



# CINT2000 Result

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**SGI**  
**SGI Origin 300 4X 500MHz R14k**

**SPECint\_rate2000 = 17.1**  
**SPECint\_rate\_base2000 = 16.5**

SPEC license #: 4 Tested by: SGI Test date: Oct-2001 Hardware Avail: Oct-2001 Software Avail: Aug-2001

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	4	521	12.5	4	501	13.0
175.vpr	4	369	17.6	4	355	18.3
176.gcc	4	313	16.3	4	313	16.3
181.mcf	4	616	13.6	4	616	13.6
186.crafty	4	251	18.5	4	248	18.7
197.parser	4	577	14.5	4	552	15.1
252.eon	4	299	20.2	4	283	21.3
253.perlbnk	4	607	13.8	4	604	13.8
254.gap	4	436	11.7	4	428	11.9
255.vortex	4	358	24.6	4	317	27.8
256.bzip2	4	447	15.6	4	412	16.9
300.twolf	4	568	24.5	4	568	24.5

### Hardware

CPU: R14000  
CPU MHz: 500  
FPU: Integrated  
CPU(s) enabled: 4 cores, 4 chips, 1 core/chip  
CPU(s) orderable: 2-8  
Parallel: No  
Primary Cache: 32KBI + 32KBD on chip  
Secondary Cache: 2MB(I+D) off chip  
L3 Cache: N/A  
Other Cache: N/A  
Memory: 4 GB  
Disk Subsystem: 1 x 18 GB FC, 2 x 18 GB FC (striped)  
Other Hardware: None

### Software

Operating System: IRIX 6.5.13m  
Compiler: MIPSpro 7.3.1.2m C, C++  
SCSL 1.3 Math Library  
File System: xfs  
System State: Single-user

## Notes/Tuning Information

Baseline optimization flags (C and C++ use same flags):

PASS1 : -Ofast=ip27 -IPA:use\_intrinsic -fb\_create /tmp/SPEC2000/FBDIR/base/\$(EXEBASE)  
PASS2 : -Ofast=ip27 -IPA:use\_intrinsic -fb\_opt /tmp/SPEC2000/FBDIR/base/\$(EXEBASE)

Portability Flags:

176.gcc: -Dalloca=\_\_builtin\_alloca -DMIPS -DHOST\_WORDS\_BIG\_ENDIAN  
186.crafty: -DSGI  
252.eon: -lm  
253.perlbnk: -DSPEC\_CPU2000\_SGI -DI\_FCNTL  
254.gap: -DSYS\_IS\_USG -DSYS\_HAS\_TIME\_PROTO -DSYS\_HAS\_SIGNAL\_PROTO -DSYS\_HAS\_IOCTL\_PROTO  
-DSYS\_HAS\_ANSI -DSYS\_HAS\_CALLOC\_PROTO  
300.twolf: -DHAVE\_SIGNED\_CHAR

Peak optimization flags:

note: all occurrences of (FEEDBACK) below means compiled with a two-step process:

PASS1 = -fb\_create /tmp/SPEC2000/FBDIR\_peak/\$(EXEBASE)  
PASS2 = -fb\_opt /tmp/SPEC2000/FBDIR\_peak/\$(EXEBASE)  
164.gzip: -Ofast=ip27 -IPA:space=500:plimit=500 -lmalloc (FEEDBACK)  
175.vpr: -Ofast=ip27 -IPA:space=300:plimit=10000:callee\_limit=5000:linear=on  
. -LNO:prefetch Ahead=2 -INLINE:aggressive=on  
. -OPT:Olimit=0:alias=disjoint:alias=restrict -CG:ld\_latency=10 -lmalloc (FEEDBACK)  
181.mcf: basepeak=yes



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## Notes/Tuning Information (Continued)

```

176.gcc: -Ofast=ip27 -CG:ld_latency=4 (FEEDBACK)
186.crafty: -Ofast=ip27 -LNO:prefetch=0 -OPT:goto=off -CG:ld_latency=4 -lmalloc (FEEDBACK)
197.parser: -Ofast=ip27 -IPA:min_hot=14 (FEEDBACK)
252.eon: -Ofast=ip27 -LNO:prefetch=0 -LANG:exceptions=off -CG:ld_latency=4 -lmalloc -lm
      (FEEDBACK)
253.perlbnk: -Ofast=ip27 -IPA:use_intrinsic -Wl,-x (FEEDBACK)
254.gap: -Ofast=ip27 -IPA:use_intrinsic -OPT:unroll_analysis=off:unroll_size=0:unroll_times_max=4
      -OPT:alias=restrict:alias=disjoint -IPA:min_hot=7 -CG:ld_latency=8 -lmalloc (FEEDBACK)
255.vortex: -Ofast=ip27 -IPA:use_intrinsic
      -OPT:unroll_analysis=off:unroll_size=0:unroll_times_max=4 -LNO:opt=0 -CG:ld_latency=5
      -IPA:min_hot=14 -TENV:X=4 -IPA:space=500:plimit=3600 -OPT:goto=off (FEEDBACK)
256.bzip2: -Ofast=ip27 -IPA:min_hot=5:space=500:plimit=2900 -INLINE:aggressive=on (FEEDBACK)
300.twolf: basepeak=yes

```

The following O/S parameters were set:

```

setenv PAGESIZE_DATA 4096 ; setenv PAGESIZE_TEXT 4096 ; setenv PAGESIZE_STACK 4096
system -i ; percent_totalmem_4m_pages = 40 ; percent_totalmem_1m_pages = 7
system -i ; percent_totalmem_256k_pages = 7 ; percent_totalmem_64k_pages = 7
system -i ; r12k_bdiag = 0x4000000 ;
limit stacksize 500000

```

The following is done before building each benchmark that requires (FEEDBACK):

```

rm -rf /tmp/SPEC2000 ; mkdir /tmp/SPEC2000 ; cd /tmp/SPEC2000 ; mkdir FBDIR_base ; mkdir FBDIR_peak
The first disk mentioned in the Disk Subsystem is the system disk. A striped
XFS filesystem was created using the rest of the disks and the benchmark was
run on this.

```