



# SPEC® CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp®2006 = **115**

Lenovo ThinkServer SD350  
(2.20 GHz, Intel Xeon E5-2630 v4)

SPECfp\_base2006 = **109**

CPU2006 license: 9017

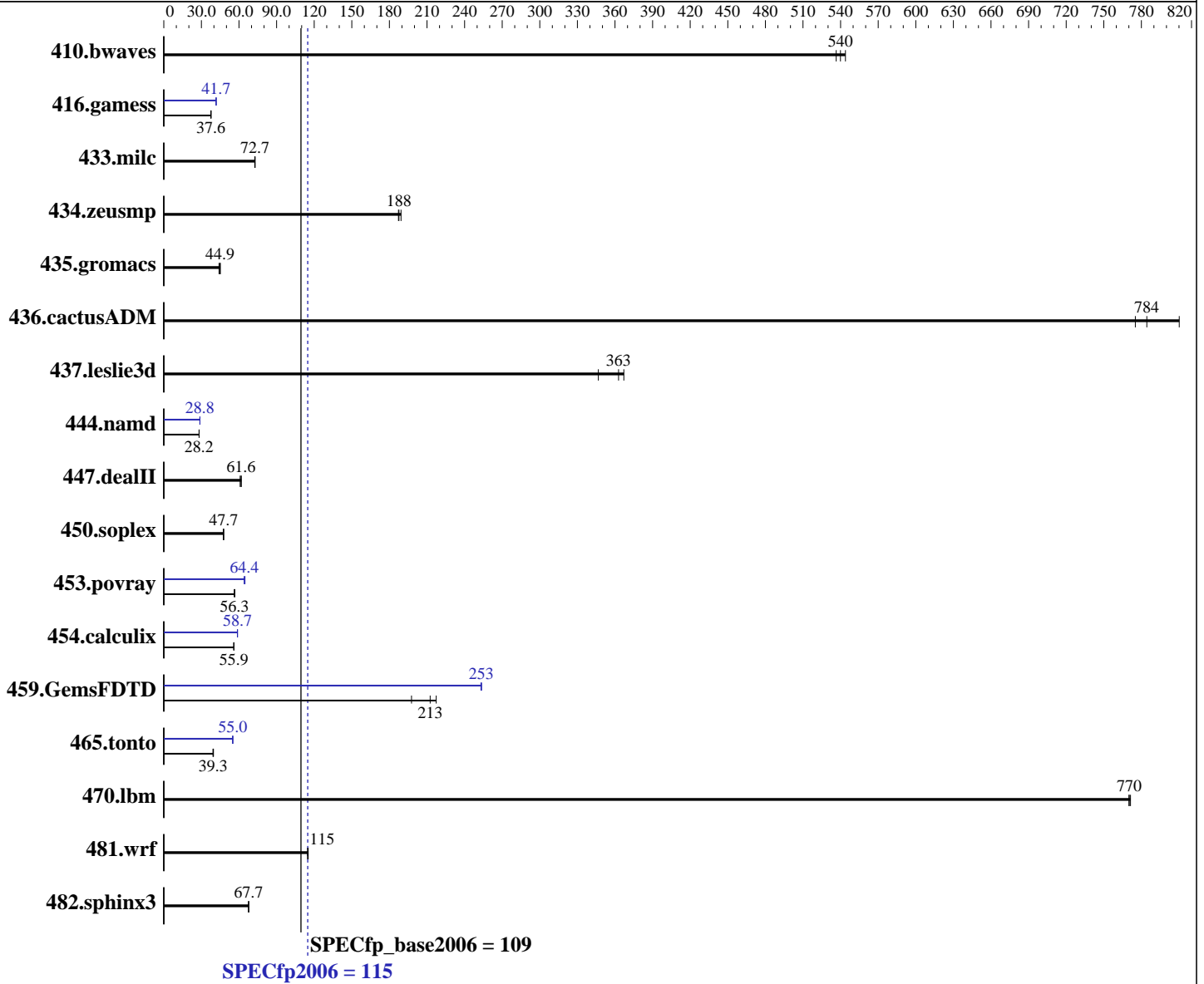
Test date: Jan-2017

Test sponsor: Lenovo Group Limited

Hardware Availability: Sep-2016

Tested by: Lenovo Group Limited

Software Availability: Sep-2016



**Hardware**

CPU Name: Intel Xeon E5-2630 v4  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip  
 CPU(s) orderable: 1,2 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 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)

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp2006 = **115**

Lenovo ThinkServer SD350  
(2.20 GHz, Intel Xeon E5-2630 v4)

SPECfp\_base2006 = **109**

CPU2006 license: 9017

Test date: Jan-2017

Test sponsor: Lenovo Group Limited

Hardware Availability: Sep-2016

Tested by: Lenovo Group Limited

Software Availability: Sep-2016

L3 Cache: 25 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)  
Disk Subsystem: 1 x 480 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	<b>25.2</b>	<b>540</b>	25.3	537	25.0	544	<b>25.2</b>	<b>540</b>	25.3	537	25.0	544
416.gamess	521	37.6	520	37.7	<b>520</b>	<b>37.6</b>	469	41.7	469	41.8	<b>469</b>	<b>41.7</b>
433.milc	126	72.9	<b>126</b>	<b>72.7</b>	126	72.6	126	72.9	<b>126</b>	<b>72.7</b>	126	72.6
434.zeusmp	48.1	189	48.6	187	<b>48.5</b>	<b>188</b>	48.1	189	48.6	187	<b>48.5</b>	<b>188</b>
435.gromacs	<b>159</b>	<b>44.9</b>	158	45.1	162	44.0	<b>159</b>	<b>44.9</b>	158	45.1	162	44.0
436.cactusADM	14.7	810	<b>15.2</b>	<b>784</b>	15.4	775	14.7	810	<b>15.2</b>	<b>784</b>	15.4	775
437.leslie3d	27.1	347	<b>25.9</b>	<b>363</b>	25.6	367	27.1	347	<b>25.9</b>	<b>363</b>	25.6	367
444.namd	285	28.2	<b>285</b>	<b>28.2</b>	285	28.2	<b>278</b>	<b>28.8</b>	278	28.8	278	28.8
447.dealII	185	61.8	<b>186</b>	<b>61.6</b>	188	60.9	185	61.8	<b>186</b>	<b>61.6</b>	188	60.9
450.soplex	<b>175</b>	<b>47.7</b>	176	47.5	175	47.8	<b>175</b>	<b>47.7</b>	176	47.5	175	47.8
453.povray	<b>94.4</b>	<b>56.3</b>	94.5	56.3	93.8	56.7	82.9	64.2	<b>82.6</b>	<b>64.4</b>	82.1	64.8
454.calculix	<b>148</b>	<b>55.9</b>	147	55.9	148	55.9	140	58.9	<b>140</b>	<b>58.7</b>	141	58.7
459.GemsFDTD	<b>49.9</b>	<b>213</b>	53.7	198	48.8	217	<b>41.9</b>	<b>253</b>	41.8	254	41.9	253
465.tonto	<b>250</b>	<b>39.3</b>	248	39.6	250	39.3	179	55.1	<b>179</b>	<b>55.0</b>	179	54.9
470.lbm	17.8	770	<b>17.8</b>	<b>770</b>	17.8	771	17.8	770	<b>17.8</b>	<b>770</b>	17.8	771
481.wrf	97.3	115	97.0	115	<b>97.2</b>	<b>115</b>	97.3	115	97.0	115	<b>97.2</b>	<b>115</b>
482.sphinx3	<b>288</b>	<b>67.7</b>	288	67.7	288	67.7	<b>288</b>	<b>67.7</b>	288	67.7	288	67.7

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"  
Transparent Huge Pages disabled with:  
echo never > /sys/kernel/mm/transparent\_hugepage/enabled

## Platform Notes

BIOS configuration:  
Hyper-Threading set to Disabled  
Sysinfo program /home/cpu2006-1.2-ic17.0/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on Kent-SUT2 Thu Jan 7 11:49:02 2016

This section contains SUT (System Under Test) info as seen by

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

**SPECfp2006 = 115**

Lenovo ThinkServer SD350  
(2.20 GHz, Intel Xeon E5-2630 v4)

**SPECfp\_base2006 = 109**

**CPU2006 license:** 9017

**Test date:** Jan-2017

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Sep-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Sep-2016

### Platform Notes (Continued)

some common utilities. To remove or add to this section, see:  
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

```

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) CPU E5-2630 v4 @ 2.20GHz
  2 "physical id"s (chips)
  20 "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 0 1 2 3 4 8 9 10 11 12
    physical 1: cores 0 1 2 3 4 8 9 10 11 12
  cache size : 25600 KB

```

```

From /proc/meminfo
MemTotal:      264571896 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 Kent-SUT2 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 Jan 7 06:36

```

SPEC is set to: /home/cpu2006-1.2-ic17.0
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sdb2       btrfs    447G  7.6G  439G   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 determined", but the intent may not be met, as there are frequent changes to

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp2006 = 115

Lenovo ThinkServer SD350  
(2.20 GHz, Intel Xeon E5-2630 v4)

SPECfp\_base2006 = 109

CPU2006 license: 9017

Test date: Jan-2017

Test sponsor: Lenovo Group Limited

Hardware Availability: Sep-2016

Tested by: Lenovo Group Limited

Software Availability: Sep-2016

## Platform Notes (Continued)

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

BIOS American Megatrends Inc. 3.57 08/12/2016

Memory:

16x Samsung M393A2G40DB1-CRC 16 GB 2 rank 2400 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 = "20"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.2

## 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.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.deallI: -DSPEC\_CPU\_LP64  
450.soplex: -DSPEC\_CPU\_LP64  
453.povray: -DSPEC\_CPU\_LP64  
454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 115**

Lenovo ThinkServer SD350  
(2.20 GHz, Intel Xeon E5-2630 v4)

**SPECfp\_base2006 = 109**

**CPU2006 license:** 9017

**Test date:** Jan-2017

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Sep-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Sep-2016

## Base Portability Flags (Continued)

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

## Peak Optimization Flags

C benchmarks:

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 115**

Lenovo ThinkServer SD350  
(2.20 GHz, Intel Xeon E5-2630 v4)

**SPECfp\_base2006 = 109**

**CPU2006 license:** 9017

**Test date:** Jan-2017

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Sep-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Sep-2016

## Peak Optimization Flags (Continued)

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.dealIII: 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

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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 115**

Lenovo ThinkServer SD350  
(2.20 GHz, Intel Xeon E5-2630 v4)

**SPECfp\_base2006 = 109**

**CPU2006 license:** 9017

**Test date:** Jan-2017

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Sep-2016

**Tested by:** Lenovo Group Limited

**Software Availability:** Sep-2016

## Peak Optimization Flags (Continued)

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-Settings-V1.2-BDW-revE.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-Settings-V1.2-BDW-revE.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 Wed Jan 25 10:54:14 2017 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 25 January 2017.