



# CINT2000 Result

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Sun Microsystems  
Sun Fire E4900 (8 processor)

SPECint\_rate2000 = 118  
SPECint\_rate\_base2000 = 106

SPEC license #: 6 Tested by: Sun Microsystems Test date: Apr-2004 Hardware Avail: Mar-2004 Software Avail: Apr-2004

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	16	332	78.3	16	279	93.0
175.vpr	16	280	92.9	16	267	97.2
176.gcc	16	193	106	16	177	115
181.mcf	16	297	112	16	259	129
186.crafty	16	163	114	16	137	136
197.parser	16	343	97.4	16	306	109
252.eon	16	177	136	16	172	141
253.perlbnk	16	302	110	16	277	121
254.gap	16	302	67.5	16	243	83.9
255.vortex	16	209	168	16	187	188
256.bzip2	16	245	114	16	229	122
300.twolf	16	536	104	16	519	107

### Hardware

CPU: UltraSPARC s400  
CPU MHz: 1200  
FPU: Integrated  
CPU(s) enabled: 16 cores, 8 chips, 2 cores/chip  
CPU(s) orderable: 4, 8, 12 (order by # chips)  
Parallel: No  
Primary Cache: 32KBI+64KBD per core on chip (64KBI+128KBD on chip)  
Secondary Cache: 8MB(I+D) per core off chip (16MB(I+D) off chip)  
L3 Cache: None  
Other Cache: None  
Memory: 32GB 16-way interleaved  
Disk Subsystem: Sun StorEdge S1 Disk Array (2x36GB)  
Sun StorEdge T3 Array for the Workgroup (9x36GB)  
Other Hardware: None

### Software

Operating System: Solaris 9 04/04  
Compiler: Sun ONE Studio 8  
Sun Performance Library 8  
File System: ufs with ufs logging  
System State: Multi-User

## Notes/Tuning Information

Compiler invocation:

C: cc  
CXX: CC

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=2 -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

The system was configured with multiple file systems.  
The O/S was installed on one disk of the Sun StorEdge S1  
Disk Array (ufs, ufs w/logging). The benchmark was run on  
the Sun StorEdge T3 Array, using H/W Raid 5 and ufs with  
ufs logging file system.