



# CINT2000 Result

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**SGI**  
SGI Origin 3800 64X 600MHz R14k

SPECint\_rate2000 = 362  
SPECint\_rate\_base2000 = 350

SPEC license #: 4 Tested by: SGI Test date: Feb-2002 Hardware Avail: Jan-2002 Software Avail: Nov-2001

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	64	440	236	64	428	243
175.vpr	64	252	412	64	238	436
176.gcc	64	251	325	64	252	324
181.mcf	64	244	549	64	244	549
186.crafty	64	201	370	64	207	359
197.parser	64	450	297	64	425	314
252.eon	64	258	375	64	237	407
253.perlbnk	64	496	270	64	496	269
254.gap	64	381	214	64	372	220
255.vortex	64	288	490	64	256	550
256.bzip2	64	309	360	64	291	383
300.twolf	64	474	470	64	474	470

**Hardware**

CPU: R14000  
CPU MHz: 600  
FPU: Integrated  
CPU(s) enabled: 64 cores, 64 chips, 1 core/chip  
CPU(s) orderable: 4-512  
Parallel: No  
Primary Cache: 32KBI + 32KBD on chip  
Secondary Cache: 8MB(I+D) off chip  
L3 Cache: N/A  
Other Cache: N/A  
Memory: 64 GB  
Disk Subsystem: 1 x 18 GB FC, 4 x 18 GB FC (striped)  
Other Hardware: None

**Software**

Operating System: IRIX 6.5.14m  
Compiler: MIPSpro 7.3.1.3m C, C++  
SCSL 1.4 Math Library  
File System: xfs  
System State: Single-user

## Notes/Tuning Information

Baseline optimization flags (C and C++ use same flags):  
PASS1 : -Ofast=ip35 -IPA:use\_intrinsic -fb\_create /tmp/SPEC2000/FBDIR/base/\$(EXEBASE)  
PASS2 : -Ofast=ip35 -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  
253.perlbnk: -DSPEC\_CPU2000\_SGI -DI\_FCNTL  
252.eon: -lm  
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=ip35 -IPA:space=500:plimit=500 -lmalloc (FEEDBACK)  
175.vpr: -Ofast=ip35 -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=ip35 -CG:ld_latency=4 (FEEDBACK)
186.crafty: -Ofast=ip35 -LNO:prefetch=0 -OPT:goto=off -CG:ld_latency=4 -lmalloc (FEEDBACK)
197.parser: -Ofast=ip35 -IPA:min_hot=14 (FEEDBACK)
252.eon: -Ofast=ip35 -LNO:prefetch=0 -LANG:exceptions=off -CG:ld_latency=4 -lmalloc -lm
      (FEEDBACK)
253.perlbnk: -Ofast=ip35 -IPA:use_intrinsic -Wl,-x (FEEDBACK)
254.gap: -Ofast=ip35 -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=ip35 -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=ip35 -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/FBDIR_peak/$baseexe ; mkdir -p /tmp/SPEC2000/FBDIR_peak/$baseexe
```

Jobs are submitted using dplace. Contents of the placement file submit.pf:

```
memories 1 in topology physical near $NODE
```

```
threads 1
```

```
run thread 0 on memory 0 using cpu $CPU
```

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.