# SPEC® CINT2006 Result
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## NEC Corporation

Express5800/T110h-S (Intel Core i3-6300)

SPECint®_rate2006 = 147
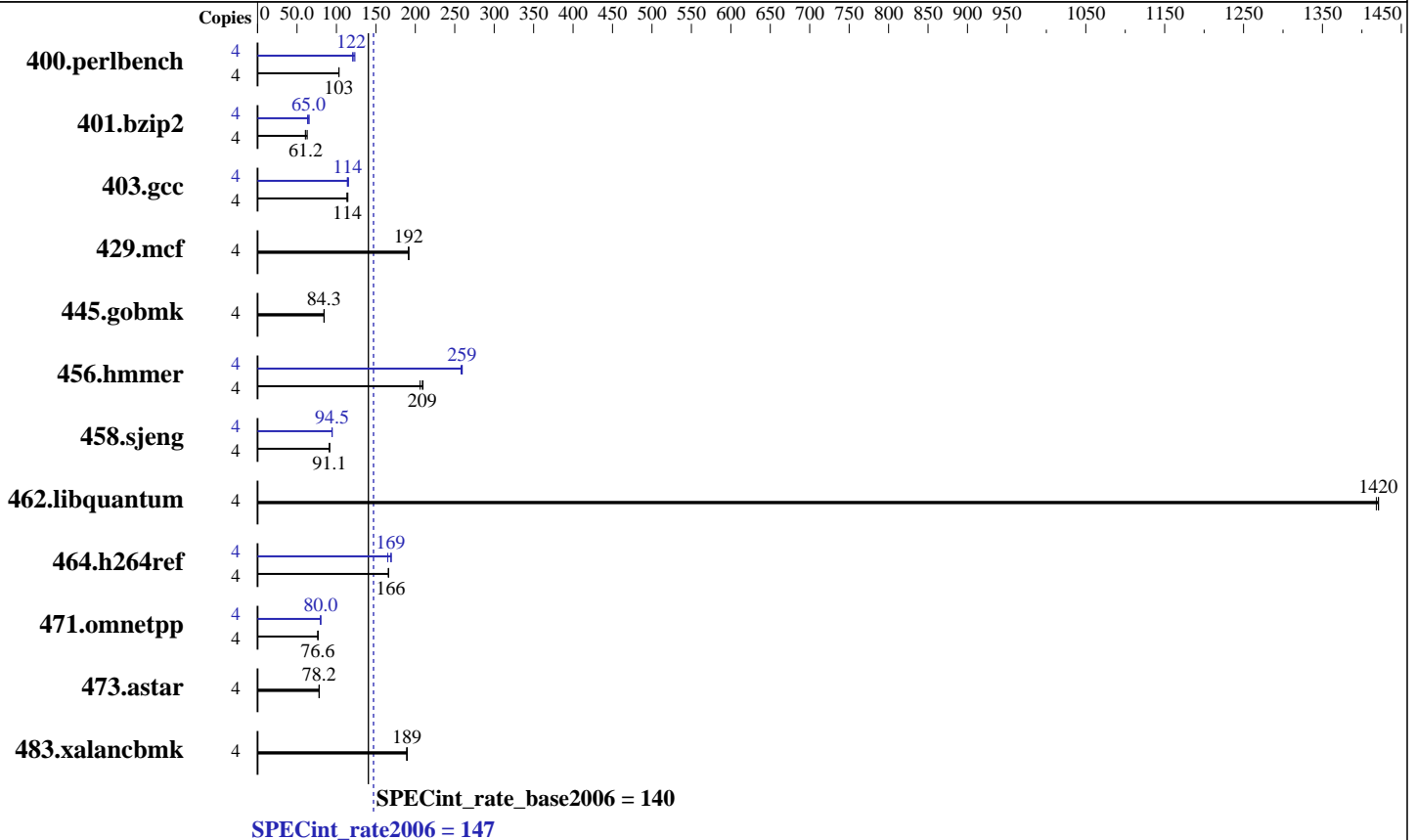
SPECint_rate_base2006 = 140

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

**Test date:** Dec-2015
**Hardware Availability:** Mar-2016
**Software Availability:** Nov-2015



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| Hardware | |
|---|---|
| CPU Name: | Intel Core i3-6300 |
| CPU Characteristics: | |
| CPU MHz: | 3800 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip, 2 threads/core |
| 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 |
| L3 Cache: | 4 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 16 GB (2 x 8 GB 2Rx8 PC4-2133P-E) |
| Disk Subsystem: | 1 x 500 GB SATA, 7200 RPM |
| Other Hardware: | None |

| Software | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 7.2 (Maipo) |
| | Kernel 3.10.0-327.el7.x86_64 |
| 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 |

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## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 4 | 379 | 103 | **379** | **103** | 379 | 103 | 4 | **320** | **122** | 317 | 123 | 324 | 121 |
| 401.bzip2 | 4 | 613 | 63.0 | 637 | 60.6 | **630** | **61.2** | 4 | **594** | **65.0** | 609 | 63.4 | 591 | 65.3 |
| 403.gcc | 4 | **283** | **114** | 281 | 115 | 284 | 113 | 4 | 279 | 115 | 283 | 114 | **282** | **114** |
| 429.mcf | 4 | 191 | 191 | **190** | **192** | 190 | 192 | 4 | 191 | 191 | **190** | **192** | 190 | 192 |
| 445.gobmk | 4 | 498 | 84.2 | **498** | **84.3** | 496 | 84.5 | 4 | 498 | 84.2 | **498** | **84.3** | 496 | 84.5 |
| 456.hmmer | 4 | **179** | **209** | 178 | 210 | 181 | 206 | 4 | 144 | 260 | **144** | **259** | 145 | 258 |
| 458.sjeng | 4 | 530 | 91.3 | **531** | **91.1** | 531 | 91.1 | 4 | **512** | **94.5** | 512 | 94.5 | 512 | 94.6 |
| 462.libquantum | 4 | 58.4 | 1420 | **58.3** | **1420** | 58.3 | 1420 | 4 | 58.4 | 1420 | **58.3** | **1420** | 58.3 | 1420 |
| 464.h264ref | 4 | **533** | **166** | 534 | 166 | 533 | 166 | 4 | **524** | **169** | 536 | 165 | 522 | 170 |
| 471.omnetpp | 4 | **326** | **76.6** | 326 | 76.6 | 327 | 76.4 | 4 | **313** | **80.0** | 313 | 79.9 | 312 | 80.0 |
| 473.astar | 4 | **359** | **78.2** | 360 | 78.0 | 359 | 78.2 | 4 | **359** | **78.2** | 360 | 78.0 | 359 | 78.2 |
| 483.xalancbmk | 4 | **146** | **189** | 146 | 189 | 145 | 190 | 4 | **146** | **189** | 146 | 189 | 145 | 190 |

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
```

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

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## 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
      -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 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

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## Peak Compiler Invocation (Continued)

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

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

## Peak Portability Flags

```
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:

```
400.perlbench: -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) -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

   445.gobmk: basepeak = yes
```

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# Peak Optimization Flags (Continued)

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

458.sjeng: `-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`
`-auto-ilp32`

462.libquantum: `basepeak = yes`

464.h264ref: `-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`
`-ansi-alias`

C++ benchmarks:

471.omnetpp: `-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) -ansi-alias`
`-opt-ra-region-strategy=block -Wl,-z,muldefs`
`-L/sh -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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-110h-RevA.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-V1.2-110h-RevA.xml

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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Feb 9 17:22:18 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 9 February 2016.