



CINT2000 Result

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Hewlett-Packard Company
AlphaServer DS15/1000

SPECint2000 = 631
SPECint_base2000 = 572

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

Benchmark	Reference Time	Base Runtime	Base Ratio	Runtime	Ratio	
164.gzip	1400	306	458	304	460	
175.vpr	1400	260	538	256	547	
176.gcc	1100	184	597	162	678	
181.mcf	1800	460	391	292	617	
186.crafty	1000	128	782	128	782	
197.parser	1800	479	376	363	495	
252.eon	1300	160	813	162	805	
253.perlbnk	1800	297	606	280	642	
254.gap	1100	239	461	208	528	
255.vortex	1900	231	823	209	909	
256.bzip2	1500	238	629	232	646	
300.twolf	3000	490	612	495	606	

Hardware

CPU: Alpha 21264C
 CPU MHz: 1000
 FPU: Integrated
 CPU(s) enabled: 1 core, 1 chip, 1 core/chip
 CPU(s) orderable: 1
 Parallel: No
 Primary Cache: 64KB(I)+64KB(D) on chip
 Secondary Cache: 2MB
 L3 Cache: None
 Other Cache: None
 Memory: 2GB; 512MB RIMMs
 Disk Subsystem: 36GB Ultra 160 10KRPM
 Other Hardware: None

Software

Operating System: Tru64 UNIX V5.1B (Rev. 2650) +IPK
 Compiler: Compaq C V6.5-011-48C5K
 Program Analysis Tools V2.0
 Spike V5.2 (510 USG)
 Compaq C++ V6.5-041
 File System: UFS
 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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SPECint_base2000 =	572

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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".