



# SPEC<sup>®</sup> CFP2006 Result

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## IBM Corporation

**SPECfp<sup>®</sup>2006 = 45.5**

### IBM System x3630 M4 (Intel Pentium 1407)

**SPECfp\_base2006 = 44.6**

CPU2006 license: 11

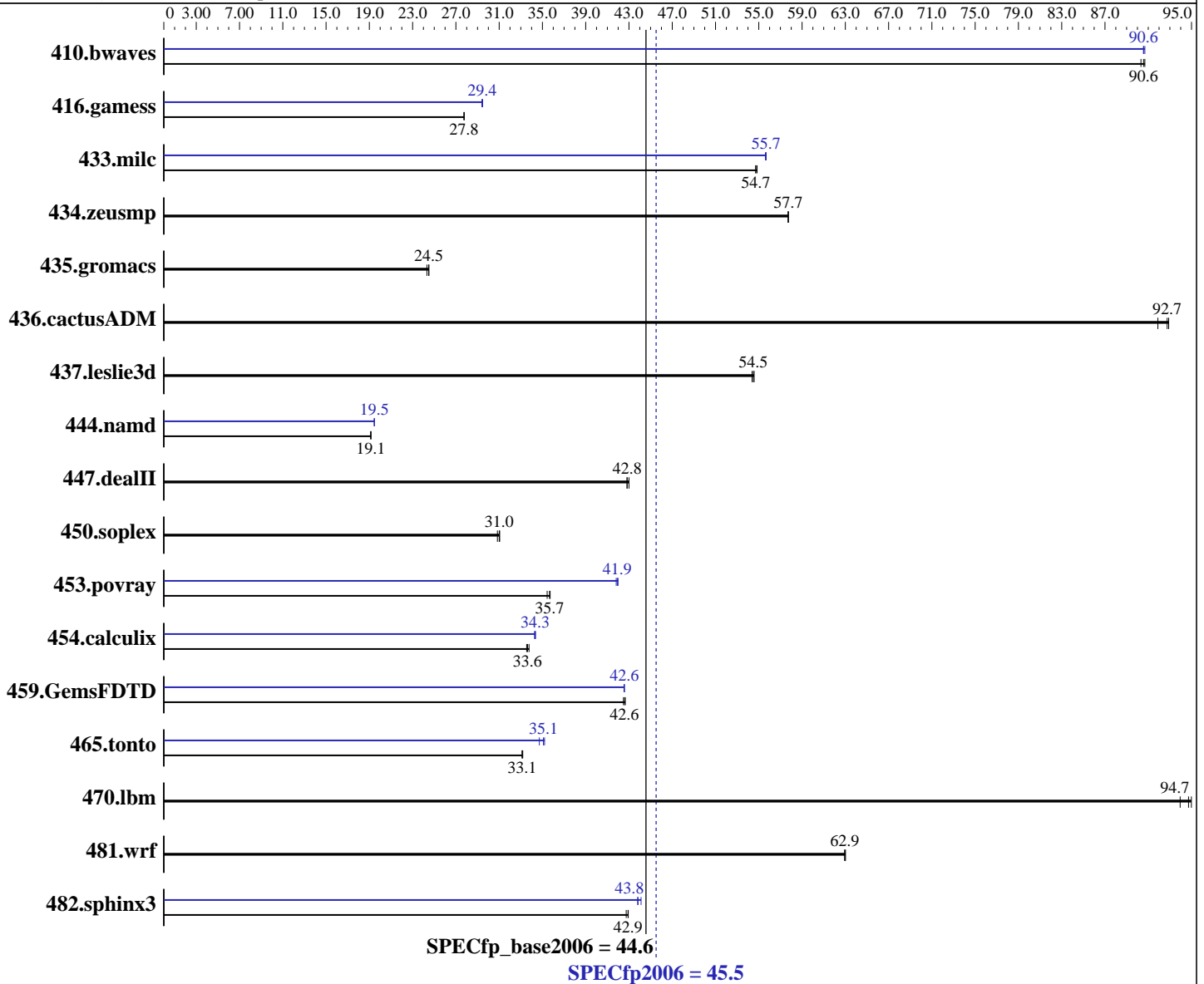
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jul-2012

Hardware Availability: May-2012

Software Availability: Dec-2011



#### Hardware

CPU Name: Intel Pentium 1407  
 CPU Characteristics:  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 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: 5 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)  
 Disk Subsystem: 1 x 500 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	150	90.7	<b>150</b>	<b>90.6</b>	150	90.3	150	90.7	150	90.6	<b>150</b>	<b>90.6</b>
416.gamess	<b>705</b>	<b>27.8</b>	706	27.7	705	27.8	666	29.4	<b>665</b>	<b>29.4</b>	664	29.5
433.milc	167	54.8	168	54.7	<b>168</b>	<b>54.7</b>	165	55.6	<b>165</b>	<b>55.7</b>	165	55.7
434.zeusmp	158	57.7	<b>158</b>	<b>57.7</b>	158	57.7	158	57.7	<b>158</b>	<b>57.7</b>	158	57.7
435.gromacs	<b>292</b>	<b>24.5</b>	294	24.3	291	24.5	<b>292</b>	<b>24.5</b>	294	24.3	291	24.5
436.cactusADM	130	91.9	<b>129</b>	<b>92.7</b>	129	92.9	130	91.9	<b>129</b>	<b>92.7</b>	129	92.9
437.leslie3d	173	54.4	<b>172</b>	<b>54.5</b>	172	54.6	173	54.4	<b>172</b>	<b>54.5</b>	172	54.6
444.namd	419	19.1	<b>419</b>	<b>19.1</b>	419	19.1	412	19.5	412	19.5	<b>412</b>	<b>19.5</b>
447.dealII	266	43.0	<b>267</b>	<b>42.8</b>	267	42.8	266	43.0	<b>267</b>	<b>42.8</b>	267	42.8
450.soplex	269	31.0	270	30.8	<b>269</b>	<b>31.0</b>	269	31.0	270	30.8	<b>269</b>	<b>31.0</b>
453.povray	<b>149</b>	<b>35.7</b>	149	35.7	150	35.4	127	42.0	127	41.8	<b>127</b>	<b>41.9</b>
454.calculix	244	33.8	<b>245</b>	<b>33.6</b>	246	33.5	240	34.4	<b>240</b>	<b>34.3</b>	241	34.3
459.GemsFDTD	249	42.7	<b>249</b>	<b>42.6</b>	250	42.5	<b>249</b>	<b>42.6</b>	249	42.5	249	42.6
465.tonto	297	33.1	297	33.2	<b>297</b>	<b>33.1</b>	283	34.7	280	35.2	<b>280</b>	<b>35.1</b>
470.lbm	146	93.9	145	95.0	<b>145</b>	<b>94.7</b>	146	93.9	145	95.0	<b>145</b>	<b>94.7</b>
481.wrf	<b>177</b>	<b>62.9</b>	177	63.0	177	62.9	<b>177</b>	<b>62.9</b>	177	63.0	177	62.9
482.sphinx3	<b>454</b>	<b>42.9</b>	456	42.7	454	42.9	<b>442</b>	<b>44.1</b>	<b>445</b>	<b>43.8</b>	<b>445</b>	<b>43.8</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

BIOS setting:  
 Operating Mode set to Maximum Performance  
 Sysinfo program /home/SPECcpu-v1.2/config/sysinfo.rev6800  
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
 running on x3630m4-rhel62 Fri Jul 27 06:16:12 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>

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## Platform Notes (Continued)

```

From /proc/cpuinfo
model name : Intel(R) Pentium(R) CPU 1407 @ 2.80GHz
 1 "physical id"s (chips)
 2 "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 : 2
  siblings  : 2
  physical 0: cores 0 1
cache size : 5120 KB

From /proc/meminfo
MemTotal:      49405540 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 x3630m4-rhel62 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 Jul 26 12:22

SPEC is set to: /home/SPECcpu-v1.2
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_x3630m4rhel62-lv_home
                ext4      383G  9.6G  354G   3% /home

Additional information from dmidecode:
Memory:
6x Samsung M393B1K70DH0-CK0 8 GB 1066 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 = "/home/SPECcpu-v1.2/libs/32:/home/SPECcpu-v1.2/libs/64"
OMP_NUM_THREADS = "2"

```

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.deallI: 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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel  
-static

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-linux64.20111122.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-linux64.20111122.xml>

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



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

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