# CINT2000 Result
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## Compaq Computer Corporation
## AlphaServer DS20L Model 68/833

SPECint_rate2000 = 6.23
SPECint_rate_base2000 = 5.61

| SPEC license #: | 2 | Tested by: | | Compaq NH | Test date: | | Feb-2002 | Hardware Avail: | Mar-2002 | Software Avail: | Oct-2001 |

| Benchmark | Base Copies | Base Runtime | Base Ratio | Copies | Runtime | Ratio |
|---|---|---|---|---|---|---|
| 164.gzip | 1 | 351 | 4.63 | 1 | 345 | 4.70 |
| 175.vpr | 1 | 340 | 4.78 | 1 | 339 | 4.79 |
| 176.gcc | 1 | 202 | 6.31 | 1 | 177 | 7.21 |
| 181.mcf | 1 | 609 | 3.43 | 1 | 424 | 4.92 |
| 186.crafty | 1 | 145 | 8.03 | 1 | 145 | 8.03 |
| 197.parser | 1 | 553 | 3.77 | 1 | 428 | 4.88 |
| 252.eon | 1 | 194 | 7.79 | 1 | 190 | 7.93 |
| 253.perlbmk | 1 | 358 | 5.83 | 1 | 324 | 6.44 |
| 254.gap | 1 | 310 | 4.12 | 1 | 259 | 4.93 |
| 255.vortex | 1 | 291 | 7.57 | 1 | 262 | 8.40 |
| 256.bzip2 | 1 | 290 | 6.00 | 1 | 270 | 6.45 |
| 300.twolf | 1 | 443 | 7.86 | 1 | 433 | 8.04 |

## Hardware
| | |
|---|---|
| CPU: | Alpha 21264B |
| CPU MHz: | 833 |
| FPU: | Integrated |
| CPU(s) enabled: | 1 core, 1 chip, 1 core/chip |
| CPU(s) orderable: | 1 to 2 |
| Parallel: | No |
| Primary Cache: | 64KB(I)+64KB(D) on chip |
| Secondary Cache: | 4MB off chip per CPU |
| L3 Cache: | None |
| Other Cache: | None |
| Memory: | 2GB |
| Disk Subsystem: | 1x40GB Maxtor 5T040H4 |
| Other Hardware: | None |

## Software
| | |
|---|---|
| Operating System: | Tru64 UNIX V5.1A (rev. 1885) |
| Compiler: | Compaq C V6.4-215-46B7O |
| | Program Analysis Tools V2.0 |
| | Spike V5.2 DTK (1.471.2.2 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 +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 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 -assume restricted_pointers -all
                   -ldensemalloc -none +CFB +IFB
```

| Compaq Computer Corporation | SPECint_rate2000 = | 6.23 |
|---|---|---|
| AlphaServer DS20L Model 68/833 | SPECint_rate_base2000 = | 5.61 |

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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        -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.

Portability: gcc: -Dalloca=__builtin_alloca; crafty: -DALPHA
perlbmk: -DSPEC_CPU2000_DUNIX; vortex: -DSPEC_CPU2000_LP64
gap: -DSYS_HAS_CALLOC_PROTO -DSYS_IS_BSD -DSYS_HAS_IOCTL_PROTO
       -DSPEC_CPU2000_LP64

Spike, and the Program Analysis Tools, are part of the Developers'
Tool Kit Supplement, http://www.tru64unix.compaq.com/dtk/ .  The
features used in this SPEC submission will be available at the web
site as a production release as of October, 2001.  The C compiler for
this SPEC submission has been available at the same location, as a
production release, since August 15, 2001.