SPEC® CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-2870, 2.40 GHz)

$SPECfp^{®}2006 =$ 51.4
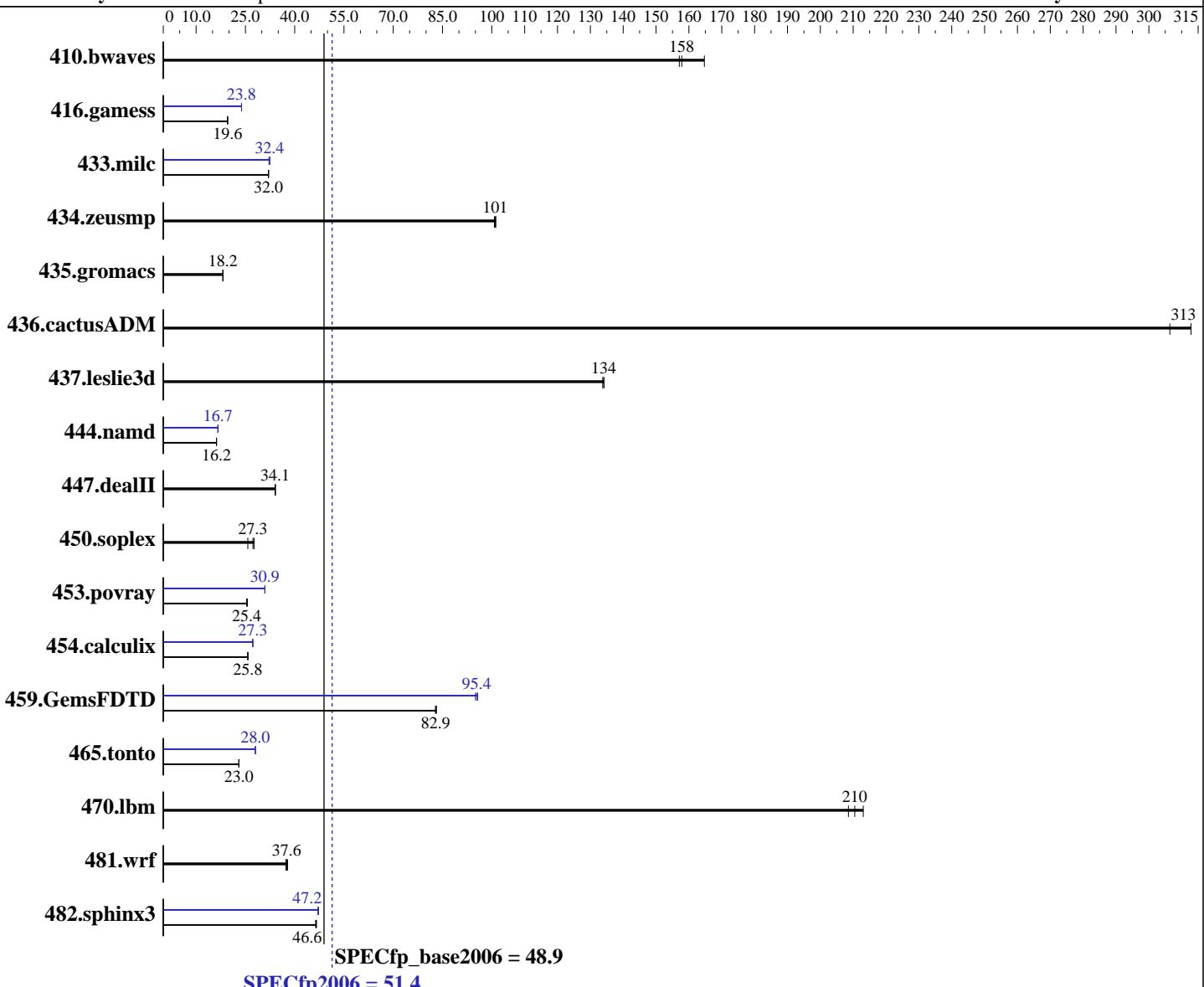
$SPECfp\_base2006 =$ 48.9

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

Test date: Apr-2012
Hardware Availability: May-2011
Software Availability: Dec-2011

SPECfp_base2006 = 48.9
SPECfp2006 = 51.4

	Hardware	
CPU Name:	Intel Xeon E7-2870	
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz	
CPU MHz:	2400	
FPU:	Integrated	
CPU(s) enabled:	20 cores, 2 chips, 10 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

	Software	
Operating System:	Red Hat Enterprise Linux Server release 6.2 (Santiago) 2.6.32-220.el6.x86_64	
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	

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-2870, 2.40 GHz)

SPECfp2006 =	51.4
SPECfp_base2006 =	48.9

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

L3 Cache:	30 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	128 GB (16 x 8 GB 4Rx8 PC3-8500R-7, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	2 x 50 GB SSD, RAID 0	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	86.5	157	82.5	165	**86.1**	**158**	86.5	157	82.5	165	**86.1**	**158**
416.gamess	1000	19.6	**1000**	**19.6**	999	19.6	822	23.8	**822**	**23.8**	822	23.8
433.milc	286	32.1	287	32.0	**287**	**32.0**	283	32.4	**283**	**32.4**	285	32.2
434.zeusmp	90.3	101	89.9	101	**90.1**	**101**	90.3	101	89.9	101	**90.1**	**101**
435.gromacs	393	18.2	**393**	**18.2**	393	18.2	393	18.2	**393**	**18.2**	393	18.2
436.cactusADM	38.2	313	39.0	306	**38.2**	**313**	38.2	313	39.0	306	**38.2**	**313**
437.leslie3d	70.1	134	70.3	134	**70.1**	**134**	70.1	134	70.3	134	**70.1**	**134**
444.namd	495	16.2	495	16.2	**495**	**16.2**	482	16.6	481	16.7	**481**	**16.7**
447.dealII	335	34.1	336	34.1	**336**	**34.1**	335	34.1	336	34.1	**336**	**34.1**
450.soplex	**306**	**27.3**	301	27.7	324	25.7	**306**	**27.3**	301	27.7	324	25.7
453.povray	209	25.4	**209**	**25.4**	208	25.6	172	31.0	**172**	**30.9**	172	30.9
454.calculix	320	25.8	321	25.7	**320**	**25.8**	303	27.3	**303**	**27.3**	303	27.3
459.GemsFDTD	**128**	**82.9**	128	83.2	128	82.9	112	95.0	**111**	**95.4**	111	95.7
465.tonto	**428**	**23.0**	428	23.0	427	23.1	351	28.0	351	28.0	**351**	**28.0**
470.lbm	64.5	213	**65.3**	**210**	65.9	209	64.5	213	**65.3**	**210**	65.9	209
481.wrf	**297**	**37.6**	295	37.9	299	37.4	**297**	**37.6**	295	37.9	299	37.4
482.sphinx3	418	46.6	**418**	**46.6**	420	46.4	**413**	**47.2**	414	47.1	412	47.3

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"
```

Platform Notes

```
Turbo Boost Power Optimization set to Traditional in BIOS
Sysinfo program /cpu2006.1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on hammerhead-pete Fri Apr  6 00:41:41 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
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-2870, 2.40 GHz)

$SPECfp2006 =$ 51.4

$SPECfp\_base2006 =$ 48.9

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

Test date: Apr-2012
Hardware Availability: May-2011
Software Availability: Dec-2011

Platform Notes (Continued)

```
      model name : Intel(R) Xeon(R) CPU E7- 2870 @ 2.40GHz
         2 "physical id"s (chips)
         40 "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 : 10
         siblings  : 20
         physical 0: cores 0 1 2 8 9 16 17 18 24 25
         physical 1: cores 0 1 2 8 9 16 17 18 24 25
      cache size : 30720 KB

   From /proc/meminfo
      MemTotal:       132134872 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)
      system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

   uname -a:
      Linux hammerhead-pete 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 Apr 5 16:33

   SPEC is set to: /cpu2006.1.2
      Filesystem     Type    Size  Used Avail Use% Mounted on
      /dev/mapper/vg_hammerheadpet-lv_root
                     ext4     89G  5.8G   78G   7% /

   Additional information from dmidecode:
     Memory:
      16x Samsung M392B1K73BM1-CF8 8 GB 1067 MHz 4 rank

   (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/cpu2006.1.2/libs/32:/cpu2006.1.2/libs/64"
OMP_NUM_THREADS = "20"

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

Continued on next page

SPEC CFP2006 Result

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-2870, 2.40 GHz)

$SPECfp2006 =$ 51.4

$SPECfp\_base2006 =$ 48.9

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

General Notes (Continued)

```
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:
      -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
      -ansi-alias

C++ benchmarks:
      -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-2870, 2.40 GHz)

$SPECfp2006 =$ 51.4

$SPECfp\_base2006 =$ 48.9

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

Base Optimization Flags (Continued)

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

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
              -ansi-alias

    470.lbm: basepeak = yes

    482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
              -parallel
```

C++ benchmarks:

```
    444.namd: -xSSE4.2(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
```

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-2870, 2.40 GHz)

$SPECfp2006 =$ 51.4

$SPECfp\_base2006 =$ 48.9

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

Test date: Apr-2012
Hardware Availability: May-2011
Software Availability: Dec-2011

Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(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: 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: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

465.tonto: -xSSE4.2(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: -xSSE4.2 -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-WSM-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-WSM-C.xml

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon E7-2870, 2.40 GHz)

SPECfp2006 = 51.4

SPECfp_base2006 = 48.9

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

Test date: Apr-2012
Hardware Availability: May-2011
Software Availability: Dec-2011

SPEC and SPECfp 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.
Report generated on Thu Jul 24 04:14:26 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 24 April 2012.