Hewlett-Packard Company
hp AlphaServer GS160 68/1224

SPECint_rate2000 = NC
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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<tbody>
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<td>16</td>
<td>NC</td>
<td>NC</td>
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<td>175.vpr</td>
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<td>NC</td>
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<tr>
<td>300.twolf</td>
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<td>16</td>
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<td>NC</td>
</tr>
</tbody>
</table>

**Hardware**

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

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org
CINT2000 Result

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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}
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.

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.


```
vm:
vm_bigpg_enabled = 1
vm_bigpg_thresh = 16
vm_swap_eager = 0
```

```
proc:
max_per_proc_address_space = 0x4000000000000000
max_per_proc_data_size = 0x4000000000000000
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
```

```
submit = runon <cpu no> $command
```

Submitted_by: "Beer, Chris" <Chris.Beer@hp.com>
Submitted: Thu Aug 1 16:15:34 2002
Submission: cpu2000-20020801-01534.sub