SPEC® CINT2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Lenovo Global Technology

$SPECint^®\_rate2006 =$ 1810

ThinkSystem ST550
(2.00 GHz, Intel Xeon Gold 6138T)

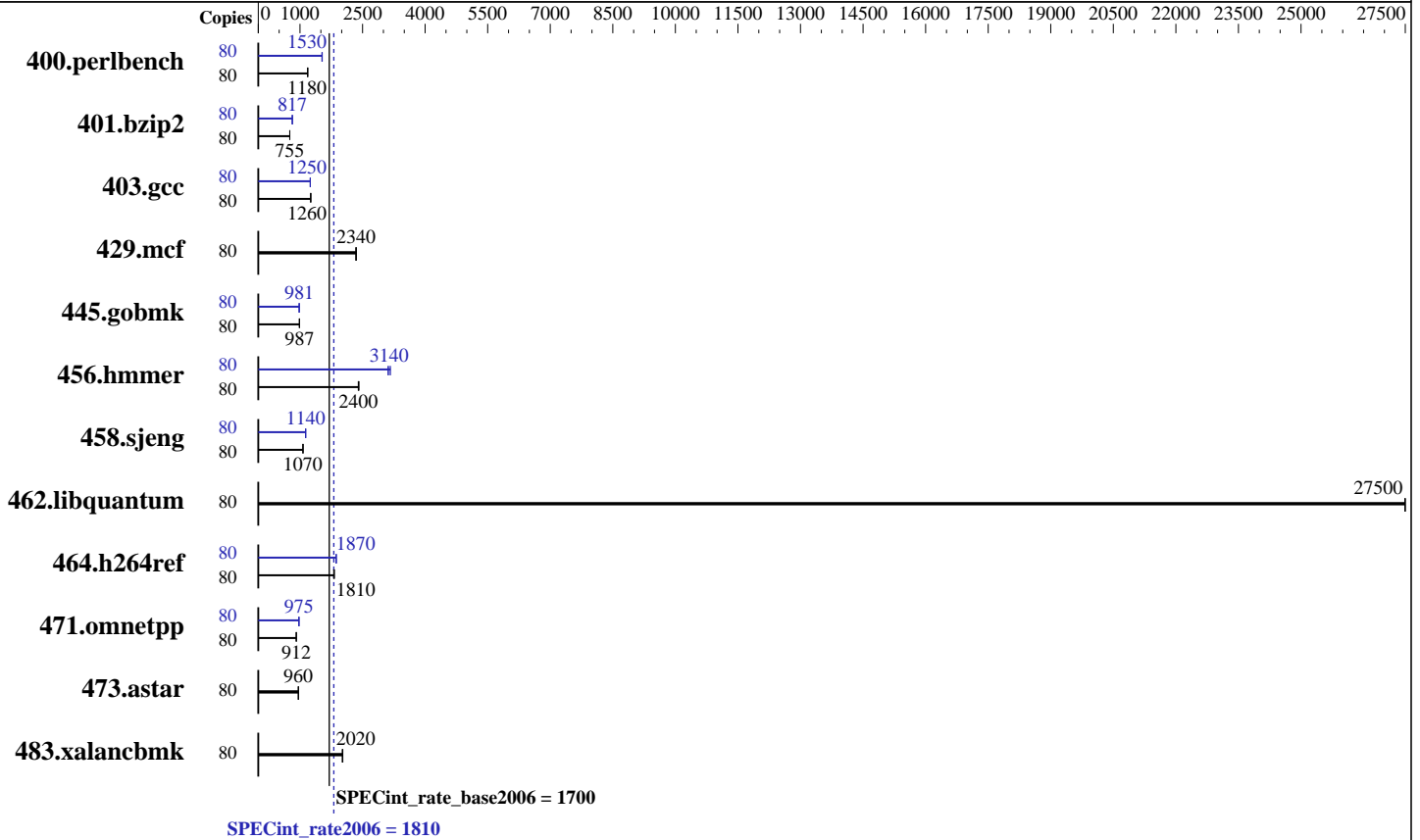$SPECint\_rate\_base2006 =$ 1700

CPU2006 license: 9017

Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Jul-2017

Hardware Availability: Aug-2017

Software Availability: Nov-2016

Copies

Benchmark	Copies	Base	Peak
400.perlbench	80 / 80	1180	1530
401.bzip2	80 / 80	755	817
403.gcc	80 / 80	1260	1250
429.mcf	80	2340	
445.gobmk	80 / 80	987	981
456.hmmer	80 / 80	2400	3140
458.sjeng	80 / 80	1070	1140
462.libquantum	80	27500	
464.h264ref	80 / 80	1810	1870
471.omnetpp	80 / 80	912	975
473.astar	80	960	
483.xalancbmk	80	2020	

SPECint_rate_base2006 = 1700

SPECint_rate2006 = 1810

Hardware

CPU Name: Intel Xeon Gold 6138T

CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz

CPU MHz: 2000

FPU: Integrated

CPU(s) enabled: 40 cores, 2 chips, 20 cores/chip, 2 threads/core

CPU(s) orderable: 1,2 chips

Primary Cache: 32 KB I + 32 KB D on chip per core

Secondary Cache: 1 MB I+D on chip per core

L3 Cache: 27.5 MB I+D on chip per chip

Other Cache: None

Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)

Disk Subsystem: 1 x 800 GB SATA SSD

Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64)
Kernel 4.4.21-69-default

Compiler: C/C++: Version 17.0.1.132 of Intel C/C++
Compiler for Linux

Auto Parallel: No

File System: btrfs

System State: Run level 3 (multi-user)

Base Pointers: 32-bit

Peak Pointers: 32/64-bit

Other Software: Microquill SmartHeap V10.2

SPEC CINT2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem ST550
(2.00 GHz, Intel Xeon Gold 6138T)

SPECint_rate2006 =   1810

SPECint_rate_base2006 = 1700

CPU2006 license: 9017
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	80	661	1180	659	1190	**661**	**1180**	80	**510**	**1530**	510	1530	512	1530
401.bzip2	80	**1023**	**755**	1021	756	1023	754	80	944	818	948	815	**945**	**817**
403.gcc	80	511	1260	513	1260	**512**	**1260**	80	**517**	**1250**	516	1250	517	1250
429.mcf	80	**311**	**2340**	312	2340	310	2350	80	**311**	**2340**	312	2340	310	2350
445.gobmk	80	**850**	**987**	850	987	851	987	80	854	982	856	981	**856**	**981**
456.hmmer	80	311	2400	309	2420	**311**	**2400**	80	236	3170	**238**	**3140**	240	3110
458.sjeng	80	903	1070	**903**	**1070**	903	1070	80	852	1140	853	1140	**853**	**1140**
462.libquantum	80	60.3	27500	60.3	27500	**60.3**	**27500**	80	60.3	27500	60.3	27500	**60.3**	**27500**
464.h264ref	80	**977**	**1810**	969	1830	978	1810	80	**948**	**1870**	946	1870	950	1860
471.omnetpp	80	549	911	548	912	**549**	**912**	80	**513**	**975**	513	975	514	973
473.astar	80	585	960	**585**	**960**	582	964	80	585	960	**585**	**960**	582	964
483.xalancbmk	80	274	2020	**273**	**2020**	272	2030	80	274	2020	**273**	**2020**	272	2030

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

```
    BIOS configuration:
     Choose Operating Mode set to Maximum Performance
     DCU Streamer Prefetcher set to Disable
     SNC set to Enable
     Per Core P-state set to Disable
     UPI Prefetcher set to Disable
     Stale AtoS set to Enable
     LLC dead line alloc set to Disable
    Sysinfo program /home/cpu2006-1.2-ic17.0u1/config/sysinfo.rev6993
    Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
    running on ST550 Mon Jul 17 21:53:46 2017

    This section contains SUT (System Under Test) info as seen by
    some common utilities.  To remove or add to this section, see:
      http://www.spec.org/cpu2006/Docs/config.html#sysinfo

    From /proc/cpuinfo
```

Lenovo Global Technology

ThinkSystem ST550
(2.00 GHz, Intel Xeon Gold 6138T)

SPECint_rate2006 =   1810

SPECint_rate_base2006 = 1700

CPU2006 license: 9017
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

Platform Notes (Continued)

```
    model name : Intel(R) Xeon(R) Gold 6138T CPU @ 2.00GHz
       2 "physical id"s (chips)
       80 "processors"
    cores, siblings (Caution: counting these is hw and system dependent.  The
    following excerpts from /proc/cpuinfo might not be reliable.  Use with
    caution.)
       cpu cores : 20
       siblings  : 40
       physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
       physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
    cache size : 28160 KB

 From /proc/meminfo
    MemTotal:       395881920 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    SuSE-release:
       SUSE Linux Enterprise Server 12 (x86_64)
       VERSION = 12
       PATCHLEVEL = 2
       # This file is deprecated and will be removed in a future service pack or
       release.
       # Please check /etc/os-release for details about this release.
    os-release:
       NAME="SLES"
       VERSION="12-SP2"
       VERSION_ID="12.2"
       PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
       ID="sles"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:12:sp2"

 uname -a:
    Linux ST550 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
    x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Jul 17 21:52

 SPEC is set to: /home/cpu2006-1.2-ic17.0u1
    Filesystem      Type   Size  Used Avail Use% Mounted on
    /dev/sdb2       btrfs  744G   91G  652G  13% /home
 Additional information from dmidecode:

    Warning: Use caution when you interpret this section. The 'dmidecode' program
    reads system data which is "intended to allow hardware to be accurately
    determined", but the intent may not be met, as there are frequent changes to
    hardware, firmware, and the "DMTF SMBIOS" standard.

    BIOS Lenovo -[O0E105R-1.00]- 04/27/2017
    Memory:
```

SPEC CINT2006 Result

Lenovo Global Technology

ThinkSystem ST550
(2.00 GHz, Intel Xeon Gold 6138T)

SPECint_rate2006 =   1810

SPECint_rate_base2006 = 1700

CPU2006 license: 9017
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

Platform Notes (Continued)

```
    12x Hynix HMA84GR7AFR4N-VK 32 GB 2 rank 2666 MHz

   (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006-1.2-ic17.0u1/lib/ia32:/home/cpu2006-1.2-ic17.0u1/lib/intel64:/home/cpu2006-1.2-ic17.0u1/sh10.2"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.2
 Transparent Huge Pages enabled by default
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

Base Compiler Invocation

C benchmarks:
```
    icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

C++ benchmarks:
```
    icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

Base Portability Flags

```
     400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
        401.bzip2: -D_FILE_OFFSET_BITS=64
          403.gcc: -D_FILE_OFFSET_BITS=64
          429.mcf: -D_FILE_OFFSET_BITS=64
        445.gobmk: -D_FILE_OFFSET_BITS=64
        456.hmmer: -D_FILE_OFFSET_BITS=64
        458.sjeng: -D_FILE_OFFSET_BITS=64
     462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
       464.h264ref: -D_FILE_OFFSET_BITS=64
       471.omnetpp: -D_FILE_OFFSET_BITS=64
         473.astar: -D_FILE_OFFSET_BITS=64
     483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
```

Base Optimization Flags

C benchmarks:
```
    -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
    -qopt-mem-layout-trans=3
```

Continued on next page

Lenovo Global Technology

ThinkSystem ST550
(2.00 GHz, Intel Xeon Gold 6138T)

SPECint_rate2006 =   1810

SPECint_rate_base2006 = 1700

CPU2006 license: 9017

Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Jul-2017

Hardware Availability: Aug-2017

Software Availability: Nov-2016

Base Optimization Flags (Continued)

C++ benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap
```

Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

Peak Compiler Invocation

C benchmarks (except as noted below):

```
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:

```
icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-D_FILE_OFFSET_BITS=64`
429.mcf: `-D_FILE_OFFSET_BITS=64`
445.gobmk: `-D_FILE_OFFSET_BITS=64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`
464.h264ref: `-D_FILE_OFFSET_BITS=64`
471.omnetpp: `-D_FILE_OFFSET_BITS=64`
473.astar: `-D_FILE_OFFSET_BITS=64`
483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

SPEC CINT2006 Result

Lenovo Global Technology

ThinkSystem ST550
(2.00 GHz, Intel Xeon Gold 6138T)

SPECint_rate2006 =   1810

SPECint_rate_base2006 = 1700

CPU2006 license: 9017
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-prefetch -auto-ilp32
-qopt-mem-layout-trans=3

403.gcc: -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3

429.mcf: basepeak = yes

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-mem-layout-trans=3

456.hmmer: -xCORE-AVX512 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-qopt-mem-layout-trans=3

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -auto-ilp32
-qopt-mem-layout-trans=3

462.libquantum: basepeak = yes

464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -qopt-mem-layout-trans=3

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2)
-qopt-ra-region-strategy=block
-qopt-mem-layout-trans=3 -Wl,-z,muldefs
-L/sh10.2 -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

SPEC CINT2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Lenovo Global Technology

ThinkSystem ST550
(2.00 GHz, Intel Xeon Gold 6138T)

SPECint_rate2006 =   1810

SPECint_rate_base2006 = 1700

CPU2006 license: 9017
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

Peak Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revD.html`
`http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revD.xml`
`http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.xml`

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Report generated on Wed Sep 20 11:04:25 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 19 September 2017.