



# CINT2000 Result

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## IBM

eServer 325, 2.0 GHz Opteron, gcc, 64-bit SuSE SLES8 Linux

SPECint\_rate2000 = 14.2

SPECint\_rate\_base2000 = 12.9

SPEC license #: 11 | Tested by: IBM, Research Triangle Park, NC | Test date: Aug-2003 | Hardware Avail: Oct-2003 | Software Avail: Jul-2003

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	1	136	11.9	1	131	12.4
175.vpr	1	145	11.2	1	144	11.3
176.gcc	1	80.1	15.9	1	78.7	16.2
181.mcf	1	352	5.93	1	211	9.90
186.crafty	1	57.1	20.3	1	54.8	21.2
197.parser	1	185	11.3	1	169	12.4
252.eon	1	77.1	19.6	1	70.9	21.3
253.perlbnk	1	138	15.1	1	137	15.2
254.gap	1	108	11.8	1	108	11.8
255.vortex	1	148	14.9	1	133	16.5
256.bzip2	1	144	12.1	1	141	12.3
300.twolf	1	286	12.1	1	234	14.9

### Hardware

CPU: AMD Opteron 246  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 1 core, 1 chip, 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: 2 x 512MB PC2700 Reg ECC DDR SDRAM CL2.5  
 Disk Subsystem: 1 x 36GB 10Krpm SCSI  
 Other Hardware: None

### Software

Operating System: SuSE Linux 8.0 SLES 64 bit Kernel 2.4.19-249 (SP2)  
 Compiler: SuSE gcc33 optional compiler (from SLES8 SP2)  
 File System: Linux/reiserfs  
 System State: Multi-user SuSE Run level 5

## Notes/Tuning Information

Tested by IBM Corporation

gcc is the SuSE optional gcc33 package C compiler (from SLES8 SP2)

+FDO: PASS1=-fprofile-arcs PASS2=-fbranch-probabilities

ONESTEP is used for all base runs

Portability: PORTABILITY=-DSPEC\_CPU2000\_LP64 is applied to all benchmarks

(affecting only 176.gcc, 252.eon, 253.perlbnk, 254.gap, and 255.vortex)

176.gcc: Approved src.alt is used

186.crafty: CPORTABILITY=-DLINUX\_i386

252.eon: CXXPORTABILITY=-DHAS\_ERRLIST -DFMAX\_IS\_DOUBLE

253.perlbnk: Approved src.alt is used

253.perlbnk: CPORTABILITY=-DSPEC\_CPU2000\_LINUX\_I386 -DSPEC\_CPU2000\_NEED\_BOOL

-DSPEC\_CPU2000\_GLIBC22

254.gap: CPORTABILITY=-DSYS\_IS\_USG -DSYS\_HAS\_IOCTL\_PROTO

-DSYS\_HAS\_TIME\_PROTO -DSYS\_HAS\_SIGNAL\_PROTO

-DSYS\_HAS\_ANSI -DSYS\_HAS\_CALLOC\_PROTO

Baseline C: gcc -O3 -funroll-all-loops +FDO

Baseline C++: g++ -O3 -funroll-all-loops +FDO

Peak tuning:

164.gzip: -O3 -funroll-all-loops -finline-limit=900 -freduce-all-givs +FDO

175.vpr: -O3 -funroll-loops -finline-limit=1000 +FDO

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## Notes/Tuning Information (Continued)

```
176.gcc:      -O3 -funroll-all-loops -finline-limit=900 +FDO
181.mcf:      -O3 -funroll-all-loops -m32 +FDO
              ONESTEP=yes
186.crafty:   -O3 -funroll-loops -fprefetch-loop-arrays
197.parser:   -O3 -funroll-all-loops -m32 +FDO
              ONESTEP=yes
252.eon:      -O3 -funroll-all-loops -ffast-math -finline-limit=3000 +FDO
253.perlbmk:  -O3 -funroll-all-loops -finline-limit=1800 +FDO
254.gap:      basepeak=true
255.vortex:   -O3 -funroll-all-loops -finline-limit=1000 +FDO
256.bzip2:    -O3 -funroll-all-loops -freduce-all-givs -finline-limit=2700 +FDO
300.twolf:    -O3 -funroll-all-loops -static -finline-limit=2000 -m32 +FDO
```

Set the following BIOS parameters:

- DRAM Interleave = AUTO
- Node Interleave = Disabled
- ACPI SRAT = Disabled

Only 1 CPU installed in system