

## References

1. Zander, J. Radio resource management in cellular networks: an introduction. Signaler, Sensorer & System. 2002.
2. Zhang, Q., Zhu, W., and Zhang, Y.Q. A cross-layer QoS-supporting framework for multimedia delivery over wireless Internet. The 12th International Paketvideo Workshop. Pittsburgh PA, USA, April 2002.
3. Cheng, L. Network awareness for heterogeneous data networks. New Brunswick Rutgers, The State University of New Jersey, May 2002.
4. Jamalipour, A. The wireless mobile Internet: architecture, protocols, and services. John Wiley & Sons, Ltd., 2003.
5. Varshney, U. and Vetter, R. Emerging mobile and wireless networks. Communications of The ACM. June 2000.
6. Shakkottai, S., Rappaport, T. S., and Karlsson, P. C. Cross-layer design for wireless networks. IEEE Communications Magazine. vol.41(10) pp.74-80, October 2003.
7. ETSI, Network aspects (NAs). General aspects of quality of service (QoS) and network performance. ETR 003. European Telecommunications Standard Institute. 2nd edition, 1994.
8. Rao, D. Efficient and portable middleware for application-level adaptation. Virginia Polytechnic Institute and State University, May 2001.
9. Bechler, M., Ritter, H., and Schiller, J. H. Quality of service in mobile and wireless networks: the need for proactive and adaptive applications. System Sciences, 2000. Proceedings of the 33rd Annual Hawaii International Conference on. 4-7 Jan 2000.

10. Suthon, S.W., Ong, G. M., and Pung, H. K. An adaptive end-to-end QoS management with dynamic protocol configurations. IEEE International Conference on Networks' 2002, ICON2002. Singapore, 27-30 Aug 2002.
11. Kurose, J. F. and Ross, K. W. Computer networking, a top-down approach featuring the Internet. 2nd Edition, ISBN 0-201-97699-4, Pearson Education, Inc., 2003.
12. Pejanovic, M. On the optimization of 3G cellular systems deployment. TELSIKS 2001. Yugoslavia, 2001.
13. Evans, B. G. and Baughan, K. Visions of 4G. Electronics & Communication Engineering Journal. December 2000.
14. Misikangas, P., Makela, M., and Raatikainen, K. Predicting quality-of-service for nomadic applications using intelligent Agents Impact'99 Workshop. 1999.
15. Oodan, A. P., Ward, K. E., and Mullee, A. W. Quality of service in telecommunications. ISBN 0-85296-919-8, The Institution of Electrical Engineers, London, United Kingdom, 1997.
16. Gronroos, C. Strategic management and marketing in the service sector. Helsingfors Swedish School of Economics and Business Administration. 1982.
17. Aurrecoechea, C., Campbell, A. T., and Hauw, L. A survey of QoS architecture. ACM/Springer Verlag Multimedia Systems Journal, Special Issue on QoS Architecture. vol.6(3) pp.138-151, Springer-Verlag, May 1998.
18. Chalmers, D. and Sloman, M. Survey of quality of service in mobile computing environments. 30th July 1998, revised 4th February 1999, Research Report 98/10. Imperial College, London, 1999.
19. Yang, S.J. and Chou, H.C. Adaptive QoS parameters approach to modeling In-

- ternet performance. International Journal of Network Management. vol.13(1) pp.69-82, January/February 2003.
20. Brownlee, N. and Loosley, C. Fundamentals of Internet measurement: a tutorial. The CMG journal of computer resource management. issue 102, Spring 2001.
21. Miras, D. A survey of network QoS needs of advanced Internet applications. Computer Science Department, University College London, November, 2002.
22. Gurijala, A. and Molina, C. Defining and monitoring QoS metrics in the next generation wireless networks. Telecommunications Quality of Service: The Business of Success. The Institution of Electrical Engineers, pp.37-42, March 2004.
23. A one-way delay metric for IP Performance Metrics (IPPM), RFC2679.
24. IP packet delay variation metric for IP Performance Metrics (IPPM), RFC3393.
25. Chen, Y., Farley, T., and Ye, N. QoS Requirements of network applications on the Internet. Information-Knowledge-System Management. vol.4 pp.55-76, 2004.
26. Wood, S. and Chatterjee, S. Network quality of service for the enterprise: a broad overview. Information Systems Frontiers. vol.4(1) pp.63-84, 2002.
27. UMTS. Universal Mobile Telecommunication System(UMTS); Quality of service and network performance (UMTS 22.25 version 3.1.0). UMTS, 1998.
28. Fitzek, F., Koepsel, A., Wolisz, A., Krishnam, M., and Reisslein, M. Providing application-level QoS in 3G/4G wireless systems: a comprehensive framework based on multi-rate CDMA. IEEE Wireless Communications. vol.9(2) pp.42-47, April 2002.
29. Fonseca, M. Negotiation de SLA dynamiques entre ISPs et ASPs basée sur les web services. DNAC, 2003.

30. Szymczyk, P. Developing service level agreement for outsourced processes and systems. International Carpathian Control Conference ICCC'2002. Malenovice, Czech Republic, 27-30 May 2002.
31. Jin, L., Machiraju V., and Sahai, A. Analysis on service level agreement of web services. HPL-2002-180, HP Laboratories Palo Alto, June 2002.
32. Philippe, J., De Palma, N., Bouchenak, S., Boyer, F., and Hagimont, D. A black-box approach for web application SLA. SAC, Dijon, France, 23-27 April 2006.
33. Mäkelä, M. Adaptability for seamless roaming using software agent. The XIII International Symposium on Services and Local Access (ISSLS2000). Sweden, 18-23 June 2000.
34. Magedanz, T., Rothermel, K., and Krause, S. Intelligent agents: an emerging technology for next generation communication. INFOCOM'96. San Francisco, CA, USA, 24-28 March, 1996.
35. Sanneck, H., Berger, M., and Bauer, B. Application of agent technology to next generation wireless/mobile networks. Proceedings of the Second World Wireless Research Forum. Helsinki, Finland, May 2001.
36. Trzec, K. and Huljenic, D. Intelligent agents for QoS management. AAMAS'02. Bologna, Italy, July 15-19, 2002.
37. Bennani, F. and Simoni, N. Dynamic management for end-to-end IP QoS: from requirements to Offers. ISCC 2000, Fifth IEEE Symposium on Computers and Communications. France, 3-6 July 2000.
38. Al-Ali, R., Hafid, A., Rana, O. F., and Walker, D. W. QoS adaptation in service-oriented grids. Proceedings of the 1st International Workshop on Middleware

- for Grid Computing (MGC2003) at ACM/IFIP/USENIX Middleware 2003. Rio de Janeiro, Brazil, June 2003.
39. Khan, S., Li, L. F., and Manning, E. G. The utility model for adaptive multimedia systems. The International Conference on Multimedia Modeling. Singapore, November 1997.
  40. Witana, V. and Richards, A. A QoS framework for heterogeneous environments. DSTC Symposium. July 1997.
  41. Wang, C., Tham, C. K., and Jiang, Y. A framework of integrating network QoS and end system QoS. Communications, 2002. ICC 2002. IEEE International Conference on. vol.2 pp.1225-1229, April-May 2002.
  42. Dalal, A. C. and Jordan, S. Improving user-perceived performance at a world wide web server. Global Telecommunications Conference, 2001. GLOBECOM'01. IEEE. issue 4 pp.2465-2469, 25-29 November 2001.
  43. Pandey, R., Fritz Barnes, J., and Olsson, R. Supporting quality of service in HTTP servers. Principles of distributed computing, Proceedings of the seventeenth annual ACM symposium on. pp.247-256, 1998.
  44. Chandra, S., Ellis, C. S., and Vahdat, A. Differentiated multimedia web services using quality aware transcoding. INFOCOM 2000. Nineteenth Annual Joint Conference of the IEEE Computer and Communications Societies. Proceedings. IEEE. vol.2 pp.961-969, 26-30 March 2000.
  45. Krishnamurthy, B. and Willis, C. E. Improving web performance by client characterization driven server adaptation. World Wide Web, Proceedings of the 11th international conference on. pp.305-316, 2002.
  46. Almeida, J., Dabu, M., Manikutty, A., and Cao, P. Providing differentiated levels

- of service in web content hosting. Proceeding of the First Workshop on Internet Server Performance. June 1998.
47. Abdelzaher, T. F. and Bhatti, N. Web server QoS management by adaptive content delivery. Quality of Service, 1999. IWQoS '99. 1999 Seventh International Workshop on. pp.216-225, May-June 1999.
48. Ye, N., Gel, E. S., Li, X., Farley, T., and Lai, YC. Web server QoS models: applying scheduling rules from production planning. Computers & Operations Research. vol.32(1) pp.1147-1164, January 2005.
49. Elnikety, S., Nahum, E., Tracey, J., and Zwaenepoel, W. A method for transparent admission control and request scheduling in e-commerce web sites. World Wide Web, Proceedings of the 13th international conference on. pp.276-286, 2004.
50. Stankovic, J. A., Spuri, M., Di Natale, M., and Buttazzo, G. C. Implications of classical scheduling results for real-time systems. IEEE Computer. vol.28(6) pp.16-25, June 1995.
51. Balachandran, A., Voelker, G. M., Bahl, P., and Venkat Rangan, P. Characterizing user behavior and network performance in a public wireless LAN. Proceedings of the 2002 ACM SIGMETRICS, International Conference on Measurement and Modeling of Computer Systems. pp.195-205, 2002.
52. Adya, A., Bahl P., and Qiu, L. Analyzing the browse patterns of mobile clients. Proceedings of the 1st ACM SIGCOMM workshop on Internet Measurement. pp.189-194, San Francisco, California, USA, 2001.
53. Kotz, D. and Essien, K. Analysis of a campus-wide wireless network. Proceedings of the 8th Annual International Conference on Mobile Computing and Networking (MOBICOM). pp.107-118, Geogia, USA, September 2002.

54. Willig, A. A short introduction to queueing theory. Technical University Berlin, Telecommunication Networks Group, 21st July 1999.
55. Gelenbe, E. and Pujolle, G. Introduction to Queueing Networks. John Wiley & Sons, 1999.
56. Jarrett, J. and Kraft A. Statistical analysis for decision making. Allyn and Bacon, 1989.
57. Andersson, M., Bengtsson A., Höst, M., and Nyberg, C. Web server traffic in crisis conditions. Proceedings of the 3rd Swedish National Computer Networking Workshop. SNCN, 2005.
58. Vincent, J.-M. Poisson process: traffic model. Universities of Grenoble, 2006.
59. Sidi, M. and Khamisy, A. Single server queueing models for communication systems. [citeseer.ist.psu.edu/117755.html](http://citeseer.ist.psu.edu/117755.html), August 2006.
60. Adan, I. and Resing, J. Lecture notes on queueing theory. Department of Mathematics and Computing Science, Eindhoven University of Technology, 28 February 2002.
61. Little, J. D. A proof of the queueing formula  $L = \lambda W$ . Operations Research, 9, pp.383-387, 1961.
62. Stidham, S. A last word on  $L = \lambda W$ . Operations Research, 22, pp.417-421, 1974.
63. T'kindt, V. and Billaut, J.-C. Some guidelines to solve multicriteria scheduling problems. Systems, Man, and Cybernetics, 1999. IEEE SMC '99 Conference Proceedings. 1999 IEEE International Conference on. vol.6 pp.463-468, October 1999.
64. Fan, YL., and Huang, CY. Adaptive scheduler algorithm for multi-criterion de-

- signs in B3G wireless systems. Wireless Communications and Networking Conference, 2004. WCNC. 2004 IEEE. vol.2 pp.1293-1297, 21-25 March 2004.
65. Cherkasova L. Scheduling strategy to improve response time for web applications. Proceedings of High Performance Computing and Networking (HPCN)-Europe. Amsterdam, April 1998.
66. Zeleny, M. Multiple criteria decision making. McGraw-Hill. 1982.
67. Ghosh, S. and Squillante, M. S. Revisiting correlations and scheduling in web servers. ACM SIGMETRICS Performance Evaluation Review. vol.31(2) pp.40-42, 2003.
68. Borst, S.C., Boxma, O.J., and Combé, M.B. Collection of customers: a correlated M/G/1 queue. ACM SIGMETRICS Performance Evaluation Review. vol.20(1) pp.47-59, June 1992.
69. Duenas, A. and Petrovic, D. A new approach to multi-objective single machine scheduling problems under fuzziness. Decision Support in an Uncertain and Complex World: The IFIP TC8/WG8.3 International Conference, 2004.
70. Flinders, K. IDC predicts wireless Internet growth. VNU Network, VNU Business Publications, <http://www.vnunet.com/news/1126661/>, 6 November 2001.
71. Ipsos-Insight. Wireless Internet access climbs nearly 30% in 2004. Ipsos-Insight Technology & Communications Practice, <http://www.ipsos-na.com/news/pressrelease.cfm?id=2598/>, 17 March 2005.
72. IEEE Std 802.11b-1999/Cor 1-2001. IEEE, 2001.
73. GPRS R. Transition scenario for 3GPP networks. RFC3574, Network Working Group, The Internet Society, August 2003.
74. EDGE Introduction of highspeed data in GSMGPRS networks. Ericsson, 2003.

75. IEEE Std 802.11g-2003. IEEE, 2003.
76. Sabata, B., Chatterjee, S., Davis, M., and Sydir, J. J. Taxonomy for QoS specifications. Proceeding of WORDS 1997. Newport Beach, California, February 1997.
77. Spohn, D. L. Data Network Design. 2<sup>nd</sup> edition, McGraw-Hill, 1997.
78. Heidemann, J., Obraczka, K., and Touch, J. Modeling the performance of HTTP over several transport protocol. IEEE/ACM Transactions on Networking. vol.5(5), October 1997.
79. Liu, B. H., Ray, P., and Jha, S. Mapping distributed application SLA to network QoS parameters. ICT 2003. pp.1230-1235, March 2003.
80. Sullivan, W. G. and Claycombe, W. W. Fundamentals of forecasting. Reston Publishing Company, Inc., Reston, Virginia, 1977.
81. Baker, K. R. Introduction to sequencing and scheduling. John Wiley & Sons Inc., 1974.
82. French, S. Sequencing and scheduling: an introduction to the mathematics of the job-shop. John Wiley & Sons Inc., 1982.
83. ns-2. The Network Simulator - ns(version 2). ns homepage, <http://www.isi.edu/nsnam/ns/>, August 2006.
84. Trivedi, K. S. Probability and statistics with reliability, queuing and computer science applications. John Wiley & Sons, 2002.
85. Hopp, W. J. Single server queueing models. When intuition fails: insights from simple models, Dilip Chhajed, Tim Lowe(eds.), New York, Springer, 2006.
86. Berners-Lee, T., Fielding, R., and Frystyk, H. Hypertext Transfer Protocol - HTTP/1.0. IETF RFC 1945. October 1995.

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- Bhattacharjee P. and Srisujjalertwaja W. A generic quality of service management model for network-aware Application. *Proceedings of 2005 IEEE Electro/Information Technology Conference*, Lincoln, Nebraska, USA, 2005.
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