



# SPEC® CINT2006 Result

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## IBM Corporation

SPECint®\_rate2006 = 116

### IBM System x3200 M3 (Intel Xeon X3460)

SPECint\_rate\_base2006 = 108

CPU2006 license: 11

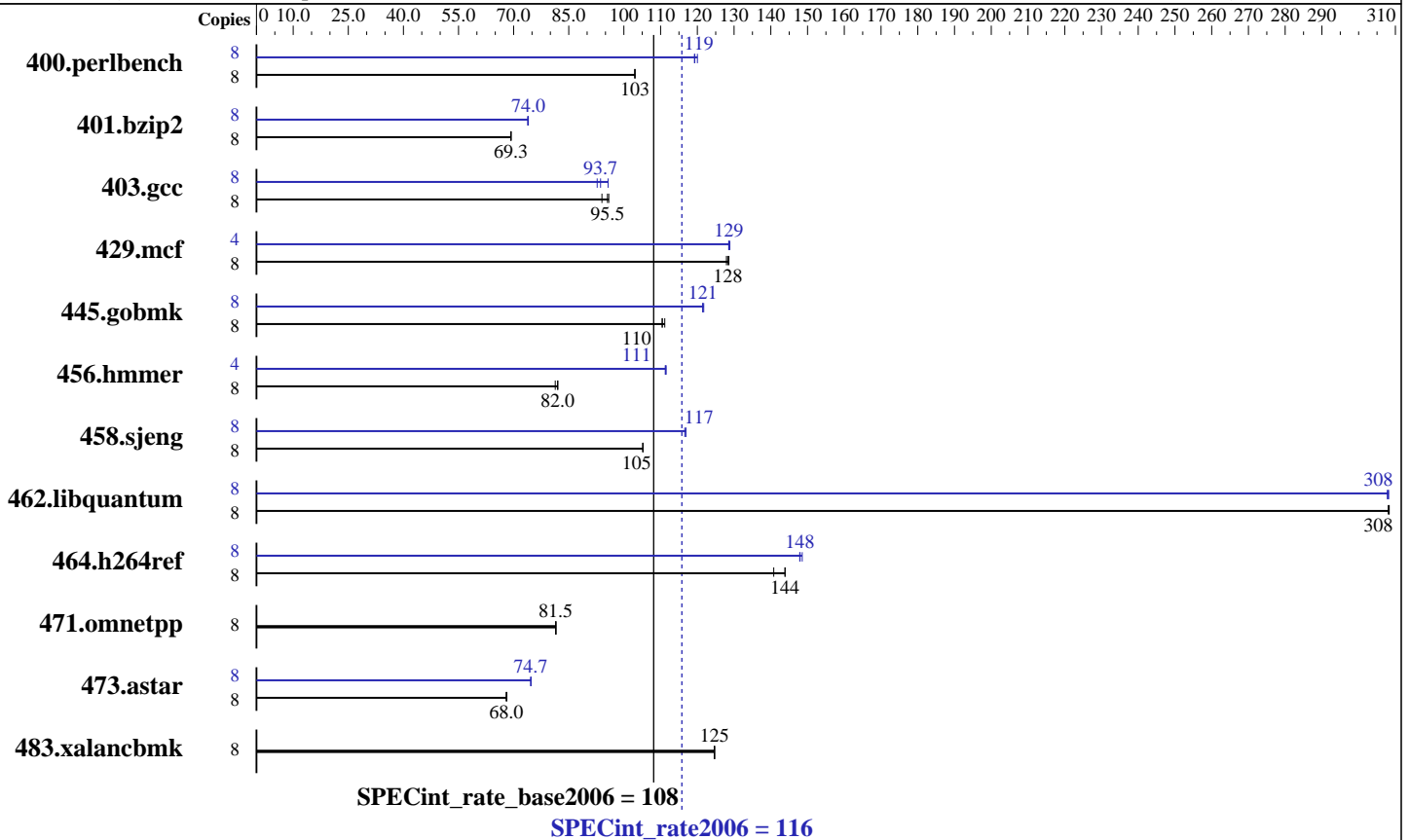
Test date: Oct-2009

Test sponsor: IBM Corporation

Hardware Availability: Oct-2009

Tested by: IBM Corporation

Software Availability: Mar-2009



### Hardware

CPU Name: Intel Xeon X3460  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 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: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 16 GB (4 x 4 GB PC3-10600R)  
 Disk Subsystem: 1 x 250 GB SATA, 7200RPM  
 Other Hardware: None

### Software

Operating System: SuSE Linux Enterprise Server 11 (x86\_64), Kernel 2.6.27.19-5-default  
 Compiler: Intel C++ Compiler Professional 11.0 for Linux Build 20090131 Package ID: l\_cproc\_p\_11.0.080  
 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 V8.1 Binutils 2.18.50.0.7.20080502



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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  | 8      | <u>759</u>  | <u>103</u>  | 758        | 103         | 759        | 103        | 8      | 651        | 120         | <u>655</u> | <u>119</u>  | 656         | 119         |
| 401.bzip2      | 8      | <u>1114</u> | <u>69.3</u> | 1115       | 69.2        | 1114       | 69.3       | 8      | 1043       | 74.0        | 1046       | 73.8        | <u>1043</u> | <u>74.0</u> |
| 403.gcc        | 8      | 685         | 94.0        | <u>674</u> | <u>95.5</u> | 672        | 95.9       | 8      | 694        | 92.7        | 673        | 95.7        | <u>688</u>  | <u>93.7</u> |
| 429.mcf        | 8      | 567         | 129         | <u>569</u> | <u>128</u>  | 570        | 128        | 4      | 283        | 129         | <u>284</u> | <u>129</u>  | 284         | 129         |
| 445.gobmk      | 8      | <u>760</u>  | <u>110</u>  | 760        | 110         | 755        | 111        | 8      | <u>691</u> | <u>121</u>  | 689        | 122         | 691         | 121         |
| 456.hammer     | 8      | 918         | 81.3        | <u>911</u> | <u>82.0</u> | 910        | 82.1       | 4      | <u>335</u> | <u>111</u>  | 335        | 112         | 335         | 111         |
| 458.sjeng      | 8      | 921         | 105         | 920        | 105         | <u>921</u> | <u>105</u> | 8      | 830        | 117         | <u>828</u> | <u>117</u>  | 828         | 117         |
| 462.libquantum | 8      | 538         | 308         | <u>538</u> | <u>308</u>  | 538        | 308        | 8      | <u>538</u> | <u>308</u>  | 539        | 308         | 538         | 308         |
| 464.h264ref    | 8      | <u>1231</u> | <u>144</u>  | 1230       | 144         | 1257       | 141        | 8      | 1197       | 148         | 1192       | 149         | <u>1197</u> | <u>148</u>  |
| 471.omnetpp    | 8      | <u>614</u>  | <u>81.5</u> | 613        | 81.5        | 614        | 81.4       | 8      | <u>614</u> | <u>81.5</u> | 613        | 81.5        | 614         | 81.4        |
| 473.astar      | 8      | <u>826</u>  | <u>68.0</u> | 824        | 68.2        | 826        | 68.0       | 8      | 751        | 74.7        | <u>752</u> | <u>74.7</u> | 752         | 74.7        |
| 483.xalanbmk   | 8      | 443         | 125         | <u>443</u> | <u>125</u>  | 443        | 125        | 8      | 443        | 125         | <u>443</u> | <u>125</u>  | 443         | 125         |

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

## General Notes

'ulimit -s unlimited' was used to set the stack size to unlimited prior to run  
CPU C-States Enable and Adjacent Sector Prefetch Enable  
Turbo Mode Enable

## Base Compiler Invocation

C benchmarks:  
icc

C++ benchmarks:  
icpc

## Base Portability Flags

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



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## Base Optimization Flags

C benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -inline-calloc  
-opt-malloc-options=3 -opt-prefetch

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs  
-L/spec/cpu2006.1.1/lib -lsmartheap

## Base Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc

401.bzip2: /opt/intel/Compiler/11.0/080/bin/intel64/icc

456.hmmer: /opt/intel/Compiler/11.0/080/bin/intel64/icc

458.sjeng: /opt/intel/Compiler/11.0/080/bin/intel64/icc

C++ benchmarks (except as noted below):

icpc

473.astar: /opt/intel/Compiler/11.0/080/bin/intel64/icpc

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32

401.bzip2: -DSPEC\_CPU\_LP64

456.hmmer: -DSPEC\_CPU\_LP64

458.sjeng: -DSPEC\_CPU\_LP64

462.libquantum: -DSPEC\_CPU\_LINUX

473.astar: -DSPEC\_CPU\_LP64

483.xalancbmk: -DSPEC\_CPU\_LINUX



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## 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) -static(pass 2)  
 -prof-use(pass 2) -ansi-alias -opt-prefetch

401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -static(pass 2)  
 -prof-use(pass 2) -opt-prefetch -ansi-alias -auto-ilp32

403.gcc: -xSSE4.2 -ipo -O3 -no-prec-div -static -inline-calloc  
 -opt-malloc-options=3

429.mcf: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -static(pass 2)  
 -prof-use(pass 2) -opt-prefetch

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -O2  
 -ipo -no-prec-div -ansi-alias

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2  
 -ansi-alias -auto-ilp32

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -static(pass 2)  
 -prof-use(pass 2) -unroll4 -auto-ilp32

462.libquantum: -xSSE4.2 -ipo -O3 -no-prec-div -static  
 -opt-malloc-options=3 -opt-prefetch

464.h264ref: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2) -static(pass 2)  
 -prof-use(pass 2) -unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -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=routine -auto-ilp32  
 -Wl,-z,muldefs -L/spec/cpu2006.1.1/lib -lsmarheap64

483.xalancbmk: basepeak = yes



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## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-int-linux64-revA.20091028.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-int-linux64-revA.20091028.xml>

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

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