



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp<sup>®</sup>2006 = **111**

Lenovo NeXtScale nx360 M5  
(Intel Xeon E5-2640 v3, 2.60 GHz)

SPECfp\_base2006 = **105**

CPU2006 license: 9017

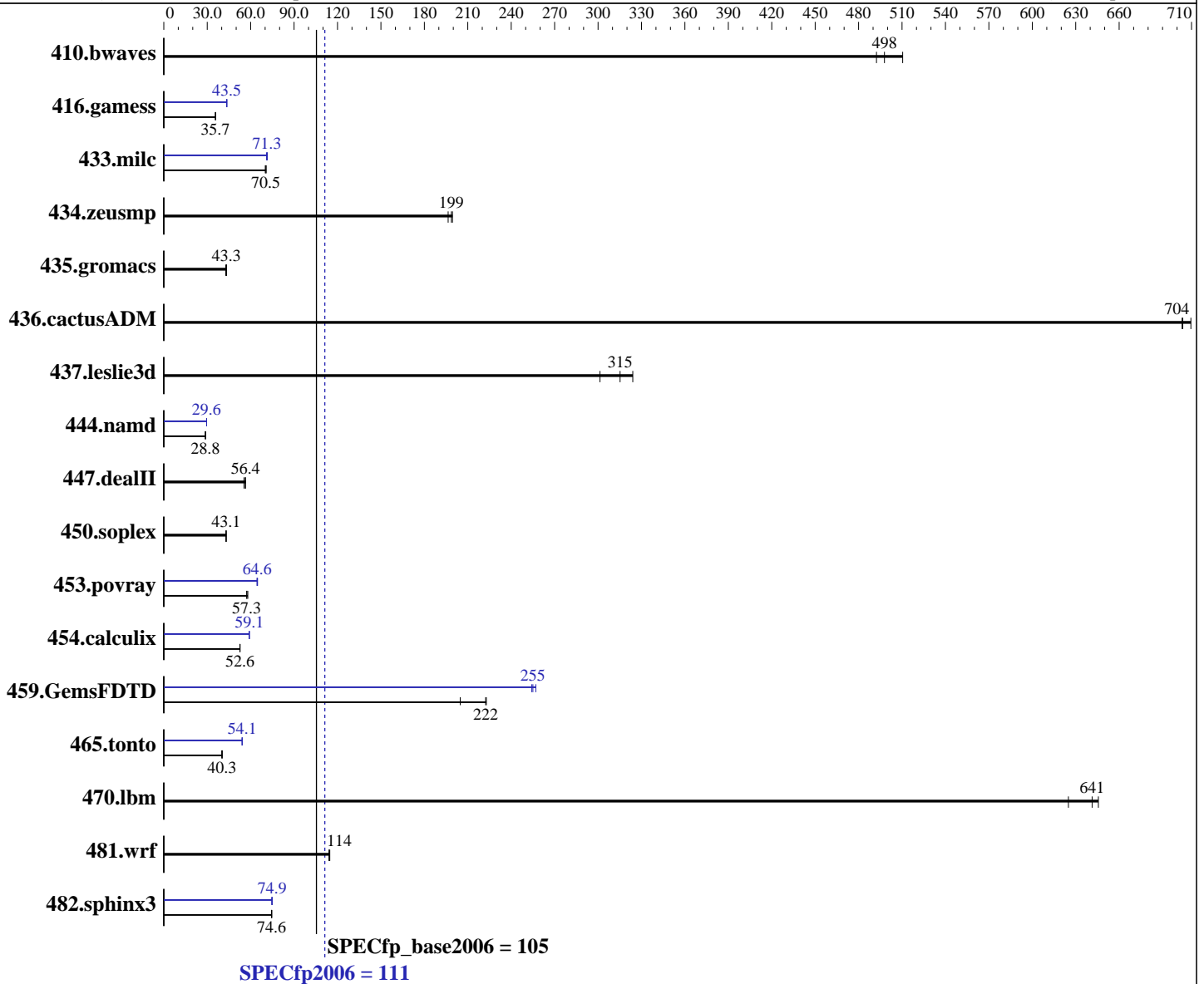
Test date: Apr-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Nov-2014

Tested by: Lenovo Group Limited

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Xeon E5-2640 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core  
 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: Red Hat Enterprise Linux Server release 7.0 (Maipo)  
 3.10.0-123.el7.x86\_64  
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;  
 Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: xfs

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp2006 = **111**

Lenovo NeXtScale nx360 M5  
(Intel Xeon E5-2640 v3, 2.60 GHz)

SPECfp\_base2006 = **105**

CPU2006 license: 9017

Test date: Apr-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Nov-2014

Tested by: Lenovo Group Limited

Software Availability: Sep-2014

L3 Cache: 20 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)  
Disk Subsystem: 1 x 1000 GB SATA, 7200 RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
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>27.3</b>	<b>498</b>	26.6	510	27.6	492	<b>27.3</b>	<b>498</b>	26.6	510	27.6	492
416.gamess	547	35.8	549	35.7	<b>549</b>	<b>35.7</b>	450	43.5	451	43.5	<b>450</b>	<b>43.5</b>
433.milc	<b>130</b>	<b>70.5</b>	130	70.7	131	70.1	<b>129</b>	<b>71.3</b>	128	71.5	129	71.0
434.zeusmp	46.3	196	45.6	199	<b>45.8</b>	<b>199</b>	46.3	196	45.6	199	<b>45.8</b>	<b>199</b>
435.gromacs	<b>165</b>	<b>43.3</b>	167	42.8	165	43.3	<b>165</b>	<b>43.3</b>	167	42.8	165	43.3
436.cactusADM	16.8	710	17.0	703	<b>17.0</b>	<b>704</b>	16.8	710	17.0	703	<b>17.0</b>	<b>704</b>
437.leslie3d	<b>29.8</b>	<b>315</b>	29.0	324	31.2	301	<b>29.8</b>	<b>315</b>	29.0	324	31.2	301
444.namd	279	28.8	279	28.8	<b>279</b>	<b>28.8</b>	271	29.6	271	29.6	<b>271</b>	<b>29.6</b>
447.dealII	203	56.4	<b>203</b>	<b>56.4</b>	206	55.4	203	56.4	<b>203</b>	<b>56.4</b>	206	55.4
450.soplex	194	42.9	193	43.1	<b>194</b>	<b>43.1</b>	194	42.9	193	43.1	<b>194</b>	<b>43.1</b>
453.povray	92.8	57.3	91.7	58.0	<b>92.8</b>	<b>57.3</b>	<b>82.4</b>	<b>64.6</b>	82.6	64.4	82.1	64.8
454.calculix	<b>157</b>	<b>52.6</b>	157	52.6	157	52.6	140	59.0	140	59.1	<b>140</b>	<b>59.1</b>
459.GemsFDTD	47.6	223	<b>47.7</b>	<b>222</b>	51.8	205	<b>41.6</b>	<b>255</b>	41.3	257	41.7	254
465.tonto	244	40.4	246	40.0	<b>244</b>	<b>40.3</b>	182	54.1	<b>182</b>	<b>54.1</b>	182	54.2
470.lbm	<b>21.4</b>	<b>641</b>	22.0	625	21.3	646	<b>21.4</b>	<b>641</b>	22.0	625	21.3	646
481.wrf	<b>97.8</b>	<b>114</b>	97.9	114	97.4	115	<b>97.8</b>	<b>114</b>	97.9	114	97.4	115
482.sphinx3	261	74.6	<b>261</b>	<b>74.6</b>	262	74.4	<b>260</b>	<b>74.9</b>	260	74.9	262	74.5

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 setting:  
Operating Mode set to "Efficiency-Favor Performance"  
Sysinfo program /home/SPEC/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on wilykat-2.labs.lenovo.com Wed Apr 22 13:33:29 2015

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp2006 = 111

Lenovo NeXtScale nx360 M5  
(Intel Xeon E5-2640 v3, 2.60 GHz)

SPECfp\_base2006 = 105

CPU2006 license: 9017

Test date: Apr-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Nov-2014

Tested by: Lenovo Group Limited

Software Availability: Sep-2014

### Platform Notes (Continued)

```

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2640 v3 @ 2.60GHz
 2 "physical id"s (chips)
32 "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 : 8
  siblings  : 16
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB

```

```

From /proc/meminfo
MemTotal:      263585972 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

```

```

uname -a:
Linux wilykat-2.labs.lenovo.com 3.10.0-123.el7.x86_64 #1 SMP Mon May 5
11:16:57 EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

```

```

SPEC is set to: /home/SPEC
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-root xfs   927G  11G  916G   2% /

```

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 IBM -[THE106CUS-1.11]- 02/16/2015

Memory:

```

10x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz
6x Hynix HMA42GR7MFR4N-TFT1 16 GB 2 rank 2133 MHz

```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp2006 = 111

Lenovo NeXtScale nx360 M5  
(Intel Xeon E5-2640 v3, 2.60 GHz)

SPECfp\_base2006 = 105

CPU2006 license: 9017

Test date: Apr-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Nov-2014

Tested by: Lenovo Group Limited

Software Availability: Sep-2014

## Platform Notes (Continued)

(End of data from sysinfo program)  
System memory running at the CPU supported max DIMM speed (1866 MHz)

## General Notes

Environment variables set by runspec before the start of the run:  
KMP\_AFFINITY = "granularity=fine,compact,1,0"  
LD\_LIBRARY\_PATH = "/home/SPEC/libs/32:/home/SPEC/libs/64:/home/SPEC/sh"  
OMP\_NUM\_THREADS = "16"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB  
memory using RedHat EL 7.0  
Transparent Huge Pages enabled with:  
echo always > /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.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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 111**

Lenovo NeXtScale nx360 M5  
(Intel Xeon E5-2640 v3, 2.60 GHz)

**SPECfp\_base2006 = 105**

**CPU2006 license:** 9017

**Test date:** Apr-2015

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Nov-2014

**Tested by:** Lenovo Group Limited

**Software Availability:** Sep-2014

## Base Portability Flags (Continued)

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

## Peak Optimization Flags

C benchmarks:

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

**SPECfp2006 = 111**

Lenovo NeXtScale nx360 M5  
(Intel Xeon E5-2640 v3, 2.60 GHz)

**SPECfp\_base2006 = 105**

**CPU2006 license:** 9017

**Test date:** Apr-2015

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Nov-2014

**Tested by:** Lenovo Group Limited

**Software Availability:** Sep-2014

## Peak Optimization Flags (Continued)

433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

### C++ benchmarks:

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

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

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

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -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(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -opt-prefetch -parallel

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

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 111**

Lenovo NeXtScale nx360 M5  
(Intel Xeon E5-2640 v3, 2.60 GHz)

**SPECfp\_base2006 = 105**

**CPU2006 license:** 9017

**Test date:** Apr-2015

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Nov-2014

**Tested by:** Lenovo Group Limited

**Software Availability:** Sep-2014

## Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.html>

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

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

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-HSW-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 May 19 18:11:46 2015 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 19 May 2015.