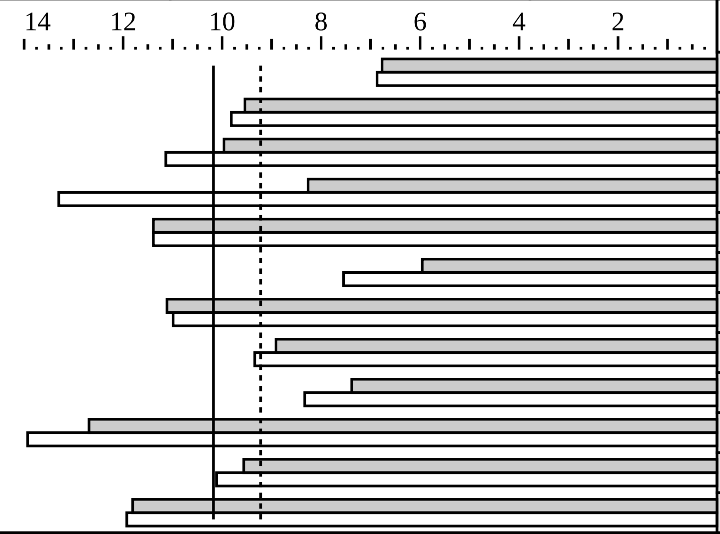
CINT2000 Result

Hewlett-Packard Company
AlphaServer GS1280 7/1150

SPECint_rate2000 = 10.2
SPECint_rate_base2000 = 9.22

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



Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	1	240	6.77	1	236	6.87
175.vpr	1	170	9.54	1	165	9.81
176.gcc	1	128	9.96	1	115	11.1
181.mcf	1	253	8.26	1	157	13.3
186.crafty	1	102	11.4	1	102	11.4
197.parser	1	351	5.96	1	277	7.54
252.eon	1	136	11.1	1	137	11.0
253.perlbmk	1	234	8.91	1	224	9.34
254.gap	1	173	7.38	1	153	8.33
255.vortex	1	174	12.7	1	158	13.9
256.bzip2	1	182	9.56	1	172	10.1
300.twolf	1	295	11.8	1	292	11.9

Hardware

CPU:	Alpha 21364
CPU MHz:	1150
FPU:	Integrated
CPU(s) enabled:	1 core, 1 chip, 1 core/chip
CPU(s) orderable:	2 to 16
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:	4GB
Disk Subsystem:	36GB SCSI
Other Hardware:	None

Software

Operating System:	Tru64 UNIX V5.1B (Rev. 2650) +IPK
Compiler:	Compaq C V6.5-011-48C5K Program Analysis Tools V2.0 Spike V5.2 (506A) Compaq C++ V6.5-028
File System:	UFS
System State:	Multi-user

Notes/Tuning Information

```
Baseline C  : cc  -arch ev7 -fast +CFB ONESTEP
         C++: cxx -arch ev7 -O2        ONESTEP

Peak:
  The following use: -g3 -arch ev7 ONESTEP
      175.vpr 181.mcf 197.parser 253.perlbmk

  The following use: -g3 -arch ev6 ONESTEP
      164.gzip 176.gcc 254.gap 255.vortex 256.bzip2 300.twolf

  Individual benchmark tuning:
     164.gzip: -fast -O4 -non_shared +CFB
      175.vpr: -fast -O4 -assume restricted_pointers +CFB
      176.gcc: -fast -O4 -xtaso_short -all -ldensemalloc -none
               +CFB +IFB
      181.mcf: -fast -xtaso_short +CFB +IFB +PFB
   186.crafty: same as base
   197.parser: -fast -O4 -xtaso_short -non_shared +CFB
      252.eon: -arch ev7 -O2 -all -ldensemalloc -none
  253.perlbmk: -fast -non_shared +CFB +IFB
```

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Notes/Tuning Information (Continued)

```
       254.gap: -fast -O4 -non_shared +CFB +IFB +PFB
    255.vortex: -fast -non_shared +CFB +IFB
     256.bzip2: -fast -O4 -non_shared +CFB
     300.twolf: -fast -O4
                -ldensemalloc -non_shared +CFB +IFB

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.


vm:
        vm_bigpg_enabled = 1
        vm_bigpg_thresh=16
        vm_swap_eager = 0

proc:
```

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Notes/Tuning Information (Continued)

```
        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: 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

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'.
In the GS1280, there are two CPUs per shelf. Each CPU
has its own 4GB of memory. Neither of the CPUs can be
physically removed. For 1 CPU result measurements,
one CPU was turned off at boot time using the
/etc/sysconfigtab setting "cpu_enabled_mask=0". The
second CPU's 4GB of memory was also physically removed.
```