# SPEC® CFP2006 Result

## NEC Corporation

**Express5800/R120b-1 (Intel Xeon X5650)**

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>57.7</td>
<td>54.3</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 9006  
**Test sponsor:** NEC Corporation  
**Tested by:** NEC Corporation  
**Test date:** Jun-2011  
**Hardware Availability:** Feb-2011  
**Software Availability:** Mar-2011

### Hardware

**CPU Name:** Intel Xeon X5650  
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.06 GHz  
**CPU MHz:** 2667  
**FPU:** Integrated  
**CPU(s) enabled:** 12 cores, 2 chips, 6 cores/chip  
**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

### 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:** Yes  
**File System:** ext3  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp®2006</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>176</td>
<td>179</td>
</tr>
<tr>
<td>416.gamess</td>
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<td>433.milc</td>
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<td>435.gromacs</td>
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<tr>
<td>436.cactusADM</td>
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<tr>
<td>437.leslie3d</td>
<td>18.3</td>
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<tr>
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**SPECfp_base2006 = 54.3**  
**SPECfp®2006 = 57.7**

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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (12 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**

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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<td><strong>354</strong></td>
<td><strong>55.1</strong></td>
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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
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
'echo 1800 > /proc/sys/vm/nr_hugepages'
'export HUGETLB_MORECORE=yes'
'export LD_PRELOAD=/usr/lib64/libhugetlbfs.so'

**Platform Notes**

BIOS Settings:
Hyper-Threading Technology: Disabled
Performance/Watt: Traditional
Server Class: Custom
Data Re Use Optimization: Disabled
Memory Voltage: Normal

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
### SPEC CFP2006 Result

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**Express5800/R120b-1 (Intel Xeon X5650)**

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### General Notes
- OMP_NUM_THREADS set to number of cores
- 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  
- **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`, `-DSPEC_CPU_CASE_FLAG`, `-DSPEC_CPU_LINUX`
- 465.tonto: `-DSPEC_CPU_LP64`
- 470.1bm: `-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`  
  - `-parallel`  
  - `-opt-prefetch`  
  - `-ansi-alias`
NEC Corporation
Express5800/R120b-1 (Intel Xeon X5650)

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### Base Optimization Flags (Continued)

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

- **Fortran benchmarks:**
  - -xSSE4.2  
  - -ipo  
  - -O3  
  - -no-prec-div  
  - -static  
  - -parallel  
  - -opt-prefetch

- **Benchmarks using both Fortran and C:**
  - -xSSE4.2  
  - -ipo  
  - -O3  
  - -no-prec-div  
  - -static  
  - -parallel  
  - -opt-prefetch  
  - -ansi-alias

### Peak Compiler Invocation

- **C benchmarks:**
  - icc   -m64

- **C++ benchmarks:**
  - icpc   -m64

- **Fortran benchmarks:**
  - ifort   -m64

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

### Peak Portability Flags

Same as Base Portability Flags

### 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  
    - -ansi-alias

  - 470.lbm: basepeak = yes

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

- **C++ benchmarks:**

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SPEC CFP2006 Result

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Peak Optimization Flags (Continued)

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-ilkp32

447.dealII: basepeak = yes
450.soplex: basepeak = yes

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 -ipo -O3 -no-prec-div -opt-prefetch -parallel
   -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: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel
   -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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) -inline-calloc
   -opt-malloc-options=3 -auto -unroll4
   -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) -static -auto-ilp32
   -ansi-alias

436.cactusADM: basepeak = yes
454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes
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For other inquiries, please contact webmaster@spec.org.

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