



CFP2000 Result

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Hewlett-Packard Company
AlphaServer GS1280 7/1300

SPECfp_rate2000 = 619

SPECfp_rate_base2000 = 470

SPEC license #: 2 | Tested by: HP | Test date: Jun-2004 | Hardware Avail: Aug-2004 | Software Avail: Jul-2004

2000 1500 1000 500				Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
				168.wupwise	32	162	367	32	67.1	885
				171.swim	32	77.3	1488	32	77.3	1488
				172.mgrid	32	227	294	32	149	449
				173.applu	32	124	631	32	114	682
				177.mesa	32	135	385	32	118	442
				178.galgel	32	122	883	32	121	892
				179.art	32	115	841	32	71.8	1344
				183.equake	32	218	221	32	72.6	664
				187.facerec	32	152	464	32	136	519
				188.amp	32	264	309	32	229	356
				189.lucas	32	117	632	32	109	682
				191.fma3d	32	183	425	32	137	570
				200.sixtrack	32	203	201	32	188	217
				301.apsi	32	188	513	32	178	542

Hardware

CPU: Alpha 21364
 CPU MHz: 1300
 FPU: Integrated
 CPU(s) enabled: 32 cores, 32 chips, 1 core/chip
 CPU(s) orderable: 2 to 64
 Parallel: No
 Primary Cache: 64KB(I)+64KB(D) on chip
 Secondary Cache: 1.75MB on chip per CPU
 L3 Cache: None
 Other Cache: None
 Memory: 2GB per CPU; 256MB RIMMs
 Disk Subsystem: AdvFS
 Other Hardware: None

Software

Operating System: Tru64 UNIX V5.1B-1 + PK4
 Compiler: Compaq C V6.5-011-48C5K
 Program Analysis Tools V2.0
 Spike V5.2 (510 USG)
 HP Fortran V5.5A-3548-48D88
 HP Fortran 77 V5.5A-3548-48D88
 KAP Fortran V4.3 000607
 KAP Fortran 77 V4.1 980926
 KAP C V4.1 000607
 File System: MFS, 16GB
 System State: Multi-user

Notes/Tuning Information

Baseline C: cc -arch ev7 -fast -O4 ONESTEP
 Fortran: f90 -arch ev7 -fast -O5 ONESTEP

Peak:

All use -g3 -arch ev7 -non_shared ONESTEP
 except these (which use only the tunings shown below):
 173.applu 188.amp 191.fma3d
 Individual benchmark tuning:
 168.wupwise: kf77 -call_shared -inline all -tune ev67
 -unroll 12 -automatic -align commons -arch ev67
 -fkapargs=' -aggressive=c -fuse
 -fuselevel=1 -so=2 -r=1 -o=1 -interleave
 -ur=6 -ur2=060 ' +PFB
 171.swim: same as base
 172.mgrid: kf90 -call_shared -arch generic -O5 -inline
 manual -nopipeline -transform_loops -unroll 9 -automatic



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Notes/Tuning Information (Continued)

```

-fkparags='-aggressive=a -fuse -interleave
-ur=2 -ur3=5 -cachesize=128,16000 ' +PFB
173.applu: kf90 -O5 -transform_loops
-fkparags=' -o=0 -nointerleave -ur=14
-ur2=260 -ur3=18' +PFB
177.mesa: kcc -fast -O4 +CFB +IFB
178.galgel: f90 -O5 -fast -unroll 5 -automatic
179.art: kcc -assume whole_program -ldensemalloc
-call_shared -assume restricted_pointers
-unroll 16 -inline none -ckparags='
-fuse -fuselevel=1 -ur=3' +PFB
183.equake: cc -call_shared -arch generic -fast -O4
-ldensemalloc -assume restricted_pointers
-inline speed -unroll 13 -xtaso_short +PFB
187.facerec: f90 -O4 -nopipeline -inline all
-non_shared -speculate all -unroll 7
-automatic -assume accuracy_sensitive
-math_library fast +IFB
188.ampp: cc -arch host -O4 -ifo -assume nomath_errno
-assume trusted_short_alignment -fp_reorder
-readonly_strings -ldensemalloc -xtaso_short
-assume restricted_pointers -unroll 9
-inline speed +CFB +IFB +PFB
189.lucas: kf90 -O5 -fkparags='-ur=1' +PFB
191.fma3d: kf90 -O4 -transform_loops -fkparags='-cachesize=128,16000 ' +PFB
200.sixtrack: f90 -fast -O5 -assume accuracy_sensitive
-notransform_loops +PFB
301.apsi: kf90 -O5 -inline none -call_shared -speculate all
-align commons -fkparags=' -aggressive=ab
-tune=ev5 -fuse -ur=1 -ur2=60 -ur3=20
-cachesize=128,16000'

```

Most benchmarks are built using one or more types of profile-driven feedback. The types used are designated by abbreviations in the notes:

+CFB: Code generation is optimized by the compiler, using feedback from a training run. These commands are done before the first compile (in phase "fdo_pre0"):

```

mkdir /tmp/pp
rm -f /tmp/pp/${baseexe}*

```

and these flags are added to the first and second compiles:

```

PASS1_CFLAGS = -prof_gen_noopt -prof_dir /tmp/pp
PASS2_CFLAGS = -prof_use_feedback -prof_dir /tmp/pp

```

(Peak builds use /tmp/pp above; base builds use /tmp/pb.)

+IFB: Icache usage is improved by the post-link-time optimizer Spike, using feedback from a training run. These commands are used (in phase "fdo_postN"):

```

mv ${baseexe} oldexe
spike oldexe -feedback oldexe -o ${baseexe}

```



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Notes/Tuning Information (Continued)

+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 -f *Counts*
mv ${baseexe} oldexe
pixie -stats dstride oldexe 1>pixie.out 2>pixie.err
mv oldexe.pixie ${baseexe}
```

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

```
spike oldexe -fb oldexe -stride_prefetch -o ${baseexe}
```

When Spike is used for both Icache and Prefetch improvements, only one spike command is actually issued, with the Icache options followed by the Prefetch options.

vm:

```
vm_bigpg_enabled = 1
vm_bigpg_thresh = 6
vm_swap_eager = 0
ubc_maxpercent = 50
```

proc:

```
max_per_proc_address_space = 34359738368
max_per_proc_data_size = 34359738368
max_per_proc_stack_size = 34359738368
max_proc_per_user = 2048
max_threads_per_user = 4096
maxusers = 2048
per_proc_address_space = 34359738368
per_proc_data_size = 34359738368
per_proc_stack_size = 34359738368
```

Portability: galgel: -fixed

Information on UNIX V5.1B Patches can be found at <http://ftpl.service.digital.com/public/unix/v5.1b/>

Processes were bound to CPUs using "runon".