SPEC® CFP2006 Result

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IBM Corporation

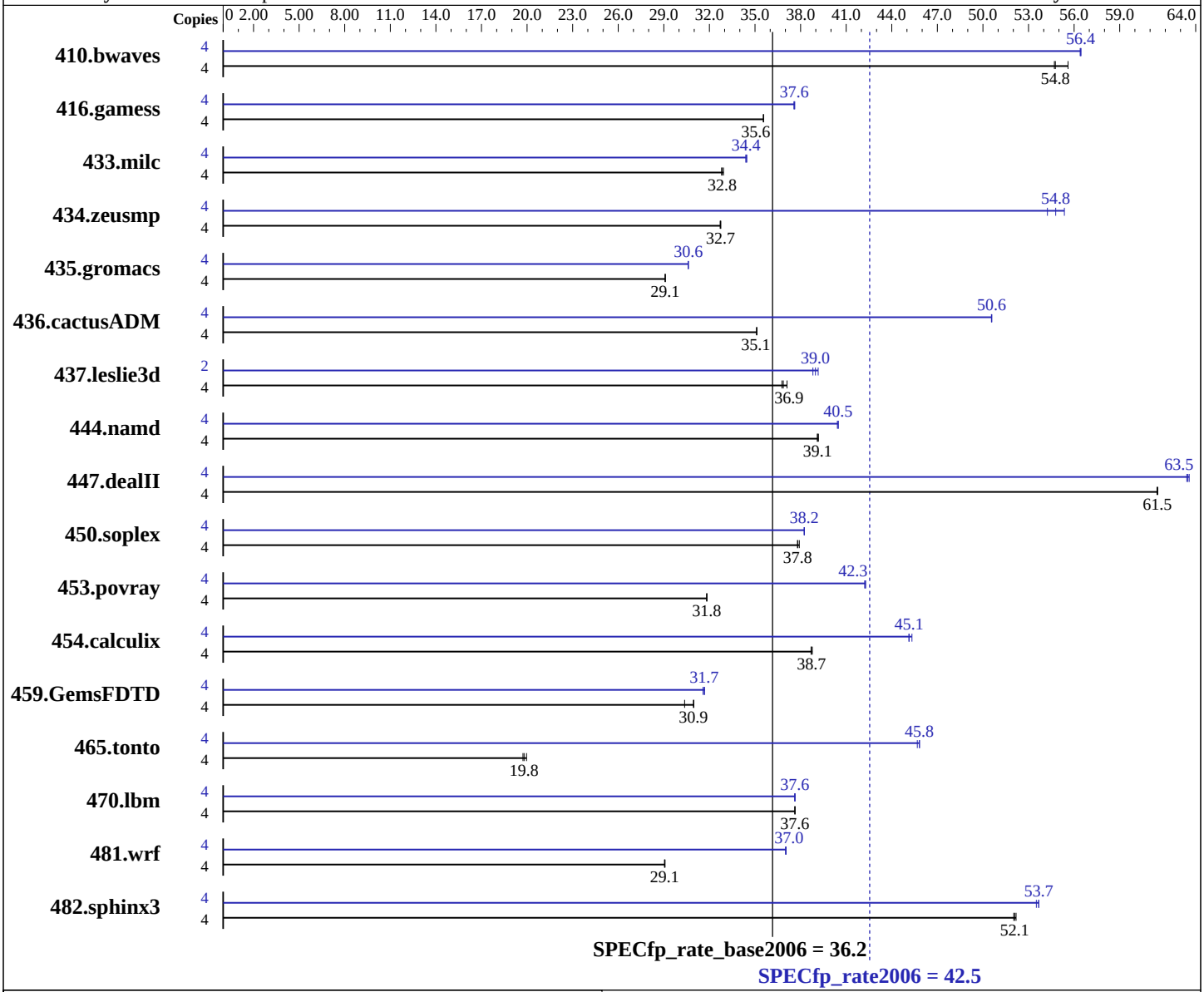
IBM BladeCenter JS12 Express (3.8 GHz, 2 core, RedHat)

SPECfp®_rate2006 = 42.5

SPECfp_rate_base2006 = 36.2

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

Test date: Feb-2008
Hardware Availability: May-2008
Software Availability: Nov-2007



Hardware

CPU Name:	POWER6
CPU Characteristics:	
CPU MHz:	3800
FPU:	Integrated
CPU(s) enabled:	2 cores, 1 chip, 2 cores/chip, 2 threads/core
CPU(s) orderable:	2 cores
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per core

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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

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L3 Cache: None
Other Cache: None
Memory: 32 GB (8x4 GB) DDR2 667 MHz
Disk Subsystem: 1x73 GB SAS 15K RPM
Other Hardware: None

Other Software: -IBM Post-Link Optimization for Linux on POWER, Version 5.4.0-17
-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	4	978	55.6	**993**	**54.8**	994	54.7	4	964	56.4	**963**	**56.4**	963	56.5
416.gamess	4	**2203**	**35.6**	2203	35.6	2202	35.6	4	**2084**	**37.6**	2082	37.6	2085	37.6
433.milc	4	1115	32.9	1120	32.8	**1118**	**32.8**	4	1065	34.5	**1067**	**34.4**	1068	34.4
434.zeusmp	4	1113	32.7	1112	32.7	**1112**	**32.7**	4	**664**	**54.8**	671	54.2	658	55.4
435.gromacs	4	**982**	**29.1**	982	29.1	982	29.1	4	933	30.6	**933**	**30.6**	933	30.6
436.cactusADM	4	1361	35.1	**1361**	**35.1**	1362	35.1	4	**945**	**50.6**	945	50.6	945	50.6
437.leslie3d	4	1013	37.1	1022	36.8	**1020**	**36.9**	2	480	39.2	**482**	**39.0**	484	38.8
444.namd	4	820	39.1	819	39.2	**820**	**39.1**	4	**793**	**40.5**	794	40.4	793	40.5
447.dealII	4	745	61.5	**744**	**61.5**	744	61.5	4	722	63.4	720	63.6	**721**	**63.5**
450.soplex	4	880	37.9	**882**	**37.8**	883	37.8	4	872	38.3	872	38.2	**872**	**38.2**
453.povray	4	668	31.8	**669**	**31.8**	669	31.8	4	**503**	**42.3**	503	42.3	504	42.2
454.calculix	4	851	38.8	**852**	**38.7**	853	38.7	4	728	45.3	**731**	**45.1**	731	45.1
459.GemsFDTD	4	1398	30.4	**1372**	**30.9**	1370	31.0	4	**1340**	**31.7**	1344	31.6	1339	31.7
465.tonto	4	**1988**	**19.8**	1971	20.0	1995	19.7	4	862	45.7	859	45.8	**859**	**45.8**
470.lbm	4	**1461**	**37.6**	1461	37.6	1460	37.6	4	1460	37.6	1461	37.6	**1461**	**37.6**
481.wrf	4	**1538**	**29.1**	1538	29.0	1536	29.1	4	**1207**	**37.0**	1206	37.1	1207	37.0
482.sphinx3	4	1498	52.0	**1497**	**52.1**	1494	52.2	4	**1453**	**53.7**	1453	53.7	1457	53.5

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

General Notes

```
kernel release 2.6.18-53.el5.

See flags file for details on following settings.

ulimit -s (stack) set to 262144.

Approved srcalt wrfv22 used for 481.wrf

Large pages reserved as follows by root user:
    echo 265 > /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
    export HUGETLB_MORECORE=yes
```

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General Notes (Continued)

```
    export XLFRTEOPTS=intrinthds=1

IBM Post-Link optimization tool used for
    433.milc 435.gromacs 436.cactusADM 453.povray 465.tonto 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/ -tl -Wl,--hugetlbfs-link=BDT
```

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Base Optimization Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

433.milc: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qnoenablevmx -lhugetlbfs

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/libsmartheap.a -Wl,--no-whole-archive

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

453.povray: -Wl,-q -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: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lessl -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 -qnostrict -lhugetlbfs

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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 -qsmallstack=dynlenonheap -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/IBM-Linux-XL.20090714.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20090714.xml`

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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 16:46:08 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 29 April 2008.