



# SPEC® CINT2006 Result

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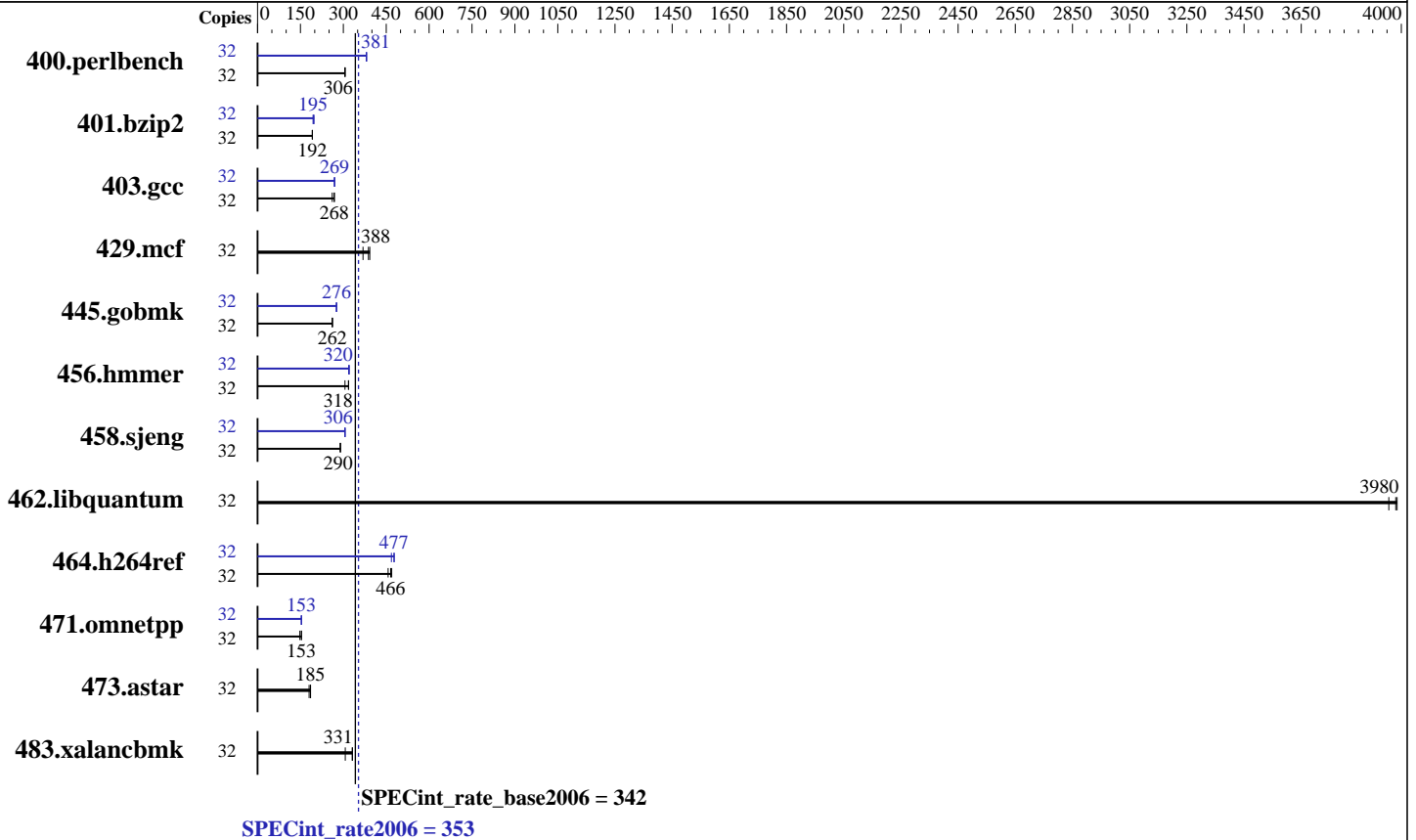
## NEC Corporation DX20a-X (Intel Xeon D-1571)

SPECint®\_rate2006 = 353

SPECint\_rate\_base2006 = 342

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, 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: 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: 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	32	1021	306	<b><u>1022</u></b>	<b><u>306</u></b>	1024	305	32	820	381	<b><u>821</u></b>	<b><u>381</u></b>	822	380
401.bzip2	32	1610	192	1613	191	<b><u>1611</u></b>	<b><u>192</u></b>	32	1588	194	1562	198	<b><u>1586</u></b>	<b><u>195</u></b>
403.gcc	32	986	261	959	269	<b><u>961</u></b>	<b><u>268</u></b>	32	<b><u>957</u></b>	<b><u>269</u></b>	954	270	959	269
429.mcf	32	791	369	<b><u>753</u></b>	<b><u>388</u></b>	744	392	32	791	369	<b><u>753</u></b>	<b><u>388</u></b>	744	392
445.gobmk	32	<b><u>1284</u></b>	<b><u>262</u></b>	1282	262	1284	261	32	<b><u>1216</u></b>	<b><u>276</u></b>	1218	276	1214	277
456.hammer	32	977	306	<b><u>940</u></b>	<b><u>318</u></b>	937	319	32	932	320	<b><u>932</u></b>	<b><u>320</u></b>	937	319
458.sjeng	32	1338	289	1336	290	<b><u>1336</u></b>	<b><u>290</u></b>	32	1267	306	<b><u>1266</u></b>	<b><u>306</u></b>	1266	306
462.libquantum	32	168	3960	<b><u>167</u></b>	<b><u>3980</u></b>	166	3990	32	168	3960	<b><u>167</u></b>	<b><u>3980</u></b>	166	3990
464.h264ref	32	1509	469	1551	457	<b><u>1521</u></b>	<b><u>466</u></b>	32	<b><u>1485</u></b>	<b><u>477</u></b>	1481	478	1513	468
471.omnetpp	32	1353	148	<b><u>1306</u></b>	<b><u>153</u></b>	1303	154	32	1303	154	1306	153	<b><u>1304</u></b>	<b><u>153</u></b>
473.astar	32	1246	180	1212	185	<b><u>1213</u></b>	<b><u>185</u></b>	32	1246	180	1212	185	<b><u>1213</u></b>	<b><u>185</u></b>
483.xalancbmk	32	720	307	665	332	<b><u>667</u></b>	<b><u>331</u></b>	32	720	307	665	332	<b><u>667</u></b>	<b><u>331</u></b>

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

## 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: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`  
`-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias`  
`-opt-mem-layout-trans=3`

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## Peak Optimization Flags (Continued)

456.hmmcr: -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-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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