



# CFP2000 Result

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Sun Microsystems  
Sun Fire V40z

SPECfp\_rate2000 = 19.6  
SPECfp\_rate\_base2000 = 18.0

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

| Benchmark    | Base Copies | Base Runtime | Base Ratio | Copies | Runtime | Ratio |
|--------------|-------------|--------------|------------|--------|---------|-------|
| 168.wupwise  | 1           | 96.3         | 19.3       | 1      | 76.3    | 24.3  |
| 171.swim     | 1           | 154          | 23.4       | 1      | 145     | 24.7  |
| 172.mgrid    | 1           | 130          | 16.1       | 1      | 110     | 18.9  |
| 173.applu    | 1           | 159          | 15.3       | 1      | 138     | 17.6  |
| 177.mesa     | 1           | 76.7         | 21.2       | 1      | 70.7    | 23.0  |
| 178.galgel   | 1           | 108          | 31.1       | 1      | 98.9    | 34.0  |
| 179.art      | 1           | 170          | 17.8       | 1      | 117     | 25.7  |
| 183.quake    | 1           | 96.4         | 15.6       | 1      | 91.1    | 16.6  |
| 187.facerec  | 1           | 85.1         | 25.9       | 1      | 85.1    | 25.9  |
| 188.amp      | 1           | 160          | 15.9       | 1      | 157     | 16.2  |
| 189.lucas    | 1           | 134          | 17.3       | 1      | 134     | 17.4  |
| 191.fma3d    | 1           | 141          | 17.2       | 1      | 141     | 17.2  |
| 200.sixtrack | 1           | 148          | 8.59       | 1      | 148     | 8.59  |
| 301.apsi     | 1           | 175          | 17.2       | 1      | 173     | 17.5  |

### Hardware

CPU: AMD Opteron (TM) 850  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 1 core, 1 chip, 1 core/chip  
 CPU(s) orderable: 1,2,4  
 Parallel: No  
 Primary Cache: 64KBI + 64KBD on chip  
 Secondary Cache: 1024KB (I+D) on chip  
 L3 Cache: N/A  
 Other Cache: N/A  
 Memory: 4x1GB, PC2700 CL2.5 DDR SDRAM ECC Registered  
 Disk Subsystem: SCSI, 73GB, 10K RPM  
 Other Hardware: None

### Software

Operating System: SuSE Linux 8.0 SLES 64 bit (SP3)  
 Compiler: PathScale EKO Compiler Suite, Release 1.1  
 SuSE optional gcc 3.3 (from SLES8 SP3)  
 PGI Fortran 5.2 (build 5.2-0E)  
 AMD Core Math Library (Version 2.0) for AMD64  
 File System: Linux/ext3  
 System State: Multi-user, Run level 3

## Notes/Tuning Information

A two-pass compilation method is used where indicated:

+PSFDO indicates PathScale feedback

PASS1: -fb\_create fbdata

PASS2: -fb\_opt fbdata

+ACML is the AMD Core Math Library V2.0

Compilers:

C: pathcc (PathScale C) unless otherwise noted

Fortran: pathf90 (PathScale f90) unless otherwise noted

If other compilers are used, they are indicated as:

gcc: Gnu C

pgf90: PGI Fortran

Floating Point base tuning:

Fortran: pgf90 -fastsse -Mipa=fast -Msmart

C: pathcc -Ofast -WOPT:mem\_opnds=on +PSFDO

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## Notes/Tuning Information (Continued)

Floating Point peak tuning:

```

168.wupwise: pgf90 -fastsse -Mipa=fast,inline -Msmart
171.swim: -Ofast -OPT:ro=3 -LNO:fusion=2:prefetch=2
172.mgrid: -O3 -OPT:Ofast
           -LNO:fusion=2:blocking=off:ou_max=5:sclrze=off:prefetch=2
           -OPT:unroll_times=8:unroll_size=256:ro=3
           -CG:gcm=off:cflow=off
173.applu: -O3 -ipa
           -LNO:fusion=2:interchange=OFF:blocking=OFF:ou_prod_max=10
           :ou_max=5:prefetch=2 -OPT:IEEE_arith=1:ro=3:unroll_size=0
           -TENV:X=4 -WOPT:mem_opnds=on:retype_expr=on:val=0 -CG:local_fwd_sched=on
177.mesa: -O2 -ipa -OPT:Ofast -fno-math-errno -CG:local_fwd_sched=on +PSFDO
178.galgel: pgf90 -fastsse -Mipa=fast -mp +ACML
           RM_SOURCES=lapak.f90 ONESTEP
179.art: -O3 -OPT:Ofast -fno-math-errno -m32 +PSFDO
183.quake: gcc -DSPEC_CPU2000_LP64 -O3 -funroll-all-loops -ffast-math
           -finline-limit=2000 ONESTEP
187.facerec: basepeak=true
188.ammp: -O3 -OPT:alias=disjoint:unroll_times=8:Ofast:ro=3
           -fno-math-errno -TENV:X=4 +PSFDO
189.lucas: pgf90 -fastsse -Mipa=fast,inline -Msmart
191.fma3d: basepeak=true
200.sixtrack: basepeak=true
301.apsi: -Ofast -TENV:X=4 -LNO:fusion=2:prefetch=0:blocking=off
           -IPA:linear=on:plimit=525

```

Portability:

178.galgel: -Mfixed

Notes:

BIOS build 2.1.0.9E, default setting was used.  
 Only one CPU was present in the system, other CPUs were physically removed.