



# SPEC® CINT2006 Result

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**NEC Corporation**  
**DX20a-X (Intel Xeon D-1571)**

**SPECint®2006 = 43.3**  
**SPECint\_base2006 = 41.9**

CPU2006 license: 9006

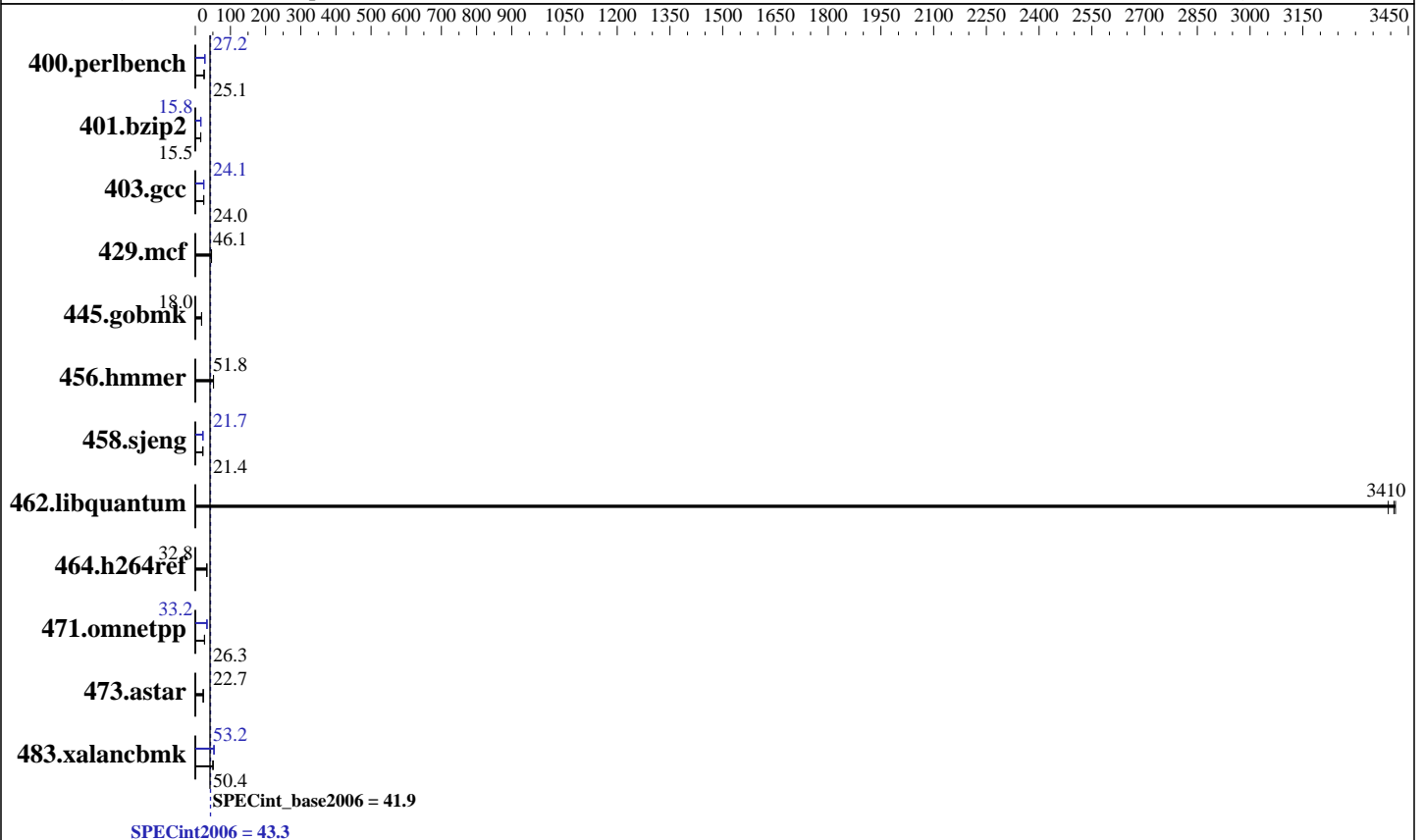
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Apr-2016

Hardware Availability: Apr-2016

Software Availability: Feb-2016



## Hardware

CPU Name: Intel Xeon D-1571  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.10 GHz  
 CPU MHz: 1300  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 1 chip, 16 cores/chip  
 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: 24 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2133P-T)  
 Disk Subsystem: 1 x 512 GB SATA, SSD  
 Other Hardware: None

## Software

Operating System: Red Hat Enterprise Linux Server release 7.2 (Maipo)  
 Kernel 3.10.0-327.10.1.el7.x86\_64  
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V10.2



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## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	<b>390</b>	<b>25.1</b>	389	25.1	390	25.1	358	27.3	359	27.2	<b>359</b>	<b>27.2</b>
401.bzip2	625	15.4	<b>624</b>	<b>15.5</b>	623	15.5	<b>612</b>	<b>15.8</b>	611	15.8	612	15.8
403.gcc	<b>335</b>	<b>24.0</b>	335	24.0	336	24.0	<b>333</b>	<b>24.1</b>	333	24.2	334	24.1
429.mcf	198	46.0	<b>198</b>	<b>46.1</b>	198	46.2	198	46.0	<b>198</b>	<b>46.1</b>	198	46.2
445.gobmk	583	18.0	<b>584</b>	<b>18.0</b>	584	18.0	583	18.0	<b>584</b>	<b>18.0</b>	584	18.0
456.hammer	180	51.8	180	51.7	<b>180</b>	<b>51.8</b>	180	51.8	180	51.7	<b>180</b>	<b>51.8</b>
458.sjeng	565	21.4	<b>565</b>	<b>21.4</b>	565	21.4	558	21.7	<b>558</b>	<b>21.7</b>	558	21.7
462.libquantum	6.07	3410	<b>6.08</b>	<b>3410</b>	6.11	3390	6.07	3410	<b>6.08</b>	<b>3410</b>	6.11	3390
464.h264ref	676	32.7	673	32.9	<b>675</b>	<b>32.8</b>	676	32.7	673	32.9	<b>675</b>	<b>32.8</b>
471.omnetpp	237	26.4	<b>237</b>	<b>26.3</b>	239	26.2	189	33.1	<b>188</b>	<b>33.2</b>	188	33.3
473.astar	309	22.8	<b>309</b>	<b>22.7</b>	310	22.6	309	22.8	<b>309</b>	<b>22.7</b>	310	22.6
483.xalancbmk	137	50.4	<b>137</b>	<b>50.4</b>	137	50.5	130	53.1	<b>130</b>	<b>53.2</b>	129	53.4

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:

Power Management Policy: Custom

Energy Performance: Performance

Patrol Scrub: 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 = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

OMP\_NUM\_THREADS = "16"

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 -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/sh -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/linux/compiler/lib/ia32\_lin

C++ benchmarks (except as noted below):

icpc -m32 -L/opt/intel/compilers\_and\_libraries\_2016/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: -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: -D\_FILE\_OFFSET\_BITS=64  
 473.astar: -DSPEC\_CPU\_LP64  
 483.xalanbmk: -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: basepeak = yes

445.gobmk: basepeak = yes

456.hmmer: basepeak = yes

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## Peak Optimization Flags (Continued)

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/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
 -ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

## 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-DX-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-DX-RevA.xml>

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 For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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