SPEC® CFP2006 Result

IBM Corporation

IBM Flex System x480 X6
(Intel Xeon E7-4830 v2, 2.20 GHz)

$SPECfp®\_rate2006 =$ 1070

$SPECfp\_rate\_base2006 =$ 1050
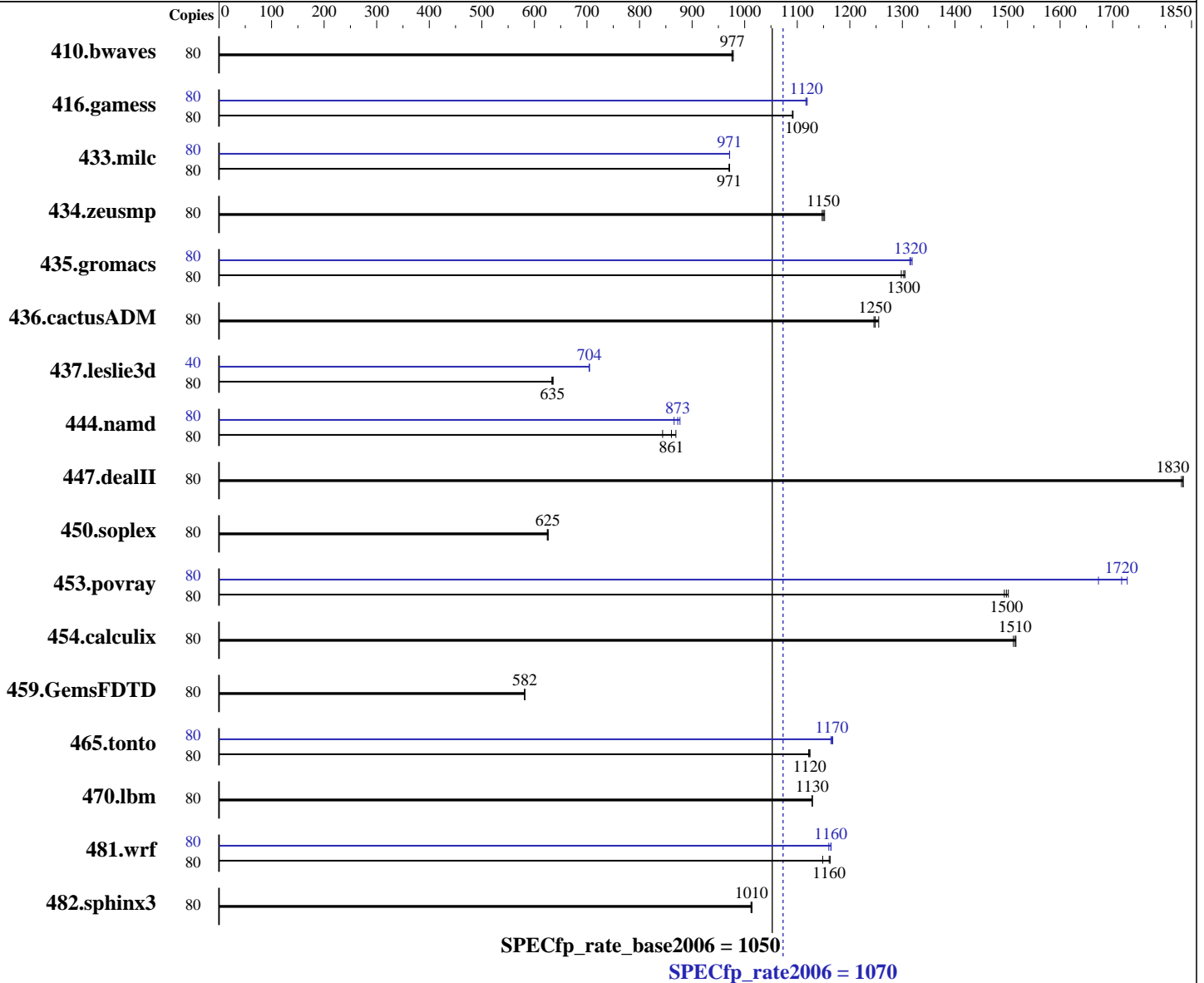
CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Aug-2014
Hardware Availability: Jun-2014
Software Availability: Nov-2013

SPECfp_rate_base2006 = 1050

SPECfp_rate2006 = 1070

Hardware

CPU Name:	Intel Xeon E7-4830 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.70 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 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 6.5 (Santiago) 2.6.32-431.el6.x86_64
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel:	No
File System:	ext4

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x480 X6
(Intel Xeon E7-4830 v2, 2.20 GHz)

$SPECfp\_rate2006 =$ 1070

$SPECfp\_rate\_base2006 =$ 1050

L3 Cache:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1066 MHz)
Disk Subsystem:	1 x 300 GB SAS, 10000 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

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	80	1111	978	1114	976	**1113**	**977**	80	1111	978	1114	976	**1113**	**977**
416.gamess	80	1434	1090	1436	1090	**1435**	**1090**	80	1403	1120	1400	1120	**1402**	**1120**
433.milc	80	**757**	**971**	756	971	757	970	80	**756**	**971**	756	971	756	971
434.zeusmp	80	634	1150	632	1150	**633**	**1150**	80	634	1150	632	1150	**633**	**1150**
435.gromacs	80	**439**	**1300**	438	1300	440	1300	80	433	1320	435	1310	**434**	**1320**
436.cactusADM	80	767	1250	762	1250	**766**	**1250**	80	767	1250	762	1250	**766**	**1250**
437.leslie3d	80	1183	636	**1185**	**635**	1188	633	40	534	704	**534**	**704**	534	705
444.namd	80	760	844	738	869	**746**	**861**	80	732	877	741	866	**735**	**873**
447.dealII	80	499	1830	500	1830	**499**	**1830**	80	499	1830	500	1830	**499**	**1830**
450.soplex	80	1068	624	**1067**	**625**	1065	626	80	1068	624	**1067**	**625**	1065	626
453.povray	80	285	1490	283	1500	**284**	**1500**	80	254	1670	246	1730	**248**	**1720**
454.calculix	80	437	1510	435	1520	**436**	**1510**	80	437	1510	435	1520	**436**	**1510**
459.GemsFDTD	80	**1459**	**582**	1459	582	1460	581	80	**1459**	**582**	1459	582	1460	581
465.tonto	80	**701**	**1120**	702	1120	700	1120	80	**675**	**1170**	674	1170	676	1160
470.lbm	80	**974**	**1130**	974	1130	974	1130	80	**974**	**1130**	974	1130	974	1130
481.wrf	80	778	1150	769	1160	**770**	**1160**	80	**768**	**1160**	767	1160	770	1160
482.sphinx3	80	1538	1010	1541	1010	**1539**	**1010**	80	1538	1010	1541	1010	**1539**	**1010**

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"

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x480 X6
(Intel Xeon E7-4830 v2, 2.20 GHz)

$SPECfp\_rate2006 =$ 1070

$SPECfp\_rate\_base2006 =$ 1050

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

Test date: Aug-2014
Hardware Availability: Jun-2014
Software Availability: Nov-2013

Platform Notes

```
Operating Mode set to Maximum Perfomance in BIOS
Memory Data Scrambling Disabled
Patrol Scrub Disabled
Sysinfo program /cpu2006.1.2_14.0_aug2013/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on newport-rhel6.5 Sun Aug 10 11:03:04 2014

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) Xeon(R) CPU E7-4830 v2 @ 2.20GHz
      4 "physical id"s (chips)
      80 "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 3 4 8 9 10 11 12
      physical 1: cores 0 1 2 3 4 8 9 10 11 12
      physical 2: cores 0 1 2 3 4 8 9 10 11 12
      physical 3: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       1058508292 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux newport-rhel6.5 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST
   2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 9 18:57 last=5

SPEC is set to: /cpu2006.1.2_14.0_aug2013
   Filesystem                         Type  Size  Used Avail Use% Mounted on
   /dev/mapper/vg_newportrhel6-lv_root ext4  265G   29G  223G  12% /

Additional information from dmidecode:
   BIOS IBM -[N2E107JUS-1.00]- 05/03/2014
   Memory:
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x480 X6
(Intel Xeon E7-4830 v2, 2.20 GHz)

$SPECfp\_rate2006 =$ 1070

$SPECfp\_rate\_base2006 =$ 1050

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

Test date: Aug-2014
Hardware Availability: Jun-2014
Software Availability: Nov-2013

Platform Notes (Continued)

```
     32x Hynix HMT42GR7AFR4A-PB 16 GB 1067 MHz 2 rank
     32x NO DIMM Unknown
     32x Samsung M393B2G70QH0-YK0 16 GB 1067 MHz 2 rank

   (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006.1.2_14.0_aug2013/libs/32:/cpu2006.1.2_14.0_aug2013/libs/64:/cpu2006.1.2_14.0_aug2013/sh"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 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.:
 numactl --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
     447.dealII: -DSPEC_CPU_LP64
     450.soplex: -DSPEC_CPU_LP64
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x480 X6
(Intel Xeon E7-4830 v2, 2.20 GHz)

$SPECfp\_rate2006 =$ 1070

$SPECfp\_rate\_base2006 =$ 1050

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

Test date: Aug-2014
Hardware Availability: Jun-2014
Software Availability: Nov-2013

Base Portability Flags (Continued)

```
  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 -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

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

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

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
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Flex System x480 X6
(Intel Xeon E7-4830 v2, 2.20 GHz)

SPECfp_rate2006 = 1070

SPECfp_rate_base2006 = 1050

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

Test date: Aug-2014
Hardware Availability: Jun-2014
Software Availability: Nov-2013

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) `-opt-mem-layout-trans=3`(pass 2)
        `-prof-use`(pass 2) `-auto-ilp32`

    470.lbm: `basepeak = yes`

    482.sphinx3: `basepeak = yes`

C++ benchmarks:

    444.namd: `-xAVX`(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`

    450.soplex: `basepeak = yes`

    453.povray: `-xAVX`(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) `-unroll4` `-ansi-alias`

Fortran benchmarks:

    410.bwaves: `basepeak = yes`

    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-`

    434.zeusmp: `basepeak = yes`

    437.leslie3d: `-xAVX` `-ipo` `-O3` `-no-prec-div` `-opt-prefetch`

    459.GemsFDTD: `basepeak = yes`

    465.tonto: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-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: `-xAVX`(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) `-opt-prefetch` `-auto-ilp32`

    436.cactusADM: `basepeak = yes`

SPEC CFP2006 Result

IBM Corporation

IBM Flex System x480 X6
(Intel Xeon E7-4830 v2, 2.20 GHz)

$SPECfp\_rate2006 = \quad 1070$

$SPECfp\_rate\_base2006 = \ 1050$

Peak Optimization Flags (Continued)

454.calculix: basepeak = yes

481.wrf: `-xAVX -ipo -O3 -no-prec-div -auto-ilp32`

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.html
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.xml
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml

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 Wed Sep 10 16:12:25 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 9 September 2014.