

# SPECweb99 Result

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Hewlett-Packard: HP 9000 rp8420-32 (4 cells)  
Zeus Technology Limited: Zeus 4.2r4

SPECweb99 = 23000

Test Date: Jan-2004  
Tester: Hewlett-Packard Company

Hardware Avail: Feb-2004 OS Avail: May-2004 HTTP Software Avail: Nov-2003 Sup. Software Avail: May-2004 SPEC license #: 3

## Hardware

Vendor: Hewlett-Packard  
Model: HP 9000 rp8420-32 (4 cells)  
Processor: PA-8800 1.0 GHz  
# Processors: 16 cores, 8 chips, 2 cores/chip  
Primary Cache: 768KBI + 768KBD (on chip) per core  
Secondary Cache: 32MB (off chip) shared by 2 cores  
Other Cache: None  
Memory: 128 GB (64x2GB)  
Disk Subsystem: 3x36GB (15K RPM), 1x146GB (10K RPM)  
Disk Controllers: 4 SCSI C1010 Fast Wide LVD (internal)  
Other Hardware: 8 x HP Procurve 2724 Switch

## Software

Operating System: HP-UX 11i v1  
File System: See Notes  
Other Software: B3901BA HP C/ANSI C

## HTTP Software

Vendor: Zeus Technology Limited  
HTTP Software: Zeus 4.2r4  
API: ISAPI  
Server Cache: HP Network Server Accelerator (NSA HTTP) B.11.11.01.02  
Log Mode: Binary Log Format

## Test Sponsor

Test Date: Jan-2004  
Tested By: Hewlett-Packard Company  
SPEC License: 3

## Network

# of Controllers: 15  
Network Controllers: HP A6825A  
# of Nets: 15  
Type of Nets: Gigabit Ethernet  
Network Speed: 1 Gb/s  
MSL (sec): 30 (Non RFC1122)  
Time-Wait (sec): 60 (Non RFC1122)  
MTU: 1500

## Clients

# of Clients: 60  
Model: HP Integrity rx2600  
Processor: Intel Itanium2 900MHz  
# of Processors: 2  
Memory: 4GB  
Network Controller: HP A6825A  
Operating System: HPUX 11i v2  
Compiler: B3901BA HP C/ANSI C

## Notes/Tuning Information

### SUT Notes

All filesystems are HFS  
1 36GB disk split into two logical volumes with LVM for OS  
1 36GB disk with 64KB block size (def. 8KB) and 8KB fragments (def. 1KB) mounted with largefiles, behind used for NSA logs  
1 36GB disk split into two logical volumes using LVM  
lv01 (18GB) with 64KB block size (def. 8KB) and 8KB fragments (def. 1KB) mounted with largefiles, behind used for /spec and Zeus logs  
lv02 (18GB) used for swap.  
1 146GB disk mounted read-only used for the file\_set

Bound each Zeus and NSA instance to processor corresponding to its NIC, one processor for CGI  
Processor binding is performed by "mpsched -c cpu# -p pid"

Set page size attribute for zeus.web binary  
chattr +pd 16M +pi 16M zeus.web

### Operating System Notes

Additional Software:  
HP Network Server Accelerator (NSA HTTP) B.11.11.01.02  
Transport Optional Upgrade Release 2.0 (TOUR 2.0) for 11i v1  
GigEtherEnh-01 B.11.11.01 Enhancement for GigEther-01

HP-UX Patches:  
PHKL\_25233 select(2) and poll(2) hang  
PHKL\_25729 signals, threads enhancement, Psets Enablement

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## Notes/Tuning Information (Continued)

### Operating System Notes (Continued)

PHKL\_25993 thread nostop for NFS, rlimit, Ufalloc fix  
PHKL\_25994 Thread NOSTOP, Psets Enablement, Ufalloc  
PHKL\_25995 eventport syscalls; socket close(2); ufalloc  
PHKL\_26197 Interrupt Migration Enablement  
PHKL\_27091 Core PM, vPar, Psets Cumulative, slpq1 perf  
PHKL\_27094 Psets Enablement Patch, slpq1 perf  
PHKL\_27317 detach; NOSTOP, Abort; Psets; slpq1 perf  
PHNE\_29945 GigEther-01 patch  
PHNE\_29825 Cumulative STREAMS patch

#### HP-UX Tunable Parameters:

bufcache\_hash\_locks=512 Buffer Cache Spinlock Pool Size (256)  
dlnc\_hash\_locks=8192 Number of Locks for Directory Lookup Sync (512)  
dbc\_max\_pct=76 Max Buffer Cache Size as Percent of RAM (50)  
dbc\_min\_pct=76 Min bufer Cache Size as Percent of RAM (5)  
fs\_async=1 Select asynchronous writes (0)  
maxfiles=60000 Soft File Limit per Process (60)  
maxfiles\_lim=60000 Hard File Limit per Process (1024)  
maxssiz\_64bit=0x10000000 Max stack size(bytes) for 64-bit procs (0x800000)  
nfile=1400000 Max number of open files (790)  
ninode=500000 Max number of inodes (444)  
nkthread=8000 Max number of kernel threads (499)  
64 Maximum number of SCSI Commands that can be Queued (8)  
tcpshasz=32768 Relative Scaling Factor for TCP & IP Int. Tables(2048)  
vps\_ceiling=4096 Max System selected page size [KB] (16)  
vps\_pagesize=64 Default User page size [KB] (4)

### HTTP Software Notes

#### Zeus Global Parameters:

tuning!bind\_any no  
tuning!cache\_cooling\_time 0  
tuning!cache\_files 58000  
tuning!cache\_flush\_interval 86400  
tuning!cache\_large\_file 250000  
tuning!cache\_max\_bytes 0  
tuning!cache\_small\_file 1000  
tuning!cache\_stat\_expire 86400  
tuning!cbuff\_size 65536  
tuning!keepalive yes  
tuning!keepalive\_timeout 1200  
tuning!keepalive\_max -1  
tuning!listen\_queue\_size 8192  
tuning!maxaccept 2048  
tuning!max\_connections 2990  
tuning!num\_children 15  
tuning!sendfile\_reservefd 56000  
tuning!sendfile\_minsize 1000  
tuning!sendfile\_maxsize 1048576  
tuning!softservers no  
tuning!so\_rbuff\_size 0  
tuning!so\_wbuff\_size 1048576  
tuning!timeout 6000  
tuning!unique\_bind yes  
tuning!use\_select yes  
tuning!modules!cgi!cbuff\_size 1048576  
tuning!modules!isapi!enabled no  
tuning!modules!nsapi!enabled no  
tuning!modules!stats!enabled no

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## Notes/Tuning Information (Continued)

### HTTP Software Notes (Continued)

Zeus runningsite configuration:  
modules!cgi!enabled yes  
modules!isapi!enabled yes

### HTTP API Notes

Zeus ISAPI interface used  
Zeus PEPP Toolkit (0.8) used for SPECweb99 dynamic content  
./Configure --sendfile=yes --checkconfig=yes --locking=semop --ssl=no --64bit=yes  
compiled with HP C/ANSI C developer's Bundle (B3901BA)  
CFLAGS=+z +O2 -Ae +DA2.0W +DS2.0 -DUSE\_SENDFILE\_HP -DCHECK\_CONFIG

### Network Notes

Networking Tunable Parameters:  
tcp\_xmit\_hiwater\_def=1000000 Max unsent data triggers flow control(32768)  
tcp\_conn\_request\_max=5000 Max outstanding connection reqs (20)  
tcp\_conn\_strategy=16384 Selects TCP connection strategy (0)

Gigabit Tunable Parameters:  
send\_max\_bufs=128 Number of sending buffers consumed to trigger interrupt (16)  
recv\_max\_bufs=128 Number of receiving buffers consumed to trigger interrupt (16)  
recv\_coal\_ticks=12000 Number of ticks to wait to trigger interrupt (0)  
send\_coal\_ticks=5000 Number of ticks to wait to trigger interrupt (0)

HP Network Setver Accelerator (NSA HTTP) Tunables:  
CacheMaxPct=15 NSA Cache Maximum Percentage of RAM (50)  
CacheTimeout=999999 NSA cache reuse timeout in seconds (600)  
EnableStat=on Enable NSA statistics (off)  
LogFile=/logs/nsahttp\_log Log file location (/var/nsa/nsahttp\_log)  
LogFormat=binary NSA log format (ASCII)  
MaxURIDataLen=195 NSA Max size URI data (web page) to cache in KB (1024)

### Client Notes

Client code generated with ./configure --enable-posix-threads  
HP-UX Tunable Parameters:  
max\_thread\_proc=800 Number of threads per process (64)  
maxusers=256 Value of MAXUSERS macro (32)  
ncallout=5000 Increase number of pending timeouts  
nkthread=8000 Maximum number of system-wide threads (499)  
ninode=5000 Maximum number of inodes (444)  
nfile=4096 Maximum number of open files (790)

### Other Notes

Tuning Disclosure: HP-20040122.txt  
Dynamic API: HP-20020723-API.tar.gz