

从gcc -v option可以窥探很多gcc背后的运行机理，便于调试编译问题。

```
1. walterzh@walterzh-Precision-T1650:~/work/victor$ cat test.c
2. int main()
3. {
4.     return 0;
5. }
```

```

1. walterzh@walterzh-Precision-T1650:~/work/victor$ arm-linux-gnueabi-gcc -v te
   st.c
2. Using built-in specs.
3. COLLECT_GCC=arm-linux-gnueabi-gcc
4. COLLECT_LTO_WRAPPER=/usr/lib/gcc-cross/arm-linux-gnueabi/4.7/lto-wrapper
5. Target: arm-linux-gnueabi
6. Configured with: ../src/configure -v --with-pkgversion='Ubuntu/Linaro 4.7.3-
   12ubuntu1' --with-bugurl=file:///usr/share/doc/gcc-4.7/README.Bugs --enable-
   languages=c,c++,go,fortran,objc,obj-c++ --prefix=/usr --program-suffix=-4.7
   --enable-shared --enable-linker-build-id --libexecdir=/usr/lib --without-inc
   luded-gettext --enable-threads=posix --with-gxx-include-dir=/usr/arm-linux-g
   nueabi/include/c++/4.7.3 --libdir=/usr/lib --enable-nls --with-sysroot=/ --e
   nable-clocale=gnu --enable-libstdcxx-debug --enable-gnu-unique-object --disa
   ble-libmudflap --disable-libitm --enable-plugin --with-system-zlib --enable-
   objc-gc --with-cloog --enable-cloog-backend=ppl --disable-cloog-version-chec
   k --disable-ppl-version-check --enable-multiarch --enable-multilib --disable
   -sjlj-exceptions --with-arch=armv5t --with-float=soft --disable-werror --ena
   ble-checking=release --build=x86_64-linux-gnu --host=x86_64-linux-gnu --targ
   et=arm-linux-gnueabi --program-prefix=arm-linux-gnueabi- --includedir=/usr/a
   rm-linux-gnueabi/include
7. Thread model: posix
8. gcc version 4.7.3 (Ubuntu/Linaro 4.7.3-12ubuntu1)
9. COLLECT_GCC_OPTIONS='-v' '-march=armv5t' '-mfloat-abi=soft' '-mtls-dialect=g
   nu'
10.
11. ①
12.
13. /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/cc1 -quiet -v -imultilib sf -imult
   iarch arm-linux-gnueabi test.c -quiet -dumpbase test.c -march=armv5t -mfloat
   -abi=soft -mtls-dialect=gnu -auxbase test -version -fstack-protector -o /tmp
   /ccNgq9eU.s
14. GNU C (Ubuntu/Linaro 4.7.3-12ubuntu1) version 4.7.3 (arm-linux-gnueabi)
15.    compiled by GNU C version 4.8.2, GMP version 5.1.3, MPFR version 3.1.2-p
   3, MPC version 1.0.1
16. warning: GMP header version 5.1.3 differs from library version 6.0.0.
17.
18. ②
19.
20. GGC heuristics: --param ggc-min-expand=100 --param ggc-min-heapsize=131072
21. ignoring nonexistent directory "/usr/local/include/arm-linux-gnueabi"
22. ignoring nonexistent directory "/usr/include/arm-linux-gnueabi"
23. #include "... " search starts here:
24. #include <...> search starts here:
25. /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/include
26. /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/include-fixed
27. /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/../../../../arm-linux-gnueabi/incl
   ude
28. /usr/include
29. End of search list.
30. GNU C (Ubuntu/Linaro 4.7.3-12ubuntu1) version 4.7.3 (arm-linux-gnueabi)
31.    compiled by GNU C version 4.8.2, GMP version 5.1.3, MPFR version 3.1.2-p
   3, MPC version 1.0.1
32. warning: GMP header version 5.1.3 differs from library version 6.0.0.

```

```

33. GGC heuristics: --param gcc-min-expand=100 --param gcc-min-heapsize=131072
34. Compiler executable checksum: 550509f4ff92bab4626b84fc11f267f2
35. COLLECT_GCC_OPTIONS='-v' '-march=armv5t' '-mfloat-abi=soft' '-mtls-dialect=g
nu'
36.
37. ③
38.
39. /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/../../../../arm-linux-gnueabi/bin/
as -v -march=armv5t -mfloat-abi=soft -meabi=5 -o /tmp/ccsakdPD.o /tmp/ccNgq9
eU.s
40. GNU assembler version 2.24 (arm-linux-gnueabi) using BFD version (GNU Binuti
ls for Ubuntu) 2.24
41. COMPILER_PATH=/usr/lib/gcc-cross/arm-linux-gnueabi/4.7:/usr/lib/gcc-cross/a
rm-linux-gnueabi/4.7:/usr/lib/gcc-cross/arm-linux-gnueabi:/usr/lib/gcc-cro
ss/arm-linux-gnueabi/4.7:/usr/lib/gcc-cross/arm-linux-gnueabi:/usr/lib/gcc
-cross/arm-linux-gnueabi/4.7/../../../../arm-linux-gnueabi/bin/
42. ④
43. LIBRARY_PATH=/usr/lib/gcc-cross/arm-linux-gnueabi/4.7/../../../../arm-linux-
gnueabi/lib/./lib:/lib/./lib:/usr/lib/./lib:/usr/lib/gcc-cross/arm-lin
ux-gnueabi/4.7:/usr/lib/gcc-cross/arm-linux-gnueabi/4.7/../../../../arm-lin
ux-gnueabi/lib:/lib:/usr/lib/
44. COLLECT_GCC_OPTIONS='-v' '-march=armv5t' '-mfloat-abi=soft' '-mtls-dialect=g
nu'
45. ⑤
46. /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/collect2 --sysroot=/ --build-id --
eh-frame-hdr -dynamic-linker /lib/ld-linux.so.3 -X --hash-style=gnu --as-nee
ded -m armelf_linux_eabi -z relro /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/.
../../../../arm-linux-gnueabi/lib/./lib/crt1.o /usr/lib/gcc-cross/arm-linux-
gnueabi/4.7/../../../../arm-linux-gnueabi/lib/./lib/crti.o /usr/lib/gcc-cro
ss/arm-linux-gnueabi/4.7/crtbegin.o -L/usr/lib/gcc-cross/arm-linux-gnueabi/4
.7/../../../../arm-linux-gnueabi/lib/./lib -L/lib/./lib -L/usr/lib/./lib
-L/usr/lib/gcc-cross/arm-linux-gnueabi/4.7 -L/usr/lib/gcc-cross/arm-linux-gn
ueabi/4.7/../../../../arm-linux-gnueabi/lib /tmp/ccsakdPD.o -lgcc --as-neede
d -lgcc_s --no-as-needed -lc -lgcc --as-needed -lgcc_s --no-as-needed /usr/l
ib/gcc-cross/arm-linux-gnueabi/4.7/crtend.o /usr/lib/gcc-cross/arm-linux-gn
ueabi/4.7/../../../../arm-linux-gnueabi/lib/./lib/crtn.o
47. walterzh@walterzh-Precision-T1650:~/work/victor$

```

①

真正compile时运行的command

默认生成的是-march=armv5t code。

②

compile是从哪儿search header file

③

把asm汇编成obj

④

连接时从哪儿取找lib file

⑤

真正link

arm-pokymllib32r4-linux-gnueabi-gcc -v -march=armv7 test.c

```
1. /usr/lib/gcc-cross/arm-linux-gnueabi/4.7/cc1 -quiet -v -imultilib sf -imulti  
arch arm-linux-gnueabi test.c -quiet -dumpbase test.c -march=armv7 -mfloat-a  
bi=soft -mtls-dialect=gnu -auxbase test -version -fstack-protector -o /tmp/c  
cMmO62W.s
```

arm-pokymllib32r4-linux-gnueabi-gcc -v -march=armv6 test.c

```
1. /home/walterzh/work/2016-05-LSP/64-bit/tmp/sysroots/x86_64-linux/usr/libexe  
c/arm-pokymllib32r4-linux-gnueabi/gcc/arm-pokymllib32r4-linux-gnueabi/4.9.3/  
cc1 -quiet -v test.c -quiet -dumpbase test.c -march=armv6 -mtls-dialect=gnu  
-auxbase test -version -o /tmp/cctFPLkn.s
```