SPECweb99_SSL Result

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IBM: eServer xSeries x306
Zeus: Zeus V4.2r4

SPECweb99_SSL = 977

Test Date: Nov-2004
Tester: IBM

Hardware Avail:	Jan-2005	OS Avail:	Aug-2004	HTTPS Software Avail:	Nov-2003	Sup. Software Avail:	Mar-2004	SPEC license #:	11

Hardware

Vendor:	IBM
Model:	eServer xSeries x306
Processor:	3.4GHz Intel Pentium 4 / 800MHz FSB
# Processors:	1 core, 1 chip, 1 core/chip (Hyper-Threading enabled)
Primary Cache:	12KBI+16KBD on chip
Secondary Cache:	1 MB
Other Cache:	NA
Memory:	4 x 1GB PC3200 SDRAM unbuffered
Disk Subsystem:	1 x 75GB Serial ATA Drive 35 x 36GB Ultra320 15KPM Fibre Channel Drives
Disk Controllers:	Integrated IBM ServeRAID-7e controller IBM TotalStorage DS4400
Other Hardware:	1 Nortel 8010 GbE Switch 3 EXP700 Total Storage Expansion Unit

Software

Operating System:	SuSE Linux Enterprise Server 9 32bit
File System:	ext2
Other Software:	GCC 3.3.3

HTTPS Software

Vendor:	Zeus
HTTPS Software:	Zeus V4.2r4
API:	Zeus PEPP 0.8 ISAPI used for Dynamic content
Server Cache:	None
Log Mode:	Zeus Binary CLF

Test Sponsor

Test Date:	Nov-2004
Tested By:	IBM
SPEC License:	11

Network

# of Controllers:	2
Network Controllers:	Intel PRO/1000 CT Network Connection IBM 82541GI/PI GbEnet Controller
# 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:	IBM eServer xSeries 335
Processor:	3.06GHz Intel Xeon
# of Processors:	2
Memory:	2GB
Network Controller:	IBM NetXtreme BCM5703 Gigabit Ethernet Adapter
Operating System:	SuSE Linux Professional 9
Compiler:	GCC 3.3.1

Notes/Tuning Information

SUT Notes

1 x 75GB onboard Serial ATA drive configured with EXT2 for OS and web server
Hyper-Threading enabled
Memory configuration 4 x 1GB PC3200 SDRAM unbuffered DIMMs
Hardware RAID0 stripe over 20 x 36GB disks for fileset
Enable read cache
cache read ahead multiplier for fileset = 3, default 0
Hardware RAID0 stripe over 7 x 36GB disks for httplog
Hardware RAID0 stripe over 8 x 36GB disks for logs
Enable write cache for httplog and logs

Operating System Notes

Tuning parameters:
- net.ipv4.ip_forward=1, default 0
- net.ipv4.conf.all.rp_filter = 1, enables source route verification, default 0
- net.ipv4.tcp_timestamps = 0, turns TCP timestamp support off, default 1
- net.ipv4.tcp_max_tw_buckets = 2000000, sets TCP time-wait buckets pool size, default 180000
- net.core.wmem_max = 10000000, maximum send socket buffer size, default 65535
- net.core.wmem_default = 10000000, default send socket buffer size, default 65535
- net.core.optmem_max = 10000000, default 10240
- net.core.hot_list_length = 10000, maximum number of skb-heads to be cached, default 128
- net.ipv4.tcp_rmem = 30000000 30000000 30000000, maximum TCP read-buffer space allocatable, default 4096 87380 174760
- net.ipv4.tcp_wmem = 30000000 30000000 30000000, maximum TCP write-buffer space allocatable, default 4096 16384 131072
- net.ipv4.tcp_mem = 30000000 30000000 30000000, maximum TCP buffer space, default 31744 32256 32768
- fs.file-max = 102400, maximum number of open files, default 1024
- net.ipv4.ip_local_port_range 1024 65536

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Notes/Tuning Information (Continued)

Operating System Notes (Continued)

- net.core.netdev_max_backlog=300000, number of unprocessed input packets before kernel starts dropping them, default 300"
Kernel is default SuSE Linux Enterise Server 9
Each NIC IRQ bound to a seperate processor
Each NIC's TX queue length set to 40000 via ifconfig, default 100
Log & fileset partition mounted with "noatime,nodiratime,nocheck", no inode access time updating
ulimit -n 102400, default 1024

HTTPS Software Notes

Zeus Configuration
- tuning!so_wbuff_size 1048576
- tuning!softservers no
- tuning!cbuff_size 65536
- tuning!clientfirst_optimise yes
- tuning!ssl_sessioncache_size 7507
- tuning!listen_queue_size 8192
- tuning!keepalive yes
- tuning!keepalive_timeout 360
- tuning!multiple_accept yes
- tuning!keepalive_max -1
- tuning!maxaccept 2048
- tuning!num_children 2
- tuning!unique_bind no
- tuning!bind_any yes
- tuning!modules!cgi!enabled yes
- tuning!isapi!enabled yes
- modules!security!enabled yes
- tuning!max_connections 3000

Virtual Server Configuration
- ip_name = server
- bindaddr = 192.0.1.100,192.0.2.100

See IBM-Zeus-tuning-20021224.txt for a description of the Zeus tuning parameters
ISAPI Source code is available in the SPECweb99_SSL support docs as HP-20020724-API.tar.gz

HTTP API Notes

Zeus ISAPI interface used
Zeus PEPP 0.8 ISAPI used for Dynamic content
./Configure --ssl=yes --checkconfig=yes

Client Notes

Client code generated with ./configure --enable-posix-threads
net.ipv4.ip_local_port_range 1024 65535