CFP2000 Result

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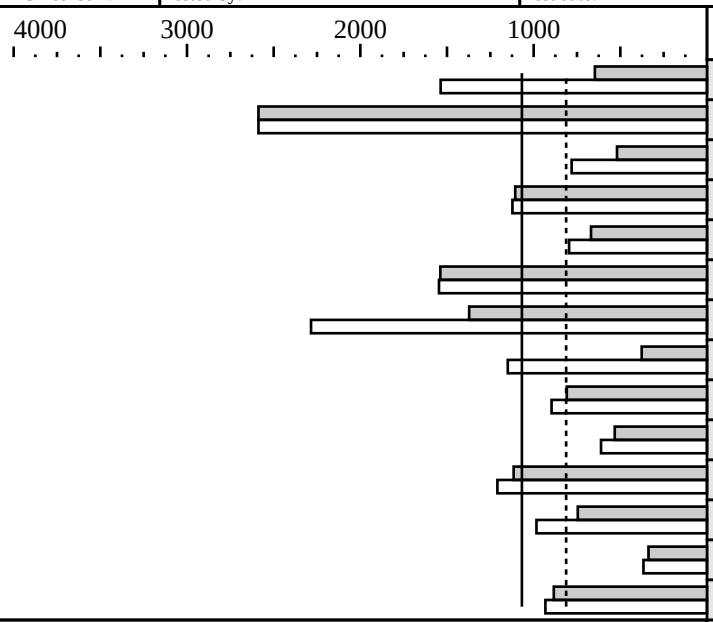
Hewlett-Packard Company
AlphaServer GS1280 Model 64

SPECfp_rate2000 = 1068

SPECfp_rate_base2000 = 813

SPEC license #: 2 | Tested by: HP | Test date: Jun-2003 | Hardware Avail: Oct-2003 | Software Avail: Oct-2003



Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
168.wupwise	64	184	647	64	77.3	1537
171.swim	64	88.9	2588	64	88.9	2588
172.mgrid	64	257	519	64	171	781
173.applu	64	141	1106	64	139	1123
177.mesa	64	155	669	64	131	796
178.galgel	64	140	1538	64	139	1546
179.art	64	141	1372	64	84.5	2284
183.equake	64	256	377	64	84.0	1149
187.facerec	64	174	809	64	157	897
188.ammp	64	307	532	64	267	611
189.lucas	64	133	1115	64	123	1209
191.fma3d	64	209	745	64	158	984
200.sixtrack	64	242	338	64	223	367
301.apsi	64	218	884	64	207	932

Hardware

CPU:	Alpha 21364
CPU MHz:	1150
FPU:	Integrated
CPU(s) enabled:	64 cores, 64 chips, 1 core/chip
CPU(s) orderable:	2 to 64
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 (64 * 10 * 512MB RIMMs, both controllers populated)
Disk Subsystem:	MFS 16GB (Memory File System)
Other Hardware:	None

Software

Operating System:	Tru64 UNIX V5.1B (Rev. 2650) +PK3
Compiler:	Compaq C V6.5-011-48C5K Program Analysis Tools V2.0 Spike V5.2 (509 DTK) Compaq Fortran X5.5-2602-48C8L Compaq Fortran 77 X5.5-2602-48C8L KAP Fortran V4.3 000607 KAP Fortran 77 V4.1 980926 KAP C V4.1 000607
File System:	MFS 16GB
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 -v -g3 -arch ev7 -non_shared ONESTEP
  except these (which use only the tunings shown below):
     173.applu 188.ammp 191.fma3d 200.sixtrack
  Individual benchmark tuning:
  168.wupwise: kf77 -g3 -arch ev7 -non_shared ONESTEP
               -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 (f90...)
    172.mgrid: kf90 -g3 -arch ev7 -non_shared ONESTEP
```

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Notes/Tuning Information (Continued)

```
                -call_shared -arch generic -O5 -inline
                manual -nopipeline -transform_loops -unroll 9 -automatic
                -fkapargs='-aggressive=a -fuse -interleave
                -ur=2 -ur3=5 -cachesize=128,16000 ' +PFB
     173.applu: kf90 ONESTEP -O5 -transform_loops
                -fkapargs=' -o=0 -nointerleave -ur=14
                -ur2=260 -ur3=18' +PFB
      177.mesa: kcc -g3 -arch ev7 -non_shared ONESTEP -fast -O4 +CFB +IFB
    178.galgel: f90 -g3 -fixed -arch ev7 -non_shared ONESTEP
                -O5 -fast -unroll 5 -automatic
       179.art: kcc -g3 -arch ev7 -non_shared ONESTEP
                -assume whole_program -ldensemalloc
                -call_shared -assume restricted_pointers
                -unroll 16 -inline none -ckapargs='
                -fuse -fuselevel=1 -ur=3' +PFB
    183.equake: cc -g3 -arch ev7 -non_shared ONESTEP
                -call_shared -arch generic -fast -O4
                -ldensemalloc -assume restricted_pointers
                -inline speed -unroll 13 -xtaso_short +PFB
   187.facerec: f90 -g3 -arch ev7 -non_shared ONESTEP
                -O4 -nopipeline -inline all
                -non_shared -speculate all -unroll 7
                -automatic -assume accuracy_sensitive
                -math_library fast +IFB
      188.ammp: cc ONESTEP -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 -g3 -arch ev7 -non_shared ONESTEP
                -O5 -fkapargs='-ur=1' +PFB
    191.fma3d: kf90 -arch ev6 -non_shared ONESTEP
                -O4 -transform_loops -fkapargs='-cachesize=128,16000 ' +PFB
 200.sixtrack: f90 -arch ev7 -non_shared ONESTEP
                -fast -O5 -assume accuracy_sensitive
                -notransform_loops +PFB
     301.apsi: kf90 -g3 -arch ev7 -non_shared ONESTEP
                -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
```

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Notes/Tuning Information (Continued)

```
            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.

    vm:
            vm_bigpg_enabled = 1
            vm_bigpg_thresh = 6
            vm_swap_eager = 0
            ubc_maxpercent = 50

    proc:
            max_per_proc_address_space = 34359738368
            max_per_proc_data_size = 34359738368
            max_per_proc_stack_size = 34359738368
            max_proc_per_user = 2048
            max_threads_per_user = 4096
            maxusers = 2048
            per_proc_address_space = 34359738368
            per_proc_data_size = 34359738368
            per_proc_stack_size = 34359738368


    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".
```