



SPEC[®] CFP2006 Result

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IBM Corporation

SPECfp[®]_rate2006 = 178

IBM System p 550 (4.2 GHz, 8 core)

SPECfp_rate_base2006 = 156

CPU2006 license: 11

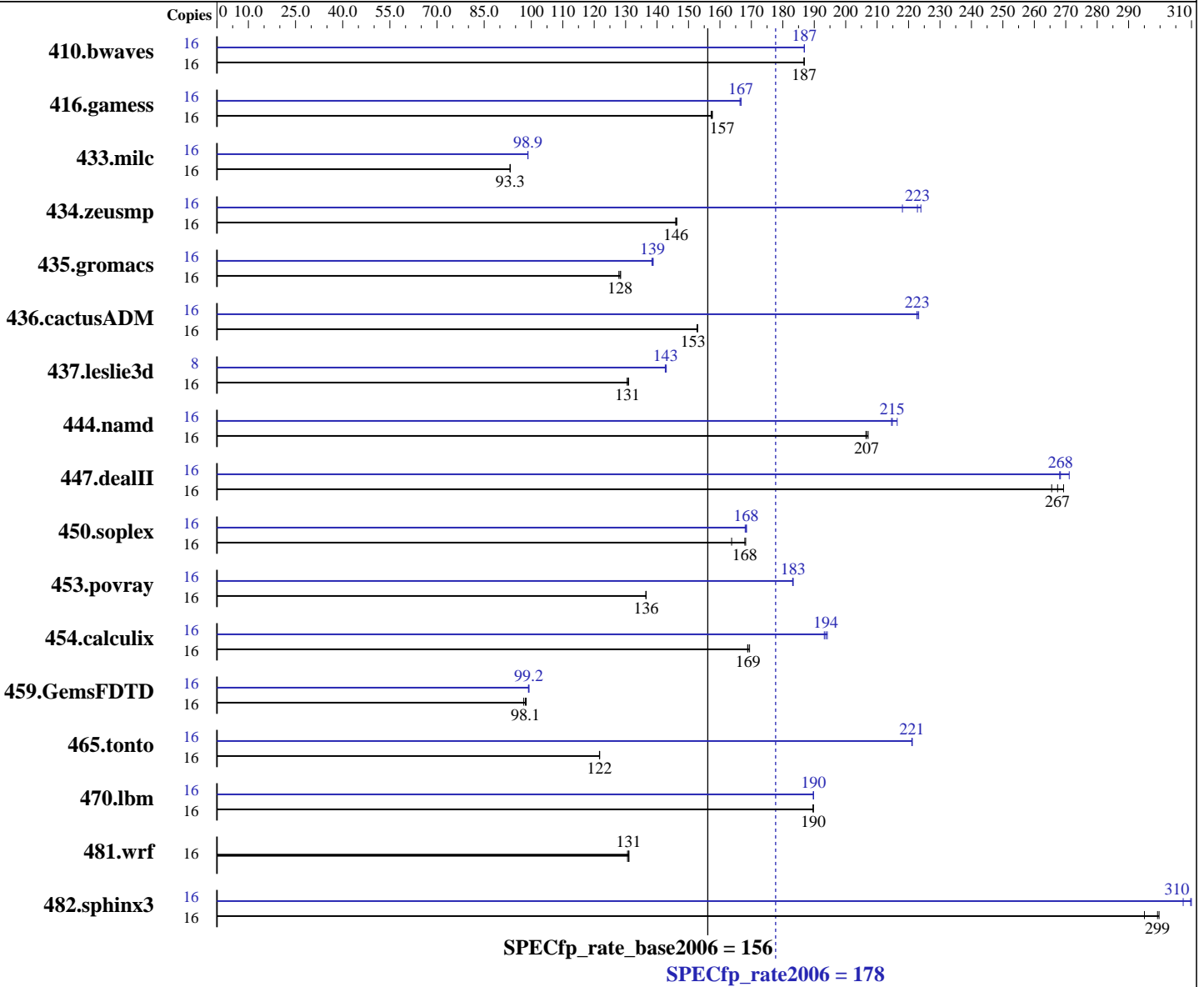
Test date: Jan-2008

Test sponsor: IBM Corporation

Hardware Availability: Feb-2008

Tested by: IBM Corporation

Software Availability: Feb-2008



Hardware

CPU Name: POWER6
 CPU Characteristics: 4200
 CPU MHz: Integrated
 FPU: Integrated
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4,6,8 cores
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per core

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Software

Operating System: IBM AIX V6.1 Updated to SP3
 Compiler: XL C/C++ Enterprise Edition V9 for AIX Updated with the Oct2007 PTF.
 XL Fortran Enterprise Edition V11.1 for AIX Updated with the Oct2007 PTF.
 Auto Parallel: No
 File System: AIX/JFS2
 System State: Multi-user
 Base Pointers: 32-bit

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L3 Cache: 32 MB I+D off chip per chip
Other Cache: None
Memory: 64 GB (32x2 GB) DDR2 667 MHz
Disk Subsystem: 1x73 GB 1x146 GB SAS 15K RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: --

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	1164	187	1164	187	1164	187	16	1164	187	1164	187	1164	187
416.gamess	16	1988	158	1993	157	1990	157	16	1883	166	1879	167	1880	167
433.milc	16	1575	93.2	1575	93.3	1574	93.3	16	1485	98.9	1485	98.9	1485	98.9
434.zeusmp	16	997	146	997	146	995	146	16	653	223	668	218	650	224
435.gromacs	16	891	128	890	128	894	128	16	824	139	823	139	826	138
436.cactusADM	16	1251	153	1250	153	1252	153	16	857	223	859	223	858	223
437.leslie3d	16	1148	131	1152	131	1152	131	8	527	143	527	143	526	143
444.namd	16	621	207	619	207	622	206	16	597	215	593	216	598	215
447.dealII	16	680	269	689	266	684	267	16	682	268	683	268	675	271
450.soplex	16	815	164	795	168	793	168	16	792	168	794	168	793	168
453.povray	16	624	136	623	137	624	136	16	464	183	465	183	465	183
454.calculix	16	782	169	781	169	779	169	16	680	194	682	194	683	193
459.GemsFDTD	16	1725	98.4	1739	97.6	1730	98.1	16	1711	99.2	1711	99.2	1713	99.1
465.tonto	16	1293	122	1293	122	1294	122	16	712	221	712	221	712	221
470.lbm	16	1159	190	1159	190	1159	190	16	1158	190	1158	190	1159	190
481.wrf	16	1365	131	1364	131	1368	131	16	1365	131	1364	131	1368	131
482.sphinx3	16	1042	299	1057	295	1041	300	16	1007	310	1006	310	1015	307

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

General Notes

See flags file of details on following settings.

all ulimits set to unlimited.

Environment variables set before executing benchmarks:

MALLOCOPTIONS=pool

MEMORY_AFFINITY=MCM

XLFRTEOPTS=intrinths=1

System set to "Enhanced" mode when defining partition on HMC.

bindprocessor command used on submit to bind each copy to a unique processor.

2000 16M large pages defined with vmo command

Remote console disabled in /etc/inittab.

fdpr binary optimization tool used for:

410.bwaves 433.milc 435.gromacs 436.cactusADM

453.povray 470.lbm 482.sphinx3



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Base Compiler Invocation

C benchmarks:

/usr/vac/bin/xlc -qlanglvl=extc99

C++ benchmarks:

/usr/vacpp/bin/xlC

Fortran benchmarks:

/usr/bin/xlf95

Benchmarks using both Fortran and C:

/usr/vac/bin/xlc -qlanglvl=extc99 /usr/bin/xlf95

Base Portability Flags

410.bwaves: -qfixed

416.gamess: -qfixed

434.zeusmp: -qfixed

435.gromacs: -qfixed -qextname

436.cactusADM: -qfixed -qextname

437.leslie3d: -qfixed

454.calculix: -qfixed -qextname

481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE

482.sphinx3: -qchars=signed

Base Optimization Flags

C benchmarks:

-bmaxdata:0x40000000 -O5 -qlargepage -D_ILS_MACROS -blpdata

C++ benchmarks:

-bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS -qrtti=all

-D__IBM_FAST_VECTOR -blpdata

Fortran benchmarks:

-bmaxdata:0x60000000 -O5 -qlargepage -qsmallstack=dynlenonheap

-qalias=nostd -blpdata

Benchmarks using both Fortran and C:

-bmaxdata:0x60000000 -O5 -qlargepage -D_ILS_MACROS

-qsmallstack=dynlenonheap -qalias=nostd -blpdata



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Base Other Flags

C benchmarks:

-qipa=noobject -qipa=threads -qsuppress=1500-036

C++ benchmarks:

-qipa=noobject -qipa=threads -qsuppress=1500-036

Fortran benchmarks:

-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036

Benchmarks using both Fortran and C:

-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036

Peak Compiler Invocation

C benchmarks:

/usr/vac/bin/xlc -qlanglvl=extc99

C++ benchmarks:

/usr/vacpp/bin/xlC

Fortran benchmarks:

/usr/bin/xlf95

Benchmarks using both Fortran and C:

/usr/vac/bin/xlc -qlanglvl=extc99 /usr/bin/xlf95

Peak Portability Flags

410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname
437.leslie3d: -qfixed
454.calculix: -qfixed -qextname
481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Peak Optimization Flags

C benchmarks:

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Peak Optimization Flags (Continued)

433.milc: -bmaxdata:0x40000000 -O5 -qlargepage -D_ILS_MACROS
-qalign=natural -qfdpr -blpdata

470.lbm: -O5 -qlargepage -D_ILS_MACROS -qfdpr -q64 -blpdata

482.sphinx3: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qlargepage -qenablevmx
-qvecnv1 -D_ILS_MACROS -qfdpr -blpdata

C++ benchmarks:

444.namd: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -D_ILS_MACROS

447.dealIII: -bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS
-qrtti=all -D__IBM_FAST_VECTOR -blpdata

450.soplex: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O4
-qlargepage -qenablevmx -qvecnv1 -qstrict -D_ILS_MACROS
-blpdata

453.povray: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -D_ILS_MACROS -qalign=natural -qfdpr -blpdata

Fortran benchmarks:

410.bwaves: -bmaxdata:0x50000000 -O5 -qlargepage -qenablevmx -qvecnv1
-qfdpr -qsmallstack=dynlenonheap -blpdata

416.gamess: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qalias=nostd

434.zeusmp: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3
-qarch=auto -qtune=auto -qlargepage -qenablevmx -qvecnv1
-qxl90=nosignedzero -blpdata

437.leslie3d: -O4 -qlargepage -q64 -blpdata

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -q64 -blpdata

465.tonto: -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qlargepage -blpdata

Benchmarks using both Fortran and C:

435.gromacs: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -qfdpr -D_ILS_MACROS -blpdata

436.cactusADM: -bmaxdata:0x60000000 -qpdf1(pass 1) -qpdf2(pass 2) -O2
-qarch=auto -qtune=auto -qlargepage -qenablevmx -qvecnv1
-qfdpr -qnostrict -D_ILS_MACROS -blpdata

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Peak Optimization Flags (Continued)

454.calculix: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qlargepage
-D_ILS_MACROS -blpdata

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:

-qipa=noobject -qipa=threads -qsuppress=1500-036

C++ benchmarks:

-qipa=noobject -qipa=threads -qsuppress=1500-036

Fortran benchmarks:

-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036

Benchmarks using both Fortran and C:

-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036

The flags file that was used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.05.html

You can also download the XML flags source by saving the following link:

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.05.xml

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Tested with SPEC CPU2006 v1.0.

Report generated on Tue Jul 22 15:57:27 2014 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 19 February 2008.