IBM Corporation

IBM System x3630 M4 (Intel Pentium 1407)

**SPECint\_rate2006 = 66.3**

| SPECint\_rate_base2006 = 63.7 |

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**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation  
**Test date:** Jul-2012  
**Hardware Availability:** May-2012  
**Software Availability:** Dec-2011

**Hardware**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Pentium 1407</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td></td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2800</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>2 cores, 1 chip, 2 cores/chip</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>
</tr>
<tr>
<td>L3 Cache:</td>
<td>5 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 500 GB SATA, 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System:</td>
<td>Red Hat Enterprise Linux Server release 6.2 (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>No</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-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V9.01</td>
</tr>
</tbody>
</table>
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SPECint_rate_base2006 = 63.7

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

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>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Base</td>
<td></td>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<tr>
<td>400.perlbench</td>
<td>2</td>
<td>422</td>
<td>46.2</td>
<td>423</td>
<td>46.2</td>
<td>423</td>
<td>46.2</td>
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<tr>
<td>401.bzip2</td>
<td>2</td>
<td>576</td>
<td>33.5</td>
<td>577</td>
<td>33.4</td>
<td>577</td>
<td>33.4</td>
</tr>
<tr>
<td>403.mcf</td>
<td>2</td>
<td>313</td>
<td>51.5</td>
<td>313</td>
<td>51.4</td>
<td>313</td>
<td>51.4</td>
</tr>
<tr>
<td>429.mcf</td>
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<td>103</td>
<td>177</td>
<td>103</td>
<td>176</td>
<td>103</td>
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<tr>
<td>445.gobmk</td>
<td>2</td>
<td>512</td>
<td>41.0</td>
<td>512</td>
<td>41.0</td>
<td>513</td>
<td>40.9</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>2</td>
<td>230</td>
<td>81.2</td>
<td>230</td>
<td>81.0</td>
<td>230</td>
<td>81.0</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>2</td>
<td>546</td>
<td>44.4</td>
<td>546</td>
<td>44.3</td>
<td>546</td>
<td>44.3</td>
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<tr>
<td>462.libquantum</td>
<td>2</td>
<td>103</td>
<td>401</td>
<td>103</td>
<td>401</td>
<td>103</td>
<td>400</td>
</tr>
<tr>
<td>464.h264ref</td>
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<td>514</td>
<td>86.0</td>
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<td>471.omnetpp</td>
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<td>325</td>
<td>38.3</td>
<td>326</td>
<td>38.4</td>
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<tr>
<td>473.astar</td>
<td>2</td>
<td>378</td>
<td>37.1</td>
<td>380</td>
<td>37.0</td>
<td>378</td>
<td>37.2</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>2</td>
<td>183</td>
<td>75.4</td>
<td>184</td>
<td>75.1</td>
<td>184</td>
<td>74.9</td>
</tr>
</tbody>
</table>

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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"

Platform Notes

BIOS setting:
Operating Mode set to Maximum Performance

Sysinfo program /home/SPECcpu-v1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 $ 6f2ebdff5032aaa42e583f96b07f99d3
running on x3630m4-rhel62 Thu Jul 26 12:34:22 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) Pentium(R) CPU 1407 @ 2.80GHz
1 "physical id"s (chips)
2 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
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Platform Notes (Continued)

cpu cores : 2
siblings : 2
physical 0: cores 0 1
cache size : 5120 KB

From /proc/meminfo
MemTotal: 49405540 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)

uname -a:
Linux x3630m4-rhel62 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 26 12:22

SPEC is set to: /home/SPECcpu-v1.2

Additional information from dmidecode:
Memory:
6x Samsung M393B1K70DH0-CK0 8 GB 1066 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-v1.2/libs/32:/home/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

Base Compiler Invocation

C benchmarks:
icc -m32

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SPEC CINT2006 Result

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Base Compiler Invocation (Continued)
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/smarmheap -lsmarmheap

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

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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)
-03(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)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32 -ansi-alias

403.gcc: -xSSE4.2 -ipo -03 -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 -03 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(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)
-03(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)
-03(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

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Peak Optimization Flags (Continued)

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-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 other inquiries, please contact webmaster@spec.org.

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