



# CINT2000 Result

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## IBM

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

SPECint\_rate2000 = 27.5

SPECint\_rate\_base2000 = 24.9

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

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
164.gzip	2	137	23.8	2	131	24.8
175.vpr	2	156	20.9	2	145	22.3
176.gcc	2	80.7	31.6	2	79.9	31.9
181.mcf	2	447	9.34	2	303	13.8
186.crafty	2	57.6	40.3	2	55.0	42.2
197.parser	2	182	23.0	2	168	24.9
252.eon	2	77.0	39.2	2	71.0	42.5
253.perlbnk	2	139	30.0	2	139	30.0
254.gap	2	104	24.4	2	104	24.4
255.vortex	2	149	29.6	2	134	32.8
256.bzip2	2	143	24.4	2	142	24.5
300.twolf	2	349	19.9	2	237	29.3

### Hardware

CPU: AMD Opteron 246  
CPU MHz: 2000  
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: 2x1024MB + 4x512MB PC2700 Reg ECC DDR SDRAM CL2.5  
Disk Subsystem: 1 x 40GB IDE  
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

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

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## Notes/Tuning Information (Continued)

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