



SPEC® CFP2006 Result

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Bull SAS

SPECfp®_rate2006 = 420

Bull Escala PL1660 (4700 MHz, 16 Cores)

SPECfp_rate_base2006 = 375

CPU2006 license: 20

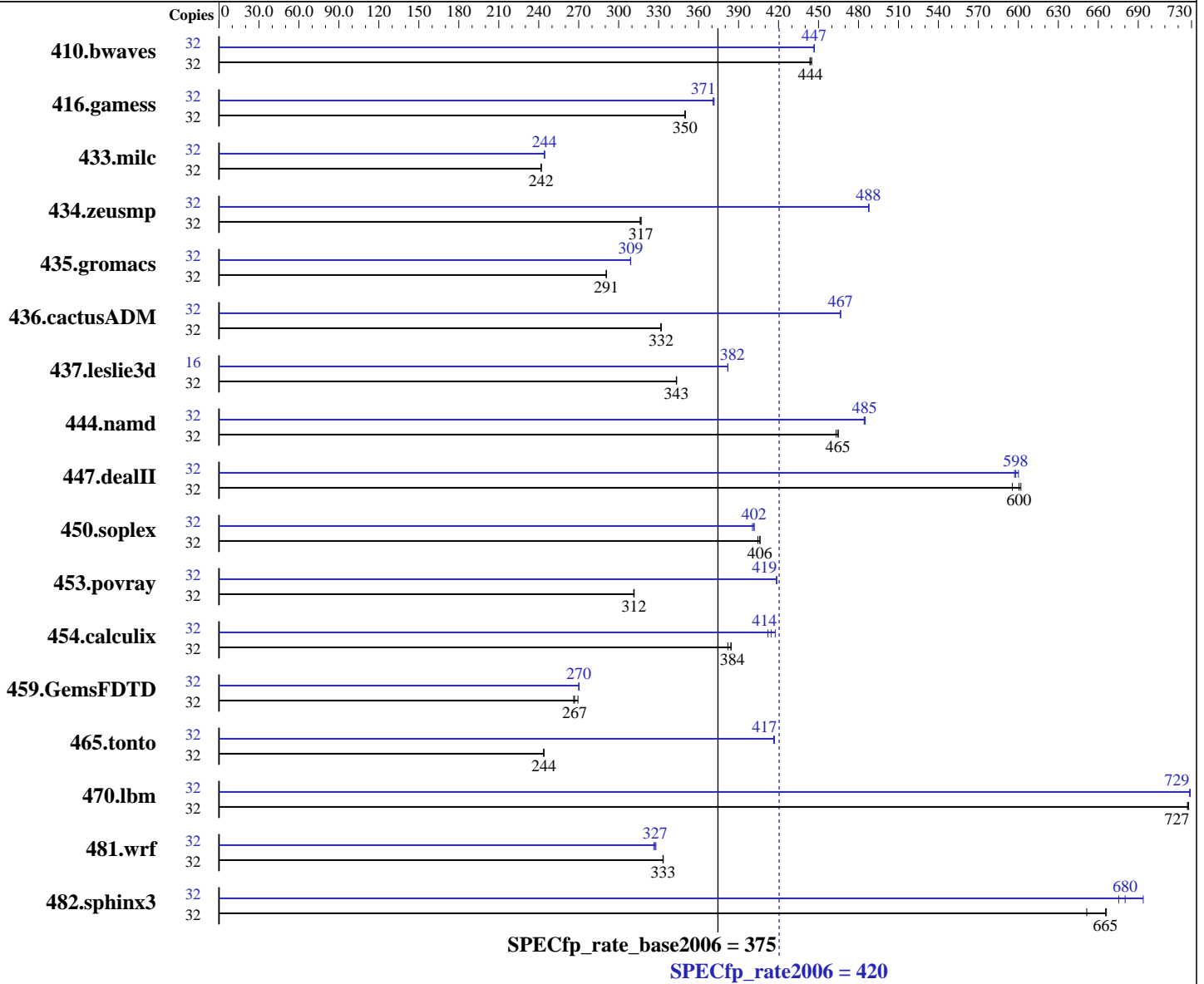
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Nov-2007

Hardware Availability: Oct-2007

Software Availability: Aug-2007



Hardware

CPU Name: POWER6
 CPU Characteristics: 4700
 CPU MHz: Integrated
 FPU: 16 cores, 8 chips, 2 cores/chip, 2 threads/core
 CPU(s) enabled: 2,4,8,12,16 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: AIX 5L V5.3
 Compiler: XL C/C++ Enterprise Edition Version 9.0 for AIX + Aug07 PTF
 XL Fortran Enterprise Edition Version 11.1 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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L3 Cache: 32 MB I+D off chip per chip
Other Cache: None
Memory: 128 GB (16x8GB) DDR2 667 MHZ
Disk Subsystem: 2x73 GB SAS, 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	32	977	445	<u>979</u>	<u>444</u>	980	444	32	974	447	973	447	<u>973</u>	<u>447</u>
416.gamess	32	1791	350	<u>1791</u>	<u>350</u>	1790	350	32	1689	371	1686	372	<u>1689</u>	<u>371</u>
433.milc	32	1215	242	<u>1215</u>	<u>242</u>	1215	242	32	<u>1202</u>	<u>244</u>	1202	244	1202	244
434.zeusmp	32	921	316	<u>919</u>	<u>317</u>	919	317	32	597	488	<u>597</u>	<u>488</u>	597	488
435.gromacs	32	<u>786</u>	<u>291</u>	786	291	786	291	32	739	309	<u>739</u>	<u>309</u>	740	309
436.cactusADM	32	<u>1152</u>	<u>332</u>	1152	332	1153	332	32	820	467	<u>820</u>	<u>467</u>	820	467
437.leslie3d	32	<u>876</u>	<u>343</u>	876	344	876	343	16	394	382	394	382	<u>394</u>	<u>382</u>
444.namd	32	<u>552</u>	<u>465</u>	554	463	552	465	32	530	484	529	485	<u>530</u>	<u>485</u>
447.dealII	32	<u>610</u>	<u>600</u>	608	602	615	596	32	<u>612</u>	<u>598</u>	613	597	610	600
450.soplex	32	660	405	<u>657</u>	<u>406</u>	657	406	32	666	400	<u>664</u>	<u>402</u>	664	402
453.povray	32	<u>546</u>	<u>312</u>	546	312	547	311	32	<u>407</u>	<u>419</u>	407	419	407	418
454.calculix	32	691	382	<u>687</u>	<u>384</u>	687	384	32	632	418	<u>637</u>	<u>414</u>	641	412
459.GemsFDTD	32	1275	266	1260	269	<u>1272</u>	<u>267</u>	32	1257	270	<u>1257</u>	<u>270</u>	1257	270
465.tonto	32	<u>1292</u>	<u>244</u>	1291	244	1292	244	32	<u>755</u>	<u>417</u>	755	417	756	416
470.lbm	32	604	728	605	727	<u>604</u>	<u>727</u>	32	603	729	<u>603</u>	<u>729</u>	603	729
481.wrf	32	1073	333	1072	334	<u>1072</u>	<u>333</u>	32	1090	328	<u>1092</u>	<u>327</u>	1095	326
482.sphinx3	32	958	651	<u>937</u>	<u>665</u>	936	666	32	<u>917</u>	<u>680</u>	923	675	899	694

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

Operating System Notes

AIX 5.3 Updated with the 5300-06 Technology Level
ulimits set to unlimited

Environment variables set before executing benchmarks:

```
MALLOCOPTIONS=pool
MEMORY_AFFINITY=MCM
XLFRTIOPTS=intrinthds=1
```

System set to "Enhanced" mode when defining partition on HMC
bindprocessor command used on submit to bind each copy to a
unique processor.

Large page mode was set as follows:

```
vmo -r -o lpgg_regions=6144 -o lpgg_size=16777216
```



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General Notes

fdpr binary optimization tool used for
410.bwaves 434.zeusmp 453.povray 470.lbm 482.sphinx3

Base Compiler Invocation

C benchmarks:
/usr/vac/bin/xlc

C++ benchmarks:
/usr/vacpp/bin/xlC

Fortran benchmarks:
/usr/bin/xlf95

Benchmarks using both Fortran and C:
/usr/vac/bin/xlc /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:
-qlanglvl=extc99 -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:
-qlanglvl=extc99 -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

C++ benchmarks:

/usr/vacpp/bin/xlC

Fortran benchmarks:

/usr/bin/xlf95

Benchmarks using both Fortran and C:

/usr/vac/bin/xlc /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: -qlanglvl=extc99 -bmaxdata:0x40000000 -O5 -qlargepage
-D_ILS_MACROS -qalign=natural -blpdata

470.lbm: -qlanglvl=extc99 -O5 -qlargepage -D_ILS_MACROS -q64
-blpdata

482.sphinx3: -qlanglvl=extc99 -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qlargepage -qenablevmx -qvecnvml -D_ILS_MACROS -blpdata

C++ benchmarks:

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

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

450.soplex: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qlargepage -qstrict -D_ILS_MACROS -blpdata

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

Fortran benchmarks:

410.bwaves: -bmaxdata:0x50000000 -O5 -qlargepage -qenablevmx -qvecnvml
-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) -O5
-qlargepage -qenablevmx -qvecnvml -qxlf90=nosignedzero
-blpdata

437.leslie3d: -O5 -qlargepage -q64 -blpdata

459.GemsFDTD: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qlargepage -qenablevmx -qvecnvml -blpdata

465.tonto: -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qlargepage -blpdata

Benchmarks using both Fortran and C:

435.gromacs: -qlanglvl=extc99 -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qlargepage -qenablevmx -qvecnvml -D_ILS_MACROS -blpdata

436.cactusADM: -qlanglvl=extc99 -bmaxdata:0x60000000 -D_ILS_MACROS
-blpdata

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Peak Optimization Flags (Continued)

454.calculix: -qlanglvl=extc99 -O4 -qlargepage -q64 -D_ILS_MACROS
-blpdata

481.wrf: -qlanglvl=extc99 -bmaxdata:0x30000000 -O5 -qlargepage
-D_ILS_MACROS -qalias=nostd -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/CPU2006_flags.20090714.08.html

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

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.08.xml

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