SPEC® CFP2006 Result

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Bull SAS

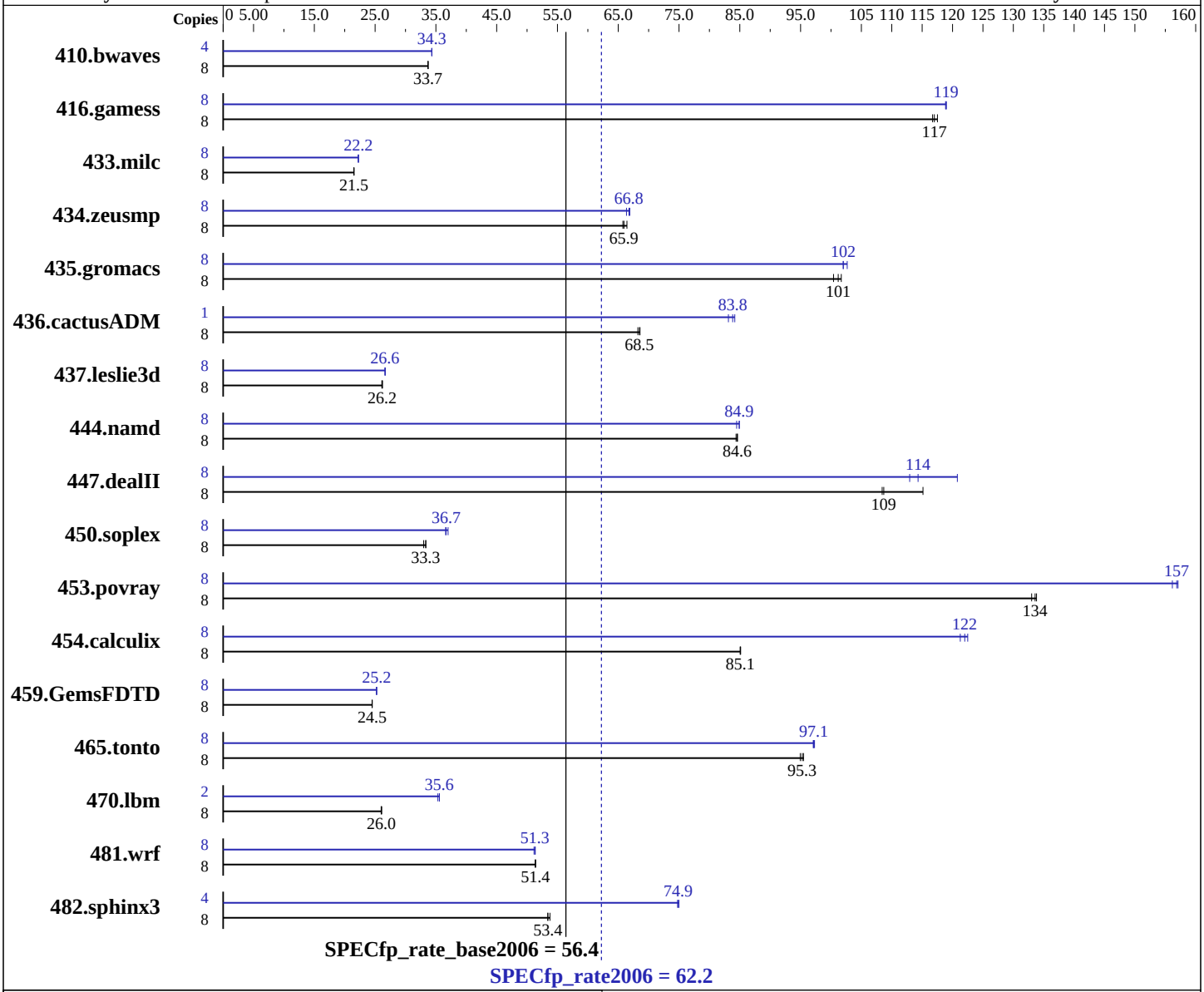
NovaScale R440 E1
(Intel Xeon E5405,2.00GHz)

SPECfp®_rate2006 = 62.2

SPECfp_rate_base2006 = 56.4

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

Test date: Jan-2008
Hardware Availability: Dec-2007
Software Availability: Nov-2007



Hardware

CPU Name:	Intel Xeon E5405
CPU Characteristics:	2.00 GHz, 2x6 MB L2 shared, 1333 MHz bus
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	12 MB I+D on chip per chip, 6 MB shared / 2 cores

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Software

Operating System:	SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
Compiler:	Intel C++ and Fortran Compiler for Linux32 and Linux64 version 10.1 Build 20070913 Package ID: l_cc_p_10.1.008, l_fc_p_10.1.008
Auto Parallel:	Yes
File System:	ext2

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L3 Cache: None
Other Cache: None
Memory: 12 GB (12x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)
Disk Subsystem: 1x73.2 GB SAS, 15000RPM
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: binutils-2.17.tar.gz, Version 2.17

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3224	33.7	3226	33.7	**3225**	**33.7**	4	1583	34.3	1583	34.3	**1583**	**34.3**
416.gamess	8	1342	117	1333	118	**1339**	**117**	8	1317	119	1318	119	**1317**	**119**
433.milc	8	3415	21.5	**3413**	**21.5**	3412	21.5	8	3301	22.2	**3302**	**22.2**	3302	22.2
434.zeusmp	8	1107	65.8	**1104**	**65.9**	1096	66.4	8	1088	66.9	1097	66.4	**1090**	**66.8**
435.gromacs	8	562	102	569	100	**564**	**101**	8	**560**	**102**	560	102	556	103
436.cactusADM	8	**1396**	**68.5**	1401	68.2	1394	68.6	1	144	83.1	142	84.2	**143**	**83.8**
437.leslie3d	8	2881	26.1	2869	26.2	**2874**	**26.2**	8	**2824**	**26.6**	2824	26.6	2820	26.7
444.namd	8	760	84.4	**759**	**84.6**	758	84.6	8	**756**	**84.9**	756	84.9	759	84.5
447.dealII	8	**842**	**109**	795	115	844	108	8	810	113	758	121	**801**	**114**
450.soplex	8	2022	33.0	**2003**	**33.3**	2000	33.4	8	1823	36.6	**1819**	**36.7**	1803	37.0
453.povray	8	**319**	**134**	320	133	318	134	8	273	156	271	157	**271**	**157**
454.calculix	8	775	85.1	776	85.1	**776**	**85.1**	8	**541**	**122**	539	122	544	121
459.GemsFDTD	8	3460	24.5	3465	24.5	**3463**	**24.5**	8	3367	25.2	3359	25.3	**3364**	**25.2**
465.tonto	8	824	95.5	**826**	**95.3**	829	94.9	8	**810**	**97.1**	809	97.3	811	97.1
470.lbm	8	4229	26.0	**4222**	**26.0**	4214	26.1	2	**773**	**35.6**	778	35.3	772	35.6
481.wrf	8	1740	51.4	**1740**	**51.4**	1739	51.4	8	1747	51.1	**1742**	**51.3**	1740	51.4
482.sphinx3	8	**2919**	**53.4**	2919	53.4	2900	53.8	4	1043	74.8	**1041**	**74.9**	1040	75.0

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

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'/usr/bin/taskset' used to bind processes to CPUs
OMP_NUM_THREADS set to number of cores (default).
```

Platform Notes

```
Bios settings:
Intel SpeedStep Technology: Disabled
```

General Notes

```
All benchmarks compiled in 64-bit mode except 437.leslie3d,
450.soplex, 470.lbm and 482.sphinx3, for peak, are
compiled in 32-bit mode
 The NEC Express5800/120Rh-1(Intel Xeon Prosessor E5405),
 the NEC Express5800/120Rj-2(Intel Xeon Prosessor E5405),
 the Bull NovaScale R440 E1 (Intel Xeon E5405,2.00GHz) and
 the Bull NovaScale R460 E1 (Intel Xeon E5405,2.00GHz) models are electronically equivalent.
 The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon Prosessor E5405) model.
```

Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

Benchmarks using both Fortran and C:
`icc ifort`

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:
`-fast`

C++ benchmarks:
`-fast`

Fortran benchmarks:
`-fast`

Benchmarks using both Fortran and C:
`-fast`

Peak Compiler Invocation

C benchmarks (except as noted below):
`/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

433.milc: `icc`

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

450.soplex: `/opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

Fortran benchmarks (except as noted below):
`ifort`

437.leslie3d: `/opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib -I/opt/intel/fc/10.1.008/include`

Benchmarks using both Fortran and C:
`icc ifort`

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`
444.namd: `-DSPEC_CPU_LP64`
447.dealII: `-DSPEC_CPU_LP64`

Continued on next page

Peak Portability Flags (Continued)

453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias -auto-ilp32

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -scalar-rep- -prefetch -opt-malloc-options=3

482.sphinx3: -fast -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch -opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -prefetch

Continued on next page

Peak Optimization Flags (Continued)

465.tonto: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -unroll4 -auto`

Benchmarks using both Fortran and C:

435.gromacs: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -prefetch -auto-ilp32`

436.cactusADM: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -unroll2 -prefetch -parallel -auto-ilp32`

454.calculix: `-fast -unroll-aggressive -auto-ilp32`

481.wrf: `-fast -auto-ilp32`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.00.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.00.xml`

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