COMMUNIQUÉ

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Web Server Performance Test Results on Compaq ProLiant 5000 Servers

This document summarizes the tests performed by Compaq Engineers to measure the overall throughput of the Compaq ProLiant 5000 server running Microsoft Internet Information Server 1.01 on Microsoft Windows NT Server 3.51 and processing client requests for HTML pages as well as pages containing CGI. The Compaq ProLiant 5000 scales better than the ProLiant 4500 under moderate to heavy request loads. The test data shows a 49% improvement on the ProLiant 4500 and a 56% improvement on the ProLiant 5000.

In the CGI testing that we outline below, we saw a 53% increase with the ProLiant 5000 single processor over an equivalently configured ProLiant 4500. In the dual-processor configuration, we saw a 60% increase in performance with the ProLiant 5000 when compared to the equivalent ProLiant 4500 configuration. In the Webstone compatible tests that were run, the performance increase for a dual-processor ProLiant 4500 versus a dual-processor ProLiant 5000 is approximately 20%. This smaller level of increase is due to the nature of the Webstone load which is not processor intensive. However, in a comparison of a single processor ProLiant 4500 to the single processor ProLiant 5000, there was an increase realized of 68%. This increase is attributed to the fact that the Webstone load is causing enough network traffic to cause the single ProLiant 4500 processor to be nearly saturated where the faster ProLiant 5000 was able to handle the test load with greater ease.

The testing demonstrates that the ProLiant 5000 outperforms the ProLiant 4500 in various proportion client requests (light request loads, medium request loads, and heavy request loads). In summary, the test results demonstrate that Compaq ProLiant servers are an excellent web server platform.

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NOTICE

The information in this publication is subject to change without notice.

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TEST METHODOLOGY AND TEST CONFIGURATIONS

The tests were first conducted on a 10-megabit network using eight clients running multiple threads to simulate up to a maximum of 256 threads. Compaq Engineers encountered a network bottleneck at light to moderate request loads on the 10-megabit network. Because of this, the tests were run over a 100-megabit network to ensure that the network was not the bottleneck. The server and clients were connected to the same 100BaseTX LAN using Compaq 100BaseTX NICs. The test used Microsoft's WebCat analysis tool with the Webstone file set to measure the server throughput in bytes per second. All tests were run using the same request load.

Performance analysis on web servers heretofore are an unknown. There has been some work done in this area, but to date little has come about for an industry standard tool. Some companies have adopted a metric and tool from Silicon Graphics Inc. (SGI) called Webstone. This tool uses the standard Hyper Text Transfer Protocol 1.0 (HTTP) method GET to request documents from the web server under test. These requests can be generated from one or many clients to artificially simulate a load to any web server.

Web server performance is relative. The information you base performance characteristics on will depend on the type of load expected for the web server under test. Because of this, Compaq determined that the Webstone file set should be used in our tests, since it is the de facto standard at this time. The WebCat load generation tool supports the Webstone file set, which enables us to use this tool to generate a load that approximates the results one would get using Webstone.

WEBSTONE FILE DISTRIBUTION

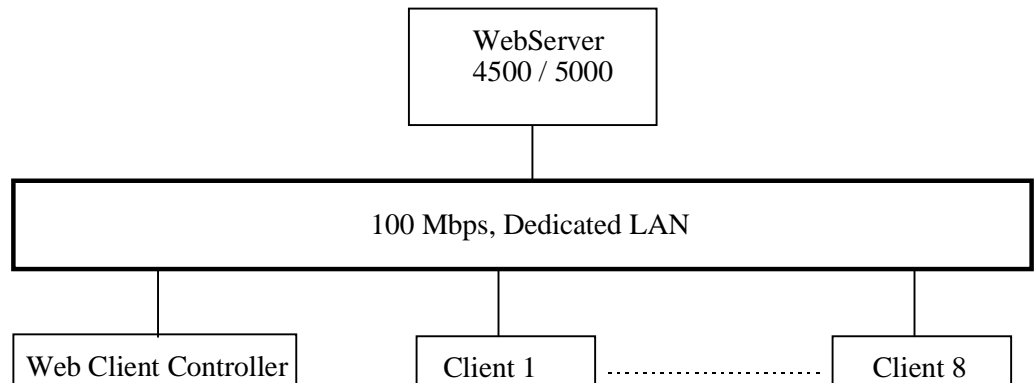| Percentage of time requested	Random file size/selection
40%	2K, 3K
25%	1K, 5K
15%	4K, 6K
5%	7K
4%	8K, 9K, 10K, 11K
4%	12K, 14K, 15K, 17K, 18K
6%	33K
1%	200K

While Webstone is useful in comparing performance across platforms, actual customer use will include requests for pages containing both HTML and CGI content. To highlight the processing power of the ProLiant 5000, the Common Gateway Interface (CGI) file set was selected as an alternate mechanism to test the server's ability to process requests. CGI is a term that is used for web servers to denote an application that requires processing and is requested by a web client but executes on the web server. The CGI test we used here distributes the load between CGI and text files according to the following table:

CGI/HTML FILE DISTRIBUTION

Percentage of time requested	Random file size/selection
2%	256K
2%	512 Bytes
2%	1K
3%	2K
3%	3K
2%	4K
3%	6K
1%	8K
3%	16K
2%	32K
1%	64K
1%	256K
75%	CGI Test

Network Configurations

Hardware Configurations

Server Hardware Configuration: ProLiant 5000, 2-Pentium Pro/166 Mhz Processors, 64 MB RAM, SMART-2 PCI Controller, Netelligent 10/100 PCI Ethernet Network Interface Controller, One 2.1 GB Fast-Wide-SCSI-2 Drive.

Server Hardware Configuration: ProLiant 4500, 2-Pentium/133 Mhz Processors, 64 MB RAM, SMART-2 PCI Controller, 100BaseTX NetFlex-3 Ethernet Network Interface Controller, One 2.1 GB Fast-Wide-SCSI-2 Drive.

Client Hardware Configuration: ProLiant 2000, 2-P5/90 Mhz Processors, 32 MB RAM, SMART EISA Controller, 100BaseTX NetFlex-3 Network Interface Controller, One 2.1 GB Fast-SCSI-2 Drive.

Software Configurations

Server Software Configuration: Windows NT Server 3.51, Service Pack 4, Microsoft Internet Information

                                   Server Version 1.01, Compaq SSD Version 1.18.

Client Software Configuration: Windows NT 3.51, Service Pack 4.

Test Tool: Microsoft WebCat (Web Server Analysis Tool)

Performance Charts

The two charts below show the performance of the ProLiant 5000 in comparison to the ProLiant 4500. The charts show the scalability of the ProLiant 5000 and the Pentium Pro processors. The CGI Performance chart shows a drastic improvement in comparison to the Webstone Performance chart, since CGI requests are very processor intensive.
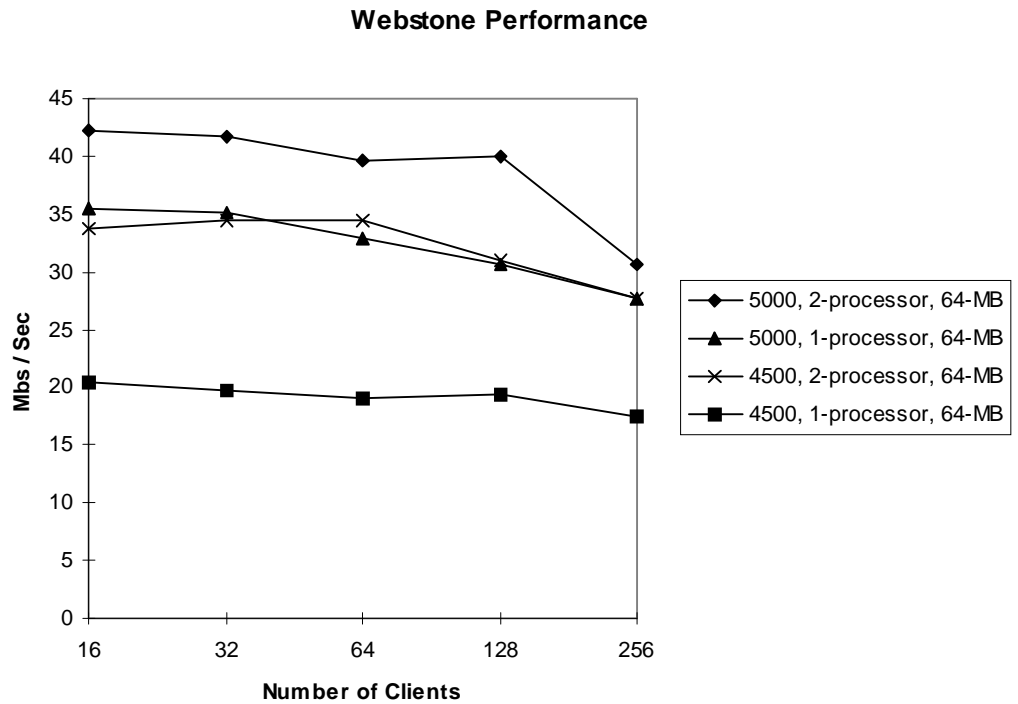
Webstone Performance

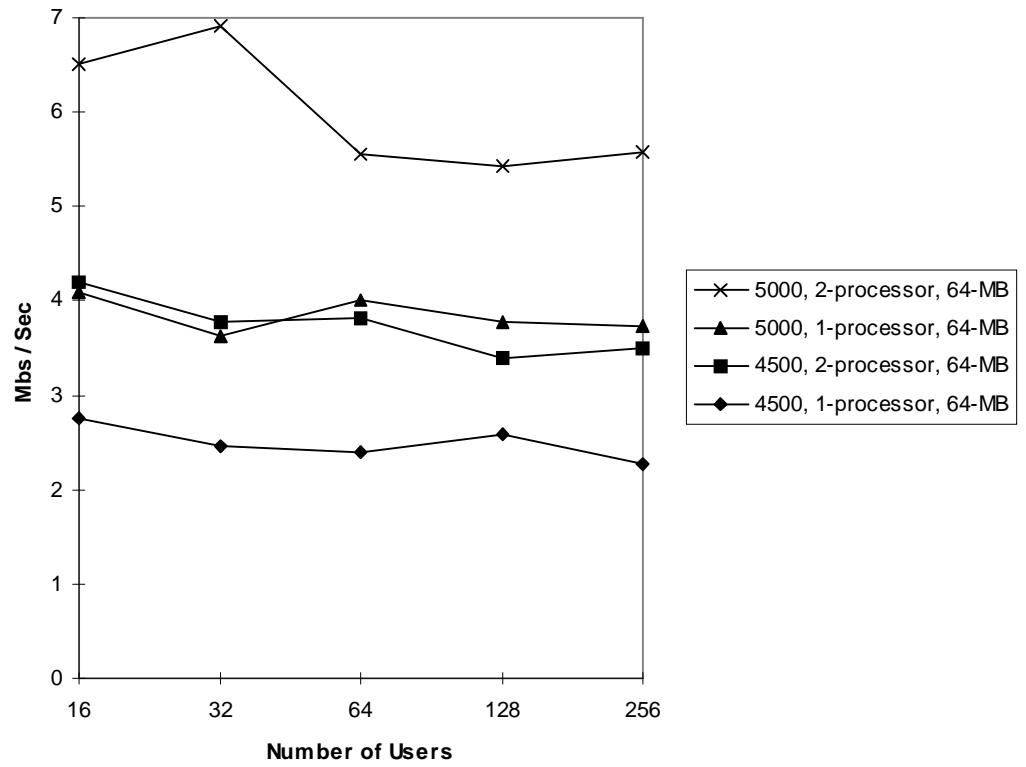*Figure 1. ProLiant 5000 vs ProLiant 4500 Webstone Performance*

CGI Performance

Figure 2. ProLiant 5000 vs ProLiant 4500 CGI Performance