



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR950  
(2.10 GHz, Intel Xeon Platinum 8176)

SPECfp<sup>®</sup>2006 = 149

SPECfp\_base2006 = 141

CPU2006 license: 9017

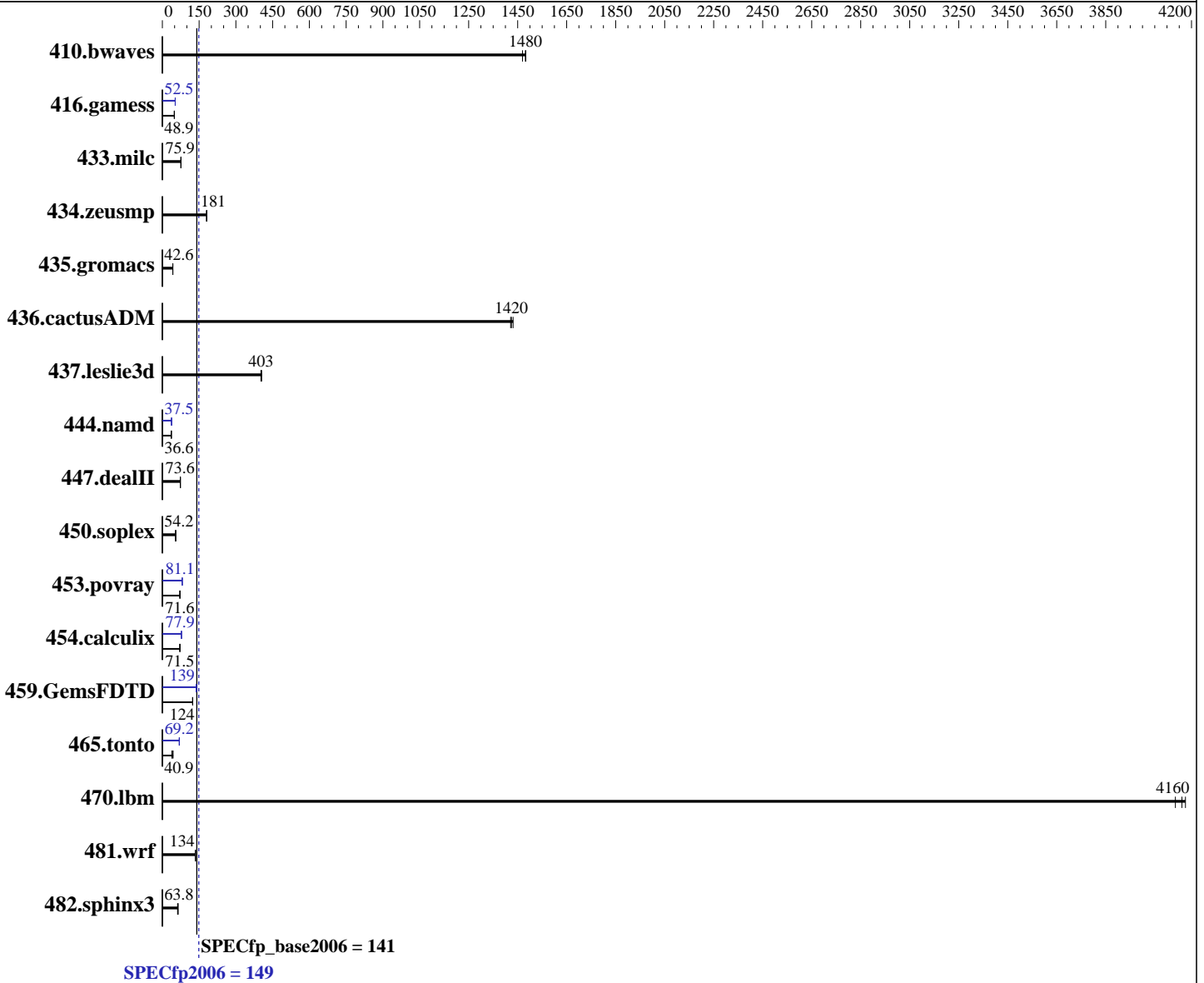
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Nov-2017

Hardware Availability: Sep-2017

Software Availability: Apr-2017



### Hardware

CPU Name: Intel Xeon Platinum 8176  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz  
 CPU MHz: 2100  
 FPU: Integrated  
 CPU(s) enabled: 112 cores, 4 chips, 28 cores/chip  
 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

Continued on next page

### 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)

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECfp2006 = **149**

ThinkSystem SR950  
(2.10 GHz, Intel Xeon Platinum 8176)

SPECfp\_base2006 = **141**

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

L3 Cache: 38.5 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

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

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	9.16	1480	<b><u>9.17</u></b>	<b><u>1480</u></b>	9.25	1470	9.16	1480	<b><u>9.17</u></b>	<b><u>1480</u></b>	9.25	1470
416.gamess	<b><u>401</u></b>	<b><u>48.9</u></b>	401	48.8	400	49.0	373	52.5	372	52.6	<b><u>373</u></b>	<b><u>52.5</u></b>
433.milc	<b><u>121</u></b>	<b><u>75.9</u></b>	121	76.0	121	75.7	<b><u>121</u></b>	<b><u>75.9</u></b>	121	76.0	121	75.7
434.zeusmp	50.6	180	<b><u>50.2</u></b>	<b><u>181</u></b>	50.1	182	50.6	180	<b><u>50.2</u></b>	<b><u>181</u></b>	50.1	182
435.gromacs	<b><u>167</u></b>	<b><u>42.6</u></b>	167	42.6	167	42.8	<b><u>167</u></b>	<b><u>42.6</u></b>	167	42.6	167	42.8
436.cactusADM	8.35	1430	<b><u>8.39</u></b>	<b><u>1420</u></b>	8.41	1420	8.35	1430	<b><u>8.39</u></b>	<b><u>1420</u></b>	8.41	1420
437.leslie3d	<b><u>23.3</u></b>	<b><u>403</u></b>	23.2	405	23.4	402	<b><u>23.3</u></b>	<b><u>403</u></b>	23.2	405	23.4	402
444.namd	219	36.6	219	36.6	<b><u>219</u></b>	<b><u>36.6</u></b>	214	37.5	<b><u>214</u></b>	<b><u>37.5</u></b>	214	37.5
447.dealII	156	73.1	155	73.7	<b><u>155</u></b>	<b><u>73.6</u></b>	156	73.1	155	73.7	<b><u>155</u></b>	<b><u>73.6</u></b>
450.soplex	154	54.1	153	54.5	<b><u>154</u></b>	<b><u>54.2</u></b>	154	54.1	153	54.5	<b><u>154</u></b>	<b><u>54.2</u></b>
453.povray	<b><u>74.3</u></b>	<b><u>71.6</u></b>	74.3	71.6	74.1	71.8	<b><u>65.6</u></b>	<b><u>81.1</u></b>	65.6	81.0	65.4	81.3
454.calculix	115	71.7	<b><u>115</u></b>	<b><u>71.5</u></b>	116	71.4	106	78.0	<b><u>106</u></b>	<b><u>77.9</u></b>	106	77.8
459.GemsFDTD	85.8	124	85.7	124	<b><u>85.8</u></b>	<b><u>124</u></b>	76.2	139	76.4	139	<b><u>76.3</u></b>	<b><u>139</u></b>
465.tonto	<b><u>241</u></b>	<b><u>40.9</u></b>	254	38.7	224	44.0	<b><u>142</u></b>	<b><u>69.2</u></b>	142	69.1	142	69.3
470.lbm	3.29	4180	<b><u>3.30</u></b>	<b><u>4160</u></b>	3.32	4130	3.29	4180	<b><u>3.30</u></b>	<b><u>4160</u></b>	3.32	4130
481.wrf	82.1	136	<b><u>83.1</u></b>	<b><u>134</u></b>	83.2	134	82.1	136	<b><u>83.1</u></b>	<b><u>134</u></b>	83.2	134
482.sphinx3	304	64.1	314	62.1	<b><u>305</u></b>	<b><u>63.8</u></b>	304	64.1	314	62.1	<b><u>305</u></b>	<b><u>63.8</u></b>

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 Proton4S-SUSE12SP2 Sat Nov 11 01:42:25 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



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Global Technology

**SPECfp2006 = 149**

ThinkSystem SR950  
(2.10 GHz, Intel Xeon Platinum 8176)

**SPECfp\_base2006 = 141**

**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) Platinum 8176 CPU @ 2.10GHz
 4 "physical id"s (chips)
 112 "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 : 28
  siblings  : 28
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
 25 26 27 28 29 30
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
 25 26 27 28 29 30
  physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
 25 26 27 28 29 30
  physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
 25 26 27 28 29 30
cache size : 39424 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 11 01:36

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

```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

ThinkSystem SR950  
(2.10 GHz, Intel Xeon Platinum 8176)

**SPECfp2006 = 149**

**SPECfp\_base2006 = 141**

**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)

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 -[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 = "112"

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

Continued on next page

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/

Page 4



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECfp2006 = 149

ThinkSystem SR950  
(2.10 GHz, Intel Xeon Platinum 8176)

SPECfp\_base2006 = 141

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)

```

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
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



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECfp2006 = 149

ThinkSystem SR950  
(2.10 GHz, Intel Xeon Platinum 8176)

SPECfp\_base2006 = 141

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

## 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

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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

**SPECfp2006 = 149**

ThinkSystem SR950  
(2.10 GHz, Intel Xeon Platinum 8176)

**SPECfp\_base2006 = 141**

**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

## Peak Optimization Flags (Continued)

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-E.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-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](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Fri Dec 15 12:20:32 2017 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 15 December 2017.