



OMPM2001 Result

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Hewlett-Packard Company
AlphaServer GS1280 Model M16

SPECompMpeak2001 = 20637

SPECompMbase2001 = 17724

SPEC license #HPG2116 Tested by: Hewlett-Packard Company Test site: Hewlett-Packard Company Test date: Dec-2002 Hardware Avail: Jan-2003 Software Avail: Jan-2003

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	293	20483	180	33423	
312.swim_m	6000	89.0	67389	88.7	67638	
314.mgrid_m	7300	241	30235	236	30937	
316.applu_m	4000	167	24009	155	25794	
318.galgel_m	5100	340	14980	344	14808	
320.earthquake_m	2600	202	12843	192	13519	
324.apsi_m	3400	242	14044	228	14898	
326.gafort_m	8700	514	16936	463	18799	
328.fma3d_m	4600	341	13480	303	15205	
330.art_m	6400	565	11324	264	24250	
332.ammp_m	7000	904	7746	903	7753	

Hardware

CPU: Alpha 21364
 CPU MHz: 1150
 FPU: Integrated
 CPU(s) enabled: 16
 CPU(s) orderable: 2 to 16 by 2
 Primary Cache: 64KB(I)+64KB(D) on chip
 Secondary Cache: 1.75MB on chip per CPU
 L3 Cache: None
 Other Cache: None
 Memory: 64GB
 Disk Subsystem: 36GB 10k rpm ufs
 Other Hardware: None

Software

OpenMP Threads: 16
 Parallel: OpenMP
 Operating System: Tru64 UNIX V5.1B (Rev 2650) + IPK
 Compiler: Compaq Fortran X5.5-2602-48C8L
 Compaq C V6.5-011-48C5K
 BETA DCPI - 3.9.6 (20020307 1815)
 SPIKE V5.2 (503DTK) GEM 48C5S LIBMLD 2.4 DATE APR 9 2002

File System: ufs
 System State: Multi-user

Notes/Tuning Information

Base:

```
cc -arch ev7 -fast -omp -O4
f90 -arch ev7 -fast -omp -O5
```

Peak:

All use -arch ev7 -omp ONESTEP

Individual benchmark tuning:

```
310.wupwise_m: f90 -call_shared -inline all -unroll 12 -align commons +PFB
312.swim_m: f90 -arch ev7 -fast -omp -O5
314.mgrid_m: f90 -O5 -transform_loops -tune ev7 -unroll 8 +PFB
316.applu_m: f90 -fast -O5 -unroll 14 +PFB
318.galgel_m: f90 -fast -O5 -unroll 5 -extend_source +PFB
320.earthquake_m: cc -fast -call_shared -O4 -ldensemalloc -assume restricted_pointers -inline speed -unroll 13 +PFB
324.apsi_m: f90 -O5 -transform_loops -unroll 8 +PFB
326.gafort_m: f90 -fast -O5 -arch ev67 -tune ev67
328.fma3d: f90 -O4 -transform_loops
330.art_m: cc -assume whole_program -ldensemalloc -call_shared -assume restricted_pointers -fast -O4 -unroll 16 -inline none +PFB
332.ammp_m: cc -O4 -ifo -assume nomath_errno -assume trusted_short_alignment -fp_reorder -readonly_strings -ldensemalloc -assume restricted_pointers -unroll 9
```

Portability:

318.galgel_m: -exend_source used in base and peak.

Peak Source:

Available as SPEC OPM source: ompm2001-src132bit-20020831.tar.gz



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Notes/Tuning Information (Continued)

For 310.wupwise_m, 312.swim_m, 314.mgrid_m, 316.applu_m, 320.earthquake_m, 324.apsi-m, 326.gafort_m, and 328.fma3d_m

Available as SPEC OPM source: `ompm2001-isoc-20020619.tar.gz`
For 330.art_m

User Environment:

```
MP_STACK_SIZE = 10000000
OMP_NUM_THREADS=16
PTHREAD_CONFIG=feature=def-scs,d4-scs
no processor set used (man processor_sets)
```

System tunables:

8Kb pages used - default

Description of +PFB: Prefetches are improved by the post-link-time optimizer Spike, using feedback from a training run. These commands are used (in phase "fdo_post_makeN"):

```
rm -rf db
mkdir db
dcpid -no_palcode ./db
```

A training run is carried out (in phase "fdo_runN"), and then these commands (in phase "fdo_postN"):

```
dcpiquit
dcpibbb -make-bbdb -pm all -counts -conf_low -db ./db ${baseexe}
spike ${baseexe} -feedback ${baseexe} -o newexe
rm ${baseexe}
mv newexe ${baseexe}
```

Information on UNIX V5.1 Patches can be found at <http://www.support.compaq.com/patches>

Information on DCPI and SPIKE can be found at <http://www.tru64unix.compaq.com/dtk>