```
                            SPECweb99_SSL Result

===========================================================================
                                        ||
 Appro : 4100H                          ||     CD SPECweb99_SSL
 Zeus Technology Ltd. : Zeus Web Server V4.2r2   ||
                                        ||
===========================================================================
    SPEC has discovered a code defect in the SPECweb99_SSL test harness run on
    the client systems used in this result.  The defect prevents these client
    systems from generating the correct SPECweb99_SSL workload.  Specifically,
    the defect in the SPECweb99_SSL code results in the clients not generating
    any of the required SSL ClientKeyExchanges during the benchmark.  Therefore,
    the results presented here are not comparable with any other SPECweb99_SSL
    results.
===========================================================================

PERFORMANCE


             |  Conforming Simultaneous
   Iteration |      Connections
---------------+---------------------------
       1     |       CD
       2     |       CD
       3     |       CD
---------------+---------------------------
     Median  |       CD


===========================================================================
                        Availability Dates

All Hardware              Jul-2003
HTTPS Software            Mar-2003
Operating System         May-2003
Supplemental System      May-2003

                            Hardware

Vendor                   Appro
Model                    4100H
Processor                AMD Opteron 244, 1.8 GHz
# Processors             2 cores, 2 chips, 1 core/chip
Primary Cache            64KBI+64KBD
Secondary Cache          1MB on chip
Other Cache              none
Memory                   16 GB pc2100 DDR
Disk Subsystem           3 36GB 15KRPM  Ultra 320 SCSI Drives
Disk Controllers         Onboard LSI SCSI
Other Hardware           1 Extreme Networks Summit 5i GbE Switch

                            Software

Operating System         SuSE Linux Enterprise Server 8 for AMD64
File System              ext2
Other Software           None

                          HTTPS Software

Vendor                   Zeus Technology Ltd.
HTTPS Software           Zeus Web Server V4.2r2 (32-bit)
API                      Zeus PEPP 0.8 ISAPI used for Dynamic content
Server Cache             None
Log Mode                 Binary Log Format

                          Test Sponsor

Test Date                Apr-2003
Tested By                Advanced Micro Devices
SPEC License             49

                            Network

# of Controllers         1
Network Controllers      Intel Pro/1000 MT Dual Port Server Adapter
# 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             8
Model                    Tyan Tiger/AMD Athlon MP
Processor                AMD Athlon MP 1900+
# of Processors          2
Memory                   1024MB
Network Controller       Intel Pro/1000 XT
Operating System         Windows 2000 Professional, w/ SP3
Compiler                 Microsoft Visual C++ 6.0
```

```
                          Benchmark Configuration

Requested Connections        1740
Fileset Size (MB)            5685.2


================================================================================
                        Notes/Tuning information

SUT Notes
     1 U320 15K 36GB SCSI disk for OS
     1 U320 15K 36GB SCSI disk for log
     1 U320 15K 36GB SCSI disk for fileset

Operating System Notes
     One NIC irq bound per CPU
     Each NIC's TX queue length set to 8192 via ifconfig, default 100
     File systems mounted with "noatime,nodiratime", no inode access time updating
     Tuning Parameters:
     - net.ipv4.ip_forward = 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.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.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 = 163721, maximum number of open files, default 1024

HTTPS Software Notes
     Zeus Configuration:
     - tuning!bind_any no
     - tuning!unique_bind yes
     - tuning!cache_cooling_time 0
     - tuning!cache_flush_interval 86400
     - tuning!cache_stat_expire 86400
     - tuning!cbuff_size 65536
     - tuning!clientfirst_optimise yes
     - tuning!keepalive_max -1
     - tuning!keepalive_timeout 20
     - tuning!listen_queue_size 8192
     - tuning!maxaccept 64
     - tuning!modules!cgi!cleansize 0
     - tuning!sendfile no
     - tuning!sendfile_maxsize 0
     - tuning!sendfile_minsize 0
     - tuning!so_wbuff_size 1048576
     - tuning!softservers no
     - tuning!ssl_diskcache no
     - tuning!ssl_sessioncache_size 2617
     Other Zeus 4.2r2 virtual_server performance parameters:
     (%zeushome%/web-4.2r2/runningsites/ssl-64)
     modules!cgi!enable yes
     modules!isapi!enable yes

HTTP API Notes
     Zeus PEPP configured with command: ./Configure --ssl=yes

Client Notes
     Clients require a Tyan Tiger motherboard and an ATX capable case.
     Case uses 300W ATX power supply, Clients use a 40G ATA 133 IDE hard drive.
     Clients use DDR pc2100 memory.

Other Notes
     Tuning Disclosure: See above.
     Dynamic API: HP-20020724-API.tgz
     Kernel config: AMD-20030401-kernel64-config.txt


================================================================================

Test Run Details


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