



SPEC[®] CFP2006 Result

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IBM Corporation

SPECfp[®]2006 = **67.0**

IBM System x3500 M4 (Intel Xeon E5-2658)

SPECfp_base2006 = **63.2**

CPU2006 license: 11

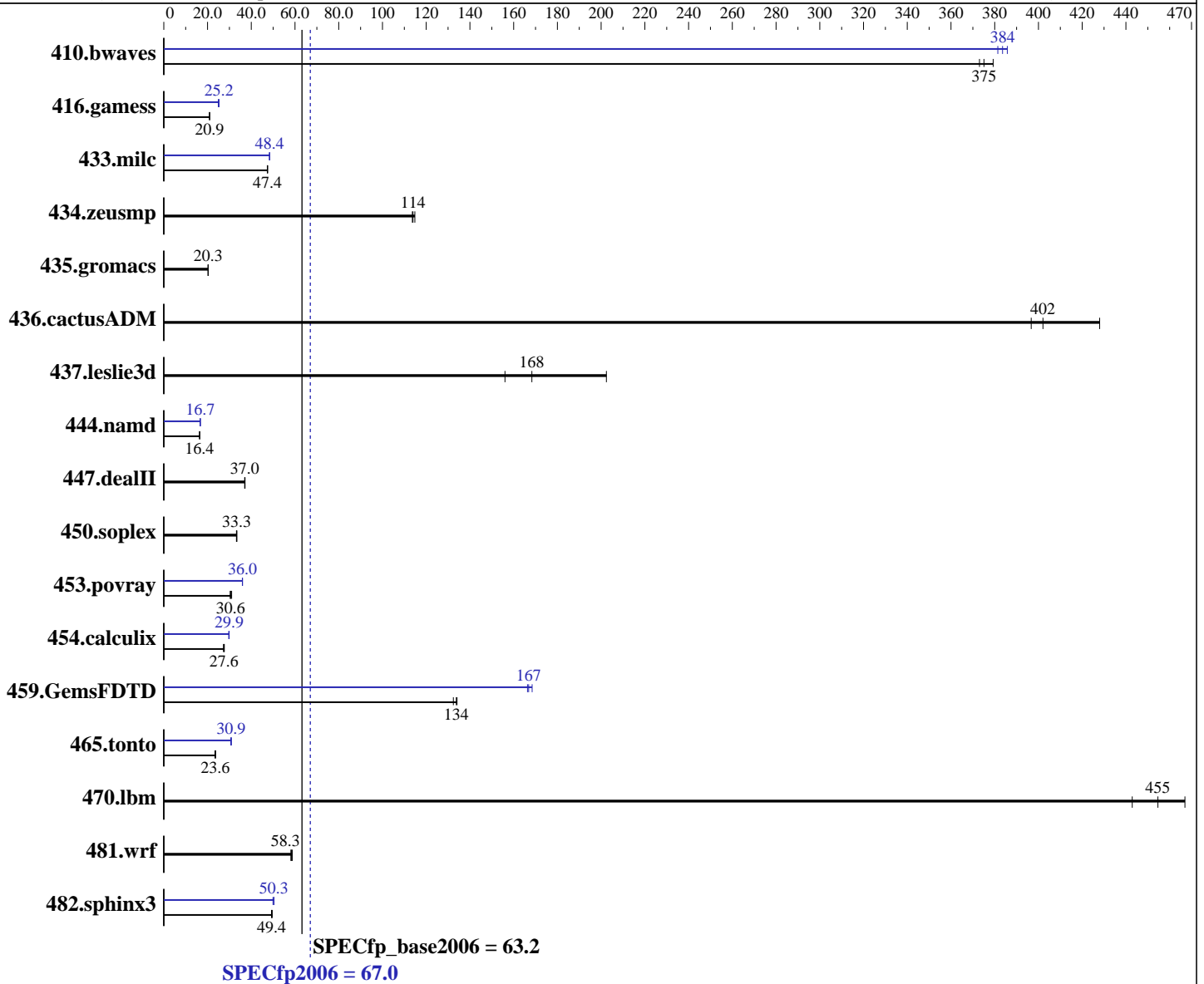
Test date: Nov-2012

Test sponsor: IBM Corporation

Hardware Availability: Mar-2012

Tested by: IBM Corporation

Software Availability: Jun-2012



Hardware

CPU Name: Intel Xeon E5-2658
 CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz
 CPU MHz: 2100
 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 6.3 (Santiago)
 2.6.32-279.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

Continued on next page



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L3 Cache: 20 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 1 TB 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	36.4	373	35.8	379	<u>36.2</u>	<u>375</u>	<u>35.4</u>	<u>384</u>	35.2	386	35.6	381
416.gamess	934	21.0	936	20.9	<u>935</u>	<u>20.9</u>	<u>777</u>	<u>25.2</u>	785	24.9	775	25.3
433.milc	194	47.3	<u>194</u>	<u>47.4</u>	193	47.5	<u>190</u>	<u>48.4</u>	190	48.4	190	48.3
434.zeusmp	80.1	114	<u>79.9</u>	<u>114</u>	79.3	115	80.1	114	<u>79.9</u>	<u>114</u>	79.3	115
435.gromacs	<u>352</u>	<u>20.3</u>	353	20.2	352	20.3	<u>352</u>	<u>20.3</u>	353	20.2	352	20.3
436.cactusADM	30.1	397	<u>29.7</u>	<u>402</u>	27.9	428	30.1	397	<u>29.7</u>	<u>402</u>	27.9	428
437.leslie3d	60.2	156	<u>55.8</u>	<u>168</u>	46.4	202	60.2	156	<u>55.8</u>	<u>168</u>	46.4	202
444.namd	<u>489</u>	<u>16.4</u>	490	16.4	489	16.4	<u>481</u>	<u>16.7</u>	481	16.7	481	16.7
447.dealII	309	37.0	<u>309</u>	<u>37.0</u>	308	37.2	309	37.0	<u>309</u>	<u>37.0</u>	308	37.2
450.soplex	251	33.2	<u>251</u>	<u>33.3</u>	249	33.4	251	33.2	<u>251</u>	<u>33.3</u>	249	33.4
453.povray	171	31.0	175	30.4	<u>174</u>	<u>30.6</u>	148	35.9	148	36.0	<u>148</u>	<u>36.0</u>
454.calculix	<u>299</u>	<u>27.6</u>	298	27.7	303	27.3	<u>276</u>	<u>29.9</u>	276	29.9	278	29.7
459.GemsFDTD	80.1	132	79.1	134	<u>79.3</u>	<u>134</u>	63.0	168	63.8	166	<u>63.6</u>	<u>167</u>
465.tonto	420	23.4	415	23.7	<u>417</u>	<u>23.6</u>	<u>319</u>	<u>30.9</u>	321	30.7	319	30.9
470.lbm	29.4	467	<u>30.2</u>	<u>455</u>	31.0	443	29.4	467	<u>30.2</u>	<u>455</u>	31.0	443
481.wrf	<u>192</u>	<u>58.3</u>	192	58.1	190	58.7	<u>192</u>	<u>58.3</u>	192	58.1	190	58.7
482.sphinx3	396	49.3	<u>395</u>	<u>49.4</u>	393	49.6	<u>387</u>	<u>50.3</u>	387	50.4	390	49.9

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

Platform Notes

BIOS Settings:
 Operating Mode set to Maximum Performance
 Sysinfo program /home/SPECcpu-v1.2/config/sysinfo.rev6800
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3
 running on x3500M4 Sun Nov 4 08:37:44 2012

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

Continued on next page



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Platform Notes (Continued)

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) CPU E5-2658 0 @ 2.10GHz
 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:      132230936 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

/usr/bin/lsb_release -d

```
Red Hat Enterprise Linux Server release 6.3 (Santiago)
```

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

```
redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

uname -a:

```
Linux x3500M4 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012
x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Nov 2 16:03

SPEC is set to: /home/SPECcpu-v1.2

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_x3500m4-lv_home
    ext4       862G    61G  758G   8% /home
```

Additional information from dmidecode:

Memory:

```
16x 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 = "/home/SPECcpu-v1.2/libs/32:/home/SPECcpu-v1.2/libs/64"

OMP_NUM_THREADS = "16"

Continued on next page

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Page 3



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General Notes (Continued)

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

Base Optimization Flags

C benchmarks:

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

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Base Optimization Flags (Continued)

C++ benchmarks:

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

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:

Continued on next page



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Peak Optimization Flags (Continued)

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.dealII: 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-linux64.20120425.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>

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



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