Hewlett-Packard Company
AlphaServer GS1280 7/1300

SPECint_rate2000 = 728
SPECint_rate_base2000 = 661

Benchmark | Base | Base | Base | Copies | Runtime | Ratio
---|---|---|---|---|---|---
164.gzip | 64 | 214 | 487 | 64 | 212 | 491
175.vpr | 64 | 152 | 686 | 64 | 148 | 701
176.gcc | 64 | 115 | 713 | 64 | 104 | 784
181.mcf | 64 | 226 | 590 | 64 | 143 | 933
186.crafty | 64 | 90.1 | 824 | 64 | 90.1 | 824
197.parser | 64 | 310 | 431 | 64 | 245 | 546
252.eon | 64 | 122 | 793 | 64 | 123 | 785
253.perlbmk | 64 | 215 | 622 | 64 | 201 | 666
254.gap | 64 | 155 | 528 | 64 | 138 | 590
255.vortex | 64 | 156 | 901 | 64 | 139 | 1014
256.bzip2 | 64 | 160 | 696 | 64 | 154 | 724
300.twolf | 64 | 260 | 856 | 64 | 256 | 869

Hardware
CPU: Alpha 21364
CPU MHz: 1300
FPU: Integrated
CPU(s) enabled: 64 cores, 64 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: 18GB Ultra 320 15KRPM
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: AdvFS, 14x18GB, RAID0
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.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

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

Processes were bound to CPUs using "runon".