



# SPEC<sup>®</sup> CFP2006 Result

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## IBM Corporation

IBM Flex System x240  
(Intel Xeon E5-2643, 3.30 GHz)

SPECfp<sup>®</sup>2006 = **83.6**

SPECfp\_base2006 = **80.1**

CPU2006 license: 11

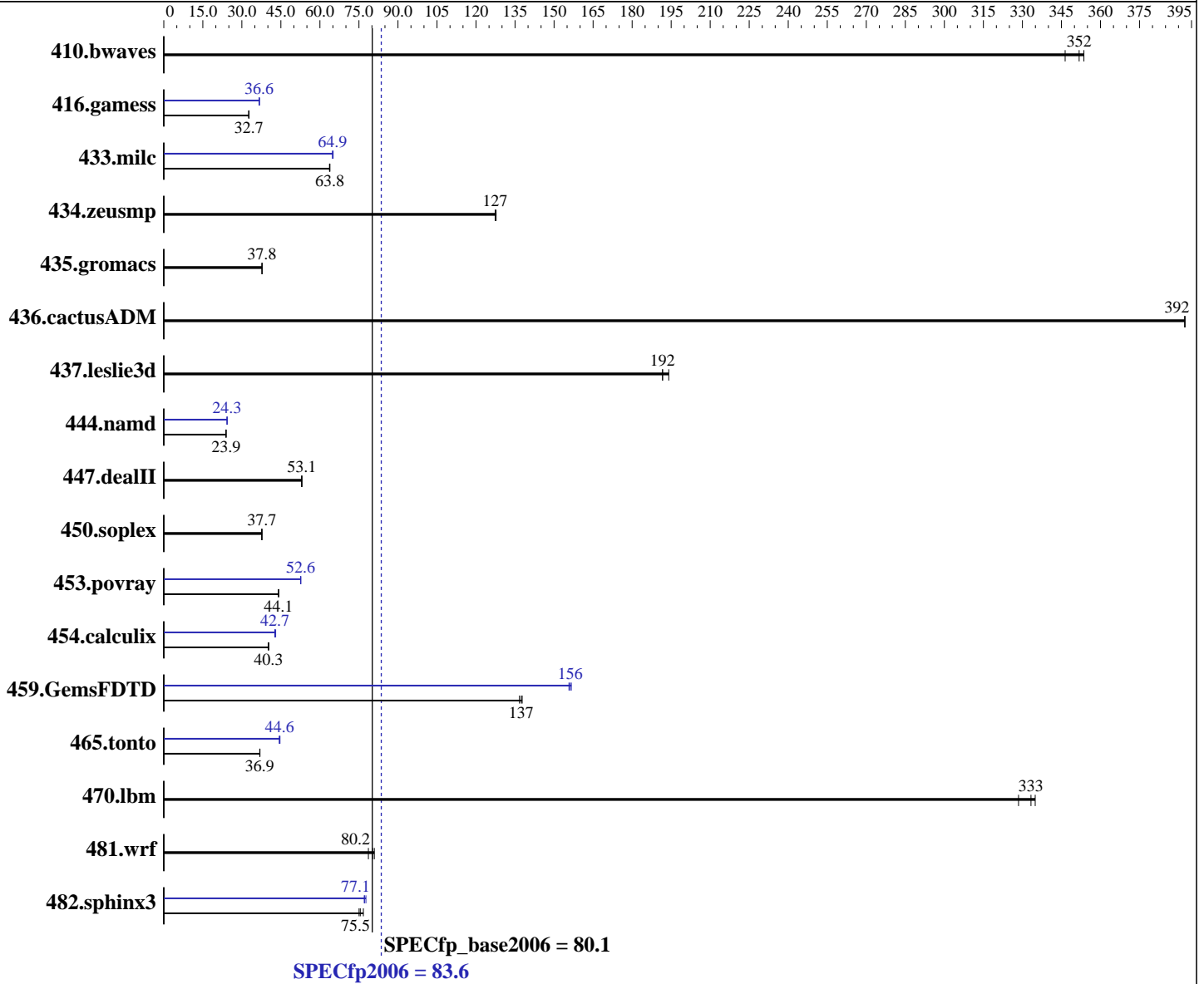
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: May-2012

Hardware Availability: May-2012

Software Availability: Dec-2011



### Hardware

CPU Name: Intel Xeon E5-2643  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3300  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 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

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### Software

Operating System: Red Hat Enterprise Linux Server release 6.2 (Santiago)  
 2.6.32-220.el6.x86\_64  
 Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 10 MB I+D on chip per chip  
Other Cache: None  
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)  
Disk Subsystem: 1 x 300 GB SAS, 10000 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	39.2	346	38.4	354	<b><u>38.6</u></b>	<b><u>352</u></b>	39.2	346	38.4	354	<b><u>38.6</u></b>	<b><u>352</u></b>
416.gamess	597	32.8	601	32.6	<b><u>598</u></b>	<b><u>32.7</u></b>	535	36.6	<b><u>535</u></b>	<b><u>36.6</u></b>	532	36.8
433.milc	<b><u>144</u></b>	<b><u>63.8</u></b>	144	63.8	144	63.7	<b><u>142</u></b>	<b><u>64.9</u></b>	142	64.9	141	65.1
434.zeusmp	71.4	127	<b><u>71.4</u></b>	<b><u>127</u></b>	71.2	128	71.4	127	<b><u>71.4</u></b>	<b><u>127</u></b>	71.2	128
435.gromacs	189	37.7	<b><u>189</u></b>	<b><u>37.8</u></b>	189	37.8	189	37.7	<b><u>189</u></b>	<b><u>37.8</u></b>	189	37.8
436.cactusADM	<b><u>30.5</u></b>	<b><u>392</u></b>	30.5	392	30.5	392	<b><u>30.5</u></b>	<b><u>392</u></b>	30.5	392	30.5	392
437.leslie3d	49.0	192	48.4	194	<b><u>49.0</u></b>	<b><u>192</u></b>	49.0	192	48.4	194	<b><u>49.0</u></b>	<b><u>192</u></b>
444.namd	<b><u>335</u></b>	<b><u>23.9</u></b>	335	23.9	335	23.9	<b><u>330</u></b>	<b><u>24.3</u></b>	330	24.3	330	24.3
447.dealII	216	53.0	216	53.1	<b><u>216</u></b>	<b><u>53.1</u></b>	216	53.0	216	53.1	<b><u>216</u></b>	<b><u>53.1</u></b>
450.soplex	221	37.8	<b><u>221</u></b>	<b><u>37.7</u></b>	222	37.6	221	37.8	<b><u>221</u></b>	<b><u>37.7</u></b>	222	37.6
453.povray	<b><u>121</u></b>	<b><u>44.1</u></b>	121	44.1	121	44.1	101	52.7	<b><u>101</u></b>	<b><u>52.6</u></b>	101	52.6
454.calculix	<b><u>205</u></b>	<b><u>40.3</u></b>	204	40.3	206	40.1	<b><u>193</u></b>	<b><u>42.7</u></b>	193	42.7	192	43.0
459.GemsFDTD	<b><u>77.2</u></b>	<b><u>137</u></b>	77.0	138	77.6	137	67.7	157	<b><u>67.9</u></b>	<b><u>156</u></b>	68.1	156
465.tonto	266	37.0	<b><u>267</u></b>	<b><u>36.9</u></b>	267	36.9	222	44.4	<b><u>221</u></b>	<b><u>44.6</u></b>	220	44.7
470.lbm	41.8	329	<b><u>41.2</u></b>	<b><u>333</u></b>	41.0	335	41.8	329	<b><u>41.2</u></b>	<b><u>333</u></b>	41.0	335
481.wrf	<b><u>139</u></b>	<b><u>80.2</u></b>	142	78.6	138	80.9	<b><u>139</u></b>	<b><u>80.2</u></b>	142	78.6	138	80.9
482.sphinx3	<b><u>258</u></b>	<b><u>75.5</u></b>	260	75.1	254	76.7	251	77.7	253	77.1	<b><u>253</u></b>	<b><u>77.1</u></b>

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

Operating Mode set to Maximum Performance in BIOS  
Sysinfo program /cpu2006.1.2/config/sysinfo.rev6800  
\$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
running on blacktip-pete Fri May 25 23:51:03 2012

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

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**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation

**Test date:** May-2012  
**Hardware Availability:** May-2012  
**Software Availability:** Dec-2011

### Platform Notes (Continued)

```
model name : Intel(R) Xeon(R) CPU E5-2643 0 @ 3.30GHz
 2 "physical id"s (chips)
 16 "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 : 4
  siblings  : 8
  physical 0: cores 0 1 2 3
  physical 1: cores 0 1 2 3
cache size : 10240 KB
```

```
From /proc/meminfo
MemTotal:      132138124 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.2 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux blacktip-pete 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 May 24 16:45
```

```
SPEC is set to: /cpu2006.1.2
Filesystem      Type      Size      Used Avail Use% Mounted on
/dev/mapper/vg_blacktippete-lv_root
                ext4      265G      6.0G   246G   3% /
```

```
Additional information from dmidecode:
Memory:
 4x Hynix HMT31GR7CFR4C-PB 8 GB 1600 MHz 2 rank
12x Samsung M393B1K70DH0-CK0 8 GB 1600 MHz 2 rank
```

(End of data from sysinfo program)

### General Notes

Environment variables set by runspec before the start of the run:  
KMP\_AFFINITY = "granularity=fine,compact,1,0"  
LD\_LIBRARY\_PATH = "/cpu2006.1.2/libs/32:/cpu2006.1.2/libs/64"  
OMP\_NUM\_THREADS = "8"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB

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## General Notes (Continued)

memory using RHEL5.5  
Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_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  
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 -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

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## Base Optimization Flags (Continued)

Fortran benchmarks:

`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:

`-xAVX -ipo -O3 -no-prec-div -static -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) -static -auto-ilp32  
-ansi-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `-xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel`

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`

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## Peak Optimization Flags (Continued)

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- -static

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-ic12.1-official-linux64.20120425.html>

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

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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