

SPECweb99 Result

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Fujitsu Siemens Computers: PRIMEPOWER 900
Zeus Technology: Zeus WebServer 4.2r2

SPECweb99 = 15114

Test Date: May-2003
Tester: Fujitsu Siemens

Hardware Avail: Jun-2003 OS Avail: Feb-2003 HTTP Software Avail: Mar-2003 Sup. Software Avail: -- SPEC license #: 22

Hardware

Vendor: Fujitsu Siemens Computers
Model: PRIMEPOWER 900
Processor: 1350 MHz SPARC64
Processors: 10 cores, 10 chips, 1 core/chip
Primary Cache: 128KBI+128KBD on chip
Secondary Cache: 2MB(I+D) on chip
Other Cache: None
Memory: 64GB
Disk Subsystem: 12 x 72 GB
Disk Controllers: Dual Channel Ultra SCSI
Other Hardware: Switches: See notes

Software

Operating System: Solaris 8 2/02
File System: VxFS (for non-root disks)
Other Software: NCA

HTTP Software

Vendor: Zeus Technology
HTTP Software: Zeus WebServer 4.2r2
API: Zeus PEPP 0.6 ISAPI
Server Cache: SNCA
Log Mode: SNCA Binary CLF

Test Sponsor

Test Date: May-2003
Tested By: Fujitsu Siemens
SPEC License: 22

Network

of Controllers: 16
Network Controllers: Gigabit Ethernet X1141A-U
of Nets: 16
Type of Nets: Gigabit Ethernet
Network Speed: 1 Gb/sec
MSL (sec): 30 (Non RFC1122)
Time-Wait (sec): 60 (Non RFC1122)
MTU: 1500

Clients

of Clients: 82
Model: 9xPRIMEPOWER 650 (PW) + 10xPRIMERGY 470 (PY)
Processor: 810MHz SPARC64 (PW) / 400MHz Pentium II (PY)
of Processors: 6 (PW) / 2 (PY)
Memory: 4 GB (PW) / 256 MB (PY)
Network Controller: FastEthernet X1093A-U (PW) / Intel PRO1000 (PY)
Operating System: Solaris 8 2/02 (PW) / Solaris 7 (PY)
Compiler: GCC 2.95.2 (PW and PY)

Notes/Tuning Information

Operating System Notes

Operating System settings in /etc/system

__ General settings:

__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=450000 (def: 1024 file descriptors)
__set rlim_fd_cur=450000 (def: max (256,rlim_fd_max))
__set autoup=60 (def: 30, seconds before dirty page buffers are sync'd)
__set maxphys=65536 (def: 131072, maximal size of physical I/O requests)
__set maxpgio=128 (def: 40, maximal number of page I/O requests that can be queued)

__ Specific modules:

__set ge:ge_intr_mode=1 (bypass normal communication layer queuing)
__set ge:ge_nos_tmds = 8192 (def: 512, transmit descriptors)
__set ge:ge_tx_fastdvma_min = 95 (def: 1024, min packet size to use fast dvm a interface)
__set ge:ge_tx_bcopy_max = 96 (def: 256, Maximum packet size to use copy of buffer)
__set ge:ge_nos_txdvma = 8192 (def: 512, transmit descriptors)
__set ge:ge_pci_intr_blank_time=24 (def: 6, Number of clock ticks to wait since last receive interrupt asserted)
__set pcipsy:pci_stream_buf_enable = 0 (disable PCI cache streaming)
__set nca:nca_conn_req_max_q=10240 (def: 256, Max number of TCP conns to listen to)
__set nca:nca_conn_req_max_q0=10240 (def: 1024, Max number of 3 way handshakes open)
__set nca:nca_ppmax=7500000 (def: 25% of physical memory, Max amount of physical memory, in pages. used by NCA)
__set nca:nca_vpmax=7500000 (def: 25% of virtual memory, Max amount of virtual memory, in pages, used by NCA)
__set nca:nca_conn_hash_size=393209 (def: 383, hash table size)
__set nca:ncaurishash_sz = 289669 (def: 8053, URI hash table size)
__set nca:ncavnodehash_sz = 289669 (def: 12281, Controls the vnode hash table size in the NCA module)
__set nca:ncappthresh = 128 (def: 4, threshold in pages to control when to stop using the default kernel memory allocator)
__set vxio:vol_maxio=128

__ Settings in NCA control files (/etc/nca)

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Notes/Tuning Information (Continued)

Operating System Notes (Continued)

__nca.if: ge0 ge1 ge2 ge3 ge4 ge5 ge6 ge7 ge8 ge9 ge10 ge11 ge12 ge13 ge14 ge15 hme1
__ncalogd.conf: status=enabled, logd_file_size=2000000000
__ncalogd.conf: logd/path_name=/logs/log0 ... /logs/log15

Dynamic Settings after reboot

__nnd set /dev/nca nca_use_segmap 1 (def: 0, controls whether NCA uses the kernel segmap to share physical pages for Unix files)

Disk usage:

__1 disk (internal): OS, Paging, Zeus, and /export/home
__10 disks (striped): /logs (Zeus Webserver binary CLF files, NCA log files)
__10 disks (striped): /web99 except file_set (r/w portion of docroot, e.g. post.log)
__10 disks (striped): /web99/file_set (r/o portion of docroot)
__1 disk unused
__File Systems, Striping with Veritas Volume Manager
__Mount /web99/file_set with noatime option

Tuning disclosure: Fujitsu-Siemens-20011126.txt

HTTP Software Notes

Zeus 4.2r2 global.cfg performance parameters

__For explanation and default values,
__refer to: <http://support.zeus.com/faq/entries/tuning.html>

__tuning!modules!stats!enabled no
__tuning!accelerator!nca!enabled yes
__tuning!num_children 20
__tuning!num_cgid 20
__tuning!cache_files 419999
__tuning!cache_max_bytes 0
__tuning!cache_small_file 4096
__tuning!cache_large_file 1048576
__tuning!cache_stat_expire 31536000
__tuning!cache_flush_interval 31536000
__tuning!cache_cooling_time 0
__tuning!sendfile yes
__tuning!listen_queue_size 8192
__tuning!so_wbuff_size 1048576
__tuning!so_rbuff_size 0
__tuning!modules!cgi!cleansize 0
__tuning!cbuff_size 65536
__tuning!sendfile_minsize 1
__tuning!sendfile_maxsize 1048576
__tuning!sendfile_reservefd 299993
__tuning!bind_any no
__tuning!softservers no

Other Zeus 4.2r2 global.cfg parameters

__gid root
__uid root
__controlport 9080
__controlallow 127.0.0.1

Other Zeus 4.2r2 virtual_server performance parameters

__(only those relevant for performance)
__in %zeushome%/web-4.2r2/runningsites/websvr:
__dnslookup no
__docroot /web99
__modules!cgi!enabled yes
__modules!isapi!enabled yes

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Notes/Tuning Information (Continued)

HTTP Software Notes (Continued)

`__modules!log!enabled` no

HTTP API Notes

Zeus API toolkit 0.6 used for dynamic content
Archived in Fujitsu-Siemens-20011126-API.tar.gz
PW code compiled with Sun Studio 7
./Configure --sendfile=no --locking=semop
Compilation options:
-I\$INCLUDES -xarch=v8plus -Kpic -dalign -fns -fsimple=2 -ftrap=%none -xlibmil -xO5

Client Notes

Network Tuning parameters (/usr/bin/ndd):
ndd -set /dev/tcp tcp_smallest_anon_port 2048 (def: 32768)
ndd -set /dev/tcp tcp_time_wait_interval 60000 (def: 240000 ms = 4 mins.)
Client code generated with "Configure OPTIMIZE="-O2 -Wall"; export OPTIMIZE
and with ./configure --enable-posix-threads --enable-gethostbyname_r --enable-pthread_scope_system
--enable-rlimit --enable-nanosleep --enable-safe-usleep=no

Clients and Server connected via a Cisco Catalyst 6500 Switch (PW clients to server)
plus 2 BayStack 450-24T switches (PY clients to server)
19 physical clients (9xPW plus 10xPY), 82 virtual clients (one per Ethernet line)

Server system board 0, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 1, plus 2 from PW client 9
Server system board 0, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 1
Server system board 0, slot 2 (66 MHz) connected to 4 quad Ethernet lines from PW client 2, plus 2 from PW client 6
Server system board 0, slot 5 (66 MHz) connected to 4 quad Ethernet lines from PW client 2, plus 1 from PW client 6
Server PCI box 0, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 3, plus 2 from PW client 9
Server PCI box 0, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 3
Server PCI box 0, slot 3 (66 MHz) connected to 4 quad Ethernet lines from PW client 4, plus 2 from PW client 8
Server PCI box 0, slot 7 (66 MHz) connected to 4 quad Ethernet lines from PW client 4, plus 1 from PW client 8
Server system board 1, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 5, plus 2 from PW client 9
Server system board 1, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 5
Server system board 1, slot 2 (66 MHz) connected to 5 PY clients
Server system board 1, slot 5 (66 MHz) connected to 5 quad Ethernet lines from PW client 6
Server PCI box 1, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 7, plus 2 from PW client 9
Server PCI box 1, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 7
Server PCI box 1, slot 3 (66 MHz) connected to 5 PY clients
Server PCI box 1, slot 7 (66 MHz) connected to 5 quad Ethernet lines from PW client 8

Used prime client separate from the load generators:
`__PRIMERGY` 470, 2 x 400 MHz Pentium II, Solaris 7