P.O.Box 8718, Beijing 100080, China	Journal of Software July 2003,14(7):1318-1323
E-mail: jos@iscas.ac.cn	ISSN 1000-9825, CODEN RUXUEW, CN 11-2560/TP
http://www.jos.org.cn	Copyright © 2003 by The Editorial Department of Journal of Software

WebMark:一个Web服务器性能测试工具

张广艳, 郑名扬, 鞠九滨

张广艳, 郑名扬, 鞠九滨 (吉林大学 计算机科学与技术系,吉林 长春 130012)
第一作者: 张广艳(1976－),男,吉林榆树人,硕士生,主要研究领域为计算机网络,分布式系统.
联系人: 张广艳 Telephone: 86-431-5166476, E-mail: guangyan.zhang@163.com
Received 2002-05-16; Accepted 2002-08-14

Abstract
In this paper, the metrics and principles of testing Web server performance are summarized, and a more rational metric, weighted response time, is proposed. A tool called WebMark is presented for testing Web server performance, which manages asynchronous I/O by event-driving mode and emulates Internet environment by modifying the TCP/IP stack of clients. The testing of the overall performance of Apache proves that developing such a powerful testing tool as WebMark is of great necessity.

Zhang GY, Zheng MY, Ju JB. WebMark: A tool for testing Web server performance. *Journal of Software*, 2003,14(7):1318~1323.
http://www.jos.org.cn/1000-9825/14/1318.htm

摘要
Web及其应用程序的普及使得Web服务器的性能测试变得越来越重要,而现有的测试工具都具有一定的适应性限制.总结了Web服务器性能测试的指标和原则,提出了一个更加合理的测试指标——加权响应时间.介绍了一个Web服务器性能测试工具WebMark.它用事件驱动的方式管理异步I/O,通过修改Client的TCP/IP协议栈来模拟Internet环境.使用它对Apache进行了全面测试,证明了研制WebMark这样一个功能强大的测试工具是十分必要的.

基金项目：Supported by the National Natural Science Foundation of China under Grant No.60073040 (国家自然科学基金)

References:

[1] Forum of Incident Response and Security Teams. New-Type software multiplies the performance of Web server 5 times. 2001. http://www.chinafirst.org.cn/new/more/d1.php?arc_id=5380 (in Chinese).

[2] SPEC. SPECweb99 release 1.02. 2000. http://www.spec.org/osg/web99/docs/whitepaper.html.

[3] Liu Z, Niclausse N, Jalpa-Villanueva C. Web traffic modeling and performance comparison between HTTP1.0 and HTTP1.1. In: Gelenbe E, ed. System Performance Evaluation: Methodologies and Applications. CRC Press, 1999.

[4] Nielsen H, Gettys J, Baird-Smith A, Prud'hommeaux E, Lie HW, Lilley C. Network performance effects of HTTP/1.1, CSS1, and PNG. In: Proceedings of the SIGCOMM'97 Symposium. Cannes: Association of Computing Machinery, 1997. 155~166.

[5] Netscape Communications Corporation. Introduction to SSL. 1998. http//docs.iplanet.com/docs/manuals/security/sslin/index.htm.

[6] Coarfa C, Druschel P, Wallach DS. Performance analysis of TLS Web servers. In: Proceedings of the Network and Distributed System Security Symposium (NDSS 2002). San Diego, 2002.

[7] Balakrishnan H, Padmanabhan V, Seshan S, Stemm M, Katz R. TCP behavior of a busy Internet server: Analysis and improvements. In: Proceedings of the IEEE Infocom'98. San Francisco: University of California, Berkeley and IBM T.J. Watson Research Center, 1998.

[8] Stanford Linear Accelerator Center. Les Cotrell throughput versus loss. 2000. http://www.slac.stanford.edu/comp/net/wan-mon/ thru-vs-loss.html.

[9] Joi L. Chevalier, editorial director Internet average. Matrix Information and Directory Services, Inc., 2001. http://average.miq.net/.

[10] Barford P. Modeling, measurement and performance of World Wide Web transactions [Ph.D. Thesis]. Boston University, 2001.

[11] Banga G, Druschel P. Measuring the capacity of a Web server under realistic loads. World Wide Web Journal, 1999,2(1). http://citeseer.nj.nec.com/banga99measuring.html.

[12] Mosberger D, Jin T. Httperf?A tool for measuring Web server performance. In: SIGMETRICS Workshop on Internet Server Performance'98. Madison, 1998.

[13] Trent G, Sake M. WebSTONE: The first generation in HTTP server benchmarking. 1995. http://www.mindcraft.com/webstone/paper.html.

[14] ZD Labs. WebBench 4.1. 2001. http://etestinglabs.com/benchmarks/webbench/webbench.asp.

附中文参考文献:
[1] 中国信息安全论坛.新型软件使Web服务器性能提高5倍.2001-02-20.http://www.chinafirst.org.cn/new/more/d1.php? arc_id=5380.