# CINT2000 Result

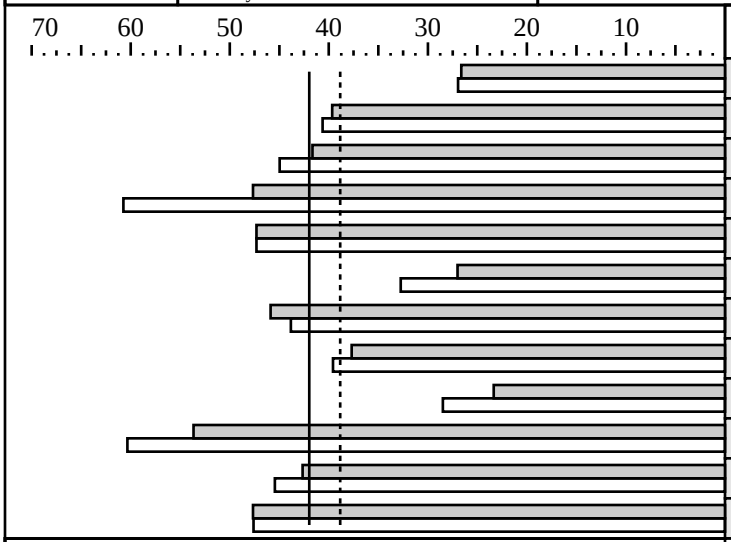


## Hewlett-Packard Company
## hp AlphaServer ES45 68/1250

SPECint_rate2000 = 42.0

SPECint_rate_base2000 = 38.8

SPEC license #: 2 | Tested by: HP NH | Test date: Jul-2002 | Hardware Avail: Aug-2002 | Software Avail: Dec-2002




| Benchmark | Base Copies | Base Runtime | Base Ratio | Copies | Runtime | Ratio |
|---|---|---|---|---|---|---|
| 164.gzip | 4 | 244 | 26.6 | 4 | 241 | 26.9 |
| 175.vpr | 4 | 164 | 39.6 | 4 | 160 | 40.6 |
| 176.gcc | 4 | 123 | 41.7 | 4 | 113 | 45.0 |
| 181.mcf | 4 | 175 | 47.7 | 4 | 138 | 60.7 |
| 186.crafty | 4 | 98.1 | 47.3 | 4 | 98.1 | 47.3 |
| 197.parser | 4 | 309 | 27.0 | 4 | 255 | 32.7 |
| 252.eon | 4 | 132 | 45.9 | 4 | 138 | 43.8 |
| 253.perlbmk | 4 | 222 | 37.7 | 4 | 211 | 39.6 |
| 254.gap | 4 | 219 | 23.4 | 4 | 179 | 28.5 |
| 255.vortex | 4 | 164 | 53.7 | 4 | 146 | 60.3 |
| 256.bzip2 | 4 | 163 | 42.6 | 4 | 153 | 45.5 |
| 300.twolf | 4 | 292 | 47.6 | 4 | 292 | 47.6 |

### Hardware

| | |
|---|---|
| CPU: | Alpha 21264C |
| CPU MHz: | 1250 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 4 chips, 1 core/chip |
| CPU(s) orderable: | 1 to 4 |
| 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: | 9 GB SCSI |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | Tru64 UNIX T5.1B |
| Compiler: | Compaq C V6.5-011-48C5K<br>Spike V5.2 (506 48C5K)<br>Compaq C++ V6.5-028 |
| 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.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
               -ldensemalloc -non_shared +CFB +IFB
```

## 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.

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
```

## Notes/Tuning Information (Continued)

```
          per_proc_data_size = 0x40000000000
          per_proc_stack_size = 0x40000000000


    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
```