# SPEC® CINT2006 Result

## NEC Corporation

Express5800/R120f-2M (Intel Xeon E5-2640 v3)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>728</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>705</td>
</tr>
</tbody>
</table>

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

**Test date:** Oct-2014  
**Hardware Availability:** Feb-2015  
**Software Availability:** May-2014

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### Hardware

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2640 v3</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.40 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2600</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chips</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>20 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 250 GB SATA, 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

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### Software

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 6.5 (Santiago)</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 14.0.2.144 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V8.1</td>
</tr>
</tbody>
</table>

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![Graph and Table]
**SPEC CINT2006 Result**

**NEC Corporation**

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<thead>
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<td>Hardware Availability: Feb-2015</td>
</tr>
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<td>Software Availability: May-2014</td>
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</tbody>
</table>

**SPECint_rate2006 = 728**

| SPECint_rate_base2006 = 705 |

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**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>583</td>
<td>536</td>
<td>583</td>
<td>536</td>
<td>32</td>
<td>480</td>
<td>652</td>
<td>481</td>
<td>650</td>
<td>482</td>
<td>649</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>32</td>
<td>901</td>
<td>343</td>
<td>896</td>
<td>345</td>
<td>32</td>
<td>859</td>
<td>359</td>
<td>858</td>
<td>360</td>
<td>861</td>
<td>358</td>
</tr>
<tr>
<td>403.gcc</td>
<td>32</td>
<td>480</td>
<td>537</td>
<td>481</td>
<td>535</td>
<td>32</td>
<td>480</td>
<td>537</td>
<td>481</td>
<td>535</td>
<td>477</td>
<td>540</td>
</tr>
<tr>
<td>429.mcf</td>
<td>32</td>
<td>304</td>
<td>960</td>
<td>306</td>
<td>954</td>
<td>32</td>
<td>304</td>
<td>960</td>
<td>306</td>
<td>954</td>
<td>302</td>
<td>966</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>719</td>
<td>467</td>
<td>719</td>
<td>467</td>
<td>32</td>
<td>703</td>
<td>478</td>
<td>702</td>
<td>478</td>
<td>702</td>
<td>478</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>32</td>
<td>295</td>
<td>1010</td>
<td>298</td>
<td>1000</td>
<td>32</td>
<td>290</td>
<td>1030</td>
<td>288</td>
<td>1040</td>
<td>289</td>
<td>1030</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32</td>
<td>790</td>
<td>490</td>
<td>791</td>
<td>490</td>
<td>32</td>
<td>761</td>
<td>509</td>
<td>760</td>
<td>509</td>
<td>761</td>
<td>509</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>32</td>
<td>93.2</td>
<td>7120</td>
<td>93.0</td>
<td>7130</td>
<td>32</td>
<td>93.2</td>
<td>7120</td>
<td>94.8</td>
<td>6990</td>
<td>94.8</td>
<td>6990</td>
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<tr>
<td>464.h264ref</td>
<td>32</td>
<td>878</td>
<td>807</td>
<td>862</td>
<td>821</td>
<td>32</td>
<td>861</td>
<td>823</td>
<td>855</td>
<td>828</td>
<td>838</td>
<td>845</td>
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<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>513</td>
<td>390</td>
<td>518</td>
<td>386</td>
<td>516</td>
<td>387</td>
<td>32</td>
<td>492</td>
<td>406</td>
<td>488</td>
<td>410</td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>579</td>
<td>388</td>
<td>579</td>
<td>388</td>
<td>582</td>
<td>386</td>
<td>32</td>
<td>579</td>
<td>388</td>
<td>579</td>
<td>388</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>281</td>
<td>785</td>
<td>282</td>
<td>784</td>
<td>282</td>
<td>782</td>
<td>32</td>
<td>281</td>
<td>785</td>
<td>282</td>
<td>784</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:
- Power Management Policy: Custom
- Energy Performance: Performance
- Patrol Scrub: Disabled

**General Notes**

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

The Express5800/R120f-1M (Intel Xeon E5-2640 v3) and the Express5800/R120f-2M (Intel Xeon E5-2640 v3) models are electronically equivalent. The results have been measured on the Express5800/R120f-2M (Intel Xeon E5-2640 v3) model.

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

Continued on next page
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General Notes (Continued)

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:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  -opt-mem-layout-trans=3

C++ benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  -opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
  -ansi-alias -opt-mem-layout-trans=3
- 456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
- 458.sjeng: -xCORE-AVX2(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

Continued on next page
The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120f-RevB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120f-RevB.xml

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