IBM Corporation
IBM System x3690 X5 (Intel Xeon E7-2870, 2.40 GHz)

**SPECint®2006 = NC**

**SPECint_base2006 = NC**

**CPU2006 license:** 11
**Test sponsor:** IBM Corporation
**Test date:** Feb-2012
**Hardware Availability:** May-2011

**Tested by:** IBM Corporation
**Software Availability:** Feb-2012

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### 400.perlbench

### 401.bzip2

### 403.gcc

### 429.mcf

### 445.gobmk

### 456.hmmer

### 458.sjeng

### 462.libquantum

### 464.h264ref

### 471.omnetpp

### 473.astar

### 483.xalancbmk

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E7-8870</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 2.80 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2400</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>20 cores, 2 chips, 10 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1,2 chips</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
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<tr>
<td>L3 Cache:</td>
<td>30 MB I+D on chip per chip</td>
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</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>Red Hat Enterprise Linux Server release 6.2 (Santiago)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
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</tr>
<tr>
<td>File System:</td>
<td>ext4</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
</tbody>
</table>

Continued on next page
SPEC CINT2006 Result

IBM Corporation
IBM System x3690 X5 (Intel Xeon E7-2870, 2.40 GHz)

CPU2006 license: 11
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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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
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<tr>
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<tr>
<td>445.gobmk</td>
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<tr>
<td>456.hmmer</td>
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<tr>
<td>458.sjeng</td>
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<tr>
<td>462.libquantum</td>
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<tr>
<td>471.omnetpp</td>
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<tr>
<td>473.astar</td>
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</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

Turbo Boost Power Optimization set to Traditional in BIOS
Sysinfo program /cpu2006.1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdfff5032aaa42e583f96b07f99d3
running on megalon-pete Fri Feb 17 10:33:56 2012

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

Continued on next page

Non-Compliant
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Base Portability Flags (Continued)

<table>
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</tr>
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<tbody>
<tr>
<td>464.h264ref: -DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>471.omnetpp: -DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>473.astar: -DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX</td>
</tr>
</tbody>
</table>

Base Optimization Flags

C benchmarks:
- -xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
- -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
- -Wl,-z,muldefs -L/smartheap -lsmartheap64

Base Other Flags

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

Peak Compiler Invocation

C benchmarks (except as noted below):
- gcc -m64
- 400.perlbench: icc -m32
- 445.gobmk: icc -m32
- 464.h264ref: icc -m32

C++ benchmarks (except as noted below):
- icpc -m32

Continued on next page
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Peak Compiler Invocation (Continued)

473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LINUX
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
473.astar: -DSPEC_CPU_LP64
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) -opt-prefetch -ansi-alias
401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32 -opt-prefetch -ansi-alias
403.gcc: -xSSE4.2 -ipo -O3 -no-prec-div -inline-calloc -opt-malloc-options=3 -auto-ilp32
429.mcf: basepeak = yes
445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias
SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the submitter reported that the result does not meet the 3 month availability requirement in the SPEC CPU2006 run rules, because the tested processor was not supported on this platform within three months of publication. Results using the supported processor can be found at http://www.spec.org/cpu2006/results/res2012q3/cpu2006-20120716-23704.html

Peak Optimization Flags (Continued)

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

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-xse(pass 2)
-unroll4

462.libquantum: basepeak = yes

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

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)
-opt-ra-reion-strategy=block -ansi-alias
-Wl,-z,muldefs -L/smartheap -lsmartheap

473.astar: basepeak = yes

483.milc: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
-Wl,-z,muldefs -L/smartheap -lsmartheap

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-iC12.1-official-linux64.20111122.html
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You can also download the XML flags sources by saving the following links:

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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