



CFP2000 Result

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Hewlett-Packard Company
hp AlphaServer DS25 68/1000

SPECfp2000 = 985
SPECfp_base2000 = 812

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

Benchmark	Reference Time	Base Runtime	Base Ratio	Runtime	Ratio	
168.wupwise	1600	236	679	194	824	
171.swim	3100	204	1518	204	1519	
172.mgrid	1800	338	532	213	847	
173.applu	2100	214	980	212	989	
177.mesa	1400	175	799	156	895	
178.galgel	2900	171	1695	172	1691	
179.art	2600	145	1794	119	2192	
183.quake	1300	374	347	141	922	
187.facerec	1900	177	1075	171	1112	
188.amp	2200	370	594	313	704	
189.lucas	2000	212	942	176	1134	
191.fma3d	2100	300	700	227	923	
200.sixtrack	1100	269	410	245	450	
301.apsi	2600	378	688	382	681	

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.quake: 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.