SPEC® CFP2006 Result

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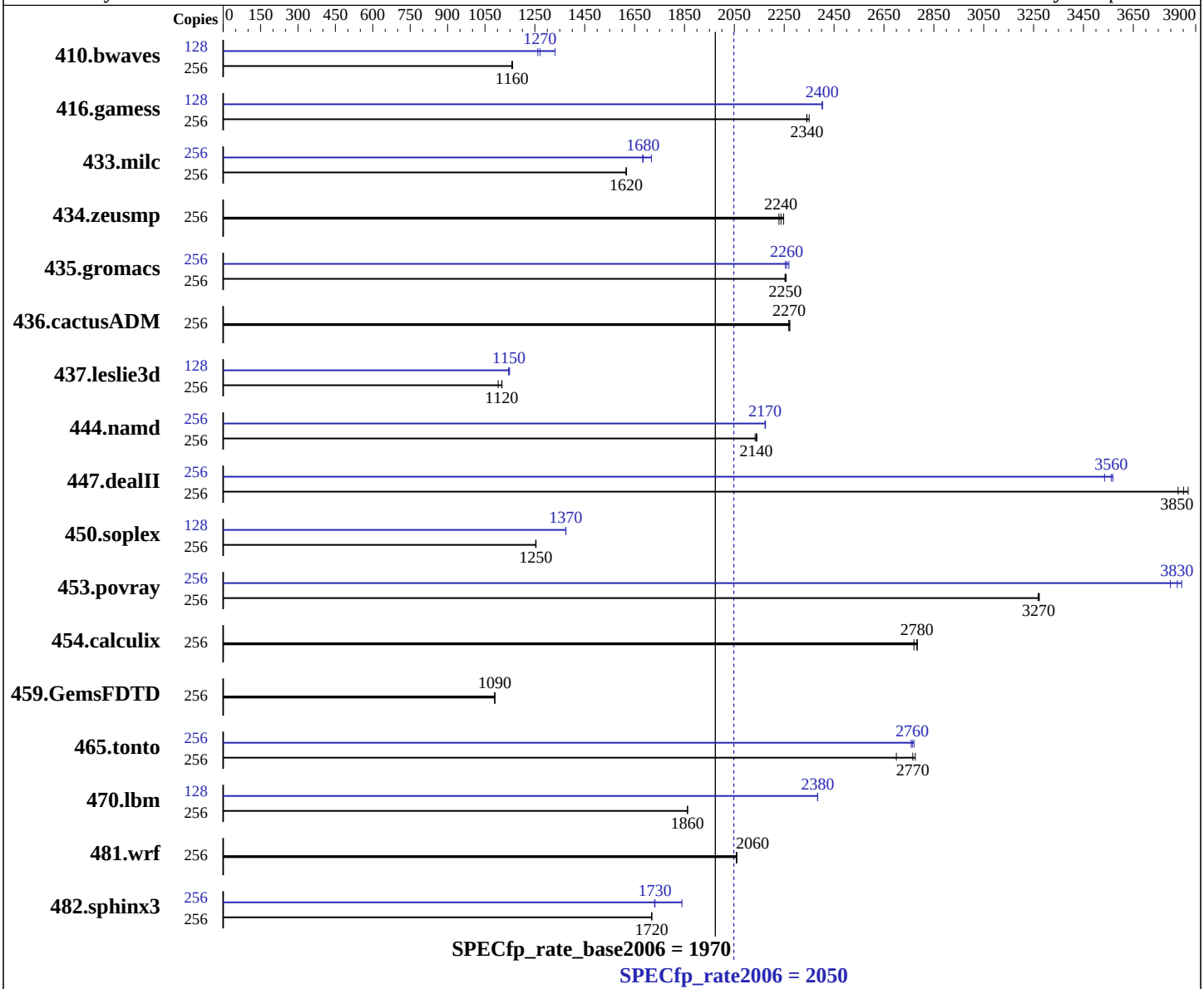
Bull SAS
novascale bullion

SPECfp®_rate2006 = 2050

SPECfp_rate_base2006 = 1970

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

Test date: Jun-2011
Hardware Availability: Sep-2011
Software Availability: Apr-2011



Hardware

CPU Name:	Intel Xeon X7560
CPU Characteristics:	Intel Turbo Boost Technology up to 2.67 GHz
CPU MHz:	2267
FPU:	Integrated
CPU(s) enabled:	128 cores, 16 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable:	2, 4, 8, 12, 16 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

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Software

Operating System:	Red Hat Enterprise Linux 6.0 (x86_64), Kernel 2.6.32-71.el6.x86_64
Compiler:	Intel C++ Compiler XE for applications running on IA-32 Version 12.0.1.116 Build 20101116
Auto Parallel:	No
File System:	tmpfs
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit

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L3 Cache: 24 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (128 x 8 GB 4Rx8 PC3-8500R-7, ECC)
Disk Subsystem: 1 x 500 GB 7200 RPM SATA
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V9.01

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	256	2997	1160	3006	1160	**3002**	**1160**	128	**1369**	**1270**	1307	1330	1379	1260
416.gamess	256	2133	2350	2142	2340	**2141**	**2340**	128	1043	2400	1043	2400	**1043**	**2400**
433.milc	256	1454	1620	1453	1620	**1454**	**1620**	256	**1395**	**1680**	1368	1720	1397	1680
434.zeusmp	256	1045	2230	**1041**	**2240**	1037	2250	256	1045	2230	**1041**	**2240**	1037	2250
435.gromacs	256	811	2250	810	2260	**811**	**2250**	256	811	2250	**809**	**2260**	806	2270
436.cactusADM	256	**1348**	**2270**	1349	2270	1346	2270	256	**1348**	**2270**	1349	2270	1346	2270
437.leslie3d	256	**2153**	**1120**	2182	1100	2152	1120	128	1051	1140	1048	1150	**1050**	**1150**
444.namd	256	962	2130	**960**	**2140**	959	2140	256	945	2170	**944**	**2170**	944	2170
447.dealII	256	765	3830	**760**	**3850**	757	3870	256	**822**	**3560**	821	3570	829	3530
450.soplex	256	**1702**	**1250**	1704	1250	1702	1250	128	**777**	**1370**	777	1370	777	1370
453.povray	256	417	3270	416	3270	**416**	**3270**	256	354	3840	359	3800	**356**	**3830**
454.calculix	256	**759**	**2780**	759	2780	762	2770	256	**759**	**2780**	759	2780	762	2770
459.GemsFDTD	256	2492	1090	**2494**	**1090**	2495	1090	256	2492	1090	**2494**	**1090**	2495	1090
465.tonto	256	**911**	**2770**	908	2780	933	2700	256	913	2760	909	2770	**911**	**2760**
470.lbm	256	1889	1860	**1889**	**1860**	1889	1860	128	738	2380	738	2380	**738**	**2380**
481.wrf	256	1388	2060	1390	2060	**1389**	**2060**	256	1388	2060	1390	2060	**1389**	**2060**
482.sphinx3	256	**2903**	**1720**	2903	1720	2904	1720	256	2712	1840	2884	1730	**2881**	**1730**

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

Submit Notes

```
The config file option 'submit' was used.
 numactl was used to bind copies to the cores
 Tmpfs filesystem set up with:
  mkdir -p /mnt/shm
  mount -t tmpfs -o rw,mpol=interleave tmpfs /mnt/shm/
 The mpol=interleave option sets the NUMA
 memory allocation policy for all files to allocate
 from each node in turn.
Operating system file is ext3
Spec benchmark is copied from hard disk ext3 to tmpfs
Binaries were compiled with huge pages enabled
but huge pages were not used
```

Platform Notes

```
System is composed of 4 modules with 32 DIMMs on each module.
```

General Notes

```
The Bull novascale bullion and
the Bull bullx S6030 models are electronically equivalent.
The results have been measured on a novascale bullion model.
Binaries were compiled on RHEL5.5
```

Base Compiler Invocation

C benchmarks:
```
icc   -m64
```

C++ benchmarks:
```
icpc  -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias`

C++ benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias`

Fortran benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static`

Benchmarks using both Fortran and C:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias`

Peak Compiler Invocation

C benchmarks (except as noted below):
`icc -m64`

482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):
`icpc -m64`

450.soplex: `icpc -m32`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`icc -m64 ifort -m64`

Peak Portability Flags

410.bwaves: `-DSPEC_CPU_LP64`
416.gamess: `-DSPEC_CPU_LP64`
433.milc: `-DSPEC_CPU_LP64`
434.zeusmp: `-DSPEC_CPU_LP64`
435.gromacs: `-DSPEC_CPU_LP64 -nofor_main`
436.cactusADM: `-DSPEC_CPU_LP64 -nofor_main`
437.leslie3d: `-DSPEC_CPU_LP64`
444.namd: `-DSPEC_CPU_LP64`
447.dealII: `-DSPEC_CPU_LP64`
453.povray: `-DSPEC_CPU_LP64`
454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
459.GemsFDTD: `-DSPEC_CPU_LP64`
465.tonto: `-DSPEC_CPU_LP64`

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Peak Portability Flags (Continued)

470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3
-ansi-alias -opt-prefetch -static -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

410.bwaves: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -static

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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Peak Optimization Flags (Continued)

459.GemsFDTD: basepeak = yes

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto -inline-calloc -opt-malloc-options=3 -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.20110705.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110705.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.20110705.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110705.xml

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