SPEC® CFP2006 Result

Fujitsu Limited

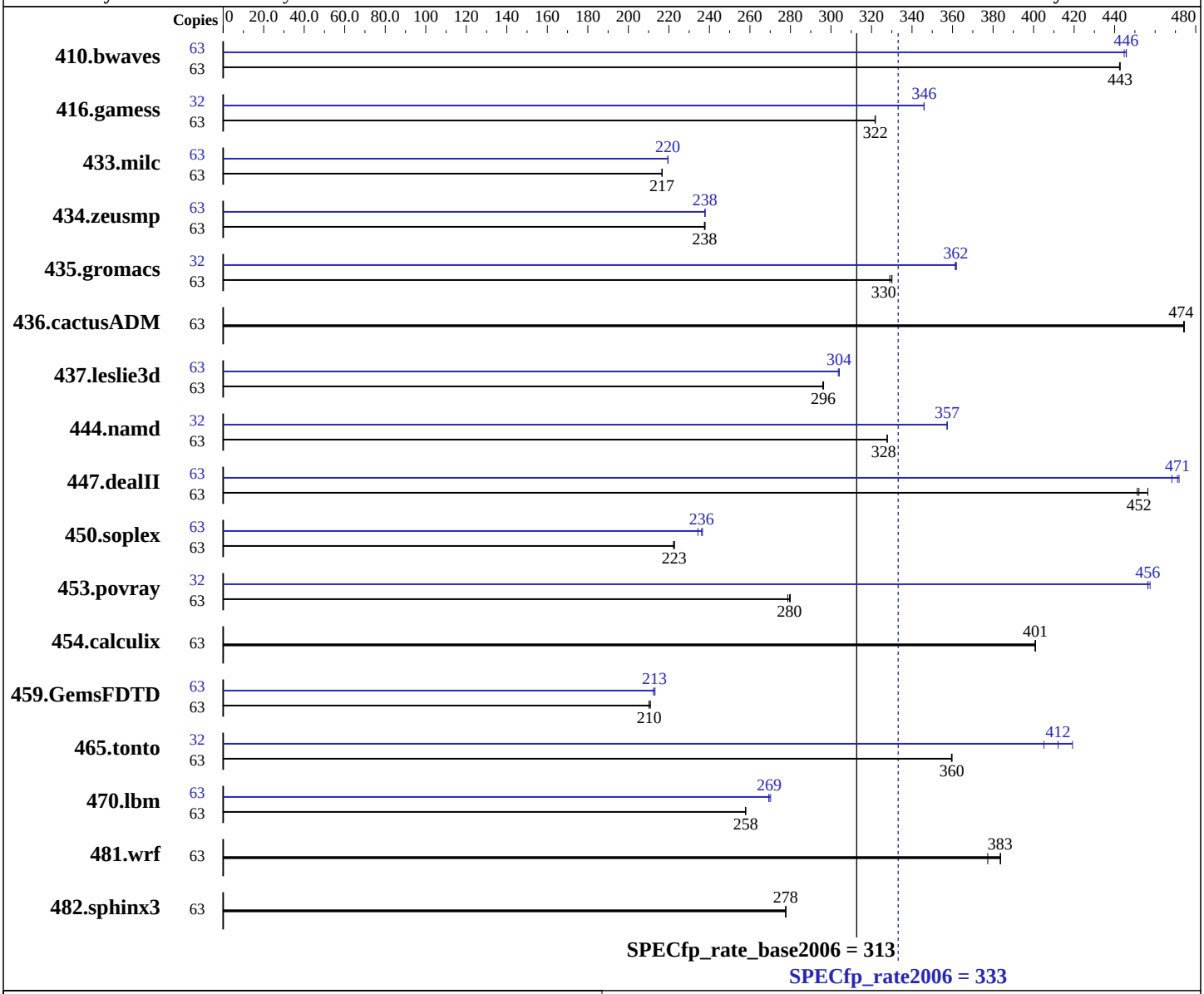
Fujitsu SPARC Enterprise M8000

SPECfp®_rate2006 = 333

SPECfp_rate_base2006 = 313

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

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



Hardware

CPU Name:	SPARC64 VI
CPU Characteristics:	
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	32 cores, 16 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 4 CMUs; each CMU contains 2 or 4 chips
Primary Cache:	128 KB I + 128 KB D on chip per core
Secondary Cache:	6 MB I+D on chip per chip

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Software

Operating System:	Solaris 10 7/07 (build s10s_u4wos_03)
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: 256 GB (128 x 2 GB)
Disk Subsystem: 400 GB RAID 0 created by Solaris Volume Manager with 12x 36GB 15,000 RPM Seagate ST336754FC FC-AL disks
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	63	1935	442	**1934**	**443**	1934	443	63	1925	445	**1921**	**446**	1920	446
416.gamess	63	**3832**	**322**	3832	322	3834	322	32	**1811**	**346**	1811	346	1811	346
433.milc	63	**2670**	**217**	2670	217	2669	217	63	2634	220	**2635**	**220**	2635	220
434.zeusmp	63	**2412**	**238**	2414	238	2410	238	63	2412	238	2409	238	**2411**	**238**
435.gromacs	63	1363	330	**1363**	**330**	1367	329	32	**632**	**362**	631	362	632	361
436.cactusADM	63	1588	474	1587	474	**1588**	**474**	63	1588	474	1587	474	**1588**	**474**
437.leslie3d	63	2001	296	**1999**	**296**	1998	296	63	1950	304	**1948**	**304**	1947	304
444.namd	63	**1542**	**328**	1542	328	1542	328	32	**718**	**357**	718	357	718	357
447.dealII	63	1579	456	1597	451	**1595**	**452**	63	1528	472	**1530**	**471**	1539	468
450.soplex	63	2364	222	2359	223	**2360**	**223**	63	2242	234	**2225**	**236**	2221	237
453.povray	63	**1199**	**280**	1197	280	1203	279	32	**373**	**456**	372	458	373	456
454.calculix	63	1297	401	**1297**	**401**	1296	401	63	1297	401	**1297**	**401**	1296	401
459.GemsFDTD	63	**3179**	**210**	3180	210	3169	211	63	**3139**	**213**	3136	213	3148	212
465.tonto	63	1725	359	1723	360	**1723**	**360**	32	**764**	**412**	751	419	777	405
470.lbm	63	**3357**	**258**	3357	258	3357	258	63	3215	269	**3212**	**269**	3203	270
481.wrf	63	1865	377	1834	384	**1835**	**383**	63	1865	377	1834	384	**1835**	**383**
482.sphinx3	63	4421	278	4423	278	**4422**	**278**	63	4421	278	4423	278	**4422**	**278**

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 local 4MB pages:
      export LD_PRELOAD=madv.so.1:mpss.so.1
      export MPSSHEAP=4MB
      export MPSSSTACK=4MB
      export MADV=access_lwp
'access_lwp' means that the next light weight
process to touch the specified address range
will access it the most heavily.

ulimit -s 131072 was used to limit the space
```

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Operating System Notes (Continued)

```
consumed by the stack (and therefore make more
space available to the heap).

 /etc/system parameters
    autoup=300
       Causes pages older than the listed number of seconds to
       be written by fsflush.
    bufhwm=3000
       Memory byte limit for caching I/O buffers
    segmap_percent=1
       Set maximum percent memory for file system cache
    tune_t_fsflushr=3
       Controls how many seconds elapse between runs of the
       page flush daemon, fsflush.

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

Platform Notes

```
"CMU" = CPU/Memory Unit; each holds 2 or 4 CPU chips.

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

This result was measured using a Sun SPARC Enterprise
M8000 Server.  Note that the Fujitsu SPARC Enterprise
M8000 and Sun SPARC Enterprise M8000 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=128/64/2:6144/256/12 -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=128/64/2:6144/256/12 -xipo=2 -xpagesize=4M -xprefetch_level=2
-xprefetch=latx:2 -xalias_level=compatible
```

Fortran benchmarks:
```
-fast -fma=fused -xcache=128/64/2:6144/256/12 -xipo=2 -xpagesize=4M
-xprefetch_level=2 -xprefetch=latx:2
```

Benchmarks using both Fortran and C:
```
-fast(cc) -fast(f90) -fma=fused -xcache=128/64/2:6144/256/12 -xipo=2
-xpagesize=4M -xprefetch_level=2 -xprefetch=latx:2 -xalias_level=std
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
```

Base Other Flags

C benchmarks:
```
-xjobs=16 -V -#
```

C++ benchmarks:
```
-xjobs=16 -verbose=diags,version
```

Fortran benchmarks:
```
-xjobs=16 -V -v
```

Benchmarks using both Fortran and C:
```
-xjobs=16 -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=128/64/2:6144/256/12 -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: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xprefetch_level=3 -xipo=2 -xrestrict -fma=fused -Wc,-Qlp=1 -Wc,-Qlp-av=512 -Wc,-Qlp-t=1 -Wc,-Qlp-fa=1 -Wc,-Qms_pipe-prefolim=64 -xprefetch=latx:5`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

444.namd: `-xdepend -library=stlport4 -fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xalias_level=compatible -xprefetch_level=1 -fma=fused -xprefetch=latx:3`

447.dealII: `-xdepend -library=stlport4 -xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xcache=128/64/2:6144/256/12 -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=128/64/2:6144/256/12 -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=128/64/2:6144/256/12 -xpagesize=4M -xalias_level=compatible -xipo=2 -xrestrict -fma=fused`

Fortran benchmarks:

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Peak Optimization Flags (Continued)

410.bwaves: `-fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2 -xprefetch_level=2 -fma=fused -xprefetch=latx:3`

416.gamess: `-fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2 -xprefetch_level=2 -fma=fused`

434.zeusmp: `-fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xipo=2 -fma=fused -lmopt`

437.leslie3d: `-fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -xprefetch_level=3 -qoption cg -Qlp=1 -qoption cg -Qlp-fa=0 -qoption cg -Qlp-fl=1 -qoption cg -Qlp-av=448 -qoption cg -Qlp-t=4 -xprefetch=latx:3.5`

459.GemsFDTD: `-fast -xcache=128/64/2:6144/256/12 -xpagesize=4M -fsimple=1 -xprefetch_level=2 -fma=fused -xprefetch=latx:2`

465.tonto: `-fast -xcache=128/64/2:6144/256/12 -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=128/64/2:6144/256/12 -xpagesize=4M -xipo=2 -xinline= -xarch=generic -xchip=generic -fsimple=0 -fma=fused`

436.cactusADM: `basepeak = yes`

454.calculix: `basepeak = yes`

481.wrf: `basepeak = yes`

Peak Other Flags

C benchmarks:
`-xjobs=16 -V -#`

C++ benchmarks:
`-xjobs=16 -verbose=diags,version`

Fortran benchmarks:
`-xjobs=16 -V -v`

Benchmarks using both Fortran and C:
`-xjobs=16 -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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