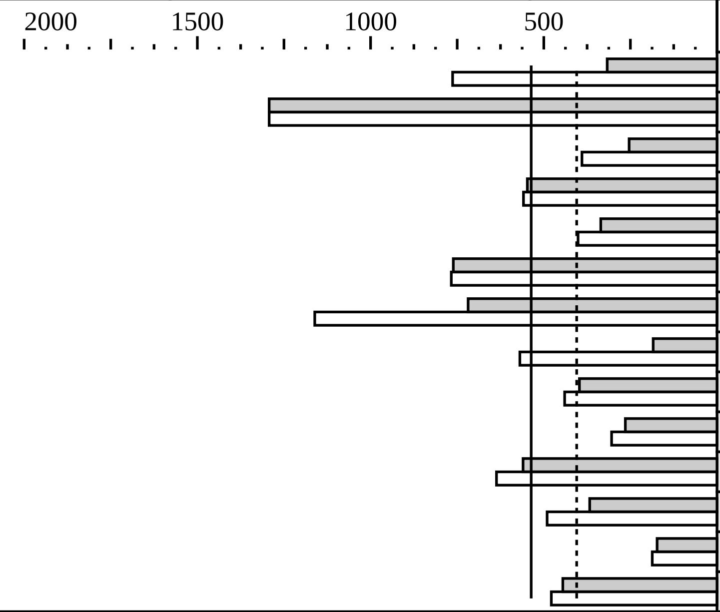
CFP2000 Result

Hewlett-Packard Company
AlphaServer GS1280 7/1150

SPECfp_rate2000 = 536
SPECfp_rate_base2000 = 405

SPEC license #: 2	Tested by: HP	Test date: Dec-2002	Hardware Avail: Jul-2003	Software Avail: Jan-2003



Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
168.wupwise	32	187	317	32	77.8	763
171.swim	32	89.0	1293	32	89.0	1293
172.mgrid	32	263	254	32	171	390
173.applu	32	142	547	32	140	559
177.mesa	32	155	336	32	130	401
178.galgel	32	141	761	32	140	767
179.art	32	134	718	32	83.1	1161
183.equake	32	262	184	32	84.8	569
187.facerec	32	178	397	32	160	440
188.ammp	32	309	265	32	268	304
189.lucas	32	133	560	32	117	637
191.fma3d	32	212	367	32	159	490
200.sixtrack	32	236	173	32	218	187
301.apsi	32	217	445	32	202	478

Hardware

CPU:	Alpha 21364
CPU MHz:	1150
FPU:	Integrated
CPU(s) enabled:	32 cores, 32 chips, 1 core/chip
CPU(s) orderable:	2 to 32
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:	256GB
Disk Subsystem:	HSV
Other Hardware:	None

Software

Operating System:	Tru64 UNIX V5.1B (Rev. 2650) +IPK
Compiler:	Compaq C V6.5-011-48C5K Spike V5.2 (506A) Compaq Fortran V5.5-2602-48C8L Compaq Fortran 77 V5.5-2602-48C8L KAP Fortran V4.3 k3105171 000607 KAP Fortran 77 V4.1 k310440 980926 KAP C V4.1 k010726 000607
File System:	AdvFS
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: -arch ev7 -non_shared ONESTEP
      except these (which use only the tunings shown below):
           173.applu 188.ammp 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
```

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Notes/Tuning Information (Continued)

```
                 -fkapargs='-aggressive=a -fuse -interleave
                 -ur=2 -ur3=5 -cachesize=128,16000 ' +PFB
     173.applu: kf90  -O5 -transform_loops
                -fkapargs=' -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 -ckapargs='
                -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.ammp: 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 -fkapargs='-ur=1' +PFB
     191.fma3d: kf90 -arch ev6 -non_shared -O4 -transform_loops
                -fkapargs='-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 -fkapargs=' -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       -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
```

Notes/Tuning Information (Continued)

```
          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.

vm:
        vm_bigpg_enabled = 1
        vm_bigpg_thresh=16
        vm_swap_eager = 0

proc:
        max_per_proc_address_space = 0x40000000000
        max_per_proc_data_size = 0x40000000000
        max_per_proc_stack_size = 0x40000000000
        max_proc_per_user = 2048
        max_threads_per_user = 0
        maxusers = 16384
        per_proc_address_space = 0x40000000000
        per_proc_data_size = 0x40000000000
        per_proc_stack_size = 0x40000000000


Portability: galgel: -fixed

Information on UNIX V5.1B Patches can be found at
http://ftp1.service.digital.com/public/unix/v5.1b/

Processes were bound to CPUs using ’runon’.

HSV controller with 8 striped 36GB disks.
```