



CINT2000 Result

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Compaq Computer Corporation
AlphaServer DS20E Model 68/833

SPECint_rate2000 = 13.1
SPECint_rate_base2000 = 12.0

SPEC license #: 2 | Tested by: Compaq NH | Test date: Jun-2001 | Hardware Avail: Jun-2001 | Software Avail: Aug-2001

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	2	357	9.10	2	352	9.22
175.vpr	2	319	10.2	2	317	10.2
176.gcc	2	189	13.5	2	167	15.3
181.mcf	2	393	10.6	2	303	13.8
186.crafty	2	149	15.5	2	149	15.5
197.parser	2	499	8.37	2	406	10.3
252.eon	2	194	15.5	2	191	15.8
253.perlbnk	2	348	12.0	2	324	12.9
254.gap	2	307	8.31	2	261	9.78
255.vortex	2	273	16.2	2	247	17.9
256.bzip2	2	275	12.6	2	256	13.6
300.twolf	2	443	15.7	2	432	16.1

Hardware

CPU: Alpha 21264B
CPU MHz: 833
FPU: Integrated
CPU(s) enabled: 2 cores, 2 chips, 1 core/chip
CPU(s) orderable: 1 to 2
Parallel: No
Primary Cache: 64KB(I)+64KB(D) on chip
Secondary Cache: 8MB off chip per CPU
L3 Cache: None
Other Cache: None
Memory: 4GB
Disk Subsystem: 1x18GB
Other Hardware: None

Software

Operating System: Tru64 UNIX V5.1
+Patch Kit 2
Compiler: Compaq C V6.4-214-46B59
Program Analysis Tools V2.0
Spike V5.2 DTK (1.461 46B5P)
Compaq C++ V6.3-010-46B2F
File System: AdvFS
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.gzip: -fast -O4 -non_shared +CFB
175.vpr: -fast -O4 -assume restricted_pointers +CF
176.gcc: -fast -O4 -xtaso_short -all -ldensemalloc
+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 ev6 -O2 -all -ldensemalloc -non
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 -assume restricted_pointers -al
-ldensemalloc -none +CFB +IFB

Most benchmarks are built using one or more types of profile-driven feedback. The types used are designated



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Notes/Tuning Information (Continued)

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
PASS1_CFLAGS = -prof_gen_noopt -prof_dir /tmp
PASS2_CFLAGS = -prof_use -prof_dir /tmp

(Peak builds use /tmp/pp above; base builds use /tmp)

+IFB: Icache usage is improved by the post-link-time opt Spike, using feedback from a training run. These are used (in phase "fdo_postN"):

```
mv ${baseexe} oldexe
spike oldexe -feedback oldexe -o ${baseexe}
```

+PFB: Prefetches are improved by the post-link-time opt 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>pix
mv oldexe.pixie ${baseexe}
```

A training run is carried out (in phase "fdo_runN") then this command (in phase "fdo_postN"):

```
spike oldexe -fb oldexe -stride_prefetch -o $
```

When Spike is used for both Icache and Prefetch improvement only one spike command is actually issued, with the Icache options followed by the Prefetch options.

Portability: gcc: -Dalloca=__builtin_alloca; crafty: -Dperlbnk: -DSPEC_CPU2000_DUNIX; vortex: -DSPEC_CPU2000_LPgap: -DSYS_HAS_CALLOC_PROTO -DSYS_IS_BSD -DSYS_HAS_IOCTL -DSPEC_CPU2000_LP64

Information on UNIX V5.1 Patches can be found at <http://ftpl.service.digital.com/public/unix/v5.1/> Spike, and the Program Analysis Tools, are part of the D Tool Kit Supplement, <http://www.tru64unix.compaq.com/dtk> features used in this SPEC submission will be available site as a beta kit in August, 2001, and as a production October, 2001. The C compiler for this SPEC submission available at the same location, as a production release, May, 2001.