SPEC® CFP2006 Result

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Fujitsu Limited

Fujitsu SPARC Enterprise M4000

$SPECfp®\_rate2006 =$ 70.9
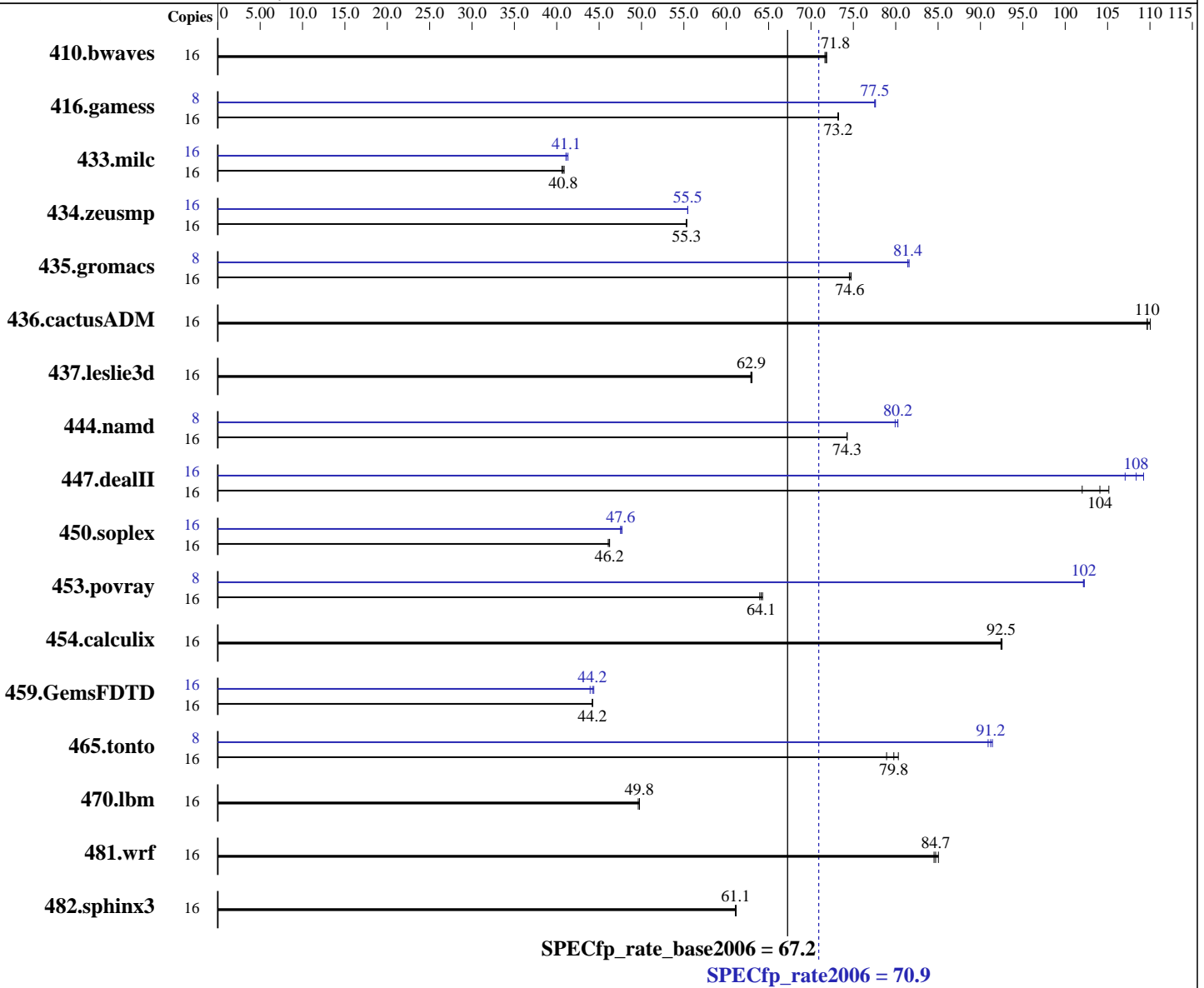
SPECfp_rate_base2006 = 67.2

CPU2006 license: 19
Test sponsor: Fujitsu Limited
Tested by: Sun Microsystems

Test date: Apr-2007
Hardware Availability: May-2007
Software Availability: Jul-2007

Benchmark	Copies	Result
410.bwaves	16	71.8
416.gamess	8	77.5
416.gamess	16	73.2
433.milc	16	41.1
433.milc	16	40.8
434.zeusmp	16	55.5
434.zeusmp	16	55.3
435.gromacs	8	81.4
435.gromacs	16	74.6
436.cactusADM	16	110
437.leslie3d	16	62.9
444.namd	8	80.2
444.namd	16	74.3
447.dealII	16	108
447.dealII	16	104
450.soplex	16	47.6
450.soplex	16	46.2
453.povray	8	102
453.povray	16	64.1
454.calculix	16	92.5
459.GemsFDTD	16	44.2
459.GemsFDTD	16	44.2
465.tonto	8	91.2
465.tonto	16	79.8
470.lbm	16	49.8
481.wrf	16	84.7
482.sphinx3	16	61.1

SPECfp_rate_base2006 = 67.2
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Hardware

CPU Name: SPARC64 VI
CPU Characteristics:
CPU MHz: 2150
FPU: Integrated
CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable: 1 or 2 CPUM; each CPUM contains 2 CPU chips
Primary Cache: 128 KB I + 128 KB D on chip per core
Secondary Cache: 5 MB I+D on chip per chip

Continued on next page

Software

Operating System: Solaris 10 7/07 (build s10s_u4wos_04)
Compiler: Sun Studio 12 (build 44.0)
Auto Parallel: No
File System: ufs
System State: Default
Base Pointers: 32-bit
Peak Pointers: 32-bit
Other Software: None

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L3 Cache:	None
Other Cache:	None
Memory:	64 GB (32 x 2 GB)
Disk Subsystem:	73 GB SEAGATE ST973401L 10K RPM Ultra320 SCSI
Other Hardware:	None

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	**3030**	**71.8**	3035	71.6	3026	71.9	16	**3030**	**71.8**	3035	71.6	3026	71.9
416.gamess	16	**4280**	**73.2**	4280	73.2	4277	73.3	8	**2020**	**77.5**	2018	77.6	2020	77.5
433.milc	16	3616	40.6	3594	40.9	**3604**	**40.8**	16	**3571**	**41.1**	3554	41.3	3575	41.1
434.zeusmp	16	**2632**	**55.3**	2633	55.3	2631	55.3	16	**2625**	**55.5**	2625	55.5	2626	55.4
435.gromacs	16	1533	74.5	**1532**	**74.6**	1529	74.7	8	700	81.6	701	81.4	**701**	**81.4**
436.cactusADM	16	**1743**	**110**	1743	110	1738	110	16	**1743**	**110**	1743	110	1738	110
437.leslie3d	16	**2389**	**62.9**	2391	62.9	2386	63.0	16	**2389**	**62.9**	2391	62.9	2386	63.0
444.namd	16	1728	74.3	1728	74.3	**1728**	**74.3**	8	799	80.3	**800**	**80.2**	803	79.9
447.dealII	16	**1758**	**104**	1794	102	1741	105	16	**1689**	**108**	1710	107	1675	109
450.soplex	16	2886	46.2	2896	46.1	**2889**	**46.2**	16	**2806**	**47.6**	2807	47.5	2797	47.7
453.povray	16	**1327**	**64.1**	1324	64.3	1331	63.9	8	416	102	417	102	**416**	**102**
454.calculix	16	1428	92.4	1426	92.5	**1428**	**92.5**	16	1428	92.4	1426	92.5	**1428**	**92.5**
459.GemsFDTD	16	3839	44.2	**3839**	**44.2**	3841	44.2	16	**3839**	**44.2**	3864	43.9	3826	44.4
465.tonto	16	**1974**	**79.8**	1995	78.9	1960	80.3	8	866	90.9	861	91.4	**863**	**91.2**
470.lbm	16	4431	49.6	4418	49.8	**4418**	**49.8**	16	4431	49.6	4418	49.8	**4418**	**49.8**
481.wrf	16	2102	85.0	**2110**	**84.7**	2114	84.5	16	2102	85.0	**2110**	**84.7**	2114	84.5
482.sphinx3	16	**5101**	**61.1**	5098	61.2	5105	61.1	16	**5101**	**61.1**	5098	61.2	5105	61.1

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

Operating System Notes

```
    Processes were bound to cores using "submit" and "pbind".

  These shell commands request use of 4MB pages:
        export LD_PRELOAD=mpss.so.1
        export MPSSHEAP=4MB
        export MPSSSTACK=4MB


    ulimit -s 131072 was used to limit the space
    consumed by the stack (and therefore make more
    space available to the heap).

    The "webconsole" service was turned off using
        svcadm disable webconsole
```

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Platform Notes

```
"CPUM" = CPU Module; each module holds two CPU chips.

Memory is 8-way interleaved by filling all slots with
the same capacity DIMMs.

This result was measured using a Sun SPARC Enterprise
M4000 Server.  Note that the Fujitsu SPARC Enterprise
M4000 and Sun SPARC Enterprise M4000 are electrically
equivalent.
```

Base Compiler Invocation

C benchmarks:
```
cc
```

C++ benchmarks:
```
CC
```

Fortran benchmarks:
```
f90
```

Benchmarks using both Fortran and C:
```
cc f90
```

Base Optimization Flags

C benchmarks:
```
-fast -fma=fused -xcache=128/64/2:5120/256/10 -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xprefetch=latx:2 -xalias_level=std
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
```

C++ benchmarks:
```
-xdepend -library=stlport4 -fast -fma=fused
-xcache=128/64/2:5120/256/10 -xipo=2 -xpagesize=4M -xprefetch_level=2
-xprefetch=latx:2 -xalias_level=compatible
```

Fortran benchmarks:
```
-fast -fma=fused -xcache=128/64/2:5120/256/10 -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xprefetch=latx:2
```

Benchmarks using both Fortran and C:
```
-fast(cc) -fast(f90) -fma=fused -xcache=128/64/2:5120/256/10 -xipo=2
-xpagesize=4M -xprefetch_level=2 -xprefetch=latx:2 -xalias_level=std
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
```

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Base Other Flags

C benchmarks:
```
-xjobs=8 -V -#
```

C++ benchmarks:
```
-xjobs=8 -verbose=diags,version
```

Fortran benchmarks:
```
-xjobs=8 -V -v
```

Benchmarks using both Fortran and C:
```
-xjobs=8 -V -# -v
```

Peak Compiler Invocation

C benchmarks:
```
cc
```

C++ benchmarks:
```
CC
```

Fortran benchmarks:
```
f90
```

Benchmarks using both Fortran and C:
```
cc f90
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -xipo=2
          -xprefetch_level=2 -fsimple=1
          -xprefetch_auto_type=indirect_array_access
          -W2,-Ainline:rs=400 -xalias_level=std -fma=fused
          -xprefetch=latx:3

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes
```

C++ benchmarks:

```
444.namd: -xdepend -library=stlport4 -fast
          -xcache=128/64/2:5120/256/10 -xpagesize=4M
          -xalias_level=compatible -xprefetch_level=1 -fma=fused
          -xprefetch=latx:3
```

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Peak Optimization Flags (Continued)

447.dealII: `-xdepend -library=stlport4`
`-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast`
`-xcache=128/64/2:5120/256/10 -xpagesize=4M`
`-xalias_level=compatible -xipo=2 -xrestrict -fma=fused`
`-xprefetch=latx:4.5`

450.soplex: `-xdepend -library=stlport4`
`-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast`
`-xcache=128/64/2:5120/256/10 -xpagesize=4M`
`-xalias_level=compatible -xipo=2 -xprefetch_level=2`
`-fsimple=0 -xrestrict`
`-xprefetch_auto_type=indirect_array_access`
`-Qoption cg -Qlp-ol=1 -Qoption cg -Qlp-it=3`
`-Qoption cg -Qlp-imb=1 -Qoption iropt -Apf:pdl=3`

453.povray: `-xdepend -library=stlport4`
`-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast`
`-xcache=128/64/2:5120/256/10 -xpagesize=4M`
`-xalias_level=compatible -xipo=2 -xrestrict -fma=fused`

Fortran benchmarks:

410.bwaves: `basepeak = yes`

416.gamess: `-fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -xipo=2`
`-xprefetch_level=2 -fma=fused`

434.zeusmp: `-fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -xipo=2`
`-fma=fused -lmopt`

437.leslie3d: `basepeak = yes`

459.GemsFDTD: `-fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -fsimple=1`
`-xprefetch_level=2 -fma=fused -xprefetch=latx:2`

465.tonto: `-fast -xcache=128/64/2:5120/256/10 -xpagesize=4M -xipo=2`
`-xprefetch=latx:12 -lfast`

Benchmarks using both Fortran and C:

435.gromacs: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast`(cc) `-fast`(f90)
`-xcache=128/64/2:5120/256/10 -xpagesize=4M -xipo=2`
`-xinline= -xarch=generic -xchip=generic -fsimple=0`
`-fma=fused`

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$SPECfp\_rate2006 = \quad 70.9$

$SPECfp\_rate\_base2006 = \quad 67.2$

Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:
    -xjobs=8 -V -#

C++ benchmarks:
    -xjobs=8 -verbose=diags,version

Fortran benchmarks:
    -xjobs=8 -V -v

Benchmarks using both Fortran and C:
    -xjobs=8 -V -# -v

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.02.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.02.xml

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

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