SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

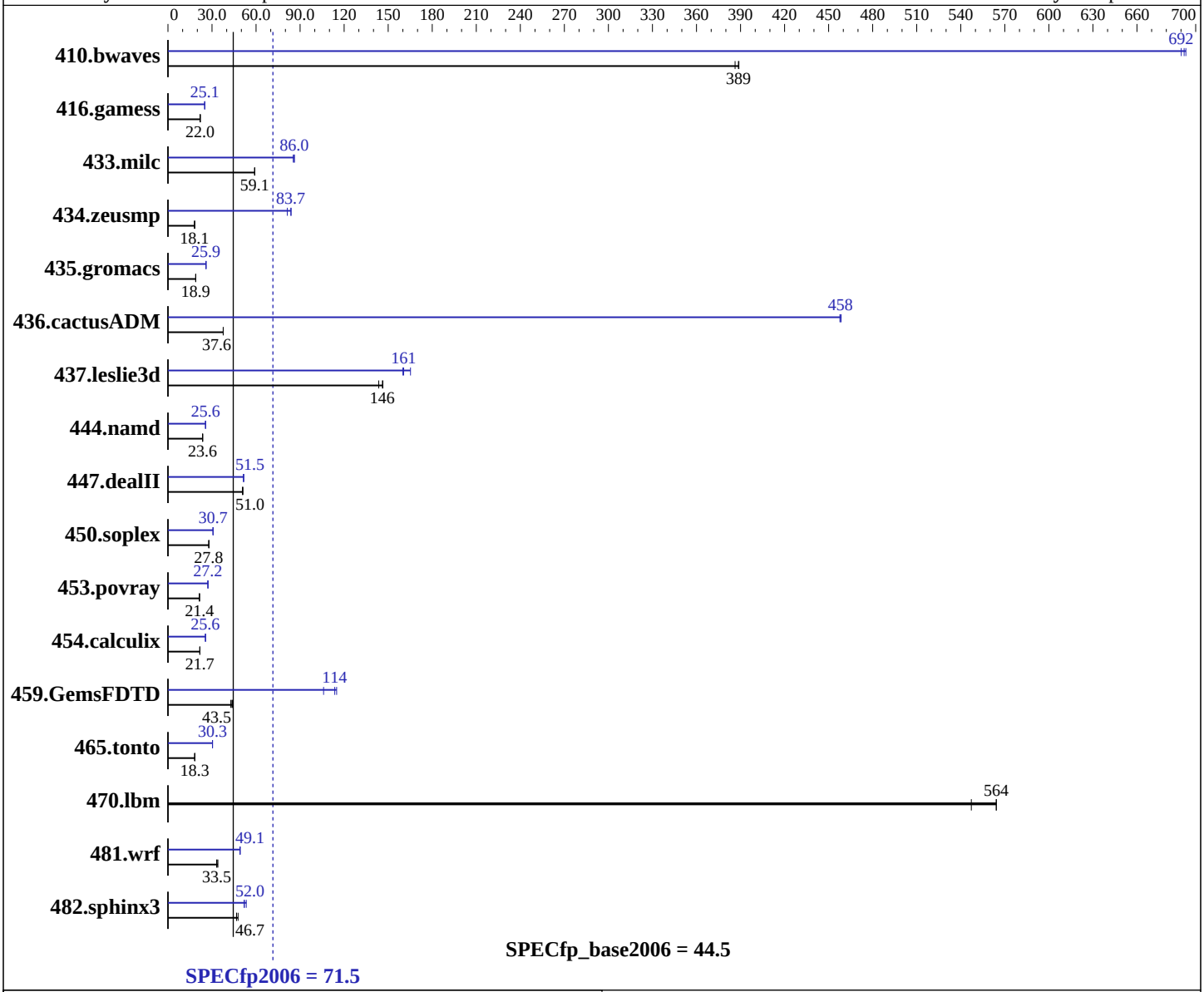
IBM Power 780 Server (3.86 GHz, 16 core)

SPECfp®2006 = 71.5

SPECfp_base2006 = 44.5

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

Test date: Apr-2010
Hardware Availability: Mar-2010
Software Availability: Apr-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.94 GHz
CPU MHz:	3860
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip
CPU(s) orderable:	16,32,48,64 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

Continued on next page

Software

Operating System:	IBM AIX V6.1 with the 6100-05 Technology Level SP1
Compiler:	XL C/C++ Enterprise Edition V11.1.0.1 for AIX XL Fortran Enterprise Edition V13.1.0.1 for AIX
Auto Parallel:	Yes
File System:	AIX/JFS2
System State:	Multi-user
Base Pointers:	32-bit
Peak Pointers:	32/64-bit

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM Power 780 Server (3.86 GHz, 16 core)

SPECfp2006 = 71.5

SPECfp_base2006 = 44.5

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

Test date: Apr-2010
Hardware Availability: Mar-2010
Software Availability: Apr-2010

Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 4 MB I+D on chip per core
Other Cache: None
Memory: 128 GB (16x8 GB) DDR3 1066 MHz
Disk Subsystem: 1x64 GB IBM SSD raid0
Other Hardware: --

Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**35.0**	**389**	35.2	386	34.9	389	19.7	690	**19.6**	**692**	19.6	693
416.gamess	892	22.0	891	22.0	**891**	**22.0**	782	25.0	781	25.1	**782**	**25.1**
433.milc	155	59.1	155	59.1	**155**	**59.1**	108	85.3	107	86.1	**107**	**86.0**
434.zeusmp	503	18.1	499	18.2	**502**	**18.1**	**109**	**83.7**	112	81.3	108	83.9
435.gromacs	378	18.9	377	18.9	**377**	**18.9**	276	25.9	275	25.9	**275**	**25.9**
436.cactusADM	318	37.6	317	37.6	**317**	**37.6**	26.1	459	**26.1**	**458**	26.1	458
437.leslie3d	65.5	144	64.2	146	**64.4**	**146**	**58.6**	**161**	56.9	165	58.8	160
444.namd	340	23.6	**340**	**23.6**	339	23.6	**313**	**25.6**	313	25.6	313	25.6
447.dealII	224	51.0	226	50.7	**224**	**51.0**	**222**	**51.5**	223	51.4	221	51.6
450.soplex	299	27.9	300	27.8	**300**	**27.8**	**271**	**30.7**	271	30.8	272	30.6
453.povray	248	21.5	248	21.4	**248**	**21.4**	**195**	**27.2**	195	27.2	195	27.2
454.calculix	380	21.7	**380**	**21.7**	379	21.7	323	25.5	**323**	**25.6**	323	25.6
459.GemsFDTD	**244**	**43.5**	248	42.8	241	43.9	92.3	115	100	106	**93.4**	**114**
465.tonto	**539**	**18.3**	539	18.3	539	18.3	324	30.3	**324**	**30.3**	324	30.4
470.lbm	**24.4**	**564**	25.1	547	24.4	564	**24.4**	**564**	25.1	547	24.4	564
481.wrf	**334**	**33.5**	328	34.0	337	33.1	**227**	**49.1**	227	49.2	228	49.0
482.sphinx3	417	46.7	408	47.8	**417**	**46.7**	365	53.4	**375**	**52.0**	375	51.9

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:
  433.milc 435.gromacs 436.cactusADM 450.soplex 482.sphinx3
     with options -O4 -nodp
  434.zeusmp
     with options -O4 -vrox -nodp
 437.leslie3d 444.namd
     with options -O3 -lu -1 -nodp -sdp 9
 453.povray 454.calculix
     with options -O3
```

Operating System Notes

```
 all ulimits set to unlimited.
 2000 16M large pages defined with vmo command
System set to single thread mode with the OS command:
 smtctl -m off -w boot
```

General Notes

```
Environment variables set by runspec before the start of the run:
MALLOCMULTIHEAP = "1"
MALLOCOPTIONS = "pool"
MEMORY_AFFINITY = "MCM"
XLFRTEOPTS = "intrinthds=1"
XLSMPOPTS = "spins=0:yields=0:startproc=0:stride=1"

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

Base Compiler Invocation

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

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

Fortran benchmarks:
```
/usr/bin/xlf95_r
```

Benchmarks using both Fortran and C:
```
/usr/vac/bin/xlc_r -qlanglvl=extc99 /usr/bin/xlf95_r
```

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:
```
-qipa=threads -bmaxdata:0x40000000 -O5 -qlargepage -qsmp=auto
-D_ILS_MACROS -blpdata
```

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

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

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

Base Other Flags

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

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

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

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

Peak Compiler Invocation

C benchmarks (except as noted below):
```
/usr/vac/bin/xlc_r -qlanglvl=extc99
```

433.milc: `/usr/vac/bin/xlc -qlanglvl=extc99`

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

Fortran benchmarks (except as noted below):
```
/usr/bin/xlf95_r
```

Continued on next page

Peak Compiler Invocation (Continued)

416.gamess: /usr/bin/xlf95

465.tonto: /usr/bin/xlf95

Benchmarks using both Fortran and C (except as noted below):
/usr/vac/bin/xlc -qlanglvl=extc99 /usr/bin/xlf95

436.cactusADM: /usr/vac/bin/xlc_r -qlanglvl=extc99 /usr/bin/xlf95_r

481.wrf: /usr/vac/bin/xlc_r -qlanglvl=extc99 /usr/bin/xlf95_r

Peak Portability Flags

410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname -DSPEC_CPU_LP64
437.leslie3d: -qfixed
454.calculix: -qfixed -qextname
481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Peak Optimization Flags

C benchmarks:

433.milc: -qipa=threads -bmaxdata:0x40000000 -O5 -qsimd -qvecnvol
-qlargepage -D_ILS_MACROS -qrestrict -qprefetch=aggressive
-qalign=natural -blpdata

470.lbm: basepeak = yes

482.sphinx3: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsmp=auto
-qlargepage -D_ILS_MACROS -blpdata

C++ benchmarks:

444.namd: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5
-qlargepage -D_ILS_MACROS -blpdata

447.dealII: -qipa=threads -bmaxdata:0x50000000 -O5 -D_ILS_MACROS
-qrtti=all -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR
-blpdata -btextpsize:64K

Continued on next page

Peak Optimization Flags (Continued)

450.soplex: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qarch=pwr5 -qlargepage -D_ILS_MACROS -blpdata

453.povray: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -q64 -qsimd -qvecnvol -D_ILS_MACROS -qalign=natural -btextpsize:64K

Fortran benchmarks:

410.bwaves: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsmp=auto -qlargepage -q64 -blpdata

416.gamess: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr5 -qlargepage -qalias=nostd -blpdata

434.zeusmp: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsmp=auto -qlargepage -qxlf90=nosignedzero -blpdata

437.leslie3d: -qipa=threads -O4 -q64 -qsmp=auto -blpdata

459.GemsFDTD: -qipa=threads -bmaxdata:0x50000000 -O4 -qsmp=auto -qsimd -qvecnvol -qlargepage -blpdata

465.tonto: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd -qvecnvol -blpdata -btextpsize:64K

Benchmarks using both Fortran and C:

435.gromacs: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd -qvecnvol -D_ILS_MACROS

436.cactusADM: -qipa=threads -O4 -q64 -qsmp=auto -D_ILS_MACROS -qnostrict -blpdata -btextpsize:64K

454.calculix: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd -qvecnvol -qlargepage -D_ILS_MACROS -blpdata

481.wrf: -O3 -qarch=auto -qtune=auto -q64 -qsmp=auto -D_ILS_MACROS -blpdata

Peak Other Flags

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

Continued on next page

Peak Other Flags (Continued)

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

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

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

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

481.wrf: `-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-AIX.20100511.html
http://www.spec.org/cpu2006/flags/IBM-XL.20100511.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-AIX.20100511.xml
http://www.spec.org/cpu2006/flags/IBM-XL.20100511.xml

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 07:00:59 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 11 May 2010.