SPEC® CFP2006 Result

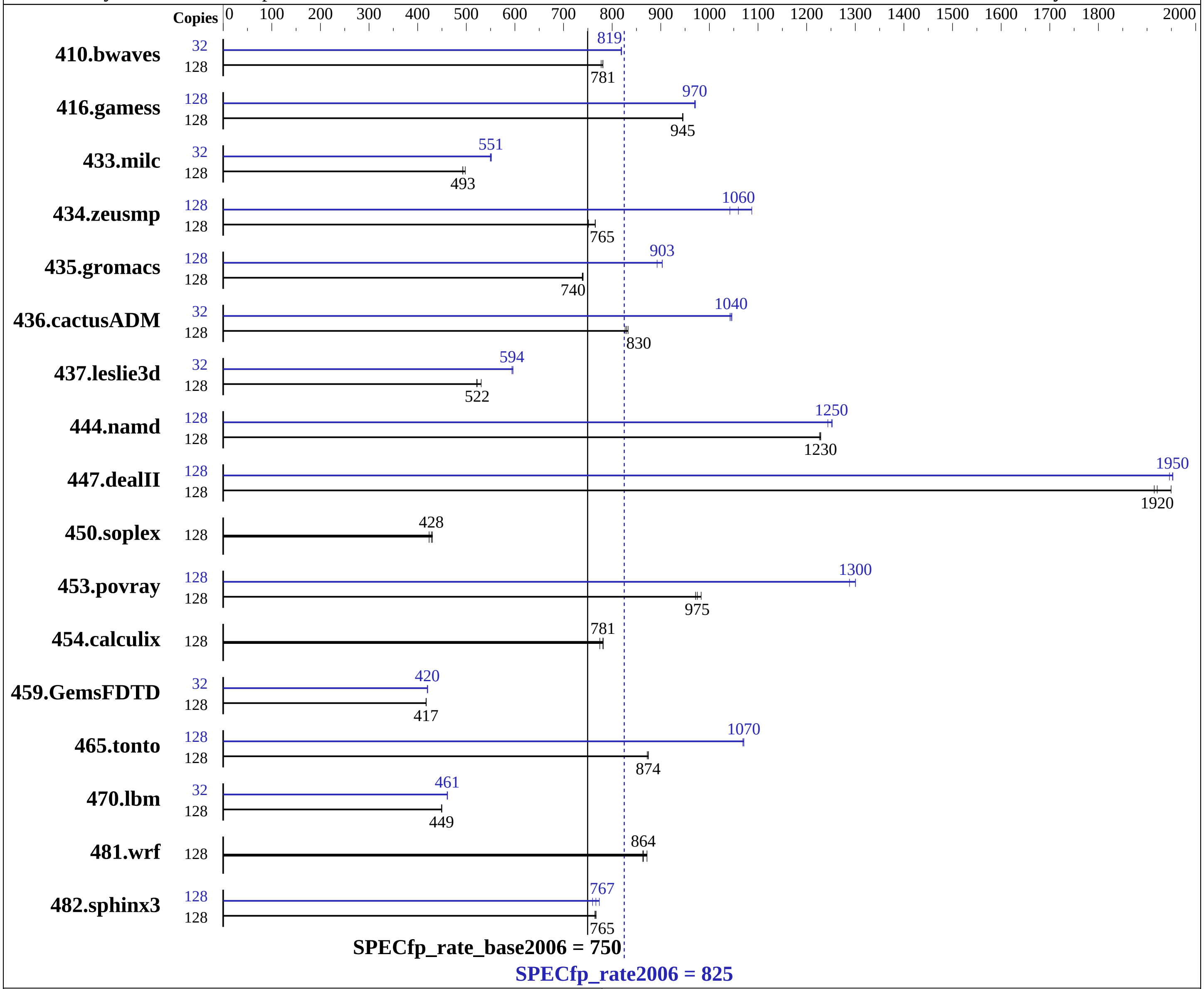
IBM Corporation

SPECfp®_rate2006 = 825

IBM Power 750 Express (3.3 GHz, 32 core)

SPECfp_rate_base2006 = 750

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 3.64 GHz
CPU MHz:	3300
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	6,8,12,16,18,24,32 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

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	128	2238	777	**2228**	**781**	2227	781	32	531	818	**531**	**819**	531	820
416.gamess	128	2653	945	2650	946	**2651**	**945**	128	2585	970	**2584**	**970**	2580	971
433.milc	128	2360	498	2384	493	**2383**	**493**	32	532	552	535	549	**534**	**551**
434.zeusmp	128	1550	751	1522	765	**1523**	**765**	128	1118	1040	**1099**	**1060**	1071	1090
435.gromacs	128	1234	740	**1236**	**740**	1238	738	128	**1012**	**903**	1012	903	1024	892
436.cactusADM	128	1850	827	**1843**	**830**	1837	833	32	**366**	**1040**	367	1040	365	1050
437.leslie3d	128	2267	531	**2303**	**522**	2307	522	32	506	594	**506**	**594**	505	596
444.namd	128	837	1230	**836**	**1230**	835	1230	128	819	1250	**821**	**1250**	825	1240
447.dealII	128	**762**	**1920**	765	1910	751	1950	128	750	1950	**750**	**1950**	752	1950
450.soplex	128	**2493**	**428**	2520	424	2480	430	128	**2493**	**428**	2520	424	2480	430
453.povray	128	701	971	**698**	**975**	693	983	128	529	1290	524	1300	**524**	**1300**
454.calculix	128	1363	775	1351	782	**1352**	**781**	128	1363	775	1351	782	**1352**	**781**
459.GemsFDTD	128	3251	418	3256	417	**3255**	**417**	32	809	420	**808**	**420**	807	421
465.tonto	128	1444	872	1440	875	**1441**	**874**	128	1179	1070	**1176**	**1070**	1176	1070
470.lbm	128	3909	450	**3915**	**449**	3916	449	32	953	462	**954**	**461**	955	461
481.wrf	128	**1654**	**864**	1640	872	1657	863	128	**1654**	**864**	1640	872	1657	863
482.sphinx3	128	**3260**	**765**	3263	765	3252	767	128	3225	774	**3254**	**767**	3284	760

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.
 The "IBM Power 750 Express (3.3 GHz)" and "IBM Power 755 (3.3 GHz)"
 are electronically equivalent. The results have been measured on the
 "IBM Power 755 (3.3 GHz)"
```

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: `-qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qlargepage -D_ILS_MACROS -qfdpr -blpdata`

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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