

# SPECweb99 Result

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

SPECweb99 = 15000

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: 8 cores, 4 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: 4 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: 8  
Network Controllers: HP A6825A  
# of Nets: 8  
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: 32  
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  
Bound cgi instance to the processor corresponding to NIC with lighter load (See Client Notes)  
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

HP-UX Patches:  
PHKL\_25233 select(2) and poll(2) hang  
PHKL\_25729 signals, threads enhancement, Psets Enablement  
PHKL\_25993 thread nostop for NFS, rlimit, Ufalloc fix

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## Notes/Tuning Information (Continued)

### Operating System Notes (Continued)

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\_29825 Cumulative STREAMS patch  
PHNE\_30656 Cumulative ARPA patch

#### HP-UX Tunable Parameters:

bufcache\_hash\_locks=512 Buffer Cache Spinlock Pool Size (256)  
dlncl\_hash\_locks=8192 Number of Locks for Directory Lookup Sync (512)

dbc\_min\_pct=50 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 (0x8000000)  
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!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

#### Zeus runningsite configuration:

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## Notes/Tuning Information (Continued)

### HTTP Software Notes (Continued)

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 Server Accelerator (NSA HTTP) Tunables:

CacheMaxPct=30 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=1000 NSA Max size URI data (web page) to cache in KB (1024)

### Client Notes

Client code generated with ./configure --enable-posix-threads

Use client speed setting in rc file to force lighter load on one NIC  
i.e. CLIENTS=s1[9] s2[9] s3[9] s4[10] s5[10] s6[10]

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