



SPEC[®] CFP2006 Result

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NEC Corporation

SPECfp[®]_rate2006 = 137

Express5800/R120b-1 (Intel Xeon X5675)

SPECfp_rate_base2006 = 133

CPU2006 license: 9006

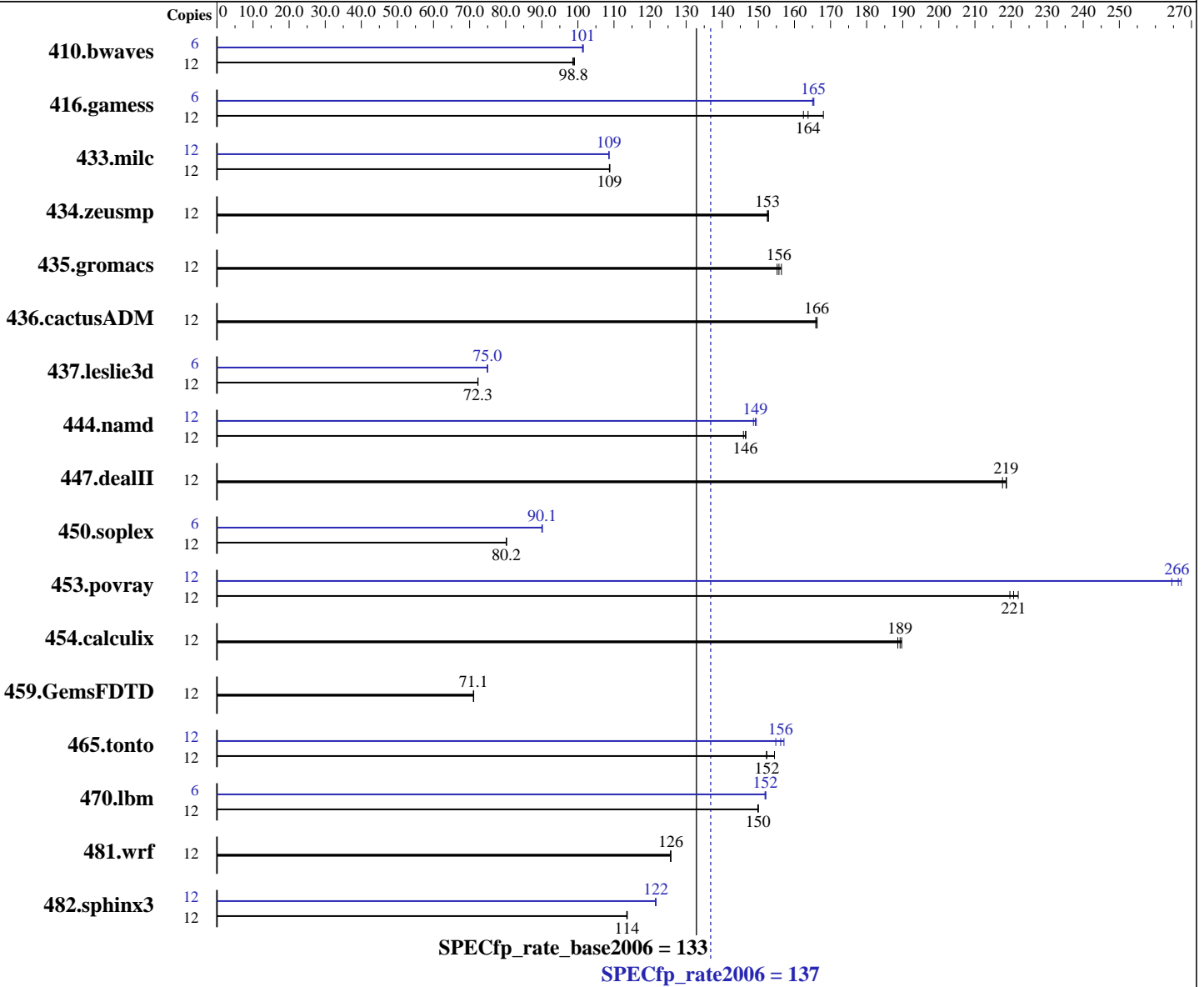
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Aug-2011

Hardware Availability: Feb-2011

Software Availability: Mar-2011



Hardware

CPU Name: Intel Xeon X5675
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz
 CPU MHz: 3067
 FPU: Integrated
 CPU(s) enabled: 6 cores, 1 chip, 6 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2 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: SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64, Version 12.0.3.174 Build 20110309
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (6 x 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None

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 | 12 | 1646 | 99.1 | <u>1651</u> | <u>98.8</u> | 1654 | 98.6 | 6 | 805 | 101 | 803 | 102 | <u>805</u> | <u>101</u> |
| 416.gamess | 12 | 1446 | 162 | 1398 | 168 | <u>1435</u> | <u>164</u> | 6 | <u>711</u> | <u>165</u> | 710 | 165 | 712 | 165 |
| 433.milc | 12 | 1012 | 109 | 1013 | 109 | <u>1013</u> | <u>109</u> | 12 | 1014 | 109 | 1014 | 109 | <u>1014</u> | <u>109</u> |
| 434.zeusmp | 12 | 715 | 153 | 716 | 153 | <u>716</u> | <u>153</u> | 12 | 715 | 153 | 716 | 153 | <u>716</u> | <u>153</u> |
| 435.gromacs | 12 | 548 | 156 | <u>550</u> | <u>156</u> | 552 | 155 | 12 | 548 | 156 | <u>550</u> | <u>156</u> | 552 | 155 |
| 436.cactusADM | 12 | <u>863</u> | <u>166</u> | 864 | 166 | 862 | 166 | 12 | <u>863</u> | <u>166</u> | 864 | 166 | 862 | 166 |
| 437.leslie3d | 12 | 1559 | 72.3 | <u>1560</u> | <u>72.3</u> | 1561 | 72.3 | 6 | <u>752</u> | <u>75.0</u> | 753 | 74.9 | 752 | 75.0 |
| 444.namd | 12 | <u>657</u> | <u>146</u> | 660 | 146 | 657 | 147 | 12 | <u>645</u> | <u>149</u> | 644 | 149 | 648 | 149 |
| 447.dealII | 12 | 631 | 218 | <u>628</u> | <u>219</u> | 628 | 219 | 12 | 631 | 218 | <u>628</u> | <u>219</u> | 628 | 219 |
| 450.soplex | 12 | 1248 | 80.2 | <u>1248</u> | <u>80.2</u> | 1248 | 80.2 | 6 | <u>555</u> | <u>90.1</u> | 555 | 90.2 | 556 | 90.0 |
| 453.povray | 12 | <u>289</u> | <u>221</u> | 291 | 220 | 288 | 222 | 12 | <u>240</u> | <u>266</u> | 241 | 265 | 239 | 267 |
| 454.calculix | 12 | <u>523</u> | <u>189</u> | 525 | 189 | 522 | 190 | 12 | <u>523</u> | <u>189</u> | 525 | 189 | 522 | 190 |
| 459.GemsFDTD | 12 | <u>1791</u> | <u>71.1</u> | 1790 | 71.1 | 1792 | 71.1 | 12 | <u>1791</u> | <u>71.1</u> | 1790 | 71.1 | 1792 | 71.1 |
| 465.tonto | 12 | 776 | 152 | <u>775</u> | <u>152</u> | 764 | 154 | 12 | 763 | 155 | <u>756</u> | <u>156</u> | 752 | 157 |
| 470.lbm | 12 | 1099 | 150 | <u>1100</u> | <u>150</u> | 1100 | 150 | 6 | 542 | 152 | <u>543</u> | <u>152</u> | 543 | 152 |
| 481.wrf | 12 | 1067 | 126 | <u>1066</u> | <u>126</u> | 1066 | 126 | 12 | 1067 | 126 | <u>1066</u> | <u>126</u> | 1066 | 126 |
| 482.sphinx3 | 12 | 2057 | 114 | <u>2059</u> | <u>114</u> | 2060 | 114 | 12 | 1923 | 122 | <u>1923</u> | <u>122</u> | 1925 | 121 |

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

Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
Huge pages were not configured for this run

Platform Notes

BIOS Settings:
Performance/Watt: Traditional
Server Class: Custom

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Platform Notes (Continued)

Data Reuse Optimization: Disabled
Memory Voltage: Normal

General Notes

The Express5800/R120b-1 and the Express5800/R120b-2 models are electronically equivalent. The results have been measured on the Express5800/R120b-1 model.

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.deallI: -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



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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: basepeak = yes

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

459.GemsFDTD: basepeak = yes

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Peak Optimization Flags (Continued)

```
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: basepeak = yes

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.html>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revF.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.xml>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revF.xml>

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For other inquiries, please contact webmaster@spec.org.

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