

# SPECweb99 Result

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Hewlett-Packard: HP Integrity rx4640  
Zeus Technology Limited: Zeus 4.2r4

SPECweb99 = 12849

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

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

## Hardware Notes/Tuning Information

Vendor: Hewlett-Packard  
Model: HP Integrity rx4640  
Processor: 1.6 GHz Intel Itanium 2 9M  
# Processors: 2 HP Procurve 2724 switches, 1 core/chip  
Primary Cache: 16KBI + 16KBD on chip  
Secondary Cache: 16KB block cache (diff 8KB) and 8KB fragments (def. 1KB)  
Other Caches: with large effective binarized for NSA logs  
Memory: 2GB (1GB) and 8KB fragments (def. 1KB)  
Disk Subsystem: with large effective binarized for web logs  
Disk Controller: read-only used for the file set (internal)  
Other Hardware: /spec4 x HP Procurve 2724 Switch; DS2100

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)  
Operating System: HP-UX 11i v2 Update2  
File System: See Notes  
Processor binding is performed by "mpsched -c cpu# -p pid"  
Other Software:  
Set page size attribute for zeus.web and zeus.cgi binaries  
chattr +pd 64k +pi 64k zeus.cgi  
chattr +pd 64M +pi 64M zeus.web

## Operating System Notes

HP-UX Tunable Parameters:  
dbc\_max\_pct=50 Max Buffer Cache Size as Percent of RAM (50)  
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)  
create\_fastlinks=1 Enables storage of symbolic links in HFS inode structures [Boolean] (0)  
nfile=600000 Max number of open files (790)  
ninode=600000 Max number of inodes (444)  
scsi\_max\_qdepth=64 Maximum number of SCSI Commands that can be Queued (8)  
tphashsz=16384 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 60000  
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 3500  
tuning!multiple\_accept yes

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## Notes/Tuning Information (Continued)

### HTTP Software Notes (Continued)

```
tuning!sendfile          yes
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!cgi!cleansize 0
tuning!modules!isapi!enabled no
tuning!modules!nsapi!enabled no
tuning!modules!stats!enabled no
Zeus runningsite configuration:
modules!cgi!enabled yes
modules!isapi!enabled yes
```

### HTTP API Notes

```
Zeus PEPP Toolkit (0.8) used for SPECweb99 dynamic content
./Configure --sendfile=yes --checkconfig=yes --locking=semop --ssl=no --64bit=yes
CFLAGS=+z +Ofaster +DD64 +DSitanium2 -Ae -Dmalloc=valloc -DUSE_SENDFILE_HP -DCHECK_CONFIG
LDFLAGS=+DSitanium2,+pd,64k,+pi,64k -b -B symbolic
```

### Network Notes

Networking Tunable Parameters:

```
tcp_xmit_hiwater_def=1000000 Max unsent data triggers flow control(32768)
tcp_conn_request_max=2048 Max outstanding connection reqs (20)
```

Gigabit Tunable Parameters:

```
itrmode=4000 Set interrupt throttle mode [-1 - 65535] (-1)
vmtu=32160 virtual maximum transmission unit. Set to 32160 enables TSO. (0)
HP Network Server Accelerator (NSA HTTP) Tunables:
CacheMaxPct=30 NSA Cache Maximum Percentage of RAM (50)
CacheTimeout=600000 NSA cache reuse timeout in seconds (600)
LogFile=/nsa_logs/nsahttp_log Log file location (/var/nsa/nsahttp_log)
LogFormat=binary NSA log format (ASCII)
MaxURIDataLen=879 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)
```

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## Notes/Tuning Information (Continued)

### Other Notes

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