



# SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## IBM Corporation

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2640 v2, 2.00 GHz)

SPECfp®2006 = 77.1

SPECfp\_base2006 = 74.3

CPU2006 license: 11

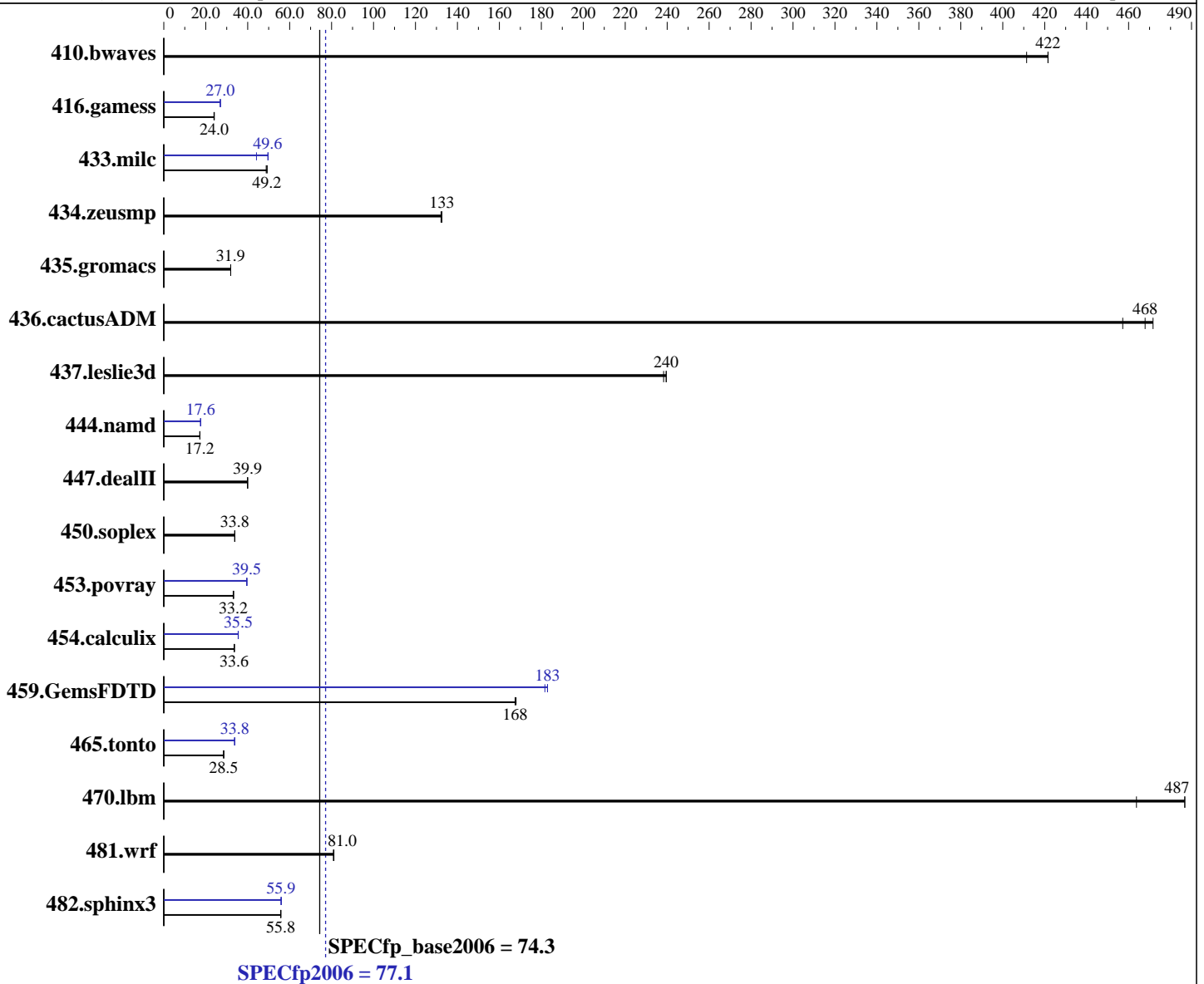
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Sep-2014

Hardware Availability: Nov-2013

Software Availability: Sep-2013



SPECfp2006 = 77.1

SPECfp\_base2006 = 74.3

### Hardware

CPU Name: Intel Xeon E5-2640 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz  
 CPU MHz: 2000  
 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 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: Yes  
 File System: ext4

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## IBM Corporation

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2640 v2, 2.00 GHz)

SPECfp2006 = **77.1**

SPECfp\_base2006 = **74.3**

CPU2006 license: 11  
Test sponsor: IBM Corporation  
Tested by: IBM Corporation

Test date: Sep-2014  
Hardware Availability: Nov-2013  
Software Availability: Sep-2013

L3 Cache: 20 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: 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	33.0	411	<b>32.2</b>	<b>422</b>	32.2	422	33.0	411	<b>32.2</b>	<b>422</b>	32.2	422
416.gamess	814	24.1	819	23.9	<b>814</b>	<b>24.0</b>	726	27.0	727	26.9	<b>726</b>	<b>27.0</b>
433.milc	<b>187</b>	<b>49.2</b>	186	49.2	188	48.8	208	44.2	<b>185</b>	<b>49.6</b>	184	49.8
434.zeusmp	68.9	132	68.7	133	<b>68.7</b>	<b>133</b>	68.9	132	68.7	133	<b>68.7</b>	<b>133</b>
435.gromacs	224	31.9	<b>224</b>	<b>31.9</b>	224	31.9	224	31.9	<b>224</b>	<b>31.9</b>	224	31.9
436.cactusADM	<b>25.5</b>	<b>468</b>	26.1	457	25.3	472	<b>25.5</b>	<b>468</b>	26.1	457	25.3	472
437.leslie3d	<b>39.2</b>	<b>240</b>	39.4	238	39.2	240	<b>39.2</b>	<b>240</b>	39.4	238	39.2	240
444.namd	465	17.2	467	17.2	<b>466</b>	<b>17.2</b>	<b>457</b>	<b>17.6</b>	457	17.6	457	17.5
447.dealII	286	40.0	287	39.9	<b>286</b>	<b>39.9</b>	286	40.0	287	39.9	<b>286</b>	<b>39.9</b>
450.soplex	<b>247</b>	<b>33.8</b>	247	33.8	246	33.9	<b>247</b>	<b>33.8</b>	247	33.8	246	33.9
453.povray	161	33.1	<b>160</b>	<b>33.2</b>	160	33.3	135	39.5	134	39.7	<b>135</b>	<b>39.5</b>
454.calculix	245	33.7	246	33.5	<b>245</b>	<b>33.6</b>	<b>232</b>	<b>35.5</b>	233	35.4	232	35.5
459.GemsFDTD	63.2	168	63.3	168	<b>63.3</b>	<b>168</b>	<b>58.0</b>	<b>183</b>	58.4	182	58.0	183
465.tonto	345	28.5	344	28.6	<b>345</b>	<b>28.5</b>	292	33.7	<b>291</b>	<b>33.8</b>	291	33.8
470.lbm	29.6	464	<b>28.2</b>	<b>487</b>	28.2	487	29.6	464	<b>28.2</b>	<b>487</b>	28.2	487
481.wrf	138	80.9	138	81.1	<b>138</b>	<b>81.0</b>	138	80.9	138	81.1	<b>138</b>	<b>81.0</b>
482.sphinx3	350	55.7	349	55.8	<b>349</b>	<b>55.8</b>	<b>348</b>	<b>55.9</b>	348	56.1	349	55.9

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"
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
```

## Platform Notes

```
BIOS setting:
Operating Mode set to Maximum Performance
Sysinfo program /home/SPECcpu-20140116-ic14.0/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on nx360M4 Sat Sep 6 10:57:28 2014
```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## IBM Corporation

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2640 v2, 2.00 GHz)

SPECfp2006 = 77.1

SPECfp\_base2006 = 74.3

CPU2006 license: 11  
Test sponsor: IBM Corporation  
Tested by: IBM Corporation

Test date: Sep-2014  
Hardware Availability: Nov-2013  
Software Availability: Sep-2013

### Platform Notes (Continued)

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 E5-2640 v2 @ 2.00GHz
 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:      132088104 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_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 Sep 6 10:52
```

```
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:
BIOS IBM -[FHE107NUS-1.20]- 06/03/2014
Memory:
8x Samsung M393B2G70QH0-CMA 16 GB 1600 MHz 2 rank
```

(End of data from sysinfo program)



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2640 v2, 2.00 GHz)

**SPECfp2006 = 77.1**

**SPECfp\_base2006 = 74.3**

**CPU2006 license:** 11

**Test sponsor:** IBM Corporation

**Tested by:** IBM Corporation

**Test date:** Sep-2014

**Hardware Availability:** Nov-2013

**Software Availability:** Sep-2013

## General Notes

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

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

LD\_LIBRARY\_PATH = "/home/SPECcpu-20140116-ic14.0/libs/32:/home/SPECcpu-20140116-ic14.0/libs/64:/home/SPECcpu-20140116-ic14.0/sh"

OMP\_NUM\_THREADS = "16"

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.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



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2640 v2, 2.00 GHz)

**SPECfp2006 = 77.1**

**SPECfp\_base2006 = 74.3**

**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation

**Test date:** Sep-2014  
**Hardware Availability:** Nov-2013  
**Software Availability:** Sep-2013

## Base Optimization Flags

C benchmarks:  
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:  
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:  
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:  
-xAVX -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:

433.milc: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2640 v2, 2.00 GHz)

**SPECfp2006 = 77.1**

**SPECfp\_base2006 = 74.3**

**CPU2006 license:** 11

**Test sponsor:** IBM Corporation

**Tested by:** IBM Corporation

**Test date:** Sep-2014

**Hardware Availability:** Nov-2013

**Software Availability:** Sep-2013

## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xAVX(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: -xAVX(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: -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: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

465.tonto: -xAVX(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

436.cactusADM: basepeak = yes

454.calculix: -xAVX -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/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>

Standard Performance Evaluation Corporation

[info@spec.org](mailto:info@spec.org)

<http://www.spec.org/>

Page 6



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2640 v2, 2.00 GHz)

**SPECfp2006 = 77.1**

**SPECfp\_base2006 = 74.3**

**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation

**Test date:** Sep-2014  
**Hardware Availability:** Nov-2013  
**Software Availability:** Sep-2013

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 Oct 8 19:39:47 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 8 October 2014.