**Lenovo Global Technology**

**ThinkSystem SR550**
(1.70 GHz, Intel Xeon Bronze 3104)

**SPECfp®2006 = 69.7**

**SPECfp_base2006 = 68.4**

**Hardware**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>22.8</td>
</tr>
<tr>
<td>416.gamess</td>
<td>22.0</td>
</tr>
<tr>
<td>433.milc</td>
<td>50.8</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>153</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>28.7</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>457</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>189</td>
</tr>
<tr>
<td>444.namd</td>
<td>16.8</td>
</tr>
<tr>
<td>447.dealII</td>
<td>34.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>25.6</td>
</tr>
<tr>
<td>453.povray</td>
<td>36.9</td>
</tr>
<tr>
<td>454.calculix</td>
<td>31.7</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>193</td>
</tr>
<tr>
<td>465.tonto</td>
<td>27.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>26.2</td>
</tr>
<tr>
<td>481.wrf</td>
<td>59.8</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>38.5</td>
</tr>
</tbody>
</table>

**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 SP2 (x86_64)  
  Kernel 4.4.21-69-default
- **Compiler:** C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux;  
  Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux
- **Auto Parallel:** Yes
- **File System:** btrfs
- **System State:** Run level 3 (multi-user)
# SPEC CFP2006 Result

**Lenovo Global Technology**

ThinkSystem SR550  
(1.70 GHz, Intel Xeon Bronze 3104)

<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>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>31.8</td>
<td>427</td>
<td>32.0</td>
<td>425</td>
<td>31.7</td>
<td>429</td>
<td></td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>892</td>
<td>22.0</td>
<td>891</td>
<td>22.0</td>
<td>891</td>
<td>22.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td>181</td>
<td>50.8</td>
<td>181</td>
<td>50.7</td>
<td>179</td>
<td>51.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>59.0</td>
<td>154</td>
<td>60.1</td>
<td>151</td>
<td>59.5</td>
<td>153</td>
<td></td>
<td></td>
</tr>
<tr>
<td>435.gromacs</td>
<td>249</td>
<td>28.7</td>
<td>249</td>
<td>28.7</td>
<td>249</td>
<td>28.6</td>
<td>249</td>
<td>28.7</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>25.8</td>
<td>463</td>
<td>26.2</td>
<td>457</td>
<td>26.2</td>
<td>457</td>
<td></td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>50.0</td>
<td>188</td>
<td>49.3</td>
<td>191</td>
<td>49.6</td>
<td>189</td>
<td></td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td>490</td>
<td>16.4</td>
<td>490</td>
<td>16.4</td>
<td>489</td>
<td>16.4</td>
<td>478</td>
<td>16.8</td>
</tr>
<tr>
<td>447.dealII</td>
<td>331</td>
<td>34.6</td>
<td>330</td>
<td>34.6</td>
<td>330</td>
<td>34.7</td>
<td>331</td>
<td>34.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>327</td>
<td>25.5</td>
<td>326</td>
<td>25.6</td>
<td>326</td>
<td>25.6</td>
<td>327</td>
<td>25.5</td>
</tr>
<tr>
<td>453.povray</td>
<td>162</td>
<td>32.8</td>
<td>162</td>
<td>32.8</td>
<td>166</td>
<td>32.0</td>
<td>142</td>
<td>37.4</td>
</tr>
<tr>
<td>454.calculix</td>
<td>260</td>
<td>31.8</td>
<td>260</td>
<td>31.7</td>
<td>260</td>
<td>31.7</td>
<td>264</td>
<td>31.3</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>61.2</td>
<td>173</td>
<td>62.1</td>
<td>171</td>
<td>62.7</td>
<td>169</td>
<td>54.9</td>
<td>193</td>
</tr>
<tr>
<td>465.tonto</td>
<td>376</td>
<td>26.2</td>
<td>375</td>
<td>26.2</td>
<td>376</td>
<td>26.2</td>
<td>366</td>
<td>26.9</td>
</tr>
<tr>
<td>470.lbm</td>
<td>24.7</td>
<td>557</td>
<td>24.8</td>
<td>555</td>
<td>24.8</td>
<td>554</td>
<td>24.7</td>
<td>557</td>
</tr>
<tr>
<td>481.wrf</td>
<td>186</td>
<td>59.9</td>
<td>187</td>
<td>59.8</td>
<td>188</td>
<td>59.4</td>
<td>186</td>
<td>59.9</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>506</td>
<td>38.5</td>
<td>509</td>
<td>38.3</td>
<td>506</td>
<td>38.5</td>
<td>506</td>
<td>38.5</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  
  Uncore Frequency Scaling set to Disable  
  LLC dead line alloc set to Disable  
- Sysinfo program /home/cpu2006-1.2-ic17.0/config/sysinfo.rev6993  
  Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
  running on linux-g50d Mon Jul 17 06:19:12 2017

This section contains SUT (System Under Test) info as seen by Lenovo Global Technology
Platform Notes (Continued)

From /proc/cpuinfo

- model name: Intel(R) Xeon(R) Bronze 3104 CPU @ 1.70GHz
- 2 "physical id"s (chips)
- 12 "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: 6
  - siblings: 6
  - physical 0: cores 0 1 2 3 4 5
  - physical 1: cores 0 1 2 3 4 5
- cache size: 8448 KB

From /proc/meminfo

- MemTotal: 395883100 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 linux-g50d 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 17 06:17

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

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
Lenovo Global Technology

ThinkSystem SR550
(1.70 GHz, Intel Xeon Bronze 3104)

SPECfp2006 = 69.7
SPECfp_base2006 = 68.4

CPU2006 license: 9017
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Lenovo -[TEE105Z-1.00]- 04/27/2017
Memory:
12x Hynix HMA84GR7AFR4N-VK 32 GB 2 rank 2666 MHz, configured at 2133 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-ic17.0/libs/32:/home/cpu2006-1.2-ic17.0/libs/64:/home/cpu2006-1.2-ic17.0/sh10.2"
OMP_NUM_THREADS = "12"

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.

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.games: -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
  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

Continued on next page
## SPEC CFP2006 Result

**Lenovo Global Technology**  
ThinkSystem SR550  
(1.70 GHz, Intel Xeon Bronze 3104)  

<table>
<thead>
<tr>
<th>CPU2006 license</th>
<th>Lenovo Global Technology</th>
<th>Test date:</th>
<th>Jul-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor</td>
<td>Lenovo Global Technology</td>
<td>Hardware Availability:</td>
<td>Aug-2017</td>
</tr>
<tr>
<td>Tested by</td>
<td>Lenovo Global Technology</td>
<td>Software Availability:</td>
<td>Nov-2016</td>
</tr>
</tbody>
</table>

### SPECfp2006 = 69.7  
SPECfp_base2006 = 68.4

## Base Portability Flags (Continued)

454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
459.GemsFDTD: `-DSPEC_CPU_LP64`
465.tonto: `-DSPEC_CPU_LP64`
470.libm: `-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 SR550
(1.70 GHz, Intel Xeon Bronze 3104)

SPEC CFP2006 Result

SPECfp2006 = 69.7
SPECfp_base2006 = 68.4

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

Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

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

Continued on next page
Lenovo Global Technology
ThinkSystem SR550
(1.70 GHz, Intel Xeon Bronze 3104)

SPECfp2006 = 69.7
SPECfp_base2006 = 68.4

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

Test date: Jul-2017
Hardware Availability: Aug-2017
Software Availability: Nov-2016

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.html
http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.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.xml
http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.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 19 September 2017.