NEC Corporation

Express5800/R120g-2M (Intel Xeon E5-2620 v4)

SPECFp®2006 = 106
SPECFp_base2006 = 100

Hardware

CPU Name: Intel Xeon E5-2620 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz: 2100
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 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: Red Hat Enterprise Linux Server release 7.2 (Maipo)
Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;
for Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
SPEC CFP2006 Result

NEC Corporation

Express5800/R120g-2M (Intel Xeon E5-2620 v4)

SPECfp2006 = 106
SPECfp_base2006 = 100

CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation
Test date: Apr-2016
Hardware Availability: Apr-2016
Software Availability: Jan-2016

L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)
Disk Subsystem: 1 x 1 TB SATA, 7200 RPM
Other Hardware: None
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>24.9</td>
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<td>25.7</td>
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<td>416.gamess</td>
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<td>30.9</td>
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<td>434.zeusmp</td>
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<td>50.3</td>
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<td>435.gromacs</td>
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<td>42.5</td>
<td>171</td>
<td>41.7</td>
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<td>303</td>
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<td>459.GemsFDTD</td>
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<td>203</td>
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<td>465.tonto</td>
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<tr>
<td>482.sphinx3</td>
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<td>65.8</td>
<td>293</td>
<td>66.5</td>
<td>297</td>
<td>65.6</td>
</tr>
</tbody>
</table>

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

Operating System Notes

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

Platform Notes

BIOS Settings:
- Power Management Policy: Custom
- Energy Performance: Performance
- Patrol Scrub: Disabled
- Snoop Mode: Home Snoop with Directory
- Hyper-Threading: Disabled
NEC Corporation

Express5800/R120g-2M (Intel Xeon E5-2620 v4)

SPEC CFP2006 Result

SPECfp2006 = 106
SPECfp_base2006 = 100

CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation
Test date: Apr-2016
Hardware Availability: Apr-2016
Software Availability: Jan-2016

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "16"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

The Express5800/R120g-1M (Intel Xeon E5-2620 v4) and
the Express5800/R120g-2M (Intel Xeon E5-2620 v4) models are electronically equivalent.
The results have been measured on the Express5800/R120g-2M (Intel Xeon E5-2620 v4) model.

Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

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.mlci: −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

Continued on next page
**SPEC CFP2006 Result**

**NEC Corporation**

Express5800/R120g-2M (Intel Xeon E5-2620 v4)

| SPECfp2006 = | 106 |
| SPECfp_base2006 = | 100 |

**CPU2006 license:** 9006  
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| Test date: | Apr-2016 |
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### Base Portability Flags (Continued)

```
482.sphinx3: -DSPEC_CPU_LP64
```

### Base Optimization Flags

**C benchmarks:**
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
 -ansi-alias

**C++ benchmarks:**
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

**Fortran benchmarks:**
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

**Benchmarks using both Fortran and C:**
-xCORE-AVX2 -ipo -O3 -no-prec-div -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: basepeak = yes
```

Continued on next page
SPEC CFP2006 Result

NEC Corporation

Express5800/R120g-2M (Intel Xeon E5-2620 v4)

SPECfp2006 = 106
SPECfp_base2006 = 100

CPU2006 license: 9006
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Tested by: NEC Corporation

Test date: Apr-2016
Hardware Availability: Apr-2016
Software Availability: Jan-2016

Peak Optimization Flags (Continued)

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

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Peak Optimization Flags (Continued)

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120g-RevC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120g-RevC.xml

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

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