SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

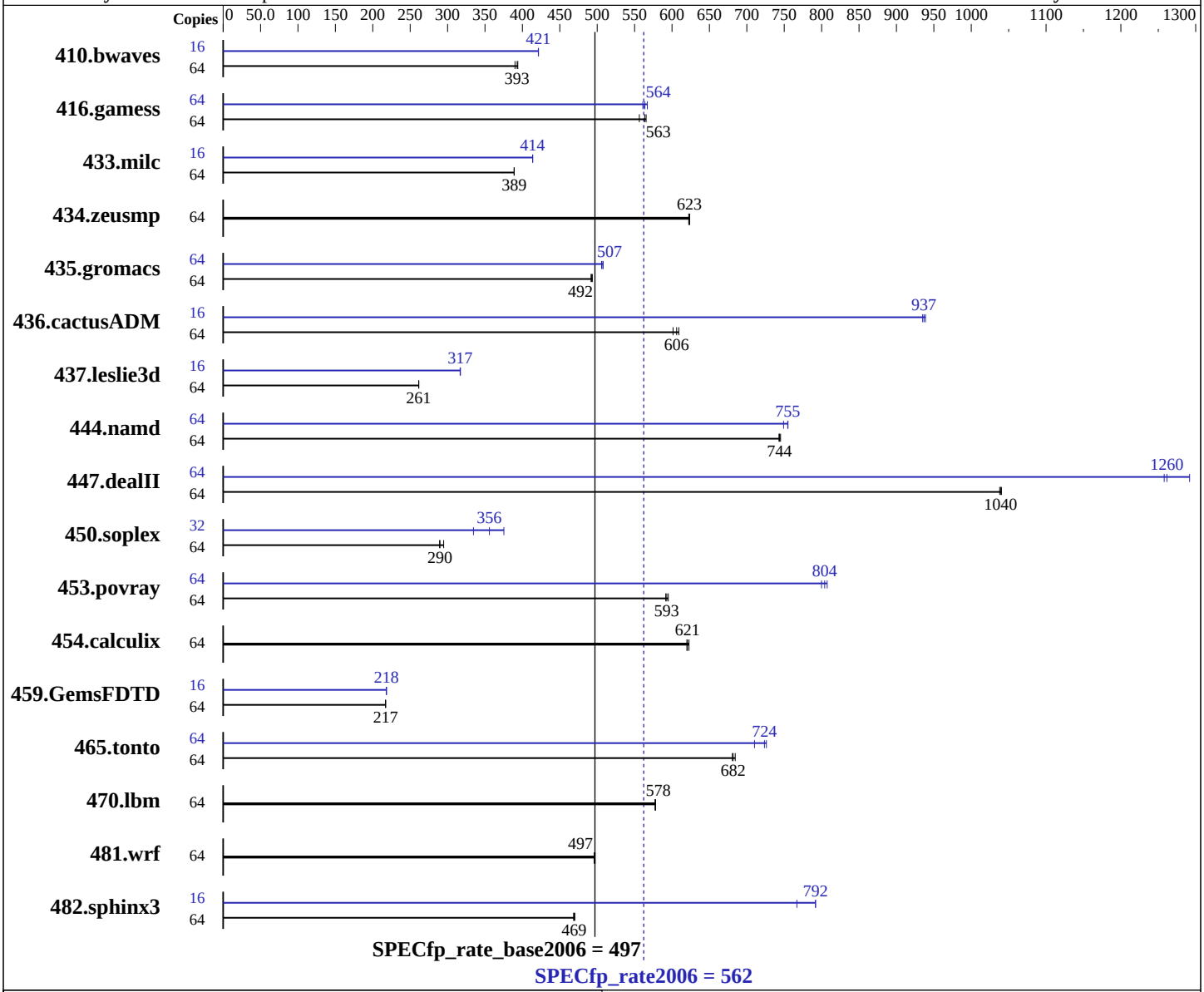
IBM Flex System p260 (4.1 GHz, 16 core, SLES)

SPECfp®_rate2006 = 562

SPECfp_rate_base2006 = 497

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

Test date: Nov-2012
Hardware Availability: Dec-2012
Software Availability: Dec-2012



Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.340 GHz
CPU MHz:	4116
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	16 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 11 SP2 (ppc64) kernel 3.0.13-0.27-ppc64
Compiler:	C/C++: Version 12.1 of IBM XL C/C++ for Linux Fortran: Version 14.1 of IBM XL Fortran for Linux
Auto Parallel:	No
File System:	ext3
System State:	Run level 3 (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

IBM Flex System p260 (4.1 GHz, 16 core, SLES)

SPECfp_rate2006 = 562

SPECfp_rate_base2006 = 497

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

Test date: Nov-2012
Hardware Availability: Dec-2012
Software Availability: Dec-2012

Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 10 MB I+D on chip per core
Other Cache: None
Memory: 128 GB (16 x 8 GB) DDR3 1066 MHz
Disk Subsystem: 1 x 600 GB SAS SFF 10K RPM
Other Hardware: None

Other Software: -Post-Link Optimization for Linux on POWER, version 5.6.1-7
-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	64	2208	394	2229	390	**2213**	**393**	16	**516**	**421**	516	421	516	422
416.gamess	64	2252	556	2216	565	**2224**	**563**	64	2234	561	**2223**	**564**	2210	567
433.milc	64	1510	389	**1510**	**389**	1510	389	16	355	414	**355**	**414**	355	414
434.zeusmp	64	934	624	936	622	**935**	**623**	64	934	624	936	622	**935**	**623**
435.gromacs	64	926	494	**928**	**492**	929	492	64	903	506	**900**	**507**	900	508
436.cactusADM	64	1272	601	1256	609	**1262**	**606**	16	204	935	**204**	**937**	204	939
437.leslie3d	64	2301	261	2302	261	**2301**	**261**	16	475	317	474	317	**474**	**317**
444.namd	64	689	745	**690**	**744**	691	743	64	685	749	680	755	**680**	**755**
447.dealII	64	705	1040	**704**	**1040**	704	1040	64	567	1290	**580**	**1260**	582	1260
450.soplex	64	**1842**	**290**	1845	289	1811	295	32	798	335	**750**	**356**	711	375
453.povray	64	**574**	**593**	576	592	572	595	64	422	807	**423**	**804**	426	800
454.calculix	64	848	623	**851**	**621**	852	620	64	848	623	**851**	**621**	852	620
459.GemsFDTD	64	3129	217	3127	217	**3128**	**217**	16	778	218	778	218	**778**	**218**
465.tonto	64	920	685	925	681	**924**	**682**	64	867	726	**870**	**724**	887	710
470.lbm	64	1523	577	1521	578	**1522**	**578**	64	1523	577	1521	578	**1522**	**578**
481.wrf	64	**1439**	**497**	1442	496	1438	497	64	**1439**	**497**	1442	496	1438	497
482.sphinx3	64	2653	470	**2659**	**469**	2663	468	16	407	767	394	792	**394**	**792**

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

Compiler Invocation Notes

```
C/C++ compiler updated to December 2012 PTF
Version: 12.01.0000.0002
Fortran compiler updated to December 2012 PTF
Version: 14.01.0000.0002
```

Peak Tuning Notes

```
Post-Link optimization tool used for:
433.milc 435.gromacs 450.soplex 482.sphinx3
     with options -O4 -nodp
 437.leslie3d
      with options -O3 -lu -1 -nodp -sdp 9
 444.namd
```

Continued on next page

Peak Tuning Notes (Continued)

```
     with options -O3 -lu -1 -nodp -sdp 9
450.soplex
    with options -O4 -nodp
465.tonto
   with options -O4
```

Submit Notes

```
The config file option 'submit' was used
to assign benchmark copy to specific kernel thread using
the "numactl" command (see flags file for details).
```

Operating System Notes

```
Large pages reserved as follows by root user:
echo 4224 > /proc/sys/vm/nr_hugepages

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

Additional filesystem options:
data=writeback,noatime

The following environment varibles were set before the runspec command:
 export HUGETLB_VERBOSE=0
 export HUGETLB_MORECORE=yes
 export HUGETLB_ELFMAP=RW
 export XLFRTEOPTS=intrinthds=1
```

Platform Notes

```
This Compute Node is housed in an "IBM Flex System Enterprise Chassis"

The Maximum Power Limit for this Compute Node was set according to
recommendation on "IBM Chassis Management Module"
```

Base Compiler Invocation

C benchmarks:
```
xlc -qlanglvl=extc99
```

C++ benchmarks:
```
xlC
```

Fortran benchmarks:
```
xlf95
```

Continued on next page

Base Compiler Invocation (Continued)

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 -q32 -qipa=threads
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-align

C++ benchmarks:
-O5 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads -qrtti
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-align

Fortran benchmarks:
-O5 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads -qalias=nostd
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-align

Benchmarks using both Fortran and C:
-O5 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-align -qalias=nostd

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`
435.gromacs: `-qfixed -qextname`
436.cactusADM: `-DSPEC_CPU_LP64 -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: `-Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs`

470.lbm: `basepeak = yes`

482.sphinx3: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -lhugetlbfs`

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=/opt/stdcxx421/include/ansi:/opt/stdcxx421/include:/opt/ibmcmp/vacpp/12.1/i -lsmartheap -L/opt/stdcxx421/lib -R/opt/stdcxx421/lib -lstd8d`

Continued on next page

Peak Optimization Flags (Continued)

450.soplex: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=pwr7 -qtune=pwr7 -q64 -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

459.GemsFDTD: -O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsimd -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-align

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: -O4 -qarch=pwr7 -qtune=pwr7 -qipa=threads -qsimd -qnostrict -q64 -lhugetlbfs

454.calculix: basepeak = yes

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:

C++ benchmarks:

Fortran benchmarks:

Benchmarks using both Fortran and C:

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Power.20121205.html
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20121024.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-Power.20121205.xml
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20121024.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 v1.2.
Report generated on Thu Jul 24 13:33:43 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 4 December 2012.