## IBM Corporation

**IBM System x3250 M4**  
(Intel Pentium G2100T, 2.60 GHz)

**SPECfp\(^\text{®}\) rate\text{2006} = 66.0**  
**SPECfp\(_\text{rate}\) base\text{2006} = 64.6**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Operating System: Red Hat Enterprise Linux Server release 6.2 (Santiago)</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>2.6.32-220.el6.x86_64</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>Compiler: C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux</td>
</tr>
<tr>
<td>FPU:</td>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>File System: ext4</td>
</tr>
<tr>
<td>2 cores, 1 chip, 2 cores/chip</td>
<td></td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td></td>
</tr>
<tr>
<td>1 chip</td>
<td></td>
</tr>
<tr>
<td>Primary Cache:</td>
<td></td>
</tr>
<tr>
<td>32 KB I + 32 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td></td>
</tr>
<tr>
<td>256 KB I+D on chip per core</td>
<td></td>
</tr>
</tbody>
</table>

## Software

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware: IBM Corporation</td>
<td>Test Sponsor: IBM Corporation</td>
</tr>
<tr>
<td>Tested by: IBM Corporation</td>
<td>Hardware Availability: Sep-2012</td>
</tr>
<tr>
<td>Test date: Oct-2012</td>
<td>Software Availability: Dec-2011</td>
</tr>
</tbody>
</table>

| Benchmark | Copies | 6.00 | 12.0 | 18.0 | 24.0 | 30.0 | 36.0 | 42.0 | 48.0 | 54.0 | 60.0 | 66.0 | 72.0 | 78.0 | 84.0 | 90.0 | 96.0 | 100.0 |
|-----------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 410.bwaves | 2 | | | | | | | | | | | | | | | | | | |
| 416.gamess | 2 | | | | | | | | | | | | | | | | | | |
| 433.milc | 2 | | | | | | | | | | | | | | | | | | |
| 434.zeusmp | 2 | | | | | | | | | | | | | | | | | | |
| 435.gromacs | 2 | | | | | | | | | | | | | | | | | | |
| 436.cactusADM | 2 | | | | | | | | | | | | | | | | | | |
| 437.leslie3d | 2 | | | | | | | | | | | | | | | | | | |
| 444.namd | 2 | | | | | | | | | | | | | | | | | | |
| 447.dealII | 2 | | | | | | | | | | | | | | | | | | |
| 450.soplex | 2 | | | | | | | | | | | | | | | | | | |
| 453.povray | 2 | | | | | | | | | | | | | | | | | | |
| 454.calculix | 2 | | | | | | | | | | | | | | | | | | |
| 459.GemsFDTD | 2 | | | | | | | | | | | | | | | | | | |
| 465.tonto | 2 | | | | | | | | | | | | | | | | | | |
| 470.lbm | 2 | | | | | | | | | | | | | | | | | | |
| 481.wrf | 2 | | | | | | | | | | | | | | | | | | |
| 482.sphinx3 | 2 | | | | | | | | | | | | | | | | | | |

**SPECfp\(_\text{rate}\) base\text{2006} = 64.6:**  
**SPECfp\(_\text{rate}\) \text{2006} = 66.0**
IBM Corporation
IBM System x3250 M4
(Intel Pentium G2100T, 2.60 GHz)

SPEC CFP2006 Result

SPECfp_rate2006 = 66.0
SPECfp_rate_base2006 = 64.6

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

L3 Cache: 3 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (2 x 8 GB 2Rx8 PC3-12800E-11, ECC)
Disk Subsystem: 1 x 146 GB SAS, 15000 RPM
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Copies</td>
<td>Seconds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>410.bwaves</td>
<td>2</td>
<td>275</td>
</tr>
<tr>
<td>416.gamess</td>
<td>2</td>
<td>714</td>
</tr>
<tr>
<td>433.milc</td>
<td>2</td>
<td>195</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>2</td>
<td>260</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>2</td>
<td>339</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>2</td>
<td>312</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>2</td>
<td>302</td>
</tr>
<tr>
<td>444.namd</td>
<td>2</td>
<td>443</td>
</tr>
<tr>
<td>447.dealII</td>
<td>2</td>
<td>275</td>
</tr>
<tr>
<td>450.soplex</td>
<td>2</td>
<td>314</td>
</tr>
<tr>
<td>453.povray</td>
<td>2</td>
<td>155</td>
</tr>
<tr>
<td>454.calculix</td>
<td>2</td>
<td>262</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>2</td>
<td>416</td>
</tr>
<tr>
<td>465.tonto</td>
<td>2</td>
<td>332</td>
</tr>
<tr>
<td>470.lbm</td>
<td>2</td>
<td>360</td>
</tr>
<tr>
<td>481.wrf</td>
<td>2</td>
<td>257</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>2</td>
<td>641</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"

Platform Notes

BIOS Settings:
 Turbo Mode enabled in BIOS
 C-State enabled in BIOS

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
IBM Corporation

IBM System x3250 M4
(Intel Pentium G2100T, 2.60 GHz)

| SPECfp_rate2006 | 66.0 |
| SPECfp_rate_base2006 | 64.6 |

| CPU2006 license | 11 |
| Test sponsor | IBM Corporation |
| Tested by | IBM Corporation |
| Test date | Oct-2012 |
| Hardware Availability | Sep-2012 |
| Software Availability | Dec-2011 |

Platform Notes (Continued)

Sysinfo program /root/SPECcpu1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdfff5032aaa42e583f96b07f99d3

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 G2100T @ 2.60GHz
  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.)
  cpu cores : 2
  siblings : 2
  physical 0: cores 0 1
cache size : 3072 KB

From /proc/meminfo
MemTotal:       16322724 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 localhost.localdomain 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 Oct 31 15:15

SPEC is set to: /root/SPECcpu1.2
Filesystem Type  Size Used Avail Use% Mounted on
/dev/mapper/VolGroup-lv_root
  ext4  50G  14G  34G  30% /

Additional information from dmidecode:
Memory:
  2x Micron 18JSF1G72AZ-1G6D1 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)
IBM Corporation
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General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/SPECcpu1.2/libs/32:/root/SPECcpu1.2/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>

Base Compiler Invocation

C benchmarks:
    icc  -m64

C++ benchmarks:
    icpc  -m64

Fortran benchmarks:
    ifort  -m64

Benchmarks using both Fortran and C:
    icc  -m64  ifort  -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64  -nofor_main
436.cactusADM: -DSPEC_CPU_LP64  -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64  -nofor_main
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64  -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64  -DSPEC_CPU_CASE_FLAG  -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64
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Base Optimization Flags

C benchmarks:
- xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
  -ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:
- xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
  -ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:
- xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:
- xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
  -ansi-alias -opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks (except as noted below):
icc  -m64

482.sphinx3: icc  -m32

C++ benchmarks (except as noted below):
icpc  -m64

450.soplex: icpc  -m32

Fortran benchmarks:
ifort  -m64

Benchmarks using both Fortran and C:
icc  -m64 ifort  -m64

Peak Portability Flags

410.bwaves:  -DSPEC_CPU_LP64
416.gamess:  -DSPEC_CPU_LP64
433.milc:   -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM:  -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd:   -DSPEC_CPU_LP64
447.dealII:  -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64

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IBM Corporation

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C benchmarks:

433.milc: -xSSE4.2 (pass 2) -prof-gen (pass 1) -ipo (pass 2) -O3 (pass 2)
   -no-prec-div (pass 2) -opt-mem-layout-trans=3 (pass 2)
   -prof-use (pass 2) -static -auto-ilp32

470.lbm: basepeak = yes

C++ benchmarks:

444.namd: -xSSE4.2 (pass 2) -prof-gen (pass 1) -ipo (pass 2) -O3 (pass 2)
   -no-prec-div (pass 2) -opt-mem-layout-trans=3 (pass 2)
   -prof-use (pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xSSE4.2 (pass 2) -prof-gen (pass 1) -ipo (pass 2) -O3 (pass 2)
   -no-prec-div (pass 2) -prof-use (pass 2) -unroll2
   -inline-level=0 -scalar-rep -static

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

Peak Portability Flags (Continued)

454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

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Peak Optimization Flags (Continued)

459.GemsFDTD: basepeak = yes

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass l) -ipo(pass 2) -o3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
            -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass l) -ipo(pass 2) -o3(pass 2)
            -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
            -prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xSSE4.2 -ipo -o3 -no-prec-div -static -auto-ilp32

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-IVB-A.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-IVB-A.xml

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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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