



# OMPM2001 Result

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Sun Microsystems  
Sun Blade T6340 Server Module

SPECompMpeak2001 = 25952  
SPECompMbase2001 = 21829

SPEC license #HPG0010 | Tested by: Sun Microsystems | Test site: Hillsboro | Test date: Sep-2008 | Hardware Avail: Oct-2008 | Software Avail: Oct-2008

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	163	36787	163	36766
312.swim_m	6000	214	28026	210	28570
314.mgrid_m	7300	356	20489	283	25753
316.applu_m	4000	211	18927	171	23370
318.galgel_m	5100	495	10301	334	15276
320.quake_m	2600	232	11212	122	21361
324.apsi_m	3400	156	21809	150	22596
326.gafort_m	8700	254	34291	230	37883
328.fma3d_m	4600	267	17238	223	20606
330.art_m	6400	94.8	67515	94.3	67848
332.ammp_m	7000	525	13341	480	14569

### Hardware

CPU: UltraSPARC T2 Plus  
 CPU MHz: 1415  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 8 threads/core  
 CPU(s) orderable: 2  
 Primary Cache: 16 KB I + 8 KB D on chip per core  
 Secondary Cache: 4 MB I+D on chip per chip  
 L3 Cache: None  
 Other Cache: None  
 Memory: 128 GB (32 x 4 GB)  
 Disk Subsystem: 1 X 73 GB 15K RPM SAS disk  
 Other Hardware: --

### Software

OpenMP Threads: 127  
 Parallel: OpenMP and Automatic Parallelization  
 Operating System: Solaris 10 10/08  
 Compiler: Sun Studio 12  
 File System: UFS  
 System State: Multi User

## Notes/Tuning Information

#### Base notes:

ONESTEP=yes for all benchmarks in base

C flags: -fast -xopenmp -xalias\_level=std -xipo=2  
 -xprefetch\_level=2 -m64 -lmtmalloc -xprofile

f90 flags: -fast -autopar -openmp -xipo=2 -xprefetch\_level=2  
 -m64 -xprefetch=latx:3 -xprofile

Extra Base C flags: -Xc

328.fma3d\_m srcalt: ompm2001-fma3dsqrtinit-20070912, fix race condition

#### Peak notes:

ONESTEP=yes for all benchmarks in peak

310.wupwise: -fast -autopar -openmp -xipo=2 -m64  
 -xprefetch=latx:3 -xprofile

312.swim: -fast -openmp -autopar -xunroll=7 -m64 -xipo=2  
 -xpagesize=4m -xprefetch=latx:4 -xpad=common:1921  
 -Qoption iropt -Atile:skewp

314.mgrid: -fast -openmp -xipo=2 -xprefetch\_level=3 -m64  
 -xpagesize=4m -xprefetch=latx:3 -xcode=abs32  
 -xunroll=8 -xprofile  
 OMP\_NUM\_THREADS=128



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## Notes/Tuning Information (Continued)

```

SUNW_MP_PROCBIND=true
316.applu: -fast -openmp -autopar -xipo=2 -xprefetch_level=3
           -m64 -xprefetch=latx:4 -xcode=abs32 -xunroll=2
           -xpagesize_heap=4m -xlinkopt=2
           OMP_NUM_THREADS = 80
           SUNW_MP_PROCBIND= 2 3 4 5 6 10 11 12 13 14 18 19 20 21 22
                26 27 28 29 30 34 35 36 37 38 42 43 44 45 46 50 51 52
                53 54 58 59 60 61 62 66 67 68 69 70 74 75 76 77 78 82
                83 84 85 86 90 91 92 93 94 98 99 100 101 102 106 107
                108 109 110 114 115 116 117 118 122 123 124 125 126
318.galgel: -fast -xipo=2 -openmp -autopar -prefetch=latx:3.0
           -xunroll=8 -dbl_align_all=yes -stackvar -xlinkopt=2
           -xlic_lib=sunperf -m64 -xprofile
           RM_SOURCES=lapak.f90
           OMP_NUM_THREADS = 64
           SUNW_MP_PROCBIND= 3 4 5 6 11 12 13 14 19 20 21 22 27 28
                29 30 35 36 37 38 43 44 45 46 51 52 53 54 59 60 61 62
                67 68 69 70 75 76 77 78 83 84 85 86 91 92 93 94 99
                100 101 102 107 108 109 110 115 116 117 118 123 124
                125 126
320.equake: -fast -xopenmp -xipo=2 -xprefetch=latx:2
           -xprefetch_level=3 -m64 -xunroll=4 -lmtmalloc
           -xpagesize=64K -xautopar -xprofile
           srcalt = omp1.32
           OMP_NUM_THREADS = 96
           SUNW_MP_PROCBIND= 1 2 3 4 5 6 9 10 11 12 13 14 17 18 19 20
                21 22 25 26 27 28 29 30 33 34 35 36 37 38 41 42 43 44 45
                46 49 50 51 52 53 54 57 58 59 60 61 62 65 66 67 68 69 70
                73 74 75 76 77 78 81 82 83 84 85 86 89 90 91 92 93 94 97
                98 99 100 101 102 105 106 107 108 109 110 113 114 115
                116 117 118 121 122 123 124 125 126
324.apsi:  -fast -openmp -xipo=2 -m64 -xpagesize=4M
           -xprefetch=latx:5 -xunroll=5 -xprofile
           OMP_NUM_THREADS = 128
           SUNW_MP_PROCBIND= 3 11 19 27 35 43 51 59 67 75 83 91 99
                107 115 123 4 12 20 28 36 44 52 60 68 76 84 92 100 108
                116 124 5 13 21 29 37 45 53 61 69 77 85 93 101 109 117
                125 6 14 22 30 38 46 54 62 70 78 86 94 102 110 118 126
                2 10 18 26 34 42 50 58 66 74 82 90 98 106 114 122 7 15
                23 31 39 47 55 63 71 79 87 95 103 111 119 127 1 9 17
                25 33 41 49 57 65 73 81 89 97 105 113 121 0 8 16 24 32
                40 48 56 64 72 80 88 96 104 112 120
326.gafort: -fast -autopar -openmp -xipo=2 -xprefetch_level=3
           -m64 -xpagesize=4m -xprefetch=latx:5 -xunroll=6
           -dbl_align_all=yes -stackvar -xprofile
           OMP_NUM_THREADS = 127
           SUNW_MP_PROCBIND= 3 11 19 27 35 43 51 59 67 75 83 91 99
                107 115 123 4 12 20 28 36 44 52 60 68 76 84 92 100 108
                116 124 5 13 21 29 37 45 53 61 69 77 85 93 101 109 117
                125 6 14 22 30 38 46 54 62 70 78 86 94 102 110 118 126
                2 10 18 26 34 42 50 58 66 74 82 90 98 106 114 122 7 15
                23 31 39 47 55 63 71 79 87 95 103 111 119 127 1 9 17
                25 33 41 49 57 65 73 81 89 97 105 113 121 0 8 16 24 32
                40 48 56 64 72 80 88 96 104 112 120
328.fma3d: -fast -autopar -openmp -xipo=2 -xprefetch_level=3

```



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```

-xprefetch=latx:4 -m64 -xcode=abs32 -xprofile
srcalt = ompl.32.sqrt.init
ompm2001-fma3dsqrtinit-20070912, fix race condition
330.art: -fast -xopenmp -xautopar -xipo=2 -m64 -xprofile
OMP_NUM_THREADS = 127
SUNW_MP_PROCBIND= 3 11 19 27 35 43 51 59 67 75 83 91 99
107 115 123 4 12 20 28 36 44 52 60 68 76 84 92 100 108
116 124 5 13 21 29 37 45 53 61 69 77 85 93 101 109 117
125 6 14 22 30 38 46 54 62 70 78 86 94 102 110 118 126
2 10 18 26 34 42 50 58 66 74 82 90 98 106 114 122 7 15
23 31 39 47 55 63 71 79 87 95 103 111 119 127 1 9 17
25 33 41 49 57 65 73 81 89 97 105 113 121 0 8 16 24 32
40 48 56 64 72 80 88 96 104 112 120
332.ammp: -fast -xipo=2 -xopenmp -xalias_level=strong -lm
-xprefetch=latx:2 -xlinkopt=2 -xpagesize_stack=8K
-xpagesize_heap=4M
-xprefetch_auto_type=indirect_array_access

```

### Other notes:

```

318.galgel_m portability flags: -e -fixed
330.art_m extra flags: -DINTS_PER_CACHELINE=16 -DDBLS_PER_CACHELINE=8

```

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

```

The following user environment was used for base and peak runs except as previously noted:

```

ulimit -s 32768 (in /bin/sh)
export OMP_DYNAMIC=FALSE
export OMP_NUM_THREADS=127
export SUNW_MP_PROCBIND="1-127"
export SUNW_MP_THR_IDLE=SPIN
export STACKSIZE=16384

```

### /etc/system parameters:

```

autoup=600
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=10
Controls how many seconds elapse between runs of the
page flush daemon, fsflush.
tsb_rss_factor=128
Suggests that the the size of the TSB (Translation Storage Buffer)
may be increased if it is more than 25% (128/512) full. Doing so
may reduce TSB traps, at the cost of additional kernel memory.

```

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



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## Notes/Tuning Information (Continued)

Sun Studio compiler patches are available at  
The tested configuration included patch 124867-07,  
124861-08, 124863-07, 127000-06

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.