SPEC® CFP2006 Result
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Bull SAS

$SPECfp^{®}2006 = $ 21.9

Bull Escala PL1660 (4700 MHz, 1 Core)
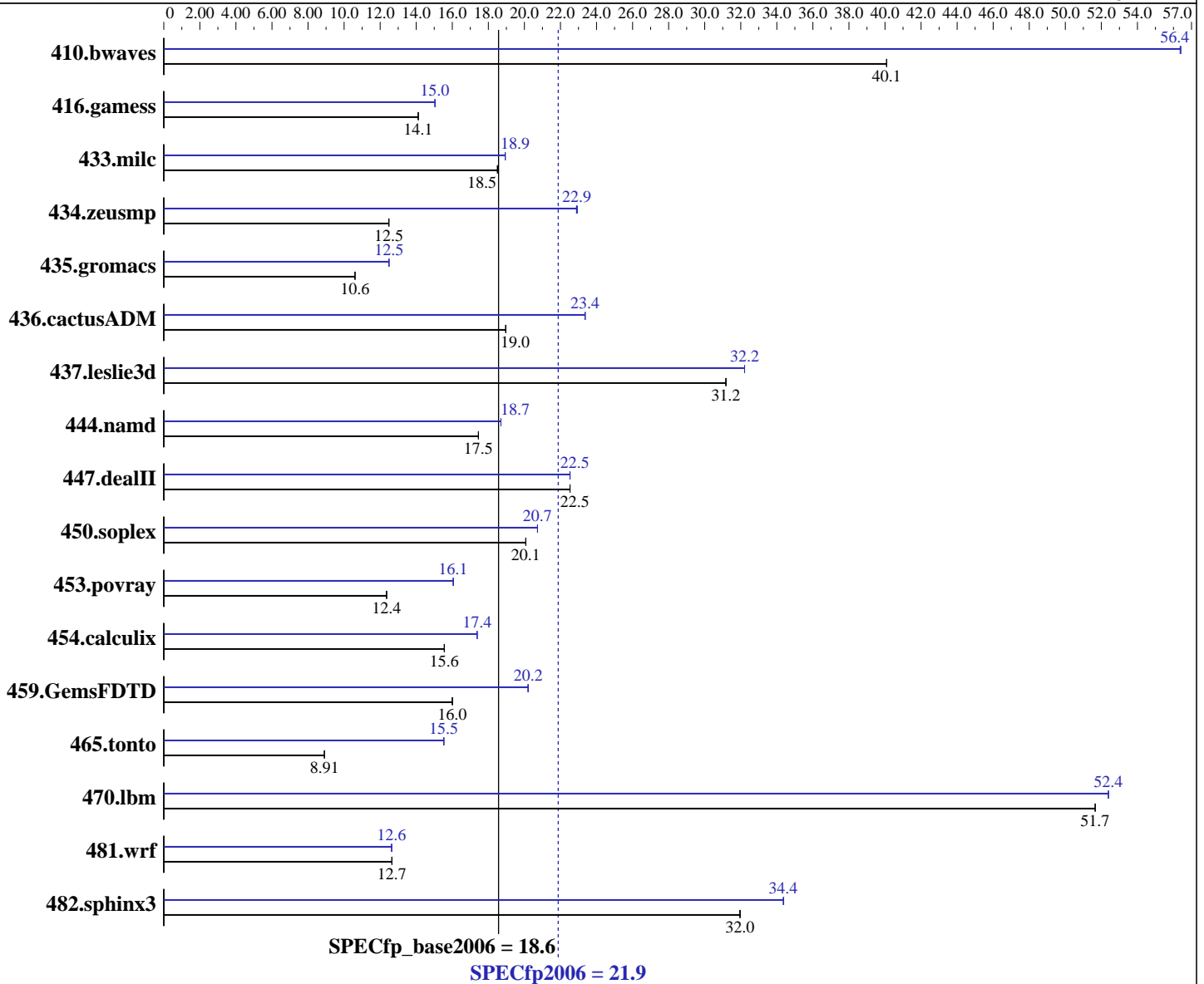
$SPECfp_base2006 = $ 18.6

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

Test date: Nov-2007
Hardware Availability: Oct-2007
Software Availability: Aug-2007

Benchmark	Peak	Base
410.bwaves	56.4	40.1
416.gamess	15.0	14.1
433.milc	18.9	18.5
434.zeusmp	22.9	12.5
435.gromacs	12.5	10.6
436.cactusADM	23.4	19.0
437.leslie3d	32.2	31.2
444.namd	18.7	17.5
447.dealII	22.5	22.5
450.soplex	20.7	20.1
453.povray	16.1	12.4
454.calculix	17.4	15.6
459.GemsFDTD	20.2	16.0
465.tonto	15.5	8.91
470.lbm	52.4	51.7
481.wrf	12.6	12.7
482.sphinx3	34.4	32.0

SPECfp_base2006 = 18.6
SPECfp2006 = 21.9

Hardware
CPU Name: POWER6
CPU Characteristics:
CPU MHz: 4700
FPU: Integrated
CPU(s) enabled: 1 core, 1 chip, 2 cores/chip
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

Continued on next page

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 Software:	None
Other Cache:	None		
Memory:	64 GB (8x8 GB) DDR2 667 MHZ		
Disk Subsystem:	2x73 GB SAS, 15K RPM		
Other Hardware:	None		

Results Table

Benchmark	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	339	40.1	339	40.1	**339**	**40.1**	241	56.4	**241**	**56.4**	241	56.4
416.gamess	1387	14.1	**1387**	**14.1**	1388	14.1	1302	15.0	**1302**	**15.0**	1302	15.0
433.milc	496	18.5	496	18.5	**496**	**18.5**	**485**	**18.9**	485	18.9	485	18.9
434.zeusmp	729	12.5	729	12.5	**729**	**12.5**	397	22.9	398	22.9	**397**	**22.9**
435.gromacs	673	10.6	**673**	**10.6**	673	10.6	**572**	**12.5**	572	12.5	572	12.5
436.cactusADM	630	19.0	**630**	**19.0**	630	19.0	511	23.4	**511**	**23.4**	512	23.4
437.leslie3d	**302**	**31.2**	301	31.2	302	31.2	292	32.2	**292**	**32.2**	292	32.2
444.namd	460	17.5	**460**	**17.5**	460	17.4	429	18.7	**429**	**18.7**	429	18.7
447.dealII	508	22.5	508	22.5	**508**	**22.5**	508	22.5	**508**	**22.5**	508	22.5
450.soplex	**415**	**20.1**	415	20.1	415	20.1	**402**	**20.7**	402	20.7	402	20.7
453.povray	431	12.4	**431**	**12.4**	431	12.4	331	16.1	**331**	**16.1**	331	16.1
454.calculix	**530**	**15.6**	530	15.6	530	15.6	475	17.4	**475**	**17.4**	475	17.4
459.GemsFDTD	**663**	**16.0**	663	16.0	663	16.0	525	20.2	525	20.2	**525**	**20.2**
465.tonto	**1105**	**8.91**	1104	8.91	1105	8.91	**634**	**15.5**	634	15.5	634	15.5
470.lbm	**266**	**51.7**	266	51.7	266	51.7	262	52.4	**262**	**52.4**	262	52.4
481.wrf	**883**	**12.7**	883	12.7	883	12.7	884	12.6	**884**	**12.6**	884	12.6
482.sphinx3	610	32.0	610	31.9	**610**	**32.0**	567	34.4	**567**	**34.4**	567	34.4

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=768 -o lgpg_size=16777216
```

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General Notes

```
Speed run on 1 core partition defined on HMC
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 -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

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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