SPEC® CFP2006 Result

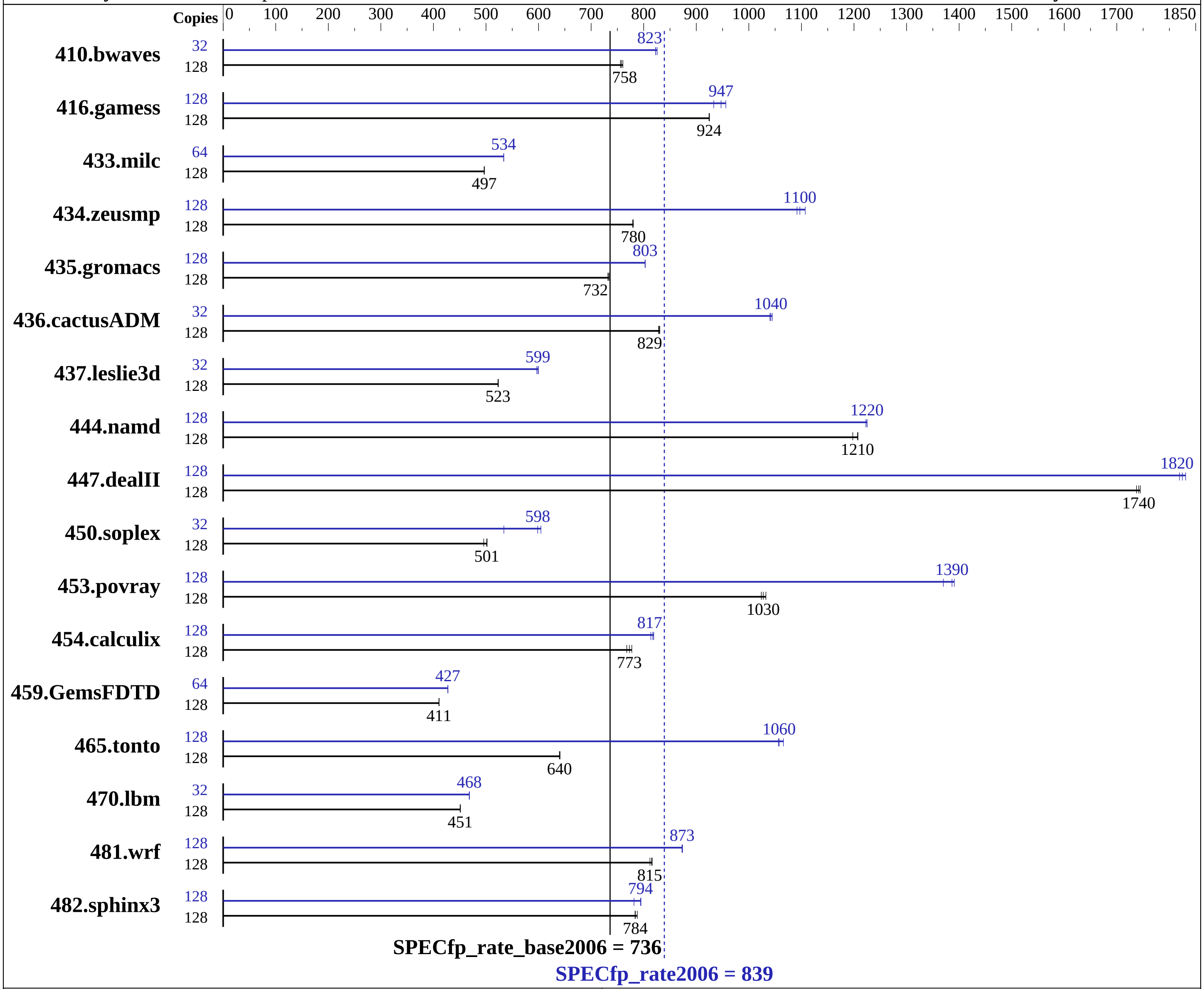
IBM Corporation

SPECfp®_rate2006 = 839

IBM Power 755 (3.3 GHz, 32 core, SLES)

SPECfp_rate_base2006 = 736

CPU2006 license:	11	**Test date:**	Jan-2010
Test sponsor:	IBM Corporation	**Hardware Availability:**	Feb-2010
Tested by:	IBM Corporation	**Software Availability:**	Dec-2009



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.64 GHz
CPU MHz:	3300
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	32 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 11 (ppc64), Kernel 2.6.27.19-5-ppc64
Compiler:	IBM XL C/C++ for Linux, V10.1 Updated with the Oct2009 PTF IBM XL Fortran for Linux, V12.1 Updated with the Oct2009 PTF
Auto Parallel:	No
File System:	ext3

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Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 4 MB I+D on chip per core
Other Cache: None
Memory: 256 GB (32x8 GB) DDR3 1066 MHz
Disk Subsystem: 8x146.8 GB SAS SFF 15K RPM
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: -Post-Link Optimization for Linux on POWER, Version 5.5.0-1
-MicroQuill SmartHeap 9

Results Table

	Base							Peak						
Benchmark	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	128	**2296**	**758**	2302	756	2288	760	32	**528**	**823**	527	826	529	823
416.gamess	128	2709	925	**2711**	**924**	2712	924	128	2621	956	2686	933	**2646**	**947**
433.milc	128	2364	497	**2366**	**497**	2367	496	64	1101	534	1101	534	**1101**	**534**
434.zeusmp	128	1496	779	**1493**	**780**	1493	780	128	1052	1110	1067	1090	**1062**	**1100**
435.gromacs	128	**1248**	**732**	1249	732	1245	734	128	1139	802	**1138**	**803**	1138	803
436.cactusADM	128	1842	831	**1844**	**829**	1847	828	32	368	1040	**367**	**1040**	366	1040
437.leslie3d	128	2301	523	**2301**	**523**	2298	524	32	504	597	**502**	**599**	502	600
444.namd	128	857	1200	**851**	**1210**	850	1210	128	838	1220	840	1220	**838**	**1220**
447.dealII	128	843	1740	**841**	**1740**	839	1740	128	800	1830	805	1820	**803**	**1820**
450.soplex	128	2153	496	**2129**	**501**	2126	502	32	500	534	**446**	**598**	441	604
453.povray	128	665	1020	**663**	**1030**	660	1030	128	497	1370	490	1390	**491**	**1390**
454.calculix	128	1375	768	**1367**	**773**	1358	777	128	1298	814	1289	819	**1292**	**817**
459.GemsFDTD	128	3309	410	3305	411	**3308**	**411**	64	1588	428	1589	427	**1589**	**427**
465.tonto	128	**1968**	**640**	1969	640	1965	641	128	**1191**	**1060**	1192	1060	1182	1070
470.lbm	128	3896	451	**3900**	**451**	3902	451	32	940	468	**939**	**468**	938	469
481.wrf	128	1761	812	1752	816	**1754**	**815**	128	**1637**	**873**	1636	874	1638	873
482.sphinx3	128	3184	784	3167	788	**3182**	**784**	128	3192	782	**3142**	**794**	3139	795

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

Submit Notes

```
The config file option 'submit' was used.
```

Operating System Notes

```
ulimit -s (stack) set to 1048576.
Large pages reserved as follows by root user:
    echo 8448 > /proc/sys/vm/nr_hugepages
System configured with libhugetlbfs library for application access to large pages
Environment variables set before executing benchmarks.
    export HUGETLB_VERBOSE=0
    export HUGETLB_MORECORE=yes
    export XLFRTEOPTS=intrinthds=1
```

General Notes

```
The "IBM Power 750 Express (3.3 GHz)" and "IBM Power 755 (3.3 GHz)"
are electronically equivalent. The results have been measured on the
"IBM Power 755 (3.3 GHz)"

IBM Post-Link optimization tool with
    options "-O4 -omullX -see 0 -m power6" used for
       433.milc 435.gromacs 436.cactusADM 482.sphinx3
    options "-O4 -omullX -see 1" used for
       436.cactusADM
    options "-O4 -omullX -see 1 -ihf -1" used for
       453.povray
    options "-O4" used for
       465.tonto
     Whenever option "-omullX" was used during the optimization phase,
       option "-imullX" was also used during the instrumentation phase.

Benchmarks bound to a processor using numactl on the submit command.
See flags file for details on settings.
```

Base Compiler Invocation

C benchmarks:
`xlc -qlanglvl=extc99`

C++ benchmarks:
`xlC`

Fortran benchmarks:
`xlf95`

Benchmarks using both Fortran and C:
`xlc -qlanglvl=extc99 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: `-DNOUNDERSCORE`
482.sphinx3: `-qchars=signed`

Base Optimization Flags

C benchmarks:
```
-O5 -qnoenablevmx -lhugetlbfs
```

C++ benchmarks:
```
-O5 -qrtti -qnoenablevmx -qstaticlink
-Wl,--whole-archive /usr/lib/libhugetlbfs.a -Wl,--no-whole-archive
```

Fortran benchmarks:
```
-O5 -qsmallstack=dynlenonheap -qalias=nostd -qnoenablevmx
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
```

Benchmarks using both Fortran and C:
```
-O5 -qnoenablevmx -qsmallstack=dynlenonheap -qalias=nostd
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
```

Base Other Flags

C benchmarks:
```
-qipa=noobject -qipa=threads
```

C++ benchmarks:
```
-qipa=noobject -qipa=threads
```

Fortran benchmarks:
```
-qipa=noobject -qipa=threads
```

Benchmarks using both Fortran and C:
```
-qipa=noobject -qipa=threads
```

Peak Compiler Invocation

C benchmarks:
```
xlc -qlanglvl=extc99
```

C++ benchmarks:
```
xlC
```

Fortran benchmarks:
```
xlf95
```

Benchmarks using both Fortran and C:
```
xlc -qlanglvl=extc99 xlf95
```

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Peak Portability Flags

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

Peak Optimization Flags

C benchmarks:

433.milc: -Wl,-q -O5 -qnoenablevmx -lhugetlbfs

470.lbm: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT -q64

482.sphinx3: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -lhugetlbfs

C++ benchmarks:

444.namd: -qpdf1(pass 1) -qpdf2(pass 2) -O5

447.dealII: -O5 -qrtti -qnoenablevmx -qstaticlink -Wl,-z,muldefs -Wl,--whole-archive /usr/lib/libsmartheap.a -Wl,--no-whole-archive

450.soplex: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qstrict -lhugetlbfs

453.povray: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lsmartheap

Fortran benchmarks:

410.bwaves: -O5 -qsmallstack=dynlenonheap -lhugetlbfs

416.gamess: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qalias=nostd -qnoenablevmx

434.zeusmp: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qxlf90=nosignedzero -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT

437.leslie3d: -O5 -qsmallstack=dynlenonheap -qnoenablevmx -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT

Continued on next page

Peak Optimization Flags (Continued)

459.GemsFDTD: `-O5 -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT -q64`

465.tonto: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -q64 -lsmartheap64`

Benchmarks using both Fortran and C:

435.gromacs: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -lhugetlbfs`

436.cactusADM: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O2 -qarch=auto -qtune=auto -qnostrict -lhugetlbfs`

454.calculix: `-O4 -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT`

481.wrf: `-O5 -qnoenablevmx -q64 -lhugetlbfs`

Peak Other Flags

C benchmarks:
`-qipa=noobject -qipa=threads`

C++ benchmarks:
`-qipa=noobject -qipa=threads`

Fortran benchmarks:
`-qipa=noobject -qipa=threads`

Benchmarks using both Fortran and C:
`-qipa=noobject -qipa=threads`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20100302.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20100302.xml

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

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