



CINT2000 Result

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IBM Corporation
IBM eServer p5 590 (1650 MHz, 1 CPU)

SPECint2000 = 1259
SPECint_base2000 = 1200

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

| Benchmark | Reference Time | Base Runtime | Base Ratio | Runtime | Ratio | |
|-------------|----------------|--------------|------------|---------|-------|--|
| 164.gzip | 1400 | 187 | 749 | 183 | 766 | |
| 175.vpr | 1400 | 132 | 1064 | 132 | 1062 | |
| 176.gcc | 1100 | 82.1 | 1339 | 81.5 | 1350 | |
| 181.mcf | 1800 | 86.9 | 2072 | 80.1 | 2246 | |
| 186.crafty | 1000 | 97.6 | 1025 | 79.0 | 1265 | |
| 197.parser | 1800 | 168 | 1068 | 166 | 1083 | |
| 252.eon | 1300 | 93.6 | 1389 | 90.5 | 1437 | |
| 253.perlbnk | 1800 | 214 | 843 | 196 | 920 | |
| 254.gap | 1100 | 99.1 | 1110 | 99.1 | 1110 | |
| 255.vortex | 1900 | 103 | 1846 | 96.6 | 1967 | |
| 256.bzip2 | 1500 | 131 | 1142 | 128 | 1172 | |
| 300.twolf | 3000 | 223 | 1348 | 216 | 1389 | |

Hardware

CPU: POWER5
 CPU MHz: 1650
 FPU: Integrated
 CPU(s) enabled: 1 core, 1 chip, 1 core/chip (SMT off)
 CPU(s) orderable: 8,16,24,32
 Parallel: No
 Primary Cache: 64KBI+32KBD (on chip)/core
 Secondary Cache: 1920KB unified (on chip)/chip
 L3 Cache: 36MB unified (off-chip)/chip, 4 chips/MCM, 4 MCMs/SUT
 Other Cache: None
 Memory: 128 GB DDR1
 Disk Subsystem: 2x36GB SCSI, 15K RPM
 Other Hardware: None

Software

Operating System: AIX 5L V5.3
 Compiler: XL C/C++ Enterprise Edition V7.0 for AIX
 File System: AIX/JFS2
 System State: Multi-user

Notes/Tuning Information

Tested by IBM

Portability Flags:

```
176.gcc: EXTRA_CFLAGS=-ma -DHOST_WORDS_BIG_ENDIAN
186.crafty: EXTRA_CFLAGS=-DAIX
252.eon: EXTRA_LDFLAGS=-I. -DNDEBUG
253.perlbnk: EXTRA_CFLAGS=-DSPEC_CPU2000_AIX
254.gap: EXTRA_CFLAGS=-DSYS_IS_BSD -DSYS_STRING_H -DSYS_HAS_TIME_PROTO -DSYS_HAS_MALLOC_PROTO
-DSYS_HAS_CALLOC_PROTO
300.twolf: EXTRA_CFLAGS=-DHAVE_SIGNED_CHAR
```

Base Optimization Flags:

```
C: -qpdf1/pdf2
-O5 -blpdata -D_ILS_MACROS
C++: -qpdf1/pdf2
-O5 -lhm -qalign=natural
```

Alternate Sources for Base & Peak:

Approved alternate-source file 252.eon.fmax_errno.src.alt.tar.gz was used with 252.eon for POSIX-compatibility.



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Notes/Tuning Information (Continued)

Peak Optimization Flags:

```

164.gzip:      -qpdf1/pdf2
               -O5 -blpdata -D_ILS_MACROS -qfdpr
               fdpr -R3
175.vpr:      -qpdf1/pdf2
               -O5 -blpdata -qalign=natural -qhot=arraypad -Q
176.gcc:      -qpdf1/pdf2
               -O5
181.mcf:      -O5 -blpdata -qfdpr -D_ILS_MACROS
               fdpr -R3
186.crafty:   -qpdf1/pdf2
               -O4 -q64 -qfdpr -qarch=pwr3 -qtune=pwr3 -D_ILS_MACROS
               fdpr -R3
197.parser:   -qpdf1/pdf2
               -O5 -blpdata -D_ILS_MACROS -qfdpr
               fdpr -R3
252.eon:      -qpdf1/pdf2
               -O4 -qarch=pwr4 -qtune=pwr4 -qalign=natural -D_ILS_MACROS
253.perlbnk:  -qpdf1/pdf2
               -O5 -lhmu -qalign=natural
254.gap:      -qpdf1/pdf2
               -O5 -lhmu -qalign=natural -D_ILS_MACROS -blpdata
255.vortex:   -qpdf1/pdf2
               -O5 -lhmu -qalign=natural -D_ILS_MACROS -blpdata
256.bzip2:   -qpdf1/pdf2
               -O5 -blpdata -D_ILS_MACROS -qfdpr
               fdpr -R3
300.twolf:    -O5 -blpdata -qfdpr -D_ILS_MACROS
               fdpr -R3

```

SMT: Acronym for "Simultaneous Multi-Threading". A processor technology that allows the simultaneous execution of multiple thread contexts within a single processor core. (Enabled by default)

MCM: Acronym for "Multi-Chip Module" (four dual-core processor chips + four L3-cache chips)
This system contains 4 MCMs.

SUT: Acronym for "System Under Test"

C: IBM XL C for AIX invoked as xlc
C++: IBM XL C++ for AIX invoked as xlc

APAR IY60349 was applied to AIX to enable new hardware support.
ulimits set to unlimited.

Large page mode and memory affinity were set as follows:

```

vmo -r -o lpgg_regions=4096 -o lpgg_size=16777216 -o memory_affinity=1
chuser capabilities=CAP_BYPASS_RAC_VMM,CAP_PROPAGATE $USER
shutdown -r
export MEMORY_AFFINITY=MCM

```

Thirty-one cores were deconfigured and SMT disabled at the open-firmware prompt, using the command

```
boot -s cpu=1 -s smt_off
```

The following config-file entry was used to assign each benchmark process to a core:

```

use_submit_for_speed = 1
submit = let "MYCPU=\$SPECUSERNUM"; bindprocessor \$\$ \$MYCPU; $command

```

The "bindprocessor" AIX command binds a process to a CPU core.



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