## NEC Corporation

Express5800/R120d-1E (Intel Xeon E5-2407)

<table>
<thead>
<tr>
<th>SPECint®_rate2006 = 106</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006 = 102</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name: Intel Xeon E5-2407</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
</tr>
<tr>
<td>CPU MHz: 2200</td>
</tr>
<tr>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable: 1.2 chips</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache: 10 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache: None</td>
</tr>
<tr>
<td>Memory: 48 GB (6 x 8 GB 2Rx4 PC3L-12800R-11, ECC, running at 1066 MHz and CL7)</td>
</tr>
<tr>
<td>Disk Subsystem: 1 x 250 GB SATA, 7200 RPM</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System: Red Hat Enterprise Linux Server release 6.2 (Santiago)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler: C/C++: Version 12.1.2.273 of Intel C++ Studio XE for Linux;</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>File System: ext4</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers: 32-bit</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Other Software: Microquill SmartHeap V8.1</td>
</tr>
</tbody>
</table>

### Test Details

- **CPU2006 license:** 9006
- **Test sponsor:** NEC Corporation
- **Test date:** Jun-2012
- **Hardware Availability:** May-2012
- **Tested by:** NEC Corporation
- **Software Availability:** Dec-2011
**NEC Corporation**

Express5800/R120d-1E (Intel Xeon E5-2407)

**SPEC CINT2006 Result**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</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>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td>4</td>
<td>530</td>
<td>73.7</td>
<td>530</td>
<td>73.7</td>
<td></td>
<td>4</td>
<td>443</td>
<td>88.2</td>
</tr>
<tr>
<td>bzip2</td>
<td>4</td>
<td>713</td>
<td>54.2</td>
<td>713</td>
<td>54.1</td>
<td>714</td>
<td>54.0</td>
<td>688</td>
<td>56.1</td>
</tr>
<tr>
<td>gcc</td>
<td>4</td>
<td>388</td>
<td>83.0</td>
<td>388</td>
<td>82.9</td>
<td>388</td>
<td>82.9</td>
<td>388</td>
<td>82.9</td>
</tr>
<tr>
<td>mcf</td>
<td>4</td>
<td>218</td>
<td>167</td>
<td>218</td>
<td>167</td>
<td>218</td>
<td>167</td>
<td>218</td>
<td>167</td>
</tr>
<tr>
<td>gobmk</td>
<td>4</td>
<td>651</td>
<td>64.4</td>
<td>651</td>
<td>64.5</td>
<td>4</td>
<td>635</td>
<td>66.0</td>
<td>66.1</td>
</tr>
<tr>
<td>hammer</td>
<td>4</td>
<td>297</td>
<td>126</td>
<td>296</td>
<td>126</td>
<td>298</td>
<td>125</td>
<td>271</td>
<td>137</td>
</tr>
<tr>
<td>sjeng</td>
<td>4</td>
<td>689</td>
<td>70.3</td>
<td>689</td>
<td>70.2</td>
<td>4</td>
<td>664</td>
<td>72.0</td>
<td>663</td>
</tr>
<tr>
<td>libquantum</td>
<td>4</td>
<td>132</td>
<td>628</td>
<td>132</td>
<td>629</td>
<td>131</td>
<td>631</td>
<td>132</td>
<td>629</td>
</tr>
<tr>
<td>h264ref</td>
<td>4</td>
<td>655</td>
<td>135</td>
<td>668</td>
<td>133</td>
<td>4</td>
<td>639</td>
<td>139</td>
<td>638</td>
</tr>
<tr>
<td>omnetpp</td>
<td>4</td>
<td>380</td>
<td>65.7</td>
<td>382</td>
<td>65.5</td>
<td>4</td>
<td>349</td>
<td>71.7</td>
<td>349</td>
</tr>
<tr>
<td>astar</td>
<td>4</td>
<td>477</td>
<td>58.9</td>
<td>476</td>
<td>59.0</td>
<td>4</td>
<td>477</td>
<td>58.9</td>
<td>476</td>
</tr>
<tr>
<td>salancbmk</td>
<td>4</td>
<td>227</td>
<td>122</td>
<td>227</td>
<td>122</td>
<td>4</td>
<td>227</td>
<td>122</td>
<td>227</td>
</tr>
</tbody>
</table>

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**

BIOS Settings:

Energy Performance: Performance

**General Notes**

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

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

The Express5800/R120d-1E and the Express5800/R120d-2E models are electronically equivalent. The results have been measured on the Express5800/R120d-1E model.

Added glibc-static-2.12-1.47.el6.x86_64.rpm to enable static linking

Transparent Huge Pages enabled with:

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General Notes (Continued)

```bash
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   -m32  

C++ benchmarks:
  icpc -m32
```

Base Portability Flags

```
400.perlbench: -DSPEC_CPU_LINUX_IA32 
462.libquantum: -DSPEC_CPU_LINUX 
483.xalancbmk: -DSPEC_CPU_LINUX 
```

Base Optimization Flags

```
C benchmarks:
  -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:
  -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3 
  -Wl,-z,muldefs -L/opt/SmartHeap_8.1/lib -lsmartheap
```

Base Other Flags

```
C benchmarks:
  403.gcc: -Dalloca=_alloca 
```

Peak Compiler Invocation

```
C benchmarks (except as noted below):
  icc   -m32  

400.perlbench: icc -m64
```

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Peak Compiler Invocation (Continued)

401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -xsSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
401.bzip2: -xsSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch -auto-ilp32 -ansi-alias
403.gcc: basepeak = yes
429.mcf: basepeak = yes
445.gobmk: -xsSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias -opt-mem-layout-trans=3
456.hmmer: -xsSE4.2 -ipo -o3 -no-prec-div -unroll2 -auto-ilp32
458.sjeng: -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-ilp32
462.libquantum: basepeak = yes
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Peak Optimization Flags (Continued)

464.h264ref: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
-L/opt/SmartHeap_8.1/lib -lsmartheap

473.astar: basepeak = yes
483.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

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 questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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