SPECweb99 Result

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Hewlett-Packard: HP Integrity rx4640
Zeus Technology Limited: Zeus 4.2r4

SPECweb99 = 12849
Test Date: Oct-2004
Tester: Hewlett-Packard Company

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

Notes/Tuning Information

Hardware

Vendor: Hewlett-Packard
Model: HP Integrity rx4640
Processor: 1.6 GHz Intel Itanium 2 9M
Processors: 4 cores, 4 chips, 1 core/chip
Primary Cache: 16KBI + 16KBD on chip
Secondary Cache: 256KB (def. 8KB) and 8KB fragments (def. 1KB)
Other Cache: 9216KB unified on chip
Memory: 128GB (32x4GB)
Disk Subsystem: 5x73GB (15K rpm)
Disk Controller: 1 Disk mounted read-only used for the file_set
Other Hardware: 4 x HP Procurve 2724 Switch; DS2100

SUT Notes

All filesystems are HP-UX, HFS
1 disk used for OS
1 disk with 64KB block size (def. 8KB) and 8KB fragments (def. 1KB)
mounted with largefiles, 16KB unified for NSA logs
1 disk with 64KB block size (def. 8KB) and 8KB fragments (def. 1KB)
mounted with largefiles, 16KB unified for web logs
1 disk mounted read-only used for the file_set
1 disk used for /spec

Software

Bound each Zeus and NSA instance to processor corresponding to its NIC
Bound cgi instance to the processor corresponding to NIC with lighter load (See Client Notes)
Processor binding is performed by "mpsched -c cpu# -p pid"

Operating System: HP-UX 11i v2 Update2
File System: See Notes
Other Software:

Set page size attribute for zeus.web and zeus.cgi binaries
chatr +pd 64k +pi 64k zeus.cgi
chatr +pd 64M +pi 64M zeus.web

Operating System Notes

HP-UX Tunable Parameters:
dbc_max_pct=50 Max Buffer Cache Size as Percent of RAM (50)
dbc_min_pct=50 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)
create_fastlinks=1 Enables storage of symbolic links in HFS inode structures [Boolean] (0)
nfile=600000 Max number of open files (790)
ninode=600000 Max number of inodes (444)
scsi_max_qdepth=64 Maximum number of SCSI Commands that can be Queued (8)
tcphashsz=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)

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 60000
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 3500
tuning!multiple_accept yes

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Notes/Tuning Information (Continued)

HTTP Software Notes (Continued)

tuning!sendfile yes
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!cgi!cleansize 0
tuning!modules!isapi!enabled no
tuning!modules!nsapi!enabled no
tuning!modules!stats!enabled no
Zeus runningsite configuration:
modules!cgi!enabled yes
modules!isapi!enabled yes

HTTP API Notes

Zeus PEPP Toolkit (0.8) used for SPECweb99 dynamic content
./Configure --sendfile=yes --checkconfig=yes --locking=semop --ssl=no --64bit=yes
CFLAGS=+z +Ofaster +DD64 +DSitanium2 -Ae -Dmalloc=valloc -DUSE_SENDFILE_HP -DCHECK_CONFIG
LDFLAGS=+DSitanium2,+pd,64k,+pi,64k -b -B symbolic

Network Notes

Networking Tunable Parameters:
tcp_xmit_hiwater_def=1000000 Max unsent data triggers flow control(32768)
tcp_conn_request_max=2048 Max outstanding connection reqs (20)

Gigabit Tunable Parameters:
itrmode=4000 Set interrupt throttle mode [-1 - 65535] (-1)
vmtu=32160 vitual maximum transmission unit. Set to 32160 enables TSO. (0)
HP Network Server Accelerator (NSA HTTP) Tunables:
CacheMaxPct=30 NSA Cache Maximum Percentage of RAM (50)
CacheTimeout=600000 NSA cache reuse timeout in seconds (600)
LogFile=/nsa_logs/nsahttp_log Log file location (/var/nsa/nsahttp_log)
LogFormat=binary NSA log format (ASCII)
MaxURIDataLen=879 NSA Max size URI data (web page) to cache in KB (1024)

Client Notes

Client code generated with ./configure --enable-posix-threads
Use client speed setting in rc file to force lighter load on one NIC
i.e. CLIENTS=s1[9] s2[9] s3[9] s4[10] s5[10] s6[10]
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)

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Notes/Tuning Information (Continued)

Other Notes

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