



# OMPM2001 Result

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## SGI

SGI Altix 4700 Bandwidth System (1600MHz 24M L3, DC Itanium2 9050)

SPECompMpeak2001 = 46444

SPECompMbase2001 = 44161

SPEC license #HPG0014 | Tested by: SGI | Test site: SGI | Test date: Jun-2006 | Hardware Avail: Jul-2006 | Software Avail: Jul-2006

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	123	48654	123	48654	
312.swim_m	6000	62.8	95598	62.8	95598	
314.mgrid_m	7300	106	68739	106	68739	
316.applu_m	4000	49.5	80859	49.5	80859	
318.galgel_m	5100	272	18754	272	18754	
320.earthquake_m	2600	80.7	32217	59.3	43850	
324.apsi_m	3400	79.6	42693	73.9	46024	
326.gafort_m	8700	284	30641	264	32943	
328.fma3d_m	4600	165	27921	149	30811	
330.art_m	6400	47.0	136205	47.0	136205	
332.ammp_m	7000	437	16032	437	16032	

### Hardware

CPU: Intel DC Itanium2 Processor 9050 (533 MHz FSB)  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 32 cores, 16 chips, 2 cores/chip (Hyper-Threading Technology disabled)  
 CPU(s) orderable: 1-512 chips  
 Primary Cache: 16KBI + 16KBD (on chip) per core  
 Secondary Cache: 1MBI + 256KBD (on chip) per core  
 L3 Cache: 12.0MB (on chip) per core  
 Other Cache: N/A  
 Memory: 128 GB (8\*1GB PC2-3200 DIMMS per 1-chip module)  
 Disk Subsystem: 1 x 147 GB SCSI (Seagate Cheetah 10k rpm)  
 Other Hardware: None

### Software

OpenMP Threads: 32  
 Parallel: OpenMP  
 Operating System: SUSE Linux Enterprise Server 10 + SGI ProPack(TM) 5  
 Compiler: Intel(R) Fortran Compiler for Linux 9.0 (Build 20060223)  
 Intel(R) C++ Compiler for Linux 9.0 (Build 20060223)  
 File System: xfs  
 System State: Multi-user

## Notes/Tuning Information

### Baseline optimization flags:

C programs: -openmp -O3 -IPF\_fp\_relaxed -ipo -ansi\_alias -auto\_ilp32 (ONESTEP)  
 OpenMP runtime library libguide.a statically linked  
 Fortran programs: -openmp -O3 -IPF\_fp\_relaxed -ipo (ONESTEP)  
 OpenMP runtime library libguide.a statically linked

### Portability Flags:

318.galgel\_m: -FI -132

### Extra Flags:

330.art\_m: -DINTS\_PER\_CACHELINE=32 -DDBLS\_PER\_CACHELINE=16

### User environment:

OMP\_NUM\_THREADS 32  
 limit stacksize 64000  
 KMP\_STACKSIZE 31M  
 KMP\_LIBRARY TURNAROUND  
 OMP\_DYNAMIC FALSE  
 KMP\_SCHEDULE static,balanced

### Peak optimization flags:

310.wupwise\_m: basepeak=true



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## Notes/Tuning Information (Continued)

```
312.swim_m: basepeak=true
314.mgrid_m: basepeak=true
316.applu_m: basepeak=true
318.galgel_m: basepeak=true
320.quake_m: -openmp -O3 -IPF_fp_relaxed -ipo -ansi_alias -auto_ilp32 (ONESTEP)
OpenMP runtime library libguide.a statically linked
324.apsi_m: -openmp -O3 -IPF_fp_relaxed -ipo (ONESTEP)
OpenMP runtime library libguide.a statically linked
326.gafort_m: -openmp -O3 -IPF_fp_relaxed -ipo (ONESTEP)
OpenMP runtime library libguide.a statically linked
328.fma3d_m: -openmp -O3 -IPF_fp_relaxed -ipo (ONESTEP)
OpenMP runtime library libguide.a statically linked
330.art_m: basepeak=true
332.amp_m: basepeak=true
```

### Required alternate sources:

Add critical region around update of linked list in parallel loop.  
Approved src.alt available as ompm-purdue1-20040324.tar.gz  
Used for 330.art\_m, base and peak.

### Peak sources:

SPEC OMPL2001 source for 64bit systems modified for SPEC OMPM2001.  
Available as ompl src.alt in SPEC OMP v3.0  
Used for 320.quake\_m, 324.apsi\_m, 326.gafort\_m, and 328.fma3d\_m.

For all benchmarks threads were bound to cores using the following submit command:

```
dplace -x2 -cNTM1,0 $command,
where NTM1 is the number of threads minus 1.
This binds threads in order of creation, beginning with the master
thread on core NTM1, the first slave thread on core NTM1-1, and so on.
The -x2 flag instructs dplace to skip placement of the lightweight
OpenMP monitor thread, which is created prior to the slave threads.
```

For a description of SGI's compiler flags, portability flags, and system parameters used to generate this result, please refer to the SGI-20061229-Linux-Intel9.0-IPF.txt file in the flags directory.