SPEC® CFP2006 Result
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IBM Corporation

$SPECfp®\_rate2006 =$ 98.5

IBM System x3755 (AMD Opteron 8224 SE)
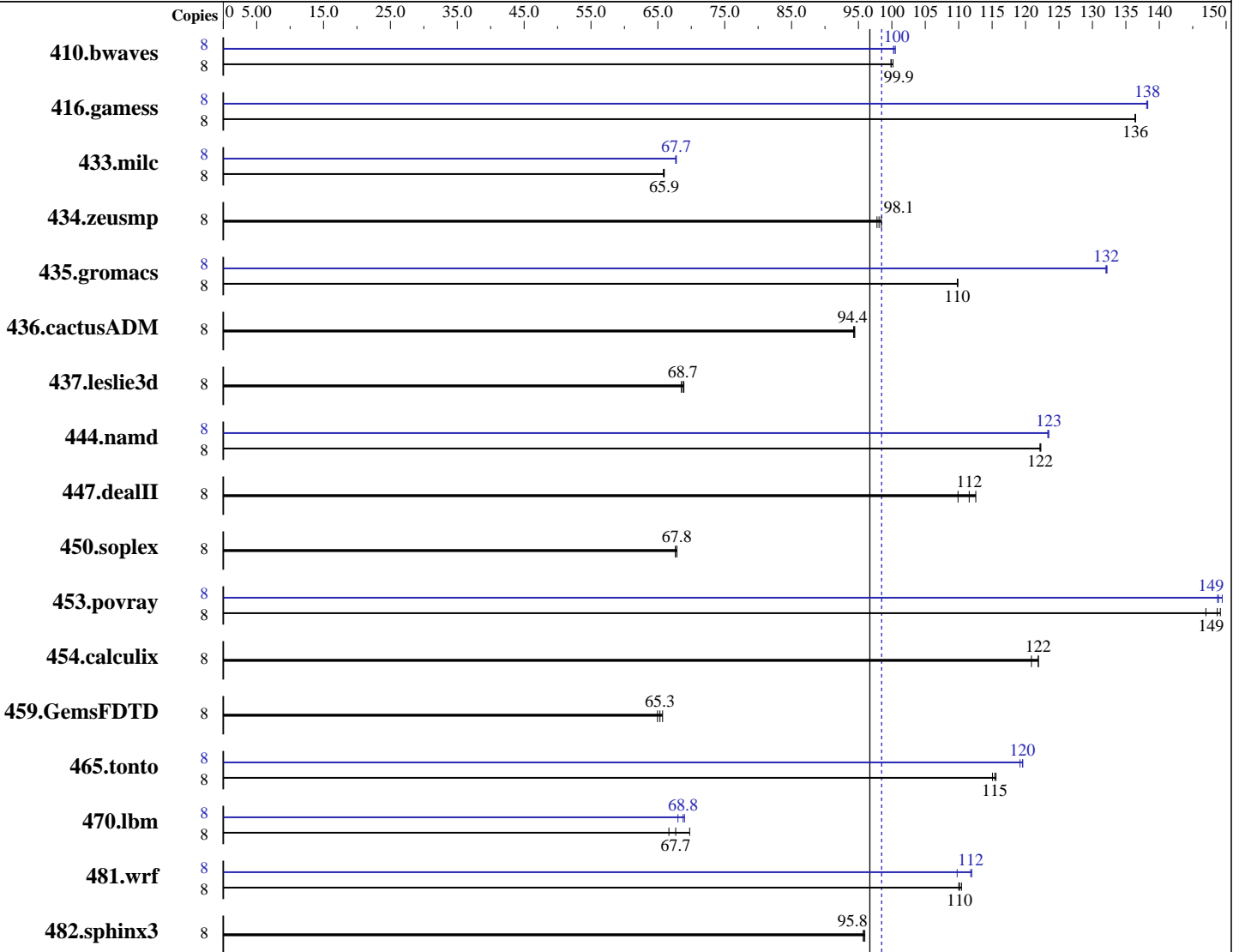
$SPECfp\_rate\_base2006 =$ 96.7

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: Advanced Micro Devices

Test date: Aug-2007

Hardware Availability: Sep-2007

Software Availability: Oct-2007

Benchmark	Copies	Result
410.bwaves	8	100
410.bwaves	8	99.9
416.gamess	8	138
416.gamess	8	136
433.milc	8	67.7
433.milc	8	65.9
434.zeusmp	8	98.1
435.gromacs	8	132
435.gromacs	8	110
436.cactusADM	8	94.4
437.leslie3d	8	68.7
444.namd	8	123
444.namd	8	122
447.dealII	8	112
450.soplex	8	67.8
453.povray	8	149
453.povray	8	149
454.calculix	8	122
459.GemsFDTD	8	65.3
465.tonto	8	120
465.tonto	8	115
470.lbm	8	68.8
470.lbm	8	67.7
481.wrf	8	112
481.wrf	8	110
482.sphinx3	8	95.8

SPECfp_rate_base2006 = 96.7

SPECfp_rate2006 = 98.5

Hardware

CPU Name:	AMD Opteron 8224 SE
CPU Characteristics:	
CPU MHz:	3200
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip
CPU(s) orderable:	1, 2, 3, 4 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core

Continued on next page

Software

Operating System:	SuSE Linux Enterprise Server 10 SP1 64-bit kernel
Compiler:	The Portland Group (PGI)
	PGI pgf90 7.1-0 Fortran Compiler
	PGI pgcc 7.1-0 C Compiler
	PGI pgCC 7.1-0 C++ Compiler
Auto Parallel:	No
File System:	ext3
System State:	Multi-user, run level 3

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L3 Cache:	None
Other Cache:	None
Memory:	32 GB (16 x 2GB DDR2-667 CL5 ECC REG Dual Rank)
Disk Subsystem:	1 x 73 GB SAS, 15000 RPM
Other Hardware:	None

Base Pointers:	64-bit
Peak Pointers:	64-bit
Other Software:	None

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	**1088**	**99.9**	1085	100	1089	99.9	8	**1084**	**100**	1081	101	1084	100
416.gamess	8	1148	136	1149	136	**1148**	**136**	8	1134	138	1133	138	**1133**	**138**
433.milc	8	1116	65.8	1113	66.0	**1114**	**65.9**	8	1084	67.8	**1084**	**67.7**	1085	67.7
434.zeusmp	8	740	98.4	**742**	**98.1**	745	97.8	8	740	98.4	**742**	**98.1**	745	97.8
435.gromacs	8	520	110	520	110	**520**	**110**	8	433	132	**432**	**132**	432	132
436.cactusADM	8	1014	94.3	1012	94.5	**1013**	**94.4**	8	1014	94.3	1012	94.5	**1013**	**94.4**
437.leslie3d	8	1091	68.9	**1094**	**68.7**	1098	68.5	8	1091	68.9	**1094**	**68.7**	1098	68.5
444.namd	8	525	122	525	122	**525**	**122**	8	520	123	**520**	**123**	520	123
447.dealII	8	**820**	**112**	813	113	833	110	8	**820**	**112**	813	113	833	110
450.soplex	8	987	67.6	983	67.9	**984**	**67.8**	8	987	67.6	983	67.9	**984**	**67.8**
453.povray	8	285	149	**286**	**149**	290	147	8	**286**	**149**	285	149	286	149
454.calculix	8	546	121	**541**	**122**	541	122	8	546	121	**541**	**122**	541	122
459.GemsFDTD	8	**1300**	**65.3**	1307	65.0	1292	65.7	8	**1300**	**65.3**	1307	65.0	1292	65.7
465.tonto	8	681	116	684	115	**682**	**115**	8	**658**	**120**	658	120	661	119
470.lbm	8	1576	69.8	**1624**	**67.7**	1649	66.7	8	1593	69.0	**1598**	**68.8**	1616	68.0
481.wrf	8	809	110	**811**	**110**	812	110	8	**799**	**112**	798	112	814	110
482.sphinx3	8	1625	96.0	1629	95.7	**1628**	**95.8**	8	1625	96.0	1629	95.7	**1628**	**95.8**

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

Operating System Notes

```
Environment stack size set to 'unlimited'
'numactl' was used to bind copies to the cores
Set vm/nr_hugepages=1024 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Base Compiler Invocation

C benchmarks:
```
pgcc
```

C++ benchmarks:
```
pgcpp
```

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Base Compiler Invocation (Continued)

Fortran benchmarks:
```
pgf95
```

Benchmarks using both Fortran and C:
```
pgcc pgf95
```

Base Portability Flags

```
     410.bwaves: -DSPEC_CPU_LP64
     416.gamess: -DSPEC_CPU_LP64
       433.milc: -DSPEC_CPU_LP64
    434.zeusmp: -DSPEC_CPU_LP64
   435.gromacs: -DSPEC_CPU_LP64 -Mnomain
  436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
    437.leslie3d: -DSPEC_CPU_LP64
      444.namd: -DSPEC_CPU_LP64
     447.dealII: -DSPEC_CPU_LP64
     450.soplex: -DSPEC_CPU_LP64
     453.povray: -DSPEC_CPU_LP64
    454.calculix: -DSPEC_CPU_LP64 -Mnomain
  459.GemsFDTD: -DSPEC_CPU_LP64
      465.tonto: -DSPEC_CPU_LP64
       470.lbm: -DSPEC_CPU_LP64
        481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
    482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi
```

C++ benchmarks:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
--zc_eh -tp k8-64 -Bstatic_pgi
```

Fortran benchmarks:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi
```

Benchmarks using both Fortran and C:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi
```

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Base Other Flags

C benchmarks:
```
-w
```

C++ benchmarks:
```
-w
```

Fortran benchmarks:
```
-w
```

Benchmarks using both Fortran and C:
```
-w
```

Peak Compiler Invocation

C benchmarks:
```
pgcc
```

C++ benchmarks:
```
pgcpp
```

Fortran benchmarks:
```
pgf95
```

Benchmarks using both Fortran and C:
```
pgcc pgf95
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
          -Mipa=noarg(pass 2) -Mpfo(pass 2) -fast -O4 -Mdse
          -Mfprelaxed -Msmartalloc=huge:8 -tp k8-64 -Bstatic_pgi

470.lbm: -fast -Mfprelaxed -Msmartalloc=huge:8 -Mipa=fast
          -Mipa=noarg -tp k8-64 -Bstatic_pgi

482.sphinx3: basepeak = yes
```

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Peak Optimization Flags (Continued)

C++ benchmarks:

 444.namd: `-Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)`
`-Mipa=inline(pass 2) -fast -O4 -Mfprelaxed`
`-Msmartalloc=huge:32 --zc_eh -tp k8-64 -Bstatic_pgi`

 447.dealII: `basepeak = yes`

 450.soplex: `basepeak = yes`

 453.povray: `-fast -Mfprelaxed -Msmartalloc=huge:32 -Mipa=fast`
`-Mipa=inline --zc_eh -tp k8-64 -Bstatic_pgi`

Fortran benchmarks:

 410.bwaves: `-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc`
`-tp k8-64 -Bstatic_pgi`

 416.gamess: `-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Mvect=noaltcode`
`-Msmartalloc=huge:64 -tp k8-64 -Bstatic_pgi`

 434.zeusmp: `basepeak = yes`

 437.leslie3d: `basepeak = yes`

 459.GemsFDTD: `basepeak = yes`

 465.tonto: `-fast -Mfprelaxed -Msmartalloc=huge:128 -Mipa=fast`
`-Mipa=inline -Mvect=noaltcode -tp k8-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:

 435.gromacs: `-fast -O4 -Mipa=fast -Mipa=inline -Mfprelaxed`
`-Msmartalloc=huge:16 -tp k8-64 -Mfpapprox=rsqrt`
`-Bstatic_pgi`

 436.cactusADM: `basepeak = yes`

 454.calculix: `basepeak = yes`

 481.wrf: `-fast -Mfprelaxed -Msmartalloc=huge:32 -Mvect=noaltcode`
`-tp k8-64 -Bstatic_pgi`

Peak Other Flags

C benchmarks:
`-w`

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Peak Other Flags (Continued)

C++ benchmarks:
    -w

Fortran benchmarks:
    -w

Benchmarks using both Fortran and C:
    -w

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/pgi710_flags.20090714.01.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/pgi710_flags.20090714.01.xml

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