SPEC® CFP2006 Result

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Bull SAS

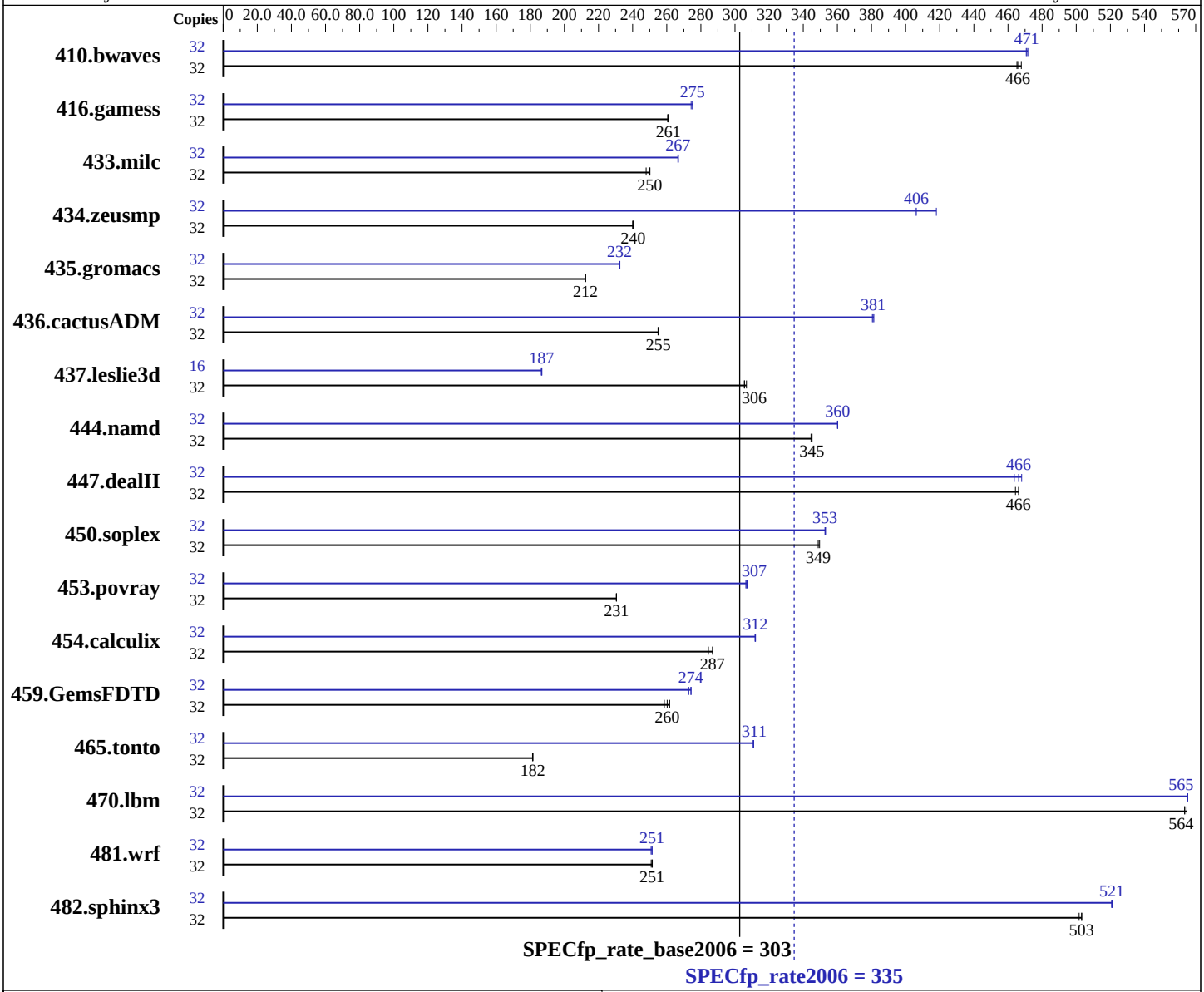
Bull Escala PL1660 (3.5 GHz, 16 cores)

SPECfp®_rate2006 = 335

SPECfp_rate_base2006 = 303

CPU2006 license: 20
Test sponsor: Bull SAS
Tested by: Bull SAS

Test date: Mar-2008
Hardware Availability: Oct-2007
Software Availability: Oct-2007



Hardware

CPU Name:	POWER6
CPU Characteristics:	
CPU MHz:	3500
FPU:	Integrated
CPU(s) enabled:	16 cores, 8 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	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:	IBM AIX 5L V5.3 updated with the 5300-07 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: 128 GB (64x2 GB) DDR2 667 MHz
Disk Subsystem: 2x73 GB SAS 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	32	935	465	930	468	**934**	**466**	32	924	471	**923**	**471**	922	472
416.gamess	32	2405	260	**2402**	**261**	2401	261	32	2277	275	**2278**	**275**	2284	274
433.milc	32	1185	248	**1175**	**250**	1174	250	32	1102	267	**1102**	**267**	1101	267
434.zeusmp	32	1213	240	1211	240	**1212**	**240**	32	718	406	697	418	**717**	**406**
435.gromacs	32	1076	212	**1076**	**212**	1076	212	32	**983**	**232**	983	233	984	232
436.cactusADM	32	1499	255	1500	255	**1499**	**255**	32	1003	381	**1004**	**381**	1005	381
437.leslie3d	32	985	306	981	307	**984**	**306**	16	**806**	**187**	805	187	807	186
444.namd	32	745	345	**744**	**345**	744	345	32	713	360	713	360	**713**	**360**
447.dealII	32	785	466	**785**	**466**	788	464	32	**785**	**466**	782	468	790	464
450.soplex	32	767	348	**765**	**349**	763	350	32	757	353	756	353	**756**	**353**
453.povray	32	738	231	739	230	**739**	**231**	32	556	306	554	307	**555**	**307**
454.calculix	32	928	284	920	287	**920**	**287**	32	846	312	**846**	**312**	847	312
459.GemsFDTD	32	1297	262	1313	259	**1305**	**260**	32	1244	273	1238	274	**1238**	**274**
465.tonto	32	1736	181	**1735**	**182**	1735	182	32	**1013**	**311**	1014	311	1013	311
470.lbm	32	778	565	**780**	**564**	780	564	32	**778**	**565**	778	565	778	565
481.wrf	32	1421	252	1425	251	**1422**	**251**	32	1422	251	1425	251	**1422**	**251**
482.sphinx3	32	**1240**	**503**	1243	502	1239	503	32	1198	521	1197	521	**1197**	**521**

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.
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.
Remote console disabled in /etc/inittab.
fdpr binary optimization tool used for:
4000 16M large pages defined with vmo command
  410.bwaves 433.milc 435.gromacs 436.cactusADM
  453.povray 470.lbm 482.sphinx3
```

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
```

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:

Continued on next page

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 -qvecnvol -D_ILS_MACROS -qfdpr -blpdata

C++ benchmarks:

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

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) -O4 -qlargepage -qenablevmx -qvecnvol -qstrict -D_ILS_MACROS -blpdata

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

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 -qalias=nostd

434.zeusmp: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qlargepage -qenablevmx -qvecnvol -qxlf90=nosignedzero -blpdata

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

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -q64 -blpdata

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 -qvecnvol -qfdpr -D_ILS_MACROS -blpdata

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

Continued on next page

Peak Optimization Flags (Continued)

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

481.wrf: `-bmaxdata:0x30000000 -O5 -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/CPU2006_flags.20090713.06.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090713.06.xml`

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