



# CINT2000 Result

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Hewlett-Packard Company  
AlphaServer GS1280 7/1300

SPECint\_rate2000 = 23.1  
SPECint\_rate\_base2000 = 21.0

SPEC license #: 2 | Tested by: HP | Test date: Jun-2004 | Hardware Avail: Aug-2004 | Software Avail: Jul-2004

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	2	211	15.4	2	209	15.5
175.vpr	2	150	21.7	2	147	22.1
176.gcc	2	111	23.0	2	100	25.5
181.mcf	2	223	18.7	2	141	29.7
186.crafty	2	89.7	25.9	2	89.7	25.9
197.parser	2	309	13.5	2	243	17.2
252.eon	2	120	25.2	2	121	24.9
253.perlbnk	2	205	20.3	2	197	21.2
254.gap	2	153	16.7	2	138	18.5
255.vortex	2	155	28.5	2	138	32.0
256.bzip2	2	158	22.0	2	152	22.9
300.twolf	2	259	26.9	2	255	27.3

### Hardware

CPU: Alpha 21364  
 CPU MHz: 1300  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 2 chips, 1 core/chip  
 CPU(s) orderable: 2 to 64  
 Parallel: No  
 Primary Cache: 64KB(I)+64KB(D) on chip  
 Secondary Cache: 1.75MB on chip per CPU  
 L3 Cache: None  
 Other Cache: None  
 Memory: 2GB per CPU; 256MB RIMMs  
 Disk Subsystem: AdvFS  
 Other Hardware: None

### Software

Operating System: Tru64 UNIX V5.1B-1 + PK4  
 Compiler: Compaq C V6.5-011-48C5K  
 Program Analysis Tools V2.0  
 Spike V5.2 (510 USG)  
 Compaq C++ V6.5-041  
 File System: MFS, 8GB  
 System State: Multi-user

## Notes/Tuning Information

Baseline C : cc -arch ev7 -fast +CFB ONESTEP  
 C++: cxx -arch ev7 -O2 ONESTEP

### Peak:

All but 252.eon: cc -g3 -arch ev7 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: cxx -arch ev7 -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



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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:

```
PASS1_CFLAGS = -prof_gen_noopt -prof_dir /tmp/pp  
PASS2_CFLAGS = -prof_use_feedback -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 = 6  
vm_swap_eager = 0  
ubc_maxpercent = 50
```

proc:

```
max_per_proc_address_space = 34359738368  
max_per_proc_data_size = 34359738368  
max_per_proc_stack_size = 34359738368  
max_proc_per_user = 2048  
max_threads_per_user = 4096  
maxusers = 2048
```



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## Notes/Tuning Information (Continued)

```
per_proc_address_space = 34359738368  
per_proc_data_size = 34359738368  
per_proc_stack_size = 34359738368
```

```
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
```

Information on UNIX V5.1B Patches can be found at  
<http://ftpl.service.digital.com/public/unix/v5.1b/>

Processes were bound to CPUs using "runon".