## NEC Corporation

**Express5800/R120g-1M (Intel Xeon E5-2699 v4)**

<table>
<thead>
<tr>
<th>SPECint®_rate2006</th>
<th>SPECint_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>904</td>
<td>870</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECint®_rate2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>44</td>
<td>696</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>44</td>
<td>489</td>
</tr>
<tr>
<td>403.gcc</td>
<td>44</td>
<td>639</td>
</tr>
<tr>
<td>429.mcf</td>
<td>44</td>
<td>1070</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>44</td>
<td>654</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>44</td>
<td>1240</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>44</td>
<td>715</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>44</td>
<td>674</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>44</td>
<td>1130</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>44</td>
<td>426</td>
</tr>
<tr>
<td>473.astar</td>
<td>44</td>
<td>479</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>44</td>
<td>851</td>
</tr>
</tbody>
</table>

**483.xalancbmk**

**SPECint_rate_base2006 = 870**

### Hardware

- **CPU Name:** Intel Xeon E5-2699 v4  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.60 GHz  
- **CPU MHz:** 2200  
- **FPU:** Integrated  
- **CPU(s) enabled:** 22 cores, 1 chip, 22 cores/chip, 2 threads/core  
- **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  
- **L3 Cache:** 55 MB I+D on chip per chip  
- **Memory:** 128 GB (8 x 16 GB 2Rx4 PC4-2400T-R)  
- **Disk Subsystem:** 1 x 1 TB SATA, 7200 RPM  
- **Other Hardware:** None

### 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  
- **Auto Parallel:** No  
- **File System:** ext4  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 32-bit  
- **Peak Pointers:** 32/64-bit  
- **Other Software:** Microquill SmartHeap V10.2
SPEC CINT2006 Result

NEC Corporation

Express5800/R120g-1M (Intel Xeon E5-2699 v4)

SPECint_rate2006 = 904
SPECint_rate_base2006 = 870

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>44</td>
<td>620</td>
<td>693</td>
<td>618</td>
<td>696</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>44</td>
<td>885</td>
<td>480</td>
<td>884</td>
<td>481</td>
</tr>
<tr>
<td>403.gcc</td>
<td>44</td>
<td>574</td>
<td>617</td>
<td>565</td>
<td>627</td>
</tr>
<tr>
<td>429.mcf</td>
<td>44</td>
<td>376</td>
<td>1070</td>
<td>374</td>
<td>1070</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>44</td>
<td>741</td>
<td>623</td>
<td>742</td>
<td>622</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>44</td>
<td>361</td>
<td>1140</td>
<td>363</td>
<td>1130</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>44</td>
<td>790</td>
<td>674</td>
<td>790</td>
<td>674</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>44</td>
<td>99.2</td>
<td>9190</td>
<td>99.2</td>
<td>9190</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>44</td>
<td>866</td>
<td>1120</td>
<td>871</td>
<td>1120</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>44</td>
<td>653</td>
<td>421</td>
<td>654</td>
<td>421</td>
</tr>
<tr>
<td>473.astar</td>
<td>44</td>
<td>644</td>
<td>479</td>
<td>645</td>
<td>479</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>44</td>
<td>357</td>
<td>850</td>
<td>357</td>
<td>851</td>
</tr>
</tbody>
</table>

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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
  Snoop Mode: Home Snoop with Directory

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"

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 E5-2699 v4) and the Express5800/R120g-2M (Intel Xeon E5-2699 v4) models are electronically equivalent.

Continued on next page
NEC Corporation
Express5800/R120g-1M (Intel Xeon E5-2699 v4)  

SPECint_rate2006 = 904  
SPECint_rate_base2006 = 870

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

General Notes (Continued)

The results have been measured on the Express5800/R120g-2M (Intel Xeon E5-2699 v4) model.
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Base Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -D_FILE_OFFSET_BITS=64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -D_FILE_OFFSET_BITS=64
458.sjeng: -D_FILE_OFFSET_BITS=64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-optimization-level=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-optimization-level=3 -Wl,-z,muldefs -L/sh -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca
### NEC Corporation

**Express5800/R120g-1M (Intel Xeon E5-2699 v4)**

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>904</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>870</td>
</tr>
</tbody>
</table>

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

---

### Peak Compiler Invocation

C benchmarks (except as noted below):

```plaintext
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

- **400.perlbench:** `icc -m64`
- **401.bzip2:** `icc -m64`
- **456.hmmer:** `icc -m64`
- **458.sjeng:** `icc -m64`

C++ benchmarks:

```plaintext
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

---

### Peak Portability Flags

```plaintext
400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
```

- **401.bzip2:** `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64`
- **403.gcc:** `-D_FILE_OFFSET_BITS=64`
- **429.mcf:** `-D_FILE_OFFSET_BITS=64`
- **445.gobmk:** `-D_FILE_OFFSET_BITS=64`
- **456.hmmer:** `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64`
- **458.sjeng:** `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64`
- **462.libquantum:** `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`
- **464.h264ref:** `-D_FILE_OFFSET_BITS=64`
- **471.omnetpp:** `-D_FILE_OFFSET_BITS=64`
- **473.astar:** `-D_FILE_OFFSET_BITS=64`
- **483.xalancbmk:** `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

---

### Peak Optimization Flags

C benchmarks:

```plaintext
400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ip0(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32
```

- **401.bzip2:** `-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) -opt-prefetch
  -auto-ilp32 -ansi-alias`
- **403.gcc:** `-xCORE-AVX2 -ipo -O3 -no-prec-div`
- **429.mcf:** `basepeak = yes`

---

Continued on next page
## SPEC CINT2006 Result

**NEC Corporation**  
Express5800/R120g-1M (Intel Xeon E5-2699 v4)  

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>904</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>870</td>
</tr>
</tbody>
</table>

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

### Peak Optimization Flags (Continued)

- **445.gobmk:**  
  -xCORE-AVX2(pass 2)  
  -prof-gen:threadsafepass 1  
  -prof-use(pass 2)  
  -par-num-threads=1(pass 1)  
  -ansi-alias  
  -opt-mem-layout-trans=3

- **456.hmmer:**  
  -xCORE-AVX2  
  -ipo  
  -O3  
  -no-prec-div  
  -unroll2  
  -auto-ilp32

- **458.sgeng:**  
  -xCORE-AVX2(pass 2)  
  -prof-gen:threadsafepass 1  
  -ipo(pass 2)  
  -O3(pass 2)  
  -no-prec-div(pass 2)  
  -par-num-threads=1(pass 1)  
  -prof-use(pass 2)  
  -unroll14  
  -auto-ilp32

- **462.libquantum:**  
  basepeak = yes

- **464.h264ref:**  
  -xCORE-AVX2(pass 2)  
  -prof-gen:threadsafepass 1  
  -ipo(pass 2)  
  -O3(pass 2)  
  -no-prec-div(pass 2)  
  -par-num-threads=1(pass 1)  
  -prof-use(pass 2)  
  -unroll12  
  -ansi-alias

### C++ benchmarks:

- **471.omnetpp:**  
  -xCORE-AVX2(pass 2)  
  -prof-gen:threadsafepass 1  
  -ipo(pass 2)  
  -O3(pass 2)  
  -no-prec-div(pass 2)  
  -par-num-threads=1(pass 1)  
  -prof-use(pass 2)  
  -ansi-alias  
  -opt-ra-region-strategy=block  
  -L/sh -lsmartheap

- **473.astar:**  
  basepeak = yes

- **483.xalanchbmk:**  
  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/NEC-Platform-Settings-V1.2-120g-RevC.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/NEC-Platform-Settings-V1.2-120g-RevC.xml](http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120g-RevC.xml)
## SPEC CINT2006 Result

**NEC Corporation**

Express5800/R120g-1M (Intel Xeon E5-2699 v4)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>904</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>870</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 9006

**Test sponsor:** NEC Corporation

**Tested by:** NEC Corporation

**Test date:** Feb-2016

**Hardware Availability:** Apr-2016

**Software Availability:** Jan-2016

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.

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

Tested with SPEC CPU2006 v1.2.


Originally published on 1 June 2016.