IBM Corporation

IBM System x3550 M4 (Intel Xeon E5-2680)

**SPECfp®2006 =** 89.1

**SPECfp_base2006 =** 84.4

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Score</th>
<th>File System</th>
<th>CPU2006 license</th>
<th>Test date</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
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</tbody>
</table>

Software

- **Operating System:** Red Hat Enterprise Linux Server release 6.1 (Santiago)
- **Compiler:** C/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
- **Auto Parallel:** Yes
- **File System:** ext4

Hardware

- **CPU Name:** Intel Xeon E5-2680
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.50 GHz
- **CPU MHz:** 2700
- **FPU:** Integrated
- **CPU(s) enabled:** 16 cores, 2 chips, 8 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

Continued on next page.
SPEC CFP2006 Result

IBM Corporation

IBM System x3550 M4 (Intel Xeon E5-2680)

SPECfp2006 = 89.1
SPECfp_base2006 = 84.4

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

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

L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 1 TB SAS, 7200 RPM
Other Hardware: None

System State: Run level 3 (add definition here)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>71.4</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 $ $Date:: 2011-10-11 #$ 6f2ebdf5032aaa42e583f96b07f99d3
running on x3550M4 Wed Mar 21 09:47:51 2012

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
Continued on next page

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Platform Notes (Continued)

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) CPU E5-2680 0 @ 2.70GHz
  2 "physical id"s (chips)
  32 "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 : 8
  siblings : 16
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  cache size : 20480 KB

From /proc/meminfo
  MemTotal:       132236124 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 x3550M4 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 Mar 19 15:13

SPEC is set to: /root/SPECcpu-v1.2
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/mapper/vg_x3550m4-lv_root
    ext4  790G  69G  681G  10% /

Additional information from dmidecode:
  Memory:
    16x Samsung M393B1K70DH0-CK0 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
  KMP_AFFINITY = "granularity=fine,compact,1,0"
  LD_LIBRARY_PATH = "\"/root/SPECcpu-v1.2/libs/32/:/root/SPECcpu-v1.2/libs/64\"
  OMP_NUM_THREADS = "16"
IBM Corporation

IBM System x3550 M4 (Intel Xeon E5-2680)

SPECfp2006 = 89.1
SPECfp_base2006 = 84.4

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

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

General Notes (Continued)

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  -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
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

Base Optimization Flags

C benchmarks:
    -xAVX  -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
    -ansi-alias

Continued on next page
IBM Corporation

CPU2006 License: 11
Test Sponsor: IBM Corporation
Tested by: IBM Corporation

IBM System x3550 M4 (Intel Xeon E5-2680)

SPECfp2006 = 89.1
SPECfp_base2006 = 84.4

Peak Compiler Invocation

C benchmarks:  
icc -m64
C++ benchmarks:  
icpc -m64
Fortran benchmarks:  
ifort -m64
Benchmarks using both Fortran and C:  
icc -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
433.milc: -xAVX (pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32  
-ansi-alias
470.lbm: basepeak = yes
482.sphinx3: -xAVX -ipo -03 -no-prec-div -unroll2 -ansi-alias  
-parallel

C++ benchmarks:

Base Optimization Flags (Continued)

C++ benchmarks:  
-xAVX -ipo -03 -no-prec-div -static -opt-prefetch -ansi-alias
Fortran benchmarks:  
-xAVX -ipo -03 -no-prec-div -static -parallel -opt-prefetch
Benchmarks using both Fortran and C:  
-xAVX -ipo -03 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias
IBM Corporation
IBM System x3550 M4 (Intel Xeon E5-2680)  

SPECfp2006 = 89.1
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CPU2006 license: 11
Test date: Mar-2012
Test sponsor: IBM Corporation
Tested by: IBM Corporation
Hardware Availability: Mar-2012
Software Availability: Oct-2011

Peak Optimization Flags (Continued)

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
            -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
            -static

416.gamess: -xAVX(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: basepeak = yes

459.GemsFDTD: -xAVX(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 -opt-prefetch -parallel

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
            -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

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
## SPEC CFP2006 Result

**IBM Corporation**

**IBM System x3550 M4 (Intel Xeon E5-2680)**

| SPECfp2006 = | 89.1 |
| SPECfp_base2006 = | 84.4 |

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

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