SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

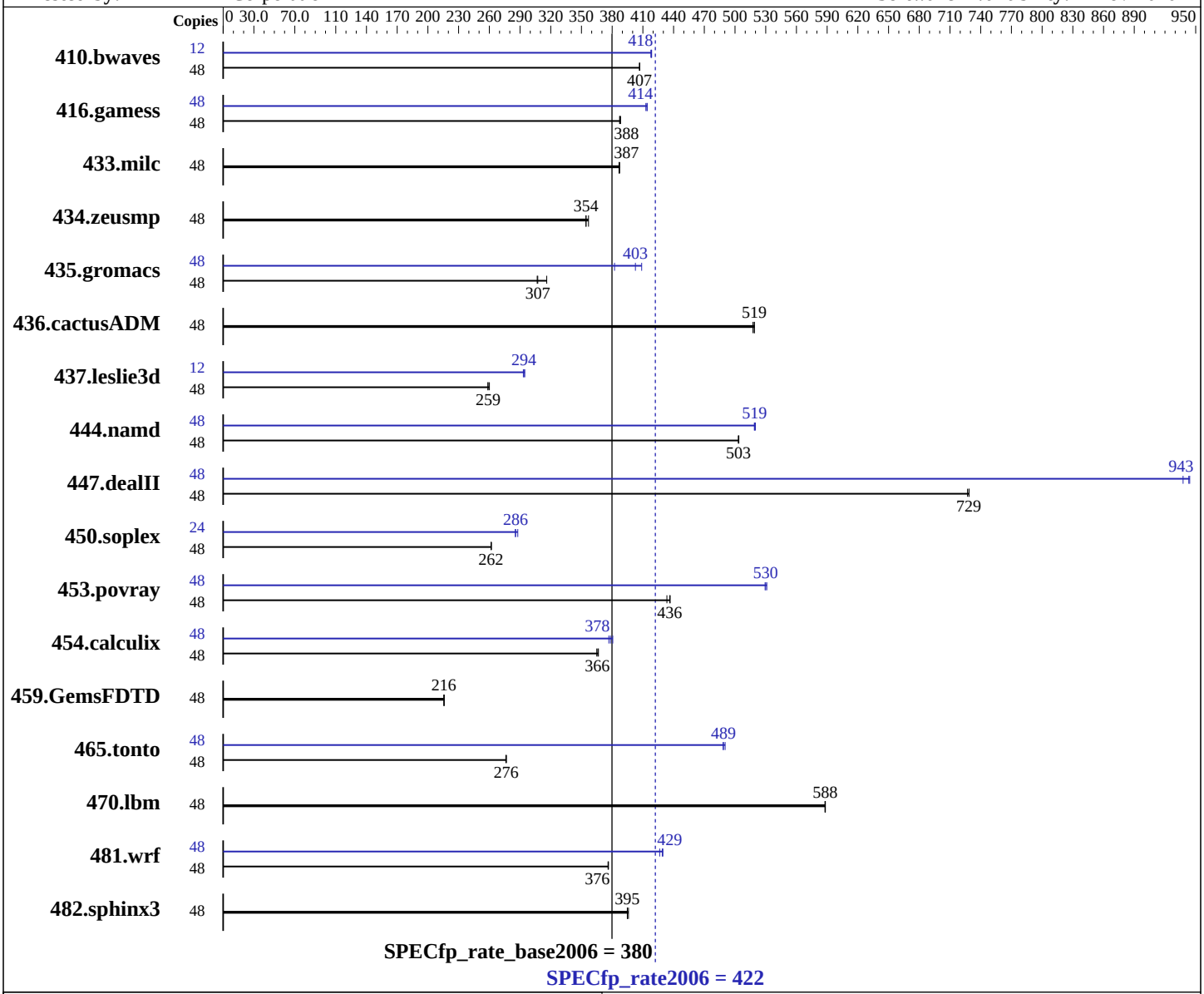
IBM Power 730 Express (3.7 GHz, 12 core, RedHat)

SPECfp®_rate2006 = 422

SPECfp_rate_base2006 = 380

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

Test date: Jan-2011
Hardware Availability: Sep-2010
Software Availability: Nov-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.92 GHz
CPU MHz:	3724
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip, 4 threads/core
CPU(s) orderable:	12 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux Server release 6.0 (ppc64), Kernel 2.6.32-71.el6.ppc64
Compiler:	IBM XL C/C++ for Linux, V11.1 Version: 11.01.0000.0001 IBM XL Fortran for Linux, V13.1 Version: 13.01.0000.0001
Auto Parallel:	No
File System:	ext3
System State:	Run Level 3 (multi-user)

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Power 730 Express (3.7 GHz, 12 core, RedHat)

SPECfp_rate2006 = 422

SPECfp_rate_base2006 = 380

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

Test date: Jan-2011
Hardware Availability: Sep-2010
Software Availability: Nov-2010

Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	4 MB I+D on chip per core
Other Cache:	None
Memory:	128 GB (16 x 8 GB) DDR3 1066 MHz
Disk Subsystem:	2 x 146.8 GB SAS SFF 15K RPM
Other Hardware:	None

Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	-Post-Link Optimization for Linux on POWER, Version 5.6.0-2 -MicroQuill SmartHeap 9 -Apache C++ Standard Library V4.2.1

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	48	**1604**	**407**	1604	407	1603	407	12	390	418	390	419	**390**	**418**
416.gamess	48	**2425**	**388**	2427	387	2421	388	48	2269	414	2276	413	**2270**	**414**
433.milc	48	1140	387	1138	387	**1139**	**387**	48	1140	387	1138	387	**1139**	**387**
434.zeusmp	48	**1232**	**354**	1232	354	1224	357	48	**1232**	**354**	1232	354	1224	357
435.gromacs	48	1084	316	**1115**	**307**	1117	307	48	838	409	896	382	**851**	**403**
436.cactusADM	48	1105	519	1108	518	**1105**	**519**	48	1105	519	1108	518	**1105**	**519**
437.leslie3d	48	1745	259	**1743**	**259**	1735	260	12	**384**	**294**	383	295	385	293
444.namd	48	**765**	**503**	764	504	765	503	48	742	519	**741**	**519**	740	520
447.dealII	48	**754**	**729**	755	727	754	729	48	582	944	586	938	**582**	**943**
450.soplex	48	1527	262	**1530**	**262**	1530	262	24	701	285	695	288	**701**	**286**
453.povray	48	585	437	589	433	**585**	**436**	48	482	529	**482**	**530**	481	531
454.calculix	48	1080	367	**1082**	**366**	1085	365	48	1051	377	**1047**	**378**	1040	381
459.GemsFDTD	48	2358	216	**2361**	**216**	2362	216	48	2358	216	**2361**	**216**	2362	216
465.tonto	48	1711	276	1707	277	**1709**	**276**	48	967	488	**966**	**489**	963	490
470.lbm	48	**1121**	**588**	1121	588	1122	588	48	**1121**	**588**	1121	588	1122	588
481.wrf	48	1426	376	1425	376	**1425**	**376**	48	1248	430	1257	426	**1250**	**429**
482.sphinx3	48	2370	395	2363	396	**2369**	**395**	48	2370	395	2363	396	**2369**	**395**

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

Peak Tuning Notes

```
IBM Post-Link Optimization tool with
options "-O4 -nodp" used for
  433.milc 435.gromacs 436.cactusADM 450.soplex 482.sphinx3
options "-O4 -vrox -nodp" used for
  434.zeusmp
options "-O3 -lu -1 -nodp -sdp 9" used for
  437.leslie3d 444.namd
options "-O4" used for
  465.tonto
```

Submit Notes

```
The config file option 'submit' was used.
Benchmarks bound to a processor using numactl on the submit command.
```

Operating System Notes

```
ulimit -s (stack) set to 1048576.
Large pages reserved as follows by root user:
  echo 4224 > /proc/sys/vm/nr_hugepages
The following environment varibles were set before the runspec command:
  XLFRTEOPTS=intrinthds=1
  HUGETLB_VERBOSE=0
  HUGETLB_MORECORE=yes
  HUGETLB_ELFMAP=RW

447.dealII (peak): "apache_stdcxx_4_2_1" src.alt was used.
447.dealII (base): "apache_stdcxx_4_2_1" src.alt was used.

The Apache C++ Standard Library V4.2.1 was installed from
http://stdcxx.apache.org/download.html using:
    gmake BUILDTYPE=8d CONFIG=gcc.config
```

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 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs
```

C++ benchmarks:
```
-O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qrtti -lhugetlbfs
```

Fortran benchmarks:
```
-O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsmallstack=dynlenonheap
-qalias=nostd -lhugetlbfs
```

Benchmarks using both Fortran and C:
```
-O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsmallstack=dynlenonheap
-qalias=nostd -lhugetlbfs
```

Base Other Flags

C benchmarks:

C++ benchmarks:

Fortran benchmarks:

Benchmarks using both Fortran and C:

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`

Continued on next page

Peak Portability Flags (Continued)

435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname
437.leslie3d: -qfixed
453.povray: -DSPEC_CPU_LP64
454.calculix: -qfixed -qextname
481.wrf: -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
-qtune=pwr7 -qipa=threads -lhugetlbfs

447.dealII: -O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qrtti
-qcpp_stdinc=/autobench/sources/stdcxx-4.2.1/dist/include/ansi:/autobench/sources/stdcxx-4.2.1/dist/include:/opt/ibmcmp/vacpp/11.1/incl
-lsmartheap -L/autobench/sources/stdcxx-4.2.1/dist/lib
-R/autobench/sources/stdcxx-4.2.1/dist/lib -lstd8d

450.soplex: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qtune=auto
-qarch=pwr5 -lhugetlbfs

453.povray: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
-qtune=pwr7 -qipa=threads -qsimd -q64 -lsmartheap64

Fortran benchmarks:

410.bwaves: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7 -qtune=pwr7
-qipa=threads -qsmallstack=dynlenonheap -q64 -lhugetlbfs

416.gamess: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7 -qtune=pwr7
-qipa=threads -qalias=nostd -lhugetlbfs

434.zeusmp: basepeak = yes

437.leslie3d: -Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -q64
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-align

Continued on next page

Peak Optimization Flags (Continued)

459.GemsFDTD: basepeak = yes

465.tonto: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsimd -lhugetlbfs

Benchmarks using both Fortran and C:

435.gromacs: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsimd -lhugetlbfs

436.cactusADM: basepeak = yes

454.calculix: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-align

481.wrf: -O3 -qarch=pwr7 -qtune=pwr7 -qipa=threads -q64 -lhugetlbfs

Peak Other Flags

C benchmarks:

C++ benchmarks:

Fortran benchmarks:

Benchmarks using both Fortran and C:

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20110426.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20110426.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 v1.1.
Report generated on Wed Jul 23 18:39:31 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 26 April 2011.