# SPEC® CFP2006 Result



## IBM Corporation

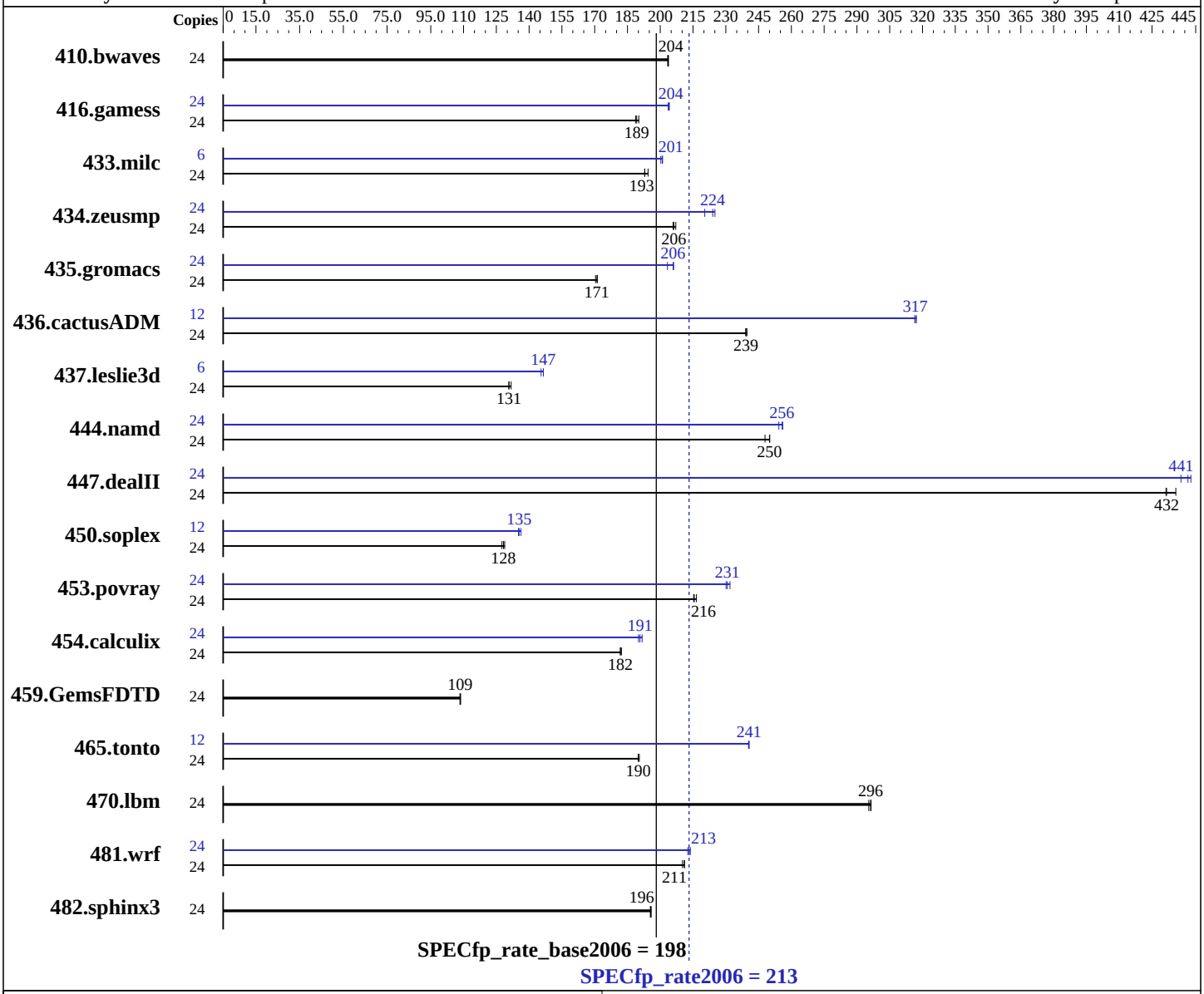
## IBM Power 710 Express (3.7 GHz, 6 core)

**SPECfp®_rate2006 = 213**

**SPECfp_rate_base2006 = 198**

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

**Test date:** Aug-2010
**Hardware Availability:** Sep-2010
**Software Availability:** Sep-2010




### Hardware

| | |
|---|---|
| CPU Name: | POWER7 |
| CPU Characteristics: | Intelligent Energy Optimization enabled, up to 3.92 GHz |
| CPU MHz: | 3724 |
| FPU: | Integrated |
| CPU(s) enabled: | 6 cores, 1 chip, 6 cores/chip, 4 threads/core |
| CPU(s) orderable: | 6 cores |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |

Continued on next page

### Software

| | |
|---|---|
| Operating System: | IBM AIX V7.1 |
| Compiler: | IBM XL C/C++ for AIX, V11.1 Version: 11.01.0000.0002 IBM XL Fortran for AIX, V13.1 Version: 13.01.0000.0002 |
| Auto Parallel: | No |
| File System: | AIX/JFS2 |
| System State: | Multi-user |

Continued on next page

# SPEC CFP2006 Result



## IBM Corporation

## IBM Power 710 Express (3.7 GHz, 6 core)

SPECfp_rate2006 = 213

SPECfp_rate_base2006 = 198

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

**Test date:** Aug-2010
**Hardware Availability:** Sep-2010
**Software Availability:** Sep-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: | 64 GB (8x8 GB) DDR3 1066 MHz |
| Disk Subsystem: | 2x146.8 GB SAS SFF 15K RPM |
| Other Hardware: | None |

| | |
|---|---|
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | None |

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 24 | 1601 | 204 | 1604 | 203 | **1601** | **204** | 24 | 1601 | 204 | 1604 | 203 | **1601** | **204** |
| 416.gamess | 24 | 2471 | 190 | **2483** | **189** | 2490 | 189 | 24 | **2303** | **204** | 2302 | 204 | 2308 | 204 |
| 433.milc | 24 | 1133 | 194 | **1142** | **193** | 1142 | 193 | 6 | 274 | 201 | **274** | **201** | 275 | 200 |
| 434.zeusmp | 24 | **1059** | **206** | 1054 | 207 | 1061 | 206 | 24 | 970 | 225 | 991 | 220 | **975** | **224** |
| 435.gromacs | 24 | 1001 | 171 | 1006 | 170 | **1002** | **171** | 24 | **832** | **206** | 843 | 203 | 831 | 206 |
| 436.cactusADM | 24 | **1199** | **239** | 1199 | 239 | 1197 | 240 | 12 | 453 | 316 | **453** | **317** | 452 | 317 |
| 437.leslie3d | 24 | 1712 | 132 | **1725** | **131** | 1726 | 131 | 6 | **385** | **147** | 385 | 147 | 388 | 145 |
| 444.namd | 24 | 776 | 248 | **770** | **250** | 770 | 250 | 24 | **753** | **256** | 757 | 254 | 752 | 256 |
| 447.dealII | 24 | 636 | 431 | **636** | **432** | 630 | 436 | 24 | 620 | 443 | **622** | **441** | 626 | 438 |
| 450.soplex | 24 | 1569 | 128 | 1554 | 129 | **1560** | **128** | 12 | 734 | 136 | **739** | **135** | 741 | 135 |
| 453.povray | 24 | 590 | 217 | 593 | 215 | **592** | **216** | 24 | 551 | 232 | **553** | **231** | 555 | 230 |
| 454.calculix | 24 | 1089 | 182 | **1089** | **182** | 1086 | 182 | 24 | 1033 | 192 | 1042 | 190 | **1038** | **191** |
| 459.GemsFDTD | 24 | 2344 | 109 | 2350 | 108 | **2346** | **109** | 24 | 2344 | 109 | 2350 | 108 | **2346** | **109** |
| 465.tonto | 24 | 1240 | 190 | 1244 | 190 | **1243** | **190** | 12 | 491 | 240 | **491** | **241** | 491 | 241 |
| 470.lbm | 24 | 1116 | 295 | 1112 | 296 | **1113** | **296** | 24 | 1116 | 295 | 1112 | 296 | **1113** | **296** |
| 481.wrf | 24 | 1270 | 211 | **1271** | **211** | 1276 | 210 | 24 | 1261 | 213 | **1257** | **213** | 1254 | 214 |
| 482.sphinx3 | 24 | 2393 | 195 | **2392** | **196** | 2388 | 196 | 24 | 2393 | 195 | **2392** | **196** | 2388 | 196 |

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:
   450.soplex
 with options -O4 -sdp 9 -vrox -kr -m power7
fdpr binary optimization tool used for:
   433.milc 435.gromacs 444.namd
 with options -O3 -lu -1 -nodp -sdp 9 -m power7
fdpr binary optimization tool used for 434.zeusmp
 with options -RD -O4 -sdp 9 -vrox -nodp -m power7
fdpr binary optimization tool used for 436.cactusADM
 with options -O3 -m power7
fdpr binary optimization tool used for:
   437.leslie3d 453.povray 454.calculix
 with options -O4 -sdp 9 -vrox -rtb -nodp -m power7
```

Continued on next page

## Peak Tuning Notes (Continued)

```
fdpr binary optimization tool used for 447.dealII
 with options -O4 -sdp 9 -vrox -m power7 -RD -dp
```

## 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

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

All ulimits set to unlimited.
6400 16M large pages defined with vmo command

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

# 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
```

# 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

Continued on next page

## Base Portability Flags (Continued)

482.sphinx3: `-qchars=signed`

## Base Optimization Flags

C benchmarks:
```
-qipa=threads -bmaxdata:0x40000000 -O5 -qlargepage -O4 -D_ILS_MACROS
-blpdata
```

C++ benchmarks:
```
-qipa=threads -bmaxdata:0x50000000 -O5 -qlargepage -O4 -D_ILS_MACROS
-qrtti=all -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR -blpdata
```

Fortran benchmarks:
```
-qipa=threads -bmaxdata:0x60000000 -O5 -qlargepage -O4
-qsmallstack=dynlenonheap -qalias=nostd -blpdata
```

Benchmarks using both Fortran and C:
```
-qipa=threads -bmaxdata:0x60000000 -O5 -qlargepage -O4 -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:
```
/usr/vac/bin/xlc -qlanglvl=extc99
```

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

Continued on next page

## Peak Compiler Invocation (Continued)

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 -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 -btextpsize:64K

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd
-qvecnvol -qlargepage -D_ILS_MACROS -bdatapsize:64K
-bstackpsize:64K -btextpsize:64K

447.dealII: -qipa=threads -bmaxdata:0x50000000 -O4 -D_ILS_MACROS
-qrtti=all -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR
-blpdata -btextpsize:64K

450.soplex: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3
-qarch=auto -qtune=auto -q64 -qlargepage -D_ILS_MACROS
-blpdata -btextpsize:64K

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

Continued on next page

## Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd -qvecnvol -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: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -q64 -blpdata -btextpsize:64K

459.GemsFDTD: basepeak = yes

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 -blpdata -btextpsize:64K

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

454.calculix: -qipa=threads -O5 -qsimd -qvecnvol -qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K

481.wrf: -bmaxdata:0x30000000 -O3 -qarch=auto -qtune=auto -qsimd -qvecnvol -D_ILS_MACROS -blpdata -btextpsize:64K

## 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

Continued on next page

# Peak Other Flags (Continued)

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`

437.leslie3d: `-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-XL.20100901.html
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-XL.20100901.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.xml



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 12:05:47 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 31 August 2010.