```
==============================================================================
                                      ||
 IBM : IBM eServer p5 570 (1900 MHz, 4 CPU, Li     ||      NC SPECweb99_SSL
 Zeus Technology Ltd. : Zeus 4.2r3                 ||
                                      ||
==============================================================================
```

    SPEC has determined that this result was not in compliance with the
    SPECweb99_SSL Run and Reporting Rules. Specifically, the implementation
    of TCP Segmentation Offload (TSO) in the networking stack of the
    operating system revision used in this result did not follow the
    slow-start algorithm as required by RFC1122.

```
==============================================================================
```

PERFORMANCE

```
                  | Conforming Simultaneous
    Iteration     |      Connections
---------------+----------------------------
        1      |         NC
        2      |         NC
        3      |         NC
---------------+----------------------------
    Median     |         NC
```

```
==============================================================================
                          Availability Dates
```

All Hardware	Aug-2004
HTTPS Software	Jul-2003
Operating System	Aug-2004
Supplemental System	Aug-2004

Hardware

Vendor	IBM
Model	IBM eServer p5 570 (1900 MHz, 4 CPU, Linux)
Processor	1900 MHz POWER5
# Processors	4 cores, 2 chips, 2 cores/chip (SMT on)
Primary Cache	64KBI+32KBD (on chip)/core
Secondary Cache	1920KB unified (on chip)/chip
Other Cache	36MB unified (off-chip)/DCM, 2 DCMs/SUT
Memory	32 GB (16 x 2GB)
Disk Subsystem	1x36GB (15 KRPM) SCSI
Disk Controllers	PCI-X Dual channel Ultra320 SCSI controller
Other Hardware	See SUT notes

Software

Operating System	SUSE LINUX Enterprise Server 9 for IBM POWER
File System	ext2
Other Software	None

HTTPS Software

Vendor	Zeus Technology Ltd.
HTTPS Software	Zeus 4.2r3
API	ISAPI
Server Cache	None
Log Mode	Binary CLF

Test Sponsor

Test Date	Jul-2004
Tested By	IBM
SPEC License	11

Network

# of Controllers	8
Network Controllers	8 IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter
# of Nets	8
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	8
Model	IBM eServer xSeries 335
Processor	2000 MHz Xeon
# of Processors	2
Memory	1GB
Network Controller	1 x BCM5703 Gigabit Ethernet
Operating System	RedHat 9.0
Compiler	gcc 3.2.2

```
                              Benchmark Configuration

Requested Connections      5140
Fileset Size (MB)          16567.6


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                         Notes/Tuning information

SUT Notes
    1 SCSI 15K 36GB SCSI disk
    2 x External IO Drawer 7311-D20 used for 8 Gigabit adapters (4 adapters per drawer)
    2 IBM Crypto 2058 accelerator cards (1 card per drawer)
    1 x Cisco 3750-T24 switch

Operating System Notes
    ulimit -n 1000000, sets number of open files, default 1024
    Each NIC's TX queue length set to 20000 via ifconfig, default 100
    Each NIC's ITR set to 1800 via insmod InterruptThrottleRate=1800, default=dynamic
    Each NIC's interface TSO=on via ethtool -k eth# tso on, default=off
    One NIC irq bound per logical CPU
    - 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.rmem_max = 10000000, maximum receive socket buffer size, default 65535
    - net.core.rmem_default = 10000000, default receive socket buffer size, default 65535
    - 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.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
    - net.core.somaxconn=20480, size of the listen queue for accepting new TCP connections, default 128
    - net.core.netdev_max_backlog=300000, number of unprocessed input packets before kernel starts dropping them, defaul 300
    DCM: Acronym for "Dual-Chip Module" (one dual-core processor chip + one L3-cache chip)
    SMT: Acronym for "Simultaneous Multi-Threading". A processor technology that allows the simultaneous execution of -
    - multiple thread contexts within a single processor core. (Enabled by default)

HTTPS Software Notes
    Starts 4 instances of Zeus sharing a common docroot
    Zeus 4.2r3 global.cfg:
    tuning!bind_any no
    tuning!cache_files 35023
    tuning!cache_large_file 1048576
    tuning!cache_small_file 102400
    tuning!cache_stat_expire 180000
    tuning!cache_flush_interval 180000
    tuning!cache_max_bytes 0
    tuning!num_children 2
    tuning!keepalive yes
    tuning!ssl_keepalive yes
    tuning!ssl_diskcache no
    tuning!ssl_sessioncache_size 5003
    tuning!keepalive_timeout 1200
    tuning!keepalive_max -1
    tuning!listen_queue_size 10240
    tuning!cbuff_size 1048576
    tuning!multiple_accept yes
    tuning!sendfile no
    tuning!so_rbuff_size 32768
    tuning!softservers no
    tuning!unique_bind yes
    tuning!use_poll no
    tuning!cache_cooling_time 0
    tuning!modules!cgi!cleansize 0
    tuning!modules!cgi!cbuff_size 921632
    tuning!modules!stats!enabled no
    tuning!modules!nsapi!enabled no
    tuning!clientfirst_optimise yes
    tuning!maxaccept 256
    tuning!ssl_cbuff_size 32840
    tuning!modules!ssld!library libZica.so
    tuning!modules!ssld!ica_lib /usr/lib/pkcs11/PKCS11_API.so
    tuning!modules!ssld!nworkers 256
    tuning!modules!ssld!queuelen 10240
    tuning!modules!ssld!failurecount 0 (the number of successive zeus.ssld failures the web server-
    -will tolerate before fall back to software permanently, set to 0 so the web server will never-
    -fall back to software permanently, and always try to contact zeus.ssld first. default 5)

HTTP API Notes
    Zeus PEPP configured with command: ./Configure --ssl=yes
    Zeus PEPP compiled with default gcc (v3.3.3)

Client Notes
    Client binary from SPEC SPECweb99_SSL package
    net.ipv4.ip_local_port_range 1024 65535

Other Notes
    Tuning Disclosure: See above
    Dynamic API: HP-20020724-API.tgz
    Server kernel config: Standard default SuSe Linux Ent. Server 9 config config-2.6.5-7.97-pseries64
```

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```

Test Run Details

Run Num	Conforming Connections	Percent Conform	Throughput ops/sec	Response msec	ops/sec/ loadgen	Kbits/ sec
1	NC	NC	NC	NC	NC	NC
=> 2	NC	NC	NC	NC	NC	NC
3	NC	NC	NC	NC	NC	NC