



# CINT2000 Result

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Sun Microsystems  
Sun Fire E25K (64 processor)

SPECint\_rate2000 = 791  
SPECint\_rate\_base2000 = 715

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

2000	1500	1000	500	Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
				164.gzip	128	426	488	128	385	540
				175.vpr	128	308	676	128	293	709
				176.gcc	128	280	583	128	236	692
				181.mcf	128	349	766	128	302	884
				186.crafty	128	182	817	128	145	1027
				197.parser	128	364	734	128	325	823
				252.eon	128	192	1004	128	186	1038
				253.perlbnk	128	346	773	128	322	831
				254.gap	128	392	417	128	339	481
				255.vortex	128	241	1170	128	216	1303
				256.bzip2	128	331	674	128	322	691
				300.twolf	128	564	789	128	547	814

### Hardware

CPU: UltraSPARC IV  
CPU MHz: 1200  
FPU: Integrated  
CPU(s) enabled: 128 cores, 64 chips, 2 cores/chip  
CPU(s) orderable: 4-72 (order by chips in groups of 4)  
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: 256GB 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 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.