



OMPM2001 Result

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Fujitsu Limited
PRIMEPOWER HPC2500 (2.08GHz)

SPECompMpeak2001 = 53901
SPECompMbase2001 = 50609

SPEC license #HPG0003 | Tested by: Fujitsu Limited | Test site: Numazu, Japan | Test date: Aug-2004 | Hardware AvailJun-2004 | Software AvailSep-2004

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	82.1	73045	80.6	74400	
312.swim_m	6000	138	43563	137	43761	
314.mgrid_m	7300	166	44023	166	44023	
316.applu_m	4000	26.7	150067	26.8	149311	
318.galgel_m	5100	204	24987	201	25324	
320.earthquake_m	2600	76.1	34170	52.0	49960	
324.apsi_m	3400	34.5	98409	34.2	99372	
326.gafort_m	8700	151	57577	144	60278	
328.fma3d_m	4600	153	29985	137	33657	
330.art_m	6400	57.6	111077	57.6	111077	
332.ammp_m	7000	425	16468	380	18401	

Hardware

CPU: SPARC64 V
 CPU MHz: 2080
 FPU: Integrated
 CPU(s) enabled: 64 cores, 64 chips, 1 core/chip
 CPU(s) orderable: 8 to 128
 Primary Cache: 128KBI+128KBD on chip
 Secondary Cache: 4MB(I+D) on chip, per core
 L3 Cache: None
 Other Cache: None
 Memory: 256GB
 Disk Subsystem: 1x 73GB Ultra SCSI
 Other Hardware: None

Software

OpenMP Threads: 63
 Parallel: OpenMP
 Operating System: Solaris 8
 Fujitsu Parallelnavi 2.3 (NQS, CPU scheduler, largepage)
 Compiler: Fujitsu Parallelnavi 2.4 (C & F90)
 File System: ufs
 System State: Multi-user

Notes/Tuning Information

Baseline flags:

C: -KOMP,fast_GP2=2,V9,hardbarrier,largepage=1,prefetch=2
 preex,a8,mfunc,ilfunc -O5 -x-
 F90: -KOMP,fast_GP2=2,V8PLUS,hardbarrier,largepage=1,prefetch_line=4,
 prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack

Base User Environment:

ENV_OMP_NUM_THREADS = 62

Portability Flags:

318.galgel_m: -Am -Fixed -w
 328.fma3d_m: -Am

Extra Flags:

330.art_m: -DINTS_PER_CACHELINE=16 -DDBLS_PER_CACHELINE=8

Peak Optimization Flags:

310.wupwise_m:
 F90: -KOMP,fast_GP2=2,V8PLUS,hardbarrier,largepage=1,prefetch_line=7,
 prefetch_cache_level=3,mfunc=2,ilfunc -O5 -Nautoobjstack



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Notes/Tuning Information (Continued)

```
312.swim_m:
  F90: -KOMP,fast_GP2=2,V9,hardbarrier,largepage=1,prefetch_line=7,
        prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
316.applu_m:
  F90: -KOMP,fast_GP2=2,V8PLUS,hardbarrier,largepage=1,prefetch_line=4,
        prefetch_cache_level=3,mfunc=2,bcopy -O5 -Nautoobjstack
318.galgel_m:
  F90: -KOMP,fast_GP2=2,V8PLUS,hardbarrier,largepage=1,prefetch_line=4,
        prefetch_cache_level=3,mfunc=2 -x70 -O5 -Nautoobjstack
326.gafort_m:
  F90: -KOMP,fast_GP2=2,V8PLUS,hardbarrier,largepage=1,prefetch_line=4,
        prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
        -Kunroll=4
328.fma3d_m:
  F90: -KOMP,fast_GP2=2,V8PLUS,hardbarrier,largepage=1,prefetch_line=6,
        prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
        -Kcommonpad=8,prefetch_infer
332.ammp_m:
  C: -KOMP,fast_GP2=2,V8PLUS,hardbarrier,largepage=1,prefetch=2,preex
```

Alternate sources:

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

Peak sources:

SPEC OMPL2001 source for 32bit systems modified for SPEC OMPM2001.
Available as ompl src.alt in the SPEC OMP v3.0 release.
Used for 316.applu_m, 320.earthquake_m, 324.apsi_m, 326.gafort_m, and 328.fma3d_m.

System tunables:

```
/etc/system:
  set shmsys:shminfo_shmmax=2147483648
  set shmsys:shminfo_shmmni=256
  set shmsys:shminfo_shmseg=256
  set autoup=172800
  set memscrub_period_sec=345600
```

```
/etc/opt/FJSVpnrmlpg.conf:
  JOB=192G,SHMSEGSIZE=2048M
```

```
/etc/opt/FJSVpnrmlcpursc.conf:
  CPU_USE=0:0
```

NQS:

```
Per-process data size limit = UNLIMITED
Per-process permanent file size limit = UNLIMITED
Per-process memory size limit = 128 gigabytes
Per-request memory size limit = 128 gigabytes
Per-process number of cpus limit = 63
Per-process stack size limit = 4 gigabytes
Per-process CPU time limit = 2147483646.000
Execution mode = SImplex
Jobclass = 0
```

Submitting the runspec to NQS:

Run the qsub command with the following sh script.



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Notes/Tuning Information (Continued)

```
cd /spec/omp2001
. ./shrc
OMP_NUM_THREADS=63
export OMP_NUM_THREADS
runspec --config=Fujitsu --reportable --tune=all medium
```