



SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp®_rate2006 = 216

IBM System p 570 (4.7 GHz, 8 core, RHEL)

SPECfp_rate_base2006 = 185

CPU2006 license: 11

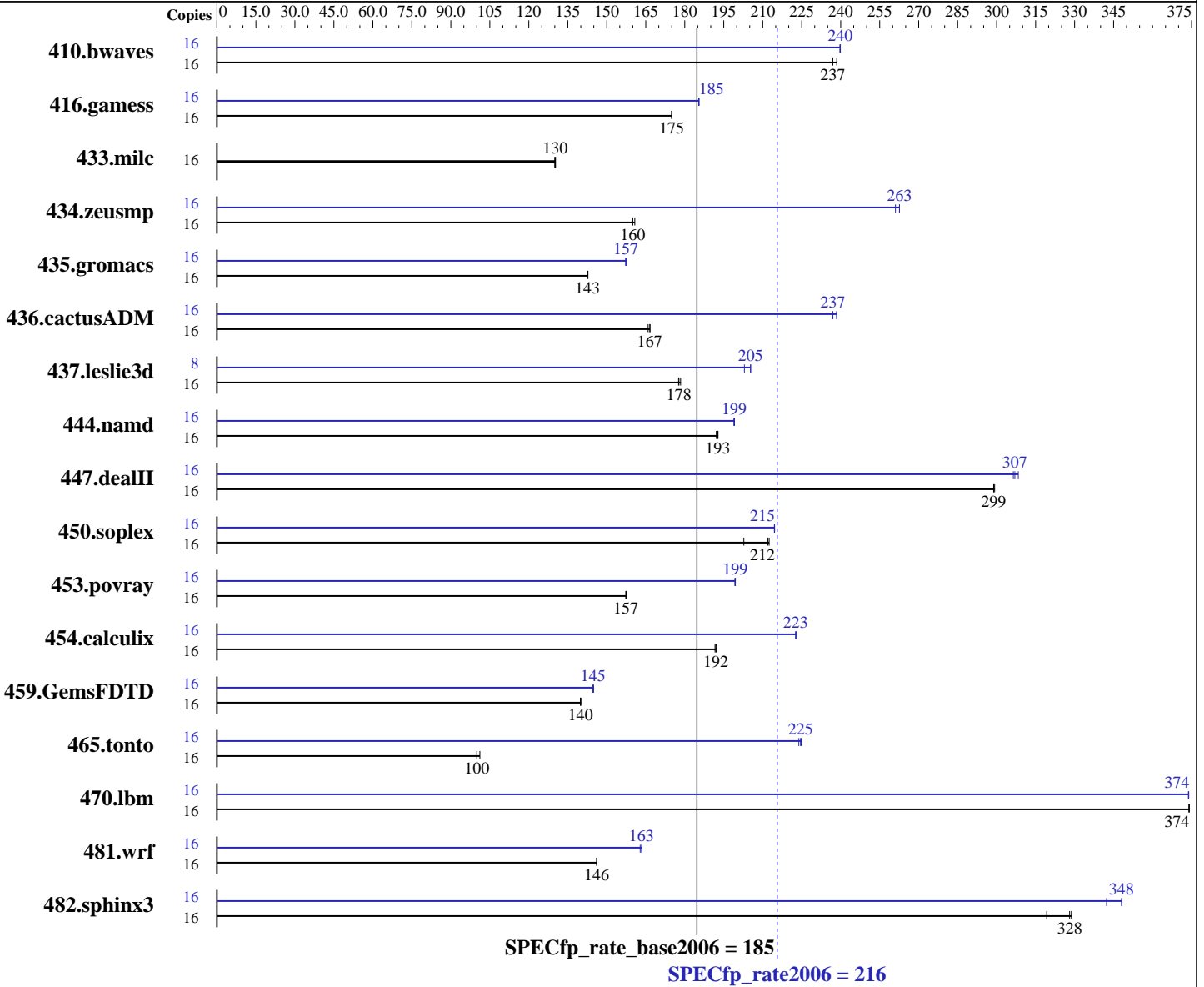
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Oct-2007

Hardware Availability: Jun-2007

Software Availability: Oct-2007



Hardware

CPU Name: POWER6
 CPU Characteristics:
 CPU MHz: 4700
 FPU: Integrated
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4,8,12,16 cores
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per core

Continued on next page

Software

Operating System: Red Hat Enterprise Linux Advanced Platform 5.1 for IBM POWER
 Compiler: IBM XL C/C++ Advanced Edition for Linux, V9.0
 IBM XL Fortran Advanced Edition for Linux, V11.1
 Auto Parallel: No
 File System: ext3
 System State: Multi-User
 Base Pointers: 32-bit
 Peak Pointers: 32/64-bit

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp_rate2006 = 216

IBM System p 570 (4.7 GHz, 8 core, RHEL)

SPECfp_rate_base2006 = 185

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

Test date: Oct-2007
Hardware Availability: Jun-2007
Software Availability: Oct-2007

L3 Cache: 32 MB I+D off chip per chip
Other Cache: None
Memory: 64 GB (32x2 GB) DDR2 667 MHz
Disk Subsystem: 2x73 GB SAS 15K RPM
Other Hardware: None

Other Software: -IBM Post-Link Optimization for Linux on POWER, Version 5.4.0-10
-MicroQuill SmartHeap 8.1
-IBM Engineering and Scientific Subroutine Library for Linux on POWER, Version 4.3

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	912	238	918	237	918	237	16	907	240	907	240	906	240
416.gamess	16	1790	175	1790	175	1790	175	16	1689	185	1690	185	1689	185
433.milc	16	1130	130	1128	130	1128	130	16	1130	130	1128	130	1128	130
434.zeusmp	16	910	160	911	160	906	161	16	558	261	554	263	554	263
435.gromacs	16	802	143	800	143	801	143	16	726	157	726	157	726	157
436.cactusADM	16	1148	167	1147	167	1152	166	16	802	238	807	237	807	237
437.leslie3d	16	846	178	847	178	843	178	8	366	205	366	205	371	203
444.namd	16	668	192	666	193	666	193	16	644	199	645	199	645	199
447.dealII	16	612	299	612	299	612	299	16	597	306	594	308	596	307
450.soplex	16	658	203	629	212	628	212	16	622	215	622	214	622	215
453.povray	16	541	157	541	157	541	157	16	427	199	427	199	427	199
454.calculix	16	688	192	687	192	689	192	16	592	223	593	223	593	223
459.GemsFDTD	16	1213	140	1212	140	1214	140	16	1173	145	1173	145	1171	145
465.tonto	16	1573	100	1575	100	1556	101	16	701	225	703	224	700	225
470.lbm	16	588	374	588	374	588	374	16	588	374	588	374	588	374
481.wrf	16	1223	146	1223	146	1223	146	16	1093	164	1094	163	1097	163
482.sphinx3	16	950	328	977	319	949	329	16	896	348	911	342	896	348

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

General Notes

kernel release 2.6.18-52.el5.

See flags file for details on following settings.

ulimit -s (stack) set to 262144.

System set to Enhanced mode when defining partition on HMC

Large pages reserved as follows by root user:

```
echo 1600 > /proc/sys/vm/nr_hugepages
```

System configured with libhugetlbfs library for application access to large pages

Environment variables set before executing benchmarks.

```
export HUGETLB_VERBOSE=0
```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp_rate2006 = 216

IBM System p 570 (4.7 GHz, 8 core, RHEL)

SPECfp_rate_base2006 = 185

CPU2006 license: 11

Test date: Oct-2007

Test sponsor: IBM Corporation

Hardware Availability: Jun-2007

Tested by: IBM Corporation

Software Availability: Oct-2007

General Notes (Continued)

```
export HUGETLB_MORECORE=yes
export XLFRTLOPTS=intrinthds=1
```

fdpr binary optimization tool used for
435.gromacs 436.cactusADM 482.sphinx3

Benchmarks bound to a processor using numactl on the submit command.

Base Compiler Invocation

C benchmarks:

```
xlc -qlanglvl=extc99
```

C++ benchmarks:

```
xlc
```

Fortran benchmarks:

```
xlf95
```

Benchmarks using both Fortran and C:

```
xlc -qlanglvl=extc99 xlf95
```

Base Portability Flags

```
410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname
437.leslie3d: -qfixed
454.calculix: -qfixed -qextname
481.wrf: -DNOUNDERSCORE
482.sphinx3: -qchars=signed
```

Base Optimization Flags

C benchmarks:

```
-O5 -qnoenablevmx -lhugetlbfs
```

C++ benchmarks:

```
-O5 -qrtti -qnoenablevmx -qstaticlink
```

Fortran benchmarks:

```
-O5 -qsmallstack=dynlenonheap -qalias=nostd -qnoenablevmx  
-B/usr/share/libhugetlbfs/ -t1 -Wl,--hugetlbfs-link=BDT
```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp_rate2006 = 216

IBM System p 570 (4.7 GHz, 8 core, RHEL)

SPECfp_rate_base2006 = 185

CPU2006 license: 11

Test date: Oct-2007

Test sponsor: IBM Corporation

Hardware Availability: Jun-2007

Tested by: IBM Corporation

Software Availability: Oct-2007

Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-O5 -qnoenablevmx -qsmallstack=dynlenonheap -qalias=nostd
-B/usr/share/libhugetlbfs/ -t1 -Wl,--hugetlbfs-link=BDT

Base Other Flags

C benchmarks:

-qipa=noobject -qipa=threads

C++ benchmarks:

-qipa=noobject -qipa=threads

Fortran benchmarks:

-qipa=noobject -qipa=threads

Benchmarks using both Fortran and C:

-qipa=noobject -qipa=threads

Peak Compiler Invocation

C benchmarks:

xlc -qlanglvl=extc99

C++ benchmarks:

xlC

Fortran benchmarks:

xlF95

Benchmarks using both Fortran and C:

xlc -qlanglvl=extc99 xlF95

Peak Portability Flags

410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname
437.leslie3d: -qfixed
454.calculix: -qfixed -qextname
481.wrf: -DNOUNDERSCORE
482.sphinx3: -qchars=signed



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp_rate2006 = 216

IBM System p 570 (4.7 GHz, 8 core, RHEL)

SPECfp_rate_base2006 = 185

CPU2006 license: 11

Test date: Oct-2007

Test sponsor: IBM Corporation

Hardware Availability: Jun-2007

Tested by: IBM Corporation

Software Availability: Oct-2007

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -O3 -qarch=pwr6e -qtune=pwr6 -B/usr/share/libhugetlbfs/
-t1 -Wl,--hugetlbfs-link=BDT -q64

482.sphinx3: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -lhugetlbfs

C++ benchmarks:

444.namd: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=pwr6e -qtune=pwr6

447.dealIII: -O5 -qrtti -qnoenablevmx -qstaticlink
-Wl,--whole-archive /usr/lib/libsmartheap.a
-Wl,--no-whole-archive

450.soplex: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qstrict -lhugetlbfs

453.povray: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lsmartheap

Fortran benchmarks:

410.bwaves: -O5 -qsmallstack=dynlenonheap -lhugetlbfs

416.gamess: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qalias=nostd
-qnoenablevmx

434.zeusmp: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=pwr6e -qtune=pwr6
-qxlf90=nosignedzero -B/usr/share/libhugetlbfs/ -t1
-Wl,--hugetlbfs-link=BDT

437.leslie3d: -O3 -qarch=pwr6e -qtune=pwr6 -B/usr/share/libhugetlbfs/
-t1 -Wl,--hugetlbfs-link=BDT -q64

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O5
-B/usr/share/libhugetlbfs/ -t1 -Wl,--hugetlbfs-link=BDT
-q64

465.tonto: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -less1 -lsmartheap
-lxlf90_r

Benchmarks using both Fortran and C:

435.gromacs: -Wl,-q -O2 -qarch=pwr6e -qtune=pwr6 -lhugetlbfs

436.cactusADM: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O2 -qarch=pwr6e
-qtune=pwr6 -lhugetlbfs

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp_rate2006 = 216

IBM System p 570 (4.7 GHz, 8 core, RHEL)

SPECfp_rate_base2006 = 185

CPU2006 license: 11

Test date: Oct-2007

Test sponsor: IBM Corporation

Hardware Availability: Jun-2007

Tested by: IBM Corporation

Software Availability: Oct-2007

Peak Optimization Flags (Continued)

454.calculix: -qpdf1(pass 1) -qpdf2(pass 2) -O4
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT

481.wrf: -O5 -qnoenablevmx -qalias=nostd -lhugetlbfs

Peak Other Flags

C benchmarks:

-qipa=noobject -qipa=threads

C++ benchmarks:

-qipa=noobject -qipa=threads

Fortran benchmarks:

-qipa=noobject -qipa=threads

Benchmarks using both Fortran and C:

-qipa=noobject -qipa=threads

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/lop-xl-flags.20090714.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/lop-xl-flags.20090714.xml>

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 v1.0.
Report generated on Tue Jul 22 14:33:34 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 27 November 2007.