



# CFP2000 Result

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**IBM**  
eServer 326, 2.4 GHz AMD Opteron (TM)

SPECfp\_rate2000 = **39.9**  
SPECfp\_rate\_base2000 = **37.3**

SPEC license #: 11 | Tested by: IBM Corporation | Test date: Oct-2004 | Hardware Avail: Oct-2004 | Software Avail: Oct-2004

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
168.wupwise	2	94.7	39.2	2	80.5	46.1
171.swim	2	125	57.7	2	124	58.0
172.mgrid	2	119	34.9	2	112	37.3
173.applu	2	142	34.4	2	115	42.4
177.mesa	2	78.2	41.5	2	71.1	45.7
178.galgel	2	108	62.2	2	110	61.4
179.art	2	147	41.1	2	110	54.9
183.quake	2	89.3	33.8	2	88.4	34.1
187.facerec	2	99.5	44.3	2	97.9	45.0
188.amp	2	160	31.9	2	154	33.2
189.lucas	2	116	40.1	2	118	39.2
191.fma3d	2	153	31.8	2	149	32.8
200.sixtrack	2	164	15.6	2	152	16.8
301.apsi	2	166	36.3	2	165	36.6

**Hardware**

CPU: AMD Opteron 250  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 2 chips, 1 core/chip  
 CPU(s) orderable: 1,2  
 Parallel: No  
 Primary Cache: 64KBI + 64KBD on chip  
 Secondary Cache: 1024KB (I+D) on chip  
 L3 Cache: N/A  
 Other Cache: N/A  
 Memory: 8x512MB, DDR400  
 Disk Subsystem: SCSI, 36GB 10K RPM  
 Other Hardware: None

**Software**

Operating System: SuSE Linux 8.0 SLES 64 bit Kernel 2.4.21-143-smp (SP3)  
 Compiler: PathScale EKO Compiler Suite, Release 1.4  
 File System: Linux/reiserfs  
 System State: Multi-user, run level 3

## Notes/Tuning Information

Tested by IBM Corporation

+FDO: PASS1= -fb\_create fbdata PASS2= -fb\_opt fbdata

Baseline optimization:

C: pathcc -Ofast -WOPT:mem\_opnds=on +FDO  
Fortran: pathf90 -Ofast -LNO:fusion=2

Portability Flags:

178.galgel: -fixedform

Peak Tuning:

168.wupwise: -Ofast -LNO:prefetch Ahead=5:prefetch=3  
-OPT:unroll\_times\_max=8:unroll\_size=128:IEEE\_NaN\_Inf=off:ro=3 -TENV:X=4

loader: -IPA:space=1000:linear=on:plimit=50000:callee\_limit=5000  
-INLINE:aggressive=on

171.swim: -Ofast -LNO:fusion=2

172.mgrid: -O3 -LNO:fusion=2:blocking=off



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## Notes/Tuning Information (Continued)

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-OPT:Ofast:unroll_times_max=8:unroll_size=256:ro=3
-CG:gcm=off:cflow=off
173.applu: -Ofast -CG:local_fwd_sched=on
-LNO:fusion=2:fission=2:full_unroll_size=10000:prefetch=3
-OPT:ro=3 -TENV:X=3 -WOPT:val=2
177.mesa: -O2 -ipa -OPT:Ofast -fno-math-errno
-CG:local_fwd_sched=on +FDO
178.galgel: -Ofast -OPT:fast_complex
-CG:load_exe=0:use_movlpd=on
179.art: -O3 -OPT:ro=2:div_split=on:alias=typed
-fno-math-errno -m32 +FDO
183.equake: -Ofast -WOPT:mem_opnds=on -CG:local_fwd_sched=on
187.facerec: -Ofast -OPT:treeheight=on:IEEE_NaN_Inf=off:ro=3
-CG:load_exe=0 -LNO:fusion=2 +FDO -IPA:plimit=1800
188.ammp: -O3 -OPT:alias=disjoint:unroll_times_max=8:Ofast:ro=3
-fno-math-errno -TENV:X=4 -LNO:prefetch=0 +FDO
189.lucas: -Ofast -CG:load_exe=2:local_fwd_sched=on -LNO:fusion=2
-TENV:X=4 -WOPT:retype_expr=on +FDO
191.fma3d: -O2 -ipa -WOPT:mem_opnds=on:retype_expr=on -OPT:Ofast:IEEE_arith=3:ro=3
-LANG:short_circuit_conditionals=on +FDO -IPA:pu_reorder=on
200.sixtrack: -Ofast -CG:load_exe=1 +FDO
301.apsi: -Ofast -TENV:X=4 -LNO:fusion=2:prefetch=0

```

BIOS Settings:  
ChipKill was DISABLED

Compiler Flags File:  
IBM-PathScale-20041025