



# SPEC<sup>®</sup> CINT2006 Result

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## IBM Corporation

SPECint<sup>®</sup>\_rate2006 = 915

### IBM System x3850 X5 (Intel Xeon E7-4850)

SPECint\_rate\_base2006 = 853

CPU2006 license: 11

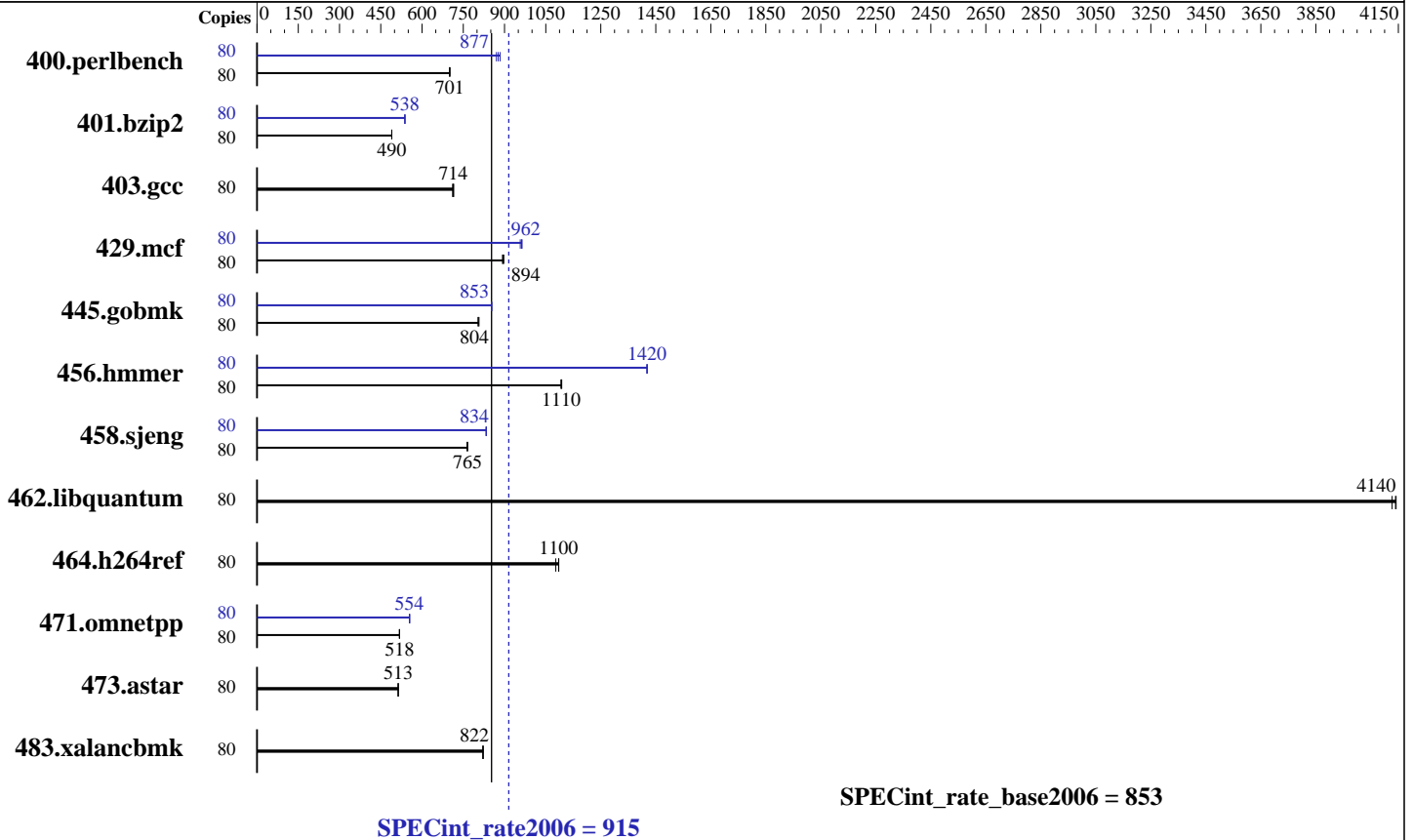
Test date: Apr-2011

Test sponsor: IBM Corporation

Hardware Availability: May-2011

Tested by: IBM Corporation

Software Availability: Jan-2011



### Hardware

CPU Name: Intel Xeon E7-4850  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.4 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2,3,4 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: 24 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 512 GB (64 x 8 GB 4Rx8 PC3-8500R-7, ECC)  
 Disk Subsystem: 2 x 147 GB 15k RPM SAS, RAID 0  
 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	80	<b><u>1116</u></b>	<b><u>701</u></b>	1114	702	1117	700	80	898	870	<b><u>891</u></b>	<b><u>877</u></b>	884	884
401.bzip2	80	1575	490	1576	490	<b><u>1575</u></b>	<b><u>490</u></b>	80	<b><u>1436</u></b>	<b><u>538</u></b>	1434	538	1436	537
403.gcc	80	900	715	906	711	<b><u>903</u></b>	<b><u>714</u></b>	80	900	715	906	711	<b><u>903</u></b>	<b><u>714</u></b>
429.mcf	80	813	897	817	893	<b><u>816</u></b>	<b><u>894</u></b>	80	757	964	<b><u>758</u></b>	<b><u>962</u></b>	762	957
445.gobmk	80	1040	807	1044	804	<b><u>1043</u></b>	<b><u>804</u></b>	80	984	853	<b><u>984</u></b>	<b><u>853</u></b>	983	854
456.hammer	80	674	1110	<b><u>674</u></b>	<b><u>1110</u></b>	675	1110	80	526	1420	526	1420	<b><u>526</u></b>	<b><u>1420</u></b>
458.sjeng	80	1264	766	<b><u>1265</u></b>	<b><u>765</u></b>	1267	764	80	1163	833	1161	834	<b><u>1161</u></b>	<b><u>834</u></b>
462.libquantum	80	402	4130	<b><u>400</u></b>	<b><u>4140</u></b>	400	4140	80	402	4130	<b><u>400</u></b>	<b><u>4140</u></b>	400	4140
464.h264ref	80	<b><u>1614</u></b>	<b><u>1100</u></b>	1630	1090	1614	1100	80	<b><u>1614</u></b>	<b><u>1100</u></b>	1630	1090	1614	1100
471.omnetpp	80	966	518	965	518	<b><u>965</u></b>	<b><u>518</u></b>	80	<b><u>902</u></b>	<b><u>554</u></b>	903	554	900	555
473.astar	80	<b><u>1094</u></b>	<b><u>513</u></b>	1093	514	1094	513	80	<b><u>1094</u></b>	<b><u>513</u></b>	1093	514	1094	513
483.xalancbmk	80	<b><u>672</u></b>	<b><u>822</u></b>	671	823	672	821	80	<b><u>672</u></b>	<b><u>822</u></b>	671	823	672	821

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 prior to run
echo 1 > /proc/sys/vm/zone_reclaim_mode
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 52000 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

BIOS Settings:  
Turbo Boost Power Optimization set to Traditional

## General Notes

Binaries were compiled on RHEL5.5



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## Base Compiler Invocation

C benchmarks:

icc -m32

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

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## Peak Compiler Invocation (Continued)

C++ benchmarks:  
icpc -m32

## 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

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## Peak Optimization Flags (Continued)

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

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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