# CINT2000 Result

## Hewlett-Packard Company

### hp AlphaServer GS80 68/1224

**SPECint2000 = 833**  
**SPECint_base2000 = 767**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Reference Time</th>
<th>Base Runtime</th>
<th>Base Ratio</th>
<th>Runtime</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>164.gzip</td>
<td>1400</td>
<td>249</td>
<td>562</td>
<td>246</td>
<td>568</td>
</tr>
<tr>
<td>175.vpr</td>
<td>1400</td>
<td>178</td>
<td>785</td>
<td>173</td>
<td>808</td>
</tr>
<tr>
<td>176.gcc</td>
<td>1100</td>
<td>130</td>
<td>846</td>
<td>119</td>
<td>925</td>
</tr>
<tr>
<td>181.mcf</td>
<td>1800</td>
<td>219</td>
<td>823</td>
<td>173</td>
<td>1038</td>
</tr>
<tr>
<td>186.crafty</td>
<td>1000</td>
<td>99.6</td>
<td>1004</td>
<td>99.6</td>
<td>1004</td>
</tr>
<tr>
<td>197.parser</td>
<td>1800</td>
<td>322</td>
<td>558</td>
<td>262</td>
<td>688</td>
</tr>
<tr>
<td>252.eon</td>
<td>1300</td>
<td>134</td>
<td>969</td>
<td>135</td>
<td>962</td>
</tr>
<tr>
<td>253.perlbmk</td>
<td>1800</td>
<td>242</td>
<td>744</td>
<td>231</td>
<td>779</td>
</tr>
<tr>
<td>254.gap</td>
<td>1100</td>
<td>313</td>
<td>351</td>
<td>257</td>
<td>428</td>
</tr>
<tr>
<td>255.vortex</td>
<td>1900</td>
<td>181</td>
<td>1052</td>
<td>165</td>
<td>1151</td>
</tr>
<tr>
<td>256.bzip2</td>
<td>1500</td>
<td>173</td>
<td>866</td>
<td>157</td>
<td>954</td>
</tr>
<tr>
<td>300.twolf</td>
<td>3000</td>
<td>288</td>
<td>1040</td>
<td>287</td>
<td>1046</td>
</tr>
</tbody>
</table>

### Notes/Tuning Information

**Baseline C:**  
```sh  
c -arch ev6 -fast +CFB ONESTEP  
c -arch ev6 -O2 ONESTEP  
```

**Peak:**  
```sh  
All but 252.eon:  
c -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:  
c -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  
```

**Software:**  
```sh  
Operating System:  
Tru64 UNIX V5.1B
Compiler:  
Compaq C V6.4-215-46B70
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  
```
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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:

```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"):

```
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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SPECint2000 = 833
SPECint_base2000 = 767

Notes/Tuning Information (Continued)

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

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