

CS 756 Reading List (Spring 2004)

General Readings

- [FIPa01] S. Floyd and V. Paxson, “Difficulties in simulating the Internet,” *IEEE/ACM Transactions on Networking*, vol. 9, pp. 392–403, August 2001.
- [SRC184] J. H. Saltzer, D. P. Reed, and D. D. Clark, “End-to-end arguments in system design,” *ACM Transactions on Computer Systems*, vol. 2, pp. 277–288, November 1984.
- [BICI01] M. Blumenthal and D. Clark, “Rethinking the design of the Internet: the end-to-end arguments vs. the brave new world,” *ACM Transactions on Internet Technology*, vol. 1, pp. 70–109, August 2001.

Discrete Event Simulation

- [ns2] You can download it from <http://www.isi.edu/nsnam/ns>. Documents are also available.
- [OPNET] It is available on site.gmu.edu. Just use the command `opnet`. Tutorials are available on-line (pull down the Help menu).
- [Brown88] R. Brown, “Calendar queues: A fast $O(1)$ priority queue implementation for the simulation event set problem,” *Communications of the ACM*, vol. 31, pp. 1220–1227, October 1988.

TCP Performance

- [PFTK98] J. Padhye, V. Firoiu, and D. T. J. Kurose, “Modeling TCP throughput: A simple model and its empirical validation,” in *Proceedings of SIGCOMM '98*, (Vancouver, British Columbia), pp. 303–314, September 1998.
- [PaF101] J. Padhye and S. Floyd, “On inferring TCP behavior,” in *Proceedings of SIGCOMM '01*, (San Diego, CA), pp. 287–298, October 2001.
- [AABa00] E. Altman, K. Avrachenkov, and C. Barakat, “A stochastic model of TCP/IP with stationary random losses,” in *Proceedings of the conference on Applications, Technologies, Architectures, and Protocols for Computer Communication*, pp. 231–242, ACM Press, 2000.

TCP Congestion Control

- [**Jaco88**] V. Jacobson, “Congestion avoidance and control,” in *Proceedings of SIGCOMM '88*, (Stanford, CA), pp. 314–329, August 1988.
- [**RFC2581**] M. Allman, V. Paxson, and W. Stevens, “TCP congestion control.” Internet RFC 2581, April 1999.
- [**RFC2001**] W. Stevens, “TCP slow start, congestion avoidance, fast retransmission, and fast recovery algorithms.” Internet RFC 2001, January 1997.
- [**RFC2582**] S. Floyd and T. Henderson, “The NewReno modification to tcp’s fast recovery algorithm.” Internet RFC 2582, April 1999.
- [**FaFl96**] K. Fall and S. Floyd, “Simulation-based comparisons of Tahoe, Reno and SACK TCP,” *Computer Communication Review*, July 1996.

Internet Congestion Control

- [**RED**] S. Floyd and V. Jacobson, “Random early detection gateways for congestion avoidance,” *IEEE/ACM Transactions on Networking*, vol. 1, pp. 397–413, August 1993.
- [**RFC2309**] B. Braden, D. Clark, 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.” Internet RFC 2309, April 1998.
- [**LiMo97**] D. Lin and R. Morris, “Dynamics of random early detection,” *Computer Communication Review*, vol. 27, October 1997.
- [**MFWe01**] R. Mahajan, S. Floyd, and D. Wetherall, “Controlling high-bandwidth flows at the congested routers,” in *9th International Conference on Network Protocols (ICNP)*, November 2001. (An extended, technical report version available as MFWe01-TR.)
- [**FlFa99**] S. Floyd and K. Fall, “Prompting the use of end-to-end congestion in the Internet,” *IEEE/ACM Transactions on Networking*, vol. 7, pp. 458–472, August 1999.
- [**AnTa99**] F. Anjum and L. Tassiulas, “Fair bandwidth sharing among adaptive and non-adaptive flows in the Internet,” in *Proc. of INFOCOM '99*, (New York, NY), pp. 1412–1420, March 1999.

- [**PPPs00**] R. Pan, B. Prabhakar, and K. Psounis, “CHOCk a stateless active queue management scheme for approximating fair bandwidth allocation,” in *Proc. of INFOCOM 2000*, (Tel-Aviv, Israel), pp. 942–951, March 2000.
- [**FFTt98**] S. Floyd, K. Fall, and K. Tieu, “Estimating arrival rates from the RED packet drop history.” <http://www.icir.org/floyd/end2end-paper.html>, April 1998.

Rate Control Algorithms for Real-time Applications

- [**XuHu02**] G. Xu and Y. Huang, “Transitional behaviors of general AIMD rate control.” Accepted to appear in *Proc. of the 11th International Conference on Computer Communications and Networks*, October 2002.
- [**BaBa01**] D. Bansal and H. Balakrishnan, “Binomial congestion control algorithms,” in *Proceedings of INFOCOM '01*, (Anchorage, AK), pp. 631–640, April 2001.
- [**BBFS01**] D. Bansal, H. Balakrishnan, S. Floyd, and S. Shenker, “Dynamic behavior of slowly-responsive congestion control algorithms,” in *Proceedings of SIGCOMM '01*, (San Diego, CA), pp. 263–274, October 2001.
- [**FPWi00**] S. Floyd, J. Padhye, and J. Widmer, “Equation-based congestion control for unicast applications,” in *Proceedings of the Conference on Applications, Technologies, Architectures, and Protocols for Computer Communication*, (Stockholm, Sweden), pp. 43–56, August 2000.
- [**YaLa00**] Y. R. Yang and S. S. Lam, “General AIMD congestion control,” in *Proceedings of ICNP 2000*, (Osaka, Japan), pp. 187–198, November 2000.
- [**RHEs99**] R. Rejaie, M. Handley, and D. Estrin, “RAP: An end-to-end rate-based congestion control mechanism for realtime streams in the Internet,” in *INFOCOM '99*, (New York, USA), pp. 1337–1345, March 1999.
- [**KiLB99**] T. eun Kim, S. Lu, and V. Bharghavan, “Improving congestion control performance through loss differentiation,” in *Proceedings of ICCCN '99*, (Boston, MA), pp. 412–418, October 1999.
- [**LKBh01**] K.W.Lee, T.Kim, and V. Bharghavan, “A comparison of two popular end-to-end congestion control algorithm: The case of AIMD and AIPD,” *IEEE/ACM Transaction on Networking*, September 2001.

- [**JGMB01**] S. Jin, L. Guo, I. Matta, and A. Bestavros, “TCP-friendly SIMD congestion control and its convergence behavior,” in *Proceedings of ICNP '01*, pp. 156–164, November 2001.
- [**WDMa01**] J. Widmer, R. Denda, and M. Mauve, “A survey on TCP-friendly congestion control,” *IEEE Networks*, pp. 28–37, May/June 2001.
- [**TEAR**] V. O. Injong Rhee and Y. Yi, “TEAR: TCP-emulation at receivers-flow control for multimedia streaming,” in *Tech.Report, Department of Comp. Sci., NCSU*, (Raleigh, NC), April 2000.
- [**SiWo00**] D. Sisalem and A. Wolisz, “LDA+ TCP-friendly adaptation: A measurement and comparison study,” in *Proceedings of 10th Network and Operating System Support for Digital Audio and Video*, (Chapel Hill, NC), June 2000.

Denial-of-Service Attacks

- [**SoPe01**] D. X. Song and A. Perrig, “Advanced and authenticated marking schemes for IP traceback,” in *Proceedings. IEEE INFOCOM 2001*, (Anchorage, Alaska), pp. 878–886, April 2001.
- [**SWKA01**] S. Savage, D. Wetherall, A. Karlin, and T. Anderson, “Network support for IP traceback,” *IEEE/ACM Transactions on Networking*, pp. 226–238, June 2001.
- [**MVSa01**] D. Moore, G. Voelker, and S. Savage, “Inferring Internet denial-of-service activity,” in *USENIX Security Symposium*, (Washington D.C.), August 2001.
- [**HWLT01**] K. J. Houle, G. M. Weaver, N. Long, and R. Thomas, “Trends in denial of service attack technology.” CERT Coordination Center, October 2001.
- [**PaLe01a**] K. Park and H. Lee, “On the effectiveness of probabilistic packet marking for IP traceback under denial of service attack,” in *Proceedings. IEEE INFOCOM 2001*, (Anchorage, Alaska), pp. 338–347, April 2001.
- [**PaLe01b**] K. Park and H. Lee, “On the effectiveness of route-based packet filtering for distributed DoS attack prevention in power-law internets,” in *Proceedings on SIGCOMM 2001*, (Huntington Beach, CA), pp. 15–26, August 2001.
- [**BaMa02**] T. Baba and S. Matsuda, “Tracing network attacks to their sources,” *IEEE Internet Computing*, pp. 20–26, March 2002.

- [Garb00] L. Garber, “Denial-of-service attacks rip the Internet,” *IEEE Computer*, vol. 33, pp. 12–17, April 2000.
- [RFC2827] P. Ferguson and D. Senie, “Network ingress filtering: Defeating denial of service attacks which employ IP source address spoofing.” Internet RFC 2827, May 2000.
- [SMSi97] D. L. Steward, P. T. Maginnis, and T. Simpson, “Who is at the door: The SYN denial of service,” *Linux Journal*, June 1997.
- [CA-98.01.smurf] “Smurf IP denial-of-service attacks.” CERT Advisory CA-98.01, January 1998. available at <http://www.cert.org/advisories/CA-98.01.smurf.html>.

Internet Dynamics

- [TMWi97] K. Thompson, G. J. Miller, and R. Wilder, “Wide-area Internet traffic patterns and characteristics,” *IEEE Network*, pp. 10–23, November–December 1997.
- [AHVe98] J. Andren, M. Hilding, and D. Veitch, “Understanding end-to-end Internet traffic dynamics,” in *GLOBECOM '98*, (Sydney, Australia), pp. 1118–1122, November 1998.
- [Bolo93] J.-C. Bolot, “End-to-end packet delay and loss behavior in the Internet,” in *Proceedings of SIGCOMM '93*, (San Francisco, CA), pp. 289–298, October 1993.
- [Will01] C. Williamson, “Internet traffic measurement,” *IEEE Internet Computing*, pp. 70–74, Nov.–Dec. 2001.
- [Paxs97] V. Paxson, “End-to-end routing behavior in the Internet,” *IEEE/ACM Transactions on Networking*, vol. 5, pp. 601–615, October 1997.
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- [CMTh98] K. Claffy, G. Miller, and K. Thompson, “The nature of the beast: Recent traffic measurements from an Internet backbone,” in *Proceedings of INET '98*, (Palexpo, Geneva), July 1998. available at www.cetp.ipsl.fr/porteneu/inet98/6g/6g_3.htm.

The Internet weather report <http://www.mids.org/weather>.

The Internet traffic report <http://www.internettrafficreport.com>.

Multicast

- [FHM_c98] E. Fleury, Y. Huang, and P. K. McKinley, “On the performance and feasibility of multicast core selection heuristics,” in *Proceedings of IEEE ICCCN '98*, pp. 296–303, October 1998.
- [DLLK_B00] C. Diot, B. Neil, B. Lyles, H. Kassem, and D. Balensiefen, “Deployment issues for the IP multicast service and architecture,” *IEEE Network*, vol. 14, January 2000.
- [DoLe93] M. Doar and I. Leslie, “How bad is naive multicast routing?,” in *Proc. of INFOCOM '93*, pp. 82–89, March 1993.
- [FBP_a98] M. Faloutsos, A. Banerjea, and R. Pankaj, “QoS_{MIC}: Quality of service sensitive multicast Internet protocol,” in *Proceedings of the ACM SIGCOMM '98*, (Vancouver Canada), pp. 144–153, Spetember 1998.
- [THW_a99] H.-Y. Tyan, J. Hou, and B. Wang, “On providing quality-of-service control for core-based multicast routing,” in *Proceedings of ICDCS '99*, (Austin, TX), pp. 25–33, June 1999.
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- [KRT_A98] S. Kumar, P. Radoslavov, D. Thaler, C. Alaettinoglu, D. Estrin, and M. Handley, “The MASC/BGMP architecture for inter-domain multicast routing,” *Proceedings of ACM SIGCOMM*, pp. 93–104, August 1998.
- [Wax_m88] B. M. Waxman, “Routing of multipoint connections,” *IEEE Journal of Selected Areas in Communications*, vol. 6, no. 9, pp. 1617–1622, 1988.
- [Wint87] P. Winter, “Steiner problem in networks: a survey,” *Networks*, pp. 129–167, 1987.
- [AlAm96] K. C. Almeroth and M. H. Ammar, “Collecting and modeling the join/leave behavior of multicast group members in the MBone,” in *Proceedings of the 5th IEEE International Symposium on High Performance Distributed Computing*, (Syracus, New York), pp. 209–216, August 1996.
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Differentiated Services and MPLS

- [**Bern00**] Y. Bernet, “The complementary roles of RSVP and differentiated services in the full-service QoS network,” *IEEE Communications Magazine*, vol. 38, pp. 154–162, February 2000.
- [**RFC2638**] K. Nichols, V. Jacobson, and L. Zhang, “A two-bit differentiated services architecture for the Internet.” Internet RFC 2638, July 1999.
- [**RFC2598**] V. Jacobson, K. Nichols, and K. Poduri, “An expedited forwarding PHB.” Internet RFC 2598, June 1999.
- [**RFC2597**] J. Heinanen, T. Finland, F. Baker, W. Weiss, and J. Wroclawski, “Assured forwarding PHB group.” Internet RFC 2597, June 1999.
- [**RFC2697**] J. Heinanen, T. Finland, and R. Guerin, “A single rate three color marker.” Internet RFC 2697, September 1999.
- [**RFC2698**] J. Heinanen, T. Finland, and R. Guerin, “A two rate three color marker.” Internet RFC 2698, September 1999.
- [**RFC2859**] W. Fang, N. Seddigh, and B. Nandy, “A time sliding window three colour marker (TSWTM).” Internet RFC 2859, June 2000.
- [**FKSS99**] W.-C. Feng, D. D. Kandlur, D. Saha, and K. G. Shin, “Adaptive packet marking for maintaining end-to-end throughput in a differentiated-services internet,” *IEEE/ACM Transactions on Networking*, vol. 7, pp. 685–697, October 1999.
- [**RFC3031**] E. Rosen, A. Viswanathan, and R. Callon, “Multiprotocol label switching architecture.” IETF RFC 3031, January 2001.
- [**RFC3032**] E. Rosen, D. Tappan, G. Fedorkow, Y. Rekhter, D. F. T. Li, and A. Conta, “MPLS label stack encoding.” IETF RFC 3032, January 2001.

You may want to check out www.ietf.org for recent drafts about DiffServ and MPLS. Some of them contain ideas that lend themselves to performance evaluation.

Internet Topologies and Generation Models

AS-level Internet topologies can be found at moat.nlanr.net/AS/.

- [**FFFa99**] M. Faloutsos, P. Faloutsos, and C. Faloutsos, “On power-law relationship of the Internet topology,” in *Proceedings of SIGCOMM '99*, pp. 251–262, August 1999.
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- [**Inet00**] C. Jin, Q. Chen, and S. Jamin, “Inet: Internet topology generator,” Tech. Rep. CSE-TR-433-00, Dept. of EECS, University of Michigan, Ann Arbor, MI 48109, 2000.
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- [**Doar96**] M. B. Doar, “A better model for generating test networks,” in *Proc. of GLOBECOM '96*, pp. 86–93, November 1996.
- [**ZCDo97**] E. Zegura, K. Calvert, and M. Donahoo, “A quantitative comparison of graph-based models for Internet topology,” *IEEE/ACM Transactions on Networking*, vol. 5, pp. 770–783, December 1997.
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Intrusion Detection

- [**KeVi02**] R. A. Kemmerer and G. Vigna, “Intrusion detection: A brief history and overview,” *Computer*, April 2002.
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- [MWill02] M. M. Williamson, “Throttling viruses: Restricting propagation to defeat malicious mobile code,” in *Proceedings of 18th Annual Computer Security Applications Conference*, (Las Vegas, Nevada), December 2002.
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- [LiJo01] S. Li and A. Jones, “Temporal signatures for intrusion detection,” in *Proceedings of 17th Annual Computer Security Applications Conference (ACSAC)*, (New Orleans, Louisiana), December 2001.