SPEC® CFP2006 Result

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IBM Corporation

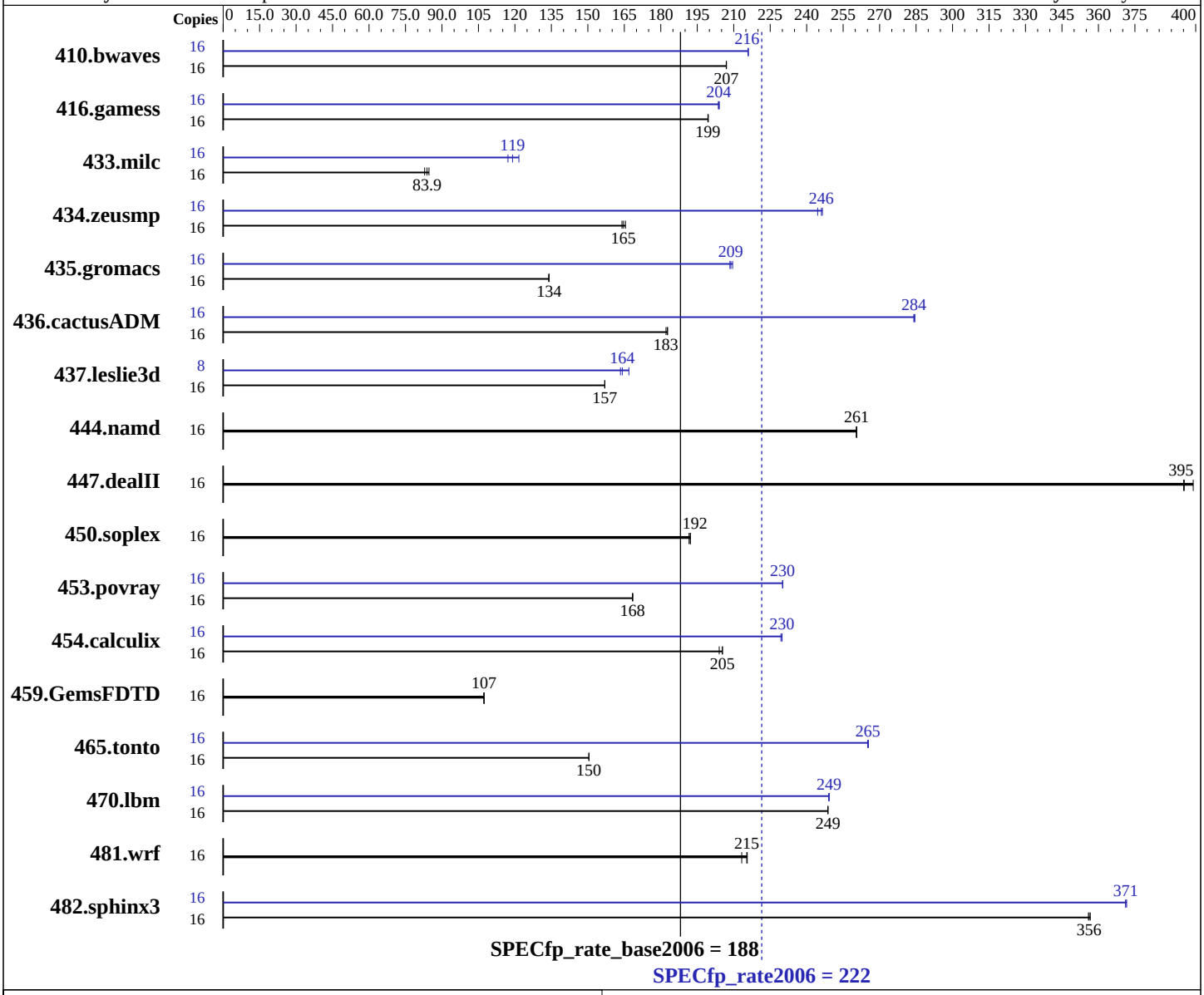
IBM Power 550 (5.0 GHz, 8 core)

SPECfp®_rate2006 = 222

SPECfp_rate_base2006 = 188

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

Test date: Apr-2009
Hardware Availability: May-2009
Software Availability: May-2009



Hardware

CPU Name:	POWER6+
CPU Characteristics:	
CPU MHz:	5000
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	2,4,6,8 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 V6.1 with the 6100-03 Technology Level
Compiler:	XL C/C++ Enterprise Edition V10.1.0.2 for AIX XL Fortran Enterprise Edition V12.1.0.3 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: 32 MB I+D off chip per chip
Other Cache: None
Memory: 128 GB (32x4 GB) DDR2 667 MHz
Disk Subsystem: 2x146 GB SAS 15K RPM
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	1051	207	1050	207	**1051**	**207**	16	1007	216	1007	216	**1007**	**216**
416.gamess	16	**1571**	**199**	1570	200	1571	199	16	1535	204	1538	204	**1537**	**204**
433.milc	16	**1752**	**83.9**	1772	82.9	1735	84.7	16	1208	122	1254	117	**1234**	**119**
434.zeusmp	16	888	164	**884**	**165**	880	165	16	**592**	**246**	591	246	595	245
435.gromacs	16	**852**	**134**	853	134	852	134	16	545	210	**547**	**209**	548	208
436.cactusADM	16	1046	183	**1046**	**183**	1050	182	16	672	285	673	284	**673**	**284**
437.leslie3d	16	958	157	**958**	**157**	958	157	8	**458**	**164**	460	163	451	167
444.namd	16	**493**	**261**	492	261	493	260	16	**493**	**261**	492	261	493	260
447.dealII	16	463	395	459	399	**463**	**395**	16	463	395	459	399	**463**	**395**
450.soplex	16	696	192	**695**	**192**	694	192	16	696	192	**695**	**192**	694	192
453.povray	16	**505**	**168**	505	168	506	168	16	370	230	370	230	**370**	**230**
454.calculix	16	647	204	643	205	**643**	**205**	16	574	230	**574**	**230**	575	229
459.GemsFDTD	16	**1583**	**107**	1583	107	1582	107	16	**1583**	**107**	1583	107	1582	107
465.tonto	16	1047	150	**1046**	**150**	1046	150	16	593	265	594	265	**594**	**265**
470.lbm	16	**884**	**249**	884	249	884	249	16	883	249	882	249	**882**	**249**
481.wrf	16	838	213	829	216	**830**	**215**	16	838	213	829	216	**830**	**215**
482.sphinx3	16	**875**	**356**	876	356	874	357	16	839	372	840	371	**840**	**371**

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

Peak Tuning Notes

```
fdpr binary optimization tool used for 410.bwaves
 with options -bf -bp -ece -lap -las -nop -nopr -pto
 -RC -RD -rmte -so -tlo -A 64 -lu 6 -rt 0.10 -ihf 60
 -sdpla 32 -sdpms 32 -shci 10 -si -siht 15 -lun 32
fdpr binary optimization tool used for 433.milc
435.gromacs 437.leslie3d 453.povray
454.calculix 481.wrf 482.sphinx3
 with options -O4 -vrox -pbsi
fdpr binary optimization tool used for 434.zeusmp 470.lbm
 with options -O3 -vrox -sdp 9
```

Submit Notes

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

Operating System Notes

```
all ulimits set to unlimited.
2000 16M large pages defined with vmo command
```

Platform Notes

```
System set to "Enhanced" mode when defining partition on HMC.
```

General Notes

```
Environment variables set by runspec before the start of the run:
MALLOCOPTIONS = "pool"
MEMORY_AFFINITY = "MCM"
XLFRTEOPTS = "intrinthds=1"

 See the flags file for details on settings.
```

Base Compiler Invocation

C benchmarks:
```
/usr/vac/bin/xlc -qlanglvl=extc99
```

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

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

Benchmarks using both Fortran and C:
```
/usr/vac/bin/xlc -qlanglvl=extc99 /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`

Continued on next page

Base Portability Flags (Continued)

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

Base Optimization Flags

C benchmarks:
`-bmaxdata:0x40000000 -O5 -qlargepage -D_ILS_MACROS -blpdata`

C++ benchmarks:
`-bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR -blpdata`

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

Benchmarks using both Fortran and C:
`-bmaxdata:0x60000000 -O5 -qlargepage -D_ILS_MACROS -qsmallstack=dynlenonheap -qalias=nostd -blpdata`

Base Other Flags

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

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

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

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

Peak Compiler Invocation

C benchmarks:
`/usr/vac/bin/xlc -qlanglvl=extc99`

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

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Peak Compiler Invocation (Continued)

Fortran benchmarks:
/usr/bin/xlf95

Benchmarks using both Fortran and C:
/usr/vac/bin/xlc -qlanglvl=extc99 /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: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Peak Optimization Flags

C benchmarks:

433.milc: -bmaxdata:0x40000000 -O5 -qlargepage -D_ILS_MACROS
-qalign=natural -qfdpr -blpdata

470.lbm: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto
-qlargepage -q64 -D_ILS_MACROS -qfdpr -blpdata

482.sphinx3: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qlargepage
-D_ILS_MACROS -qfdpr -blpdata

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -D_ILS_MACROS
-qalign=natural -qfdpr -btextpsize:64K

Fortran benchmarks:

410.bwaves: -bmaxdata:0x50000000 -O5 -qlargepage -qenablevmx -qvecnvol
-qfdpr -qsmallstack=dynlenonheap -blpdata

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Peak Optimization Flags (Continued)

416.gamess: `-bmaxdata:0x40000000 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qlargepage -qalias=nostd -blpdata`

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

437.leslie3d: `-O5 -qlargepage -qenablevmx -qvecnvol -qfdpr -blpdata`

459.GemsFDTD: `basepeak = yes`

465.tonto: `-bmaxdata:0x50000000 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -bdatapsize:64K -bstackpsize:64K -btextpsize:64K`

Benchmarks using both Fortran and C:

435.gromacs: `-qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -D_ILS_MACROS -qfdpr`

436.cactusADM: `-bmaxdata:0x60000000 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O2 -qarch=auto -qtune=auto -qenablevmx -qvecnvol -D_ILS_MACROS -qfdpr -qnostrict -bdatapsize:64K -bstackpsize:64K -btextpsize:64K`

454.calculix: `-O4 -qlargepage -q64 -D_ILS_MACROS -qfdpr -blpdata`

481.wrf: `basepeak = yes`

Peak Other Flags

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

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

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

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

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

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/IBM-XL.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.xml

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