



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®2006 = **82.4**

IBM System x3550 M4 (Intel Xeon E5-2665)

SPECfp_base2006 = **78.7**

CPU2006 license: 11

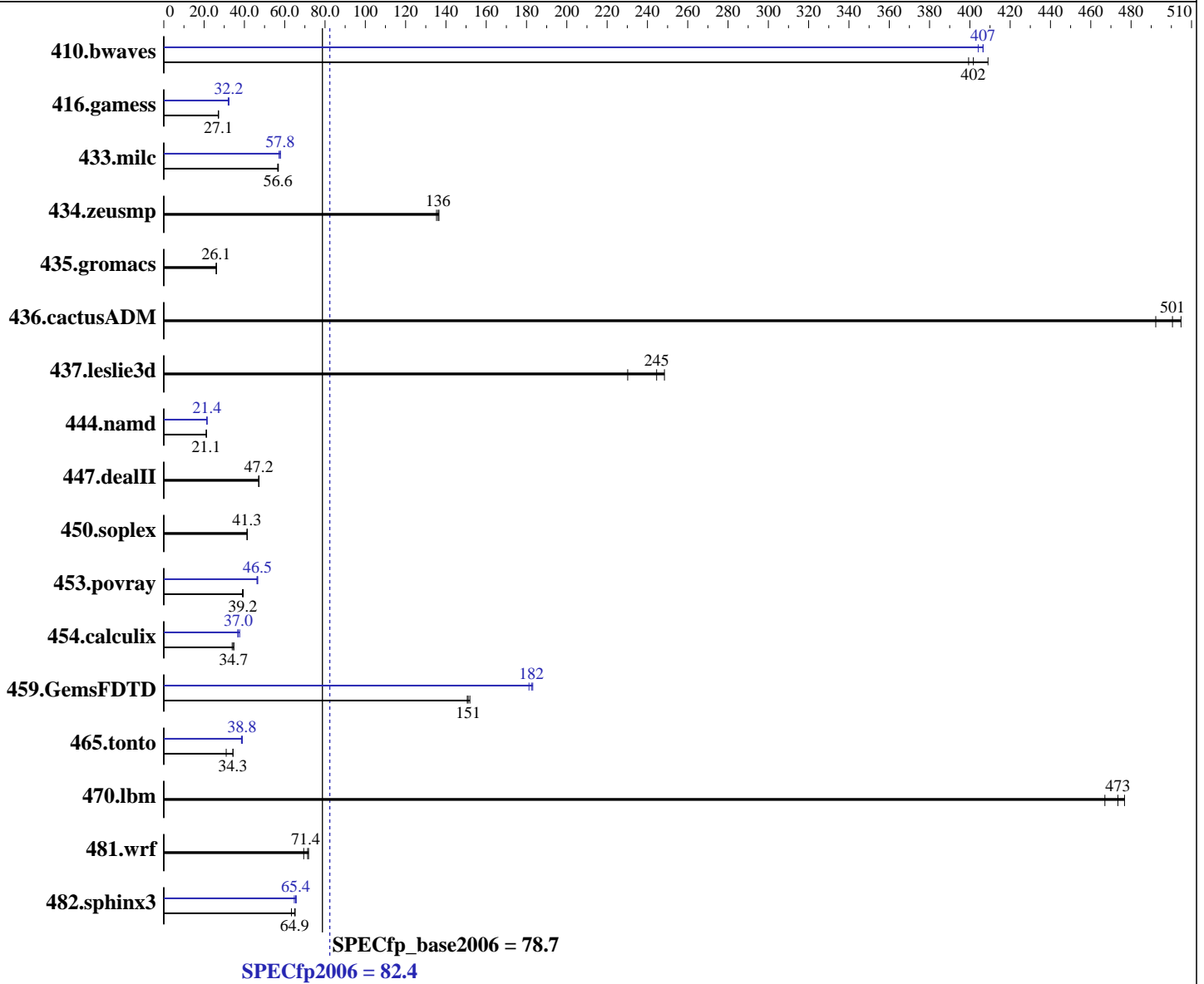
Test date: Apr-2012

Test sponsor: IBM Corporation

Hardware Availability: Mar-2012

Tested by: IBM Corporation

Software Availability: Oct-2011



Hardware

CPU Name: Intel Xeon E5-2665
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz
 CPU MHz: 2400
 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

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Software

Operating System: Red Hat Enterprise Linux Server release 6.1 (Santiago)
 2.6.32-131.0.15.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: 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 SAS, 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	33.2	409	34.0	399	<u>33.8</u>	<u>402</u>	<u>33.4</u>	<u>407</u>	33.4	407	33.6	404
416.gamess	<u>723</u>	<u>27.1</u>	721	27.1	724	27.1	613	31.9	<u>609</u>	<u>32.2</u>	606	32.3
433.milc	<u>162</u>	<u>56.6</u>	162	56.6	161	56.9	159	57.9	160	57.2	<u>159</u>	<u>57.8</u>
434.zeusmp	<u>66.8</u>	<u>136</u>	67.2	135	66.6	137	<u>66.8</u>	<u>136</u>	67.2	135	66.6	137
435.gromacs	274	26.1	274	26.1	<u>274</u>	<u>26.1</u>	274	26.1	274	26.1	<u>274</u>	<u>26.1</u>
436.cactusADM	24.3	492	<u>23.9</u>	<u>501</u>	23.7	505	24.3	492	<u>23.9</u>	<u>501</u>	23.7	505
437.leslie3d	<u>38.4</u>	<u>245</u>	37.8	248	40.8	230	<u>38.4</u>	<u>245</u>	37.8	248	40.8	230
444.namd	380	21.1	<u>380</u>	<u>21.1</u>	380	21.1	<u>374</u>	<u>21.4</u>	374	21.4	374	21.4
447.dealII	242	47.3	243	47.0	<u>242</u>	<u>47.2</u>	242	47.3	243	47.0	<u>242</u>	<u>47.2</u>
450.soplex	201	41.5	<u>202</u>	<u>41.3</u>	202	41.3	201	41.5	<u>202</u>	<u>41.3</u>	202	41.3
453.povray	<u>136</u>	<u>39.2</u>	136	39.0	135	39.4	<u>114</u>	<u>46.5</u>	114	46.6	115	46.2
454.calculix	238	34.7	<u>238</u>	<u>34.7</u>	243	33.9	219	37.7	<u>223</u>	<u>37.0</u>	225	36.7
459.GemsFDTD	70.5	151	<u>70.2</u>	<u>151</u>	69.9	152	58.5	181	<u>58.1</u>	<u>182</u>	57.9	183
465.tonto	286	34.4	318	31.0	<u>287</u>	<u>34.3</u>	252	39.0	<u>254</u>	<u>38.8</u>	255	38.5
470.lbm	28.8	477	29.4	467	<u>29.0</u>	<u>473</u>	28.8	477	29.4	467	<u>29.0</u>	<u>473</u>
481.wrf	155	71.8	<u>156</u>	<u>71.4</u>	161	69.4	155	71.8	<u>156</u>	<u>71.4</u>	161	69.4
482.sphinx3	299	65.2	<u>300</u>	<u>64.9</u>	308	63.3	297	65.7	<u>298</u>	<u>65.4</u>	301	64.8

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 /root/SPECcpu-v1.2/config/sysinfo.rev6800
 \$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3
 running on x3550M4 Sun Apr 22 14:29:24 2012

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

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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 E5-2665 0 @ 2.40GHz
 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:      132236124 kB
HugePages_Total:    0
Hugepagesize:     2048 kB
```

/usr/bin/lsb_release -d

```
Red Hat Enterprise Linux Server release 6.1 (Santiago)
```

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

```
redhat-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

uname -a:

```
Linux x3550M4 2.6.32-131.0.15.el6.x86_64 #1 SMP Tue May 10 15:42:40 EDT 2011
x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Apr 20 15:38

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

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_x3550m4-lv_root
                ext4      790G  69G  681G  10% /
```

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 = "/root/SPECcpu-v1.2/libs/32:/root/SPECcpu-v1.2/libs/64"

OMP_NUM_THREADS = "16"

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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:

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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-linux64.20111122.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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