IBM Corporation

IBM System x3650 M4 BD
(Intel Xeon E5-2695 v2, 2.40 GHz)

**SPEClnt_rate2006 = 915**

**SPEClnt_rate_base2006 = 885**

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

**Test date:** Dec-2013
**Hardware Availability:** Jan-2014
**Software Availability:** Sep-2013

**CPU Name:** Intel Xeon E5-2695 v2
**Operating System:** Red Hat Enterprise Linux Server release 6.4 (Santiago)

**CPU Characteristics:** Intel Turbo Boost Technology up to 3.20 GHz
**Compiler:** C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux

**CPU MHz:** 2400
**Auto Parallel:** No

**FPU:** Integrated
**File System:** ext4

**CPU(s) enabled:** 24 cores, 2 chips, 12 cores/chip, 2 threads/core
**System State:** Run level 3 (multi-user)

**CPU(s) orderable:** 1,2 chips
**Base Pointers:** 32-bit

**Primary Cache:** 32 KB I + 32 KB D on chip per core
**Peak Pointers:** 32/64-bit

**Secondary Cache:** 256 KB I+D on chip per core
**Other Software:** Microquill SmartHeap V10.0

**L3 Cache:** 30 MB I+D on chip per chip

**Other Cache:** None

**Memory:** 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)

**Disk Subsystem:** 1 x 500 GB SATA, 7200 RPM
**IBM Corporation**

IBM System x3650 M4 BD
(Intel Xeon E5-2695 v2, 2.40 GHz)

**SPEC CINT2006 Result**

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

**SPECint_rate2006 = 915**  
**SPECint_rate_base2006 = 885**

**Test date:** Dec-2013  
**Hardware Availability:** Jan-2014  
**Software Availability:** Sep-2013

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>48</td>
<td>694</td>
<td>676</td>
<td>693</td>
<td>677</td>
<td>693</td>
<td>677</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>48</td>
<td>966</td>
<td>479</td>
<td>967</td>
<td>479</td>
<td>967</td>
<td>479</td>
</tr>
<tr>
<td>403.gcc</td>
<td>48</td>
<td>562</td>
<td>688</td>
<td>563</td>
<td>686</td>
<td>560</td>
<td>689</td>
</tr>
<tr>
<td>429.mcf</td>
<td>48</td>
<td>335</td>
<td>1310</td>
<td>334</td>
<td>1310</td>
<td>333</td>
<td>1310</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>48</td>
<td>754</td>
<td>668</td>
<td>753</td>
<td>669</td>
<td>751</td>
<td>670</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>48</td>
<td>372</td>
<td>1200</td>
<td>373</td>
<td>1200</td>
<td>373</td>
<td>1200</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>48</td>
<td>874</td>
<td>665</td>
<td>873</td>
<td>666</td>
<td>872</td>
<td>666</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>48</td>
<td>167</td>
<td>5970</td>
<td>167</td>
<td>5970</td>
<td>166</td>
<td>5980</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>48</td>
<td>936</td>
<td>1140</td>
<td>932</td>
<td>1140</td>
<td>933</td>
<td>1140</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>48</td>
<td>630</td>
<td>476</td>
<td>627</td>
<td>479</td>
<td>628</td>
<td>478</td>
</tr>
<tr>
<td>473.astar</td>
<td>48</td>
<td>682</td>
<td>494</td>
<td>686</td>
<td>492</td>
<td>684</td>
<td>492</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>48</td>
<td>357</td>
<td>927</td>
<td>359</td>
<td>923</td>
<td>358</td>
<td>926</td>
</tr>
</tbody>
</table>

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 setting:**
Operating Mode set to Maximum Performance  
Sysinfo program /home/SPECcpu-new/config/sysinfo.rev6818  
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4596a3cee98f191  
running on x3650M4BD Mon Dec 23 12:19:12 2013

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 E5-2695 v2 @ 2.40GHz`  
2 "physical id"s (chips)  
48 "processors"  
`cores, siblings (Caution: counting these is hw and system dependent. The Continued on next page`
IBM System x3650 M4 BD
(Intel Xeon E5-2695 v2, 2.40 GHz)

IBM Corporation

SPECint_rate2006 = 915
SPECint_rate_base2006 = 885

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

Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 12
siblings : 24
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size : 30720 KB

From /proc/meminfo
MemTotal: 264610220 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
Linux x3650M4BD 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 23 12:14

SPEC is set to: /home/SPECcpu-new
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/vg_x3650m4bd-lv_home ext4 404G 52G 332G 14% /home

Additional information from dmidecode:
BIOS IBM -[YOE101OUS-1.00]- 11/21/2013
Memory:
16x Samsung M393B2G70QH0-CMA 16 GB 1867 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 = "~/home/SPECcpu-new/libs/32:/home/SPECcpu-new/libs/64:/home/SPECcpu-new/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4
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.:

Continued on next page
IBM Corporation
IBM System x3650 M4 BD
(Intel Xeon E5-2695 v2, 2.40 GHz)

SPECint_rate2006 = 915
SPECint_rate_base2006 = 885

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

Test date: Dec-2013
Hardware Availability: Jan-2014
Software Availability: Sep-2013

General Notes (Continued)
umactl --interleave=all runspec <etc>

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/sh -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

Continued on next page
IBM Corporation

IBM System x3650 M4 BD
(Intel Xeon E5-2695 v2, 2.40 GHz)

SPECint_rate2006 = 915
SPECint_rate_base2006 = 885

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

Test date: Dec-2013
Hardware Availability: Jan-2014
Software Availability: Sep-2013

Peak Compiler Invocation (Continued)

458.sjeng: icc -m64
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)
-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

Continued on next page
IBM Corporation
IBM System x3650 M4 BD
(Intel Xeon E5-2695 v2, 2.40 GHz)

SPECint_rate2006 = 915
SPECint_rate_base2006 = 885

CPU2006 license: 11
Test sponsor: IBM Corporation
Test date: Dec-2013
Tested by: IBM Corporation
Hardware Availability: Jan-2014
Software Availability: Sep-2013

Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
-L/sh -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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 11 February 2014.