Hewlett-Packard Company
hp AlphaServer DS25 68/1000

SPECint_rate2000 = 7.86
SPECint_rate_base2000 = 7.17

Baseline C : cc -arch ev6 -fast +CFB ONESTEP
C++: cxx -arch ev6 -O2 ONESTEP

Peak:
All but 252.eon: cc -q3 -arch ev6 ONESTEP
164.gzip: -fast -04 -non_shared +CFB
175.vpr: -fast -04 -assume restricted_pointers +CFB
176.gcc: -fast -04 -xtaso_short -all -ldensemalloc -none +CFB +IFB
181.mcf: -fast -xtaso_short +CFB +IFB +PFB
186.crafty: same as base
197.parser: -fast -04 -xtaso_short -non_shared +CFB
252.eon: cxx -arch ev6 -02 -all -ldensemalloc -none
253.perlbmk: -fast -non_shared +CFB +IFB
254.gap: -fast -non_shared +CFB +IFB
255.vortex: -fast -non_shared +CFB +IFB
256.bzip2: -fast -04 -non_shared +CFB
300.twolf: -fast -04 -assume restricted_pointers -all -ldensemalloc -none +CFB +IFB

Notes/Tuning Information

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 V6.4-215-46B7O
Program Analysis Tools V2.0
Spike V5.2 DTK (1.471.2.2 46B5P)
Compaq C++ V6.3-010-46B2F
File System: AdvFS
System State: Multi-user

Notes/Tuning Information
Notes/Tuning Information (Continued)

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: gcc: -Dalloca=__builtin_alloca; crafty: -DALPHA
perlbmk: -DSPEC_CPU2000_DUNIX; vortex: -DSPEC_CPU2000_LP64
gap: -DSYS_HAS_CALLOC_PROTO -DSYS_IS_BSD -DSYS_HAS_IOCTL_PROTO -DSPEC_CPU2000_LP64

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.