



# OMPM2001 Result

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Fujitsu Limited  
Fujitsu SPARC Enterprise M8000

SPECompMpeak2001 = 104714  
SPECompMbase2001 = 75418

SPEC license #HPG0003 | Tested by: Fujitsu Limited | Test site: Sun Microsystems | Test date: Jul-2008 | Hardware Avail: Jul-2008 | Software Avail: Jul-2008

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	47.5	126370	39.3	152770	
312.swim_m	6000	73.7	81388	68.1	88043	
314.mgrid_m	7300	83.0	88000	80.8	90372	
316.applu_m	4000	31.3	127818	17.1	233687	
318.galgel_m	5100	229	22278	116	44103	
320.earthquake_m	2600	67.9	38306	26.8	96998	
324.apsi_m	3400	24.4	139416	21.3	159998	
326.gafort_m	8700	117	74071	104	83358	
328.fma3d_m	4600	85.2	53985	58.7	78419	
330.art_m	6400	18.4	347305	17.6	363255	
332.ammp_m	7000	298	23489	195	35952	

### Hardware

CPU: SPARC64 VII  
 CPU MHz: 2520  
 FPU: Integrated  
 CPU(s) enabled: 64 cores, 16 chips, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 to 4 CMUs; each CMU contains 2 or 4 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 6 MB I+D on chip per chip  
 L3 Cache: None  
 Other Cache: None  
 Memory: 256 GB (128 x 2 GB)  
 Disk Subsystem: Seagate 73 GB 10000 RPM SAS  
 Other Hardware: --

### Software

OpenMP Threads: 64  
 Parallel: OpenMP and Automatic Parallelization  
 Operating System: Solaris 10 5/08 with patch 137111-03  
 Compiler: Sun Studio 12 with patches 124867-06, 124861-07, 124863-05, 127000-05  
 File System: UFS  
 System State: Multi-User

## Notes/Tuning Information

### Compiler Invocation:

C: cc  
 F90: f90  
 F77: f77

### Base Tuning:

C: -fast -xopenmp -xalias\_level=std -xipo=2  
 -xprefetch\_level=3 -m64 -lmtmalloc -g  
 -xpagesize=4m -xprefetch=latx:4 -xprofile  
 f90: -fast -openmp -m64 -xipo=2 -autopar -fma=fused  
 -g -xpagesize=4m -xprefetch=latx:4 -xprofile  
 ONESTEP=yes

318.galgel\_m portability flags: -e -fixed

### Extra art allowed flags:

330.art\_m: -DINTS\_PER\_CACHELINE=16 -DDBLS\_PER\_CACHELINE=8

### Peak Notes:

ONESTEP=yes

310.wupwise\_m: -fast -openmp -xunroll=4 -autopar -m32  
 -xipo=2 -fma=fused -xpagesize=512k



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## Notes/Tuning Information (Continued)

```

-Ooption iropt -Athr,-Apf:l2subblock=256,-Apf:ipa=9
-xprefetch=latx:3 -Ooption iropt -Rloop_dist
-xprofile
312.swim_m: -fast -openmp -m64 -xipo=2 -autopar
           -fma=fused -xpagesize=512k -xprefetch=latx:3
314.mgrid_m: -fast -openmp -xipo=2 -xprefetch_level=3
            -m32 -xpagesize=512K -xprefetch:latx:4.8
            -fma=fused -Ooption iropt -Apf:l2subblock=256
            -xprofile
316.applu_m: -fast -xipo=2 -openmp -xautopar -m64
            -fma=fused -xpagesize=4m -xprefetch=latx:2.8
            -Ooption iropt -Rloop_dist -xunroll=3 -xprofile
318.galgel_m: -fast -openmp -xipo=2 -xprefetch=latx:1
             -xlic_lib=sunperf -xprofile
             RM_SOURCES=lapak.f90
320.quake_m: -fast -xopenmp -xprefetch_level=3
            -xpagesize=64k -xprefetch=latx:2 -xipo=2
            -lmtmalloc -W2,-Apf:l2subblock=256
            -xprofile
324.apsi_m: -fast -openmp -m64 -xipo=2 -autopar
           -fma=fused -xpagesize=4m -xprefetch=latx:3.4
           -Ooption iropt -Rloop_dist -xprofile
326.gafort_m: -fast -openmp -xprefetch_level=3 -m64
            -fma=fused -xprefetch=latx:0.5 -xprofile
328.fma3d_m: -fast -openmp -autopar -xipo=2 -fma=fused
            -m32 -unroll=5 -xprefetch=latx:4 -lmtmalloc
330.art_m: -fast -xopenmp -xipo=2 -xprefetch_level=3
           -m64 -xprefetch=latx:3 -xprofile
332.amp_m: -fast -xipo=2 -xopenmp -xautopar
           -xalias_level=strong -lm -xpagesize=512K -g

```

### Alternate Source for Base and Peak:

328.fma3d\_m: sqrt.init, avoid a potential race condition.  
 Available as SPEC OMP alternate source:  
 ompm2001-fma3dsqrtinit-20070912.tar.gz

### Alternate Source for Peak:

312.swim\_m: ompl.32 (available in benchmark)  
 316.applu\_m: ompl.32 (available in benchmark)  
 320.quake\_m: ompl.32 (available in benchmark)  
 328.fma3d\_m: ompl.sqrt.init, avoid a potential race condition and  
 incorporates ompl.srcalt. Available as SPEC OMP alternate source:  
 ompm2001-fma3dsqrtinit-20070912.tar.gz

Feedback optimization (-xprofile) is done as follows,  
 unless otherwise noted:

```

fdo_pre0: rm -rf `pwd`/feedback.profile
PASS1:   -xprofile=collect:./feedback
PASS2:   -xprofile=use:./feedback

```

### Base and Peak User Environment Settings:

```

unlimit stacksize (in /bin/csh)
setenv SUNW_MP_PROCBIND " 1 2 4 6 8 10 12 14
 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46
 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78

```



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## Notes/Tuning Information (Continued)

```
80 82 84 86 88 90 92 94 96 98 100 102 104 106 108
110 112 114 116 118 120 122 124 126 "
setenv SUNW_MP_THR_IDLE SPIN
setenv OMP_DYNAMIC FALSE
```

### Additional Peak User Environment Settings:

OMP\_NUM\_THREADS settings per benchmark

```
310.wupwise_m      64
312.swim_m         64
314.mgrid_m       64
316.applu_m        64
318.galgel_m      64
320.equake_m      64
324.apsi_m        127
326.gafort_m      64
328.fma3d_m       64
330.art_m         32
332.ammmp_m       127
```

SUNW\_MP\_PROCBIND was set per benchmark to distribute the work to as many cpus and cores as possible. See config file for details.

For a description of Sun Studio 12 Compiler flags, portability flags and system parameters used to generate this result, please refer to SUN-20080714-Studio-Solaris-sparc.txt file in the flags directory.

This result was measured on Sun SPARC Enterprise M8000.  
The Sun SPARC Enterprise M8000 and the Fujitsu SPARC Enterprise M8000 are electrically equivalent.

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