SPEC® CFP2006 Result

IBM Corporation

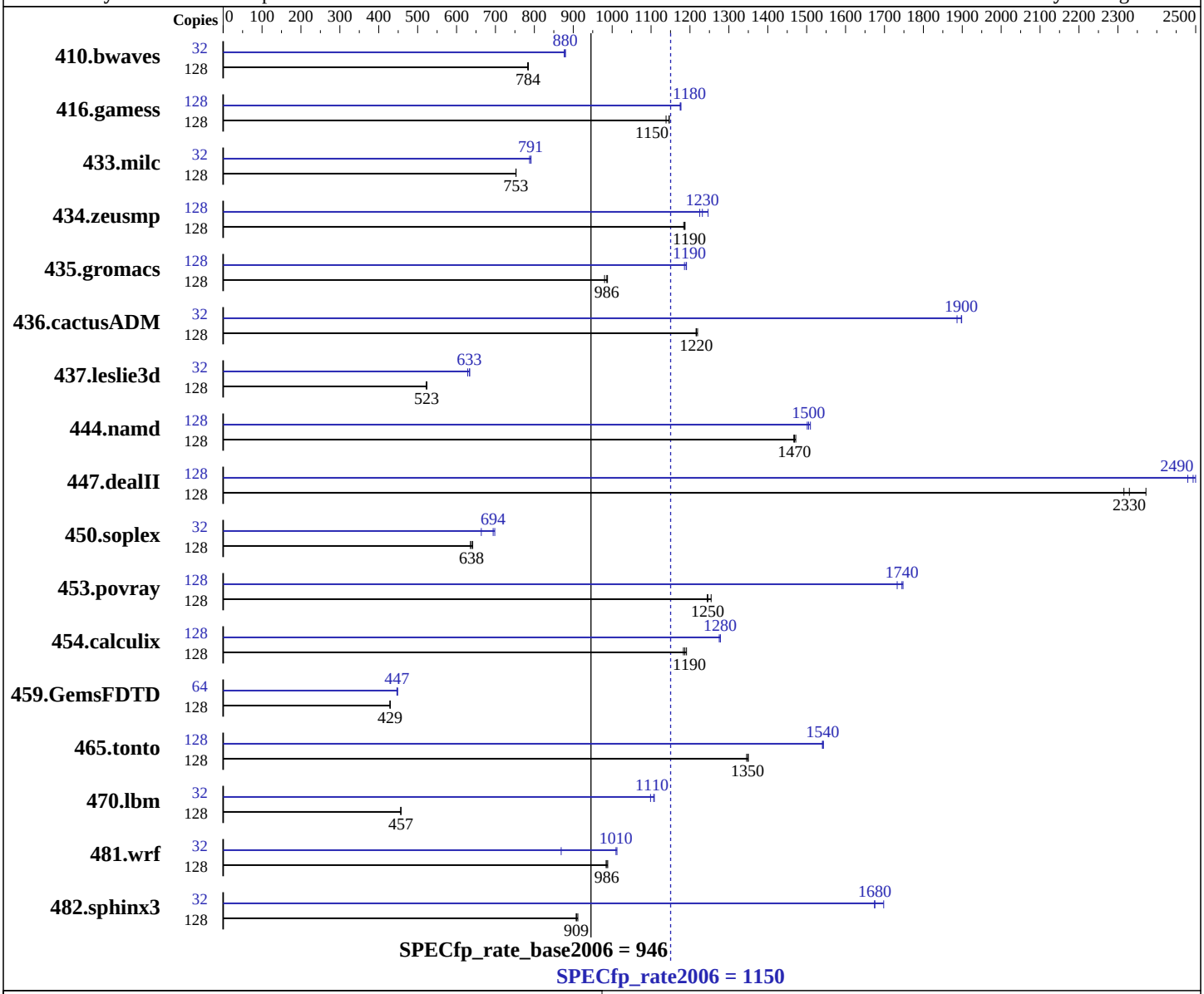
IBM Flex System p460 (4.1 GHz, 32 core)

SPECfp®_rate2006 = 1150

SPECfp_rate_base2006 = 946

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

Test date: Jul-2013
Hardware Availability: Sep-2013
Software Availability: Aug-2013



Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.340 GHz
CPU MHz:	4116
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	32 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

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Software

Operating System:	IBM AIX V7.1
Compiler:	C/C++: Version 12.1 of IBM XL C/C++ for AIX; Fortran: Version 14.1 of IBM XL Fortran for AIX
Auto Parallel:	No
File System:	AIX/JFS2
System State:	Multi-user
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	None

Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	10 MB I+D on chip per core
Other Cache:	None
Memory:	256 GB (32 x 8 GB) DDR3 1066 MHz
Disk Subsystem:	2 x 177 GB Raid0 SATA SSD 1.8"
Other Hardware:	None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	128	2217	785	**2218**	**784**	2222	783	32	**494**	**880**	496	877	494	880
416.gamess	128	2201	1140	**2186**	**1150**	2186	1150	128	**2132**	**1180**	2129	1180	2133	1180
433.milc	128	**1561**	**753**	1560	753	1561	753	32	**372**	**791**	371	791	373	788
434.zeusmp	128	981	1190	984	1180	**982**	**1190**	128	951	1230	**946**	**1230**	934	1250
435.gromacs	128	932	981	925	988	**927**	**986**	128	**768**	**1190**	767	1190	771	1190
436.cactusADM	128	1258	1220	**1257**	**1220**	1254	1220	32	203	1890	**202**	**1900**	201	1900
437.leslie3d	128	2297	524	2306	522	**2300**	**523**	32	478	629	475	634	**475**	**633**
444.namd	128	697	1470	**699**	**1470**	700	1470	128	**682**	**1500**	680	1510	684	1500
447.dealII	128	617	2370	**629**	**2330**	632	2320	128	591	2480	**587**	**2490**	586	2500
450.soplex	128	1680	636	**1672**	**638**	1664	642	32	402	664	382	698	**385**	**694**
453.povray	128	547	1240	543	1250	**547**	**1250**	128	390	1750	**390**	**1740**	393	1730
454.calculix	128	892	1180	887	1190	**890**	**1190**	128	826	1280	828	1280	**826**	**1280**
459.GemsFDTD	128	3168	429	3162	430	**3165**	**429**	64	**1518**	**447**	1514	449	1520	447
465.tonto	128	933	1350	936	1350	**934**	**1350**	128	816	1540	818	1540	**817**	**1540**
470.lbm	128	**3850**	**457**	3849	457	3850	457	32	400	1100	397	1110	**397**	**1110**
481.wrf	128	**1449**	**986**	1446	989	1452	984	32	411	869	353	1010	**354**	**1010**
482.sphinx3	128	2749	907	2736	912	**2745**	**909**	32	**372**	**1680**	367	1700	373	1670

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

Compiler Invocation Notes

```
C/C++ compiler updated to June 2013 PTF
      Version: 12.01.0000.0004
Fortran compiler updated to June 2013 PTF
      Version: 14.01.0000.0004
```

Peak Tuning Notes

```
416.gamess fdpr options: -O4 -cbpth -1 -sdp -1
433.milc fdpr options: -O4 -nodp
435.gromacs fdpr options: -O
436.cactusADM fdpr options: -O3 -lu -1 -nodp -sdp 9
437.leslie3d fdpr options: -O3
444.namd fdpr options: -O4 -nodp
```

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Peak Tuning Notes (Continued)

```
453.povray fdpr options: -O3 -cbpth -1
459.GemsFDTD fdpr options: -O3 -cbpth -1
465.tonto fdpr options: -O4
482.sphinx3 fdpr options: -O4 -rcctf 0 -sdp 9 -vrox
```

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

```
AIX updated to V7.1 TL 2 SP3

All ulimits set to unlimited.

12800 16M large pages defined with vmo command
```

Platform Notes

```
This Compute Node is housed in an
 "IBM Flex System Enterprise Chassis"
```

General Notes

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

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:
-qipa=threads -bmaxdata:0x40000000 -qlargepage -O5 -D_ILS_MACROS
-blpdata

C++ benchmarks:
-qipa=threads -bmaxdata:0x50000000 -qlargepage -O5 -qsimd -qvecnvol
-D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR
-D__IBM_FAST_SET_MAP_ITERATOR -qprefetch=dscr=0x42 -blpdata

Fortran benchmarks:
-qipa=threads -bmaxdata:0x60000000 -qlargepage -O5
-qsmallstack=dynlenonheap -qalias=nostd -blpdata

Benchmarks using both Fortran and C:
-qipa=threads -bmaxdata:0x60000000 -qlargepage -O5 -D_ILS_MACROS
-qsmallstack=dynlenonheap -qalias=nostd -blpdata

Base Other Flags

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

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

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

Benchmarks using both Fortran and C:
-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: -qipa=threads -bmaxdata:0x40000000 -O5 -qlargepage
-D_ILS_MACROS -qalign=natural -blpdata -btextpsize:64K

470.lbm: -qipa=threads -bmaxdata:0x30000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O5 -D_ILS_MACROS -blpdata -btextpsize:64K

482.sphinx3: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage
-D_ILS_MACROS -blpdata -btextpsize:64K

C++ benchmarks:

444.namd: -qipa=threads -O4 -q64 -qlargepage -qprefetch=dscr=0x42
-D_ILS_MACROS -D__IBM_FAST_VECTOR
-D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K

447.dealII: -qipa=threads -bmaxdata:0x50000000 -O5 -qsimd -qvecnvol
-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: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qprefetch=dscr=0x42 -D_ILS_MACROS -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K

453.povray: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd -qvecnvol -qlargepage -qprefetch=dscr=0x42 -D_ILS_MACROS -qalign=natural -blpdata -btextpsize:64K

Fortran benchmarks:

410.bwaves: -qipa=threads -bmaxdata:0x50000000 -O5 -qlargepage -qsmallstack=dynlenonheap -blpdata -btextpsize:64K

416.gamess: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr5 -qlargepage -qalias=nostd -blpdata -btextpsize:64K

434.zeusmp: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qlargepage -qxlf90=nosignedzero -blpdata -btextpsize:64K

437.leslie3d: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -blpdata -btextpsize:64K

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -q64 -qlargepage -blpdata -btextpsize:64K

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

Benchmarks using both Fortran and C:

435.gromacs: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -D_ILS_MACROS -blpdata -btextpsize:64K

436.cactusADM: -qipa=threads -bmaxdata:0x60000000 -O4 -qsimd -qvecnvol -D_ILS_MACROS -qnostrict -blpdata -btextpsize:64K

454.calculix: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd -qvecnvol -qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K

481.wrf: -qipa=threads -bmaxdata:0x30000000 -O5 -qsimd -qvecnvol -D_ILS_MACROS -blpdata -btextpsize:64K

Peak Other Flags

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

C++ benchmarks (except as noted below):
```
-qipa=noobject -qsuppress=1500-036
```

450.soplex: `-qsuppress=1500-036`

Fortran benchmarks (except as noted below):
```
-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qsuppress=1500-036
```

434.zeusmp: `-qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036`

Benchmarks using both Fortran and C (except as noted below):
```
-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qsuppress=1500-036
```

481.wrf: `-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.20130828.html
http://www.spec.org/cpu2006/flags/IBM-AIX.20130828.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-XL.20130828.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.20130828.xml

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

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