



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 80.8

IBM System p 520 (4.2 GHz, 4 core)

SPECfp_rate_base2006 = 71.4

CPU2006 license: 11

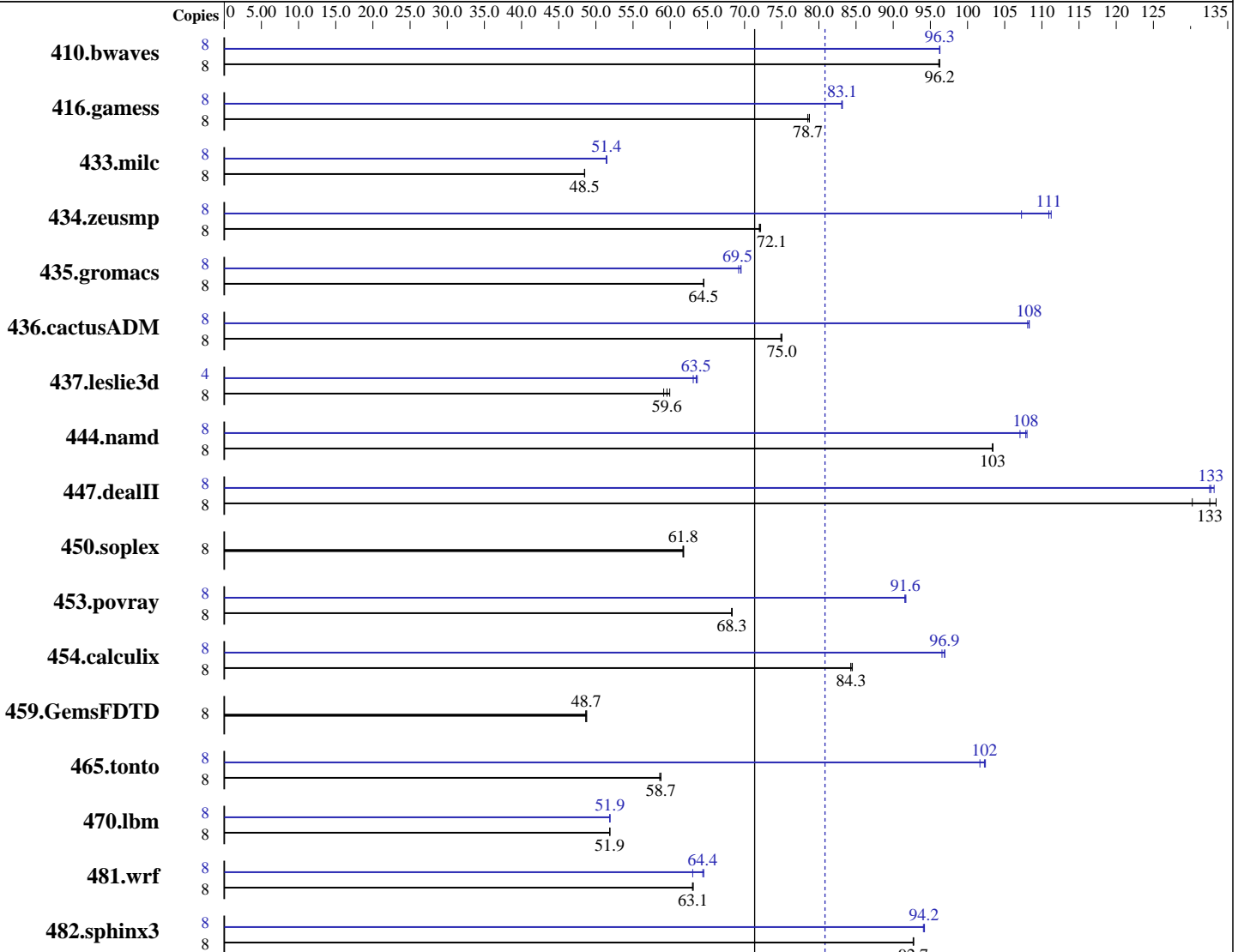
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jan-2008

Hardware Availability: Feb-2008

Software Availability: Feb-2008



SPECfp_rate_base2006 = 71.4

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Hardware

CPU Name: POWER6
 CPU Characteristics: 4200
 CPU MHz: Integrated
 FPU: 4 cores, 2 chips, 2 cores/chip, 2 threads/core
 CPU(s) enabled: 1,2,4 cores
 CPU(s) orderable: 64 KB I + 64 KB D on chip per core
 Primary Cache: 4 MB I+D on chip per core
 Secondary Cache:

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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: None
Other Cache: None
Memory: 32 GB (8x4 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	8	<u>1130</u>	<u>96.2</u>	1131	96.1	1129	96.3	8	1130	96.2	<u>1129</u>	<u>96.3</u>	1129	96.3
416.gamess	8	1990	78.7	<u>1990</u>	<u>78.7</u>	1996	78.5	8	1885	83.1	1883	83.2	<u>1885</u>	<u>83.1</u>
433.milc	8	<u>1515</u>	<u>48.5</u>	1515	48.5	1514	48.5	8	1429	51.4	<u>1428</u>	<u>51.4</u>	1427	51.5
434.zeusmp	8	1011	72.0	1009	72.2	<u>1010</u>	<u>72.1</u>	8	<u>656</u>	<u>111</u>	654	111	679	107
435.gromacs	8	<u>886</u>	<u>64.5</u>	885	64.5	886	64.5	8	825	69.2	821	69.5	<u>822</u>	<u>69.5</u>
436.cactusADM	8	<u>1275</u>	<u>75.0</u>	1277	74.9	1274	75.0	8	883	108	<u>883</u>	<u>108</u>	884	108
437.leslie3d	8	1255	59.9	1272	59.1	<u>1263</u>	<u>59.6</u>	4	591	63.6	596	63.1	<u>592</u>	<u>63.5</u>
444.namd	8	<u>620</u>	<u>103</u>	621	103	620	103	8	<u>595</u>	<u>108</u>	594	108	599	107
447.dealII	8	<u>690</u>	<u>133</u>	686	133	703	130	8	687	133	<u>690</u>	<u>133</u>	690	133
450.soplex	8	1081	61.7	<u>1080</u>	<u>61.8</u>	1079	61.8	8	1081	61.7	<u>1080</u>	<u>61.8</u>	1079	61.8
453.povray	8	623	68.3	<u>623</u>	<u>68.3</u>	623	68.3	8	<u>465</u>	<u>91.6</u>	465	91.6	464	91.7
454.calculix	8	781	84.5	783	84.3	<u>783</u>	<u>84.3</u>	8	<u>681</u>	<u>96.9</u>	683	96.6	681	96.9
459.GemsFDTD	8	<u>1743</u>	<u>48.7</u>	1740	48.8	1746	48.6	8	<u>1743</u>	<u>48.7</u>	1740	48.8	1746	48.6
465.tonto	8	1344	58.6	1340	58.7	<u>1340</u>	<u>58.7</u>	8	774	102	<u>770</u>	<u>102</u>	769	102
470.lbm	8	2119	51.9	2119	51.9	<u>2119</u>	<u>51.9</u>	8	2119	51.9	<u>2119</u>	<u>51.9</u>	2119	51.9
481.wrf	8	1419	63.0	1417	63.1	<u>1417</u>	<u>63.1</u>	8	1418	63.0	<u>1388</u>	<u>64.4</u>	1385	64.5
482.sphinx3	8	<u>1682</u>	<u>92.7</u>	1682	92.7	1681	92.8	8	1658	94.1	<u>1656</u>	<u>94.2</u>	1655	94.2

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=intrinthds=1
System set to "Enhanced" mode when defining partition on HMC.
bindprocessor command used on submit to bind each copy to a unique processor.
1000 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: basepeak = yes

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
-qxf90=nosignedzero -blpdata

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

459.GemsFDTD: basepeak = yes

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

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

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Peak Optimization Flags (Continued)

481.wrf: -bmaxdata:0x30000000 -05 -qlargepage -qalias=nostd
-D_ILS_MACROS -blpdata

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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