Hewlett-Packard Company
hp AlphaServer GS320 68/1224

SPECint_rate2000 = 9.67
SPECint_rate_base2000 = 8.90

164.gzip 1 249 6.52 1 246 6.59
175.vpr 1 178 9.11 1 173 9.37
176.gcc 1 130 9.82 1 119 10.7
181.mcf 1 219 9.55 1 173 12.0
186.crafty 1 99.6 11.7 1 99.6 11.7
197.parser 1 322 6.48 1 262 7.98
252.eon 1 134 11.2 1 135 11.2
253.perlbmk 1 242 8.63 1 231 9.03
254.gap 1 313 4.08 1 257 4.97
255.vortex 1 181 12.2 1 165 13.4
256.bzip2 1 173 10.0 1 157 11.1
300.twolf 1 288 12.1 1 287 12.1

Hardware

CPU: Alpha 21264C
CPU MHz: 1224
FPU: Integrated
CPU(s) enabled: 1 core, 1 chip, 1 core/chip
CPU(s) orderable: 1 to 32
Parallel: No
Primary Cache: 64KB(I)+64KB(D) on chip
Secondary Cache: 16MB off chip per CPU
L3 Cache: None
Other Cache: None
Memory: 16GB
Disk Subsystem: 9GB Hard Drive
Other Hardware: None

Software

Operating System: Tru64 UNIX V5.1B
Compiler: Compaq C V6.4-215-46B7O
Program Analysis Tools V2.0
Spike V5.2 DTK (1.471.2.2 46B5P)
Compaq C++ V6.3-010-46B2F
File System: ufs
System State: Multi-user

Notes/Tuning Information

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

Peak:
All but 252.eon: cc -q3 -arch ev6 ONESTEP
164.gzip: -fast -04 -non_shared +CFB
175.vpr: -fast -04 -assume restricted_pointers +CFB
176.gcc: -fast -04 -xtaso_short -all -ldensemalloc -none
+CFB +IFB
181.mcf: -fast -xtaso_short +CFB +IFB +PFB
186.crafty: same as base
197.parser: -fast -04 -xtaso_short -non_shared +CFB
252.eon: cxx -arch ev6 -O2 -all -ldensemalloc -none
253.perlbmk: -fast -non_shared +CFB +IFB
254.gap: -fast -04 -non_shared +CFB +IFB +PFB
255.vortex: -fast -non_shared +CFB +IFB
256.bzip2: -fast -04 -non_shared +CFB
300.twolf: -fast -04
-ldensemalloc -non_shared +CFB +IFB
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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.


vm:

  vm_bigpg_enabled = 1
  vm_bigpg_thresh = 16
  vm_swap_eager = 0

proc:

  max_per_proc_address_space = 0x400000000000
  max_per_proc_data_size = 0x400000000000
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Notes/Tuning Information (Continued)

max_per_proc_stack_size = 0x4000000000000000
max_proc_per_user = 2048
max_threads_per_user = 0
maxusers = 16384
per_proc_address_space = 0x4000000000000000
per_proc_data_size = 0x4000000000000000
per_proc_stack_size = 0x4000000000000000

System is single QBB (4-cpu) with only 1 cpu enabled at console