Lenovo Global Technology
ThinkSystem SR950
(3.00 GHz, Intel Xeon Gold 6136)

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

SPECfp®2006 = 156
SPECfp_base2006 = 150

Test date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Apr-2017

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: 48 cores, 4 chips, 12 cores/chip
CPU(s) orderable: 2,4 chips
Primary Cache: 32 KB L1 + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core

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;
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)

Continued on next page
## Lenovo Global Technology

**ThinkSystem SR950**  
(3.00 GHz, Intel Xeon Gold 6136)

### SPEC CFP2006 Result

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>8.51</td>
<td>1600</td>
<td>8.51</td>
<td>1600</td>
<td>8.51</td>
<td>1600</td>
<td>8.51</td>
<td>1600</td>
<td>8.51</td>
<td>1600</td>
</tr>
<tr>
<td>416.gamess</td>
<td>400</td>
<td>48.9</td>
<td>400</td>
<td>48.9</td>
<td>379</td>
<td>51.7</td>
<td>379</td>
<td>51.7</td>
<td>380</td>
<td>51.6</td>
</tr>
<tr>
<td>433.milc</td>
<td>126</td>
<td>72.7</td>
<td>126</td>
<td>72.6</td>
<td>126</td>
<td>72.7</td>
<td>126</td>
<td>72.6</td>
<td>126</td>
<td>72.6</td>
</tr>
<tr>
<td>444.namd</td>
<td>225</td>
<td>35.6</td>
<td>225</td>
<td>35.6</td>
<td>220</td>
<td>36.5</td>
<td>220</td>
<td>36.5</td>
<td>220</td>
<td>36.5</td>
</tr>
<tr>
<td>447.dealII</td>
<td>160</td>
<td>71.5</td>
<td>159</td>
<td>71.8</td>
<td>159</td>
<td>71.8</td>
<td>159</td>
<td>71.8</td>
<td>159</td>
<td>71.8</td>
</tr>
<tr>
<td>450.soplex</td>
<td>161</td>
<td>51.7</td>
<td>162</td>
<td>51.6</td>
<td>161</td>
<td>51.7</td>
<td>162</td>
<td>51.6</td>
<td>163</td>
<td>51.3</td>
</tr>
<tr>
<td>453.povray</td>
<td>76.3</td>
<td>69.7</td>
<td>76.1</td>
<td>69.9</td>
<td>76.0</td>
<td>70.0</td>
<td>76.0</td>
<td>70.0</td>
<td>76.0</td>
<td>70.0</td>
</tr>
<tr>
<td>454.calculix</td>
<td>110</td>
<td>74.7</td>
<td>110</td>
<td>74.8</td>
<td>111</td>
<td>74.5</td>
<td>108</td>
<td>76.7</td>
<td>108</td>
<td>76.7</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>54.8</td>
<td>194</td>
<td>54.4</td>
<td>195</td>
<td>55.2</td>
<td>192</td>
<td>55.3</td>
<td>192</td>
<td>55.2</td>
<td>192</td>
</tr>
<tr>
<td>465.tonto</td>
<td>178</td>
<td>55.3</td>
<td>178</td>
<td>52.6</td>
<td>180</td>
<td>54.8</td>
<td>183</td>
<td>63.8</td>
<td>143</td>
<td>68.6</td>
</tr>
<tr>
<td>470.lbm</td>
<td>4.73</td>
<td>2910</td>
<td>4.73</td>
<td>2910</td>
<td>4.73</td>
<td>2910</td>
<td>4.73</td>
<td>2910</td>
<td>4.73</td>
<td>2910</td>
</tr>
<tr>
<td>481.wrf</td>
<td>83.6</td>
<td>134</td>
<td>84.1</td>
<td>133</td>
<td>83.5</td>
<td>134</td>
<td>83.6</td>
<td>134</td>
<td>84.1</td>
<td>133</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>241</td>
<td>80.8</td>
<td>241</td>
<td>80.8</td>
<td>241</td>
<td>80.8</td>
<td>241</td>
<td>80.8</td>
<td>241</td>
<td>80.8</td>
</tr>
</tbody>
</table>

### Operating System Notes

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

### Platform Notes

- BIOS configuration:  
  - Choose Operating Mode set to Maximum Performance  
  - Hyper-Threading set to Disable  
  - 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 Proton4S-SUSE12SP2 Fri Nov 17 21:04:59 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: Continued on next page
Lenovo Global Technology
ThinkSystem SR950
(3.00 GHz, Intel Xeon Gold 6136)

SPECfp2006 = 156
SPECfp_base2006 = 150

CPU2006 license: 9017
Test date: Nov-2017
Test sponsor: Lenovo Global Technology
Hardware Availability: Sep-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 6136 CPU @ 3.00GHz
  4 "physical id"s (chips)
  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 : 12
  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
  physical 2: cores 0 1 2 3 4 9 10 16 18 19 25 26
  physical 3: cores 0 1 2 3 4 9 10 16 18 19 25 26
  cache size : 25344 KB

From /proc/meminfo
  MemTotal: 1584766852 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 Proton4S-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 Nov 17 21:03

SPEC is set to: /home/cpu2006-1.2-ic17.0u3
  Filesystem  Type  Size  Used  Avail  Use% Mounted on
  /dev/sda3  btrfs  743G  182G  561G  25%  /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
Continued on next page
Lenovo Global Technology
ThinkSystem SR950
(3.00 GHz, Intel Xeon Gold 6136)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>156</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>150</td>
</tr>
</tbody>
</table>

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

Test date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Apr-2017

Platform Notes (Continued)

"determined", but the intent may not be met, as there are frequent changes to
hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Lenovo -[PSE105X-1.00]- 08/17/2017
Memory:
48x NO DIMM NO DIMM
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:
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 = "48"

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
Filesystem page cache cleared with:
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.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main

Continued on next page
Lenovo Global Technology
ThinkSystem SR950
(3.00 GHz, Intel Xeon Gold 6136)

**SPECfp2006 = 156**
**SPECfp_base2006 = 150**

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

---

**Base Portability Flags (Continued)**

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

---

**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
Lenovo Global Technology
ThinkSystem SR950
(3.00 GHz, Intel Xeon Gold 6136)

SPECfp2006 = 156
SPECfp_base2006 = 150

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

Test date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Apr-2017

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
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)
              -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

Continued on next page
## Lenovo Global Technology

**ThinkSystem SR950**  
(3.00 GHz, Intel Xeon Gold 6136)

<table>
<thead>
<tr>
<th>SPECf2006 = 156</th>
<th>SPECfp_base2006 = 150</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Test date: Nov-2017</th>
<th>Hardware Availability: Sep-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Availability: Apr-2017</td>
<td></td>
</tr>
</tbody>
</table>

### Peak Optimization Flags (Continued)

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:

- [Intel-ic17.0-official-linux64-revF.html](http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html)  
- [Lenovo-Platform-Flags-V1.2-SKL-E.html](http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-E.html)

You can also download the XML flags sources by saving the following links:

- [Intel-ic17.0-official-linux64-revF.xml](http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml)  
- [Lenovo-Platform-Flags-V1.2-SKL-E.xml](http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-E.xml)

---

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.  
Originally published on 26 December 2017.