B. Pattan. *Satellite-Based Cellular Communications*. McGraw Hill, 1998.
- [106] D. Patterson and M. Liron. U.S. Patent No. 5796715: Non-Blocking Dynamic Fast Packet Switch for Satellite Communication System, 1998.
- [107] D. Patterson and M. Sturza. U.S. Patent No. 5408237: Earth-Fixed Cell Beam Management for Satellite Communication System, 1995.
- [108] V. Paxson. Automated Packet Trace Analysis of TCP Implementations. *Proceedings of ACM SIGCOMM '97 Conference*, pages 167–180, 1997.
- [109] R. Perlman. *Interconnections: Bridges and Routers*. Addison Wesley, 1992.
- [110] L. Peterson and B. Davie. *Computer Networks: A Systems Approach*. Morgan Kaufmann, 1996.
- [111] J. Postel. Transmission Control Protocol. *Internet RFC 793*, 1981.
- [112] S. Pratt et al. An Operational and Performance Overview of the IRIDIUM Low Earth Orbit Satellite System. *IEEE Communications Surveys*, 1(3):2–10, 1999.
- [113] T. Pratt and C. Bostian. *Satellite Communications*. John Wiley, 1986.
- [114] W. Press et al. *Numerical Recipes in C: The Art of Scientific Computing*. Cambridge University Press, 1993.

- [115] J. Proakis. *Digital Communications*. McGraw Hill, 1995.
- [116] M. Rahnema. U.S. Patent No. 5430729: Method and Apparatus for Adaptive Directed Route Randomization and Distribution in a Richly Connected Communication Network, 1995.
- [117] M. Rahnema. U.S. Patent No. 5596722: Packet Routing System and Method for Achieving Uniform Link Usage and Minimizing Link Load, 1997.
- [118] J. Restrepo and G. Maral. Cellular Geometry for World-Wide Coverage by non-GEO Satellites using 'Earth-Fixed Cell' Technique. *Space Communications*, 14:179–189, 1996.
- [119] N. Samaraweera. Return Link Optimization for Internet Service Provision using DBS-S Networks. *ACM Computer Communications Review*, 29(3):4–13, July 1999.
- [120] A. Sangiovanni-Vincentelli. Private communications, 1999.
- [121] S. Segaller. *Nerds 2.0.1—A Brief History of the Internet*. TV Books, L.L.C., 1998.
- [122] J. Semke, J. Mahdavi, and M. Mathis. Automatic TCP Buffer Tuning. *Proceedings of ACM SIGCOMM '98*, pages 315–23, October 1998.
- [123] K. Seo et al. Distributed Testing and Measurement across the Atlantic Packet Satellite Network (SATNET). *Proceedings of ACM Sigcomm '88*, pages 235–46, 1988.
- [124] N. Shacham. Protocols for Multi-Satellite Networks. *Proceedings of IEEE MILCOM '88*, pages 501–505, 1988.
- [125] S. Shenker. Fundamental Design Issues for the Future Internet. *IEEE Journal on Selected Areas in Communications*, 13(7):1176–1188, September 1995.
- [126] W. Simpson. The Point-to-Point Protocol (PPP). *Internet RFC 1548*, 1993.
- [127] W. Stevens. *TCP/IP Illustrated, Volume 1*. Addison Wesley, 1994.
- [128] W. Stevens. *TCP/IP Illustrated, Volume 3*. Addison Wesley, 1996.
- [129] W. Stevens. TCP Slow Start, Congestion Avoidance, Fast Retransmit, and Fast Recovery Algorithms. *Internet RFC 2001*, 1997.
- [130] M. Sturza. The Teledesic Satellite System. *Proceedings of 1994 IEEE National Telesystems Conference*, pages 123–126, 1994.
- [131] B. Suter, T. Lakshman, D. Stiliadis, and A. Choudhury. Design Considerations for Supporting TCP with Per-flow Queueing. *Proceedings of INFOCOM '98*, pages 299–306, 1998.
- [132] J. Touch. TCP Control Block Interdependence. *Internet RFC 2140*, 1997.
- [133] P. Tsuchiya. The Landmark Hierarchy: A New Hierarchy for Routing in Very Large Networks. *Proceedings of ACM Sigcomm '88*, pages 35–42, 1988.
- [134] E. Tuck et al. The Calling Network. *International Journal of Satellite Communications*, 12(1):45–61, 1994.

- [135] H. Uzunalioglu. A Connection Handover Protocol for LEO Satellite Networks. *Proceedings of ACM MobiCom '97*, pages 204–14, 1997.
- [136] H. Uzunalioglu. Probabilistic Routing Protocol for Low Earth Orbit Satellite Networks. *Proceedings of IEEE ICC '98*, pages 89–93, 1998.
- [137] T. Watts. Telephony, Internet, and Broadband over Satellite. *Invited talk, Global Opportunities in Internet via Satellite Conference, Washington D.C.*, May 1999.
- [138] M. Werner. A Dynamic Routing Concept for ATM-Based Satellite Personal Communication Networks. *IEEE Journal on Selected Areas in Communications*, 15(8):1636–48, 1997.
- [139] M. Werner, C. Delucchi, H-J. Vogel, G. Maral, and J. de Ridder. ATM-Based Routing in LEO/MEO Satellite Networks with Intersatellite Links. *IEEE Journal on Selected Areas in Communications*, 15(1):69–82, 1997.
- [140] M. Werner, A. Jahn, E. Lutz, and A. Bottcher. Analysis of System Parameters for LEO/ICO-Satellite Communication Networks. *IEEE Journal on Selected Areas in Communications*, 13(2):371–81, 1995.
- [141] D. Wetherall and C. Lindblad. Extending Tcl for Dynamic Object-Oriented Programming. *Proceedings of the Tcl/Tk Workshop*, July 1995.
- [142] L. Wood. *Network Performance of Non-Geostationary Constellations Equipped with Intersatellite Links*. Masters thesis, University of Surrey, 1995.
- [143] L. Wood. Big LEO Tables. <http://www.ee.surrey.ac.uk/Personal/L.Wood/constellations/tables/tables.html>, 1999.
- [144] G. Wright and W. Stevens. *TCP/IP Illustrated, Volume 2*. Addison Wesley, 1995.
- [145] XTP Forum. The XTP 4.0 Specification, 1995.
- [146] Y. Zhang, D. DeLucia, B. Ryu, and S. Dao. Satellite Communications in the Global Internet: Issues, Pitfalls, and Potential. *Proceedings of INET '97*, June 1997.
- [147] Y. Zhang, E. Yan, and S. Dao. A Measurement of TCP over Long-Delay Network. *Proceedings of 6th Int'l Conference on Telecommunication Systems, Modelling, and Analysis*, March 1998.