NEC Corporation

Express5800/GT110e (Intel Pentium G640)

SPECfp®_rate2006 = 60.9
SPECfp_rate_base2006 = 59.6

CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation

Test date: Jul-2012
Hardware Availability: Jul-2012
Software Availability: Feb-2012

Hardware

CPU Name: Intel Pentium G640
CPU Characteristics:
CPU MHz: 2800
FPU: Integrated
CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip
CPU(s) orderable: 1 chip
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: Red Hat Enterprise Linux Server release 6.2 (Santiago)
Compiler: C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux;
Fortran: Version 12.1.3.293 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext4

Copies

410.bwaves 2
416.gamess 2
433.milc 2
434.zeusmp 2
435.gromacs 2
436.cactusADM 2
437.leslie3d 2
444.namd 2
447.dealII 2
450.soplex 2
453.povray 2
454.calculix 2
459.GemsFDTD 2
465.tonto 2
470.lbm 2
481.wrf 2
482.sphinx3 2

SPECfp_rate_base2006 = 59.6:
SPECfp_rate2006 = 60.9
Results Table

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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
Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes
Default BIOS settings were used.
**SPEC CFP2006 Result**

**NEC Corporation**

Express5800/GT110e (Intel Pentium G640)  

| SPECfp_rate2006 | 60.9 |
| SPECfp_rate_base2006 | 59.6 |

- **CPU2006 license**: 9006  
- **Test date**: Jul-2012  
- **Test sponsor**: NEC Corporation  
- **Hardware Availability**: Jul-2012  
- **Tested by**: NEC Corporation  
- **Software Availability**: Feb-2012

### General Notes

Environment variables set by runspec before the start of the run:

LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"

Added glibc-static-2.12-1.47.el6.x86_64.rpm  

to enable static linking

Transparent Huge Pages enabled with:

echo always > /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`
- 470.lbm: `-DSPEC_CPU_LP64`
- 481.wrf: `-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX`
- 482.sphinx3: `-DSPEC_CPU_LP64`
## NEC Corporation

**Express5800/GT110e (Intel Pentium G640)**

<table>
<thead>
<tr>
<th>SPECfp_rate2006</th>
<th>60.9</th>
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### CPU2006 license: 9006
- Test sponsor: NEC Corporation
- Tested by: NEC Corporation
- Test date: Jul-2012
- Hardware Availability: Jul-2012
- Software Availability: Feb-2012

### 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):

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<th>Compiler</th>
<th>Options</th>
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<tbody>
<tr>
<td>icc</td>
<td>-m64</td>
</tr>
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482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

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<th>Options</th>
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<td>icpc</td>
<td>-m64</td>
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</table>

450.soplex: icpc -m32

Fortran benchmarks:

<table>
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<th>Compiler</th>
<th>Options</th>
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<td>ifort</td>
<td>-m64</td>
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Benchmarks using both Fortran and C:

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### Peak Portability Flags

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<td>436.cactusADM</td>
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SPEC CFP2006 Result

NEC Corporation

Express5800/GT110e (Intel Pentium G640)

SPECfp_rate2006 = 60.9
SPECfp_rate_base2006 = 59.6

CPU2006 license: 9006
Test sponsor: NEC Corporation
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Peak Portability Flags (Continued)

454.caculix: -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: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: -xsse4.2 -ipo -03 -no-prec-div -opt-mem-layout-trans=3 -unroll2

C++ benchmarks:

444.namd: -xsse4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(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) -03(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) -03(pass 2)
           -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
           -prof-use(pass 2) -unroll14 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -xsse4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(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: basepeak = yes

Continued on next page
NEC Corporation

Express5800/GT110e (Intel Pentium G640)

**SPECfp_rate2006 = 60.9**

**SPECfp_rate_base2006 = 59.6**

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**Peak Optimization Flags (Continued)**

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
-0prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: basepeak = yes
481.wrf: -xSSE4.2 -ipo -03 -0prec-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-linux64.20120425.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120d-RevA.html

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

http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120d-RevA.xml

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

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