



SPEC[®] CFP2006 Result

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IBM Corporation

SPECfp[®]_rate2006 = 154

IBM System p 550 (3.5 GHz, 8 core)

SPECfp_rate_base2006 = 135

CPU2006 license: 11

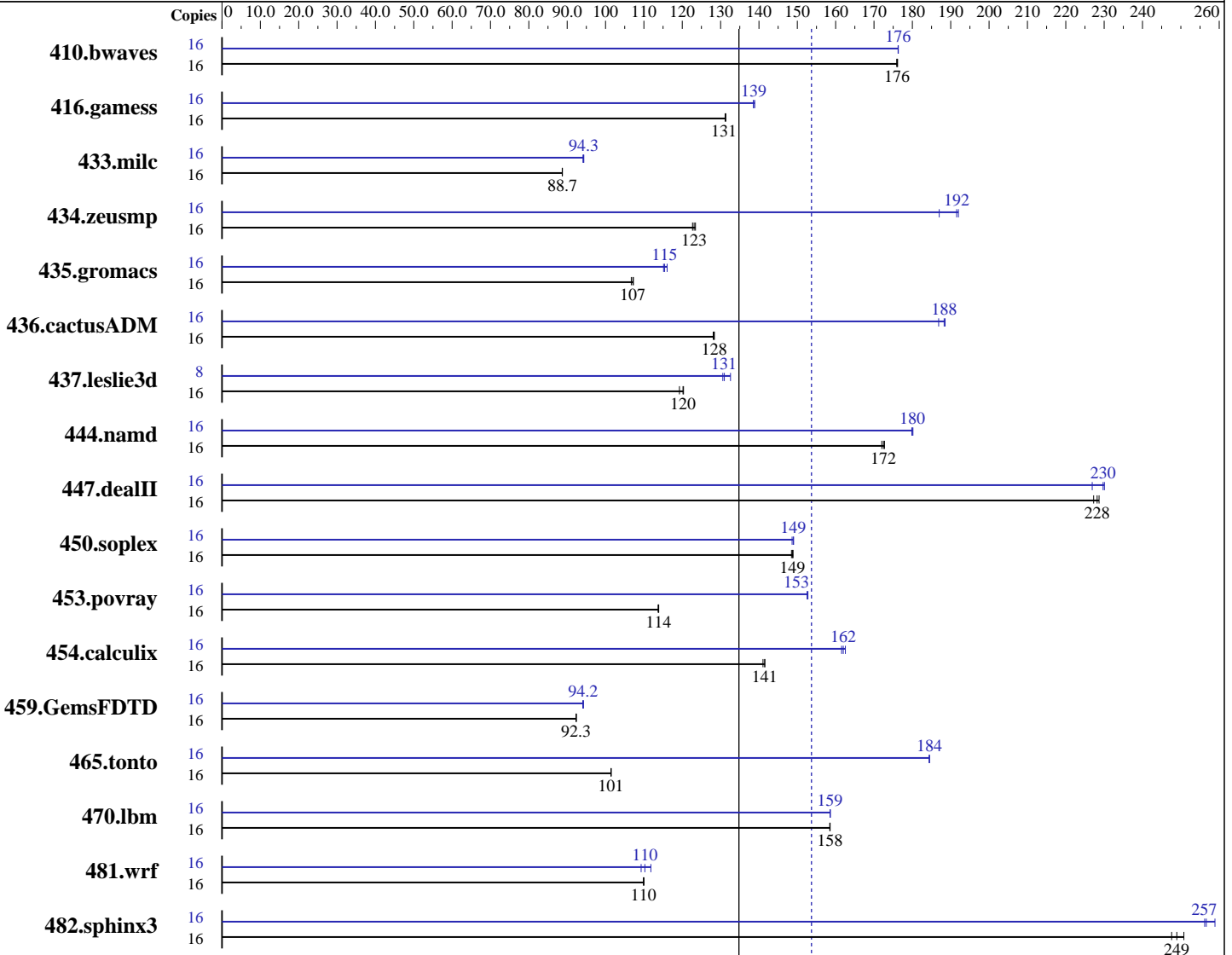
Test date: Jan-2008

Test sponsor: IBM Corporation

Hardware Availability: Feb-2008

Tested by: IBM Corporation

Software Availability: Feb-2008



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Hardware

CPU Name: POWER6
 CPU Characteristics: 3500
 CPU MHz: Integrated
 FPU: 8 cores, 4 chips, 2 cores/chip, 2 threads/core
 CPU(s) enabled: 2,4,6,8 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: 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	1234	176	<u>1235</u>	<u>176</u>	1236	176	16	1233	176	<u>1233</u>	<u>176</u>	1234	176
416.gamess	16	<u>2386</u>	<u>131</u>	2386	131	2388	131	16	<u>2260</u>	<u>139</u>	2255	139	2261	139
433.milc	16	1655	88.8	<u>1655</u>	<u>88.7</u>	1656	88.7	16	1557	94.3	<u>1558</u>	<u>94.3</u>	1561	94.1
434.zeusmp	16	1187	123	<u>1183</u>	<u>123</u>	1179	123	16	758	192	<u>760</u>	<u>192</u>	779	187
435.gromacs	16	1065	107	1071	107	<u>1066</u>	<u>107</u>	16	<u>990</u>	<u>115</u>	992	115	984	116
436.cactusADM	16	1490	128	1493	128	<u>1490</u>	<u>128</u>	16	1014	189	1023	187	<u>1015</u>	<u>188</u>
437.leslie3d	16	<u>1251</u>	<u>120</u>	1250	120	1261	119	8	<u>574</u>	<u>131</u>	567	133	576	131
444.namd	16	743	173	<u>744</u>	<u>172</u>	746	172	16	713	180	712	180	<u>713</u>	<u>180</u>
447.dealII	16	<u>802</u>	<u>228</u>	805	227	800	229	16	<u>797</u>	<u>230</u>	796	230	807	227
450.soplex	16	<u>897</u>	<u>149</u>	896	149	899	148	16	895	149	898	149	<u>896</u>	<u>149</u>
453.povray	16	<u>748</u>	<u>114</u>	748	114	749	114	16	557	153	<u>558</u>	<u>153</u>	558	153
454.calculix	16	936	141	933	142	<u>933</u>	<u>141</u>	16	812	163	<u>815</u>	<u>162</u>	817	162
459.GemsFDTD	16	1838	92.4	1839	92.3	<u>1838</u>	<u>92.3</u>	16	<u>1803</u>	<u>94.2</u>	1805	94.1	1801	94.2
465.tonto	16	1552	101	<u>1552</u>	<u>101</u>	1552	101	16	854	184	853	184	<u>854</u>	<u>184</u>
470.lbm	16	1386	159	<u>1387</u>	<u>158</u>	1387	158	16	1387	159	1386	159	<u>1387</u>	<u>159</u>
481.wrf	16	<u>1626</u>	<u>110</u>	1626	110	1625	110	16	1635	109	<u>1621</u>	<u>110</u>	1598	112
482.sphinx3	16	1259	248	1243	251	<u>1253</u>	<u>249</u>	16	1205	259	<u>1215</u>	<u>257</u>	1217	256

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: -bmaxdata:0x30000000 -O5 -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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