SPEC® CINT2006 Result
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Lenovo Global Technology

ThinkSystem SR650
(3.00 GHz, Intel Xeon Gold 6136)

SPECint®_rate2006 =   1550

SPECint_rate_base2006 = 1460

CPU2006 license: 9017

Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Jul-2017

Hardware Availability: Aug-2017

Software Availability: Apr-2017

Copies | 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10500 12000 13500 15000 16500 18000 19500 21000 22500 24500

400.perlbench — 48 / 1290, 48 / 1080

401.bzip2 — 48 / 682, 48 / 647

403.gcc — 48 / 1060, 48 / 1050

429.mcf — 48 / 1980

445.gobmk — 48 / 877, 48 / 880

456.hmmer — 48 / 2600, 48 / 2060

458.sjeng — 48 / 1010, 48 / 937

462.libquantum — 48 / 24300

464.h264ref — 48 / 1640, 48 / 1580

471.omnetpp — 48 / 742, 48 / 682

473.astar — 48 / 823

483.xalancbmk — 48 / 1800

SPECint_rate_base2006 = 1460

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Hardware

CPU Name: Intel Xeon Gold 6136

CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz

CPU MHz: 3000

FPU: Integrated

CPU(s) enabled: 24 cores, 2 chips, 12 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: 24.75 MB I+D on chip per chip

Other Cache: None

Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)

Disk Subsystem: 1 x 800 GB SAS 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 17.0.3.191 of Intel C/C++
Compiler for Linux

Auto Parallel: Yes

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

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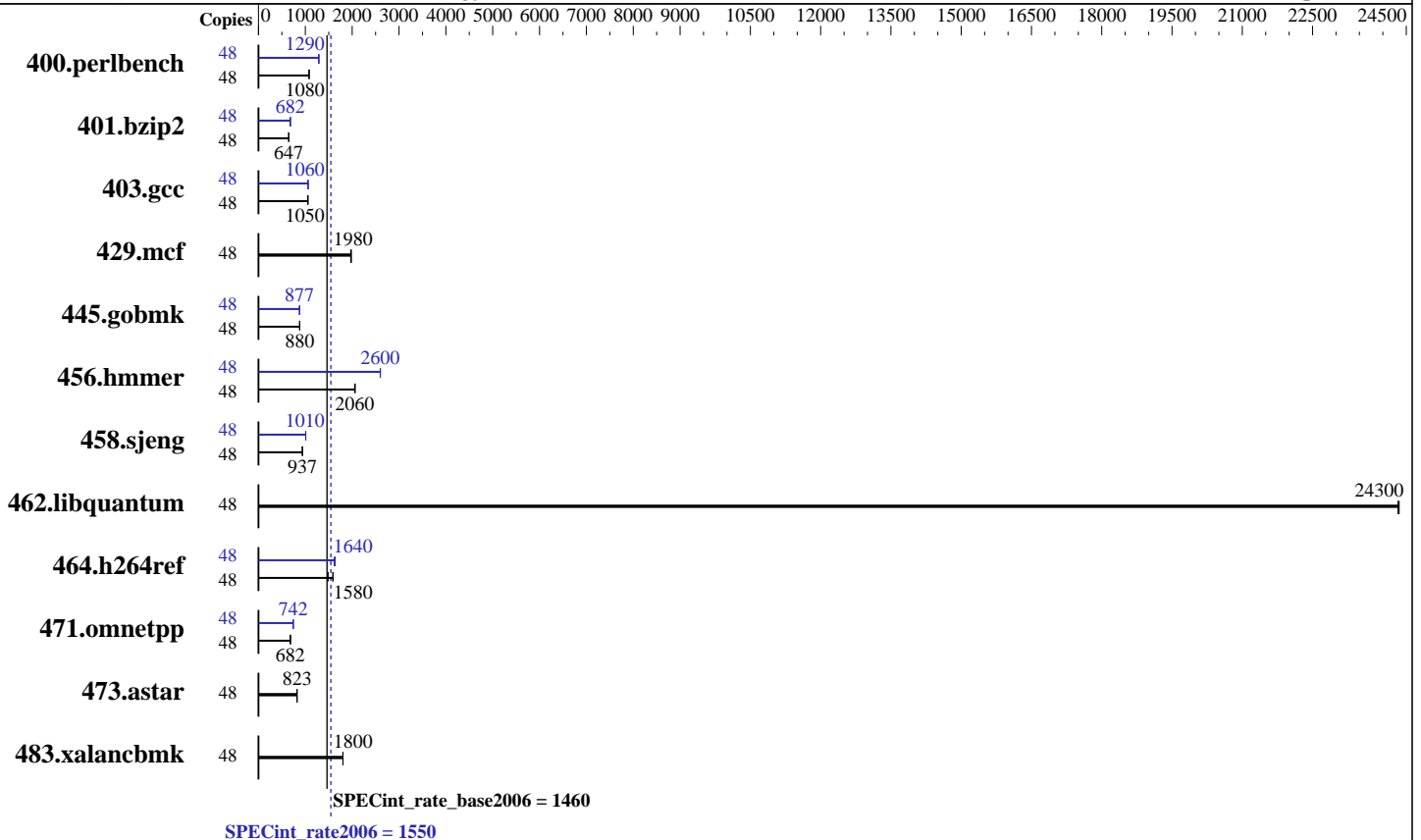
CPU2006 license: 9017	**Test date:** Jul-2017
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	48	**434**	**1080**	434	1080	434	1080	48	365	1290	**364**	**1290**	364	1290
401.bzip2	48	715	648	**716**	**647**	717	646	48	678	683	684	677	**679**	**682**
403.gcc	48	**367**	**1050**	366	1060	367	1050	48	365	1060	364	1060	**364**	**1060**
429.mcf	48	222	1970	**221**	**1980**	221	1980	48	222	1970	**221**	**1980**	221	1980
445.gobmk	48	**572**	**880**	572	880	573	879	48	574	877	575	875	**574**	**877**
456.hmmer	48	218	2050	**218**	**2060**	217	2060	48	172	2600	**172**	**2600**	172	2600
458.sjeng	48	**620**	**937**	619	938	620	937	48	576	1010	575	1010	**576**	**1010**
462.libquantum	48	40.8	24300	40.9	24300	**40.9**	**24300**	48	40.8	24300	40.9	24300	**40.9**	**24300**
464.h264ref	48	**670**	**1580**	666	1590	712	1490	48	649	1640	657	1620	**649**	**1640**
471.omnetpp	48	440	682	440	682	**440**	**682**	48	**404**	**742**	404	742	405	741
473.astar	48	409	825	411	821	**409**	**823**	48	409	825	411	821	**409**	**823**
483.xalancbmk	48	**184**	**1800**	184	1800	184	1800	48	**184**	**1800**	184	1800	184	1800

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:
    Operating Mode set to Maximum Performance
    SNC set to Enable
    DCU Streamer Prefetcher set to Disable
    Stale AtoS set to Enable
    LLC dead line alloc set to Disable
     Sysinfo program /home/cpu2006-1.2-ic17.0u3/config/sysinfo.rev6993
     Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
     running on Cyborg-SPECcpu2006-SUSE12SP2 Wed Jul 26 04:31:05 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
        model name : Intel(R) Xeon(R) Gold 6136 CPU @ 3.00GHz
           2 "physical id"s (chips)

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Platform Notes (Continued)

```
       48 "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 : 12
       siblings  : 24
       physical 0: cores 0 1 2 3 4 9 10 16 18 19 25 26
       physical 1: cores 0 1 2 3 4 9 10 16 18 19 25 26
    cache size : 25344 KB

 From /proc/meminfo
    MemTotal:       395892112 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 Cyborg-SPECcpu2006-SUSE12SP2 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 26 04:30

 SPEC is set to: /home/cpu2006-1.2-ic17.0u3
    Filesystem      Type   Size  Used Avail Use% Mounted on
    /dev/sdb2       btrfs  744G   30G  713G   4% /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 -[IVE109Q-1.00]- 06/28/2017
  Memory:
    24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666 MHz
```

Continued on next page

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Platform Notes (Continued)

(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-ic17.0u3/lib/ia32:/home/cpu2006-1.2-ic17.0u3/lib/intel64:/home/cpu2006-1.2-ic17.0u3/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:
 shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
 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

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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`

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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

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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-revF.html
http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.20171004.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-revF.xml
http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.20171004.xml

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

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