



# OMPL2001 Result

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## SGI

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

SPECompLpeak2001 = --

SPECompLbase2001 = 863761

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
311.wupwise_1	9200	196	752311		
313.swim_1	12500	128	1568216		
315.mgrid_1	13500	253	853596		
317.applu_1	13500	299	721345		
321.equake_1	13000	494	421300		
325.apsi_1	10500	172	977450		
327.gafort_1	11000	344	511302		
329.fma3d_1	23500	632	595305		
331.art_1	25000	136	2939261		

### Hardware

CPU: Intel DC Itanium2 Processor 9050 (533 MHz FSB)  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 128 cores, 64 chips, 2 cores/chip (Hyper-Threading Technology disabled)  
 CPU(s) orderable: 2-1024 cores  
 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: 512 GB (8\*1G PC2-3200 DIMMS per 2 core module)  
 Disk Subsystem: 1 x 147 GB SCSI (Seagate Cheetah 10k rpm)  
 Other Hardware: None

### Software

OpenMP Threads: 128  
 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 (ONESTEP)  
 Fortran programs: -openmp -O3 -IPF\_fp\_relaxed -ipo (ONESTEP)  
 OpenMP runtime library libguide.a statically linked

Extra Flags:

331.art\_1: -DINTS\_PER\_CACHELINE=32 -DDBLS\_PER\_CACHELINE=16

User environment:

```
OMP_NUM_THREADS 128
limit stacksize 128000
KMP_STACKSIZE 124M
KMP_LIBRARY TURNAROUND
OMP_DYNAMIC FALSE
KMP_SCHEDULE static,balanced
```

Required alternate sources:

Add critical region around update of linked list in parallel loop.  
 Approved src.alt available as ompl-purdue1-20040324.tar.gz  
 Used for 331.art\_1, base.

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

```
dplace -x2 -e -cNTM1,0 $command,
where NTM1 is the number of threads minus 1.
```



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## Notes/Tuning Information (Continued)

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. System was configured to 64 chips by disabling extra chips at PROM.

For a description of SGI's compiler flags, portability flags, and system parameters used to generate this result, please refer to the SGI-20060719-Linux-Intel9.0-IPF.txt file in the flags directory.