SPEC® CFP2006 Result

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IBM Corporation

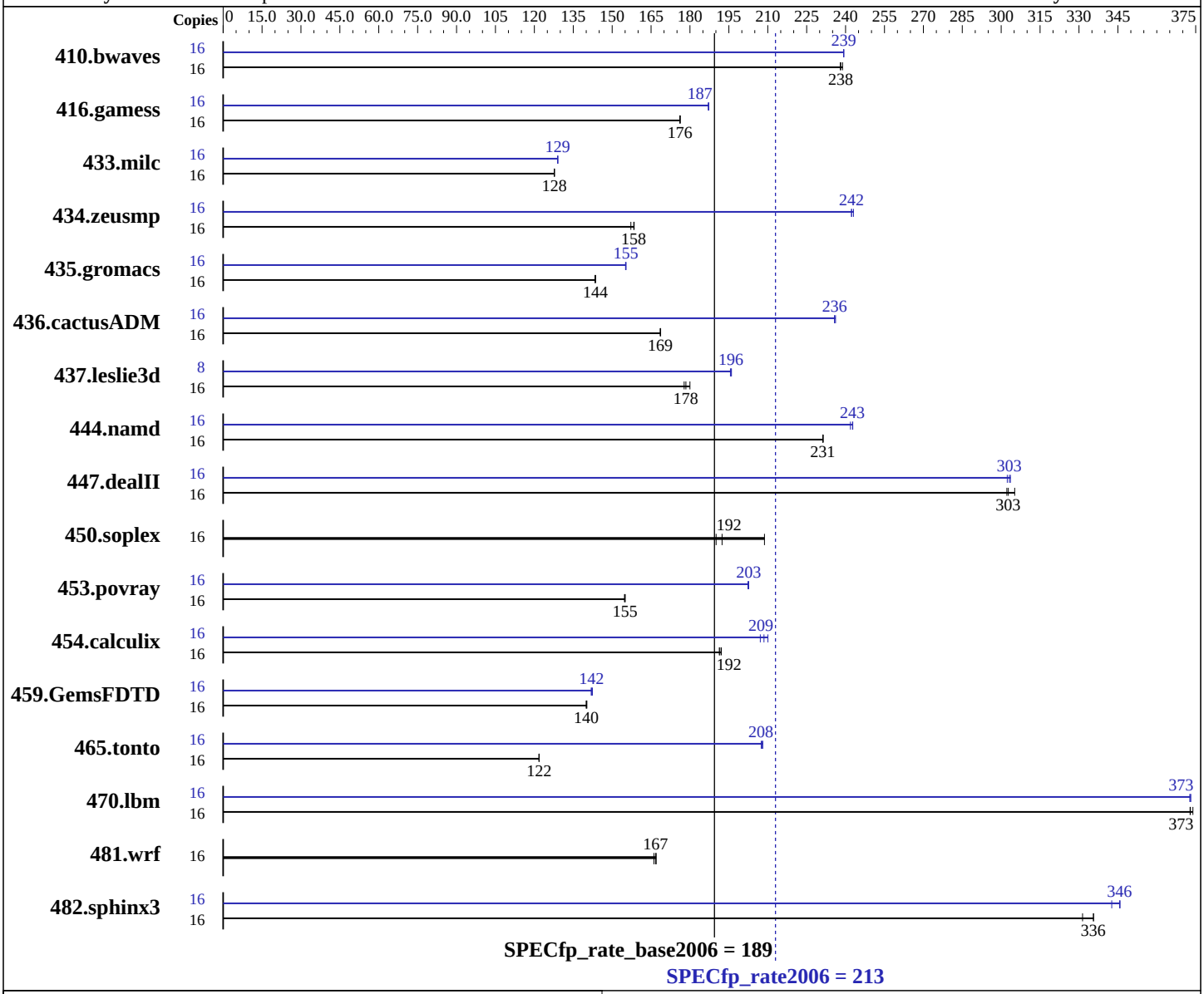
IBM System i 570 (4.7 GHz, 8 core)

SPECfp®_rate2006 = 213

SPECfp_rate_base2006 = 189

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

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



Hardware

CPU Name:	POWER6
CPU Characteristics:	
CPU MHz:	4700
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	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

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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
Other Software:	--

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L3 Cache: 32 MB I+D off chip per chip
Other Cache: None
Memory: 64 GB (32x2 GB) DDR2 667 MHz
Disk Subsystem: 2x73 GB 2x146 GB SAS 15K RPM
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	910	239	914	238	**913**	**238**	16	909	239	**909**	**239**	909	239
416.gamess	16	**1778**	**176**	1779	176	1777	176	16	1673	187	**1674**	**187**	1675	187
433.milc	16	1151	128	1150	128	**1150**	**128**	16	**1138**	**129**	1138	129	1139	129
434.zeusmp	16	926	157	**920**	**158**	919	158	16	**601**	**242**	599	243	601	242
435.gromacs	16	797	143	**796**	**144**	796	144	16	736	155	**736**	**155**	736	155
436.cactusADM	16	**1134**	**169**	1133	169	1134	169	16	811	236	810	236	**811**	**236**
437.leslie3d	16	836	180	**843**	**178**	846	178	8	**384**	**196**	384	196	384	196
444.namd	16	555	231	**555**	**231**	555	231	16	531	242	529	243	**529**	**243**
447.dealII	16	600	305	606	302	**605**	**303**	16	**604**	**303**	603	304	605	302
450.soplex	16	**694**	**192**	702	190	639	209	16	**694**	**192**	702	190	639	209
453.povray	16	550	155	549	155	**549**	**155**	16	421	202	**420**	**203**	420	203
454.calculix	16	690	191	687	192	**689**	**192**	16	628	210	**633**	**209**	637	207
459.GemsFDTD	16	**1212**	**140**	1210	140	1213	140	16	1196	142	1192	142	**1195**	**142**
465.tonto	16	1292	122	1292	122	**1292**	**122**	16	759	207	**757**	**208**	757	208
470.lbm	16	590	373	588	374	**589**	**373**	16	589	373	590	373	**589**	**373**
481.wrf	16	1076	166	**1072**	**167**	1070	167	16	1076	166	**1072**	**167**	1070	167
482.sphinx3	16	941	331	**929**	**336**	929	336	16	910	343	902	346	**902**	**346**

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 5300-06 Technology Level.
See flags file of details on following settings.
all ulimits set to unlimited
Envionment variables set before executing benchmarks:
  MALLOCOPTIONS=pool
  MEMORY_AFFINITY=MCM
  XLFRTEOPTS=intrinthds=1
System set to "Enhanced" mode when defining partition on HMC
3072 16M pages defined on systems with vmo command
fdpr binary optimization tool used for
  410.bwaves 434.zeusmp 453.povray 470.lbm 482.sphinx3
submit used to bind benchmark to a processor using "bindprocessor"
The "IBM System p 570" and "IBM System i 570" are electronicly equivalent.
The results have been measured on the "IBM System p 570" model.
```

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: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Base Optimization Flags

C benchmarks:
-O5 -qlargepage -D_ILS_MACROS -blpdata

C++ benchmarks:
-O5 -qlargepage -D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR
-blpdata

Fortran benchmarks:
-O5 -qlargepage -qsmallstack=dynlenonheap -blpdata

Benchmarks using both Fortran and C:
-O5 -qlargepage -D_ILS_MACROS -qsmallstack=dynlenonheap -blpdata

Base Other Flags

C benchmarks:
-qlanglvl=extc99 -bmaxdata:0x40000000 -qipa=noobject -qipa=threads
-qsuppress=1500-036

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Base Other Flags (Continued)

C++ benchmarks:
`-bmaxdata:0x50000000 -qipa=noobject -qipa=threads -qsuppress=1500-036`

Fortran benchmarks:
`-bmaxdata:0x60000000 -qalias=nostd -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036`

Benchmarks using both Fortran and C:
`-qlanglvl=extc99 -bmaxdata:0x60000000 -qalias=nostd -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: `-DSPEC_CPU_AIX -DNOUNDERSCORE`
482.sphinx3: `-qchars=signed`

Peak Optimization Flags

C benchmarks:

433.milc: `-O5 -qlargepage -D_ILS_MACROS -qalign=natural -blpdata`

Continued on next page

Peak Optimization Flags (Continued)

470.lbm: -O5 -qlargepage -D_ILS_MACROS -q64 -blpdata

482.sphinx3: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -D_ILS_MACROS -blpdata

C++ benchmarks:

444.namd: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -D_ILS_MACROS -blpdata

447.dealII: -O5 -qlargepage -D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR -blpdata

450.soplex: basepeak = yes

453.povray: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -D_ILS_MACROS -qalign=natural -blpdata

Fortran benchmarks:

410.bwaves: -O5 -qlargepage -qenablevmx -qvecnvol -qsmallstack=dynlenonheap -blpdata

416.gamess: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -blpdata

434.zeusmp: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -qxlf90=nosignedzero -blpdata

437.leslie3d: -O5 -qlargepage -q64 -blpdata

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -blpdata

465.tonto: Same as 416.gamess

Benchmarks using both Fortran and C:

435.gromacs: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -qenablevmx -qvecnvol -D_ILS_MACROS -blpdata

436.cactusADM: -D_ILS_MACROS -blpdata

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

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks (except as noted below):
```
-qlanglvl=extc99 -qipa=noobject -qipa=threads -qsuppress=1500-036
```

433.milc: `-qlanglvl=extc99 -bmaxdata:0x40000000 -qipa=noobject -qipa=threads -qsuppress=1500-036`

C++ benchmarks (except as noted below):
```
-bmaxdata:0x50000000 -qipa=noobject -qipa=threads -qsuppress=1500-036
```

444.namd: `-qipa=noobject -qipa=threads -qsuppress=1500-036`

453.povray: `-qipa=noobject -qipa=threads -qsuppress=1500-036`

Fortran benchmarks (except as noted below):
```
-bmaxdata:0x50000000 -qipa=noobject -qsuppress=1500-010
-qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036
```

416.gamess: `-bmaxdata:0x40000000 -qalias=nostd -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036`

434.zeusmp: `-bmaxdata:0x40000000 -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036`

437.leslie3d: `-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036`

465.tonto: `-bmaxdata:0x20000000 -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036`

Benchmarks using both Fortran and C (except as noted below):
```
-qlanglvl=extc99 -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qipa=threads -qsuppress=1500-036
```

436.cactusADM: `-qlanglvl=extc99 -bmaxdata:0x60000000 -qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qipa=threads -qsuppress=1500-036`

481.wrf: `-qlanglvl=extc99 -bmaxdata:0x60000000 -qalias=nostd -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.20090714.12.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.12.xml

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