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:ncaurihash_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
__ndd 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