IBM Corporation

IBM System x3500 M4 (Intel Xeon E5-2630)

**SPECint®2006 = 43.2**

**SPECint_base2006 = 40.7**

**CPU2006 license:** 11

**Test date:** Apr-2012

**Test sponsor:** IBM Corporation

**Hardware Availability:** Mar-2012

**Tested by:** IBM Corporation

**Software Availability:** Oct-2011

---

**SPECint2006 = 43.2**

**SPECint_base2006 = 40.7**

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2630</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 2.80 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2300</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>12 cores, 2 chips, 6 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>
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<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>15 MB I+D on chip per chip</td>
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<tr>
<td>Other Cache</td>
<td>None</td>
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<tr>
<td>Memory</td>
<td>64 GB (16 x 4 GB 2Rx8 PC3-12800R-11, ECC, running at 1333 MHz)</td>
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<tr>
<td>Disk Subsystem</td>
<td>1 x 300 GB SAS, 15000 RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
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### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 6.1 (Santiago)</td>
</tr>
<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>
<td>Yes</td>
</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>
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<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
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<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V9.01</td>
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</tbody>
</table>
SPEC CINT2006 Result

IBM Corporation
IBM System x3500 M4 (Intel Xeon E5-2630)

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SPECint_base2006 = 40.7

CPU2006 license: 11
Test sponsor: IBM Corporation
Test date: Apr-2012
Hardware Availability: Mar-2012
Tested by: IBM Corporation
Software Availability: Oct-2011

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
<th>Seconds</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>389</td>
<td>25.1</td>
<td>389</td>
<td>25.1</td>
<td>389</td>
<td>25.1</td>
<td>328</td>
<td>29.8</td>
<td>327</td>
<td>29.9</td>
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<tr>
<td>401.bzip2</td>
<td>518</td>
<td>18.6</td>
<td>521</td>
<td>18.5</td>
<td>519</td>
<td>18.6</td>
<td>509</td>
<td>19.0</td>
<td>509</td>
<td>19.0</td>
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<td>403.mcf</td>
<td>310</td>
<td>26.0</td>
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<td>310</td>
<td>25.9</td>
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<td>429.gcc</td>
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<td>40.5</td>
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<tr>
<td>445.gobmk</td>
<td>518</td>
<td>20.2</td>
<td>518</td>
<td>20.3</td>
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<td>492</td>
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<td>493</td>
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<td>456.hmmer</td>
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<td>42.1</td>
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<td>41.8</td>
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<tr>
<td>458.sjeng</td>
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<td>23.0</td>
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<tr>
<td>462.libquantum</td>
<td>9.89</td>
<td>2090</td>
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<tr>
<td>464.h264ref</td>
<td>590</td>
<td>37.8</td>
<td>588</td>
<td>37.7</td>
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<tr>
<td>471.omnetpp</td>
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<td>20.1</td>
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<td>20.1</td>
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<td>20.1</td>
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<tr>
<td>473.astar</td>
<td>285</td>
<td>24.7</td>
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<td>24.6</td>
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<td>24.7</td>
<td>283</td>
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<tr>
<td>483.xalancbmk</td>
<td>165</td>
<td>41.9</td>
<td>165</td>
<td>41.8</td>
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<td>162</td>
<td>42.7</td>
<td>162</td>
<td>42.7</td>
</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"
Zone reclaim mode enabled with:
echo 1 > /proc/sys/vm/zone_reclaim_mode

Platform Notes

BIOS Settings:
Operating Mode set to Maximum Performance
Sysinfo program /root/SPECcpu-v1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on x3500M4 Thu Apr 26 17:10:53 2012

This section contains SUT (System Under Test) info as seen by
some common utilities. To remove or add to this section, see:
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2630 0 @ 2.30GHz
2 "physical id"s (chips)
24 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores : 6
siblings : 12
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5
IBM Corporation

IBM System x3500 M4 (Intel Xeon E5-2630)

<table>
<thead>
<tr>
<th>SPECint2006</th>
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<tr>
<td>SPECint_base2006</td>
<td>40.7</td>
</tr>
</tbody>
</table>

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Platform Notes (Continued)

```
cache size : 15360 KB

From /proc/meminfo
MemTotal: 66045764 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.1 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
```

```
uname -a:
Linux x3500M4 2.6.32-131.0.15.el6.x86_64 #1 SMP Tue May 10 15:42:40 EDT 2011
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Apr 24 15:15
```

```
SPEC is set to: /root/SPECcpu-v1.2
```

```
Filesystem    Type    Size  Used Avail Use% Mounted on
/dev/mapper/vg_x3500m4-lv_root
  ext4    210G   71G  128G  36% /
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Base Compiler Invocation (Continued)

C++ benchmarks:
icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xAVX -ipo -03 -no-prec-div -parallel -opt-prefetch -auto-p32
C++ benchmarks:
-xAVX -ipo -03 -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):
icc -m64

400.perlbench: icc -m32
445.gobmk: icc -m32

Continued on next page
**SPEC CINT2006 Result**

**IBM Corporation**

IBM System x3500 M4 (Intel Xeon E5-2630)

| SPECint2006 = | 43.2 |
| SPECint_base2006 = | 40.7 |

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---

**Peak Compiler Invocation (Continued)**

464.h264ref: `icc -m32`

C++ benchmarks (except as noted below):

`icpc -m32`

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_LP64`
- 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: `-xAVX(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: `-xAVX(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: `-xAVX -ipo -O3 -no-prec-div -inline-calloc -opt-malloc-options=3 -auto-ilp32`

- 429.mcf: `basepeak = yes`

- 445.gobmk: `-xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias`

- 456.hmmer: `-xAVX -ipo -O3 -no-prec-div -unroll12 -auto-ilp32 -ansi-alias`

- 458.sjeng: `-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4`

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Continued on next page
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Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes
464.h264ref: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -prof-use(pass 2)
              -opt-ra-region-strategy=block -ansi-alias
              -Wl,-z,muldefs -L/smartheap -lsmartheap

473.astar: basepeak = yes
483.xalancbmk: -xAVX -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
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.html
You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.xml