



# OMPM2001 Result

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Oracle Corporation  
Sun Server X3-2 (Intel Xeon E5-2690 2.9GHz)

SPECompMpeak2001 = 105601  
SPECompMbase2001 = 89090

SPEC license #HPG0010 Tested by: Oracle Corporation Test site: Santa Clara Test date: Apr-2012 Hardware Avail: Apr-2012 Software Avail: Jun-2012

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	42.2	142066	41.1	145818
312.swim_m	6000	79.8	75201	74.6	80395
314.mgrid_m	7300	77.3	94424	73.5	99277
316.applu_m	4000	48.7	82181	47.3	84653
318.galgel_m	5100	87.3	58432	46.8	109019
320.earthquake_m	2600	33.6	77390	21.2	122880
324.apsi_m	3400	44.6	76201	39.5	86133
326.gafort_m	8700	97.3	89433	95.0	91557
328.fma3d_m	4600	72.2	63695	62.9	73146
330.art_m	6400	22.1	289953	16.7	383799
332.ammp_m	7000	118	59474	112	62324

**Software**

OpenMP Threads: 32  
Parallel: OpenMP and Automatic parallel  
Operating System: Oracle Solaris 11 11/11 (SRU 02)  
Compiler: C/C++/Fortran: Version 12.3 of Oracle Solaris Studio (patch update 1, tested with nightly build 20120313)  
File System: zfs  
System State: Default

**Hardware**

CPU: Intel Xeon E5-2690  
CPU MHz: 2900  
FPU: Integrated  
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core  
CPU(s) orderable: 1,2 chips  
Primary Cache: 32 KB I + 32 KB D on chip per core  
Secondary Cache: 256 KB I+D on chip per core  
L3 Cache: 20 MB I+D on chip per chip  
Other Cache: None  
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)  
Disk Subsystem: 1 x 300 GB 10K RPM SAS  
Other Hardware: None

## Notes/Tuning Information

### Compiler Invocation:

C : cc  
F90 : f90  
F77 : f90

FDO: PASS1= -xprofile=collect:./feedback PASS2= -xprofile=use:./feedback  
fdo\_pre0: rm -rf ./feedback.profile

### Base tuning:

Fortran : -fast -xtarget=nehalem -xarch=generic -xipo=2 -xopenmp -xautopar  
-xvector=lib -m64 -lmtmalloc +FDO  
C : -fast -xtarget=nehalem -fns=no -xdepend=no -m64 -xopenmp -lmvec +FDO  
ONESTEP=yes

### Peak tuning:

ONESTEP=yes for all peak tests.

310.wupwise\_m : -fast -xtarget=nehalem -xpagesize=2M -xarch=generic -xautopar  
-xopenmp -xipo=2 -xprefetch -xprefetch\_level=3 -m64 +FDO  
ENV\_SUNW\_MP\_PROCBIND=0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
ENV\_OMP\_NUM\_THREADS=16

312.swim\_m : -fast -xtarget=nehalem -xpagesize=2M -xmodel=medium



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## Notes/Tuning Information (Continued)

```

-Qoption ube -fsimple=3 -xipo=2 -m64 -xvector=simd -xopenmp +FDO
srcalt = ompl.32
ENV_SUNW_MP_PROCBIND=0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
ENV_OMP_NUM_THREADS=16

314.mgrid_m      : -fast -xtarget=nehalem -xopenmp -xautopar -xipo=2 -xprefetch
                  -xprefetch_level=3 -m64 +FDO
                  ENV_SUNW_MP_PROCBIND=0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
                  ENV_OMP_NUM_THREADS=16

316.apflu_m      : -fast -xtarget=nehalem -xpagesize=2M -xarch=generic -xipo=2
                  -xopenmp -xautopar -m64 +FDO

318.galgel_m     : -O3 -xtarget=nehalem -xpagesize=2M -xipo=2 -xvector=simd -m64 -xopenmp
                  -xlic_lib=sunperf
                  RM_SOURCES=lapak.f90
                  srcalt = dlamch
                  ENV_SUNW_MP_PROCBIND=0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
                  ENV_OMP_NUM_THREADS=16

320.equake_m     : -fast -xtarget=nehalem -fns=no -xalias_level=layout -xdepend=no
                  -m64 -xopenmp +FDO
                  srcalt = ompl.32
                  ENV_SUNW_MP_PROCBIND=0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
                  ENV_OMP_NUM_THREADS=16

324.apsi_m       : -fast -xtarget=nehalem -xipo=2 -m64 -xprefetch_level=3 -xvector
                  -xopenmp -lmtmalloc +FDO
                  srcalt = ompl.32
                  ENV_SUNW_MP_PROCBIND=0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
                  ENV_OMP_NUM_THREADS=16

326.gafort_m     : -fast -xtarget=nehalem -xipo=1 -xpagesize=2M -xarch=generic
                  -xopenmp -xautopar -m64 +FDO

328.fma3d_m      : -fast -xtarget=nehalem -xipo=2 -m64 -xvector=simd -xopenmp +FDO
                  srcalt = ompl.32

330.art_m        : -fast -xtarget=nehalem -xipo=2 -m64 -xpagesize=2M -xopenmp +FDO
                  ENV_SUNW_MP_PROCBIND=0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
                  ENV_OMP_NUM_THREADS=16

332.ampm_m       : -fast -xtarget=nehalem -fns=no -xdepend=no -xpagesize=2M -m64
                  -xopenmp +FDO

```

### Portability flags:

318.galgel\_m : -e -fixed

### Extra art allowed flags:

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

### Base and Peak User Environment:

```

export OMP_NUM_THREADS=32
export SUNW_MP_PROCBIND=TRUE
export SUNW_MP_THR_IDLE=SPIN

```



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## Notes/Tuning Information (Continued)

```
export OMP_NESTED=FALSE
export STACKSIZE=16384
export OMP_DYNAMIC=TRUE
ulimit -s unlimited
```

```
/etc/system parameters
autoup=1000
zfs:zfs_arc_max=0x400000000
zfs:zfs_arc_min=0x400000000
ncsize=0x10000
lpg_alloc_prefer=1
```

For a description of Oracle Studio Solaris 12.3 flags, portability flags and system parameters used to generate this result, please refer to Oracle-Studio-Solaris-X86\_64-20120731.txt file in the flags directory.

### BIOS settings notes:

Energy Performance set to Performance  
Intel Hyper-Threading Technology (SMT): Enabled (default is Enabled)  
Intel Turbo Boost Technology (Turbo) : Enabled (default is Enabled) (Max 3.8GHz)

Oracle's Sun Server X3-2 was formerly known as the Sun Fire X4170 M3