



SPEC® CFP2006 Result

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Bull SAS

SPECfp®_rate2006 = 1170

Bullion E7-4850 (80 cores - 2TB RAM)

SPECfp_rate_base2006 = 1150

CPU2006 license: 20

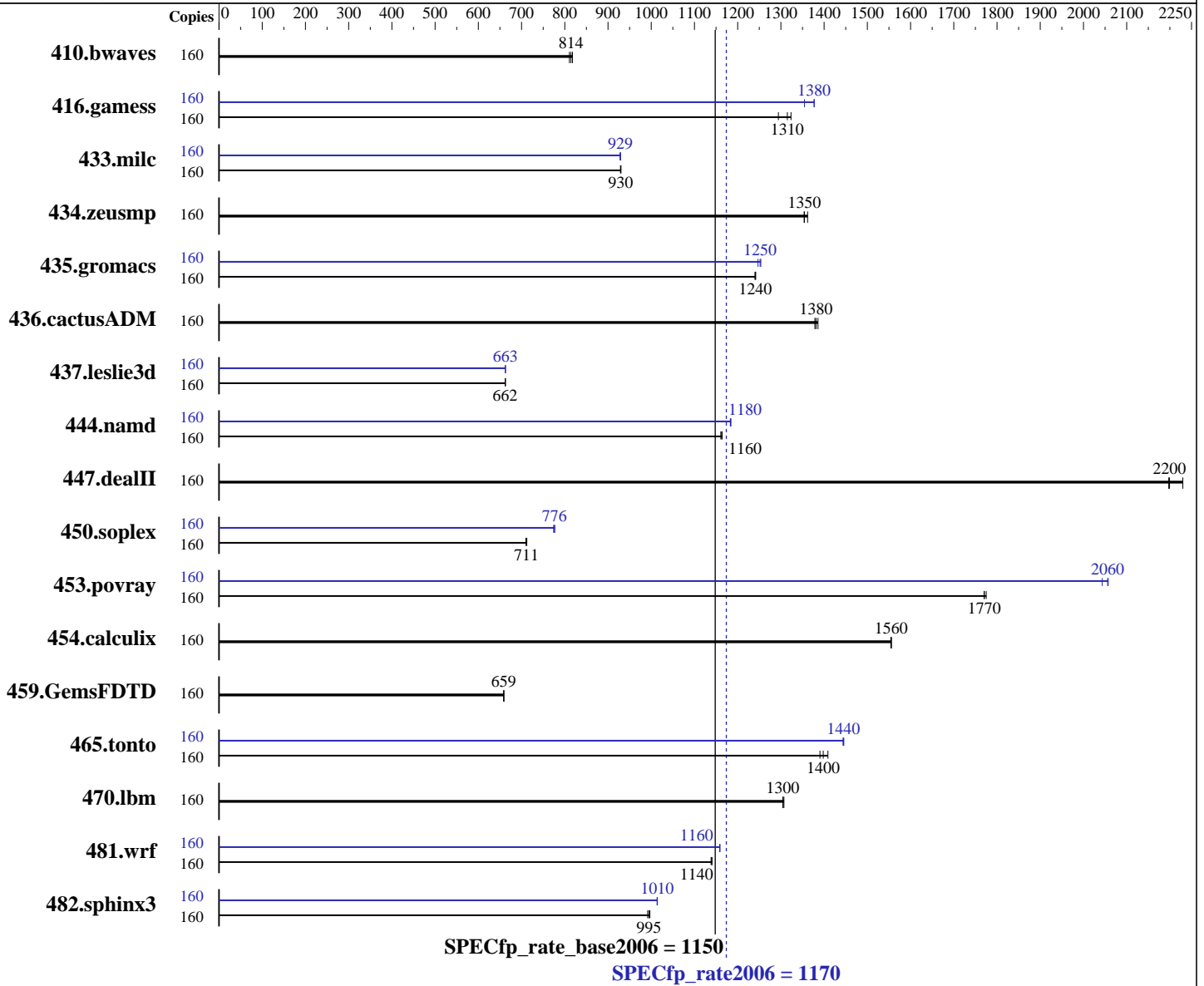
Test date: Jan-2013

Test sponsor: Bull SAS

Hardware Availability: Jan-2012

Tested by: Bull SAS

Software Availability: Jun-2012



Hardware

CPU Name: Intel Xeon E7-4850
 CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz
 CPU MHz: 2000
 FPU: Integrated
 CPU(s) enabled: 80 cores, 8 chips, 10 cores/chip, 2 threads/core
 CPU(s) orderable: 4,8 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 Server release 6.3 (Santiago)
 2.6.32-279.el6.x86_64
 Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;
 Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
 Auto Parallel: No
 File System: tmpfs

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L3 Cache: 24 MB I+D on chip per chip
 Other Cache: None
 Memory: 2 TB (128 x 16 GB 2Rx4 PC3-8500R-7, ECC)
 Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
 Other Hardware: None

System State: Run level 3 (multiuser)
 Base Pointers: 32/64-bit
 Peak Pointers: 32/64-bit
 Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	160	2682	811	2659	818	2670	814	160	2682	811	2659	818	2670	814
416.gamess	160	2383	1310	2421	1290	2367	1320	160	2313	1350	2276	1380	2275	1380
433.milc	160	1582	929	1580	930	1580	930	160	1581	929	1581	929	1583	928
434.zeusmp	160	1075	1350	1076	1350	1069	1360	160	1075	1350	1076	1350	1069	1360
435.gromacs	160	920	1240	921	1240	921	1240	160	913	1250	916	1250	911	1250
436.cactusADM	160	1387	1380	1384	1380	1380	1390	160	1387	1380	1384	1380	1380	1390
437.leslie3d	160	2271	662	2269	663	2271	662	160	2270	663	2270	663	2271	662
444.namd	160	1102	1160	1103	1160	1105	1160	160	1083	1180	1085	1180	1085	1180
447.dealII	160	821	2230	833	2200	832	2200	160	821	2230	833	2200	832	2200
450.soplex	160	1876	711	1874	712	1880	710	160	1719	776	1724	774	1718	777
453.povray	160	480	1780	481	1770	481	1770	160	414	2060	417	2040	414	2060
454.calculix	160	849	1560	849	1560	849	1550	160	849	1560	849	1560	849	1550
459.GemsFDTD	160	2577	659	2577	659	2576	659	160	2577	659	2577	659	2576	659
465.tonto	160	1126	1400	1132	1390	1118	1410	160	1089	1450	1090	1440	1091	1440
470.lbm	160	1685	1300	1685	1300	1682	1310	160	1685	1300	1685	1300	1682	1310
481.wrf	160	1568	1140	1570	1140	1567	1140	160	1543	1160	1542	1160	1543	1160
482.sphinx3	160	3128	997	3134	995	3145	992	160	3075	1010	3075	1010	3077	1010

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

SPEC files placed in /spec2006, with /spec2006 mounted as tmpfs with mpol=interleave, size=480G
 Stack size set to unlimited using "ulimit -s unlimited"
 Kernel booted with option clocksource=jiffies (allows to count time with interrupts at 1 jiffy period instead using HPET counters)
 Bios set with Max_Numa_Nodes_per_module to 4
 Bios set with Memory hemisphere mode



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Platform Notes

Sysinfo program /spec2006/config/sysinfo.rev6800
\$Rev: 6800 \$ \$Date:: 2011-10-11 # \$ 6f2ebdff5032aaa42e583f96b07f99d3
running on turin-test Sat Jan 19 12:22:25 2013

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

```
From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E7- 4850 @ 2.00GHz
 8 "physical id"s (chips)
160 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
caution.)
cpu cores : 10
siblings : 20
physical 0: cores 0 1 2 8 9 16 17 18 24 25
physical 1: cores 0 1 2 8 9 16 17 18 24 25
physical 2: cores 0 1 2 8 9 16 17 18 24 25
physical 3: cores 0 1 2 8 9 16 17 18 24 25
physical 4: cores 0 1 2 8 9 16 17 18 24 25
physical 5: cores 0 1 2 8 9 16 17 18 24 25
physical 6: cores 0 1 2 8 9 16 17 18 24 25
physical 7: cores 0 1 2 8 9 16 17 18 24 25
cache size : 24576 KB
```

```
From /proc/meminfo
MemTotal: 2115719988 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.3 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux turin-test 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Jan 18 13:55 last=5
```

```
SPEC is set to: /spec2006
Filesystem Type Size Used Avail Use% Mounted on
none tmpfs 480G 138G 343G 29% /spec2006
```

Additional information from dmidecode:

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Platform Notes (Continued)

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec2006/libs/32:/spec2006/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

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

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Base Portability Flags (Continued)

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 -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

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

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Peak Portability Flags (Continued)

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
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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -static -auto-ilp32
470.lbm: basepeak = yes
482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
-unroll2

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -fno-alias -auto-ilp32
447.dealII: basepeak = yes
450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-malloc-options=3
453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

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Peak Optimization Flags (Continued)

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 -static -opt-prefetch

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

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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html>

<http://www.spec.org/cpu2006/flags/Bull-Platform-Settings-V1.2-revB.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml>

<http://www.spec.org/cpu2006/flags/Bull-Platform-Settings-V1.2-revB.xml>

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