



# CINT2000 Result

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Sun Microsystems  
Sun Fire E20K (16 processor)

SPECint\_rate2000 = 334  
SPECint\_rate\_base2000 = 282

SPEC license #: 6 Tested by: Sun Microsystems Test date: Dec-2005 Hardware Avail: Oct-2005 Software Avail: Nov-2005

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	32	218	238	32	197	264
175.vpr	32	191	272	32	182	285
176.gcc	32	261	157	216	810	340
181.mcf	32	268	249	32	222	300
186.crafty	32	97.4	381	32	89.5	415
197.parser	32	245	273	32	212	314
252.eon	32	126	382	32	118	410
253.perlbnk	32	197	339	32	189	354
254.gap	32	285	143	216	1319	209
255.vortex	32	129	547	32	123	574
256.bzip2	32	182	305	32	180	310
300.twolf	32	357	312	32	318	350

### Hardware

CPU: UltraSPARC IV+  
CPU MHz: 1500  
FPU: Integrated  
CPU(s) enabled: 32 cores, 16 chips, 2 cores/chip  
CPU(s) orderable: 4-36 (order by number of chips, groups of 4)  
Parallel: No  
Primary Cache: 64KBI+64KBD per core on chip (128KBI+128KBD on chip)  
Secondary Cache: 2MB(I+D) per chip (on chip)  
L3 Cache: 32MB(I+D) per chip (off chip)  
Other Cache: None  
Memory: 128GB 16-way interleaved  
Disk Subsystem: Sun StorEdge D240 Media Tray (2x73GB)  
Sun StorEdge 6120 Array (14x73GB)  
Other Hardware: None

### Software

Operating System: Solaris 10  
Compiler: Sun Studio 11  
File System: ufs (default ufs logging on with Solaris 10)  
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 for all benchmarks  
Profile feedback used for those marked with +FDO

164.gzip: -x04 -xbuiltin=%all -xtarget=native -xalias\_level=std  
-xipo=2 -Wc,-Qeps:enabled=1,-Qeps:rp\_filtering\_margin=30,  
-Qeps:do\_spec\_load=1 +FDO  
175.vpr: -fast -Wc,-Qeps:enabled=1,-Qeps:do\_spec\_load=1,  
-Qeps:rp\_filtering\_margin=30 -xipo=2 -xpagesize\_stack=8K  
-lmopt -lm +FDO



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## Notes/Tuning Information (Continued)

```

176.gcc: -fast -xipo=2 -Wc,-Qicache-chbab=1 -Wc,-Qeps:enabled=1
        -Qeps:ws=32 -Wc,-Qdepgraph-early_cross_call=1
        -Wc,-Qms_pipe-pref_prolog -ll2amm +FDO
181.mcf: -fast -xipo=2 -xprefetch_level=2
186.crafty: -fast -xpagesize=8k -xipo=2 -xalias_level=strong
        -W2,-Ashort_ldst -xinline= -xprefetch -xrestrict
        +FDO (-xlinkopt during pass2)
197.parser: -fast -xipo=2 -xalias_level=strong -Wc,Qgsched-T6
        -Wc,-Qipa:valueprediction -Wc,-Qms_pipe-prefstrong=0,
        -Qlp-pt=weak +FDO
252.eon: -fast -xipo=2 -xalias_level=compatible -Qoption cg
        -Qeps:enabled=1 -xvector -Qoption iropt -Abcopy -xunroll=16
        +FDO
253.perlbnk: -fast -xipo -Wc,-Qeps:enabled=1,-Qeps:ws=16 -xalias_level=std
        -xsafe=mem -Wc,-Qiselect-funcalign=128,-Qicache-chbab=1
        -Wc,-Qiselect-sw_pf_tbl_th=40,-Qeps:do_spec_load=1 +FDO
254.gap: -fast -W2,-Abcopy -xvector -xprefetch_level=3 +FDO
255.vortex: -fast -xrestrict -xipo=2 -Wc,-Qeps:enabled=1
        -W2,-Ainline:recursion=1:cs=400:irs=5000
        -Wc,-Qdepgraph-early_cross_call=1 -Wc,-Qiselect-funcalign=64
        -Wc,-Qpeep-Sh0 -W2,-crit -xprefetch=latx:1.7 -fsimple=1
        -Wc,-Qiselect-sw_pf_tbl_th=30 -Wc,-Qicache-chbab=1
        -W2,-Ainline:inc=300 -ll2amm +FDO
256.bzip2: -fast -xipo=2 -xalias_level=strong -xrestrict
        -Wc,-Qeps:enabled=1,-Qeps:do_spec_load=1 +FDO
300.twolf: -fast -xalias_level=strong -xsafe=mem -xipo=2
        -xprefetch=no%auto -Wc,-Qms_pipe+intdivusefp -xinline= +FDO

```

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: -DFMAX_IS_DOUBLE -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

```

The system was configured with multiple file systems.  
The O/S was installed on one disk of the Sun StorEdge D240  
Media Tray (ufs, ufs w/logging). The benchmark was run on  
the Sun StorEdge 6120 Array, using H/W Raid 5 and ufs with  
ufs logging file system.



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