### SPEC® CFP2006 Result

**Lenovo Global Technology**

ThinkSystem SR630  
(3.00 GHz, Intel Xeon Gold 6136)

**SPECfp®2006** = 152  
**SPECfp_base2006** = 147

<table>
<thead>
<tr>
<th>Benchmarks</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>51.7</td>
</tr>
<tr>
<td>416.gamess</td>
<td>72.5</td>
</tr>
<tr>
<td>433.milc</td>
<td>79.3</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>71.5</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>50.1</td>
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<tr>
<td>436.cactusADM</td>
<td>35.6</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>57.1</td>
</tr>
<tr>
<td>444.namd</td>
<td>66.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>61.5</td>
</tr>
<tr>
<td>450.soplex</td>
<td>89.3</td>
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<tr>
<td>453.povray</td>
<td>76.4</td>
</tr>
<tr>
<td>454.calculix</td>
<td>74.8</td>
</tr>
<tr>
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<td>67.6</td>
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<tr>
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<td>69.8</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>74.8</td>
</tr>
</tbody>
</table>

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

**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  
- **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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http://www.spec.org/  
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| 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 |
| Test date: | Aug-2017 |
| Hardware Availability: | Aug-2017 |
| Software Availability: | Apr-2017 |

### 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><strong>84.3</strong></td>
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<td>482.sphinx3</td>
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<td><strong>243</strong></td>
<td><strong>80.3</strong></td>
<td>242</td>
<td>80.4</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:
 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 Cable-SPECcpu2017-SUSE12SP2 Fri Aug 4 05:54:16 2017

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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# Lenovo Global Technology

## ThinkSystem SR630

(3.00 GHz, Intel Xeon Gold 6136)

## SPEC CFP2006 Result

<table>
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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

## Software Availability:

Apr-2017

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### 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
- 2 "physical id"s (chips)
- 24 "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
- cache size : 25344 KB

From /proc/meminfo

- MemTotal: 395892352 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 Cable-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 4 05:53

SPEC is set to: /home/cpu2006-1.2-ic17.0u3

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>btrfs</td>
<td>744G</td>
<td>35G</td>
<td>708G</td>
<td>5%</td>
<td>/home</td>
</tr>
</tbody>
</table>

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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# SPEC CFP2006 Result

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## Platform Notes (Continued)

- BIOS Lenovo -[IVE109Q-1.00]- 06/28/2017  
- Memory:  
  24x Samsung M393A2K43BB1-CTD 16 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 = "24"

- 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 -nofor_main  
- 436.cactusADM: -DSPEC_CPU_LP64 -nofor_main  
- 437.leslie3d: -DSPEC_CPU_LP64  
- 444.namd: -DSPEC_CPU_LP64 -nofor_main  
- 447.dealII: -DSPEC_CPU_LP64

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Lenovo Global Technology
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Base Portability Flags (Continued)

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:
ic -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags
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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)
-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

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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
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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For other inquiries, please contact webmaster@spec.org.

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