



CFP2000 Result

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Hewlett-Packard Company
hp AlphaServer DS25 68/1000

SPECfp_rate2000 = 11.4
SPECfp_rate_base2000 = 9.41

SPEC license #: 2 | Tested by: HP | Test date: Jul-2002 | Hardware Avail: Aug-2002 | Software Avail: Oct-2001

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
168.wupwise	1	236	7.87	1	194	9.56
171.swim	1	204	17.6	1	204	17.6
172.mgrid	1	338	6.17	1	213	9.82
173.applu	1	214	11.4	1	212	11.5
177.mesa	1	175	9.27	1	156	10.4
178.galgel	1	171	19.7	1	172	19.6
179.art	1	145	20.8	1	119	25.4
183.equake	1	374	4.03	1	141	10.7
187.facerec	1	177	12.5	1	171	12.9
188.amp	1	370	6.89	1	313	8.16
189.lucas	1	212	10.9	1	176	13.2
191.fma3d	1	300	8.12	1	227	10.7
200.sixtrack	1	269	4.75	1	245	5.22
301.apsi	1	378	7.98	1	382	7.90

Hardware

CPU: Alpha 21264C
 CPU MHz: 1000
 FPU: Integrated
 CPU(s) enabled: 1 core, 1 chip, 1 core/chip
 CPU(s) orderable: 1 to 2
 Parallel: No
 Primary Cache: 64KB(I)+64KB(D) on chip
 Secondary Cache: 8MB off chip per CPU
 L3 Cache: None
 Other Cache: None
 Memory: 8GB
 Disk Subsystem: 18.2GB SCSI
 Other Hardware: None

Software

Operating System: Tru64 UNIX V5.1A
 Compiler: Compaq C V6.4-215-46B70
 Program Analysis Tools V2.0
 Spike V5.2 DTK (1.471.2.2 46B5P)
 Compaq Fortran V5.4A-1472-46B2F
 Compaq Fortran 77 V5.4A-196-46B2F
 KAP Fortran V4.3 000607
 KAP Fortran 77 V4.1 980926
 KAP C V4.1 000607
 File System: AdvFS
 System State: Multi-user

Notes/Tuning Information

Baseline C: cc -arch ev6 -fast -O4 ONESTEP
 Fortran: f90 -arch ev6 -fast -O5 ONESTEP

Peak:

All use -g3 -arch ev6 -non_shared ONESTEP
 Individual benchmark tuning:
 168.wupwise: kf77 -fast -O4 -pipeline -unroll 2 +PFB
 171.swim: f90 -fast -O5
 172.mgrid: kf77 -O5 -transform_loops -tune ev6 -unroll 8
 173.applu: f90 -fast -O5 +PFB
 177.mesa: cc -fast -O4 +CFB +IFB
 178.galgel: f90 -fast -O5
 179.art: kcc -fast -O4 -unroll 10 -ckapargs='-arl=4 -ur=4' +PFB
 183.equake: cc -fast -xtaso_short -assume restricted_pointers -all -ldensemalloc -none +PFB



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Notes/Tuning Information (Continued)

```

187.facerec: f90 -fast -O4 +PFB
188.ammmp: cc -fast -O4 -xtaso_short -assume
           restricted_pointers
189.lucas: kf90 -O5 -fkapargs='-ur=1' +PFB
191.fma3d: kf90 -O4 -transform_loops +PFB
200.sixtrack: f90 -fast -O5 -assume accuracy_sensitive
             -notransform_loops +PFB
301.apsi: kf90 -O5 -transform_loops -unroll 8
          -fkapargs='-ur=1' +PFB

```

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       -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}

```

+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.

Portability: galgel: -fixed



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Notes/Tuning Information (Continued)

Spike, and the Program Analysis Tools, are part of the Developers' Tool Kit Supplement, <http://www.tru64unix.compaq.com/dtk/>. The features used in this SPEC submission will be available at the web site as a production release in October, 2001. The C compiler for this SPEC submission has been available at the same location, as a production release, since August, 2001.