**IBM Corporation**

IBM System x3500 M4 (Intel Xeon E5-2640)

**SPECint_rate2006 = 465**

**SPECint_rate_base2006 = 444**

<table>
<thead>
<tr>
<th>CPU2006 license</th>
<th>IBM Corporation</th>
<th>Test date:</th>
<th>Apr-2012</th>
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<tbody>
<tr>
<td>Test sponsor:</td>
<td>IBM Corporation</td>
<td>Hardware Availability:</td>
<td>Mar-2012</td>
</tr>
<tr>
<td>Tested by:</td>
<td>IBM Corporation</td>
<td>Software Availability:</td>
<td>Oct-2011</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-2640
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.00 GHz
- **CPU MHz:** 2500
- **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:** 15 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 64 GB (16 x 4 GB 2Rx8 PC3-12800R-11, ECC, running at 1333 MHz)
- **Disk Subsystem:** 1 x 300 GB SAS, 15000 RPM

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 6.1 (Santiago) 2.6.32-131.0.15.el6.x86_64
- **Compiler:** C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux
- **Auto Parallel:** No
- **File System:** ext4
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V9.01
**IBM Corporation**

IBM System x3500 M4 (Intel Xeon E5-2640)

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**SPECint_rate_base2006** = 444

---

Results Table

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

---

**Submit Notes**

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

---

**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 $ $Date:: 2011-10-11 #$ 6f2ebdf5032aaa42e583f96b07f99d3

Running on x3500M4 Tue Apr  3 15:35:20 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 E5-2640 0 @ 2.50GHz
2 "physical id"s (chips)
24 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The Continued on next page
**Platform Notes (Continued)**

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```
cpu cores : 6
siblings : 12
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5
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 3 15:02
```

```
SPEC is set to: /root/SPECcpu-v1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/vg_x3500m4-lv_root ext4 210G 69G 130G 35% /
```

```
Additional information from dmidecode:
Memory:
16x Samsung M393B5273DH0-CK0 4 GB 1600 MHz 2 rank
```

(End of data from sysinfo program)

---

**General Notes**

Environment variables set by runspec before the start of the run:
```
LD_LIBRARY_PATH = "/root/SPECcpu-v1.2/libs/32:/root/SPECcpu-v1.2/libs/64"
```

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5

Transparent Huge Pages enabled with:
```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

Filesystem page cache cleared with:
```
echo 1 > /proc/sys/vm/drop_caches
```

runspec command invoked through numactl i.e.:
```
umactl --interleave=all runspec <etc>
```

---

**IBM Corporation**

**IBM System x3500 M4 (Intel Xeon E5-2640)**

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

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**Platform Notes (Continued)**

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SPECint\textsubscript{rate\_base2006} = 444

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

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 -opt-mem-layout-trans=3

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
    -Wl,-z,muldefs -L/smartheap -lsmartheap

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

C++ benchmarks:
    icpc -m32
IBM Corporation

IBM System x3500 M4 (Intel Xeon E5-2640)

SPECint_rate2006 = 465
SPECint_rate_base2006 = 444

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

Test date: Apr-2012
Hardware Availability: Mar-2012
Software Availability: Oct-2011

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)
          -auto-ilp32
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
403.gcc: -xSSE4.2 -ipo -O3 -no-prec-div
429.mcf: basepeak = yes
445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
          -ansi-alias -opt-mem-layout-trans=3
456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
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
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)
          -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
          -L/smartheap -lsmartheap
473.astar: basepeak = yes

Continued on next page
SPEC CINT2006 Result

IBM Corporation
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CPU2006 license: 11
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Peak Optimization Flags (Continued)

483.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:

403gcc: -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

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

Tested with SPEC CPU2006 v1.2.
Originally published on 24 April 2012.