SPEC® CFP2006 Result

IBM Corporation

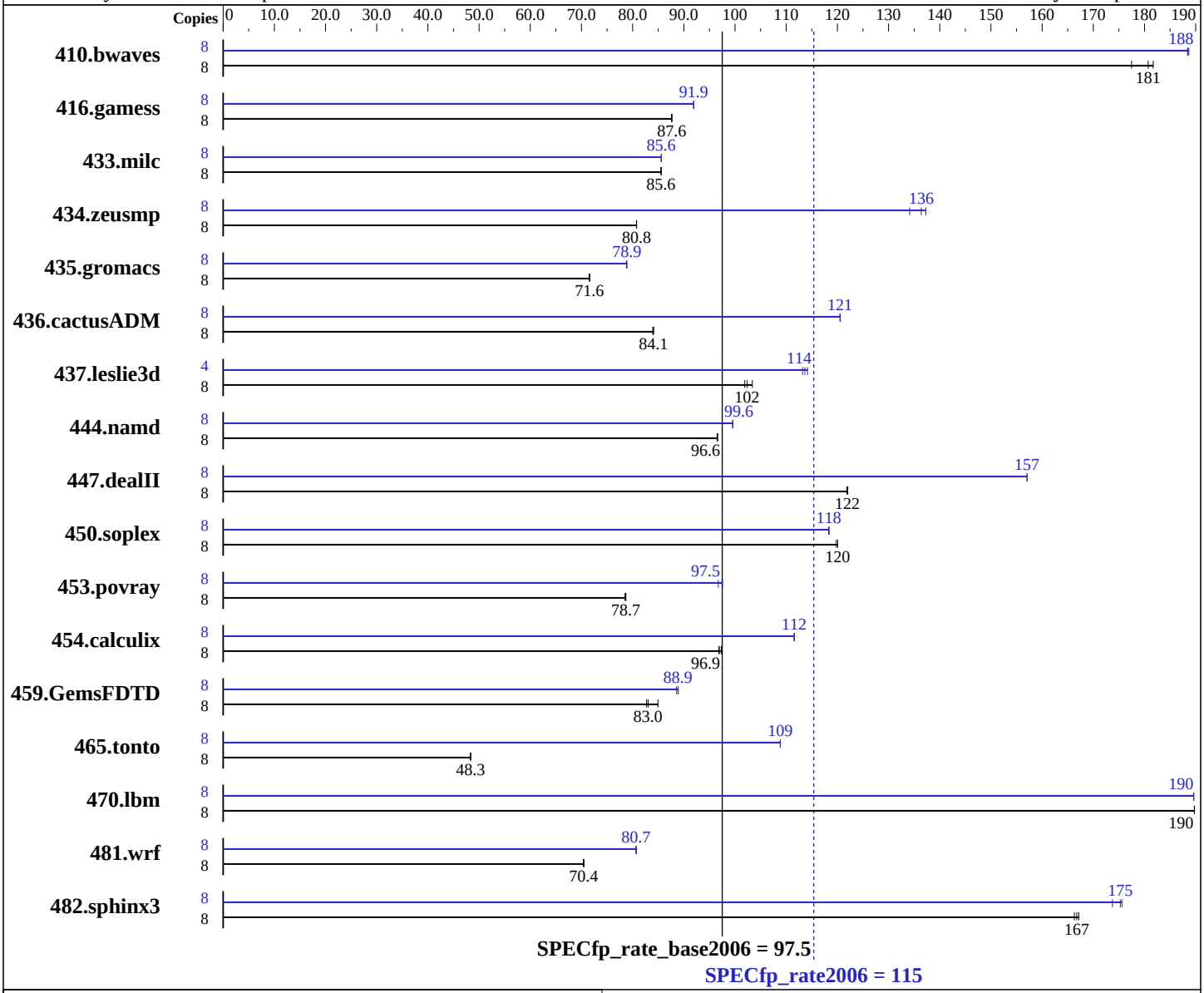
IBM System p 570 (4.7 GHz, 4 core, SLES)

SPECfp®_rate2006 = 115

SPECfp_rate_base2006 = 97.5

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

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



Hardware

CPU Name:	POWER6
CPU Characteristics:	
CPU MHz:	4700
FPU:	Integrated
CPU(s) enabled:	4 cores, 2 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:	SUSE Linux Enterprise 10 SP1
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:	ReiserFS
System State:	Multi-User
Base Pointers:	32-bit
Peak Pointers:	32/64-bit

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L3 Cache: 32 MB I+D off chip per chip
Other Cache: None
Memory: 32 GB (16x2 GB) DDR2 667 MHz
Disk Subsystem: 2x73 GB SAS 15K RPM
Other Hardware: None

Other Software: -Post-Link Optimization for Linux on POWER, Version 5.4.0
-MicroQuill SmartHeap 7.3
-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	8	**602**	**181**	613	177	598	182	8	577	188	**577**	**188**	576	189
416.gamess	8	**1787**	**87.6**	1787	87.7	1788	87.6	8	**1704**	**91.9**	1704	91.9	1704	91.9
433.milc	8	**858**	**85.6**	858	85.6	859	85.5	8	858	85.6	858	85.6	**858**	**85.6**
434.zeusmp	8	902	80.8	901	80.8	**901**	**80.8**	8	543	134	**534**	**136**	530	137
435.gromacs	8	798	71.6	**798**	**71.6**	798	71.6	8	725	78.8	**724**	**78.9**	724	78.9
436.cactusADM	8	1139	83.9	**1137**	**84.1**	1137	84.1	8	793	121	**793**	**121**	793	121
437.leslie3d	8	**735**	**102**	738	102	727	103	4	332	113	329	114	**331**	**114**
444.namd	8	**664**	**96.6**	664	96.6	665	96.5	8	645	99.5	644	99.6	**644**	**99.6**
447.dealII	8	751	122	750	122	**750**	**122**	8	583	157	**583**	**157**	583	157
450.soplex	8	557	120	556	120	**556**	**120**	8	564	118	**564**	**118**	564	118
453.povray	8	541	78.7	542	78.5	**541**	**78.7**	8	440	96.7	**437**	**97.5**	436	97.6
454.calculix	8	**681**	**96.9**	678	97.3	681	96.9	8	591	112	592	112	**592**	**112**
459.GemsFDTD	8	**1022**	**83.0**	999	85.0	1026	82.7	8	955	88.9	**955**	**88.9**	958	88.6
465.tonto	8	1629	48.3	1629	48.3	**1629**	**48.3**	8	**723**	**109**	723	109	723	109
470.lbm	8	**579**	**190**	579	190	579	190	8	580	190	580	190	**580**	**190**
481.wrf	8	**1269**	**70.4**	1270	70.4	1268	70.5	8	1107	80.7	1108	80.7	**1108**	**80.7**
482.sphinx3	8	**935**	**167**	938	166	933	167	8	**890**	**175**	888	176	897	174

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

General Notes

```
kernel release 2.6.16.46-0.12-ppc64.

See flags file for details on following settings.

ulimit -s (stack) set to unlimited.


System set to Enhanced mode when defining partition on HMC

Large pages reserved as follows by root user:
    echo 800 > /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

General Notes (Continued)

```
    export HUGETLB_MORECORE=yes
    export HUGETLB_MORECORE_HEAPBASE=0x50000000
    export XLFRTEOPTS=intrinthds=1

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

Benchmarks bound to a processor using taskset 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 -B/usr/share/libhugetlbfs/ -tl
-Wl,--hugetlbfs-link=BDT
```

C++ benchmarks:
```
-O5 -qrtti -qnoenablevmx -lhugetlbfs
```

Fortran benchmarks:
```
-O5 -qsmallstack=dynlenonheap -qalias=nostd -qnoenablevmx
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
```

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
`-O5 -qnoenablevmx -B/usr/share/libhugetlbfs/ -tl`
`-Wl,--hugetlbfs-link=BDT -qsmallstack=dynlenonheap -qalias=nostd`

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`

Continued on next page

Peak Portability Flags (Continued)

481.wrf: -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Peak Optimization Flags

C benchmarks:

433.milc: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qnoenablevmx
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT

470.lbm: -O3 -qarch=pwr6e -qtune=pwr6 -B/usr/share/libhugetlbfs/
-tl -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.dealII: -O5 -qrtti -qnoenablevmx -qstaticlink
-Wl,--whole-archive /usr/lib/libhugetlbfs.a
-Wl,--no-whole-archive

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

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/ -tl
-Wl,--hugetlbfs-link=BDT

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

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

465.tonto: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lessl -lhugetlbfs
-lxlf90_r

Continued on next page

Peak Optimization Flags (Continued)

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`

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.20090714.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/lop-xl-flags.20090714.01.xml`

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 13:23:54 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 24 July 2007.