SPEC® CFP2006 Result

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IBM Corporation

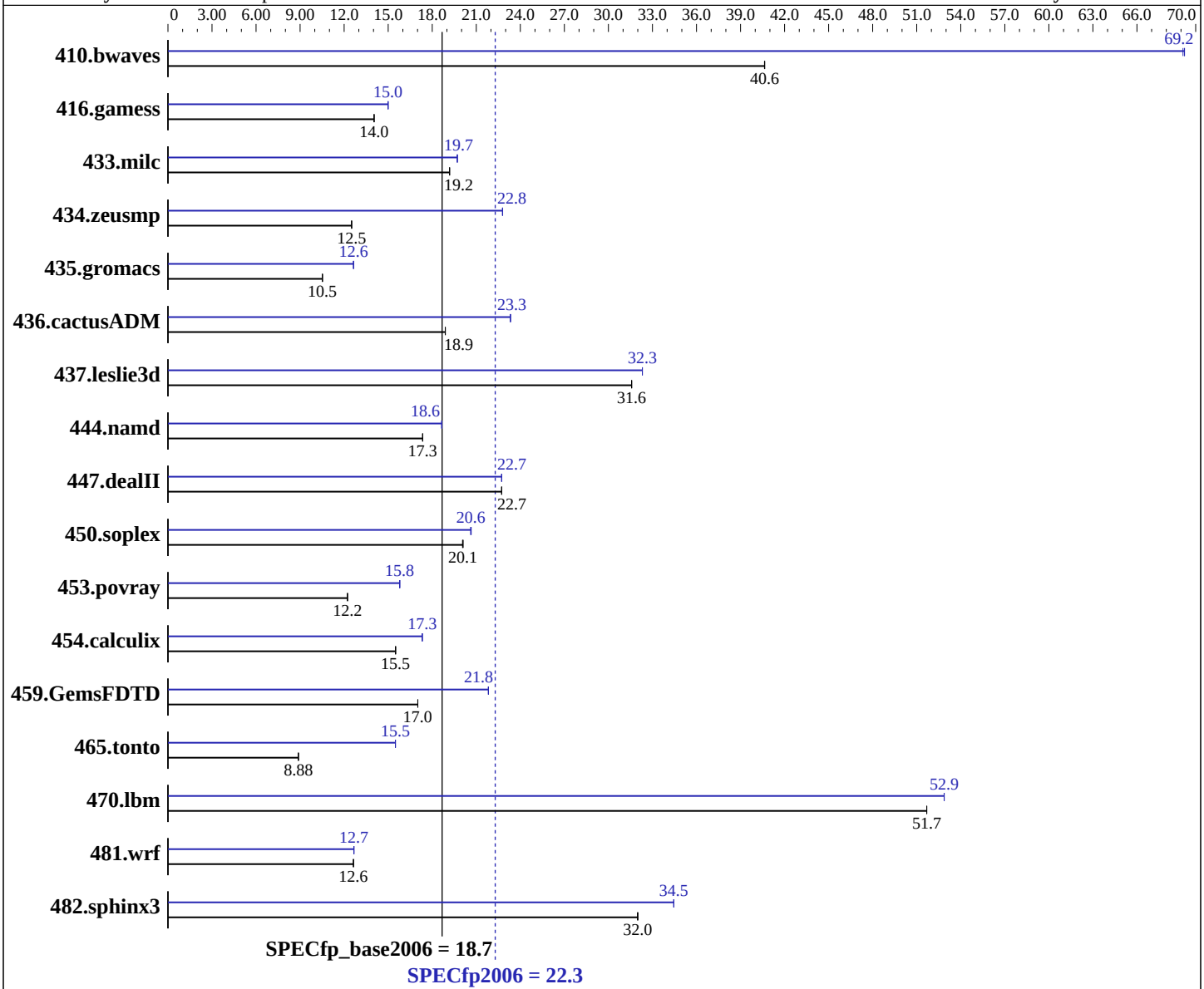
IBM System i 570 (4.7 GHz, 1 core)

SPECfp®2006 = 22.3

SPECfp_base2006 = 18.7

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:	1 core, 1 chip, 2 cores/chip
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

Continued on next page

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: 16 GB (8x2 GB) DDR2 667 MHz
Disk Subsystem: 1x73 GB 1x146 GB SAS 15K RPM
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**334**	**40.6**	334	40.6	334	40.6	197	69.1	196	69.2	**196**	**69.2**
416.gamess	1395	14.0	**1395**	**14.0**	1395	14.0	1306	15.0	**1306**	**15.0**	1306	15.0
433.milc	479	19.2	479	19.2	**479**	**19.2**	466	19.7	**466**	**19.7**	466	19.7
434.zeusmp	**727**	**12.5**	728	12.5	727	12.5	399	22.8	**399**	**22.8**	399	22.8
435.gromacs	679	10.5	**679**	**10.5**	679	10.5	**565**	**12.6**	565	12.6	565	12.6
436.cactusADM	633	18.9	**633**	**18.9**	633	18.9	**512**	**23.3**	513	23.3	512	23.3
437.leslie3d	298	31.6	298	31.6	**298**	**31.6**	291	32.3	291	32.3	**291**	**32.3**
444.namd	462	17.3	462	17.3	**462**	**17.3**	430	18.6	430	18.6	**430**	**18.6**
447.dealII	503	22.7	503	22.7	**503**	**22.7**	503	22.7	503	22.7	**503**	**22.7**
450.soplex	416	20.1	**415**	**20.1**	415	20.1	404	20.6	**404**	**20.6**	404	20.7
453.povray	435	12.2	**435**	**12.2**	435	12.2	337	15.8	**337**	**15.8**	337	15.8
454.calculix	532	15.5	**532**	**15.5**	532	15.5	**476**	**17.3**	476	17.3	477	17.3
459.GemsFDTD	623	17.0	**623**	**17.0**	624	17.0	486	21.8	486	21.8	**486**	**21.8**
465.tonto	1107	8.88	**1108**	**8.88**	1108	8.88	635	15.5	**635**	**15.5**	635	15.5
470.lbm	266	51.7	266	51.7	**266**	**51.7**	260	52.9	260	52.9	**260**	**52.9**
481.wrf	884	12.6	884	12.6	**884**	**12.6**	**882**	**12.7**	882	12.7	882	12.7
482.sphinx3	609	32.0	**609**	**32.0**	609	32.0	566	34.5	**566**	**34.5**	566	34.4

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
Speed run on 1 core partition defined on HMC,
768 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.
```

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General Notes (Continued)

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
```

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`

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: `-qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qlargepage -D_ILS_MACROS -blpdata`

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`

Continued on next page

Peak Optimization Flags (Continued)

481.wrf: -O5 -qlargepage -D_ILS_MACROS -blpdata

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):
-qipa=noobject -qipa=threads -qsuppress=1500-036

447.dealII: -bmaxdata:0x50000000 -qipa=noobject -qipa=threads -qsuppress=1500-036

450.soplex: -bmaxdata:0x40000000 -qstrict -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:0x30000000 -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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