Lenovo Global Technology
ThinkSystem SR650
(3.20 GHz, Intel Xeon Gold 6134)

SPECfp®2006 = 148
SPECfp_base2006 = 143

Hardware
- 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: 16 cores, 2 chips, 8 cores/chip
- 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

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;
  Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux
- Auto Parallel: Yes
- File System: btrfs
- System State: Run level 3 (multi-user)

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CPU2006 license: 9017
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test date: Aug-2017
Hardware Availability: Aug-2017
Tested by: Lenovo Global Technology
Software Availability: Apr-2017

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

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>240</td>
<td>81.3</td>
</tr>
</tbody>
</table>

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

Operating System Notes

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

Platform Notes

BIOS configuration:
Operating Mode set to Maximum Performance
Hyper-Threading set to Disabled
LLC dead line alloc set to Disable
Sysinfo program /home/cpu2006-1.2-ic17.0u3/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbef290c1)
running on Cyborg-SPECcpu2017-SUSE12SP2 Sun Aug 12 00:10:31 2018

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
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ThinkSystem SR650
(3.20 GHz, Intel Xeon Gold 6134)

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cpu2006 license: 9017
Test sponsor: Lenovo Global Technology
Test date: Aug-2017
Hardware Availability: Aug-2017
Tested by: Lenovo Global Technology
Software Availability: Apr-2017

Platform Notes (Continued)

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

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

From /proc/meminfo
MemTotal: 395881796 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
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-SPECcpu2017-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 Aug 12 00:09

SPEC is set to: /home/cpu2006-1.2-ic17.0u3
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 btrfs 744G 92G 650G 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 -[IVE111C-1.00]- 07/17/2017
Memory:
24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)
Lenovo Global Technology
ThinkSystem SR650
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General Notes
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
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"
OMP_NUM_THREADS = "16"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/transparent_hugepage/enabled
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zestmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64
Lenovo Global Technology  
ThinkSystem SR650  
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**SPECfp2006 =** 148  
**SPECfp_base2006 =** 143  

CPU2006 license: 9017  
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Test date: Aug-2017  
Hardware Availability: Aug-2017  
Software Availability: Apr-2017  

### Base Optimization Flags

C benchmarks:
- -xCORE-AVX2  
- -ipo  
- -O3  
- -no-prec-div  
- -parallel  
- -qopt-prefetch  

C++ benchmarks:
- -xCORE-AVX2  
- -ipo  
- -O3  
- -no-prec-div  
- -qopt-prefetch  

Fortran benchmarks:
- -xCORE-AVX2  
- -ipo  
- -O3  
- -no-prec-div  
- -parallel  
- -qopt-prefetch  

Benchmarks using both Fortran and C:
- -xCORE-AVX2  
- -ipo  
- -O3  
- -no-prec-div  
- -parallel  
- -qopt-prefetch  

### Peak Compiler Invocation

C benchmarks:
- icc -m64  

C++ benchmarks:
- icpc -m64  

Fortran benchmarks:
- ifort -m64  

Benchmarks using both Fortran and C:
- icc -m64 ifort -m64  

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

C benchmarks:
- 433.milc: basepeak = yes  
- 470.lbm: basepeak = yes  
- 482.sphinx3: basepeak = yes  

C++ benchmarks:
- 444.namd: -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)  
  -fno-alias  
  -auto-ilp32  

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Software Availability: Apr-2017

Peak Optimization Flags (Continued)

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -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 -ansi-alias

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -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 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -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 -inline-level=0
               -qopt-prefetch -parallel
465.tonto: -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) -inline-calloc -qopt-malloc-options=3
           -auto -unroll4

Benchmarks using both Fortran and C:
435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32
481.wrf: basepeak = yes

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
## Lenovo Global Technology

**ThinkSystem SR650**
(3.20 GHz, Intel Xeon Gold 6134)

<table>
<thead>
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<th>Specification</th>
<th>Value</th>
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<td>148</td>
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- **CPU2006 license:** 9017  
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