



# SPEC® CINT2006 Result

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## NEC Corporation

**SPECint®2006 = 67.2**

Express5800/A2040d (Intel Xeon E7-8867 v4)

**SPECint\_base2006 = 65.1**

CPU2006 license: 9006

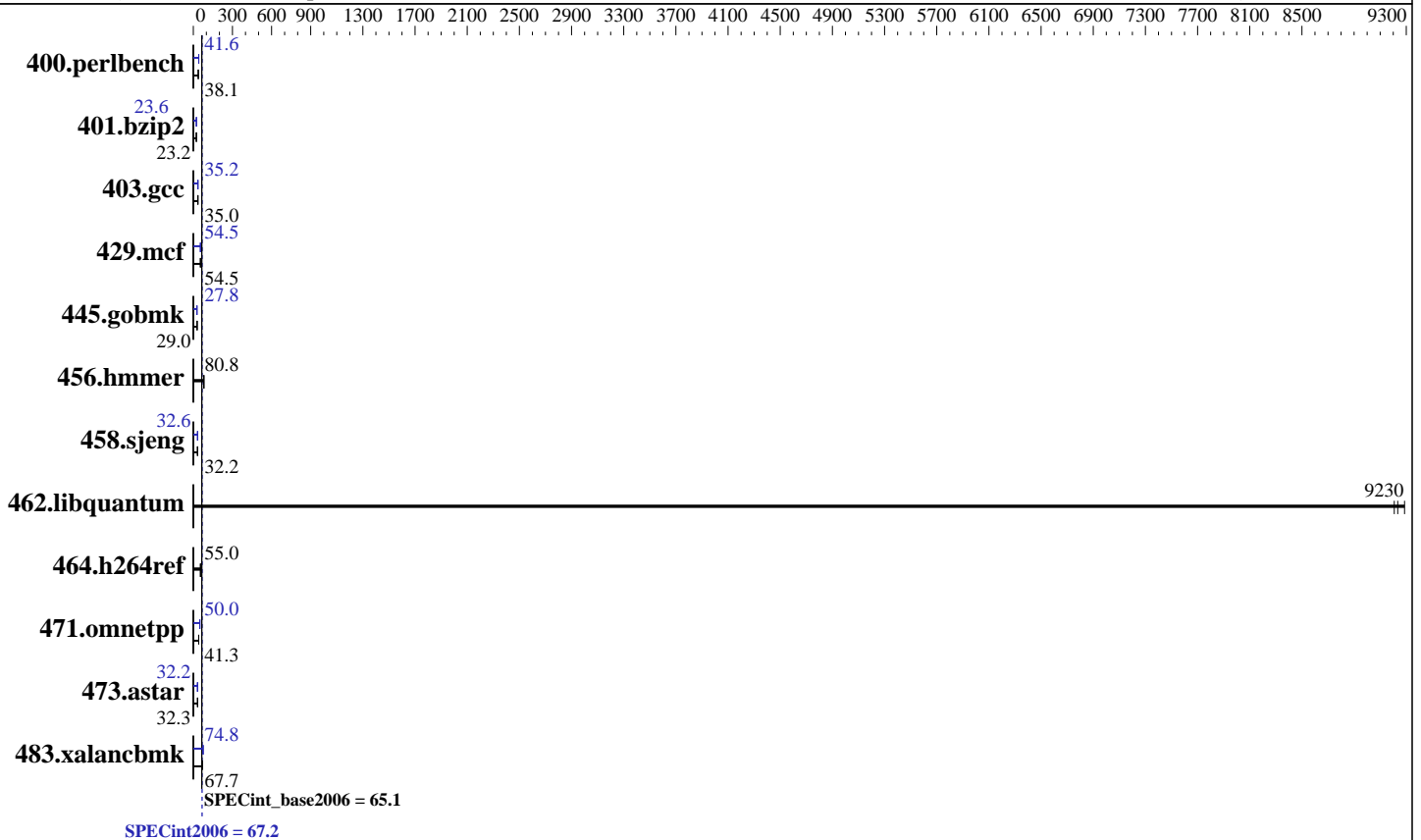
Test date: May-2017

Test sponsor: NEC Corporation

Hardware Availability: Sep-2016

Tested by: NEC Corporation

Software Availability: Nov-2016



### Hardware

CPU Name: Intel Xeon E7-8867 v4  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 72 cores, 4 chips, 18 cores/chip  
 CPU(s) orderable: 2,3,4 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: 45 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 1 TB (32 x 32 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
 Disk Subsystem: 1 x 600 GB SAS, 15000 RPM, RAID 0  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
 Kernel 3.10.0-514.el7.x86\_64  
 Compiler: C/C++: Version 16.0.3.210 of Intel C++ Studio XE for Linux  
 Auto Parallel: Yes  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap Multi-Core V10.01



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## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	256	38.1	<u>257</u>	<u>38.1</u>	258	37.8	235	41.6	234	41.7	<u>235</u>	<u>41.6</u>
401.bzip2	417	23.1	414	23.3	<u>417</u>	<u>23.2</u>	408	23.6	408	23.6	<u>408</u>	<u>23.6</u>
403.gcc	<u>230</u>	<u>35.0</u>	230	35.0	229	35.2	229	35.2	<u>229</u>	<u>35.2</u>	228	35.3
429.mcf	165	55.4	<u>167</u>	<u>54.5</u>	168	54.3	<u>167</u>	<u>54.5</u>	166	55.0	168	54.4
445.gobmk	<u>362</u>	<u>29.0</u>	362	29.0	362	29.0	<u>377</u>	<u>27.8</u>	378	27.8	377	27.8
456.hammer	115	80.9	116	80.7	<u>115</u>	<u>80.8</u>	115	80.9	116	80.7	<u>115</u>	<u>80.8</u>
458.sjeng	377	32.1	376	32.2	<u>376</u>	<u>32.2</u>	372	32.5	<u>372</u>	<u>32.6</u>	372	32.6
462.libquantum	2.23	9290	2.25	9210	<u>2.24</u>	<u>9230</u>	2.23	9290	2.25	9210	<u>2.24</u>	<u>9230</u>
464.h264ref	402	55.1	402	55.0	<u>402</u>	<u>55.0</u>	402	55.1	402	55.0	<u>402</u>	<u>55.0</u>
471.omnetpp	150	41.6	<u>151</u>	<u>41.3</u>	153	40.9	126	49.7	<u>125</u>	<u>50.0</u>	125	50.1
473.astar	<u>218</u>	<u>32.3</u>	213	33.0	218	32.2	218	32.2	218	32.2	<u>218</u>	<u>32.2</u>
483.xalancbmk	101	68.4	<u>102</u>	<u>67.7</u>	102	67.6	92.2	74.8	92.2	74.8	<u>92.2</u>	<u>74.8</u>

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

## Submit Notes

The config file option 'submit' was used.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

BIOS Settings:  
Memory RAS Mode: Independent mode  
VT-x : Disabled  
Processor C6 Report : Disabled  
OS Performance Tuning : Disabled  
Energy Performance : Performance  
Patrol Scrub : Disabled  
Demand Scrub : Disabled  
Memory P.E. Retry : Disabled  
Hyper-Threading : Disabled

## General Notes

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

KMP\_AFFINITY = "granularity=fine,compact"

LD\_LIBRARY\_PATH = \*/opt/SmartHeap\_10mc/lib:/opt/SmartHeap\_10mc/lib64:/opt/intel/compilers\_and\_libraries\_2016.3.210/linux/compiler/lib/ia32\_lin:/opt/intel/compilers\_and\_libraries\_2016.3.210/linux/compiler/lib/intel64\_lin\*

OMP\_NUM\_THREADS = "72"



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## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
401.bzip2: -DSPEC\_CPU\_LP64  
403.gcc: -DSPEC\_CPU\_LP64  
429.mcf: -DSPEC\_CPU\_LP64  
445.gobmk: -DSPEC\_CPU\_LP64  
456.hmmer: -DSPEC\_CPU\_LP64  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
471.omnetpp: -DSPEC\_CPU\_LP64  
473.astar: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-Wl,-z,muldefs -L/opt/SmartHeap\_10mc/lib64 -lsmartheap64

## Base Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

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## Peak Compiler Invocation (Continued)

400.perlbench: icc -m32 -L/opt/intel/compilers\_and\_libraries\_2016.3.210/linux/compiler/lib/ia32\_lin

445.gobmk: icc -m32 -L/opt/intel/compilers\_and\_libraries\_2016.3.210/linux/compiler/lib/ia32\_lin

C++ benchmarks (except as noted below):

icpc -m32 -L/opt/intel/compilers\_and\_libraries\_2016.3.210/linux/compiler/lib/ia32\_lin

473.astar: icpc -m64

## Peak Portability Flags

400.perlbench: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX\_IA32

401.bzip2: -DSPEC\_CPU\_LP64

403.gcc: -DSPEC\_CPU\_LP64

429.mcf: -DSPEC\_CPU\_LP64

445.gobmk: -D\_FILE\_OFFSET\_BITS=64

456.hmmmer: -DSPEC\_CPU\_LP64

458.sjeng: -DSPEC\_CPU\_LP64

462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

464.h264ref: -DSPEC\_CPU\_LP64

471.omnetpp: -D\_FILE\_OFFSET\_BITS=64

473.astar: -DSPEC\_CPU\_LP64

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) -opt-prefetch  
-ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div  
-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32  
-opt-prefetch -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc  
-opt-malloc-options=3 -auto-ilp32

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel  
-opt-prefetch -auto-p32

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias

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## Peak Optimization Flags (Continued)

456.hmmcr: basepeak = yes

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

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

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)  
-opt-ra-region-strategy=block -ansi-alias  
-Wl,-z,muldefs -L/opt/SmartHeap\_10mc/lib -lsmarheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
-auto-p32 -Wl,-z,muldefs  
-L/opt/SmartHeap\_10mc/lib64 -lsmarheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
-ansi-alias -Wl,-z,muldefs  
-L/opt/SmartHeap\_10mc/lib -lsmarheap

## 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-A2040d-RevB.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-A2040d-RevB.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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