SPECweb99 Result

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Hewlett-Packard: HP 9000 rp8420-32 (4 cells)
Zeus Technology Limited: Zeus 4.2r4

SPECweb99 = 23000

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

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

Hardware

Vendor:	Hewlett-Packard
Model:	HP 9000 rp8420-32 (4 cells)
Processor:	PA-8800 1.0 GHz
# Processors:	16 cores, 8 chips, 2 cores/chip
Primary Cache:	768KBI + 768KBD (on chip) per core
Secondary Cache:	32MB (off chip) shared by 2 cores
Other Cache:	None
Memory:	128 GB (64x2GB)
Disk Subsystem:	3x36GB (15K RPM), 1x146GB (10K RPM)
Disk Controllers:	4 SCSI C1010 Fast Wide LVD (internal)
Other Hardware:	8 x HP Procurve 2724 Switch

Software

Operating System:	HP-UX 11i v1
File System:	See Notes
Other Software:	B3901BA HP C/ANSI C

HTTP Software

Vendor:	Zeus Technology Limited
HTTP Software:	Zeus 4.2r4
API:	ISAPI
Server Cache:	HP Network Server Accelerator (NSA HTTP) B.11.11.01.02
Log Mode:	Binary Log Format

Test Sponsor

Test Date:	Jan-2004
Tested By:	Hewlett-Packard Company
SPEC License:	3

Network

# of Controllers:	15
Network Controllers:	HP A6825A
# of Nets:	15
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:	60
Model:	HP Integrity rx2600
Processor:	Intel Itanium2 900MHz
# of Processors:	2
Memory:	4GB
Network Controller:	HP A6825A
Operating System:	HPUX 11i v2
Compiler:	B3901BA HP C/ANSI C

Notes/Tuning Information

SUT Notes

All filesystems are HFS
1 36GB disk split into two logical volumes with LVM for OS
1 36GB disk with 64KB block size (def. 8KB) and 8KB fragments
(def. 1KB) mounted with largefiles, behind used for NSA logs
1 36GB disk split into two logical volumes using LVM
lvol1 (18GB) with 64KB block size (def. 8KB) and 8KB fragments
(def. 1KB) mounted with largefiles, behind used for /spec and Zeus logs
lvol2 (18GB) used for swap.
1 146GB disk mounted read-only used for the file_set

Bound each Zeus and NSA instance to processor corresponding to its NIC, one processor for CGI
Processor binding is performed by "mpsched -c cpu# -p pid"

Set page size attribute for zeus.web binary
chatr +pd 16M +pi 16M zeus.web

Operating System Notes

Additional Software:
HP Network Server Accelerator (NSA HTTP) B.11.11.01.02
Transport Optional Upgrade Release 2.0 (TOUR 2.0) for 11i v1
GigEtherEnh-01 B.11.11.01 Enhancement for GigEther-01

HP-UX Patches:
PHKL_25233 select(2) and poll(2) hang
PHKL_25729 signals, threads enhancement, Psets Enablement

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Notes/Tuning Information (Continued)

Operating System Notes (Continued)

PHKL_25993 thread nostop for NFS, rlimit, Ufalloc fix
PHKL_25994 Thread NOSTOP, Psets Enablement, Ufalloc
PHKL_25995 eventport syscalls; socket close(2); ufalloc
PHKL_26197 Interrupt Migration Enablement
PHKL_27091 Core PM, vPar, Psets Cumulative, slpq1 perf
PHKL_27094 Psets Enablement Patch, slpq1 perf
PHKL_27317 detach; NOSTOP, Abort; Psets; slpq1 perf
PHNE_29945 GigEther-01 patch
PHNE_29825 Cumulative STREAMS patch

HP-UX Tunable Parameters:
bufcache_hash_locks=512 Buffer Cache Spinlock Pool Size (256)
dlnc_hash_locks=8192 Number of Locks for Directory Lookup Sync (512)
dbc_max_pct=76 Max Buffer Cache Size as Percent of RAM (50)
dbc_min_pct=76 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)
maxssiz_64bit=0x10000000 Max stack size(bytes) for 64-bit procs (0x800000)
nfile=1400000 Max number of open files (790)
ninode=500000 Max number of inodes (444)
nkthread=8000 Max number of kernel threads (499)
64 Maximum number of SCSI Commands that can be Queued (8)
tcphashsz=32768 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 250000
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 2990
tuning!num_children 15
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!isapi!enabled no
tuning!modules!nsapi!enabled no
tuning!modules!stats!enabled no

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Notes/Tuning Information (Continued)

HTTP Software Notes (Continued)

Zeus runningsite configuration:
modules!cgi!enabled yes
modules!isapi!enabled yes

HTTP API Notes

Zeus ISAPI interface used
Zeus PEPP Toolkit (0.8) used for SPECweb99 dynamic content
./Configure --sendfile=yes --checkconfig=yes --locking=semop --ssl=no --64bit=yes
compiled with HP C/ANSI C developer's Bundle (B3901BA)
CFLAGS=+z +O2 -Ae +DA2.0W +DS2.0 -DUSE_SENDFILE_HP -DCHECK_CONFIG

Network Notes

Networking Tunable Parameters:
tcp_xmit_hiwater_def=1000000 Max unsent data triggers flow control(32768)
tcp_conn_request_max=5000 Max outstanding connection reqs (20)
tcp_conn_strategy=16384 Selects TCP connection strategy (0)

Gigabit Tunable Parameters:
send_max_bufs=128 Number of sending buffers consumed to trigger interrupt (16)
recv_max_bufs=128 Number of receiving buffers consumed to trigger interrupt (16)
recv_coal_ticks=12000 Number of ticks to wait to trigger interrupt (0)
send_coal_ticks=5000 Number of ticks to wait to trigger interrupt (0)

HP Network Setver Accelerator (NSA HTTP) Tunables:
CacheMaxPct=15 NSA Cache Maximum Percentage of RAM (50)
CacheTimeout=999999 NSA cache reuse timeout in seconds (600)
EnableStat=on Enable NSA statistics (off)
LogFile=/logs/nsahttp_log Log file location (/var/nsa/nsahttp_log)
LogFormat=binary NSA log format (ASCII)
MaxURIDataLen=195 NSA Max size URI data (web page) to cache in KB (1024)

Client Notes

Client code generated with ./configure --enable-posix-threads
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)

Other Notes

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