SPEC® CFP2006 Result

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Bull SAS

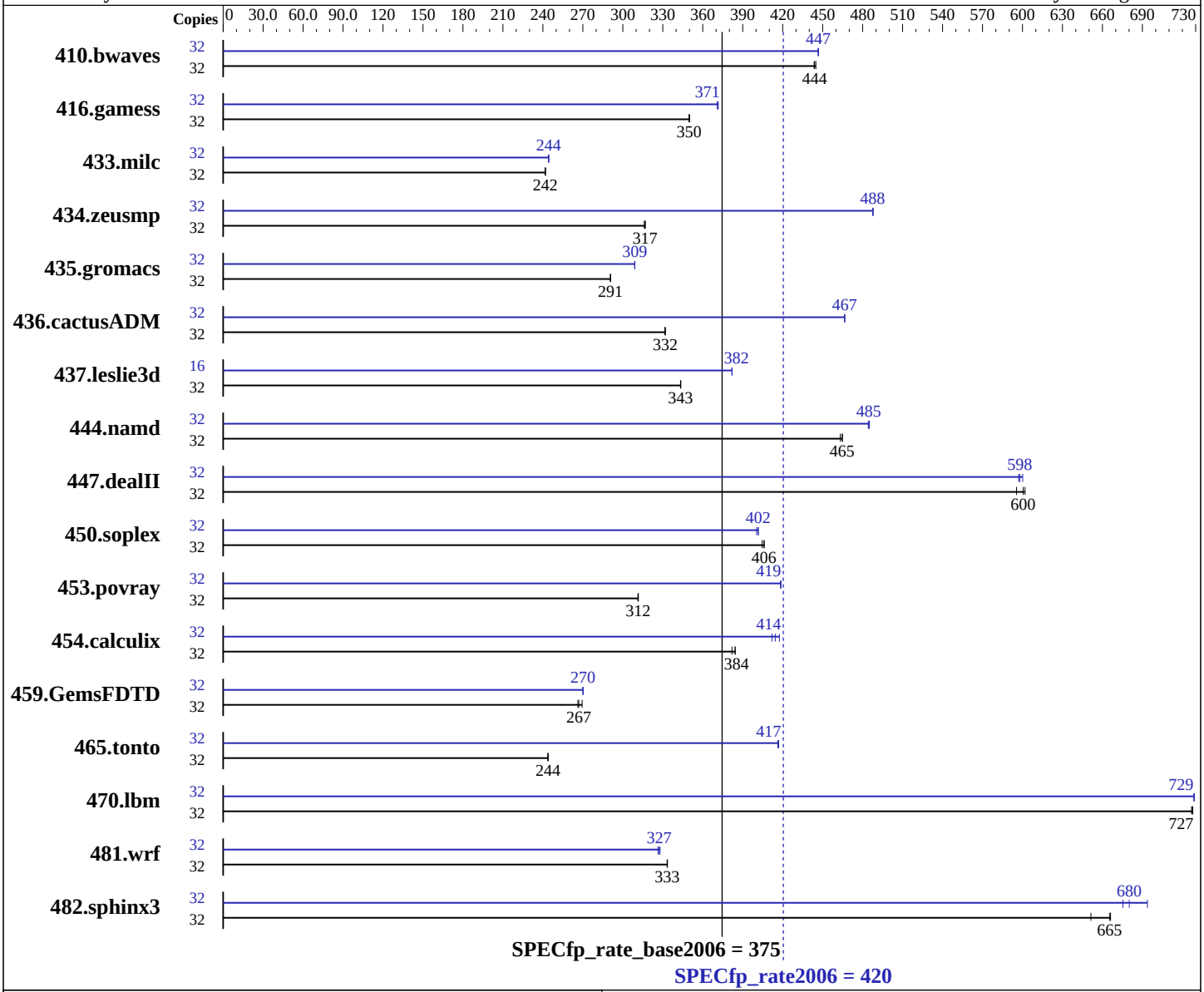
Bull Escala PL1660 (4700 MHz, 16 Cores)

SPECfp®_rate2006 = 420

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:	
CPU MHz:	4700
FPU:	Integrated
CPU(s) enabled:	16 cores, 8 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	2,4,8,12,16 cores
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per core

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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	**979**	**444**	980	444	32	974	447	973	447	**973**	**447**
416.gamess	32	1791	350	**1791**	**350**	1790	350	32	1689	371	1686	372	**1689**	**371**
433.milc	32	1215	242	**1215**	**242**	1215	242	32	**1202**	**244**	1202	244	1202	244
434.zeusmp	32	921	316	**919**	**317**	919	317	32	597	488	**597**	**488**	597	488
435.gromacs	32	**786**	**291**	786	291	786	291	32	739	309	**739**	**309**	740	309
436.cactusADM	32	**1152**	**332**	1152	332	1153	332	32	820	467	**820**	**467**	820	467
437.leslie3d	32	**876**	**343**	876	344	876	343	16	394	382	394	382	**394**	**382**
444.namd	32	**552**	**465**	554	463	552	465	32	530	484	529	485	**530**	**485**
447.dealII	32	**610**	**600**	608	602	615	596	32	**612**	**598**	613	597	610	600
450.soplex	32	660	405	**657**	**406**	657	406	32	666	400	**664**	**402**	664	402
453.povray	32	**546**	**312**	546	312	547	311	32	**407**	**419**	407	419	407	418
454.calculix	32	691	382	**687**	**384**	687	384	32	632	418	**637**	**414**	641	412
459.GemsFDTD	32	1275	266	1260	269	**1272**	**267**	32	1257	270	**1257**	**270**	1257	270
465.tonto	32	**1292**	**244**	1291	244	1292	244	32	**755**	**417**	755	417	756	416
470.lbm	32	604	728	605	727	**604**	**727**	32	603	729	**603**	**729**	603	729
481.wrf	32	1073	333	1072	334	**1072**	**333**	32	1090	328	**1092**	**327**	1095	326
482.sphinx3	32	958	651	**937**	**665**	936	666	32	**917**	**680**	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

Envionment variables set before executing benchmarks:
  MALLOCOPTIONS=pool
  MEMORY_AFFINITY=MCM
  XLFRTEOPTS=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 lgpg_regions=6144 -o lgpg_size=16777216
```

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`

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:

Continued on next page

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 -qvecnvol -D_ILS_MACROS -blpdata

C++ benchmarks:

444.namd: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -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 -qvecnvol -D_ILS_MACROS -qalign=natural -blpdata

Fortran benchmarks:

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

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

459.GemsFDTD: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -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 -qvecnvol -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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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 13:43:37 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 11 December 2007.