SPEC® CFP2006 Result

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IBM Corporation

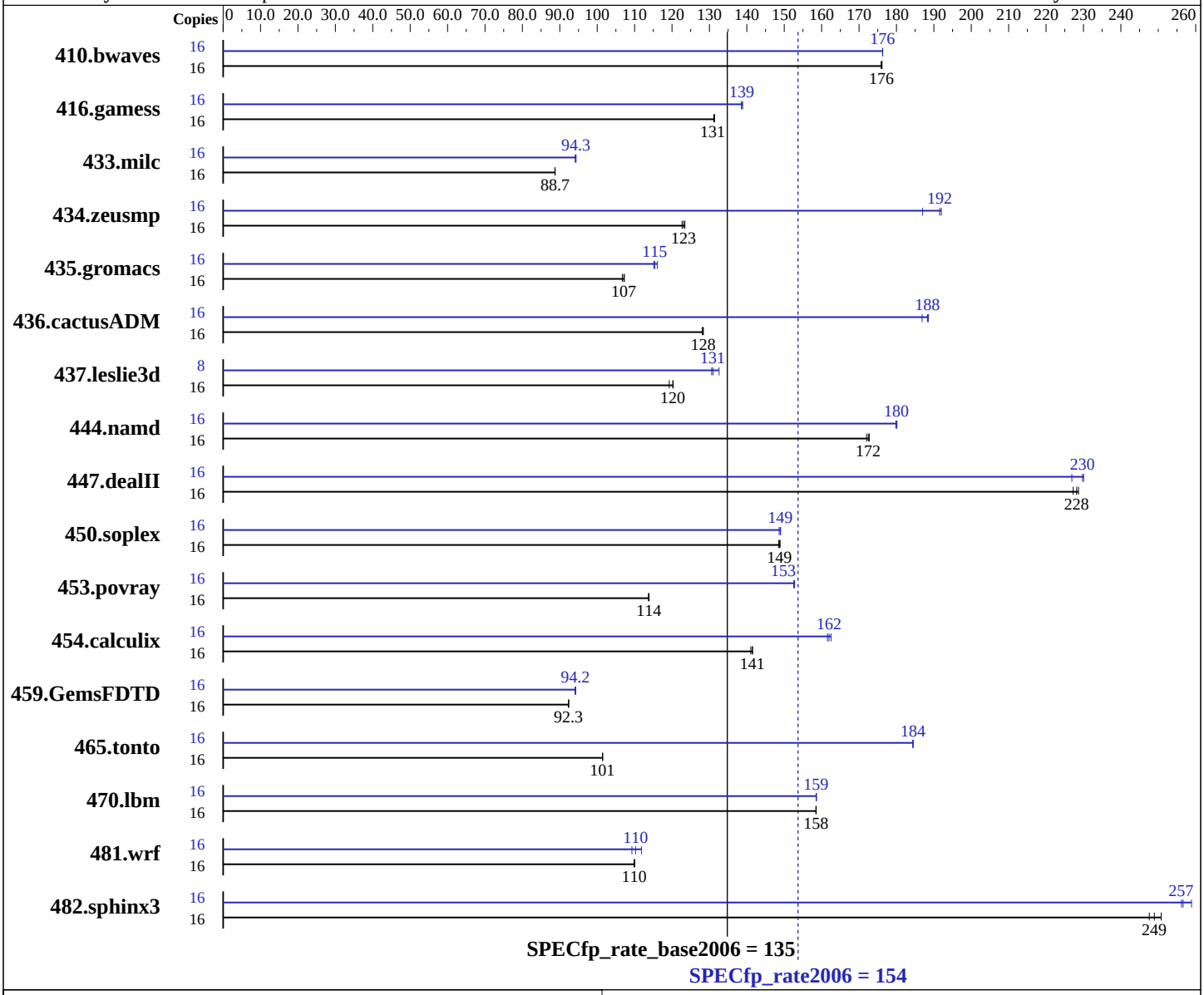
IBM System p 550 (3.5 GHz, 8 core)

SPECfp®_rate2006 = 154

SPECfp_rate_base2006 = 135

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

Test date: Jan-2008
Hardware Availability: Feb-2008
Software Availability: Feb-2008



Hardware

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

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
```

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:

Continued on next page

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 -qvecnvol -D_ILS_MACROS -qfdpr -blpdata

C++ benchmarks:

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

447.dealII: -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 -qvecnvol -qstrict -D_ILS_MACROS -blpdata

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

Fortran benchmarks:

410.bwaves: -bmaxdata:0x50000000 -O5 -qlargepage -qenablevmx -qvecnvol -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 -qvecnvol -qxlf90=nosignedzero -blpdata

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

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -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 -qvecnvol -qfdpr -D_ILS_MACROS -blpdata

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

Continued on next page

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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