



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2603 v3, 1.60 GHz)

SPECfp<sup>®</sup>2006 = 55.3

SPECfp\_base2006 = 53.8

CPU2006 license: 9017

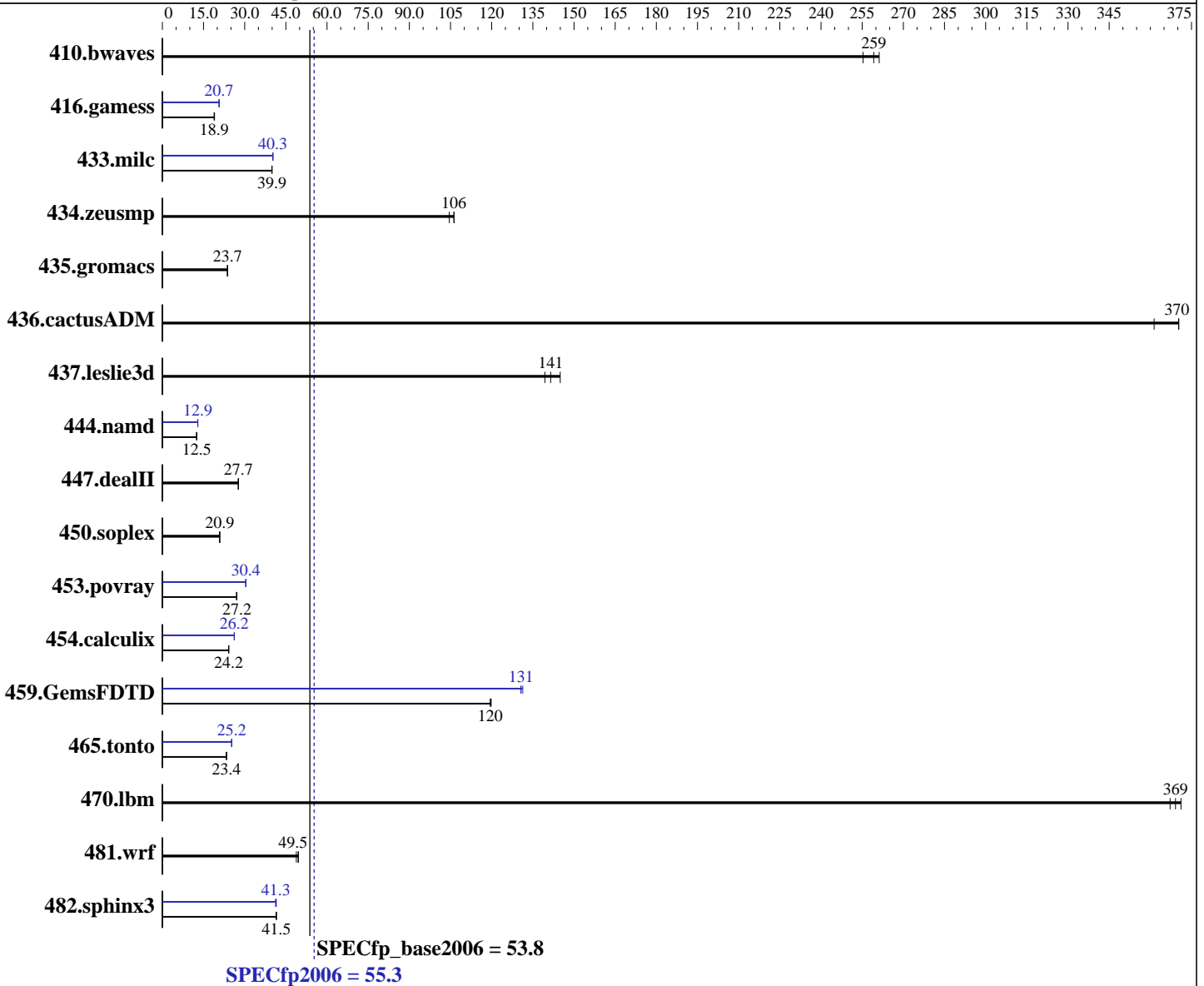
Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Jan-2014



### Hardware

CPU Name: Intel Xeon E5-2603 v3  
 CPU Characteristics:  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip  
 CPU(s) orderable: 1,2 chip  
 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 6.5 (Santiago)  
 2.6.32-431.el6.x86\_64  
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;  
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2603 v3, 1.60 GHz)

SPECfp2006 = **55.3**

SPECfp\_base2006 = **53.8**

CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Jan-2014

L3 Cache: 15 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
Disk Subsystem: 1 x 800 GB SATA SSD  
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	53.2	255	<b>52.4</b>	<b>259</b>	52.0	261	53.2	255	<b>52.4</b>	<b>259</b>	52.0	261
416.gamess	1038	18.9	1030	19.0	<b>1034</b>	<b>18.9</b>	948	20.7	946	20.7	<b>947</b>	<b>20.7</b>
433.milc	<b>230</b>	<b>39.9</b>	230	39.9	230	40.0	228	40.3	<b>228</b>	<b>40.3</b>	228	40.2
434.zeusmp	<b>85.6</b>	<b>106</b>	87.0	105	85.6	106	<b>85.6</b>	<b>106</b>	87.0	105	85.6	106
435.gromacs	301	23.7	301	23.8	<b>301</b>	<b>23.7</b>	301	23.7	301	23.8	<b>301</b>	<b>23.7</b>
436.cactusADM	32.3	370	33.1	361	<b>32.3</b>	<b>370</b>	32.3	370	33.1	361	<b>32.3</b>	<b>370</b>
437.leslie3d	64.8	145	67.4	139	<b>66.4</b>	<b>141</b>	64.8	145	67.4	139	<b>66.4</b>	<b>141</b>
444.namd	641	12.5	<b>641</b>	<b>12.5</b>	643	12.5	621	12.9	<b>621</b>	<b>12.9</b>	621	12.9
447.dealII	<b>413</b>	<b>27.7</b>	414	27.6	413	27.7	<b>413</b>	<b>27.7</b>	414	27.6	413	27.7
450.soplex	399	20.9	<b>399</b>	<b>20.9</b>	399	20.9	399	20.9	<b>399</b>	<b>20.9</b>	399	20.9
453.povray	196	27.2	<b>196</b>	<b>27.2</b>	197	27.0	175	30.4	175	30.5	<b>175</b>	<b>30.4</b>
454.calculix	341	24.2	341	24.2	<b>341</b>	<b>24.2</b>	315	26.2	315	26.2	<b>315</b>	<b>26.2</b>
459.GemsFDTD	88.8	120	88.6	120	<b>88.8</b>	<b>120</b>	80.8	131	<b>81.2</b>	<b>131</b>	81.2	131
465.tonto	<b>421</b>	<b>23.4</b>	422	23.3	421	23.4	390	25.2	389	25.3	<b>390</b>	<b>25.2</b>
470.lbm	<b>37.2</b>	<b>369</b>	37.0	371	37.4	367	<b>37.2</b>	<b>369</b>	37.0	371	37.4	367
481.wrf	<b>226</b>	<b>49.5</b>	229	48.8	225	49.6	<b>226</b>	<b>49.5</b>	229	48.8	225	49.6
482.sphinx3	<b>469</b>	<b>41.5</b>	469	41.6	470	41.4	<b>472</b>	<b>41.3</b>	<b>472</b>	<b>41.3</b>	469	41.5

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:  
Cluster On Die set to Disabled  
Early Snoop set to Disabled  
Performance Profile set to Custom  
C1E Support set to Disabled  
Core C3 set to Disabled  
Core C6 set to Disabled  
Thermal Profile set to High Fan Speed  
Memory Power Savings set to Disabled

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

**SPECfp2006 = 55.3**

Lenovo ThinkServer RD550 (Intel Xeon E5-2603 v3, 1.60 GHz)

**SPECfp\_base2006 = 53.8**

**CPU2006 license:** 9017

**Test date:** Oct-2014

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Sep-2014

**Tested by:** Lenovo Group Limited

**Software Availability:** Jan-2014

### Platform Notes (Continued)

```
Sysinfo program /usr/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on RD550 Mon Oct 27 23:51:24 2014
```

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>

```
From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2603 v3 @ 1.60GHz
 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 : 15360 KB
```

```
From /proc/meminfo
MemTotal:      264416268 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux RD550 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013 x86_64
x86_64 x86_64 GNU/Linux
```

```
run-level 3 Oct 27 23:47
```

```
SPEC is set to: /usr/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext4  730G   13G  680G   2% /
```

```
Additional information from dmidecode:
BIOS LENOVO PB1TS110 10/06/2014
Memory:
 16x  16 GB
 8x NO DIMM NO DIMM
 16x Samsung M393A2G40DB0-CPB 16 GB 1600 MHz 2 rank
```

(End of data from sysinfo program)  
Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2603 v3, 1.60 GHz)

SPECfp2006 = 55.3

SPECfp\_base2006 = 53.8

CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Jan-2014

### Platform Notes (Continued)

RD550 support 4 channels and 12 DIMMs per processor, total 8 channels and 24 DIMMs. 16 DIMM slots installed with 16 GB DIMM for this run.

### General Notes

Environment variables set by runspec before the start of the run:

KMP\_AFFINITY = "granularity=fine,compact,1,0"

LD\_LIBRARY\_PATH = "/usr/cpu2006/libs/32:/usr/cpu2006/libs/64:/usr/cpu2006/sh"

OMP\_NUM\_THREADS = "12"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

### 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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp2006 = 55.3**

Lenovo ThinkServer RD550 (Intel Xeon E5-2603 v3, 1.60 GHz)

**SPECfp\_base2006 = 53.8**

**CPU2006 license:** 9017

**Test date:** Oct-2014

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Sep-2014

**Tested by:** Lenovo Group Limited

**Software Availability:** Jan-2014

## Base Portability Flags (Continued)

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 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2603 v3, 1.60 GHz)

SPECfp2006 = 55.3

SPECfp\_base2006 = 53.8

CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Jan-2014

## Peak Optimization Flags

### C benchmarks:

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.dealII: 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-calloc -opt-malloc-options=3 -auto -unroll4

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2603 v3, 1.60 GHz)

SPECfp2006 = 55.3

SPECfp\_base2006 = 53.8

CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Jan-2014

## Peak Optimization Flags (Continued)

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-ic14.0-official-linux64.20140128.html>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-HSW-revA.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-HSW-revA.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 Feb 10 18:33:33 2015 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 10 February 2015.