SPEC® CFP2006 Result

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IBM Corporation

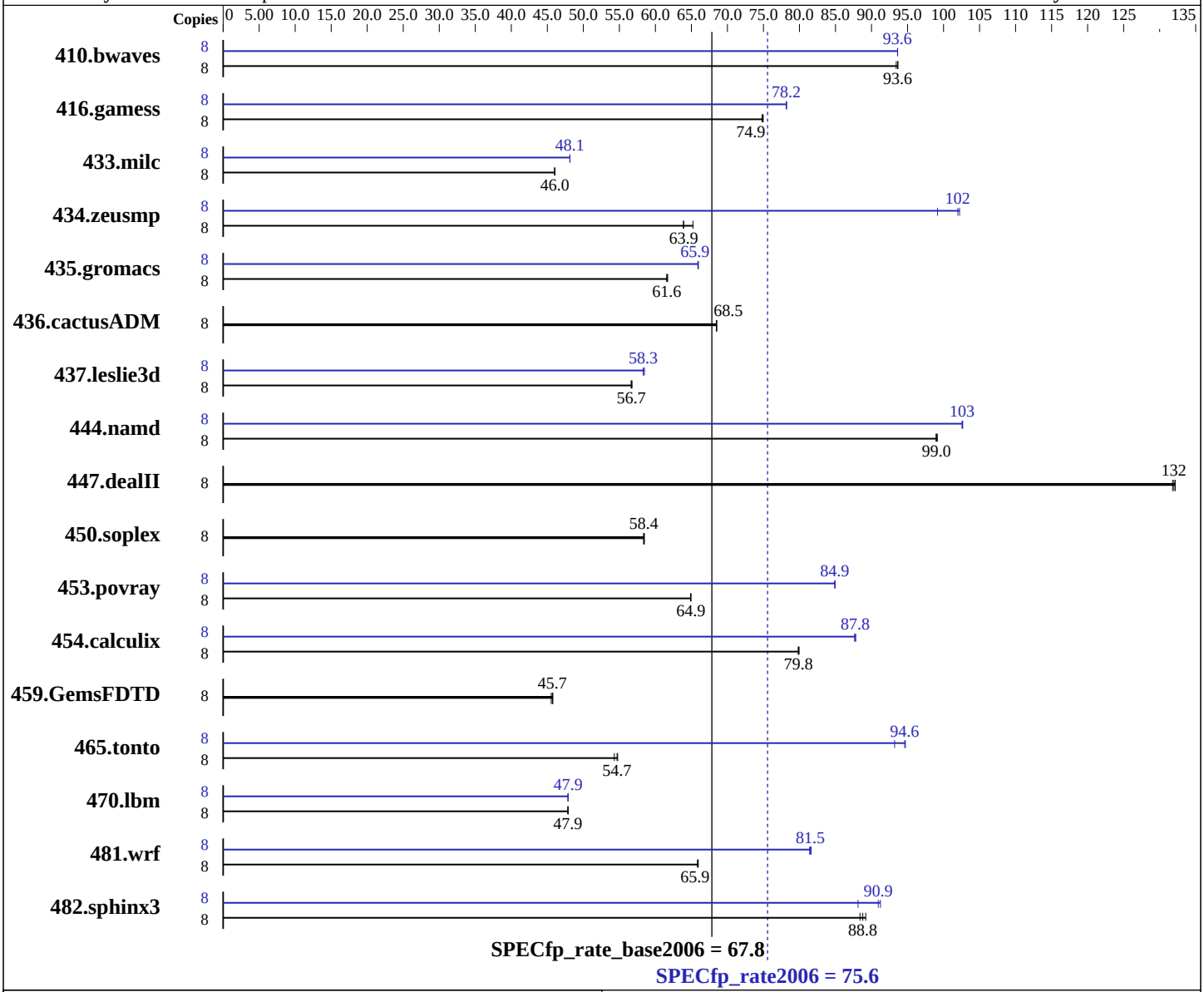
IBM BladeCenter JS22 (4.0 GHz, 4 core)

SPECfp®_rate2006 = 75.6

SPECfp_rate_base2006 = 67.8

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

Test date: Nov-2007
Hardware Availability: Nov-2007
Software Availability: Nov-2007



Hardware

CPU Name:	POWER6
CPU Characteristics:	
CPU MHz:	4000
FPU:	Integrated
CPU(s) enabled:	4 cores, 2 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	4 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:	IBM AIX 5L V5.3
Compiler:	XL C/C++ Enterprise Edition Version 9.0 for AIX XL Fortran Enterprise Edition Version 11.1 for AIX
Auto Parallel:	No
File System:	AIX/JFS2
System State:	Multi-user
Base Pointers:	32-bit
Peak Pointers:	32/64-bit

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L3 Cache: None
Other Cache: None
Memory: 16 GB (4x4 GB) DDR2 667 MHz
Disk Subsystem: 1x146 GB SAS 15K RPM
Other Hardware: None

Other Software: IBM Engineering and Scientific Subroutine Library (ESSL) version 4.3.0.2

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	1164	93.4	1161	93.7	**1161**	**93.6**	8	1161	93.6	1161	93.6	**1161**	**93.6**
416.gamess	8	2089	75.0	2094	74.8	**2092**	**74.9**	8	2004	78.2	2002	78.2	**2004**	**78.2**
433.milc	8	1596	46.0	1595	46.0	**1595**	**46.0**	8	1526	48.1	1526	48.1	**1526**	**48.1**
434.zeusmp	8	**1139**	**63.9**	1139	63.9	1116	65.2	8	734	99.2	**714**	**102**	712	102
435.gromacs	8	928	61.6	926	61.7	**927**	**61.6**	8	867	65.9	**866**	**65.9**	866	66.0
436.cactusADM	8	**1396**	**68.5**	1396	68.5	1395	68.5	8	**1396**	**68.5**	1396	68.5	1395	68.5
437.leslie3d	8	1325	56.8	**1327**	**56.7**	1327	56.7	8	1286	58.5	**1289**	**58.3**	1290	58.3
444.namd	8	648	99.0	647	99.1	**648**	**99.0**	8	625	103	**625**	**103**	625	103
447.dealII	8	**693**	**132**	694	132	692	132	8	**693**	**132**	694	132	692	132
450.soplex	8	**1143**	**58.4**	1143	58.4	1141	58.5	8	**1143**	**58.4**	1143	58.4	1141	58.5
453.povray	8	**656**	**64.9**	656	64.9	655	64.9	8	501	84.9	**501**	**84.9**	501	85.0
454.calculix	8	827	79.8	**827**	**79.8**	825	80.0	8	753	87.6	752	87.8	**752**	**87.8**
459.GemsFDTD	8	1854	45.8	**1857**	**45.7**	1864	45.5	8	1854	45.8	**1857**	**45.7**	1864	45.5
465.tonto	8	1450	54.3	**1440**	**54.7**	1437	54.8	8	845	93.2	**832**	**94.6**	831	94.7
470.lbm	8	2296	47.9	2296	47.9	**2296**	**47.9**	8	2296	47.9	2296	47.9	**2296**	**47.9**
481.wrf	8	1357	65.9	1355	66.0	**1357**	**65.9**	8	1098	81.4	**1096**	**81.5**	1095	81.6
482.sphinx3	8	1764	88.4	**1756**	**88.8**	1748	89.2	8	**1715**	**90.9**	1709	91.2	1769	88.1

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

General Notes

```
AIX 5L V5.3 updated with the 5300-07 Technology Level.
IBM XL Compilers updated to October 2007 PTF Level.

See flags file for details on following settings:
   all ulimits set to unlimited
   Envionment variables set before executing benchmarks:
      MALLOCOPTIONS=pool
      MEMORY_AFFINITY=MCM
      XLFRTEOPTS=intrinthds=1
   768 pages of size 16M defined on systems with vmo command
  fdpr binary optimization tool used for peak versions of: 433.milc, 453.povray, 470.lbm, 482.sphinx3
submit used to bind benchmark to a processor using "bindprocessor"

The binaries were compiled on a system with 32 GB of memory.
```

Base Compiler Invocation

C benchmarks:
/usr/vac/bin/xlc

C++ benchmarks:
/usr/vacpp/bin/xlC

Fortran benchmarks:
/usr/bin/xlf95

Benchmarks using both Fortran and C:
/usr/vac/bin/xlc /usr/bin/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 -DSPEC_CPU_AIX
482.sphinx3: -qchars=signed

Base Optimization Flags

C benchmarks:
-qlanglvl=extc99 -bmaxdata:0x40000000 -O5 -qlargepage

C++ benchmarks:
-bmaxdata:0x50000000 -O5 -qlargepage -qrtti=all -D__IBM_FAST_VECTOR

Fortran benchmarks:
-bmaxdata:0x60000000 -O5 -qlargepage -qsmallstack=dynlenonheap
-qalias=nostd

Benchmarks using both Fortran and C:
-qlanglvl=extc99 -bmaxdata:0x60000000 -O5 -qlargepage
-qsmallstack=dynlenonheap -qalias=nostd

Base Other Flags

C benchmarks:
-qipa=threads -qsuppress=1500-036

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Base Other Flags (Continued)

C++ benchmarks:
```
-qipa=threads -qsuppress=1500-036
```

Fortran benchmarks:
```
-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036
```

Benchmarks using both Fortran and C:
```
-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads
-qsuppress=1500-036
```

Peak Compiler Invocation

C benchmarks:
```
/usr/vac/bin/xlc
```

C++ benchmarks:
```
/usr/vacpp/bin/xlC
```

Fortran benchmarks:
```
/usr/bin/xlf95
```

Benchmarks using both Fortran and C:
```
/usr/vac/bin/xlc /usr/bin/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 -DSPEC_CPU_AIX`
482.sphinx3: `-qchars=signed`

Peak Optimization Flags

C benchmarks:

433.milc: `-qlanglvl=extc99 -O5 -qfdpr -qlargepage -bmaxdata:0x40000000 -blpdata`

Continued on next page

Peak Optimization Flags (Continued)

470.lbm: `-qlanglvl=extc99 -O5 -qlargepage -qfdpr -q64 -qenablevmx -qhot=simd -blpdata`

482.sphinx3: `-qlanglvl=extc99 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qlargepage -qfdpr -blpdata`

C++ benchmarks:

444.namd: `-qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5`

447.dealII: `basepeak = yes`

450.soplex: `basepeak = yes`

453.povray: `-qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qfdpr -qenablevmx -qvecnvol`

Fortran benchmarks:

410.bwaves: `-O5 -qlargepage -qsmallstack=dynlenonheap -bmaxdata:0x50000000 -blpdata`

416.gamess: `-qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qalias=nostd -bmaxdata:0x60000000`

434.zeusmp: `-qpdf1`(pass 1) `-qpdf2`(pass 2) `-O3 -qarch=pwr6e -qtune=pwr6 -qxlf90=nosignedzero -qlargepage -qenablevmx -bmaxdata:0x40000000 -blpdata`

437.leslie3d: `-O4 -qlargepage -q64 -blpdata`

459.GemsFDTD: `basepeak = yes`

465.tonto: `-bmaxdata:0x60000000 -blpdata -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qlargepage -lessl`

Benchmarks using both Fortran and C:

435.gromacs: `-qlanglvl=extc99 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -bdatapsize:64K -bstackpsize:64K`

436.cactusADM: `basepeak = yes`

454.calculix: `-qlanglvl=extc99 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qlargepage -blpdata`

481.wrf: `-qlanglvl=extc99 -bmaxdata:0x60000000 -O5 -qlargepage -qsmallstack=dynlenonheap`

Peak Other Flags

C++ benchmarks:

447.dealII: `-qipa=threads -qsuppress=1500-036`

450.soplex: `-qipa=threads -qsuppress=1500-036`

Fortran benchmarks:

459.GemsFDTD: `-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg`
`-qipa=threads -qsuppress=1500-036`

Benchmarks using both Fortran and C:

436.cactusADM: `-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg`
`-qipa=threads -qsuppress=1500-036`

481.wrf: `-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg`
`-qipa=threads -qsuppress=1500-036`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.08.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.08.xml`

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