SPEC® CFP2006 Result
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IBM Corporation

$SPECfp®2006 =$ 43.1

IBM System x3630 M4 (Intel Pentium 1403)
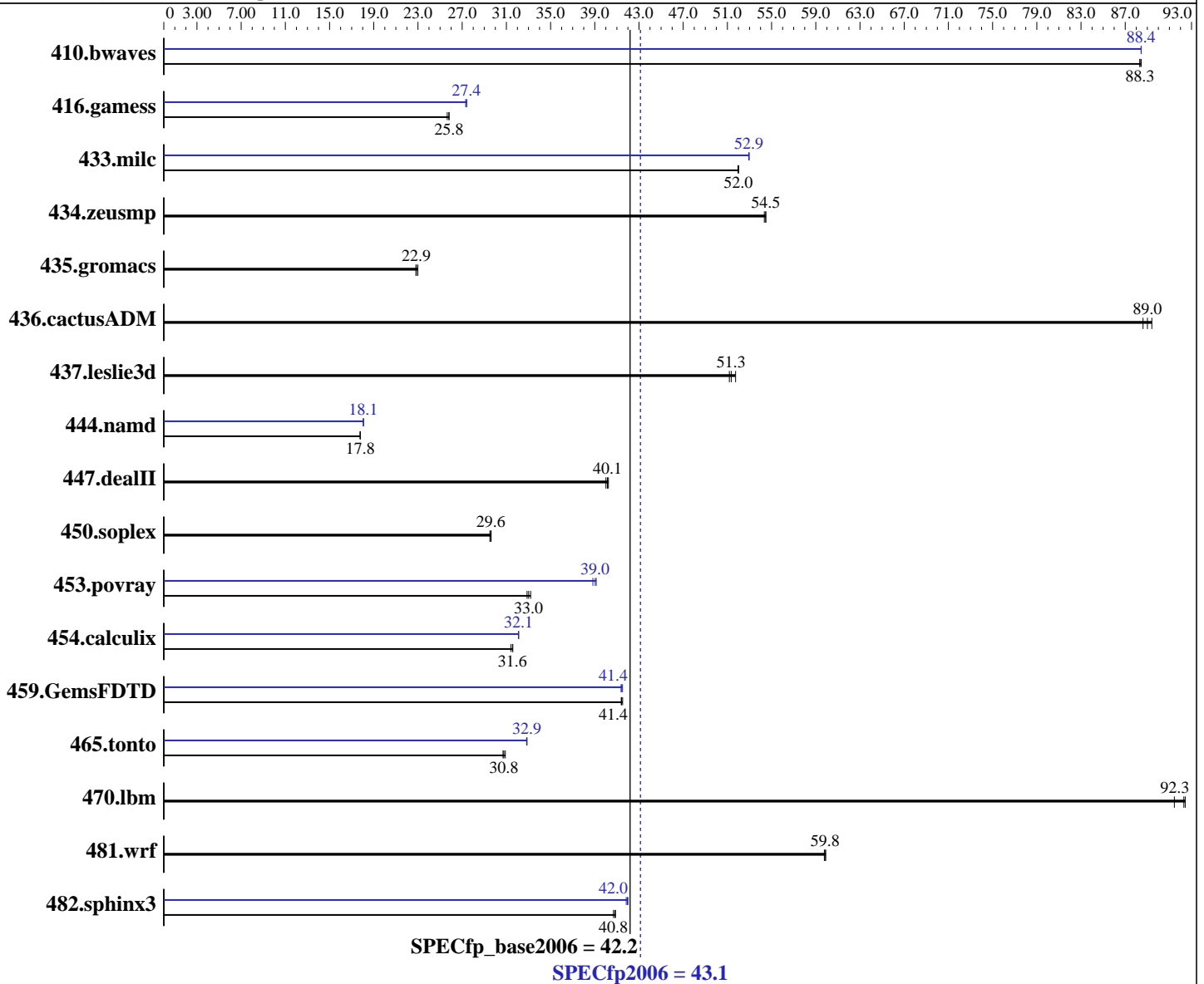
$SPECfp\_base2006 =$ 42.2

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

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

410.bwaves: 88.4 / 88.3
416.gamess: 27.4 / 25.8
433.milc: 52.9 / 52.0
434.zeusmp: 54.5
435.gromacs: 22.9
436.cactusADM: 89.0
437.leslie3d: 51.3
444.namd: 18.1 / 17.8
447.dealII: 40.1
450.soplex: 29.6
453.povray: 39.0 / 33.0
454.calculix: 32.1 / 31.6
459.GemsFDTD: 41.4 / 41.4
465.tonto: 32.9 / 30.8
470.lbm: 92.3
481.wrf: 59.8
482.sphinx3: 42.0 / 40.8

SPECfp_base2006 = 42.2
SPECfp2006 = 43.1

Hardware

CPU Name: Intel Pentium 1403
CPU Characteristics:
CPU MHz: 2600
FPU: Integrated
CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip
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

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L3 Cache:	5 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**154**	**88.3**	154	88.3	154	88.4	**154**	**88.4**	154	88.4	154	88.4
416.gamess	**759**	**25.8**	758	25.8	763	25.6	714	27.4	717	27.3	**715**	**27.4**
433.milc	177	52.0	176	52.0	**177**	**52.0**	173	53.0	173	52.9	**173**	**52.9**
434.zeusmp	**167**	**54.5**	167	54.3	167	54.5	**167**	**54.5**	167	54.3	167	54.5
435.gromacs	**312**	**22.9**	311	23.0	313	22.8	**312**	**22.9**	311	23.0	313	22.8
436.cactusADM	135	88.6	**134**	**89.0**	134	89.4	135	88.6	**134**	**89.0**	134	89.4
437.leslie3d	182	51.7	184	51.2	**183**	**51.3**	182	51.7	184	51.2	**183**	**51.3**
444.namd	451	17.8	451	17.8	**451**	**17.8**	**444**	**18.1**	444	18.1	444	18.1
447.dealII	286	40.0	284	40.2	**285**	**40.1**	286	40.0	284	40.2	**285**	**40.1**
450.soplex	**282**	**29.6**	283	29.5	282	29.6	**282**	**29.6**	283	29.5	282	29.6
453.povray	160	33.2	**161**	**33.0**	162	32.9	136	39.1	**136**	**39.0**	137	38.8
454.calculix	261	31.6	**261**	**31.6**	263	31.4	257	32.1	257	32.1	**257**	**32.1**
459.GemsFDTD	256	41.5	256	41.4	**256**	**41.4**	256	41.5	256	41.4	**256**	**41.4**
465.tonto	**320**	**30.8**	321	30.7	318	30.9	300	32.8	299	32.9	**300**	**32.9**
470.lbm	**149**	**92.3**	150	91.4	149	92.4	**149**	**92.3**	150	91.4	149	92.4
481.wrf	**187**	**59.8**	187	59.8	186	59.9	**187**	**59.8**	187	59.8	186	59.9
482.sphinx3	**478**	**40.8**	479	40.7	477	40.9	**465**	**42.0**	464	42.0	466	41.8

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

```
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 Tue Jul 24 06:26:35 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
```

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Test date: Jul-2012
Hardware Availability: May-2012
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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Pentium(R) CPU 1403 @ 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 : 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)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

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 23 11:21

SPEC is set to: /home/SPECcpu-v1.2
   Filesystem     Type    Size  Used Avail Use% Mounted on
   /dev/mapper/vg_x3630m4rhel62-lv_home
                  ext4    383G  9.6G  354G   3% /home

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:
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 = "2"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
```
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Test sponsor: IBM Corporation	**Hardware Availability:**	May-2012
Tested by: IBM Corporation	**Software Availability:**	Dec-2011

General Notes (Continued)

```
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
```

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

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Test sponsor: IBM Corporation		**Hardware Availability:**	May-2012
Tested by: IBM Corporation		**Software Availability:**	Dec-2011

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
```

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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-linux64.20111122.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.html

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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 questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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