



SPEC[®] CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x440
(Intel Xeon E5-4640, 2.40 GHz)

SPECfp[®]2006 = **70.3**

SPECfp_base2006 = **65.8**

CPU2006 license: 11

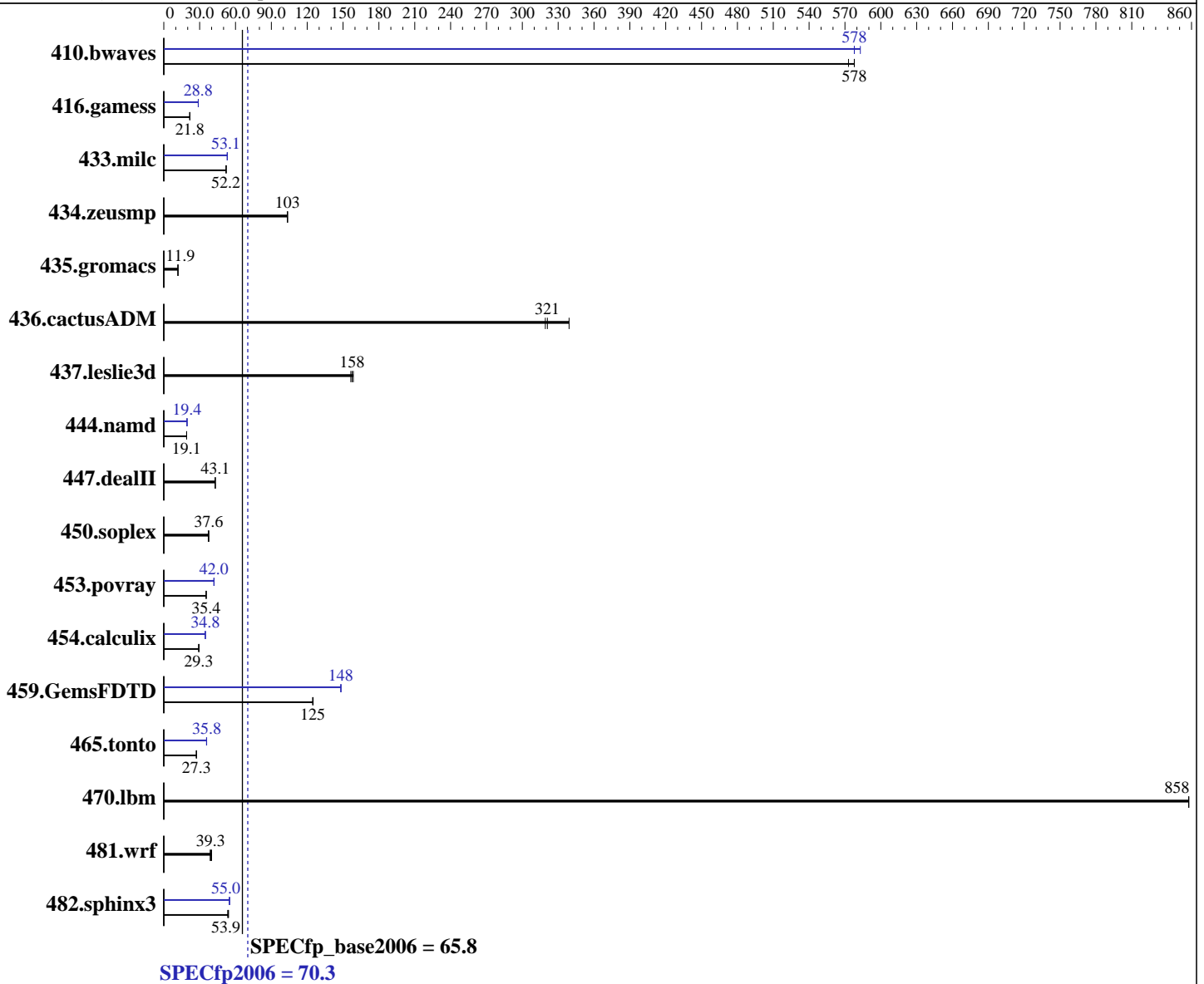
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2012

Hardware Availability: Aug-2012

Software Availability: Dec-2011



Hardware

CPU Name: Intel Xeon E5-4640
 CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2,3,4 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 6.2 (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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x440
(Intel Xeon E5-4640, 2.40 GHz)

SPECfp2006 = **70.3**

SPECfp_base2006 = **65.8**

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2012

Hardware Availability: Aug-2012

Software Availability: Dec-2011

L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (32 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	23.7	573	23.5	578	<u>23.5</u>	<u>578</u>	23.5	578	23.3	583	<u>23.5</u>	<u>578</u>
416.gamess	897	21.8	<u>898</u>	<u>21.8</u>	904	21.7	679	28.8	678	28.9	<u>679</u>	<u>28.8</u>
433.milc	176	52.1	176	52.2	<u>176</u>	<u>52.2</u>	<u>173</u>	<u>53.1</u>	173	53.1	173	53.1
434.zeusmp	87.9	103	<u>87.9</u>	<u>103</u>	87.9	103	87.9	103	<u>87.9</u>	<u>103</u>	87.9	103
435.gromacs	605	11.8	601	11.9	<u>601</u>	<u>11.9</u>	605	11.8	601	11.9	<u>601</u>	<u>11.9</u>
436.cactusADM	<u>37.2</u>	<u>321</u>	37.4	319	35.2	339	<u>37.2</u>	<u>321</u>	37.4	319	35.2	339
437.leslie3d	60.1	156	59.3	159	<u>59.7</u>	<u>158</u>	60.1	156	59.3	159	<u>59.7</u>	<u>158</u>
444.namd	419	19.1	420	19.1	<u>420</u>	<u>19.1</u>	413	19.4	412	19.4	<u>412</u>	<u>19.4</u>
447.dealII	266	43.0	266	43.1	<u>266</u>	<u>43.1</u>	266	43.0	266	43.1	<u>266</u>	<u>43.1</u>
450.soplex	221	37.7	224	37.2	<u>222</u>	<u>37.6</u>	221	37.7	224	37.2	<u>222</u>	<u>37.6</u>
453.povray	150	35.4	<u>150</u>	<u>35.4</u>	150	35.5	<u>127</u>	<u>42.0</u>	127	41.9	126	42.1
454.calculix	<u>282</u>	<u>29.3</u>	283	29.1	279	29.5	238	34.6	237	34.8	<u>237</u>	<u>34.8</u>
459.GemsFDTD	84.9	125	<u>85.1</u>	<u>125</u>	85.1	125	71.6	148	<u>71.6</u>	<u>148</u>	71.6	148
465.tonto	<u>361</u>	<u>27.3</u>	361	27.3	360	27.3	274	35.9	<u>275</u>	<u>35.8</u>	275	35.7
470.lbm	16.0	858	16.0	858	<u>16.0</u>	<u>858</u>	16.0	858	16.0	858	<u>16.0</u>	<u>858</u>
481.wrf	288	38.8	<u>284</u>	<u>39.3</u>	279	40.0	288	38.8	<u>284</u>	<u>39.3</u>	279	40.0
482.sphinx3	360	54.2	<u>362</u>	<u>53.9</u>	364	53.5	<u>354</u>	<u>55.0</u>	355	54.8	354	55.1

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 congo-pete Wed Aug 8 14:10:24 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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x440
(Intel Xeon E5-4640, 2.40 GHz)

SPECfp2006 = 70.3

SPECfp_base2006 = 65.8

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2012

Hardware Availability: Aug-2012

Software Availability: Dec-2011

Platform Notes (Continued)

```

model name : Intel(R) Xeon(R) CPU E5-4640 0 @ 2.40GHz
 4 "physical id"s (chips)
 64 "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
  physical 2: cores 0 1 2 3 4 5 6 7
  physical 3: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB

```

```

From /proc/meminfo
MemTotal:      264501716 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 congo-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 Aug 6 16:18

```

SPEC is set to: /cpu2006.1.2
Filesystem      Type      Size Used Avail Use% Mounted on
/dev/mapper/vg_congopete-lv_root
                ext4      264G  5.9G  245G   3% /

```

```

Additional information from dmidecode:
Memory:
 32x Micron 36JSF1G72PZ-1G6M1 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 = "32"

```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = 70.3

IBM Flex System x440
(Intel Xeon E5-4640, 2.40 GHz)

SPECfp_base2006 = 65.8

CPU2006 license: 11

Test date: Aug-2012

Test sponsor: IBM Corporation

Hardware Availability: Aug-2012

Tested by: IBM Corporation

Software Availability: Dec-2011

General Notes (Continued)

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches

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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x440
(Intel Xeon E5-4640, 2.40 GHz)

SPECfp2006 = 70.3

SPECfp_base2006 = 65.8

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2012

Hardware Availability: Aug-2012

Software Availability: Dec-2011

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



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = 70.3

IBM Flex System x440
(Intel Xeon E5-4640, 2.40 GHz)

SPECfp_base2006 = 65.8

CPU2006 license: 11

Test date: Aug-2012

Test sponsor: IBM Corporation

Hardware Availability: Aug-2012

Tested by: IBM Corporation

Software Availability: Dec-2011

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>



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x440
(Intel Xeon E5-4640, 2.40 GHz)

SPECfp2006 = 70.3

SPECfp_base2006 = 65.8

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

Test date: Aug-2012
Hardware Availability: Aug-2012
Software Availability: Dec-2011

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.

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 10:56:29 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 29 August 2012.