



# OMPM2001 Result

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Hewlett-Packard Company  
hp server rx8620 (1500 MHz Itanium 2)

SPECompMpeak2001 = 12762

SPECompMbase2001 = 11847

SPEC license #HPG2116 | Tested by: Hewlett-Packard Company | Test site: Richardson, Texas | Test date: Oct-2003 | Hardware Avail: Nov-2003 | Software Avail: Oct-2003

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio	
310.wupwise_m	6000	472	12720	438	13696	
312.swim_m	6000	229	26169	229	26169	
314.mgrid_m	7300	519	14066	519	14066	
316.applu_m	4000	178	22506	167	23995	
318.galgel_m	5100	581	8770	482	10591	
320.earthquake_m	2600	256	10143	240	10823	
324.apsi_m	3400	247	13749	211	16079	
326.gafort_m	8700	995	8744	995	8744	
328.fma3d_m	4600	659	6980	532	8649	
330.art_m	6400	533	12017	533	12017	
332.ammp_m	7000	1025	6826	970	7220	

### Hardware

CPU: Intel Itanium 2  
 CPU MHz: 1500  
 FPU: Integrated  
 CPU(s) enabled: 8  
 CPU(s) orderable: 2 to 16 by 2  
 Primary Cache: L1 Inst/Data: 16 KB, associativity = 4  
 Secondary Cache: L2 Unified: 256 KB, associativity = 8  
 L3 Cache: L3 Unified: 6144 KB, associativity = 24  
 Other Cache: None  
 Memory: 32GB (64 \* 512MB DIMMs)  
 Disk Subsystem: root disk 1x36 SCSI  
 Other Hardware: --

### Software

OpenMP Threads: 8  
 Parallel: OpenMP  
 Operating System: HPUX11i-TCOE B.11.23  
 Compiler: HP C/ANSI C Compiler B.11.23  
 HP aC++ Compiler B.11.23  
 HP Fortran 90 Compiler B.11.23  
 HP LIBF90 PHSS\_29620  
 HP F90 Compiler PHSS\_29663  
 HP aC++ Compiler PHSS\_29655  
 HP C Compiler PHSS\_29656  
 u2comp/be/plugin library PHSS\_29657

File System: vxfs  
 System State: Multi-user

## Notes/Tuning Information

### User environment:

```
MP_IDLE_THREADS_WAIT=-1
OMP_FIRST_USE=0
```

### Portability Flags:

```
318.galgel: +source=fixed +extend_source
```

### Base:

```
F90 +Ofaster +Oopenmp
+Oinfo +DD64 -minshared
cc +Ofaster +Oopenmp +DD64 +Oinfo
-minshared -AOe +Onofltacc
submit = chattr -s +id disable +pd 256k +pi 256k +mergeseg $commandexe; \
_M_ARENA_OPTS=64:32 _M_SBA_OPTS=16348:150:256 \
_M_CACHE_OPTS=32768:256:1024 mpsched -T FILL $command
```

### Peak:

```
310.wupwise_m: +Ofaster +cat +O3 +Oopenmp
+Oinfo +DD64 -minshared -Wl,+pd256k -Wl,+pi256k
ONESTEP = true
submit = chattr -s +id disable $commandexe;
```



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## Notes/Tuning Information (Continued)

`_M_ARENA_OPTS=64:32 mpsched -T FILL $command`

312.swim\_m: basepeak=true

314.mgrid\_m: basepeak=true

316.applu\_m: +Ofaster +Oopenmp +Oinfo  
+DD64 -minshared +DSitanium  
ONESTEP=true  
submit = chatr -s +id disable +pd 256k +pi 256k \$commandexe;  
`_M_ARENA_OPTS=64:32`  
`_M_CACHE_OPTS=32768:256:1024 mpsched -T FILL $command`

318.galgel\_m: +Ofaster +Oopenmp +Oinfo  
+DD64 -minshared +Onodataprefetch +Oloop\_unroll=14  
ONESTEP = true  
submit = chatr -s +id disable +pd 256k +pi 256k \$commandexe;  
`_M_ARENA_OPTS=64:32`  
`_M_CACHE_OPTS=32768:256:1024 mpsched -T FILL $command`

320.equake\_m: +Ofaster +Oopenmp +DD64 +Oinfo  
-minshared -AOe +Onofltacc +Onoparmsoverlap +Odataprefetch=direct  
submit = chatr -s +id disable +pd 64k +pi 64k \$commandexe;  
`_M_ARENA_OPTS=64:32` `_M_CACHE_OPTS=32768:256:1024`  
`mpsched -T FILL $command`

324.apsi\_m: +Ofaster +Oopenmp +Oinfo +DD64 -minshared  
ONESTEP = true  
submit = chatr -s +id enable +pd 4m +pi 4m  
\$commandexe; `_M_ARENA_OPTS=64:32`  
`_M_CACHE_OPTS=32768:256:1024`  
`mpsched -T FILL $command`

326.gafort\_m: basepeak=true

328.fma3d\_m: +Ofaster +Oopenmp +Oinfo +DD64  
-minshared +Oinline\_budget=75  
ONESTEP=true  
submit = chatr -s +id disable +pd 1m +pi 1m  
\$commandexe; `_M_ARENA_OPTS=64:32`  
`_M_CACHE_OPTS=32768:256:1024`  
`mpsched -T FILL $command`

330.art\_m: basepeak=true

332.ammp\_m: +Ofaster +Oopenmp +DD64 +Oinfo  
-minshared -AOe +Onofltacc  
submit = chatr -s +id enable +pd 4m +pi 4m  
\$commandexe; `_M_ARENA_OPTS=64:32`  
`_M_CACHE_OPTS=32768:256:1024`  
`mpsched -T FILL $command`

### Alternate Sources:

hpg.1 C++ compiler compatible sources  
from SPEC Web site `ompm2001-isoc-20020619.tar.gz`



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## Notes/Tuning Information (Continued)

used for Base 320.equake\_m 330.art\_m 332.ammp\_m  
used for Peak 332.ammp\_m

ompl.32 OMPL 32 bit compatible sources  
from SPEC Web site ompm2001-srcl32bit-20020822.tar.gz  
used for Peak 310.wupwise\_m 328.fma3d\_m

Kernel Paramters (/stand/system):  
maxdsiz 0xc0000000  
maxdsiz\_64bit 0x3fffbfffffff  
maxssiz 0x17f00000  
maxssiz\_64bit 0x40000000  
maxtsiz 0x40000000  
maxtsiz\_64bit 0x40000000  
vps\_pagesize 4096  
vps\_ceiling 16384  
dbc\_min\_pct 20  
dbc\_max\_pct 20  
swapmem\_on 0

### Notes:

System was configured with 1/2 of memory interleaved and  
1/2 of memory local to each cell

System configured as a single partition with 4 cells and  
2 processors per cell

Threads were assigned to cpus using the FILL strategy  
from the HP-UX mpsched utility

Memory tuning is documented in man page malloc(3C)

M\_ARENA\_OPTS=64:32  
64 malloc arenas, 32 4k pages expansion

M\_SBA\_OPTS=16348:150:256  
16384 maxfast size, 150 small blocks, 256 grain size

M\_CACHE\_OPTS=32768:256:1024  
32768 bucket\_size: 256 buckets:1024 retirement\_age