



# CINT2000 Result

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Hewlett-Packard Company  
hp AlphaServer GS160 68/1224

SPECint\_rate2000 = NC  
SPECint\_rate\_base2000 = NC

SPEC license #: 2 | Tested by: HPQ - NH | Test date: Jul-2002 | Hardware Avail: Aug-2002 | Software Avail: Nov-2001

**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.**

5	4	3	2	1	Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
.....	.....	.....	.....	.....	164.zip	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	175.vpr	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	176.gcc	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	181.mcf	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	186.crafty	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	197.parser	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	252.eon	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	253.perlbmk	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	254.gap	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	255.vortex	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	256.bzip2	1	NC	NC	1	NC	NC
.....	.....	.....	.....	.....	300.twolf	1	NC	NC	1	NC	NC

### Hardware

CPU: Alpha 21264C  
CPU MHz: 1224  
FPU: Integrated  
CPU(s) enabled: 1 core, 1 chip, 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: 16GB  
Disk Subsystem: 9GB Hard Drive  
Other Hardware: None

### Software

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

## 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.zip: -fast -O4 -non\_shared +CFB  
175.vpr: -fast -O4 -assume\_restricted\_pointers +CFB  
176.gcc: -fast -O4 -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.perlbnk: -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  
perlbnk: -DSPEC_CPU2000_DUNIX; vortex: -DSPEC_CPU2000_LP64  
gap: -DSYS_HAS_CALLOC_PROTO -DSYS_IS_BSD -DSYS_HAS_IOCTL_PROTO  
-DSPEC_CPU2000_LP64
```

vm:

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

proc:

```
max_per_proc_address_space = 0x40000000000  
max_per_proc_data_size = 0x40000000000  
max_per_proc_stack_size = 0x40000000000  
max_proc_per_user = 2048  
max_threads_per_user = 0  
maxusers = 16384  
per_proc_address_space = 0x40000000000  
per_proc_data_size = 0x40000000000  
per_proc_stack_size = 0x40000000000
```

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

Submitted\_by: "Beer, Chris" <Chris.Beer@hp.com>  
Submitted: Thu Aug 1 16:15:29 2002  
Submission: cpu2000-20020801-01533.sub