



# CINT2000 Result

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Sun Microsystems  
Sun Fire 12K

SPECint\_rate2000 = 260  
SPECint\_rate\_base2000 = 230

SPEC license #: 6 Tested by: Sun Microsystems Test date: Mar-2003 Hardware Avail: Mar-2003 Software Avail: May-2003

| Benchmark   | Base Copies | Base Runtime | Base Ratio | Copies | Runtime | Ratio |
|-------------|-------------|--------------|------------|--------|---------|-------|
| 164.gzip    | 36          | 330          | 177        | 36     | 274     | 214   |
| 175.vpr     | 36          | 298          | 196        | 36     | 280     | 209   |
| 176.gcc     | 36          | 211          | 218        | 36     | 185     | 248   |
| 181.mcf     | 36          | 372          | 202        | 36     | 299     | 251   |
| 186.crafty  | 36          | 161          | 260        | 36     | 138     | 302   |
| 197.parser  | 36          | 349          | 215        | 36     | 303     | 248   |
| 252.eon     | 36          | 182          | 298        | 36     | 177     | 307   |
| 253.perlbnk | 36          | 312          | 241        | 36     | 286     | 263   |
| 254.gap     | 36          | 285          | 161        | 36     | 239     | 193   |
| 255.vortex  | 36          | 225          | 352        | 36     | 199     | 398   |
| 256.bzip2   | 36          | 243          | 258        | 36     | 230     | 272   |
| 300.twolf   | 36          | 507          | 247        | 36     | 469     | 267   |

### Hardware

CPU: UltraSPARC III Cu  
 CPU MHz: 1200  
 FPU: Integrated  
 CPU(s) enabled: 36 cores, 36 chips, 1 core/chip  
 CPU(s) orderable: 4-52  
 Parallel: No  
 Primary Cache: 32KBI+64KBD on chip  
 Secondary Cache: 8MB(I+D) off chip  
 L3 Cache: None  
 Other Cache: None  
 Memory: 288GB 16-way interleaved  
 Disk Subsystem: 1 x 36GB (System Disk)  
 Sun StorEdge T3, 9 x 18GB striped  
 Other Hardware: None

### Software

Operating System: Solaris 9 12/02  
 Compiler: Sun ONE Studio 8 (pre-FCS build 3/9)  
 Sun Performance Library 8 (pre-FCS build 3/9)  
 File System: ufs with ufs logging  
 System State: Multi-User

## Notes/Tuning Information

Compiler invocation:

C: cc  
 CXX: CC  
 F90: f90  
 F77: f90

Integer base flags:

-fast -xipo=2 with ONESTEP=yes and feedback

Integer peak flags:

ONESTEP=yes and feedback for all benchmarks

164.gzip: -xO4 -xbuiltin=%all -xtarget=native -xalias\_level=std  
 -xipo=2 -Wc,-Qeps:enabled=1,-Qeps:rp\_filtering\_margin=100  
 175.vpr: -fast -xalias\_level=std -xipo=2  
 -Wc,-Qeps:enabled=1,-Qeps:rp\_filtering\_margin=100 -lmopt -lm  
 176.gcc: -fast -xipo=2 -l12amm  
 181.mcf: -fast -xipo=2 -xprefetch\_level=3 -Wc,-Qeps:enabled=1  
 186.crafty: -fast -xinline= -xipo=2 -xalias\_level=strong -W2,-Ashort\_ldst



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## Notes/Tuning Information (Continued)

```

Feedback adds -xlinkopt in PASS2
197.parser: -fast -xipo=2 -xalias_level=strong
            -Wc,-Qgsched-T6,-Qipa:valueprediction
252.eon:    -fast -xipo=2 -xalias_level=compatible -noex
            -Qoption cg -Qeps:enabled=1,-Qeps:ws=32
253.perlbnk: -xO5 -xtarget=native -xipo -xalias_level=std -xsafe=mem
            -Wc,-Qeps:enabled=1,-Qeps:ws=8,-Qiselect-sw_pf_tbl_th=20,
            -Qiselect-funcalign=32,-Qicache-chbab=1
254.gap:    -fast -xipo=2 -xalias_level=strong -xvector
            -xprefetch_level=3 -W2,-Abcopy
255.vortex: -fast -xrestrict -xipo=2
            -W2,-crit,-Ainline:recursion=1:cs=500:irs=6000
            -Wc,-Qeps:enabled=1,-Qdepgraph-early_cross_call=1,
            -Qiselect-funcalign=32,-Qpeep-Sh0 -ll2amm
256.bzip2:  -fast -xipo -xalias_level=strong -xrestrict
            -Wc,-Qeps:enabled=1
300.twolf:  -fast -xalias_level=strong -xsafe=mem -xipo=2
            -xprefetch=no%auto -Wc,-Qms_pipe+intdivusefp

```

Feedback is done as follows, unless otherwise noted:

```

fdo_pre0:  rm -rf ./feedback.profile ./SunWS_cache
PASS1:     -xprofile=collect:./feedback
PASS2:     -xprofile=use:./feedback

```

Portability:

```

176.gcc:   -Dalloca=__builtin_alloca -DHOST_WORDS_BIG_ENDIAN
186.crafty: -DSUN
252.eon:   -library=iostream
253.perlbnk: -DSPEC_CPU2000_SOLARIS
254.gap:   -DSYS_IS_USG -DSYS_HAS_TIME_PROTO -DSYS_HAS_SIGNAL_PROTO
            -DSYS_HAS_CALLOC_PROTO -DSYS_HAS_IOCTL_PROTO

```

Shell Environments:

```

Stack size set to unlimited via "ulimit -s unlimited"
MPSSHEAP=4M
MPSSSTACK=4M
LD_PRELOAD=mpss.so.1

```

Kernel Parameters (/etc/system):

```

autoup=900
tune_t_fsflushr=1

```

Processes were bound to CPUs using submit=pbind