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

IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2690)

$SPECfp^{®}2006 =$ 94.8
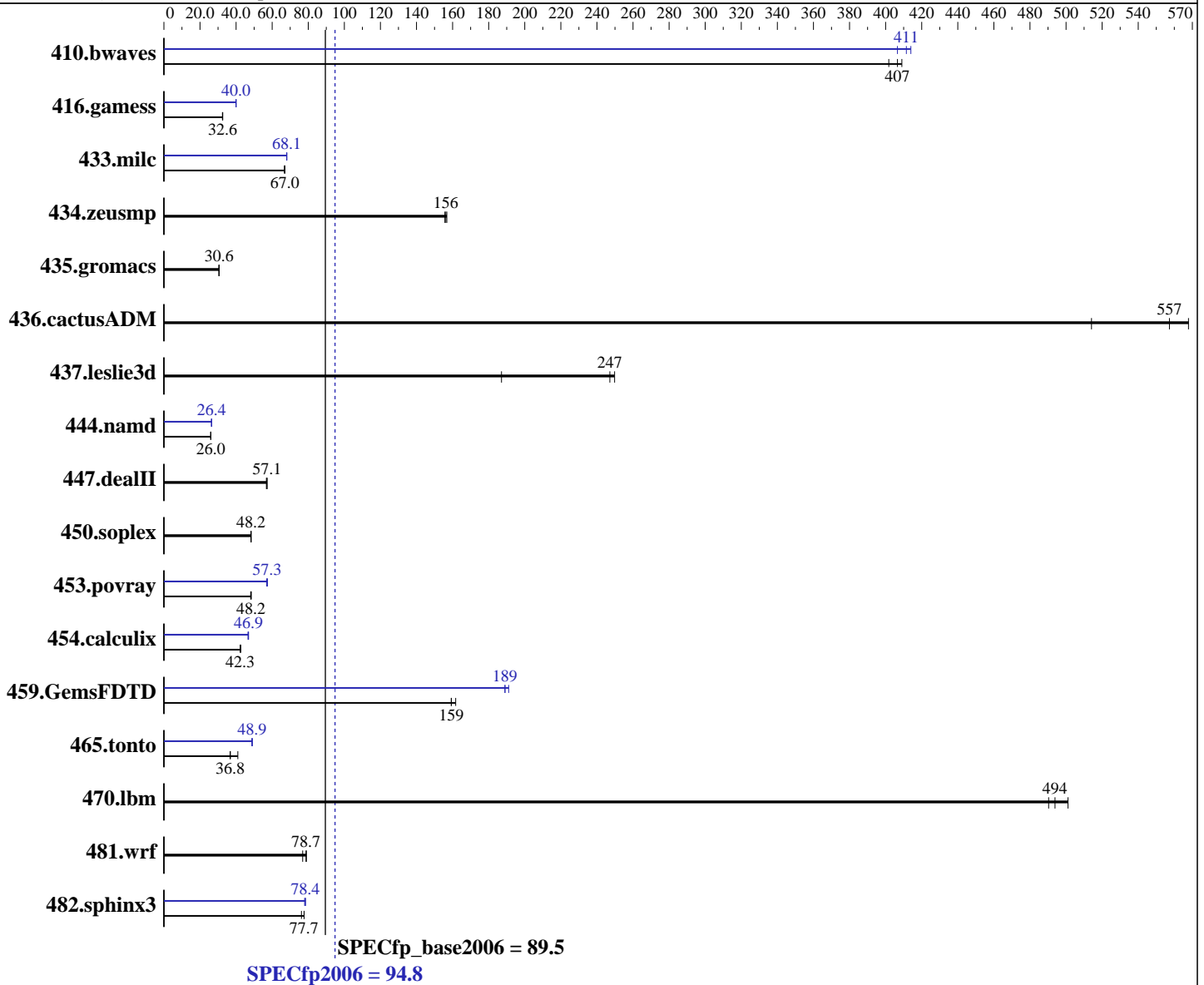
$SPECfp\_base2006 =$ 89.5

CPU2006 license: 11	**Test date:** Nov-2012
Test sponsor: IBM Corporation	**Hardware Availability:** Feb-2013
Tested by: IBM Corporation	**Software Availability:** Jun-2012

Results chart (scale 0 to 570):

- **410.bwaves** — 411 / 407
- **416.gamess** — 40.0 / 32.6
- **433.milc** — 68.1 / 67.0
- **434.zeusmp** — 156
- **435.gromacs** — 30.6
- **436.cactusADM** — 557
- **437.leslie3d** — 247
- **444.namd** — 26.4 / 26.0
- **447.dealII** — 57.1
- **450.soplex** — 48.2
- **453.povray** — 57.3 / 48.2
- **454.calculix** — 46.9 / 42.3
- **459.GemsFDTD** — 189 / 159
- **465.tonto** — 48.9 / 36.8
- **470.lbm** — 494
- **481.wrf** — 78.7
- **482.sphinx3** — 78.4 / 77.7

SPECfp_base2006 = 89.5
SPECfp2006 = 94.8

Hardware

CPU Name:	Intel Xeon E5-2690
CPU Characteristics:	Intel Turbo Boost Technology up to 3.80 GHz
CPU MHz:	2900
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

Software

Operating System:	Red Hat Enterprise Linux Server release 6.3 (Santiago) 2.6.32-279.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 System x iDataPlex dx360 M4 (Intel Xeon E5-2690)

SPECfp2006 =	94.8
SPECfp_base2006 =	89.5

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Nov-2012

Hardware Availability: Feb-2013

Software Availability: Jun-2012

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 250 GB SATA, 7200 RPM
Other Hardware:	None

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

Results Table

	Base						Peak					
Benchmark	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	33.8	402	**33.4**	**407**	33.2	409	33.4	407	**33.0**	**411**	32.8	414
416.gamess	**601**	**32.6**	601	32.6	604	32.4	490	39.9	489	40.0	**490**	**40.0**
433.milc	137	67.0	**137**	**67.0**	138	66.8	135	68.1	135	68.0	**135**	**68.1**
434.zeusmp	**58.2**	**156**	58.0	157	58.4	156	**58.2**	**156**	58.0	157	58.4	156
435.gromacs	**234**	**30.6**	233	30.6	234	30.5	**234**	**30.6**	233	30.6	234	30.5
436.cactusADM	21.0	568	**21.4**	**557**	23.2	514	21.0	568	**21.4**	**557**	23.2	514
437.leslie3d	**38.0**	**247**	37.6	250	50.2	187	**38.0**	**247**	37.6	250	50.2	187
444.namd	309	26.0	309	26.0	**309**	**26.0**	304	26.4	304	26.4	**304**	**26.4**
447.dealII	**200**	**57.1**	201	56.8	200	57.2	**200**	**57.1**	201	56.8	200	57.2
450.soplex	**173**	**48.2**	172	48.3	173	48.2	**173**	**48.2**	172	48.3	173	48.2
453.povray	111	48.1	**110**	**48.2**	110	48.4	**92.9**	**57.3**	93.5	56.9	92.8	57.4
454.calculix	194	42.6	195	42.3	**195**	**42.3**	177	46.6	**176**	**46.9**	176	46.9
459.GemsFDTD	**66.6**	**159**	65.6	162	66.6	159	55.5	191	**56.1**	**189**	56.1	189
465.tonto	268	36.7	240	41.0	**267**	**36.8**	**201**	**48.9**	201	49.0	202	48.8
470.lbm	28.0	490	**27.8**	**494**	27.4	501	28.0	490	**27.8**	**494**	27.4	501
481.wrf	141	79.0	**142**	**78.7**	145	76.9	141	79.0	**142**	**78.7**	145	76.9
482.sphinx3	251	77.7	**251**	**77.7**	256	76.2	250	78.0	248	78.4	**249**	**78.4**

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 /home/SPECcpu-v1.2/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ 8787f7622badcf24e01c368b1db4377c
running on dx360M4 Sat Nov  3 21:35:13 2012

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

IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2690)

$SPECfp2006 =$ 94.8

$SPECfp\_base2006 =$ 89.5

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

Test date: Nov-2012
Hardware Availability: Feb-2013
Software Availability: Jun-2012

Platform Notes (Continued)

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

   From /proc/cpuinfo
      model name : Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz
         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:       132271056 kB
      HugePages_Total:        0
      Hugepagesize:        2048 kB

   /usr/bin/lsb_release -d
      Red Hat Enterprise Linux Server release 6.3 (Santiago)

   From /etc/*release* /etc/*version*
      redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
      system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
      system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

   uname -a:
      Linux dx360M4 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012
      x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 Nov 2 14:45

   SPEC is set to: /home/SPECcpu-v1.2
      Filesystem     Type    Size  Used Avail Use% Mounted on
      /dev/mapper/vg_dx360m4-lv_home
                     ext4    176G   61G  106G  37% /home

   (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 = "/home/SPECcpu-v1.2/libs/32:/home/SPECcpu-v1.2/libs/64"
 OMP_NUM_THREADS = "16"

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

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2690)

$\text{SPECfp2006} = \qquad 94.8$

$\text{SPECfp\_base2006} = \qquad 89.5$

CPU2006 license: 11		**Test date:**	Nov-2012
Test sponsor:	IBM Corporation	**Hardware Availability:**	Feb-2013
Tested by:	IBM Corporation	**Software Availability:**	Jun-2012

General Notes (Continued)

```
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
```

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

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2690)

SPECfp2006 =	94.8
SPECfp_base2006 =	89.5

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

Test date: Nov-2012
Hardware Availability: Feb-2013
Software Availability: Jun-2012

Base Optimization Flags (Continued)

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
               -parallel
```

C++ benchmarks:

```
    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
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2690)

$SPECfp2006 =$ 94.8

$SPECfp\_base2006 =$ 89.5

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

Test date: Nov-2012
Hardware Availability: Feb-2013
Software Availability: Jun-2012

Peak Optimization Flags (Continued)

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-linux64.20120425.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-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.xml

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2690)

$\text{SPECfp2006} =$ 94.8

$\text{SPECfp\_base2006} =$ 89.5

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 14:46:29 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 29 January 2013.