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This document uses accepted industry-standard benchmarks to help illustrate the performance capabilities of the Compaq ProLiant servers. This document provides test results as well as an overview of the test, results summary, and server configurations used to generate performance results.

ProLiant 1600 ServerBench Performance Summary

***Abstract:** On July 7, 1998, Compaq introduced the ProLiant 1600 with 350MHz and 400MHz Pentium II processors. The ProLiant 1600 is the ultimate workgroup server delivering next-generation performance and high availability features critical to maximizing server uptime for workgroups, remote sites, and replicated server environments. The next-generation performance of the ProLiant 1600 400MHz is shown by the industry-standard ServerBench® 4.01 benchmark.*

ProLiant 1600 400MHz Delivers Next-Generation Performance

The ProLiant 1600 server offers 350 and 400MHz Pentium II processors linked by a 100MHz GTL Bus to provide up to 50% faster access to memory. Industry-standard 100MHz ECC SDRAM memory achieves faster clock speeds and increased system performance. The Dual-Channel Integrated Wide-Ultra SCSI controller provides double the throughput of the Fast Wide SCSI-2 from 20MB/s to 40MB/s per channel, offering up to 80MB/s total throughput. The Compaq Netelligent 10/100 TX embedded UTP controller provides high performance network throughput with autosensing capability and full duplex Ethernet support.

When comparing the peaks, the ProLiant 1600 400MHz outperforms the ProLiant 1600 300MHz as follows:

- **35% with 1 processor over 1-32 clients**
- **41% with 2 processors over 1-32 clients**

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ProLiant 1600 ServerBench Performance Summary
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ServerBench 4.01 Benchmark

Overview

ServerBench® 4.01 measures the performance of application servers in a client/server environment by running tests that produce different types of load on the server. The ServerBench test environment includes the server being tested, its PC clients, and a PC designated as the controller (test suites are executed and monitored from the controller).

ServerBench 4.01 is an important industry-standard benchmark used by several computer vendors to simulate application server performance. Ziff-Davis Benchmark Operation (ZDBop), a division of the Ziff-Davis Publishing Company, develops and supports the publicly available, core benchmark programs that all ZD publications use, including NetBench and ServerBench.

Interpreting the Results

When comparing the ProLiant 1600 400MHz model to the ProLiant 1600 300MHz model, it should be noted that different memory configurations were used. A direct comparison may be made when referencing the “peak” performance of each server model; however, a direct comparison is impossible when comparing the “average” performance improvement over the curve. As the performance charts demonstrate, the ProLiant 1600 400MHz with 256MB RAM clearly outperforms the ProLiant 1600 300MHz with 128MB RAM at the 8 to 24 client load. This configuration demonstrates the extra value that memory can play in improving server performance.

The Compaq ProLiant 1600 400MHz delivers improved performance over the Compaq ProLiant 1600 300MHz for environments with up to 32 clients.¹ The Compaq ProLiant 1600 400MHz was configured with 256MB RAM vs. 128MB RAM on the 266, 300, and 350MHz models.

On average, the Compaq ProLiant 1600 400MHz with 256 MB RAM and one processor outperformed the ProLiant 1600 300MHz with 128MB RAM by:

- 57% when averaged over 1-32 clients

When comparing the peaks, the ProLiant 1600 400MHz with one processor outperformed the ProLiant 1600 300MHz by:

- 35%

¹ Number of ServerBench clients is not necessarily equal to number of “users.”

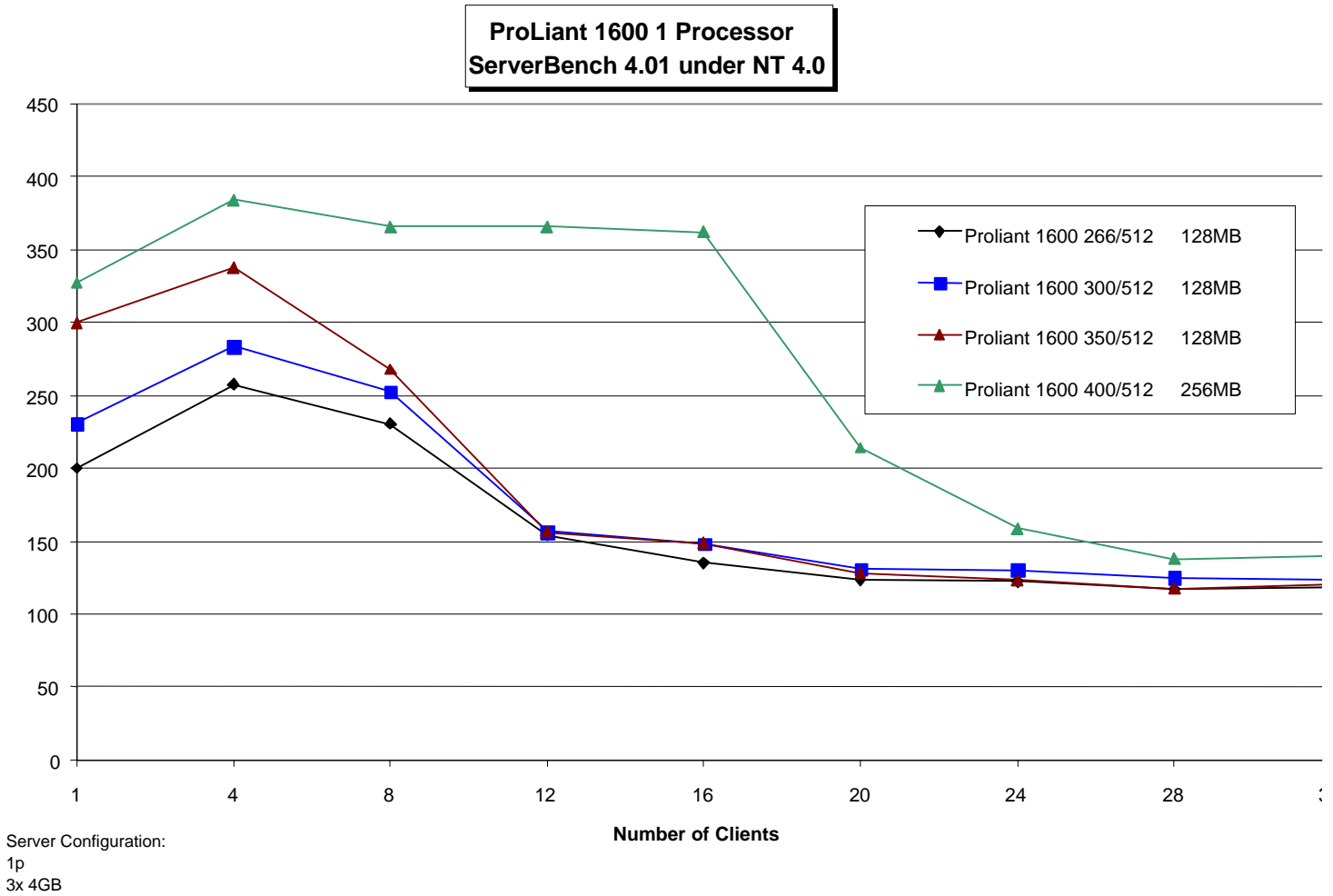


Figure 1. ServerBench 4.01 under Microsoft Windows NT 4.0, 1 Processor

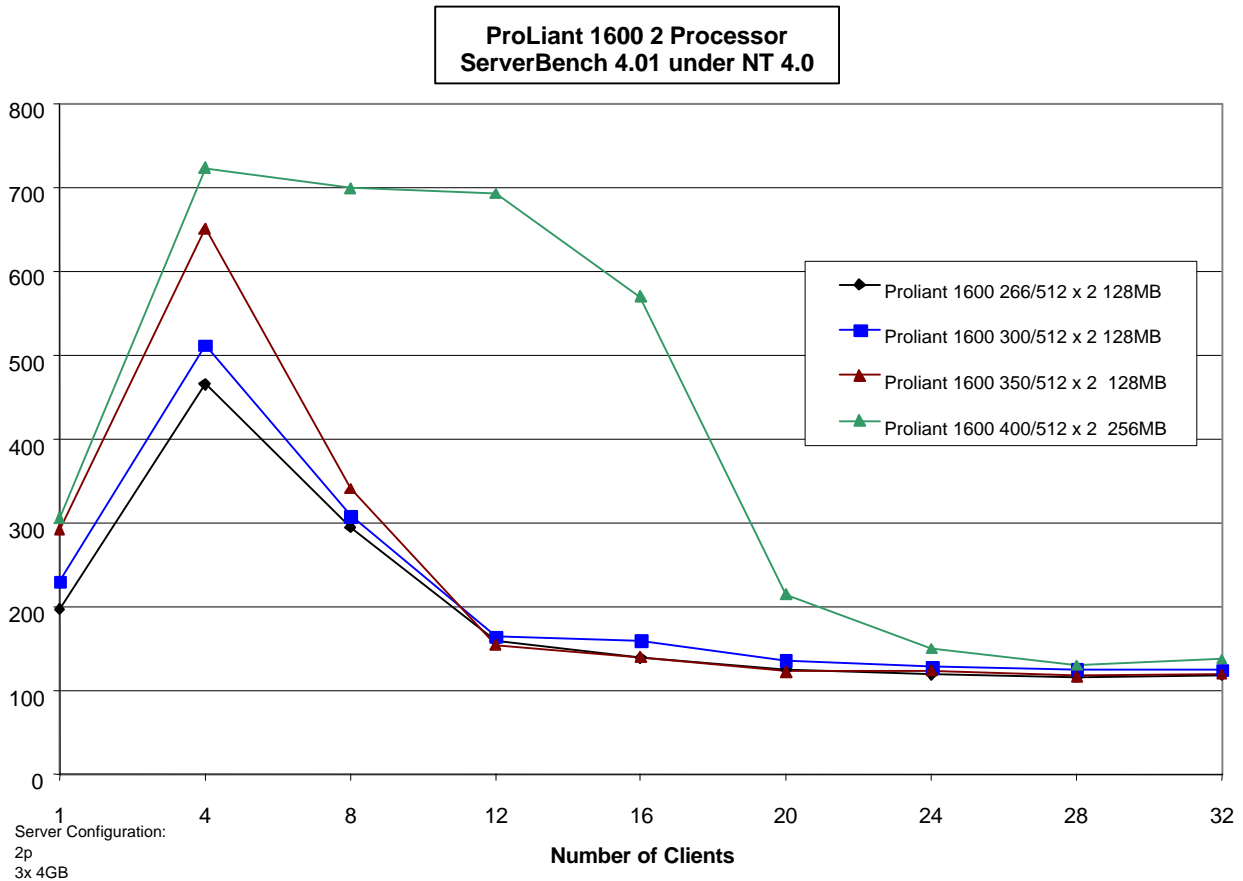


Figure 2. ServerBench 4.01 under Windows NT 4.0, 2 Processors

On average, the Compaq ProLiant 1600 400MHz with 256MB RAM and two processors outperformed the ProLiant 300MHz with 128MB RAM by:

- **97%** when averaged over 1-32 clients

When comparing the peaks, the Compaq ProLiant 1600 400MHz with two processors outperformed the ProLiant 1600 300MHz by:

- **41%**

The tests were performed using Microsoft Windows Advanced Server 4.0.

ServerBench 4.01 Configurations Tested

	Compaq ProLiant 1600 400MHz	Compaq ProLiant 1600 266, 300, 350MHz
Number and type of processor	1 and 2 Pentium II 400MHz	1 and 2 Pentium II 266, 300, 350MHz
Size of hardware CPU cache	512KB/CPU	512KB/CPU
Amount of memory	256MB	128MB
Type of I/O bus	PCI/ISA	PCI/ISA
Number and type of hard disk controllers	1 Compaq Wide-Ultra SCSI	1 Compaq Wide-Ultra SCSI
Number and type of hard disks	3 x 4GB 7.2K rpm drives	3 x 4GB 7.2K rpm drives
Disk organization	NT Stripe Set	NT Stripe Set
Disk controller driver version	cpq32fs2.sys V3.16	cpq32fs2.sys V3.16
Number and type of network controllers	2 - Netflex-3	2 - Netflex-3
Network controller driver version	Netflx3.sys V2.42	Netflx3.sys V2.42
Network operating system name and version	Windows NT Advanced Server 4.0	Windows NT Advanced Server 4.0
Any relevant modifications to default network operating system parameters	Service Pak 3	Service Pak 3

TestBed Disclosure

Network type (10Base T, Token Ring, etc.)	100 Base-TX
Number and type of clients	32 Compaq ProLineas (ServerBench)
Number and type of hubs/concentrators (full duplex, switching, etc.)	4x Compaq Netelligent hubs, 1x Compaq Netelligent switch
Number of clients/segment	15
Client CPU type and speed in percentages	Pentiums: 100% 133MHz Pentiums (ServerBench)
Client network controller broken down by percentages	Intel Pro/100- 100%
Client network software name and version (drivers, protocols, redirector)	Win95
Size of any client network cache	none
Disk controller software	n/a
Network controller software	Intel Pro/100 driver

ServerBench Disclosure	
ServerBench version	4.01
Description of the test parameters for each mix in the test suite	Sys_60g.tst

Interpreting the Results

The performance that Compaq achieves with the ProLiant 1600 400MHz with 256MB RAM in application server environments clearly indicates that the ProLiant 1600 400MHz is the ultimate workgroup server delivering next-generation performance and high availability features critical to maximizing server uptime for workgroups, remote sites, and replicated server environments. ServerBench 4.01 under Windows NT Advanced Server 4.0 was benchmarked on the Compaq ProLiant 1600 400MHz and Compaq ProLiant 1600 266, 300, and 350MHz to measure effectiveness of each server in an application server environment.

The configurations utilized also demonstrate the extra performance that is gained by doubling the memory configuration from 128MB to 256MB on the server. The key to achieving excellent performance is in recognizing that a balanced system approach should be used to maximize throughput. Memory, disk, and processor improvements all contribute to excellent server performance.