



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 2110

IBM Power 595 (5.0 GHz, 64 core)

SPECfp_rate_base2006 = 1820

CPU2006 license: 11

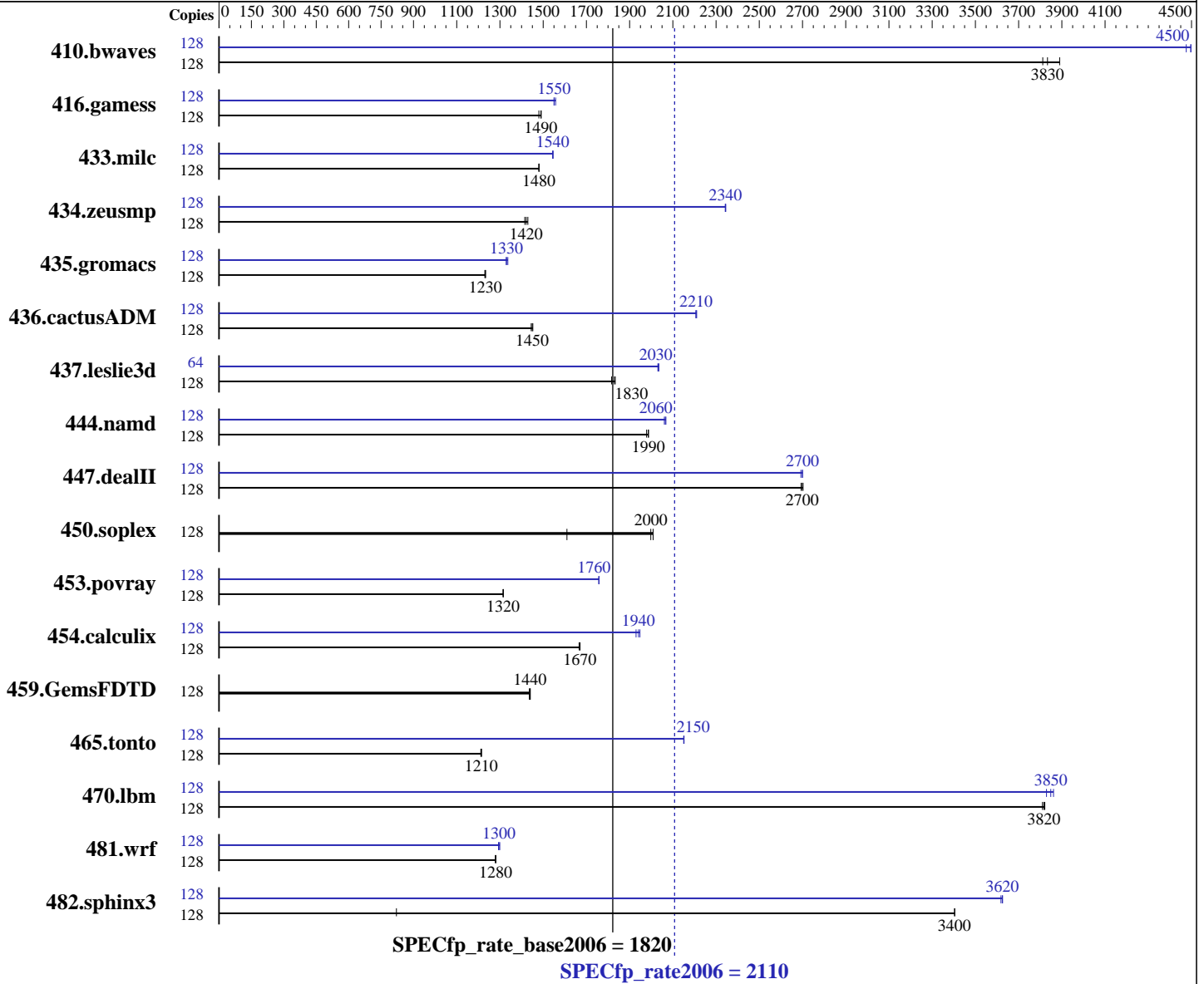
Test date: Mar-2008

Test sponsor: IBM Corporation

Hardware Availability: Jun-2008

Tested by: IBM Corporation

Software Availability: May-2008



Hardware

CPU Name: POWER6
 CPU Characteristics: 5000
 CPU MHz: Integrated
 FPU: 64 cores, 32 chips, 2 cores/chip, 2 threads/core
 CPU(s) enabled: 8,16,24,32,40,48,56,64 cores
 CPU(s) orderable: 64 KB I + 64 KB D on chip per core
 Primary Cache: 4 MB I+D on chip per core
 Secondary Cache:

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Software

Operating System: IBM AIX V6.1
 with the 6100-01 Technology Level
 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

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L3 Cache: 32 MB I+D off chip per chip
Other Cache: None
Memory: 512 GB (256x2 GB) DDR2 667 MHz
Disk Subsystem: 4x146 GB SCSI 15K RPM
Other Hardware: None

Base Pointers: 32-bit
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	128	447	3890	454	3830	456	3810	128	389	4480	387	4500	387	4500		
416.gamess	128	1682	1490	1681	1490	1693	1480	128	1609	1560	1616	1550	1616	1550		
433.milc	128	794	1480	794	1480	794	1480	128	760	1550	761	1540	761	1540		
434.zeusmp	128	823	1410	819	1420	815	1430	128	497	2340	497	2340	497	2340		
435.gromacs	128	741	1230	741	1230	743	1230	128	688	1330	687	1330	684	1340		
436.cactusADM	128	1053	1450	1059	1440	1055	1450	128	692	2210	693	2210	693	2210		
437.leslie3d	128	658	1830	662	1820	656	1830	64	296	2030	296	2040	296	2030		
444.namd	128	517	1990	517	1990	519	1980	128	496	2070	497	2060	498	2060		
447.dealII	128	543	2700	544	2690	542	2700	128	544	2690	542	2700	542	2700		
450.soplex	128	663	1610	534	2000	531	2010	128	663	1610	534	2000	531	2010		
453.povray	128	518	1320	518	1310	518	1320	128	387	1760	388	1760	387	1760		
454.calculix	128	632	1670	632	1670	634	1670	128	544	1940	542	1950	547	1930		
459.GemsFDTD	128	943	1440	946	1440	944	1440	128	943	1440	946	1440	944	1440		
465.tonto	128	1037	1210	1037	1210	1040	1210	128	585	2150	586	2150	585	2150		
470.lbm	128	461	3820	460	3820	462	3810	128	457	3850	455	3860	459	3830		
481.wrf	128	1118	1280	1116	1280	1117	1280	128	1106	1290	1100	1300	1103	1300		
482.sphinx3	128	733	3400	3039	821	733	3400	128	688	3620	688	3630	689	3620		

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.

Environment variables set before executing benchmarks:

MALLOCOPTIONS=pool

MEMORY_AFFINITY=MCM

XLFRTEOPTS=intrinths=1

System set to "Enhanced" mode when defining partition on HMC.

bindprocessor command used on submit to bind each copy to a unique processor.

12800 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



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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



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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:

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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
-qvecnv1 -D_ILS_MACROS -qfdpr -blpdata

C++ benchmarks:

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

447.dealIII: -bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS
-qrtti=all -D__IBM_FAST_VECTOR -blpdata

450.soplex: basepeak = yes

453.povray: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx
-qvecnv1 -D_ILS_MACROS -qalign=natural -qfdpr -blpdata

Fortran benchmarks:

410.bwaves: -bmaxdata:0x50000000 -O5 -qlargepage -qenablevmx -qvecnv1
-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 -qvecnv1
-qxf90=nosignedzero -blpdata

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

459.GemsFDTD: basepeak = yes

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
-qvecnv1 -qfdpr -D_ILS_MACROS -blpdata

436.cactusADM: -bmaxdata:0x60000000 -qpdf1(pass 1) -qpdf2(pass 2) -O2
-qarch=auto -qtune=auto -qlargepage -qenablevmx -qvecnv1
-qfdpr -qnostrict -D_ILS_MACROS -blpdata

454.calculix: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qlargepage
-D_ILS_MACROS -blpdata

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Peak Optimization Flags (Continued)

```
481.wrf: -bmaxdata:0x30000000 -05 -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/IBM-AIX-XL.20090714.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/IBM-AIX-XL.20090714.xml>

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

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