



# SPEC® CINT2006 Result

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## IBM Corporation

SPECint®\_rate2006 = 391

IBM System x iDataPlex dx360 M3 (Intel Xeon X5675)

SPECint\_rate\_base2006 = 364

CPU2006 license: 11

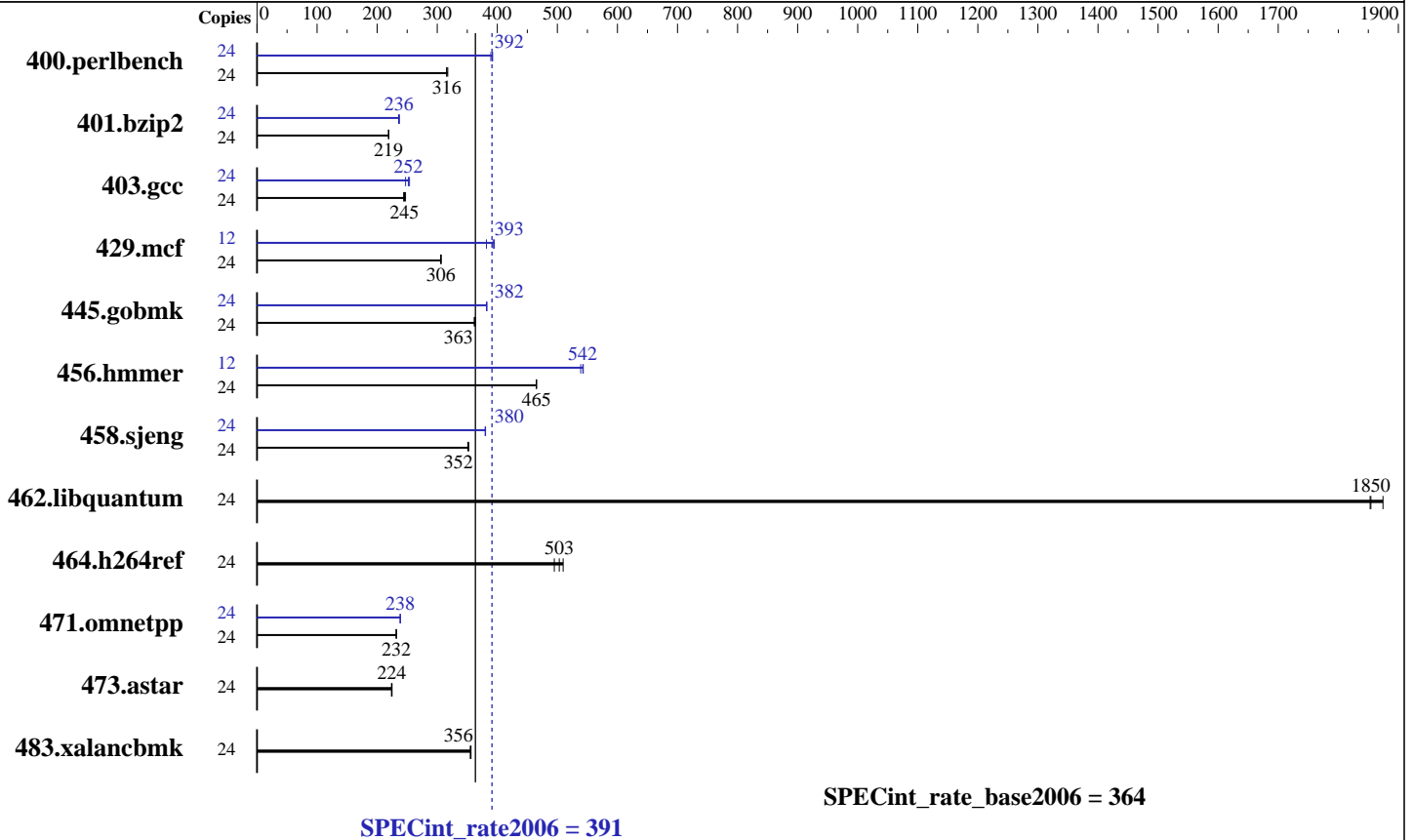
Test date: Feb-2011

Test sponsor: IBM Corporation

Hardware Availability: Feb-2011

Tested by: IBM Corporation

Software Availability: Jan-2011



### Hardware

CPU Name: Intel Xeon X5675  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz  
 CPU MHz: 3067  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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: 12 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 96 GB (12 x 8 GB 2Rx4 PC3-10600R-9, ECC)  
 Disk Subsystem: 1 x 146 GB SAS, 15000 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  | 24     | <b>742</b>  | <b>316</b> | 743        | 316         | 738         | 318        | 24     | 598         | 392        | 602        | 389         | <b>598</b> | <b>392</b> |
| 401.bzip2      | 24     | 1055        | 219        | 1058       | 219         | <b>1057</b> | <b>219</b> | 24     | 982         | 236        | 977        | 237         | <b>980</b> | <b>236</b> |
| 403.gcc        | 24     | <b>787</b>  | <b>245</b> | 782        | 247         | 792         | 244        | 24     | 761         | 254        | <b>767</b> | <b>252</b>  | 781        | 247        |
| 429.mcf        | 24     | <b>715</b>  | <b>306</b> | 714        | 307         | 716         | 306        | 12     | 287         | 382        | 277        | 395         | <b>278</b> | <b>393</b> |
| 445.gobmk      | 24     | 693         | 363        | 696        | 362         | <b>694</b>  | <b>363</b> | 24     | 659         | 382        | <b>658</b> | <b>382</b>  | 658        | 382        |
| 456.hammer     | 24     | 481         | 465        | 481        | 465         | <b>481</b>  | <b>465</b> | 12     | 206         | 543        | 208        | 539         | <b>206</b> | <b>542</b> |
| 458.sjeng      | 24     | 828         | 351        | 824        | 352         | <b>826</b>  | <b>352</b> | 24     | 763         | 380        | <b>764</b> | <b>380</b>  | 764        | 380        |
| 462.libquantum | 24     | 265         | 1870       | <b>268</b> | <b>1850</b> | 268         | 1850       | 24     | 265         | 1870       | <b>268</b> | <b>1850</b> | 268        | 1850       |
| 464.h264ref    | 24     | <b>1055</b> | <b>503</b> | 1042       | 510         | 1073        | 495        | 24     | <b>1055</b> | <b>503</b> | 1042       | 510         | 1073       | 495        |
| 471.omnetpp    | 24     | 647         | 232        | <b>647</b> | <b>232</b>  | 646         | 232        | 24     | 629         | 238        | <b>629</b> | <b>238</b>  | 629        | 239        |
| 473.astar      | 24     | 753         | 224        | <b>751</b> | <b>224</b>  | 750         | 225        | 24     | 753         | 224        | <b>751</b> | <b>224</b>  | 750        | 225        |
| 483.xalancbmk  | 24     | 465         | 356        | <b>466</b> | <b>356</b>  | 466         | 355        | 24     | 465         | 356        | <b>466</b> | <b>356</b>  | 466        | 355        |

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
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 10800 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

Turbo Mode enabled in BIOS  
Turbo Boost set to Traditional in BIOS  
Power C-State enabled in BIOS  
Data Reuse disabled in BIOS  
Demand Scrub disabled in BIOS

## General Notes

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

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

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## Peak Optimization Flags (Continued)

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

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 questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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