



SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3530 M4
(Intel Xeon E5-2450 v2, 2.50 GHz)

SPECfp®_rate2006 = 454

SPECfp_rate_base2006 = 441

CPU2006 license: 11

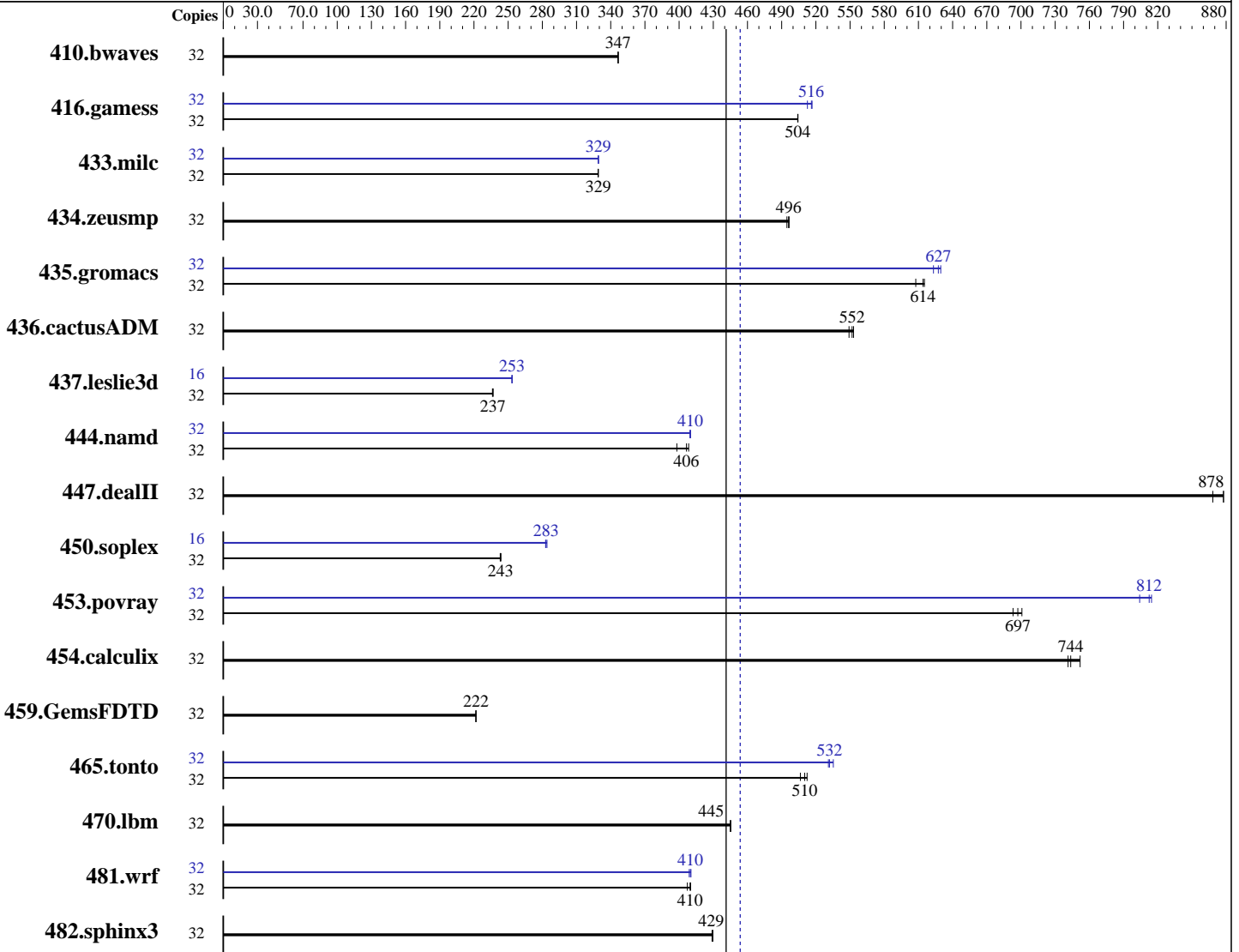
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Feb-2014

Hardware Availability: Mar-2014

Software Availability: Nov-2013



SPECfp_rate_base2006 = 441

SPECfp_rate2006 = 454

Hardware

CPU Name: Intel Xeon E5-2450 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
 CPU MHz: 2500
 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 6.5 (Santiago)
 2.6.32-431.el6.x86_64
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
 Auto Parallel: No
 File System: ext4

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3530 M4
(Intel Xeon E5-2450 v2, 2.50 GHz)

SPECfp_rate2006 = **454**

SPECfp_rate_base2006 = **441**

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Feb-2014

Hardware Availability: Mar-2014

Software Availability: Nov-2013

L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 192 GB (12 x 16 GB 2Rx4 PC3-12800R-13, ECC)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	32	1255	347	<u>1255</u>	<u>347</u>	1255	346	32	1255	347	<u>1255</u>	<u>347</u>	1255	346		
416.gamess	32	1242	504	<u>1243</u>	<u>504</u>	1243	504	32	1222	513	<u>1214</u>	<u>516</u>	1213	517		
433.milc	32	893	329	<u>893</u>	<u>329</u>	893	329	32	<u>892</u>	<u>329</u>	893	329	892	329		
434.zeusmp	32	586	497	<u>587</u>	<u>496</u>	589	495	32	586	497	<u>587</u>	<u>496</u>	589	495		
435.gromacs	32	<u>372</u>	<u>614</u>	376	608	371	615	32	<u>364</u>	<u>627</u>	367	623	363	630		
436.cactusADM	32	691	553	<u>693</u>	<u>552</u>	696	549	32	691	553	<u>693</u>	<u>552</u>	696	549		
437.leslie3d	32	1271	237	<u>1271</u>	<u>237</u>	1273	236	16	<u>593</u>	<u>253</u>	594	253	593	254		
444.namd	32	628	408	<u>631</u>	<u>406</u>	645	398	32	<u>626</u>	<u>410</u>	626	410	627	410		
447.dealII	32	417	878	422	868	<u>417</u>	<u>878</u>	32	417	878	422	868	<u>417</u>	<u>878</u>		
450.soplex	32	<u>1097</u>	<u>243</u>	1095	244	1098	243	16	472	283	<u>471</u>	<u>283</u>	470	284		
453.povray	32	246	693	<u>244</u>	<u>697</u>	243	701	32	212	804	<u>210</u>	<u>812</u>	209	815		
454.calculix	32	<u>355</u>	<u>744</u>	351	752	356	741	32	<u>355</u>	<u>744</u>	351	752	356	741		
459.GemsFDTD	32	<u>1531</u>	<u>222</u>	1531	222	1531	222	32	<u>1531</u>	<u>222</u>	1531	222	1531	222		
465.tonto	32	615	512	622	506	<u>617</u>	<u>510</u>	32	588	535	<u>592</u>	<u>532</u>	593	531		
470.lbm	32	988	445	<u>988</u>	<u>445</u>	988	445	32	988	445	<u>988</u>	<u>445</u>	988	445		
481.wrf	32	872	410	<u>873</u>	<u>410</u>	878	407	32	874	409	871	410	<u>872</u>	<u>410</u>		
482.sphinx3	32	1454	429	<u>1452</u>	<u>429</u>	1452	430	32	1454	429	<u>1452</u>	<u>429</u>	1452	430		

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

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



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3530 M4
(Intel Xeon E5-2450 v2, 2.50 GHz)

SPECfp_rate2006 = 454

SPECfp_rate_base2006 = 441

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

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Nov-2013

Platform Notes

BIOS setting:
Operating Mode set to Maximum Performance

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/SPECcpu/libs/32:/home/SPECcpu/libs/64:/home/SPECcpu/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3530 M4
(Intel Xeon E5-2450 v2, 2.50 GHz)

SPECfp_rate2006 = 454

SPECfp_rate_base2006 = 441

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

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Nov-2013

Base Portability Flags (Continued)

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 -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

C++ benchmarks:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

Fortran benchmarks:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks (except as noted below):
icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3530 M4
(Intel Xeon E5-2450 v2, 2.50 GHz)

SPECfp_rate2006 = 454

SPECfp_rate_base2006 = 441

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

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Nov-2013

Peak Portability Flags (Continued)

```

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
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

```

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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -auto-ilp32

```

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

```

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -fno-alias -auto-ilp32

```

447.dealII: basepeak = yes

```

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-malloc-options=3

```

```

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(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-

```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3530 M4
(Intel Xeon E5-2450 v2, 2.50 GHz)

SPECfp_rate2006 = 454

SPECfp_rate_base2006 = 441

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

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Nov-2013

Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html>

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

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

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

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 20:41:28 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 25 March 2014.