

# SPECweb99 Result

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Sun Microsystems: Enterprise 420R with SNCA  
Zeus Technology Ltd.: Zeus 3.3.8.4

SPECweb99 = 1400

Test Date: Oct-2001  
Tester: gcocco software, inc.

Hardware Avail: Jun-2000 OS Avail: Sep-2001 HTTP Software Avail: Mar-2001 Sup. Software Avail: -- SPEC license #: 76

## Hardware

Vendor: Sun Microsystems  
Model: Enterprise 420R with SNCA  
Processor: 450 MHz UltraSPARC II  
# Processors: 4 cores, 4 chips, 1 core/chip  
Primary Cache: 16KBI+16KBD on chip  
Secondary Cache: 4MB(I+D) off chip  
Other Cache: None.  
Memory: 4 GB  
Disk Subsystem: 2x36GB(10,000RPM),6x18GB(10,000RPM)  
Disk Controllers: ultra-SCSI  
Other Hardware: HP ProCurve 4108gl Switch

## Software

Operating System: Solaris 8 4/01 + patches  
File System: UFS  
Other Software: Forte C/6.1

## HTTP Software

Vendor: Zeus Technology Ltd.  
HTTP Software: Zeus 3.3.8.4  
API: ISAPI - Zeus PEPP 0.6  
Server Cache: SNCA  
Log Mode: SNCA Binary CLF

## Test Sponsor

Test Date: Oct-2001  
Tested By: gcocco software, inc.  
SPEC License: 76

## Network

# of Controllers: 2  
Network Controllers: Gigabit Ethernet-SX PCI  
# of Nets: 2  
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: 4  
Model: Sun Enterprise 420R  
Processor: 450MHz UltraSPARC II  
# of Processors: 4  
Memory: 2GB  
Network Controller: Sun Gigabit Adapter 2.0/P  
Operating System: Solaris 8 - 01/2001  
Compiler: Forte C/6.1

## Notes/Tuning Information

### SUT Notes

Solaris 8 - 4/01 + patches  
\_\_ 108813-06 Sun Gigabit Ethernet  
\_\_ 111293-04 libdevinfo  
\_\_ 108528-10 kernel update  
\_\_ 108991-13 libc  
\_\_ 108995-02 libproc  
\_\_ 109025-03 truss  
\_\_ 109472-07 TCP  
\_\_ 109234-06 NCA  
\_\_ 111295-01 pstack  
\_\_ 111297-01 libsendfile  
\_\_ 109279-15 ndd fix  
Operating system changes in (/etc/system)  
\_\_ set sq\_max\_size = 0 (unlimited messages allowed on each IP queue)  
\_\_ set segmap\_percent = 90 (def: 12, Size of kernel segmap segment)  
\_\_ set rlim\_fd\_max = 70000 (def: 1024 file descriptors)  
\_\_ set ge:ge\_intr\_mode=1 (1=bypass normal communication layer queuing)  
\_\_ set ge:ge\_tx\_fastdma\_min=512 (def: 1024, min packet size to use fast dvma interface)  
\_\_ set ge:ge\_nos\_tmnds=2048 (def: 512, transmit descriptors)  
\_\_ set pcisch:pci\_stream\_buf\_enable=0 (0=disable PCI cache streaming)  
\_\_ set nca:nca\_conn\_req\_max\_q=100000 (def: 256, Max number of TCP conns to listen to)  
\_\_ set nca:nca\_conn\_req\_max\_q0=100000 (def: 1024, Max number of 3 way handshakes open)  
\_\_ set nca:nca\_ppmax=300000 (def: 124004, max physical pages used by NCA)  
\_\_ set nca:nca\_vpmax=300000 (def: 123998, max virtual pages used by NCA)  
\_\_ set nca:nca\_conn\_hash\_size=82500 (def: 383, hash table size)  
\_\_ set nca:ncaurhash\_sz=12281 (def: 8053, URI hash table size)  
Network Tuning parameters (/usr/sbin/ndd)  
ndd-set /dev/tcp tcp time wait interval 60000 (def: 240000 ms = 4 mins.)

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## Notes/Tuning Information (Continued)

### SUT Notes (Continued)

\_\_ ndd -set /dev/nca nca\_max\_cache\_size 900000 (def: 10,000,000 bytes Max file size to cache)

\_\_ ndd -set /dev/nca nca\_use\_segmap 1 (NCA uses kernel segmap to share pages.)

Network Cache Accelerator files

\_\_ /etc/nca/nca.if:

\_\_ ge0

\_\_ ge1

\_\_ /etc/nca/ncakmod.conf:

\_\_ status=enabled

\_\_ httpd\_door\_path=/var/run/nca\_httpd\_1.door

\_\_ ncad\_status=enabled

\_\_ nca\_active=enabled

\_\_ /etc/nca/ncalogd.conf:

\_\_ status=enabled

\_\_ logd\_file\_size=1000000000

\_\_ logd\_path\_name="/log/log00 /log/log01 &lt;...snip...&gt; /log/log08 /log/log09"

Network Switch - HP Procurve 4108gl

\_\_ Single switch, two subnets

Disk Layout (c0t0d0 and c0t1d01 are Internal)

\_\_ c0t0d0 - OS, paging and Zeus

\_\_ c0t1d0 - /log filesystem (Zeus Webserver Binary CLF files, NCA log files)

Disk Array (SG-XDSK060C-109G - Ultra SCSI, 10K RPM drives)

\_\_ c0t2d0 - /ex filesystem (r/w portion of docroot - eg post.log)

\_\_ c0t3d0 to c0t7d0 - /ex/file\_set (r/o docroot)

\_\_ /ex/file\_set - 20 GB striped filesystem over 5 devices using DiskSuite

### HTTP Software Notes

This result was tested with Zeus version 3.3.8.4. Minor performance neutral logging issues were noted with this version of Zeus and it was subsequently replaced by Zeus 3.3.8.6. If Zeus 3.3.8.4 is not available, Zeus 3.3.8.6 should be used to reproduce this result.

Zeus 3.3.8.4 Global.cfg performance parameters

\_\_ Refer to: <http://support.zeus.com/faq/entries/tuning.html>

\_\_ tuning!num\_children 4

\_\_ tuning!cache\_files 98041

\_\_ tuning!cache\_large\_file 1048576

\_\_ tuning!cache\_small\_file 4096

\_\_ tuning!cache\_max\_bytes 0

\_\_ tuning!cache\_cooling\_time 0

\_\_ tuning!cache\_stat\_expire 31536000

\_\_ tuning!cache\_flush\_interval 31536000

\_\_ tuning!use\_nca yes

\_\_ tuning!keepalive no

\_\_ ##tuning!keepalive\_max -1

\_\_ tuning!sendfile yes

\_\_ tuning!sendfile\_maxsize 1048576

\_\_ tuning!sendfile\_minsize 1

\_\_ tuning!sendfile\_reservefd 69000

\_\_ tuning!listen\_queue\_size 8192

\_\_ tuning!unique\_bind yes

\_\_ tuning!bind\_any no

\_\_ tuning!use\_poll yes

\_\_ tuning!so\_wbuff\_size 1048576

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## Notes/Tuning Information (Continued)

### HTTP Software Notes (Continued)

```
__ tuning!so_rbuff_size      0
__ tuning!so_nagle_off      no

__
__ tuning!modules!cgi!cleansize  0
__ tuning!cbuff_size        1048576
__ tuning!softservers       no

__
Zeus 3.3.8.4 virtual_server performance parameters
__ dnslookup                no
__ docroot                  /ex

__
__ modules!cgi!allowanywhere  yes
__ modules!cgi!allowcmd      yes
__ modules!cgi!enabled       yes
__ modules!get!enabled       yes
__ modules!isapi!enabled     yes
__ modules!log!enabled       yes
__ modules!log!filename      /log/binlog
__ modules!log!format        %B
__ modules!map!enabled       yes
__ modules!mime!enabled      yes
__ modules!index!enabled     yes
__ modules!index!files       index.html, index.htm, index.shtml, index.cgi

__
__ modules!access!enabled    no
__ modules!access!ldap!enabled no
__ modules!dirlist!enabled   no
__ modules!distributed!enabled no
__ modules!errors!enabled    no
__ modules!fastcgi!enabled   no
__ modules!frontpage!enabled no
__ modules!htaccess!enabled  no
__ modules!imagemap!enabled  no
__ modules!jserv!enabled     no
__ modules!map!homedir!enabled no
__ modules!nsapi!enabled     no
__ modules!put!enabled       no
__ modules!put!save_as_user  no
__ modules!referrer!enabled  no
__ modules!search!enabled    no
__ modules!spelling!enabled  no
__ modules!stats!enabled     no
__ modules!subserver!enabled no
__ modules!throttle!enabled  no
__ modules!throttle!subserver no
__ modules!usertrack!enabled no
__ modules!usertrack!expire  no

__
__ security!client_cert     0
__ security!enabled         no

__
__ modules!map!alias!/!filepath /ex/
__ modules!map!alias!/!type    simple
__ modules!map!alias!/cgi-bin!/filepath /ex/cgi-bin/
__ modules!map!alias!/cgi-bin!/type    cgi
__ modules!map!alias!/isapi-bin!/filepath /ex/isapi-bin/
__ modules!map!alias!/isapi-bin!/type  isapi

__
__ modules!map!alias_types!cgi      application/x-httpd-cgi
__ modules!map!alias_types!fastcgi  application/x-httpd-fcgi
```

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## Notes/Tuning Information (Continued)

### HTTP Software Notes (Continued)

```
__ modules!map!alias_types!simple      application/x-httpd-alias
__
__ modules!mime!default      text/plain
__ modules!mime!types!      ** no changes to mime types **
__
__ bindaddr 192.1.1.59,192.2.3.59,192.1.1.59,192.2.3.59
```

### HTTP API Notes

```
Zeus PEPP SPECweb99 toolkit (0.6) used for dynamic content
__ ./Configure --sendfile=no --locking=semop
```

### Client Notes

```
Solaris 8 - 4/01 + patches
Operating system changes in (/etc/system)
__ set sq_max_size = 0 (unlimited messages allowed on each IP queue)
__ set hires_tick = 1 (def: 0, 10 ms resolution, set to 1 ms resolution)
__ set rlim_fd_max = 32760 (def: 1024 file descriptors)
__ set rlim_fd_cur = 32760 (def: 256 or rlim_fd_max, whichever is smaller)
Network Tuning parameters (/usr/sbin/ndd)
__ ndd -set /dev/tcp tcp_time_wait_interval 60000 (def: 240000 ms = 4 mins.)
__ ndd -set /dev/tcp tcp_smallest_anon_port 5001 (def: 32768)
__ ndd -set /dev/tcp tcp_conn_req_max_q 1024 (def: 128)
SPECweb99 V1.02 src.alt
__ Sun WorkShop 6 update 1 C 5.2 2000/09/11
__ Client build:
__ ./configure --enable-posix-threads --enable-gethostbyname_r \
__ --enable-pthread_scope_system --enable-rlimit \
__ --enable-safe-usleep=no --cache-file=./config.cache \
__ --prefix=/export/home/spec/web99
__ Typical client invocation:
__ "client.alt -g ayu -C ayu-cntl -w work -d"
__ no usage of logical ip interfaces.
```

### Other Notes

For more information, see the tester's website: <http://www.gcocco.com>

```
__ Tuning disclosure: Sun-20010412.txt
__ Dynamic API disclosure: gcocco-20010903.txt
```