



# SPEC® CINT2006 Result

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## NEC Corporation

SPECint®\_rate2006 = 147

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

SPECint\_rate\_base2006 = 140

CPU2006 license: 9006

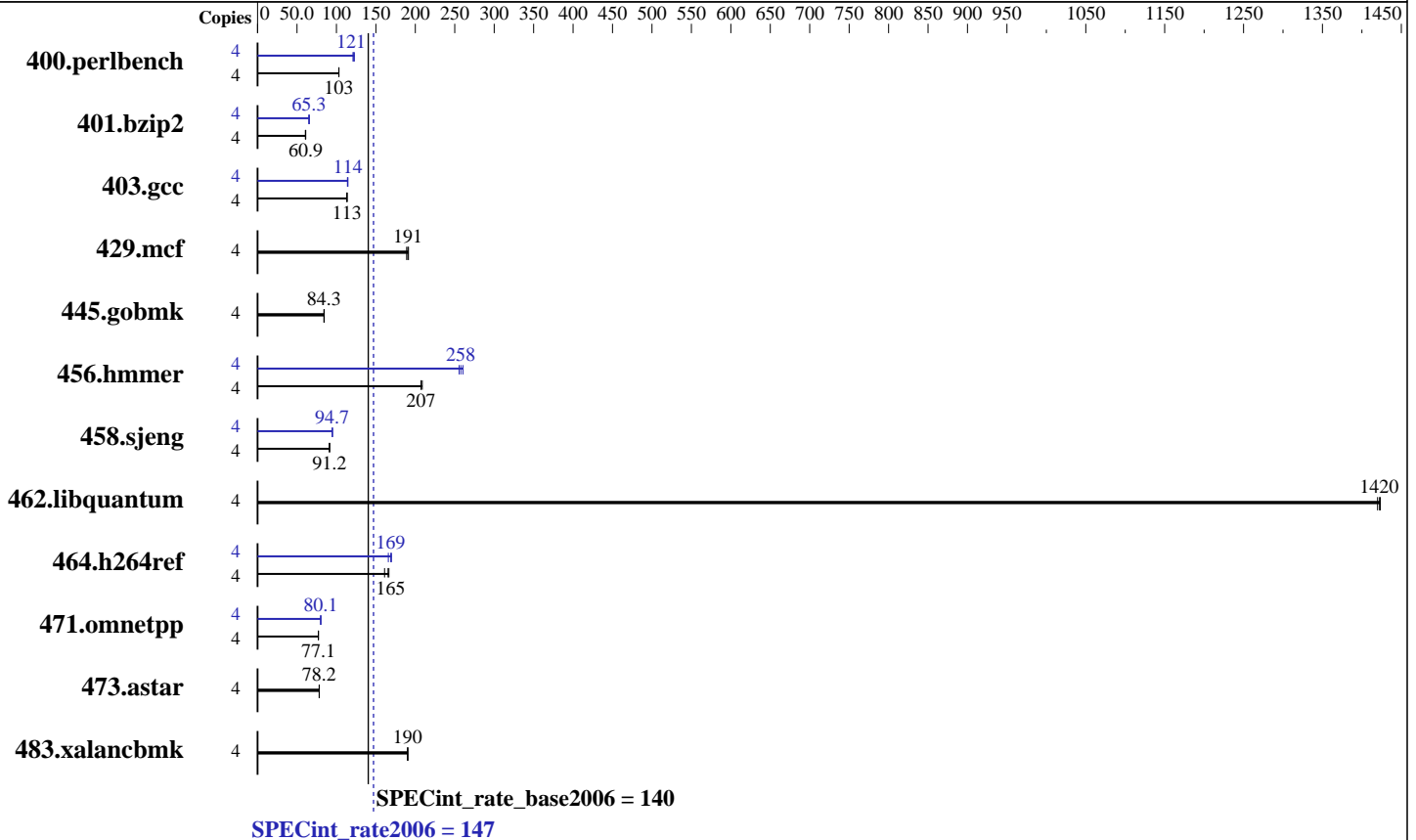
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Dec-2015

Hardware Availability: Mar-2016

Software Availability: Nov-2015



### 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	<u>379</u>	<u>103</u>	379	103	4	<u>322</u>	<u>121</u>	322	121	318	123
401.bzip2	4	632	61.1	637	60.6	<u>633</u>	<u>60.9</u>	4	<u>591</u>	<u>65.3</u>	588	65.6	593	65.0
403.gcc	4	283	114	<u>284</u>	<u>113</u>	285	113	4	283	114	281	114	<u>281</u>	<u>114</u>
429.mcf	4	<u>191</u>	<u>191</u>	191	191	193	189	4	<u>191</u>	<u>191</u>	191	191	193	189
445.gobmk	4	496	84.6	498	84.3	<u>498</u>	<u>84.3</u>	4	496	84.6	498	84.3	<u>498</u>	<u>84.3</u>
456.hammer	4	<u>180</u>	<u>207</u>	179	209	180	207	4	143	260	146	256	<u>145</u>	<u>258</u>
458.sjeng	4	530	91.3	531	91.1	<u>531</u>	<u>91.2</u>	4	510	95.0	<u>511</u>	<u>94.7</u>	511	94.7
462.libquantum	4	58.4	1420	58.2	1420	<u>58.3</u>	<u>1420</u>	4	58.4	1420	58.2	1420	<u>58.3</u>	<u>1420</u>
464.h264ref	4	550	161	<u>535</u>	<u>165</u>	532	167	4	<u>524</u>	<u>169</u>	521	170	534	166
471.omnetpp	4	324	77.2	<u>324</u>	<u>77.1</u>	324	77.1	4	312	80.0	312	80.2	<u>312</u>	<u>80.1</u>
473.astar	4	359	78.2	360	78.1	<u>359</u>	<u>78.2</u>	4	359	78.2	360	78.1	<u>359</u>	<u>78.2</u>
483.xalancbmk	4	<u>145</u>	<u>190</u>	145	190	145	191	4	<u>145</u>	<u>190</u>	145	190	145	191

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.hmmr: -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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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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