



# SPEC<sup>®</sup> CINT2006 Result

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## IBM Corporation

SPECint<sup>®</sup>\_rate2006 = 460

### IBM System x3690 X5 (Intel Xeon E7-2850)

SPECint\_rate\_base2006 = 428

CPU2006 license: 11

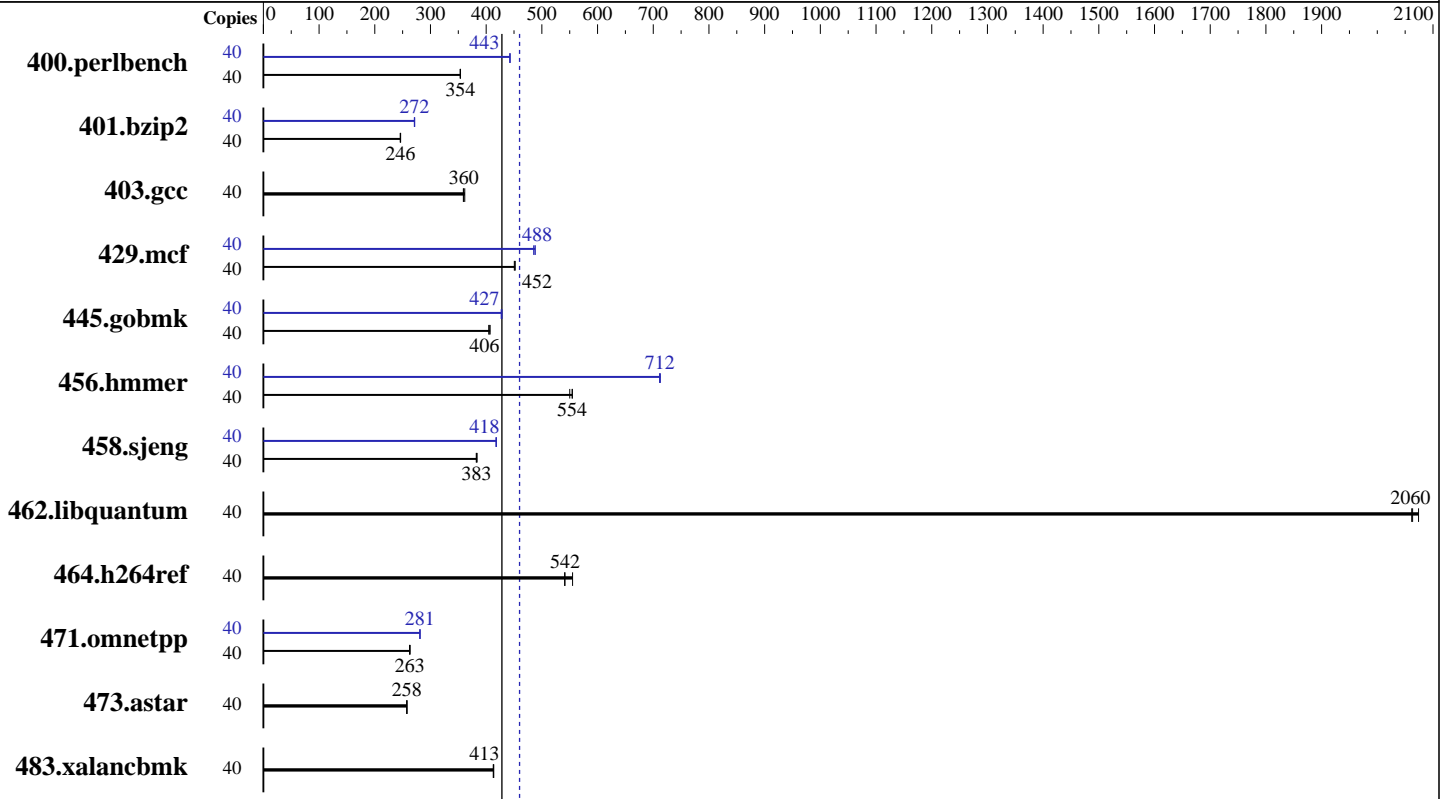
Test date: May-2011

Test sponsor: IBM Corporation

Hardware Availability: May-2011

Tested by: IBM Corporation

Software Availability: Jan-2011



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### Hardware

CPU Name: Intel Xeon E7-2850  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 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: 24 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (32 x 8 GB 4Rx8 PC3-8500R-7, ECC)  
 Disk Subsystem: 1 x 300 GB SAS, 10000 RPM  
 Other Hardware: None

### Software

Operating System: SUSE Linux Enterprise Server 11 SP1 (x86\_64), Kernel 2.6.32.12-0.7-default  
 Compiler: Intel C++ Compiler XE for applications running on IA-32 Version 12.0.1.116 Build 20101116  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V9.01



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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	40	1104	354	<b><u>1105</u></b>	<b><u>354</u></b>	1106	353	40	883	443	883	443	<b><u>883</u></b>	<b><u>443</u></b>
401.bzip2	40	1571	246	1566	246	<b><u>1569</u></b>	<b><u>246</u></b>	40	<b><u>1422</u></b>	<b><u>272</u></b>	1424	271	1421	272
403.gcc	40	897	359	<b><u>895</u></b>	<b><u>360</u></b>	891	362	40	897	359	<b><u>895</u></b>	<b><u>360</u></b>	891	362
429.mcf	40	810	451	807	452	<b><u>808</u></b>	<b><u>452</u></b>	40	<b><u>748</u></b>	<b><u>488</u></b>	748	488	752	485
445.gobmk	40	1031	407	1037	405	<b><u>1035</u></b>	<b><u>406</u></b>	40	<b><u>982</u></b>	<b><u>427</u></b>	979	429	982	427
456.hammer	40	673	555	<b><u>673</u></b>	<b><u>554</u></b>	678	550	40	525	711	524	713	<b><u>524</u></b>	<b><u>712</u></b>
458.sjeng	40	1266	382	<b><u>1264</u></b>	<b><u>383</u></b>	1261	384	40	1158	418	1157	418	<b><u>1158</u></b>	<b><u>418</u></b>
462.libquantum	40	402	2060	400	2070	<b><u>402</u></b>	<b><u>2060</u></b>	40	402	2060	400	2070	<b><u>402</u></b>	<b><u>2060</u></b>
464.h264ref	40	1637	541	1595	555	<b><u>1635</u></b>	<b><u>542</u></b>	40	1637	541	1595	555	<b><u>1635</u></b>	<b><u>542</u></b>
471.omnetpp	40	949	263	953	262	<b><u>951</u></b>	<b><u>263</u></b>	40	<b><u>890</u></b>	<b><u>281</u></b>	890	281	889	281
473.astar	40	<b><u>1090</u></b>	<b><u>258</u></b>	1090	258	1090	258	40	<b><u>1090</u></b>	<b><u>258</u></b>	1090	258	1090	258
483.xalancbmk	40	667	414	669	413	<b><u>668</u></b>	<b><u>413</u></b>	40	667	414	669	413	<b><u>668</u></b>	<b><u>413</u></b>

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.  
numactl was used to bind copies to the cores

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited
'nodev /mnt/hugepages hugetlbfs defaults 0 0' added to /etc/fstab
echo 24000 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

Load Default BIOS Settings and then change the following  
Turbo Boost set to Traditional

## General Notes

Binaries compiled on RHEL 5.5

## Base Compiler Invocation

C benchmarks:  
icc -m32

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## Base Compiler Invocation (Continued)

C++ benchmarks:  
icpc -m32

## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32  
462.libquantum: -DSPEC\_CPU\_LINUX  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

C++ benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs  
-L/smartheap -lsmartheap  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

## Base Other Flags

C benchmarks:  
403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):  
icc -m32

400.perlbench: icc -m64

401.bzip2: icc -m64

456.hmmer: icc -m64

458.sjeng: icc -m64

C++ benchmarks:  
icpc -m32



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## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
 401.bzip2: -DSPEC\_CPU\_LP64  
 456.hmmer: -DSPEC\_CPU\_LP64  
 458.sjeng: -DSPEC\_CPU\_LP64  
 462.libquantum: -DSPEC\_CPU\_LINUX  
 483.xalancbmk: -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
 -B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
 -opt-prefetch -auto-ilp32 -ansi-alias  
 -B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

403.gcc: basepeak = yes

429.mcf: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
 -ansi-alias -auto-ilp32

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
 -ansi-alias -auto-ilp32

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32  
 -B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
 -unroll4 -auto-ilp32  
 -B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
 -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs  
 -L/smartheap -lsmartheap

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## Peak Optimization Flags (Continued)

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-ic12.0-linux64-revB.html>

<http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml>

<http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.xml>

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

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