



CFP2000 Result

Copyright ©1999-2004, Standard Performance Evaluation Corporation

Hewlett-Packard Company
AlphaServer GS1280 7/1300

SPECfp_rate2000 = 310
SPECfp_rate_base2000 = 235

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

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
168.wupwise	16	161	185	16	67.1	443
171.swim	16	76.8	750	16	76.8	750
172.mgrid	16	225	149	16	149	224
173.applu	16	124	315	16	114	341
177.mesa	16	135	193	16	118	221
178.galgel	16	122	441	16	121	446
179.art	16	114	422	16	71.8	672
183.equake	16	218	111	16	72.8	331
187.facerec	16	152	232	16	136	259
188.amp	16	264	154	16	229	178
189.lucas	16	118	316	16	108	343
191.fma3d	16	183	213	16	137	285
200.sixtrack	16	202	101	16	186	110
301.apsi	16	189	256	16	178	271

Hardware

CPU: Alpha 21364
 CPU MHz: 1300
 FPU: Integrated
 CPU(s) enabled: 16 cores, 16 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



CFP2000 Result

Copyright ©1999-2004, Standard Performance Evaluation Corporation

Hewlett-Packard Company
AlphaServer GS1280 7/1300

SPECfp_rate2000 = 310
SPECfp_rate_base2000 = 235

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

Notes/Tuning Information (Continued)

```

-fkparms='-aggressive=a -fuse -interleave
-ur=2 -ur3=5 -cachesize=128,16000 ' +PFB
173.applu: kf90 -O5 -transform_loops
-fkparms='-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 -ckparms='
-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 -fkparms='-ur=1' +PFB
191.fma3d: kf90 -O4 -transform_loops -fkparms='-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 -fkparms=' -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}

```



CFP2000 Result

Copyright ©1999-2004, Standard Performance Evaluation Corporation

Hewlett-Packard Company
AlphaServer GS1280 7/1300

SPECfp_rate2000 = 310
SPECfp_rate_base2000 = 235

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

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".