SPEC® CFP2006 Result

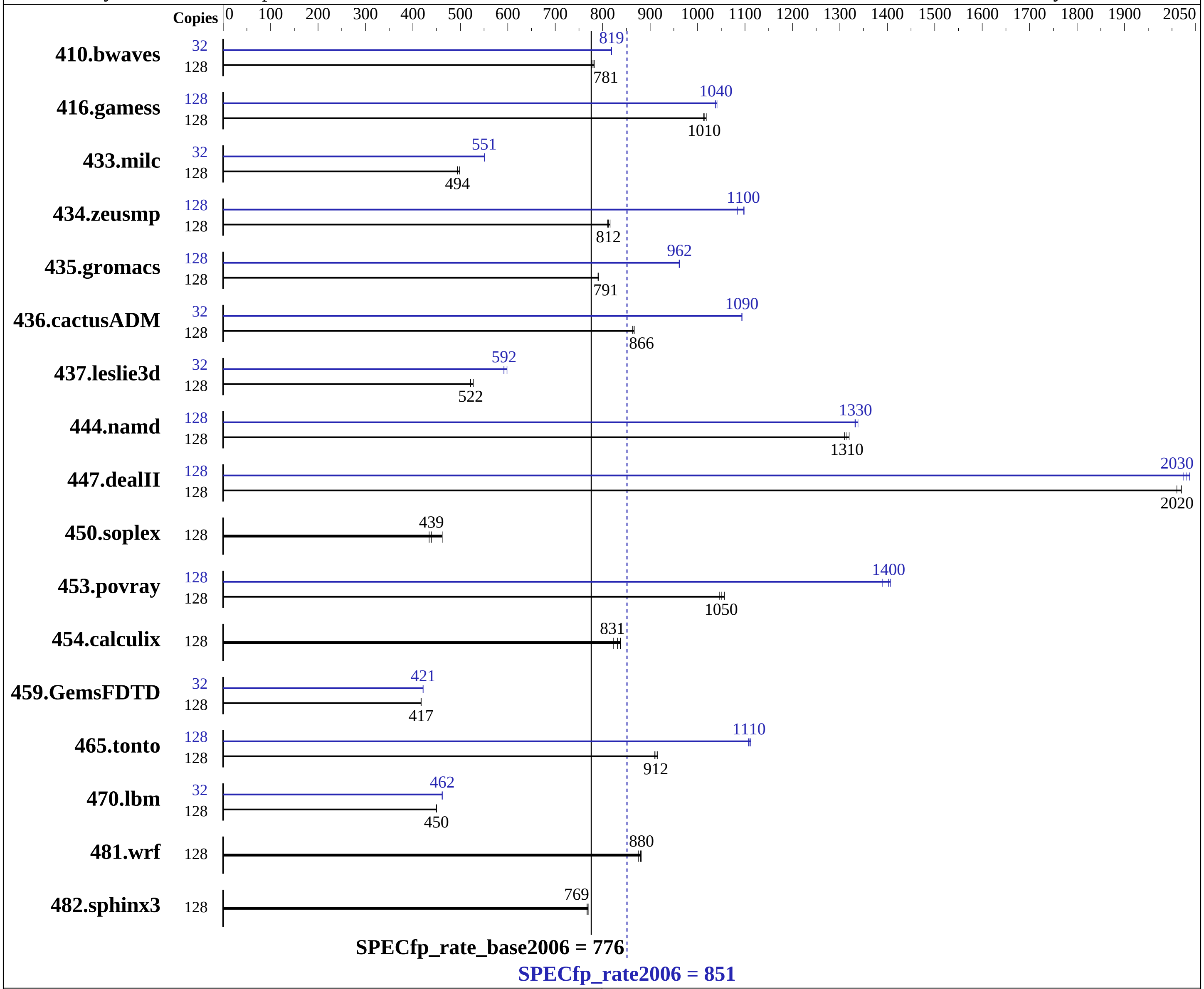
IBM Corporation

IBM Power 750 Express (3.55 GHz, 32 core)

SPECfp®_rate2006 = 851

SPECfp_rate_base2006 = 776

CPU2006 license: 11		**Test date:**	Jan-2010
Test sponsor:	IBM Corporation	**Hardware Availability:**	Feb-2010
Tested by:	IBM Corporation	**Software Availability:**	Feb-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.86 GHz
CPU MHz:	3550
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	8,16,24,32 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

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Software

Operating System:	IBM AIX V6.1 with the 6100-04 Technology Level and Service Pack 2
Compiler:	XL C/C++ Enterprise Edition V10.1.0.5 for AIX XL Fortran Enterprise Edition V12.1.0.6 for AIX
Auto Parallel:	No
File System:	AIX/JFS2
System State:	Multi-user
Base Pointers:	32-bit
Peak Pointers:	32/64-bit

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Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	4 MB I+D on chip per core
Other Cache:	None
Memory:	256 GB (32x8 GB) DDR3 1066 MHz
Disk Subsystem:	8x146.8 GB SAS SFF 15K RPM
Other Hardware:	None

Other Software: None

Results Table

	Base							Peak						
Benchmark	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	128	2237	778	2224	782	**2226**	**781**	32	**531**	**819**	532	818	531	819
416.gamess	128	2474	1010	**2471**	**1010**	2461	1020	128	**2413**	**1040**	2407	1040	2416	1040
433.milc	128	2357	498	2381	494	**2379**	**494**	32	534	550	**534**	**551**	534	551
434.zeusmp	128	1437	810	**1434**	**812**	1428	816	128	1074	1080	1061	1100	**1062**	**1100**
435.gromacs	128	1157	790	**1155**	**791**	1154	792	128	950	962	951	961	**950**	**962**
436.cactusADM	128	1765	867	**1766**	**866**	1772	863	32	350	1090	350	1090	**350**	**1090**
437.leslie3d	128	2282	527	2309	521	**2306**	**522**	32	503	598	**508**	**592**	508	592
444.namd	128	778	1320	**781**	**1310**	784	1310	128	**770**	**1330**	767	1340	771	1330
447.dealII	128	728	2010	**725**	**2020**	725	2020	128	724	2020	**721**	**2030**	719	2040
450.soplex	128	2312	462	2458	434	**2431**	**439**	128	2312	462	2458	434	**2431**	**439**
453.povray	128	**649**	**1050**	645	1060	651	1050	128	484	1410	**485**	**1400**	490	1390
454.calculix	128	**1270**	**831**	1284	822	1261	838	128	**1270**	**831**	1284	822	1261	838
459.GemsFDTD	128	**3255**	**417**	3257	417	3254	417	32	806	421	**806**	**421**	806	421
465.tonto	128	**1381**	**912**	1386	909	1375	916	128	**1136**	**1110**	1137	1110	1133	1110
470.lbm	128	3910	450	**3911**	**450**	3914	449	32	**952**	**462**	952	462	953	461
481.wrf	128	1634	875	1622	881	**1625**	**880**	128	1634	875	1622	881	**1625**	**880**
482.sphinx3	128	**3245**	**769**	3253	767	3242	769	128	**3245**	**769**	3253	767	3242	769

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

Peak Tuning Notes

```
fdpr binary optimization tool used for 410.bwaves
 with options -O3 -vrox -pbsi -A 64
fdpr binary optimization tool used for 433.milc
 with options -O4 -vrox -pbsi
fdpr binary optimization tool used for 434.zeusmp
 with options -O3 -vrox -sdp 9
fdpr binary optimization tool used for 435.gromacs
 with options -O4 -vrox -pbsi
fdpr binary optimization tool used for 437.leslie3d
 with options -O4 -vrox -pbsi
fdpr binary optimization tool used for 450.soplex
 with options -O3 -vrox -sdp 9
fdpr binary optimization tool used for 453.povray
```

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Peak Tuning Notes (Continued)

```
  with options -O4 -vrox -pbsi
 fdpr binary optimization tool used for 454.calculix
  with options -O4 -vrox -pbsi
 fdpr binary optimization tool used for 459.GemsFDTD
  with options -O4 -vrox -pbsi
 fdpr binary optimization tool used for 470.lbm
  with options -O3 -vrox -sdp 9
 fdpr binary optimization tool used for 481.wrf
  with options -O4 -vrox -pbsi
 fdpr binary optimization tool used for 482.sphinx3
  with options -O4 -vrox -pbsi
```

Submit Notes

```
 The config file option 'submit' was used
 to assign benchmark copy to specific kernel thread using
 the "bindprocessor" command (see flags file for details).
```

Operating System Notes

```
 all ulimits set to unlimited.
 12800 16M large pages defined with vmo command
```

General Notes

```
Environment variables set by runspec before the start of the run:
MALLOCOPTIONS = "pool"
MEMORY_AFFINITY = "MCM"
XLFRTEOPTS = "intrinthds=1"

 See the flags file for details on settings.
```

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

C++ benchmarks:
-qipa=threads -qipa=noobject -qsuppress=1500-036

Fortran benchmarks:
-qipa=threads -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qsuppress=1500-036

Benchmarks using both Fortran and C:
-qipa=threads -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-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:

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

470.lbm: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qlargepage -q64 -D_ILS_MACROS -qfdpr -blpdata

482.sphinx3: basepeak = yes

C++ benchmarks:

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

447.dealII: -bmaxdata:0x50000000 -O5 -D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K

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Peak Optimization Flags (Continued)

450.soplex: basepeak = yes

453.povray: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -D_ILS_MACROS -qalign=natural -qfdpr -btextpsize:64K

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 -qlargepage -qalias=nostd -blpdata

434.zeusmp: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qlargepage -qenablevmx -qvecnvol -qxlf90=nosignedzero -qfdpr -blpdata

437.leslie3d: -O5 -qlargepage -qenablevmx -qvecnvol -qfdpr -blpdata

459.GemsFDTD: -O4 -qlargepage -q64 -qfdpr -blpdata

465.tonto: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -blpdata -btextpsize:64K

Benchmarks using both Fortran and C:

435.gromacs: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -D_ILS_MACROS -qfdpr

436.cactusADM: -bmaxdata:0x60000000 -qpdf1(pass 1) -qpdf2(pass 2) -O2 -qarch=auto -qtune=auto -qenablevmx -qvecnvol -D_ILS_MACROS -qfdpr -qnostrict -blpdata -btextpsize:64K

454.calculix: basepeak = yes

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:
-qipa=threads -qipa=noobject -qsuppress=1500-036

C++ benchmarks:
-qipa=threads -qipa=noobject -qsuppress=1500-036

Fortran benchmarks:
-qipa=threads -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036

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Peak Other Flags (Continued)

Benchmarks using both Fortran and C:

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-XL.20100303.html
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-XL.20100303.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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