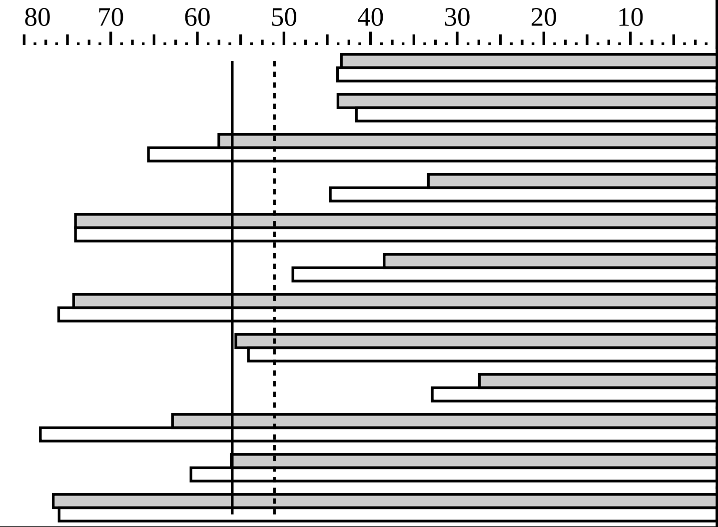
CINT2000 Result

Compaq Computer Corporation
AlphaServer GS80 Model 8 68/1001

SPECint_rate2000 = 56.0
SPECint_rate_base2000 = 51.1

SPEC license #: 2	Tested by: Compaq NH	Test date: Jun-2001	Hardware Avail: Jun-2001	Software Avail: Aug-2001



Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	8	300	43.4	8	297	43.8
175.vpr	8	297	43.8	8	312	41.6
176.gcc	8	177	57.5	8	155	65.6
181.mcf	8	501	33.3	8	374	44.6
186.crafty	8	125	74.1	8	125	74.1
197.parser	8	435	38.4	8	341	49.0
252.eon	8	162	74.3	8	159	76.0
253.perlbmk	8	301	55.6	8	309	54.1
254.gap	8	372	27.4	8	310	32.9
255.vortex	8	280	62.9	8	226	78.1
256.bzip2	8	248	56.1	8	229	60.7
300.twolf	8	363	76.6	8	366	76.0

Hardware

CPU:	Alpha 21264C
CPU MHz:	1001
FPU:	Integrated
CPU(s) enabled:	8 cores, 8 chips, 1 core/chip
CPU(s) orderable:	1 to 8
Parallel:	No
Primary Cache:	64KB(I)+64KB(D) on chip
Secondary Cache:	8MB off chip per CPU
L3 Cache:	None
Other Cache:	None
Memory:	32GB
Disk Subsystem:	mfs (Memory File System)
Other Hardware:	None

Software

Operating System:	Tru64 UNIX V5.1 +Patch Kit 2
Compiler:	Compaq C V6.4-214-46B59 Program Analysis Tools V2.0 Spike V5.2 DTK (1.461 46B5P) Compaq C++ V6.3-010-46B2F
File System:	mfs
System State:	Single-user

Notes/Tuning Information

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

Peak:
  All but 252.eon: cc -g3 -arch ev6 ONESTEP
     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: cxx -arch ev6 -O2 -all -ldensemalloc -none
  253.perlbmk: -fast -non_shared +CFB +IFB
      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 -assume restricted_pointers -all
               -ldensemalloc -none +CFB +IFB
```

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

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

submit = runon <cpu #> $command
sysconfigtab settings:
           max_proc_per_user = 4096
        max_threads_per_user = 4096
       per_proc_data_size     = 21474836480
```

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Notes/Tuning Information (Continued)

```
max_per_proc_data_size     = 21474836480
    per_proc_address_space = 21474836480
max_per_proc_address_space = 21474836480
```

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 beta kit in August, 2001, and 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 May, 2001.