



# CINT2000 Result

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**SGI**  
SGI Origin 3400 32X 500MHz R14k

SPECint\_rate2000 = 155  
SPECint\_rate\_base2000 = 149

SPEC license #: 4 Tested by: SGI Test date: May-2001 Hardware Avail: Jul-2001 Software Avail: Mar-2001

| Benchmark   | Base Copies | Base Runtime | Base Ratio | Copies | Runtime | Ratio |
|-------------|-------------|--------------|------------|--------|---------|-------|
| 164.gzip    | 32          | 518          | 100        | 32     | 498     | 104   |
| 175.vpr     | 32          | 299          | 174        | 32     | 288     | 180   |
| 176.gcc     | 32          | 296          | 138        | 32     | 295     | 138   |
| 181.mcf     | 32          | 274          | 244        | 32     | 274     | 244   |
| 186.crafty  | 32          | 247          | 151        | 32     | 244     | 152   |
| 197.parser  | 32          | 530          | 126        | 32     | 504     | 132   |
| 252.eon     | 32          | 300          | 161        | 32     | 281     | 172   |
| 253.perlbnk | 32          | 592          | 113        | 32     | 591     | 113   |
| 254.gap     | 32          | 427          | 95.6       | 32     | 428     | 95.5  |
| 255.vortex  | 32          | 330          | 214        | 32     | 295     | 239   |
| 256.bzip2   | 32          | 376          | 148        | 32     | 332     | 168   |
| 300.twolf   | 32          | 550          | 202        | 32     | 550     | 202   |

### Hardware

CPU: R14000  
CPU MHz: 500  
FPU: Integrated  
CPU(s) enabled: 32 cores, 32 chips, 1 core/chip  
CPU(s) orderable: 4-32  
Parallel: No  
Primary Cache: 32KBI + 32KBD on chip  
Secondary Cache: 8MB(I+D) off chip  
L3 Cache: N/A  
Other Cache: N/A  
Memory: 32 GB  
Disk Subsystem: 1 x 18 GB FC, 20 x 18 GB FC (striped)  
Other Hardware: None

### Software

Operating System: IRIX 6.5.11f  
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: -DUSG -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
systemd -i ; percent_totalmem_4m_pages = 40 ; percent_totalmem_1m_pages = 7
systemd -i ; percent_totalmem_256k_pages = 7 ; percent_totalmem_64k_pages = 7
systemd -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

```