Hewlett-Packard Company
hp AlphaServer DS25 68/1000

SPECfp2000 = 985
SPECfp_base2000 = 812

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.equake | 1300 | 374 | 347 | 141 | 922
187.facercc | 1900 | 177 | 1075 | 171 | 1112
188.ammp | 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

Software
- Operating System: Tru64 UNIX V5.1A
- Compiler:
  - Compaq C V6.4-215-46B70
  - Program Analysis Tools V2.0
  - Spike V5.2 DTK (1.471.2.46B5P)
  - 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 +PFB
  - 183.equake: cc -fast -xtaso_short -assume
    restricted_pointers = all -ldensemalloc -none +PFB
Notes/Tuning Information (Continued)

187.facerec: f90 -fast -O4 +PFB
188.ammp: 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
Hewlett-Packard Company
hp AlphaServer DS25 68/1000

SPECfp2000 = 985
SPECfp_base2000 = 812

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.