SPECweb99_SSL Result

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Dell: PowerEdge 6650 (2-node cluster)
Red Hat: Zeus 4.2r2

SPECweb99_SSL =4224

Test Date: Sep-2003
Tester: Dell

Hardware Avail:	Jun-2003	OS Avail:	Sep-2002	HTTPS Software Avail:	Mar-2002	Sup. Software Avail:	Sep-2003	SPEC license #:	55

Hardware

Vendor:	Dell
Model:	PowerEdge 6650 (2-node cluster)
Processor:	2.8 GHz Intel Xeon processor MP
# Processors:	8 cores, 8 chips, 1 core/chip (Hyper-Threading enabled)
Primary Cache:	12KBI+8KBD on chip
Secondary Cache:	512KB
Other Cache:	2MB L3
Memory:	32 GB (16 GB per node)
Disk Subsystem:	2 36GB, 8 18GB 15K RPM drives (1 36GB, 4 18GB per node)
Disk Controllers:	Onboard SCSI
Other Hardware:	Dell PowerConnect 5224 switch

Software

Operating System:	Red Hat Linux 8.0
File System:	ext2
Other Software:	RHSA-2003-098 Intel e1000 5.1.11

HTTPS Software

Vendor:	Red Hat
HTTPS Software:	Zeus 4.2r2
API:	Zeus PEPP 0.9pre2
Server Cache:	None
Log Mode:	Binary CLF

Test Sponsor

Test Date:	Sep-2003
Tested By:	Dell
SPEC License:	55

Network

# of Controllers:	4
Network Controllers:	Intel PRO/1000 MT Dual Port Server Adapter (2 per node)
# of Nets:	5
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:	12
Model:	Dell PowerEdge 1650
Processor:	1.4GHz Pentium III
# of Processors:	2
Memory:	256MB
Network Controller:	Onboard Intel 82544EI
Operating System:	Windows XP Professional
Compiler:	Microsoft Visual C++ 6.0

Notes/Tuning Information

SUT Notes

Each node has 1 disk for OS and access log, 4 disk SW RAID0 stripe for file set
Nodes used ntpd to synchronize time to a central clock
Second node accessed first node's User.Personality, Custom.Ads, post.log via NFS
Hyper-Threading enabled, Sequential Memory Access disabled

Operating System Notes

ulimit -n 10000, sets number of open files, default 1024
Each NIC's TX queue length set to 20000 via ifconfig, default 1000
NFS file system mounted with "acregmin=0,acregmax=0", disable file attribute caching
net.ipv4.tcp_timestamps = 0, turns TCP timestamp support off, default on
net.ipv4.tcp_max_tw_buckets = 600000, sets TCP time-wait buckets pool size, default 180000
net.ipv4.tcp_rmem = 30000000 30000000 30000000, sets min/default/max TCP read buffer, default 4096 87380 174760
net.ipv4.tcp_wmem = 30000000 30000000 30000000, sets min/pressure/max TCP write buffer, default 4096 16384 131072
net.ipv4.tcp_mem = 30000000 30000000 30000000, sets min/pressure/max TCP buffer space, default 31744 32256 32768
net.ipv4.tcp_max_syn_backlog = 8192, sets length of per-socket backlog queue, default 1024
net.core.hot_list_length = 10000, maximum number of skb-heads to be cached, default 128
net.core.rmem_max = 10000000, maximum receive socket buffer size, default 131071
net.core.wmem_max = 10000000, maximum send socket buffer size, default 131071
net.core.rmem_default = 10000000, default receive socket buffer size, default 65535
net.core.wmem_default = 10000000, default send socket buffer size, default 65535
net.core.optmem_max = 10000000, maximum amount of option memory buffers, default 10240

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Notes/Tuning Information (Continued)

HTTPS Software Notes

Two instances of Zeus per node, one with HTTPS virtual server, one with HTTP virtual server
Common global.cfg settings:
tuning!cbuff_size 65536, CGI buffer size, default 8192
tuning!chunk no, disable chunked encoding, default yes
tuning!clientfirst_optimise yes, accept connections only when client data available, default no
tuning!keepalive_max 2100, max number of keepalives allowed, default 256
tuning!keepalive_timeout 3600, close connection after 3600 secs inactivity, default 15
tuning!listen_queue_size 8192, increase TCP listen queue, default 256
tuning!maxaccept 64, maximum number of accepts per socket per poll/select, default 32
tuning!modules!stats!enabled no, disable statistics gathering, default yes
tuning!sendfile_minsize 1, smallest file to be sent with sendfile, default 32768
tuning!so_wbuff_size 1048576, set socket write buffer, default not set
tuning!softservers no, disable software virtual servers, default yes
modules!cgi!enabled yes, enable CGIs
modules!isapi!enabled yes, enable ISAPIs
HTTPS virtual server settings:
tuning!ssl_sessioncache_size 13217, SSL session cache size, default 199
tuning!ssl_sessioncache_expiry 120, number of seconds cache data is valid, default 86400
HTTP virtual server settings:
tuning!num_children 1, sets number of Zeus children, default # CPUs
tuning!bind_any no, bind Zeus to any address, default yes
tuning!unique_bind yes, bind each Zeus child to a unique address, default no

Network Notes

Each node connected to two separate client networks
Servers connected to each other via crossover CAT5 on a separate network
e1000 parameter: TxIntDelay = 32, change transmit interrupt delay, default 64

Client Notes

alt.WIN32, manager.ssl.rcp.alt.WIN32 used
Registry tunes:
- TcpipParametersMaxUserPort=0xfffe, sets maximum open ports to 65534
- TcpipParametersTcpTimedWaitDelay=60, sets TIME_WAIT parameter to 60 seconds (non-RFC 1122), default 240
- TcpipParametersMaxFreeTWTcbs=100000, sets maximum number of TIME_WAIT tcbs to 100,000
- TcpipParametersTcpWindowSize=65535, sets TCP send eceive window size, default 8192

Other Notes

Tuning Disclosure: See above
Compiler flags and descriptions: Dell-20030818-flags.txt
Kernel .config: Dell-20030818-2PE6650-config.txt
Dynamic API: Dell-20030916-API.tgz
API configured with --ssl=yes