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.

### Hardware
- **CPU:** Alpha 21264C
- **CPU MHz:** 1224
- **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:** 16MB off chip per CPU
- **L3 Cache:** None
- **Other Cache:** None
- **Memory:** 16GB
- **Disk Subsystem:** mfs (Memory File System)
- **Other Hardware:** None

### Software
- **Operating System:** Tru64 UNIX T5.1B
- **Compiler:**
  - Compaq C V6.5-011-48C5K
  - Spike V5.2 (506-48C5K)
  - Compaq Fortran V5.5-1877-48BBF
  - Compaq Fortran 77 V5.5-1877-48BBF
  - KAP Fortran V4.4 k340504 20010517
  - KAP Fortran 77 V4.1 k310440 980926
  - KAP C V4.2 k010737S 010515
- **File System:** mfs
- **System State:** Multi-user

### Notes/Tuning Information
- **Baseline**
  - C: cc -arch ev6 -fast -04 ONESTEP
  - Fortran: f90 -arch ev6 -fast -05 ONESTEP
- **Peak**
  - All use -arch ev6 -non_shared ONESTEP (except applu and ammp)
Hewlett-Packard Company
hp AlphaServer GS80 68/1224

SPECfp_rate2000 = NC
SPECfp_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.

Notes/Tuning Information (Continued)

Individual benchmark tuning:
168.wupwise: kf77 -call_shared -inline all -tune ev67
-unsroll 12 -automatic -align commons -arch ev67
-fkapargs=' -aggressive=0 -fuse
-fuselevel=1 -so=2 -r=1 -o=1 -interleave
-ur=6 -ur2=060 ' +PFB

171.swim: same as base

172.mgrid: kf90 -call_shared -arch generic -o5 -inline
manual -nopipeline -unsroll 9 -automatic -transform_loops
-fkapargs=' -aggressive=a -fuse -interleave
-ur=2 -ur3=5 -cachedsize=128,16000 ' +PFB

173.applu: kf90 -o5 -transform_loops
-fkapargs=' -o=0 -nointerleave -ur=14
-ur2=260 -ur3=18 ' +PFB

177.mesa: kcc -fast -o4 +CFB +IFB

178.galgel: f90 -o5 -fast -unsroll 5 -automatic

179.art: kcc -assume whole_program -ldensemalloc
-call_shared -assume restricted_pointers
-unsroll 16 -inline none -fkapargs=' -fuse -fuselevel=1 -ur=3' +PFB

183.equake: cc -call_shared -arch generic -fast -o4
-ldensemalloc -assume restricted_pointers
-inline speed -unsroll 13 -xtaso_short +PFB

187.facerec: f90 -o4 -nopipeline -inline all
-non_shared -speculate all -unsroll 7
-automatic -assume accuracy_sensitive
-math_library fast +IFB

188.ammp: cc -arch host -o4 -ifo -assume nomath_errno
-assume trusted_short_alignment -fp_reorder
-readonly_strings -ldensemalloc -xtaso_short
-assume restricted_pointers -unsroll 9
-inline speed +CFB +IFB +PFB

189.lucas: kf90 -o5 -fkapargs=' -ur=1' +PFB

191.fma3d: kf90 -o4 -transform_loops -fkapargs=' -cachedsize=128,16000 ' +PFB

200.sixtrack: f90 -fast -o5 -assume accuracy_sensitive
-notransform_loops +PFB

301.apsi: kf90 -o5 -inline none -call_shared -speculate all
-align commons -fkapargs=' -aggressive=ab
-tune=ev5 -fuse -ur=1 -ur2=60 -ur3=20
-cachedsize=128,16000'

Most benchmarks are built using one or more types of profile-driven feedback. The types used are designated by abbreviations in the notes:
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)

+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"):

```bash
mkdir /tmp/pp
rm -f /tmp/pp/${baseexe}*
```

and these flags are added to the first and second compiles:

```bash
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"):

```bash
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"):

```bash
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"):

```bash
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.

```bash
vm:
vm_bigpg_enabled = 1
vm_bigpg_thresh=16
vm_swap_eager = 0
```
**Non-Compliant**

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

---

**Hewlett-Packard Company**
hp AlphaServer GS80 68/1224

<table>
<thead>
<tr>
<th>SPECfp_rate2000</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_rate_base2000</td>
<td>NC</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>proc:</th>
</tr>
</thead>
<tbody>
<tr>
<td>max_per_proc_address_space = 0x40000000000</td>
</tr>
<tr>
<td>max_per_proc_data_size = 0x40000000000</td>
</tr>
<tr>
<td>max_per_proc_stack_size = 0x40000000000</td>
</tr>
<tr>
<td>max_proc_per_user = 2048</td>
</tr>
<tr>
<td>max_threads_per_user = 0</td>
</tr>
<tr>
<td>maxusers = 16384</td>
</tr>
<tr>
<td>per_proc_address_space = 0x40000000000</td>
</tr>
<tr>
<td>per_proc_data_size = 0x40000000000</td>
</tr>
<tr>
<td>per_proc_stack_size = 0x40000000000</td>
</tr>
</tbody>
</table>

Portability: galgel: -fixed
submit = runon cpu

Submitted by: "Craig, Steve" <Steve.Craig@hp.com>
Submitted: Mon Sep 9 13:58:58 2002
Submission: cpu2000-20020909-01620.sub

---

Non-Compliant