



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp<sup>®</sup>2006 = 134

Lenovo System x3850 X6  
(Intel Xeon E7-8891 v4, 2.80 GHz)

SPECfp\_base2006 = 127

CPU2006 license: 9017

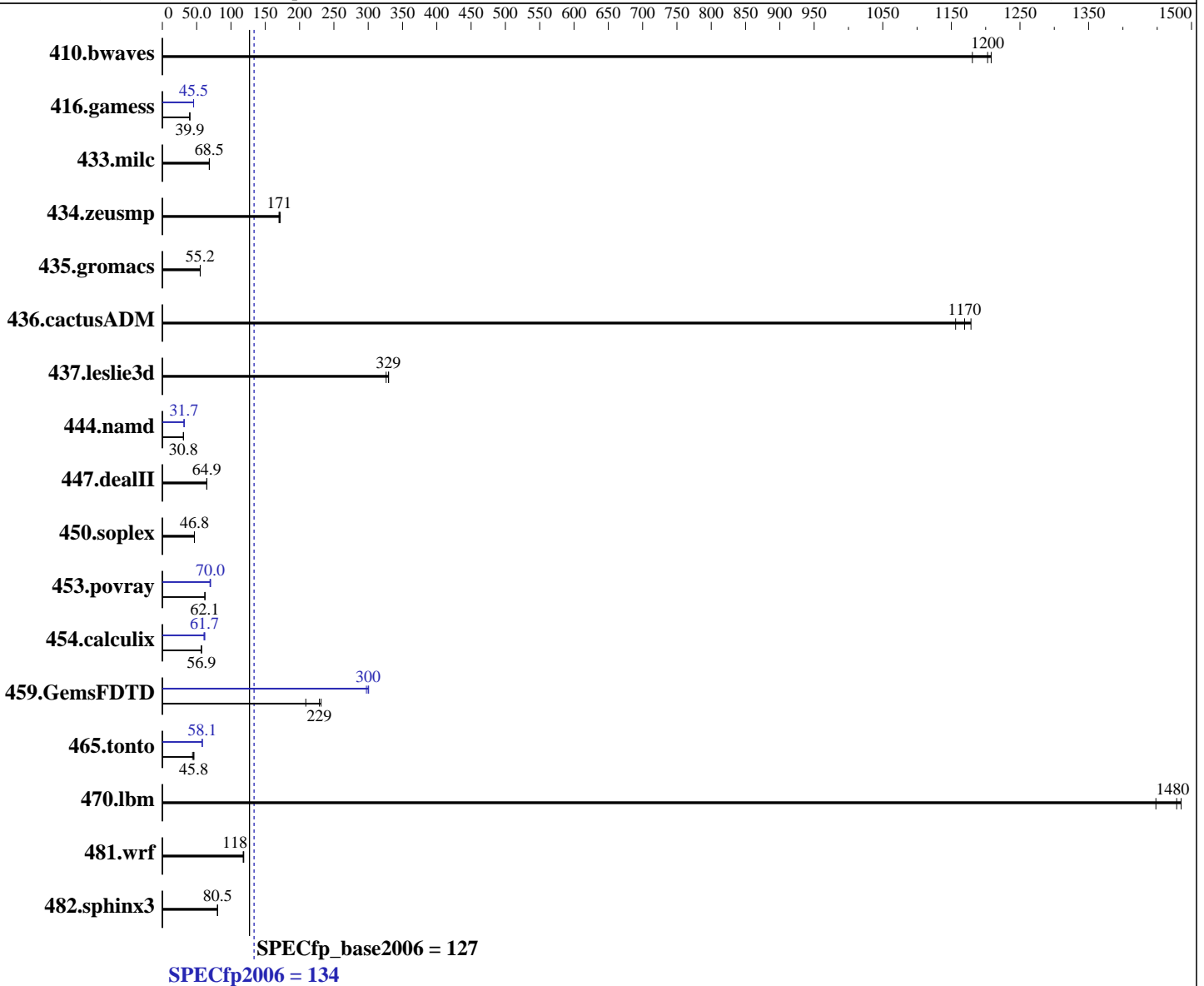
Test date: Aug-2016

Test sponsor: Lenovo Group Limited

Hardware Availability: Jun-2016

Tested by: Lenovo Group Limited

Software Availability: Dec-2015



### Hardware

CPU Name: Intel Xeon E7-8891 v4  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip  
 CPU(s) orderable: 2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

Continued on next page

### Software

Operating System: SUSE Linux Enterprise Server 12 SP1 (x86\_64)  
 Kernel 3.12.49-11-default  
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;  
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: xfs  
 System State: Run level 3 (multi-user)

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp2006 = **134**

Lenovo System x3850 X6  
(Intel Xeon E7-8891 v4, 2.80 GHz)

SPECfp\_base2006 = **127**

CPU2006 license: 9017

Test date: Aug-2016

Test sponsor: Lenovo Group Limited

Hardware Availability: Jun-2016

Tested by: Lenovo Group Limited

Software Availability: Dec-2015

L3 Cache: 60 MB I+D on chip per chip  
Other Cache: None  
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
Disk Subsystem: 1 x 800 GB SATA 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	11.5	1180	11.2	1210	<b>11.3</b>	<b>1200</b>	11.5	1180	11.2	1210	<b>11.3</b>	<b>1200</b>
416.gamess	491	39.9	<b>490</b>	<b>39.9</b>	489	40.1	<b>430</b>	<b>45.5</b>	430	45.5	430	45.6
433.milc	134	68.5	134	68.5	<b>134</b>	<b>68.5</b>	134	68.5	134	68.5	<b>134</b>	<b>68.5</b>
434.zeusmp	53.5	170	52.9	172	<b>53.3</b>	<b>171</b>	53.5	170	52.9	172	<b>53.3</b>	<b>171</b>
435.gromacs	129	55.2	<b>129</b>	<b>55.2</b>	129	55.1	129	55.2	<b>129</b>	<b>55.2</b>	129	55.1
436.cactusADM	10.3	1160	10.1	1180	<b>10.2</b>	<b>1170</b>	10.3	1160	10.1	1180	<b>10.2</b>	<b>1170</b>
437.leslie3d	28.8	326	<b>28.5</b>	<b>329</b>	28.5	330	28.8	326	<b>28.5</b>	<b>329</b>	28.5	330
444.namd	261	30.8	<b>261</b>	<b>30.8</b>	261	30.8	253	31.7	253	31.7	<b>253</b>	<b>31.7</b>
447.dealII	177	64.7	176	64.9	<b>176</b>	<b>64.9</b>	177	64.7	176	64.9	<b>176</b>	<b>64.9</b>
450.soplex	178	46.8	<b>178</b>	<b>46.8</b>	179	46.7	178	46.8	<b>178</b>	<b>46.8</b>	179	46.7
453.povray	85.9	62.0	85.6	62.1	<b>85.7</b>	<b>62.1</b>	<b>76.0</b>	<b>70.0</b>	75.8	70.2	76.6	69.4
454.calculix	145	57.0	145	56.9	<b>145</b>	<b>56.9</b>	136	60.7	<b>134</b>	<b>61.7</b>	134	61.7
459.GemsFDTD	50.7	209	<b>46.4</b>	<b>229</b>	45.9	231	35.3	301	35.7	297	<b>35.4</b>	<b>300</b>
465.tonto	224	44.0	<b>215</b>	<b>45.8</b>	214	45.9	<b>169</b>	<b>58.1</b>	170	58.0	169	58.2
470.lbm	9.25	1480	9.49	1450	<b>9.29</b>	<b>1480</b>	9.25	1480	9.49	1450	<b>9.29</b>	<b>1480</b>
481.wrf	94.7	118	<b>94.6</b>	<b>118</b>	94.1	119	94.7	118	<b>94.6</b>	<b>118</b>	94.1	119
482.sphinx3	<b>242</b>	<b>80.5</b>	243	80.3	242	80.5	<b>242</b>	<b>80.5</b>	243	80.3	242	80.5

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 Disable

Sysinfo program /home/cpu2006-1.2-ic16.0/config/sysinfo.rev6914

\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1

running on X3950-01-SLES12SP1 Mon Aug 8 18:32:13 2016

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

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/

Page 2



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp2006 = 134

Lenovo System x3850 X6  
(Intel Xeon E7-8891 v4, 2.80 GHz)

SPECfp\_base2006 = 127

CPU2006 license: 9017

Test date: Aug-2016

Test sponsor: Lenovo Group Limited

Hardware Availability: Jun-2016

Tested by: Lenovo Group Limited

Software Availability: Dec-2015

### Platform Notes (Continued)

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

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E7-8891 v4 @ 2.80GHz

4 "physical id"s (chips)

40 "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 : 10

siblings : 10

physical 0: cores 5 9 10 11 13 18 24 26 28 29

physical 1: cores 5 9 10 11 13 18 24 26 28 29

physical 2: cores 5 9 10 11 13 18 24 26 28 29

physical 3: cores 5 9 10 11 13 18 24 26 28 29

cache size : 61440 KB

From /proc/meminfo

MemTotal: 529036824 kB

HugePages\_Total: 0

Hugepagesize: 2048 kB

From /etc/\*release\* /etc/\*version\*

SuSE-release:

SUSE Linux Enterprise Server 12 (x86\_64)

VERSION = 12

PATCHLEVEL = 1

# 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-SP1"

VERSION\_ID="12.1"

PRETTY\_NAME="SUSE Linux Enterprise Server 12 SP1"

ID="sles"

ANSI\_COLOR="0;32"

CPE\_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:

Linux X3950-01-SLES12SP1 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015 (8d714a0) x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 3 Aug 8 13:42

SPEC is set to: /home/cpu2006-1.2-ic16.0

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xfs	512G	7.0G	505G	2%	/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



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

**SPECfp2006 = 134**

Lenovo System x3850 X6  
(Intel Xeon E7-8891 v4, 2.80 GHz)

**SPECfp\_base2006 = 127**

**CPU2006 license:** 9017

**Test date:** Aug-2016

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jun-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Dec-2015

## 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 IBM -[A9E135CUS-3.10]- 06/16/2016

Memory:

64x NO DIMM Unknown

32x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 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-ic16.0/libs/32:/home/cpu2006-1.2-ic16.0/libs/64:/home/cpu2006-1.2-ic16.0/sh"

OMP\_NUM\_THREADS = "40"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

Transparent Huge Pages disabled with:

echo never > /sys/kernel/mm/transparent\_hugepage/enabled

## 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

437.lelie3d: -DSPEC\_CPU\_LP64

444.namd: -DSPEC\_CPU\_LP64

Continued on next page

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/

Page 4



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 134**

Lenovo System x3850 X6  
(Intel Xeon E7-8891 v4, 2.80 GHz)

**SPECfp\_base2006 = 127**

**CPU2006 license:** 9017

**Test date:** Aug-2016

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jun-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Dec-2015

## Base Portability Flags (Continued)

```

447.deallI: -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 -opt-prefetch
-ansi-alias

```

C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

```

Fortran benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

```

## 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



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

**SPECfp2006 = 134**

Lenovo System x3850 X6  
(Intel Xeon E7-8891 v4, 2.80 GHz)

**SPECfp\_base2006 = 127**

**CPU2006 license:** 9017

**Test date:** Aug-2016

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jun-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Dec-2015

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias  
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4  
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2  
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc  
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 134**

Lenovo System x3850 X6  
(Intel Xeon E7-8891 v4, 2.80 GHz)

**SPECfp\_base2006 = 127**

**CPU2006 license:** 9017

**Test date:** Aug-2016

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jun-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Dec-2015

## Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-BDW-B.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-BDW-B.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 Tue Sep 6 16:58:16 2016 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 6 September 2016.