Hewlett-Packard Company
hp AlphaServer GS320 68/1224

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SPECint_rate_base2000 = NC

SPEC has determined that this result was not in compliance with the SPEC CPU2000 run and reporting rules. Specifically, the submitter has reported that the 3 month availability requirement in the SPEC CPU2000 run rules will not be met due to a change in availability date for the operating system.

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Copies</th>
<th>Base Runtime</th>
<th>Base Ratio</th>
<th>Copies</th>
<th>Runtime</th>
<th>Ratio</th>
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<tr>
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<td>175.vpr</td>
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<tr>
<td>300.twolf</td>
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</tr>
</tbody>
</table>

Hardware

CPU: Alpha 21264C
CPU MHz: 1224
FPU: Integrated
CPU(s) enabled: 32 cores, 32 chips, 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: 128GB
Disk Subsystem: mfs (Memory File System)
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
mfs

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 -g3 -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
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Notes/Tuning Information (Continued)

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 -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}
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Notes/Tuning Information (Continued)

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: -DSYS_HAS_CALLOC_PROTO -DSYS_IS_BSD -DSYS_HAS_IOCTL_PROTO -DSPEC_CPU2000_LP64
vortex: -DSPEC_CPU2000_LP64

gap: -DSYS_HAS_CALLOC_PROTO -DSYS_IS_BSD -DSYS_HAS_IOCTL_PROTO

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
  max_per_proc_stack_size = 0x400000000000
  max_proc_per_user = 2048
  max_threads_per_user = 0
  maxusers = 16384
  per_proc_address_space = 0x400000000000
  per_proc_data_size = 0x400000000000
  per_proc_stack_size = 0x400000000000

submit = runon <cpu no> $command

Submitted by: "Beer, Chris" <Chris.Beer@hp.com>
Submitted: Thu Aug  1 16:15:34 2002
Submission: cpu2000-20020801-01536.sub