



# SPEC<sup>®</sup> CFP2006 Result

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## IBM Corporation

SPECfp<sup>®</sup>\_rate2006 = 586

### IBM Flex System p260 (4.1 GHz, 16 core)

SPECfp\_rate\_base2006 = 480

CPU2006 license: 11

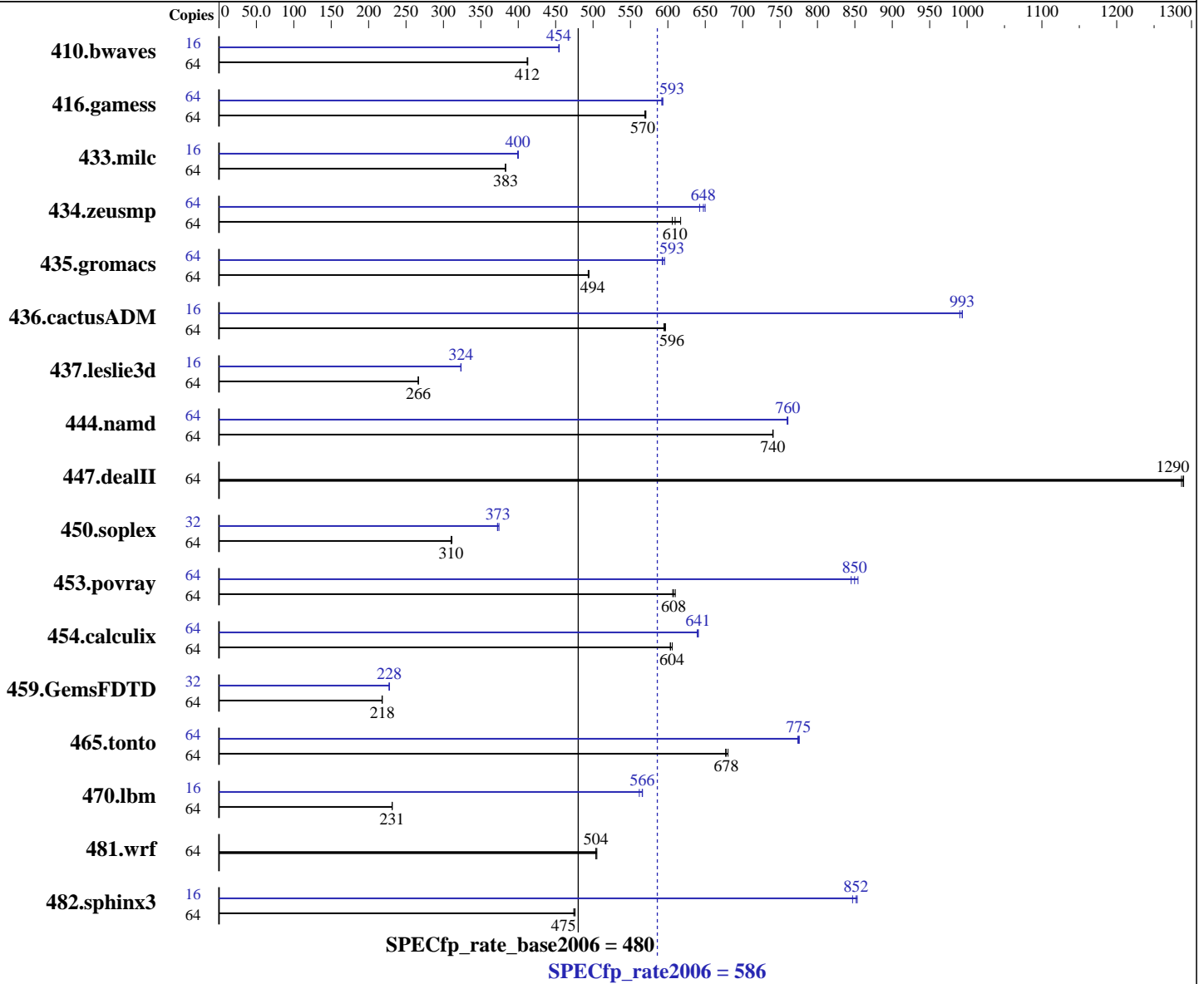
Test date: Oct-2012

Test sponsor: IBM Corporation

Hardware Availability: Dec-2012

Tested by: IBM Corporation

Software Availability: Nov-2012



#### Hardware

CPU Name: POWER7+  
 CPU Characteristics: Intelligent Energy Optimization enabled, up to 4.340 GHz  
 CPU MHz: 4116  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 4 threads/core  
 CPU(s) orderable: 16 cores  
 Primary Cache: 32 KB I + 32 KB D on chip per core

#### Software

Operating System: IBM AIX V7.1  
 Compiler: C/C++: Version 12.1 of IBM XL C/C++ for AIX; Fortran: Version 14.1 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: 256 KB I+D on chip per core  
 L3 Cache: 10 MB I+D on chip per core  
 Other Cache: None  
 Memory: 128 GB (16 x 8 GB) DDR3 1066 MHz  
 Disk Subsystem: 1 x 177 GB Raid0 SFF-1 SSD  
 Other Hardware: None

## Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	64	2107	413	2111	412	<b>2110</b>	<b>412</b>	16	478	455	<b>479</b>	<b>454</b>	479	454		
416.gamess	64	<b>2198</b>	<b>570</b>	2196	571	2202	569	64	2112	593	2117	592	<b>2114</b>	<b>593</b>		
433.milc	64	1534	383	1534	383	<b>1534</b>	<b>383</b>	16	367	400	<b>368</b>	<b>400</b>	368	399		
434.zeusmp	64	961	606	944	617	<b>955</b>	<b>610</b>	64	907	642	<b>899</b>	<b>648</b>	896	650		
435.gromacs	64	<b>925</b>	<b>494</b>	924	495	926	493	64	767	596	771	592	<b>770</b>	<b>593</b>		
436.cactusADM	64	1281	597	<b>1283</b>	<b>596</b>	1286	595	16	193	990	192	994	<b>192</b>	<b>993</b>		
437.leslie3d	64	<b>2258</b>	<b>266</b>	2257	267	2258	266	16	<b>465</b>	<b>324</b>	465	324	465	323		
444.namd	64	693	740	<b>693</b>	<b>740</b>	693	741	64	<b>675</b>	<b>760</b>	675	761	676	759		
447.dealII	64	<b>568</b>	<b>1290</b>	568	1290	569	1290	64	<b>568</b>	<b>1290</b>	568	1290	569	1290		
450.soplex	64	1714	311	<b>1720</b>	<b>310</b>	1721	310	32	<b>716</b>	<b>373</b>	713	374	717	372		
453.povray	64	<b>560</b>	<b>608</b>	558	610	561	606	64	403	845	<b>401</b>	<b>850</b>	399	854		
454.calculix	64	871	606	<b>875</b>	<b>604</b>	875	603	64	824	641	<b>824</b>	<b>641</b>	826	639		
459.GemsFDTD	64	3116	218	3112	218	<b>3112</b>	<b>218</b>	32	<b>1492</b>	<b>228</b>	1493	227	1491	228		
465.tonto	64	<b>929</b>	<b>678</b>	926	680	930	677	64	812	776	<b>813</b>	<b>775</b>	814	774		
470.lbm	64	3798	232	<b>3799</b>	<b>231</b>	3799	231	16	391	562	<b>389</b>	<b>566</b>	388	566		
481.wrf	64	1419	504	1415	505	<b>1419</b>	<b>504</b>	64	1419	504	1415	505	<b>1419</b>	<b>504</b>		
482.sphinx3	64	2621	476	<b>2624</b>	<b>475</b>	2630	474	16	368	847	<b>366</b>	<b>852</b>	366	853		

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 November 2012 PTF  
 Version: 12.01.0000.0002  
 Fortran compiler updated to November 2012 PTF  
 Version: 14.01.0000.0002

## Peak Tuning Notes

416.gamess fdpr options: -O4 -cbpth -1 -sdp -1  
 433.milc fdpr options: -O3 -lu -1  
 435.gromacs fdpr options: -O  
 436.cactusADM fdpr options: -O3 -lu -1 -nodp -sdp 9  
 437.leslie3d fdpr options: -O3  
 453.povray fdpr options: -O3 -cbpth -1

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## Peak Tuning Notes (Continued)

459.GemsFDTD fdpr options: -O3 -cbpth -1  
465.tonto fdpr options: -O4  
482.sphinx3 fdpr options: -O4 -rcctf 0 -sdp 9 -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 TL 2 SP1  
All ulimits set to unlimited.  
6400 16M large pages defined with vmo command

## Platform Notes

This Compute Node is housed in an "IBM Flex System Enterprise Chassis"

## General Notes

Environment variables set by runspec before the start of the run:  
MALLOCOPTIONS = "pool"  
MEMORY\_AFFINITY = "MCM"  
XLFRTIOPTS = "intrinthds=1"

## 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



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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:

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

C++ benchmarks:

```
-qipa=threads -bmaxdata:0x50000000 -qlargepage -O5 -qsimd -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
-qsmallstack=dynlenonheap -qalias=nostd -blpdata
```

Benchmarks using both Fortran and C:

```
-qipa=threads -bmaxdata:0x60000000 -qlargepage -O5 -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
```



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## Peak 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

## 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: -qipa=threads -bmaxdata:0x40000000 -O5 -qlargepage  
-D\_ILS\_MACROS -qprefetch=aggressive -qalign=natural  
-blpdata -btextpsize:64K

470.lbm: -qipa=threads -bmaxdata:0x30000000 -O5 -D\_ILS\_MACROS  
-blpdata -btextpsize:64K

482.sphinx3: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage  
-D\_ILS\_MACROS -blpdata -btextpsize:64K

C++ benchmarks:

444.namd: -qipa=threads -O4 -q64 -qlargepage -D\_ILS\_MACROS  
-D\_\_IBM\_FAST\_VECTOR -D\_\_IBM\_FAST\_SET\_MAP\_ITERATOR -blpdata  
-btextpsize:64K

447.dealIII: basepeak = yes

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## Peak Optimization Flags (Continued)

450.soplex: -qipa=threads -bmaxdata:0x40000000 -O5 -qsimd -qvecnvml  
-D\_ILS\_MACROS -D\_\_IBM\_FAST\_VECTOR  
-D\_\_IBM\_FAST\_SET\_MAP\_ITERATOR -blpdata -btextpsize:64K

453.povray: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd  
-qvecnvml -qlargepage -D\_ILS\_MACROS -qalign=natural  
-blpdata -btextpsize:64K

### Fortran benchmarks:

410.bwaves: -qipa=threads -bmaxdata:0x50000000 -O5 -qlargepage  
-qsmallstack=dynlenonheap -blpdata -btextpsize:64K

416.gamess: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1)  
-qpdf2(pass 2) -O5 -qarch=pwr5 -qlargepage -qalias=nostd  
-blpdata -btextpsize:64K

434.zeusmp: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3  
-qarch=auto -qtune=auto -qlargepage -qxlf90=nosignedzero  
-blpdata -btextpsize:64K

437.leslie3d: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -blpdata  
-btextpsize:64K

459.GemsFDTD: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -q64 -qlargepage  
-blpdata -btextpsize:64K

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

### Benchmarks using both Fortran and C:

435.gromacs: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5  
-D\_ILS\_MACROS -blpdata -btextpsize:64K

436.cactusADM: -qipa=threads -bmaxdata:0x60000000 -O4 -qsimd -qvecnvml  
-D\_ILS\_MACROS -qnostrict -blpdata -btextpsize:64K

454.calculix: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd  
-qvecnvml -qlargepage -D\_ILS\_MACROS -blpdata  
-btextpsize:64K

481.wrf: basepeak = yes



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## Peak Other Flags

C benchmarks:

-qipa=noobject -qsuppress=1500-036

C++ benchmarks (except as noted below):

-qipa=noobject -qsuppress=1500-036

450.soplex: -qsuppress=1500-036

Fortran benchmarks (except as noted below):

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

434.zeusmp: -qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036

Benchmarks using both Fortran and C:

-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.20110613.html>

<http://www.spec.org/cpu2006/flags/IBM-AIX.20110613.html>

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

<http://www.spec.org/cpu2006/flags/IBM-XL.20110613.xml>

<http://www.spec.org/cpu2006/flags/IBM-AIX.20110613.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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