



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 851

IBM Power 750 Express (3.55 GHz, 32 core)

SPECfp_rate_base2006 = 776

CPU2006 license: 11

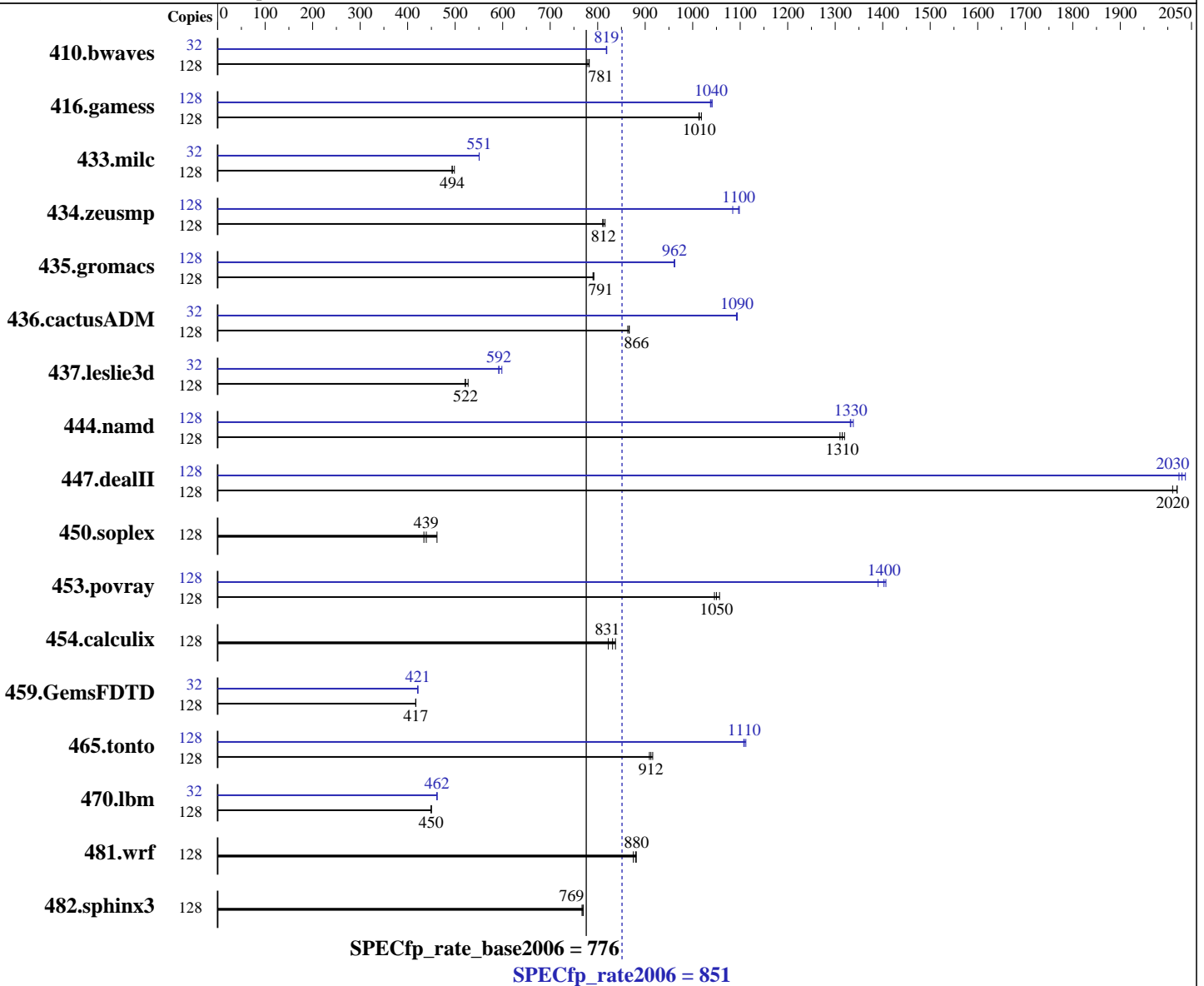
Test date: Jan-2010

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

Benchmark	Base							Peak						
	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"
XLFRTOPTS = "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
```



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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
```



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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 -qvecnvол
-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 -qvecnvол
-qxlf90=nosignedzero -qfdpr -blpdata

437.leslie3d: -O5 -qlargepage -qenablevmx -qvecnvол -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 -qvecnvол
-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>

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For other inquiries, please contact webmaster@spec.org.

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