



# SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Lenovo Group Limited

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2650L v2, 1.70 GHz)

SPECfp®\_rate2006 = 463

SPECfp\_rate\_base2006 = 452

CPU2006 license: 9017

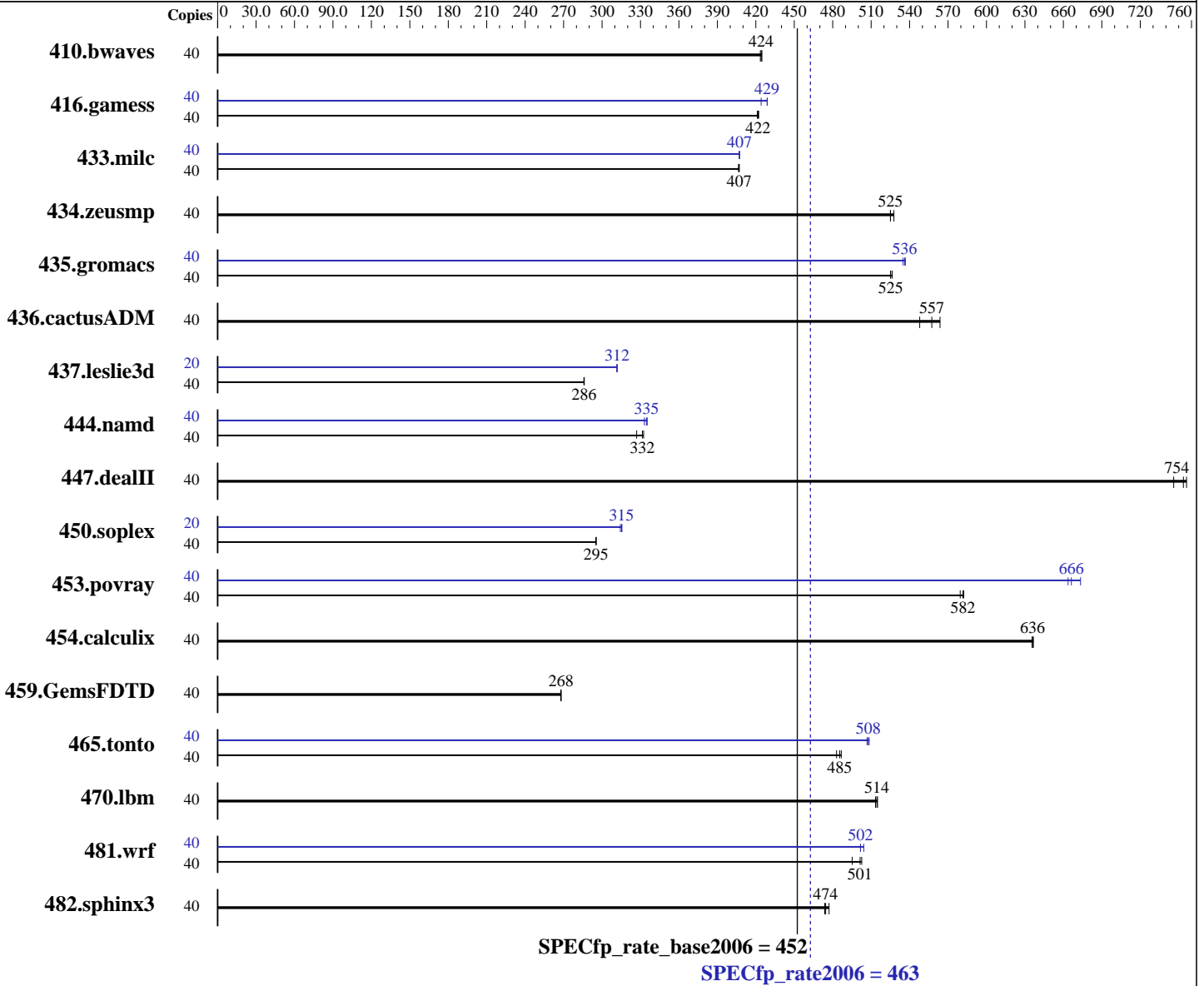
Test sponsor: Lenovo Group Limited

Tested by: IBM Corporation

Test date: Oct-2014

Hardware Availability: Nov-2013

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2650L v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.10 GHz  
 CPU MHz: 1700  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 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 6.4 (Santiago)  
 2.6.32-358.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: No  
 File System: ext4

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Lenovo Group Limited

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2650L v2, 1.70 GHz)

SPECfp\_rate2006 = 463

SPECfp\_rate\_base2006 = 452

CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: IBM Corporation

Test date: Oct-2014

Hardware Availability: Nov-2013

Software Availability: Sep-2013

L3 Cache: 25 MB I+D on chip per chip  
Other Cache: None  
Memory: 128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1600 MHz)  
Disk Subsystem: 2 x 250 GB SATA, 7200RPM, RAID 0  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	40	<b>1281</b>	<b>424</b>	1284	424	1280	425	40	<b>1281</b>	<b>424</b>	1284	424	1280	425		
416.gamess	40	<b>1857</b>	<b>422</b>	1855	422	1860	421	40	1826	429	1847	424	<b>1826</b>	<b>429</b>		
433.milc	40	<b>902</b>	<b>407</b>	902	407	903	406	40	902	407	902	407	<b>902</b>	<b>407</b>		
434.zeusmp	40	693	525	690	528	<b>693</b>	<b>525</b>	40	693	525	690	528	<b>693</b>	<b>525</b>		
435.gromacs	40	<b>544</b>	<b>525</b>	542	527	544	525	40	534	535	<b>533</b>	<b>536</b>	532	537		
436.cactusADM	40	<b>858</b>	<b>557</b>	848	564	872	548	40	<b>858</b>	<b>557</b>	848	564	872	548		
437.leslie3d	40	1314	286	<b>1315</b>	<b>286</b>	1315	286	20	603	312	<b>603</b>	<b>312</b>	604	312		
444.namd	40	981	327	<b>968</b>	<b>332</b>	965	332	40	957	335	<b>959</b>	<b>335</b>	963	333		
447.dealII	40	<b>607</b>	<b>754</b>	613	746	605	756	40	<b>607</b>	<b>754</b>	613	746	605	756		
450.soplex	40	<b>1130</b>	<b>295</b>	1129	295	1130	295	20	531	314	529	316	<b>529</b>	<b>315</b>		
453.povray	40	367	579	<b>366</b>	<b>582</b>	365	582	40	<b>319</b>	<b>666</b>	321	664	316	673		
454.calculix	40	518	637	519	636	<b>519</b>	<b>636</b>	40	518	637	519	636	<b>519</b>	<b>636</b>		
459.GemsFDTD	40	1585	268	<b>1584</b>	<b>268</b>	1583	268	40	1585	268	<b>1584</b>	<b>268</b>	1583	268		
465.tonto	40	815	483	809	487	<b>811</b>	<b>485</b>	40	<b>775</b>	<b>508</b>	774	508	777	507		
470.lbm	40	1070	513	1067	515	<b>1068</b>	<b>514</b>	40	1070	513	1067	515	<b>1068</b>	<b>514</b>		
481.wrf	40	902	495	<b>891</b>	<b>501</b>	889	503	40	<b>891</b>	<b>502</b>	891	502	886	504		
482.sphinx3	40	1646	474	<b>1643</b>	<b>474</b>	1634	477	40	1646	474	<b>1643</b>	<b>474</b>	1634	477		

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"  
Zone reclaim mode enabled with:  
echo 1 > /proc/sys/vm/zone\_reclaim\_mode  
Intel Idle Driver disabled with the following Linux kernel parameter in /etc/grub.conf:  
intel\_idle.max\_cstate=0



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## Lenovo Group Limited

**SPECfp\_rate2006 = 463**

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2650L v2, 1.70 GHz)

**SPECfp\_rate\_base2006 = 452**

**CPU2006 license:** 9017

**Test date:** Oct-2014

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Nov-2013

**Tested by:** IBM Corporation

**Software Availability:** Sep-2013

## Platform Notes

BIOS setting:

Operating Mode set to Maximum Performance

Sysinfo program /home/SPECcpu-20140116-ic14.0/config/sysinfo.rev6874

\$Rev: 6874 \$ \$Date:: 2013-11-20 #\$ 654bd3fcf53b06faef0efe54ed011998

running on nx360M4 Tue Oct 21 07:54:18 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 E5-2650L v2 @ 1.70GHz

2 "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 : 20

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: 132087136 kB

HugePages\_Total: 0

Hugepagesize: 2048 kB

/usr/bin/lsc\_release -d

Red Hat Enterprise Linux Server release 6.4 (Santiago)

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

redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

system-release-cpe: cpe:/o:redhat:enterprise\_linux:6server:ga:server

uname -a:

Linux nx360M4 2.6.32-358.el6.x86\_64 #1 SMP Tue Jan 29 11:47:41 EST 2013

x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 3 Oct 20 14:25

SPEC is set to: /home/SPECcpu-20140116-ic14.0

Filesystem Type Size Used Avail Use% Mounted on

/dev/mapper/vg\_nx360m4-lv\_home

ext4 403G 14G 370G 4% /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 hardware, firmware, and the "DMTF SMBIOS" standard.

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECfp\_rate2006 = 463

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2650L v2, 1.70 GHz)

SPECfp\_rate\_base2006 = 452

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Nov-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

## Platform Notes (Continued)

BIOS IBM -[FHE107NUS-1.20]- 06/03/2014

Memory:

8x Samsung M393B2G70QH0-CMA 16 GB 2 rank 1866 MHz, configured at 1600 MHz

(End of data from sysinfo program)

## General Notes

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

```
LD_LIBRARY_PATH = "/home/SPECcpu-20140116-ic14.0/libs/32:/home/SPECcpu-20140116-ic14.0/libs/64:/home/SPECcpu-20140116-ic14.0/sh"
```

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
```

Filesystem page cache cleared with:

```
echo 1 > /proc/sys/vm/drop_caches
```

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

Continued on next page

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/

Page 4



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECfp\_rate2006 = 463

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2650L v2, 1.70 GHz)

SPECfp\_rate\_base2006 = 452

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Nov-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

## Base Portability Flags (Continued)

```

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:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

```

C++ benchmarks:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

```

Fortran benchmarks:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

```

## Peak Compiler Invocation

C benchmarks:

```

icc -m64

```

C++ benchmarks (except as noted below):

```

icpc -m64

```

```

450.soplex: icpc -m32

```

Fortran benchmarks:

```

ifort -m64

```

Benchmarks using both Fortran and C:

```

icc -m64 ifort -m64

```



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECfp\_rate2006 = 463

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2650L v2, 1.70 GHz)

SPECfp\_rate\_base2006 = 452

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Nov-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

## Peak 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
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

```

## Peak Optimization Flags

C benchmarks:

```

433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -auto-ilp32

```

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

```

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -fno-alias -auto-ilp32

```

447.dealII: basepeak = yes

```

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-malloc-options=3

```

```

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -unroll14 -ansi-alias

```

Fortran benchmarks:

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2650L v2, 1.70 GHz)

**SPECfp\_rate2006 = 463**

**SPECfp\_rate\_base2006 = 452**

**CPU2006 license:** 9017

**Test sponsor:** Lenovo Group Limited

**Tested by:** IBM Corporation

**Test date:** Oct-2014

**Hardware Availability:** Nov-2013

**Software Availability:** Sep-2013

## Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

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

Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

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/IBM-Platform-Flags-V1.2-IVB-C.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/IBM-Platform-Flags-V1.2-IVB-C.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 Nov 18 16:32:46 2014 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 18 November 2014.