



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 214

IBM Power S814 (3.026 GHz, 4 core)

SPECfp_rate_base2006 = 191

CPU2006 license: 11

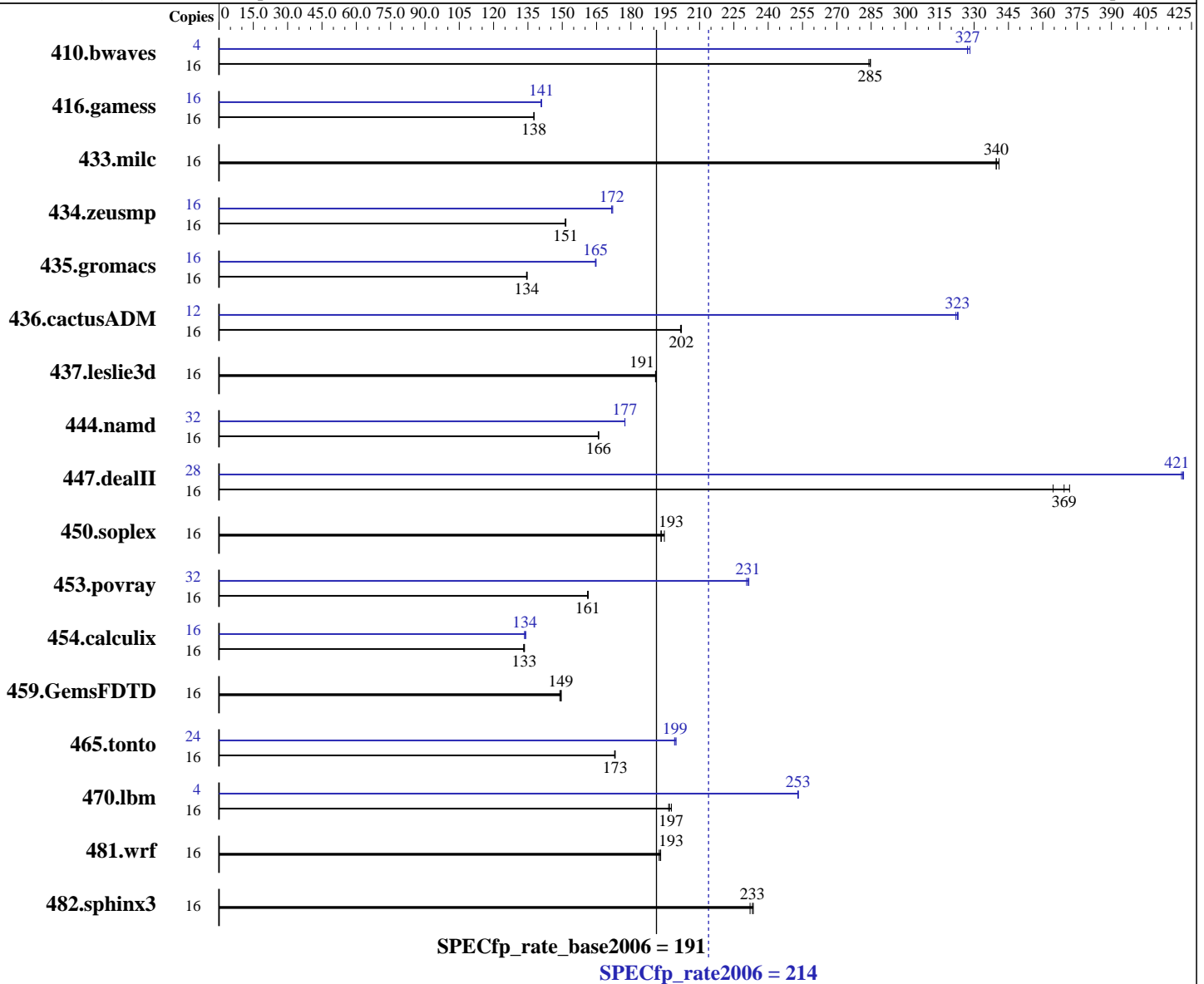
Test date: May-2015

Test sponsor: IBM Corporation

Hardware Availability: Jun-2014

Tested by: IBM Corporation

Software Availability: Sep-2014



Hardware

CPU Name: POWER8
 CPU Characteristics: Intelligent Energy Optimization enabled, up to 3.36 GHz
 CPU MHz: 3026
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip, 8 threads/core
 CPU(s) orderable: 1 Modules
 Primary Cache: 32 KB I + 64 KB D on chip per core

Software

Operating System: IBM AIX V7.1
 Compiler: C/C++: Version 13.1 of IBM XL C/C++ for AIX
 Fortran: Version 15.1 of IBM XL Fortran for AIX
 Auto Parallel: No
 File System: AIX/JFS2
 System State: Multi-user
 Base Pointers: 32-bit
 Peak Pointers: 32/64-bit
 Other Software: None

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Secondary Cache: 512 KB I+D on chip per core
 L3 Cache: 8 MB I+D on chip per core
 Other Cache: 16 MB I+D off chip per CDIMM
 Memory: 64 GB (4 x 16 GB CDIMMs) DDR3 1600 MHz
 Disk Subsystem: 5 x 300 GB 15K RPM SAS SF-2 Raid0
 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	764	285	766	284	764	285	4	166	328	166	327	166	327		
416.gamess	16	2275	138	2276	138	2276	138	16	2221	141	2223	141	2226	141		
433.milc	16	431	341	432	340	432	340	16	431	341	432	340	432	340		
434.zeusmp	16	962	151	962	151	960	152	16	848	172	846	172	848	172		
435.gromacs	16	850	134	848	135	850	134	16	694	165	693	165	694	165		
436.cactusADM	16	946	202	946	202	948	202	12	444	323	444	323	445	322		
437.leslie3d	16	788	191	788	191	788	191	16	788	191	788	191	788	191		
444.namd	16	774	166	773	166	774	166	32	1447	177	1447	177	1447	177		
447.dealII	16	502	365	496	369	492	372	28	762	421	761	421	760	422		
450.soplex	16	691	193	686	195	690	193	16	691	193	686	195	690	193		
453.povray	16	529	161	528	161	527	161	32	737	231	738	231	735	232		
454.calculix	16	992	133	989	134	989	133	16	989	134	984	134	988	134		
459.GemsFDTD	16	1140	149	1135	150	1136	149	16	1140	149	1135	150	1136	149		
465.tonto	16	911	173	910	173	910	173	24	1185	199	1182	200	1186	199		
470.lbm	16	1119	197	1117	197	1112	198	4	217	253	217	253	217	253		
481.wrf	16	929	192	926	193	927	193	16	929	192	926	193	927	193		
482.sphinx3	16	1344	232	1335	234	1338	233	16	1344	232	1335	234	1338	233		

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

Compiler Invocation Notes

C/C++ compiler updated to September 2014 PTF
 Version 13.01.0000.0001
 Fortran compiler updated to September 2014 PTF
 Version 15.01.0000.0001

Peak Tuning Notes

410.bwaves fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
 416.gamess fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
 433.milc fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
 434.zeusmp fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
 435.gromacs fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
 436.cactusADM fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
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Peak Tuning Notes (Continued)

437.leslie3d fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
444.namd fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
447.dealII fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
453.povray fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
454.calculix fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
459.GemsFDTD fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
465.tonto fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
470.lbm fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
481.wrf fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
482.sphinx3 fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox

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

AIX updated to V7.1 TL3 SP4

All ulimits set to unlimited.
Set 8 threads per core via "smtctl -t 8 -w boot"

3200 16M large pages defined with vmo command

General Notes

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

Base Compiler Invocation

C benchmarks:
/opt/IBM/xlc/13.1.0/bin/xlc -qlanglvl=extc99

C++ benchmarks:
/opt/IBM/xlc/13.1.0/bin/xlc

Fortran benchmarks:
/opt/IBM/xlf/15.1.0/bin/xlf95

Benchmarks using both Fortran and C:
/opt/IBM/xlc/13.1.0/bin/xlc -qlanglvl=extc99
/opt/IBM/xlf/15.1.0/bin/xlf95



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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:

```
-qinline=40 -qipa=threads -bmaxdata:0x40000000 -qlargepage -O5
-qsimd=noauto -D_ILS_MACROS -blpdata
```

C++ benchmarks:

```
-qinline=40 -qipa=threads -bmaxdata:0x50000000 -qlargepage -O5
-qvecnv1 -D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR
-D__IBM_FAST_SET_MAP_ITERATOR -blpdata
```

Fortran benchmarks:

```
-qipa=threads -bmaxdata:0x60000000 -qlargepage -O5 -qvecnv1
-qsmallstack=dynlenonheap -qalias=nostd -blpdata
```

Benchmarks using both Fortran and C:

```
-qinline=40 -qipa=threads -bmaxdata:0x60000000 -qlargepage -O5
-qsimd=noauto -D_ILS_MACROS -qvecnv1 -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
```



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Peak Compiler Invocation

C benchmarks:

/opt/IBM/xlc/13.1.0/bin/xlc -qlanglvl=extc99

C++ benchmarks:

/opt/IBM/xlC/13.1.0/bin/xlC

Fortran benchmarks:

/opt/IBM/xlf/15.1.0/bin/xlf95

Benchmarks using both Fortran and C:

/opt/IBM/xlc/13.1.0/bin/xlc -qlanglvl=extc99

/opt/IBM/xlf/15.1.0/bin/xlf95

Peak Portability Flags

410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -DSPEC_CPU_LP64 -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: basepeak = yes

470.lbm: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2)
-qlargepage -O5 -qsimd=noauto -qprefetch=dscr=84
-D_ILS_MACROS -qfdpr -q64 -blpdata -btextpsize:64K

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -qinline=40 -qipa=threads -qlargepage -O4 -qvecnv1
-qfdpr -D_ILS_MACROS -D__IBM_FAST_VECTOR
-D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K

447.dealII: -qinline=40 -qipa=threads -bmaxdata:0x50000000
-qpdf1(pass 1) -qpdf2(pass 2) -qlargepage -O4 -qvecnv1
-qfdpr -D_ILS_MACROS -qrtti=all -D__IBM_FAST_VECTOR
-D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K

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Peak Optimization Flags (Continued)

450.soplex: basepeak = yes

453.povray: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2)
-qlargepage -O3 -qarch=auto -qtune=auto
-qprefetch=dscr=147 -D_ILS_MACROS -qalign=natural -qfdpr
-blpdata -btextpsize:64K

Fortran benchmarks:

410.bwaves: -qipa=threads -bmaxdata:0x50000000 -qlargepage -O5
-qsimd=noauto -qprefetch=dscr=84 -qfdpr
-qsmallstack=dynlenonheap -blpdata -btextpsize:64K

416.gamess: -qipa=threads -bmaxdata:0x40000000 -qlargepage -O5
-qsimd=noauto -qalias=nostd -qfdpr -blpdata
-btextpsize:64K

434.zeusmp: -qipa=threads -qlargepage -O4 -qsimd=noauto
-qxlf90=nosignedzero -qfdpr -q64 -blpdata -btextpsize:64K

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -qlargepage
-O5 -qvecnvool -qprefetch=dscr=147 -qfdpr -q64 -blpdata
-btextpsize:64K

Benchmarks using both Fortran and C:

435.gromacs: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2)
-qlargepage -O4 -qvecnvool -D_ILS_MACROS -qfdpr -blpdata
-btextpsize:64K

436.cactusADM: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2)
-qlargepage -O4 -qvecnvool -qarch=pwr7 -qtune=pwr7 -q64
-D_ILS_MACROS -qfdpr -blpdata -btextpsize:64K

454.calculix: -qinline=40 -qipa=threads -O5 -qsimd=noauto
-qprefetch=dscr=147 -D_ILS_MACROS -qfdpr -blpdata
-btextpsize:64K

481.wrf: basepeak = yes



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Peak 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 (except as noted below):

-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qsuppress=1500-036

454.calculix: -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.V13.html>

<http://www.spec.org/cpu2006/flags/IBM-AIX.V7.html>

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

<http://www.spec.org/cpu2006/flags/IBM-XL.V13.xml>

<http://www.spec.org/cpu2006/flags/IBM-AIX.V7.xml>

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For other inquiries, please contact webmaster@spec.org.

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