Lenovo Global Technology
ThinkSystem SR850
(3.20 GHz, Intel Xeon Gold 6134)

| SPECint_rate2006 | 2170 |
| SPECint_rate_base2006 | 2060 |

CPU2006 license: 9017  
Test sponsor: Lenovo Global Technology  
Tested by: Lenovo Global Technology  
CPU Name: Intel Xeon Gold 6134  
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz  
CPU MHz: 3200  
FPU: Integrated  
CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 2 threads/core  
CPU(s) orderable: 2,4 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: 1536 GB (48 x 32 GB 2Rx4 PC4-2666V-R)  
Disk Subsystem: 1 x 800 GB SAS SSD  
Other Hardware: None  
Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64)  
Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux  
Auto Parallel: Yes  
File System: xfs  
System State: Run level 3 (multi-user)  
Base Pointers: 32-bit  
Peak Pointers: 32/64-bit  
Other Software: Microquill SmartHeap V10.2

Software

Hardware

| Copy | 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 | 11000 | 12000 | 13000 | 14000 | 15000 | 16000 | 17000 | 18000 | 19000 | 20000 | 21000 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 400.perlbench | | | | | | | | | | | | | | | | | | | | | | |
| 401.bzip2 | | | | | | | | | | | | | | | | | | | | | | |
| 403.gcc | | | | | | | | | | | | | | | | | | | | | | |
| 429.mcf | | | | | | | | | | | | | | | | | | | | | | |
| 445.gobmk | | | | | | | | | | | | | | | | | | | | | | |
| 456.hmmer | | | | | | | | | | | | | | | | | | | | | | |
| 458.sjeng | | | | | | | | | | | | | | | | | | | | | | |
| 462.libquantum | | | | | | | | | | | | | | | | | | | | | | |
| 464.h264ref | | | | | | | | | | | | | | | | | | | | | | |
| 471.omnetpp | | | | | | | | | | | | | | | | | | | | | | |
| 473.aster | | | | | | | | | | | | | | | | | | | | | | |
| 483.xalancbmk | | | | | | | | | | | | | | | | | | | | | | |
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SPECint_rate2006 = 2170
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlb</td>
<td>64</td>
<td>417 1500</td>
<td>420 1490</td>
<td>418 1500</td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>64</td>
<td>633 976</td>
<td>634 974</td>
<td>630 980</td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>64</td>
<td>334 1540</td>
<td>336 1530</td>
<td>337 1530</td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>64</td>
<td>193 3030</td>
<td>193 3030</td>
<td>193 3030</td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>64</td>
<td>509 1320</td>
<td>509 1320</td>
<td>510 1320</td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>64</td>
<td>191 3130</td>
<td>191 3130</td>
<td>191 3130</td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>64</td>
<td>557 1390</td>
<td>557 1390</td>
<td>557 1390</td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>64</td>
<td>64.7 20500</td>
<td>64.6 20500</td>
<td>64.2 20600</td>
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</tr>
<tr>
<td>464.h264ref</td>
<td>64</td>
<td>585 2420</td>
<td>581 2440</td>
<td>579 2440</td>
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</tr>
<tr>
<td>471.omnetpp</td>
<td>64</td>
<td>416 962</td>
<td>416 962</td>
<td>416 962</td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>64</td>
<td>370 1210</td>
<td>371 1210</td>
<td>371 1210</td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>64</td>
<td>168 2630</td>
<td>168 2620</td>
<td>168 2620</td>
<td></td>
</tr>
</tbody>
</table>

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
Execute Disable Bit set to Disable
DCU Streamer Prefetcher set to Disable
Intel Virtualization Technology set to Disable
Stale AtoS set to Enable
LLC dead line alloc set to Disable
SNC set to Enable
Sysinfo program /home/cpu2006-1.2-ic17.0u3/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on Electron-02 Tue Oct 17 17:40:19 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
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Hardware Availability: Aug-2017  
Tested by: Lenovo Global Technology  
Software Availability: Apr-2017  

Platform Notes (Continued)

model name : Intel(R) Xeon(R) Gold 6134 CPU @ 3.20GHz  
4 "physical id"s (chips)  
64 "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 : 8  
siblings : 16  
physical 0: cores 0 4 5 6 16 19 20 22  
physical 1: cores 1 2 3 4 8 18 24 27  
physical 2: cores 0 1 2 3 4 10 19 24  
physical 3: cores 0 2 3 9 16 19 26 27  
cache size : 25344 KB  

From /proc/meminfo  
MemTotal: 1584974156 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:  
(9464f67) x86_64 x86_64 x86_64 GNU/Linux  
run-level 3 Oct 17 17:16  

SPEC is set to: /home/cpu2006-1.2-ic17.0u3  
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.
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Platform Notes (Continued)

BIOS Lenovo -[TEE113J-1.00]- 06/03/2017
Memory:
48x Samsung M393A4K40BB2-CTD 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-ic17.0u3/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
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Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -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:
icc -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

Continued on next page
**Peak Portability Flags (Continued)**

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-AVX2(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-AVX2(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-AVX2 -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-AVX2(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-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32  
-qopt-mem-layout-trans=3

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(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-AVX2(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-AVX2(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

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Peak Optimization Flags (Continued)

473.astar: basepeak = yes
483.xalancbmk: basepeak = yes

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

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