OMPM2001 Result

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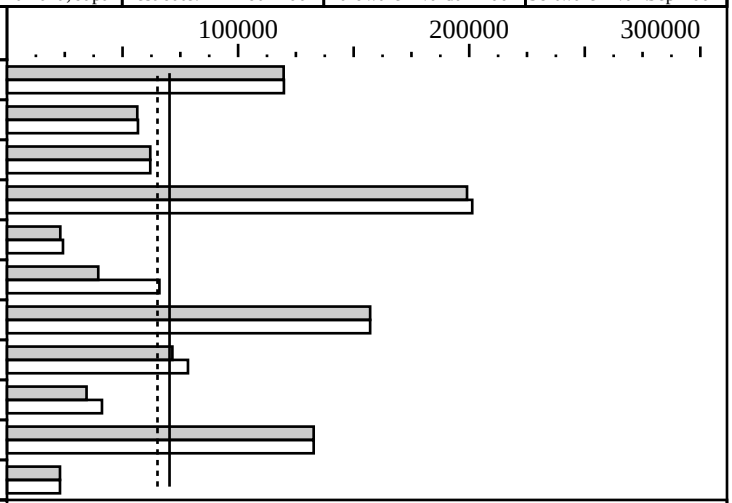
Fujitsu Limited
PRIMEPOWER HPC2500 (2.08GHz)

SPECompMpeak2001 = 70329

SPECompMbase2001 = 65119

SPEC license #HPG0003	Tested by: Fujitsu Limited	Test site: Numazu, Japan	Test date: Jul-2004	Hardware Avail: Jun-2004	Software Avail: Sep-2004

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	50.1	119705	50.1	119817
312.swim_m	6000	106	56373	106	56668
314.mgrid_m	7300	118	61990	118	61990
316.applu_m	4000	20.1	199049	19.9	201303
318.galgel_m	5100	221	23063	211	24221
320.equake_m	2600	65.8	39489	39.4	65948
324.apsi_m	3400	21.6	157130	21.6	157130
326.gafort_m	8700	122	71562	111	78307
328.fma3d_m	4600	134	34420	112	41094
330.art_m	6400	48.2	132697	48.2	132697
332.ammp_m	7000	305	22927	305	22927



Hardware

CPU:	SPARC64 V
CPU MHz:	2080
FPU:	Integrated
CPU(s) enabled:	128 cores, 128 chips, 1 core/chip
CPU(s) orderable:	8 to 128
Primary Cache:	128KBI+128KBD on chip
Secondary Cache:	4MB(I+D) on chip, per CPU
L3 Cache:	None
Other Cache:	None
Memory:	512GB
Disk Subsystem:	1x 36GB Ultra SCSI
Other Hardware:	None

Software

OpenMP Threads:	124
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,V9,hardbarrier,largepage=1,prefetch_line=4,
           prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack

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,V9,hardbarrier,largepage=1,prefetch_line=7,
          prefetch_cache_level=3,mfunc=2,ilfunc -O5 -Nautoobjstack
 312.swim_m:
     F90: -KOMP,fast_GP2=2,V9,hardbarrier,largepage=1,prefetch_line=7,
          prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
```

Notes/Tuning Information (Continued)

```
    316.applu_m:
        F90: -KOMP,fast_GP2=2,V9,hardbarrier,largepage=1,prefetch_line=4,
             prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
             -Kunroll=4
    318.galgel_m:
        F90: -KOMP,fast_GP2=2,V9,hardbarrier,largepage=1,prefetch_line=8,
             prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
             -Kunroll=4,commonpad=16
    326.gafort_m:
        F90: -KOMP,fast_GP2=2,V9,hardbarrier,largepage=1,prefetch_line=4,
             prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
             -Kunroll=4
    328.fma3d_m:
        F90: -KOMP,fast_GP2=2,V9,hardbarrier,largepage=1,prefetch_line=6,
             prefetch_cache_level=3,mfunc=2 -O5 -Nautoobjstack
             -Kcommonpad=8,prefetch_infer

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 64bit systems modified for SPEC OMPM2001.
Available as ompl src.alt in the SPEC OMP v3.0 release.
Used for 320.equake_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/FJSVpnrm/lpg.conf:
        JOB=408G,SHMSEGSIZE=2048M
    /etc/opt/FJSVpnrm/cpursc.conf:
        CPU_USE=0,1:0,1
    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 = 126
        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.

        cd /spec/omp2001
        . ./shrc
```

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Notes/Tuning Information (Continued)

```
OMP_NUM_THREADS=124
export OMP_NUM_THREADS
runspec --config=Fujitsu --reportable --tune=all medium
```