

# SPECweb99\_SSL Result

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Hewlett-Packard: hp server rp8400  
Zeus Technology Limited: Zeus 4.2r1

SPECweb99\_SSL =4700

Test Date: Jan-2003  
Tester: Hewlett-Packard Company

Hardware Avail: Aug-2002 OS Avail: Dec-2002 HTTPS Software Avail: Feb-2003 Sup. Software Avail: Aug-2002 SPEC license #: 3

## Hardware

Vendor: Hewlett-Packard  
Model: hp server rp8400  
Processor: PA8700 875Mhz  
# Processors: 16 cores, 16 chips, 1 core/chip  
Primary Cache: 768KBI+1536KBD on chip  
Secondary Cache: None  
Other Cache: None  
Memory: 64 GB  
Disk Subsystem: 1-36GB(10K rpm), 1-36GB(15K rpm)  
Disk Controllers: SCSI Ultra, SCSI Ultra 2  
Other Hardware: 16 x HP Procurve 1600M Switches

## Software

Operating System: HP-UX 11i  
File System: See SUT Notes  
Other Software: B3913DB C.03.33.01 HP aC++ Compiler

## HTTPS Software

Vendor: Zeus Technology Limited  
HTTPS Software: Zeus 4.2r1  
API: ISAPI  
Server Cache: None  
Log Mode: Binary Log Format

## Test Sponsor

Test Date: Jan-2003  
Tested By: Hewlett-Packard Company  
SPEC License: 3

## Network

# of Controllers: 16  
Network Controllers: HP A6847A PCI Gigabit Ethernet  
# of Nets: 16  
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: 156  
Model: HP 9000/A180C  
Processor: 180Mhz PA-7300LC  
# of Processors: 1  
Memory: 128MByte  
Network Controller: HP A5230A, PCI 100BaseT  
Operating System: HP-UX 11i  
Compiler: B3901BA B.11.11.04 HP C/ANSI C

## Notes/Tuning Information

### SUT Notes

All filesystems are HP-UX HFS  
1 (36GB 10K rpm) disk used for OS  
1 (36GB 15K rpm) used for fileset and logs  
Bound each Zeus instance to the processor corresponding to its NIC  
A lighter web load was given to the CPU with CGI bound to it  
Processor binding is performed by: mpsched -c cpu# -p pid  
Set page size attributes for zeus.web and zeus.cgi binaries  
chattr +pd 64M +pi 64M zeus.web  
chattr +pd 4M +pi 4M zeus.cgi

### Operating System Notes

HP-UX 11i Patches:  
PHKL\_25233 - select(2) and poll(2) hang  
PHKL\_25729 - signals, threads enhancement, Psets Enablement  
PHKL\_27091 - Core PM, vPar, Psets Cumulative Patch  
PHKL\_27094 - Psets Enablement Patch, slpq1 perf  
PHKL\_27317 - detach; NOSTOP, Abort; Psets; slpq1 perf  
PHNE\_25388 - Cumulative LAN Products Patch  
PHNE\_26939 - 1000Base-SX/T B.11.11.14 cumulative patch  
PHNE\_27703 - Cumulative STREAMS Patch  
PHNE\_28089 - Cumulative ARPA Patch  
HP-UX Tunable Parameters:  
dbc\_max\_pct=20 Max Buffer Cache Size as Percent of RAM (50)  
dbc\_min\_pct=20 Min bufer Cache Size as Percent of RAM (5)  
default\_disk\_ir=1 Set immediate reporting (Write Cache Enable) for SCSI disks (0)

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## Notes/Tuning Information (Continued)

### Operating System Notes (Continued)

fs\_async=1 Select Asynchronous Writes (0)  
maxfiles=60000 Soft File Limit per Process (60)  
maxfiles\_lim=60000 Hard File Limit per Process (1024)  
  
maxdsiz\_64bit=0x180000000 Max Data Size for 64-Bit Procs (0x40000000)  
maxswapchunks=16384 Max number of swap chunks (256)  
ncallout=8000 Max number of pending timeouts (515)  
nfile=20010 Max number of open files (790)  
ninode=320000 Max number of inodes (444)  
nproc=512 Max number of processes (276)  
tcpshasz=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)  
Filesystem for logs created with following options:  
behind - Queue writes for flushing when page is full  
largefiles - Enable creation of files greater than 2 gigabytes in size  
64KB block size (def. 8KB) and 8KB fragments (def. 1KB)

### HTTPS Software Notes

```
tuning!cache_max_bytes 0
tuning!cache_small_file 400000
tuning!cache_large_file 1048576
tuning!cache_stat_expire 86400
tuning!cache_flush_interval 86400
tuning!listen_queue_size 8192
tuning!multiple_accept yes
tuning!so_rbuff_size 0
tuning!so_wbuff_size 1048576
tuning!cbuff_size 65536
tuning!keepalive yes
tuning!keepalive_timeout 1200
tuning!keepalive_max -1
tuning!timeout 600
tuning!unique_bind yes
tuning!bind_any no
tuning!sendfile no
tuning!modules!cgi!cbuff_size 1048576
tuning!modules!cgi!cleansize 0
tuning!ssl_keepalive yes
tuning!ssl_diskcache no
tuning!ssl_sessioncache_size 251
tuning!softservers no
tuning!use_poll no
tuning!modules!stats!enabled no
tuning!modules!nsapi!enabled no
tuning!modules!isapi!enabled yes
tuning!cache_cooling_time 0
tuning!maxaccept 4096
security!enabled yes
```

Zeus Global Parameters:

```
tuning!cache_files 356750
```

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## Notes/Tuning Information (Continued)

### HTTP API Notes

Zeus ISAPI interface used  
Zeus PEPP Toolkit(0.8) used for SPECweb99\_SSL dynamic content  
./Configure --sendfile=no --checkconfig=yes --locking=semop --ssl=yes --64bit=yes

### Network Notes

Networking Tunable Parameters:  
tcp\_xmit\_hiwater\_def=1000000 Max unsent data triggers flow control (32768)  
tcp\_conn\_request\_max=4096 Max outstanding connection reqs (20)  
tcp\_conn\_strategy=1 Selects TCP connection strategy (0)  
Gigabit Tunable Parameters:  
recv\_coal\_ticks=2000 Number of ticks to wait to trigger interrupt (0)  
recv\_max\_bufs=128 Number of recv buffers consumed to trigger interrupt (1)  
send\_coal\_ticks=1000 Number of ticks to wait to trigger interrupt (0)  
send\_max\_bufs=128 Number of send buffers consumed to trigger interrupt (16)

### Client Notes

10 Clients connected via a switch to each NIC  
(6 Clients for NIC for CPU with cgi)  
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

### Other Notes

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