GCC Arm 嵌入式编译器的研究

GCC 对嵌入式cpu的支持似乎不是很好

1. Readme.txt

GNU Tools for ARM Embedded Processors

Version: 6

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\* Installing executables on Linux \*

Unpack the tarball to the install directory, like this:

$ cd $install\_dir && tar xjf gcc-arm-none-eabi-\*-yyyymmdd-linux.tar.bz2

If you want to use gdb python build (arm-none-eabi-gdb-py), you'd

install python2.7.

For some Ubuntu releases, the toolchain can also be installed via

Launchpad PPA at https://launchpad.net/~team-gcc-arm-embedded/+archive/ubuntu/ppa.

\* Installing executables on Mac OS X \*

Unpack the tarball to the install directory, like this:

$ cd $install\_dir && tar xjf gcc-arm-none-eabi-\*-yyyymmdd-mac.tar.bz2

\* Installing executables on Windows \*

Run the installer (gcc-arm-none-eabi-\*-yyyymmdd-win32.exe) and follow the

instructions. The installer can also be run on the command line. When run on

the command-line, the following options can be set:

- /S Run in silent mode

- /P Adds the installation bin directory to the system PATH

- /R Adds an InstallFolder registry entry for the install.

For example, to install the tools silently, amend users PATH and add registry

entry:

> gcc-arm-none-eabi-\*-yyyymmdd-win32.exe /S /P /R

The toolchain in windows zip package is a backup to windows installer for

those who cannot run installer. We need decompress the zip package

in a proper place and then invoke it following instructions in next section.

To use gdb python build (arm-none-eabi-gdb-py), you need install 32 bit

python2.7 no matter 32 or 64 bit Windows. Please get the package from

https://www.python.org/download/.

\* Invoking GCC \*

On Linux and Mac OS X, either invoke with the complete path like this:

$ $install\_dir/gcc-arm-none-eabi-\*/bin/arm-none-eabi-gcc

Or set path like this:

$ export PATH=$PATH:$install\_dir/gcc-arm-none-eabi-\*/bin

$ arm-none-eabi-gcc

On Windows (although the above approaches also work), it can be more

convenient to either have the installer register environment variables, or run

INSTALL\_DIR\bin\gccvar.bat to set environment variables for the current cmd.

For windows zip package, after decompression we can invoke toolchain either with

complete path like this:

TOOLCHAIN\_UNZIP\_DIR\bin\arm-none-eabi-gcc

or run TOOLCHAIN\_UNZIP\_DIR\bin\gccvar.bat to set environment variables for the

current cmd.

\* Architecture options usage \*

This toolchain is built and optimized for Cortex-A/R/M bare metal development.

the following table shows how to invoke GCC/G++ with correct command line

options for variants of Cortex-A/R and Cortex-M architectures.

--------------------------------------------------------------------------

| ARM core | Command Line Options | multilib |

| / ARM arch | | |

|------------|--------------------------------------------|--------------|

| Cortex-M0+ | -mthumb -mcpu=cortex-m0plus | thumb |

| Cortex-M0 | -mthumb -mcpu=cortex-m0 | /v6-m |

| Cortex-M1 | -mthumb -mcpu=cortex-m1 | |

| |--------------------------------------------| |

| | -mthumb -march=armv6-m | |

|------------|--------------------------------------------|--------------|

| Cortex-M3 | -mthumb -mcpu=cortex-m3 | thumb |

| |--------------------------------------------| /v7-m |

| | -mthumb -march=armv7-m | |

|------------|--------------------------------------------|--------------|

| Cortex-M4 | -mthumb -mcpu=cortex-m4 | thumb |

| (No FP) |--------------------------------------------| /v7e-m |

| | -mthumb -march=armv7e-m | |

|------------|--------------------------------------------|--------------|

| Cortex-M4 | -mthumb -mcpu=cortex-m4 -mfloat-abi=softfp | thumb |

| (Soft FP) | -mfpu=fpv4-sp-d16 | /v7e-m |

| |--------------------------------------------| /fpv4-sp |

| | -mthumb -march=armv7e-m -mfloat-abi=softfp | /softfp |

| | -mfpu=fpv4-sp-d16 | |

|------------|--------------------------------------------|--------------|

| Cortex-M4 | -mthumb -mcpu=cortex-m4 -mfloat-abi=hard | thumb |

| (Hard FP) | -mfpu=fpv4-sp-d16 | /v7e-m |

| |--------------------------------------------| /fpv4-sp |

| | -mthumb -march=armv7e-m -mfloat-abi=hard | /hard |

| | -mfpu=fpv4-sp-d16 | |

|------------|--------------------------------------------|--------------|

| Cortex-M7 | -mthumb -mcpu=cortex-m7 | thumb |

| (No FP) |--------------------------------------------| /v7e-m |

| | -mthumb -march=armv7e-m | |

|------------|--------------------------------------------|--------------|

| Cortex-M7 | -mthumb -mcpu=cortex-m7 -mfloat-abi=softfp | thumb |

| (Soft FP) | -mfpu=fpv5-sp-d16 | /v7e-m |

| |--------------------------------------------| /fpv5-sp |

| | -mthumb -march=armv7e-m -mfloat-abi=softfp | /softfp |

| | -mfpu=fpv5-sp-d16 | |

| |--------------------------------------------|--------------|

| | -mthumb -mcpu=cortex-m7 -mfloat-abi=softfp | thumb |

| | -mfpu=fpv5-d16 | /v7e-m |

| |--------------------------------------------| /fpv5 |

| | -mthumb -march=armv7e-m -mfloat-abi=softfp | /softfp |

| | -mfpu=fpv5-d16 | |

|------------|--------------------------------------------|--------------|

| Cortex-M7 | -mthumb -mcpu=cortex-m7 -mfloat-abi=hard | thumb |

| (Hard FP) | -mfpu=fpv5-sp-d16 | /v7e-m |

| |--------------------------------------------| /fpv5-sp |

| | -mthumb -march=armv7e-m -mfloat-abi=hard | /hard |

| | -mfpu=fpv5-sp-d16 | |

| |--------------------------------------------|--------------|

| | -mthumb -mcpu=cortex-m7 -mfloat-abi=hard | thumb |

| | -mfpu=fpv5-d16 | /v7e-m |

| |--------------------------------------------| /fpv5 |

| | -mthumb -march=armv7e-m -mfloat-abi=hard | /hard |

| | -mfpu=fpv5-d16 | |

|------------|--------------------------------------------|--------------|

| Cortex-M23 | -mthumb -mcpu=cortex-m23 | thumb |

| |--------------------------------------------| /v8-m.base |

| | -mthumb -march=armv8-m.base | |

|------------|--------------------------------------------|--------------|

| Cortex-M33 | -mthumb -mcpu=cortex-m33 | thumb |

| (No FP) |--------------------------------------------| /v8-m.main |

| | -mthumb -march=armv8-m.main | |

|------------|--------------------------------------------|--------------|

| Cortex-M33 | -mthumb -mcpu-cortex-m33 | thumb |

| (Soft FP) | -mfloat-abi=softfp -mfpu=fpv5-sp-d16 | /v8-m.main |

| |--------------------------------------------| /fpv5-sp |

| | -mthumb -march=armv8-m.main | /softfp |

| | -mfloat-abi=softfp -mfpu=fpv5-sp-d16 | |

| |--------------------------------------------|--------------|

| | -mthumb -mcpu-cortex-m33 | thumb |

| | -mfloat-abi=softfp -mfpu=fpv5-d16 | /v8-m.main |

| |--------------------------------------------| /fpv5 |

| | -mthumb -march=armv8-m.main | /softfp |

| | -mfloat-abi=softfp -mfpu=fpv5-d16 | |

|------------|--------------------------------------------|--------------|

| Cortex-M33 | -mthumb -mcpu=cortex-m33 | thumb |

| (Hard FP) | -mfloat-abi=hard -mfpu=fpv5-sp-d16 | /v8-m.main |

| |--------------------------------------------| /fpv5-sp |

| | -mthumb -march=armv8-m.main | /hard |

| | -mfloat-abi=softfp -mfpu=fpv5-d16 | |

| |--------------------------------------------|--------------|

| | -mthumb -mcpu=cortex-m33 | thumb |

| | -mfloat-abi=hard -mfpu=fpv5-d16 | /v8-m.main |

| |--------------------------------------------| /fpv5 |

| | -mthumb -march=armv8-m.main | /hard |

| | -mfloat-abi=hard -mfpu=fpv5-d16 | |

|------------|--------------------------------------------|--------------|

| Cortex-R4 | [-mthumb] -march=armv7-r | thumb |

| Cortex-R5 | | /v7-ar |

| Cortex-R7 | | |

| Cortex-R8 | | |

| (No FP) | | |

|------------|--------------------------------------------|--------------|

| Cortex-R4 | [-mthumb] -march=armv7-r -mfloat-abi=softfp| thumb |

| Cortex-R5 | -mfpu=vfpv3-d16 | /v7-ar |

| Cortex-R7 | | /fpv3 |

| Cortex-R8 | | /softfp |

| (Soft FP) | | |

|------------|--------------------------------------------|--------------|

| Cortex-R4 | [-mthumb] -march=armv7-r -mfloat-abi=hard | thumb |

| Cortex-R5 | -mfpu=vfpv3-d16 | /v7-ar |

| Cortex-R7 | | /fpv3 |

| Cortex-R8 | | /hard |

| (Hard FP) | | |

|------------|--------------------------------------------|--------------|

| Cortex-A\* | [-mthumb] -march=armv7-a | thumb |

| (No FP) | | /v7-ar |

|------------|--------------------------------------------|--------------|

| Cortex-A\* | [-mthumb] -march=armv7-a -mfloat-abi=softfp| thumb |

| (Soft FP) | -mfpu=vfpv3-d16 | /v7-ar |

| | | /fpv3 |

| | | /softfp |

|------------|--------------------------------------------|--------------|

| Cortex-A\* | [-mthumb] -march=armv7-a -mfloat-abi=hard | thumb |

| (Hard FP) | -mfpu=vfpv3-d16 | /v7-ar |

| | | /fpv3 |

| | | /hard |

--------------------------------------------------------------------------

\* C Libraries usage \*

This toolchain is released with two prebuilt C libraries based on newlib:

one is the standard newlib and the other is newlib-nano for code size.

To distinguish them, we rename the size optimized libraries as:

libc.a --> libc\_nano.a

libg.a --> libg\_nano.a

To use newlib-nano, users should provide additional gcc compile and link time

option:

--specs=nano.specs

At compile time, a 'newlib.h' header file especially configured for newlib-nano

will be used if --specs=nano.specs is passed to the compiler.

Nano.specs also handles two additional gcc libraries: libstdc++\_nano.a and

libsupc++\_nano.a, which are optimized for code size.

For example:

$ arm-none-eabi-gcc src.c --specs=nano.specs $(OTHER\_OPTIONS)

This option can also work together with other specs options like

--specs=rdimon.specs

Please note that --specs=nano.specs is a both a compiler and linker option. Be

sure to include in both compiler and linker options if compiling and linking

are separated.

\*\* additional newlib-nano libraries usage

Newlib-nano is different from newlib in addition to the libraries' name.

Formatted input/output of floating-point number are implemented as weak symbol.

If you want to use %f, you have to pull in the symbol by explicitly specifying

"-u" command option.

-u \_scanf\_float

-u \_printf\_float

e.g. to output a float, the command line is like:

$ arm-none-eabi-gcc --specs=nano.specs -u \_printf\_float $(OTHER\_LINK\_OPTIONS)

For more about the difference and usage, please refer the README.nano in the

source package.

Users can choose to use or not use semihosting by following instructions.

\*\* semihosting

If you need semihosting, linking like:

$ arm-none-eabi-gcc --specs=rdimon.specs $(OTHER\_LINK\_OPTIONS)

\*\* non-semihosting/retarget

If you are using retarget, linking like:

$ arm-none-eabi-gcc --specs=nosys.specs $(OTHER\_LINK\_OPTIONS)

\* Linker scripts & startup code \*

Latest update of linker scripts template and startup code is available on

http://www.arm.com/cmsis

\* Samples \*

Examples of all above usages are available at:

$install\_dir/gcc-arm-none-eabi-\*/share/gcc-arm-none-eabi/samples

Read readme.txt under it for further information.

\* GDB Server for CMSIS-DAP based hardware debugger \*

CMSIS-DAP is the interface firmware for a Debug Unit that connects

the Debug Port to USB. More detailed information can be found at

http://www.keil.com/support/man/docs/dapdebug/.

A software GDB server is required for GDB to communicate with CMSIS-DAP based

hardware debugger. The pyOCD is an implementation of such GDB server that is

written in Python and under Apache License.

For those who are using this toolchain and have board with CMSIS-DAP based

debugger, the pyOCD is our recommended gdb server. More information can be

found at https://github.com/mbedmicro/pyOCD.

1. GCC 参数

Using built-in specs.

COLLECT\_GCC=arm-none-eabi-gcc.exe

COLLECT\_LTO\_WRAPPER=h:/software/6\ 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/lto-wrapper.exe

Usage: arm-none-eabi-gcc.exe [options] file...

Options:

-pass-exit-codes Exit with highest error code from a phase.

--help Display this information.

--target-help Display target specific command line options.

--help={common|optimizers|params|target|warnings|[^]{joined|separate|undocumented}}[,...].

Display specific types of command line options.

--version Display compiler version information.

-dumpspecs Display all of the built in spec strings.

-dumpversion Display the version of the compiler.

-dumpmachine Display the compiler's target processor.

-print-search-dirs Display the directories in the compiler's search path.

-print-libgcc-file-name Display the name of the compiler's companion library.

-print-file-name=<lib> Display the full path to library <lib>.

-print-prog-name=<prog> Display the full path to compiler component <prog>.

-print-multiarch Display the target's normalized GNU triplet, used as

a component in the library path.

-print-multi-directory Display the root directory for versions of libgcc.

-print-multi-lib Display the mapping between command line options and

multiple library search directories.

-print-multi-os-directory Display the relative path to OS libraries.

-print-sysroot Display the target libraries directory.

-print-sysroot-headers-suffix Display the sysroot suffix used to find headers.

-Wa,<options> Pass comma-separated <options> on to the assembler.

-Wp,<options> Pass comma-separated <options> on to the preprocessor.

-Wl,<options> Pass comma-separated <options> on to the linker.

-Xassembler <arg> Pass <arg> on to the assembler.

-Xpreprocessor <arg> Pass <arg> on to the preprocessor.

-Xlinker <arg> Pass <arg> on to the linker.

-save-temps Do not delete intermediate files.

-save-temps=<arg> Do not delete intermediate files.

-no-canonical-prefixes Do not canonicalize paths when building relative

prefixes to other gcc components.

-pipe Use pipes rather than intermediate files.

-time Time the execution of each subprocess.

-specs=<file> Override built-in specs with the contents of <file>.

-std=<standard> Assume that the input sources are for <standard>.

--sysroot=<directory> Use <directory> as the root directory for headers

and libraries.

-B <directory> Add <directory> to the compiler's search paths.

-v Display the programs invoked by the compiler.

-### Like -v but options quoted and commands not executed.

-E Preprocess only; do not compile, assemble or link.

-S Compile only; do not assemble or link.

-c Compile and assemble, but do not link.

-o <file> Place the output into <file>.

-pie Create a position independent executable.

-shared Create a shared library.

-x <language> Specify the language of the following input files.

Permissible languages include: c c++ assembler none

'none' means revert to the default behavior of

guessing the language based on the file's extension.

Options starting with -g, -f, -m, -O, -W, or --param are automatically

passed on to the various sub-processes invoked by arm-none-eabi-gcc.exe. In order to pass other options on to these processes the -W<letter> options must be used.

gcc version 6.3.1 20170620 (release) [ARM/embedded-6-branch revision 249437] (GNU Tools for ARM Embedded Processors 6-2017-q2-update)

COLLECT\_GCC\_OPTIONS='--help' '-v'

*h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/cc1.exe -quiet -v -iprefix h:\software\6 2017-q2-update\bin\../lib/gcc/arm-none-eabi/6.3.1/ -isysroot h:\software\6 2017-q2-update\bin\../arm-none-eabi -D\_\_USES\_INITFINI\_\_ help-dummy -quiet -dumpbase help-dummy -auxbase help-dummy -version --help -o C:\Users\ADMINI~1\AppData\Local\Temp\ccKXMdhN.s*

The following options are specific to just the language **Ada**:

-fbuiltin-printf Ignored.

The following options are specific to just the language **AdaSCIL**:

None found. Use --help=AdaSCIL to show \*all\* the options supported by the AdaSCIL front-end.

The following options are specific to just the language **AdaWhy**:

None found. Use --help=AdaWhy to show \*all\* the options supported by the AdaWhy front-end.

The following options are specific to just the language **C**:

-lang-asm This option lacks documentation.

The following options are specific to just the language **C++**:

-Wplacement-new Warn for placement new expressions with undefined

behavior. Same as -Wplacement-new=.

-Wplacement-new= Warn for placement new expressions with undefined

behavior.

The following options are specific to just the language Fortran:

-J<directory> Put MODULE files in 'directory'.

-Waliasing Warn about possible aliasing of dummy arguments.

-Walign-commons Warn about alignment of COMMON blocks.

-Wampersand Warn about missing ampersand in continued

character constants.

-Warray-temporaries Warn about creation of array temporaries.

-Wc-binding-type Warn if the type of a variable might be not

interoperable with C.

-Wcharacter-truncation Warn about truncated character expressions.

-Wcompare-reals Warn about equality comparisons involving REAL or

COMPLEX expressions.

-Wconversion-extra Warn about most implicit conversions.

-Wextra Print extra (possibly unwanted) warnings.

-Wfunction-elimination Warn about function call elimination.

-Wimplicit-interface Warn about calls with implicit interface.

-Wimplicit-procedure Warn about called procedures not explicitly

declared.

-Winteger-division Warn about constant integer divisions with

truncated results.

-Wintrinsic-shadow Warn if a user-procedure has the same name as an

intrinsic.

-Wintrinsics-std Warn on intrinsics not part of the selected

standard.

-Wline-truncation Warn about truncated source lines.

-Wreal-q-constant Warn about real-literal-constants with 'q'

exponent-letter.

-Wrealloc-lhs Warn when a left-hand-side array variable is

reallocated.

-Wrealloc-lhs-all Warn when a left-hand-side variable is

reallocated.

-Wsurprising Warn about "suspicious" constructs.

-Wtabs Permit nonconforming uses of the tab character.

-Wtarget-lifetime Warn if the pointer in a pointer assignment might

outlive its target.

-Wunderflow Warn about underflow of numerical constant

expressions.

-Wunused-dummy-argument Warn about unused dummy arguments.

-Wuse-without-only Warn about USE statements that have no ONLY

qualifier.

-Wzerotrip Warn about zero-trip DO loops.

-cpp Enable preprocessing.

-cpp= This option lacks documentation.

-faggressive-function-elimination Eliminate multiple function invokations

also for impure functions.

-falign-commons Enable alignment of COMMON blocks.

-fall-intrinsics All intrinsics procedures are available

regardless of selected standard.

-fallow-leading-underscore This option lacks documentation.

-fautomatic Do not treat local variables and COMMON blocks as

if they were named in SAVE statements.

-fbackslash Specify that backslash in string introduces an

escape character.

-fbacktrace Produce a backtrace when a runtime error is

encountered.

-fblas-matmul-limit=<n> Size of the smallest matrix for which matmul will

use BLAS.

-fcheck-array-temporaries Produce a warning at runtime if a array temporary

has been created for a procedure argument.

-fcheck=[...] Specify which runtime checks are to be performed.

-fcoarray=<none|single|lib> Specify which coarray parallelization should be

used.

-fconvert= -fconvert=<big-endian|little-endian|native|swap>

The endianness used for unformatted files.

-fcray-pointer Use the Cray Pointer extension.

-fd-lines-as-code Ignore 'D' in column one in fixed form.

-fd-lines-as-comments Treat lines with 'D' in column one as comments.

-fdec Enable all DEC language extensions.

-fdec-structure Enable support for DEC STRUCTURE/RECORD.

-fdefault-double-8 Set the default double precision kind to an 8

byte wide type.

-fdefault-integer-8 Set the default integer kind to an 8 byte wide

type.

-fdefault-real-8 Set the default real kind to an 8 byte wide type.

-fdollar-ok Allow dollar signs in entity names.

-fdump-core Does nothing. Preserved for backward

compatibility.

-fdump-fortran-optimized Display the code tree after front end

optimization.

-fdump-fortran-original Display the code tree after parsing.

-fdump-parse-tree Display the code tree after parsing; deprecated

option. Same as -fdump-fortran-original.

-fexternal-blas Specify that an external BLAS library should be

used for matmul calls on large-size arrays.

-ff2c Use f2c calling convention.

-ffixed-form Assume that the source file is fixed form.

-ffixed-line-length-<n> Use n as character line width in fixed mode.

-ffixed-line-length-none Allow arbitrary character line width in fixed

mode.

-ffpe-summary=[...] Print summary of floating point exceptions.

-ffpe-trap=[...] Stop on following floating point exceptions.

-ffree-form Assume that the source file is free form.

-ffree-line-length-<n> Use n as character line width in free mode.

-ffree-line-length-none Allow arbitrary character line width in free mode.

-ffrontend-optimize Enable front end optimization.

-fimplicit-none Specify that no implicit typing is allowed,

unless overridden by explicit IMPLICIT statements.

-finit-character=<n> Initialize local character variables to ASCII

value n.

-finit-integer=<n> Initialize local integer variables to n.

-finit-local-zero Initialize local variables to zero (from g77).

-finit-logical=<true|false> Initialize local logical variables.

-finit-real=<zero|snan|nan|inf|-inf> Initialize local real variables.

-finline-matmul-limit=<n> Specify the size of the largest matrix for which

matmul will be inlined.

-finteger-4-integer-8 Interpret any INTEGER(4) as an INTEGER(8).

-fintrinsic-modules-path Specify where to find the compiled intrinsic

modules.

-fintrinsic-modules-path= Specify where to find the compiled intrinsic

modules.

-fmax-array-constructor=<n> Maximum number of objects in an array constructor.

-fmax-identifier-length=<n> Maximum identifier length.

-fmax-stack-var-size=<n> Size in bytes of the largest array that will be

put on the stack.

-fmax-subrecord-length=<n> Maximum length for subrecords.

-fmodule-private Set default accessibility of module entities to

PRIVATE.

-fpack-derived Try to lay out derived types as compactly as

possible.

-fprotect-parens Protect parentheses in expressions.

-frange-check Enable range checking during compilation.

-freal-4-real-10 Interpret any REAL(4) as a REAL(10).

-freal-4-real-16 Interpret any REAL(4) as a REAL(16).

-freal-4-real-8 Interpret any REAL(4) as a REAL(8).

-freal-8-real-10 Interpret any REAL(8) as a REAL(10).

-freal-8-real-16 Interpret any REAL(8) as a REAL(16).

-freal-8-real-4 Interpret any REAL(8) as a REAL(4).

-frealloc-lhs Reallocate the LHS in assignments.

-frecord-marker=4 Use a 4-byte record marker for unformatted files.

-frecord-marker=8 Use an 8-byte record marker for unformatted files.

-frecursive Allocate local variables on the stack to allow

indirect recursion.

-frepack-arrays Copy array sections into a contiguous block on

procedure entry.

-fsecond-underscore Append a second underscore if the name already

contains an underscore.

-fsign-zero Apply negative sign to zero values.

-fstack-arrays Put all local arrays on stack.

-funderscoring Append underscores to externally visible names.

-fwhole-file Does nothing. Preserved for backward

compatibility.

-nocpp Disable preprocessing.

-static-libgfortran Statically link the GNU Fortran helper library

(libgfortran).

-std=f2003 Conform to the ISO Fortran 2003 standard.

-std=f2008 Conform to the ISO Fortran 2008 standard.

-std=f2008ts Conform to the ISO Fortran 2008 standard

including TS 29113.

-std=f95 Conform to the ISO Fortran 95 standard.

-std=gnu Conform to nothing in particular.

-std=legacy Accept extensions to support legacy code.

The following options are specific to just the language **Go**:

-L This option lacks documentation.

-fgo-check-divide-overflow Add explicit checks for division overflow in

INT\_MIN / -1.

-fgo-check-divide-zero Add explicit checks for division by zero.

-fgo-dump-<type> Dump Go frontend internal information.

-fgo-optimize-<type> Turn on optimization passes in the frontend.

-fgo-pkgpath=<string> Set Go package path.

-fgo-prefix=<string> Set package-specific prefix for exported Go names.

-fgo-relative-import-path= -fgo-relative-import-path=<path> Treat a relative

import as relative to path.

-frequire-return-statement Functions which return values must end with

return statements.

The following options are specific to just the language Java:

--CLASSPATH Same as -fclasspath=. Use the latter option

instead.

--bootclasspath Same as -fbootclasspath=. Use the latter option

instead.

--classpath Same as -fclasspath=. Use the latter option

instead.

--encoding Same as -fencoding=. Use the latter option

instead.

--extdirs Same as -fextdirs=. Use the latter option

instead.

--output-class-directory This option lacks documentation.

--output-class-directory= This option lacks documentation.

--resource This option lacks documentation.

--resource= This option lacks documentation.

-CLASSPATH Same as -fclasspath=. Use the latter option

instead.

-MD\_ This option lacks documentation.

-MMD\_ This option lacks documentation.

-Wall-deprecation This option lacks documentation.

-Wall-javadoc This option lacks documentation.

-Wassert-identifier This option lacks documentation.

-Wboxing This option lacks documentation.

-Wchar-concat This option lacks documentation.

-Wcondition-assign This option lacks documentation.

-Wconstructor-name This option lacks documentation.

-Wdep-ann This option lacks documentation.

-Wdiscouraged This option lacks documentation.

-Wempty-block This option lacks documentation.

-Wenum-identifier This option lacks documentation.

-Wenum-switch This option lacks documentation.

-Wextraneous-semicolon Warn if deprecated empty statements are found.

-Wfallthrough This option lacks documentation.

-Wfield-hiding This option lacks documentation.

-Wfinal-bound This option lacks documentation.

-Wfinally This option lacks documentation.

-Wforbidden This option lacks documentation.

-Whiding This option lacks documentation.

-Windirect-static This option lacks documentation.

-Wintf-annotation This option lacks documentation.

-Wintf-non-inherited This option lacks documentation.

-Wjavadoc This option lacks documentation.

-Wlocal-hiding This option lacks documentation.

-Wmasked-catch-block This option lacks documentation.

-Wnls This option lacks documentation.

-Wno-effect-assign This option lacks documentation.

-Wnull This option lacks documentation.

-Wout-of-date Warn if .class files are out of date.

-Wover-ann This option lacks documentation.

-Wparam-assign This option lacks documentation.

-Wpkg-default-method This option lacks documentation.

-Wraw This option lacks documentation.

-Wredundant-modifiers Warn if modifiers are specified when not

necessary.

-Wserial This option lacks documentation.

-Wspecial-param-hiding This option lacks documentation.

-Wstatic-access This option lacks documentation.

-Wstatic-receiver This option lacks documentation.

-Wsuppress This option lacks documentation.

-Wsynthetic-access This option lacks documentation.

-Wtasks This option lacks documentation.

-Wtype-hiding This option lacks documentation.

-Wuncheck This option lacks documentation.

-Wunnecessary-else This option lacks documentation.

-Wunqualified-field This option lacks documentation.

-Wunused-argument This option lacks documentation.

-Wunused-import This option lacks documentation.

-Wunused-label Warn when a label is unused.

-Wunused-local This option lacks documentation.

-Wunused-private This option lacks documentation.

-Wunused-thrown This option lacks documentation.

-Wuseless-type-check This option lacks documentation.

-Wvarargs-cast This option lacks documentation.

-Wwarning-token This option lacks documentation.

-bootclasspath Same as -fbootclasspath=. Use the latter option

instead.

-classpath Same as -fclasspath=. Use the latter option

instead.

-encoding Same as -fencoding=. Use the latter option

instead.

--CLASSPATH Deprecated; use --classpath instead. Same as

-fclasspath=.

-fassert Permit the use of the assert keyword.

-fassume-compiled This option lacks documentation.

-fassume-compiled= This option lacks documentation.

-faux-classpath This option lacks documentation.

--bootclasspath=<path> Replace system path.

-fbootstrap-classes Generated should be loaded by bootstrap loader.

-fcheck-references Generate checks for references to NULL.

--classpath=<path> Set class path.

-fcompile-resource= This option lacks documentation.

-fdisable-assertions This option lacks documentation.

-fdisable-assertions= This option lacks documentation.

-femit-class-file Output a class file.

-femit-class-files Alias for -femit-class-file.

-fenable-assertions This option lacks documentation.

-fenable-assertions= This option lacks documentation.

--encoding=<encoding> Choose input encoding (defaults from your locale).

--extdirs=<path> Set the extension directory path.

-ffilelist-file Input file is a file with a list of filenames to

compile.

-fforce-classes-archive-check Always check for non gcj generated classes

archives.

-fhash-synchronization Assume the runtime uses a hash table to map an

object to its synchronization structure.

-findirect-classes Generate instances of Class at runtime.

-findirect-dispatch Use offset tables for virtual method calls.

-finline-functions Integrate functions not declared "inline" into

their callers when profitable.

-fjni Assume native functions are implemented using JNI.

-foptimize-static-class-initialization Enable optimization of static class

initialization code.

-foutput-class-dir= This option lacks documentation.

-freduced-reflection Reduce the amount of reflection meta-data

generated.

-fsaw-java-file This option lacks documentation.

-fsource-filename= This option lacks documentation.

-fsource= Set the source language version.

-fstore-check Enable assignability checks for stores into

object arrays.

-ftarget= Set the target VM version.

-fuse-atomic-builtins Generate code for built-in atomic operations.

-fuse-boehm-gc Generate code for the Boehm GC.

-fuse-divide-subroutine Call a library routine to do integer divisions.

-version Display the compiler's version.

The following options are specific to just the language **LTO**:

-flinker-output= Set linker output type (used internally during

LTO optimization)

-fltrans Run the link-time optimizer in local

transformation (LTRANS) mode.

-fltrans-output-list= Specify a file to which a list of files output by

LTRANS is written.

-fresolution= The resolution file.

-fwpa Run the link-time optimizer in whole program

analysis (WPA) mode.

-fwpa= Whole program analysis (WPA) mode with number of

parallel jobs specified.

The following options are specific to just the language **ObjC**:

None found. Use --help=ObjC to show \*all\* the options supported by the ObjC front-end.

The following options are specific to just the language **ObjC++**:

-fobjc-call-cxx-cdtors Generate special Objective-C methods to

initialize/destroy non-POD C++ ivars, if needed.

The following options are **language-related**:

--all-warnings Same as -Wall. Use the latter option instead.

--ansi Same as -ansi. Use the latter option instead.

--assert Same as -A. Use the latter option instead.

--assert= Same as -A. Use the latter option instead.

--comments Same as -C. Use the latter option instead.

--comments-in-macros Same as -CC. Use the latter option instead.

--define-macro Same as -D. Use the latter option instead.

--define-macro= Same as -D. Use the latter option instead.

--dependencies Same as -M. Use the latter option instead.

--dump Same as -d. Use the latter option instead.

--dump= Same as -d. Use the latter option instead.

--imacros Same as -imacros. Use the latter option instead.

--imacros= Same as -imacros. Use the latter option instead.

--include Same as -include. Use the latter option instead.

--include-barrier Same as -I. Use the latter option instead.

--include-directory Same as -I. Use the latter option instead.

--include-directory-after Same as -idirafter. Use the latter option

instead.

--include-directory-after= Same as -idirafter. Use the latter option

instead.

--include-directory= Same as -I. Use the latter option instead.

--include-prefix Same as -iprefix. Use the latter option instead.

--include-prefix= Same as -iprefix. Use the latter option instead.

--include-with-prefix Same as -iwithprefix. Use the latter option

instead.

--include-with-prefix-after Same as -iwithprefix. Use the latter option

instead.

--include-with-prefix-after= Same as -iwithprefix. Use the latter option

instead.

--include-with-prefix-before Same as -iwithprefixbefore. Use the latter

option instead.

--include-with-prefix-before= Same as -iwithprefixbefore. Use the latter

option instead.

--include-with-prefix= Same as -iwithprefix. Use the latter option

instead.

--include= Same as -include. Use the latter option instead.

--no-line-commands Same as -P. Use the latter option instead.

--no-standard-includes Same as -nostdinc. Use the latter option instead.

--no-standard-libraries Same as -nostdlib. Use the latter option instead.

--no-warnings Same as -w. Use the latter option instead.

--output Same as -o. Use the latter option instead.

--output-pch= This option lacks documentation.

--output= Same as -o. Use the latter option instead.

--pedantic Same as -Wpedantic. Use the latter option

instead.

--preprocess This option lacks documentation.

--print-missing-file-dependencies Same as -MG. Use the latter option instead.

--trace-includes Same as -H. Use the latter option instead.

--traditional-cpp Same as -traditional-cpp. Use the latter option

instead.

--trigraphs Same as -trigraphs. Use the latter option

instead.

--undefine-macro Same as -U. Use the latter option instead.

--undefine-macro= Same as -U. Use the latter option instead.

--user-dependencies Same as -MM. Use the latter option instead.

--verbose Same as -v. Use the latter option instead.

--write-dependencies Same as -MD. Use the latter option instead.

--write-user-dependencies Same as -MMD. Use the latter option instead.

-A<question>=<answer> Assert the <answer> to <question>. Putting '-'

before <question> disables the <answer> to

<question>.

-C Do not discard comments.

-CC Do not discard comments in macro expansions.

-D<macro>[=<val>] Define a <macro> with <val> as its value. If

just <macro> is given, <val> is taken to be 1.

-E This option lacks documentation.

-F <dir> Add <dir> to the end of the main framework

include path.

-H Print the name of header files as they are used.

-I <dir> Add <dir> to the end of the main include path.

-M Generate make dependencies.

-MD Generate make dependencies and compile.

-MF <file> Write dependency output to the given file.

-MG Treat missing header files as generated files.

-MM Like -M but ignore system header files.

-MMD Like -MD but ignore system header files.

-MP Generate phony targets for all headers.

-MQ <target> Add a MAKE-quoted target.

-MT <target> Add an unquoted target.

-P Do not generate #line directives.

-U<macro> Undefine <macro>.

## 警告类设置

-Wabi Warn about things that will change when compiling

with an ABI-compliant compiler.

-Wabi-tag Warn if a subobject has an abi\_tag attribute that

the complete object type does not have.

-Wabi= Warn about things that change between the current

-fabi-version and the specified version.

-Waddress Warn about suspicious uses of memory addresses.

-Wall Enable most warning messages.

-Wassign-intercept Warn whenever an Objective-C assignment is being

intercepted by the garbage collector.

-Wbad-function-cast Warn about casting functions to incompatible

types.

-Wbool-compare Warn about boolean expression compared with an

integer value different from true/false.

-Wbuiltin-macro-redefined Warn when a built-in preprocessor macro is

undefined or redefined.

-Wc++-compat Warn about C constructs that are not in the

common subset of C and C++.

-Wc++0x-compat Same as -Wc++11-compat. Use the latter option

instead.

-Wc++11-compat Warn about C++ constructs whose meaning differs

between ISO C++ 1998 and ISO C++ 2011.

-Wc++14-compat Warn about C++ constructs whose meaning differs

between ISO C++ 2011 and ISO C++ 2014.

-Wc90-c99-compat Warn about features not present in ISO C90, but

present in ISO C99.

-Wc99-c11-compat Warn about features not present in ISO C99, but

present in ISO C11.

-Wcast-qual Warn about casts which discard qualifiers.

-Wchar-subscripts Warn about subscripts whose type is "char".

-Wchkp Warn about memory access errors found by Pointer

Bounds Checker.

-Wclobbered Warn about variables that might be changed by

"longjmp" or "vfork".

-Wcomment Warn about possibly nested block comments, and

C++ comments spanning more than one physical line.

-Wcomments Synonym for -Wcomment. Same as -Wcomment.

-Wconditionally-supported Warn for conditionally-supported constructs.

-Wconversion Warn for implicit type conversions that may

change a value.

-Wconversion-null Warn for converting NULL from/to a non-pointer

type.

-Wcpp Warn when a #warning directive is encountered.

-Wctor-dtor-privacy Warn when all constructors and destructors are

private.

-Wdate-time Warn about \_\_TIME\_\_, \_\_DATE\_\_ and \_\_TIMESTAMP\_\_

usage.

-Wdeclaration-after-statement Warn when a declaration is found after a

statement.

-Wdelete-incomplete Warn when deleting a pointer to incomplete type.

-Wdelete-non-virtual-dtor Warn about deleting polymorphic objects with non-

virtual destructors.

-Wdeprecated Warn if a deprecated compiler feature, class,

method, or field is used.

-Wdesignated-init Warn about positional initialization of structs

requiring designated initializers.

-Wdiscarded-array-qualifiers Warn if qualifiers on arrays which are pointer

targets are discarded.

-Wdiscarded-qualifiers Warn if type qualifiers on pointers are discarded.

-Wdiv-by-zero Warn about compile-time integer division by zero.

-Wdouble-promotion Warn about implicit conversions from "float" to

"double".

-Wduplicated-cond Warn about duplicated conditions in an if-else-if

chain.

-Weffc++ Warn about violations of Effective C++ style

rules.

-Wempty-body Warn about an empty body in an if or else

statement.

-Wendif-labels Warn about stray tokens after #elif and #endif.

-Wenum-compare Warn about comparison of different enum types.

-Werror Treat all warnings as errors.

-Werror-implicit-function-declaration This switch is deprecated; use

-Werror=implicit-function-declaration instead.

Same as -Werror=.

-Wfloat-conversion Warn for implicit type conversions that cause

loss of floating point precision.

-Wfloat-equal Warn if testing floating point numbers for

equality.

-Wformat Warn about printf/scanf/strftime/strfmon format

string anomalies. Same as -Wformat=.

-Wformat-contains-nul Warn about format strings that contain NUL bytes.

-Wformat-extra-args Warn if passing too many arguments to a function

for its format string.

-Wformat-nonliteral Warn about format strings that are not literals.

-Wformat-security Warn about possible security problems with format

functions.

-Wformat-signedness Warn about sign differences with format functions.

-Wformat-y2k Warn about strftime formats yielding 2-digit

years.

-Wformat-zero-length Warn about zero-length formats.

-Wformat= Warn about printf/scanf/strftime/strfmon format

string anomalies.

-Wframe-address Warn when \_\_builtin\_frame\_address or

\_\_builtin\_return\_address is used unsafely.

-Wignored-attributes Warn whenever attributes are ignored.

-Wignored-qualifiers Warn whenever type qualifiers are ignored.

-Wimplicit Warn about implicit declarations.

-Wimplicit-function-declaration Warn about implicit function declarations.

-Wimplicit-int Warn when a declaration does not specify a type.

-Wimport This option lacks documentation.

-Wincompatible-pointer-types Warn when there is a conversion between pointers

that have incompatible types.

-Winherited-variadic-ctor Warn about C++11 inheriting constructors when the

base has a variadic constructor.

-Winit-self Warn about variables which are initialized to

themselves.

-Wint-conversion Warn about incompatible integer to pointer and

pointer to integer conversions.

-Wint-to-pointer-cast Warn when there is a cast to a pointer from an

integer of a different size.

-Winvalid-offsetof Warn about invalid uses of the "offsetof" macro.

-Winvalid-pch Warn about PCH files that are found but not used.

-Wjump-misses-init Warn when a jump misses a variable initialization.

-Wliteral-suffix Warn when a string or character literal is

followed by a ud-suffix which does not begin with

an underscore.

-Wlogical-not-parentheses Warn when logical not is used on the left hand

side operand of a comparison.

-Wlogical-op Warn when a logical operator is suspiciously

always evaluating to true or false.

-Wlong-long Do not warn about using "long long" when

-pedantic.

-Wmain Warn about suspicious declarations of "main".

-Wmaybe-uninitialized Warn about maybe uninitialized automatic

variables.

-Wmemset-transposed-args Warn about suspicious calls to memset where the

third argument is constant literal zero and the

second is not.

-Wmisleading-indentation Warn when the indentation of the code does not

reflect the block structure.

-Wmissing-braces Warn about possibly missing braces around

initializers.

-Wmissing-declarations Warn about global functions without previous

declarations.

-Wmissing-field-initializers Warn about missing fields in struct initializers.

-Wmissing-format-attribute Same as -Wsuggest-attribute=format. Use the

latter option instead.

-Wmissing-include-dirs Warn about user-specified include directories

that do not exist.

-Wmissing-parameter-type Warn about function parameters declared without a

type specifier in K&R-style functions.

-Wmissing-prototypes Warn about global functions without prototypes.

-Wmudflap This option lacks documentation. Uses of this

option are diagnosed.

-Wmultichar Warn about use of multi-character character

constants.

-Wmultiple-inheritance Warn on direct multiple inheritance.

-Wnamespaces Warn on namespace definition.

-Wnarrowing Warn about narrowing conversions within { } that

are ill-formed in C++11.

-Wnested-externs Warn about "extern" declarations not at file

scope.

-Wnoexcept Warn when a noexcept expression evaluates to

false even though the expression can't actually

throw.

-Wnon-template-friend Warn when non-templatized friend functions are

declared within a template.

-Wnon-virtual-dtor Warn about non-virtual destructors.

-Wnonnull Warn about NULL being passed to argument slots

marked as requiring non-NULL.

-Wnonnull-compare Warn if comparing pointer parameter with nonnull

attribute with NULL.

-Wnormalized Same as -Wnormalized=. Use the latter option

instead.

-Wnormalized=<none|id|nfc|nfkc> Warn about non-normalised Unicode strings.

-Wold-style-cast Warn if a C-style cast is used in a program.

-Wold-style-declaration Warn for obsolescent usage in a declaration.

-Wold-style-definition Warn if an old-style parameter definition is used.

-Wopenmp-simd Warn if a simd directive is overridden by the

vectorizer cost model.

-Woverlength-strings Warn if a string is longer than the maximum

portable length specified by the standard.

-Woverloaded-virtual Warn about overloaded virtual function names.

-Woverride-init Warn about overriding initializers without side

effects.

-Woverride-init-side-effects Warn about overriding initializers with side

effects.

-Wpacked-bitfield-compat Warn about packed bit-fields whose offset changed

in GCC 4.4.

-Wparentheses Warn about possibly missing parentheses.

-Wpedantic Issue warnings needed for strict compliance to

the standard.

-Wpmf-conversions Warn when converting the type of pointers to

member functions.

-Wpointer-arith Warn about function pointer arithmetic.

-Wpointer-sign Warn when a pointer differs in signedness in an

assignment.

-Wpointer-to-int-cast Warn when a pointer is cast to an integer of a

different size.

-Wpragmas Warn about misuses of pragmas.

-Wproperty-assign-default Warn if a property for an Objective-C object has

no assign semantics specified.

-Wprotocol Warn if inherited methods are unimplemented.

-Wpsabi This option lacks documentation.

-Wredundant-decls Warn about multiple declarations of the same

object.

-Wreorder Warn when the compiler reorders code.

-Wreturn-type Warn whenever a function's return type defaults

to "int" (C), or about inconsistent return types

(C++).

-Wscalar-storage-order Warn on suspicious constructs involving reverse

scalar storage order.

-Wselector Warn if a selector has multiple methods.

-Wsequence-point Warn about possible violations of sequence point

rules.

-Wshadow-ivar Warn if a local declaration hides an instance

variable.

-Wshift-count-negative Warn if shift count is negative.

-Wshift-count-overflow Warn if shift count >= width of type.

-Wshift-negative-value Warn if left shifting a negative value.

-Wshift-overflow Warn if left shift of a signed value overflows.

Same as -Wshift-overflow=.

-Wshift-overflow= Warn if left shift of a signed value overflows.

-Wsign-compare Warn about signed-unsigned comparisons.

-Wsign-conversion Warn for implicit type conversions between signed

and unsigned integers.

-Wsign-promo Warn when overload promotes from unsigned to

signed.

-Wsized-deallocation Warn about missing sized deallocation functions.

-Wsizeof-array-argument Warn when sizeof is applied on a parameter

declared as an array.

-Wsizeof-pointer-memaccess Warn about suspicious length parameters to

certain string functions if the argument uses

sizeof.

-Wstrict-aliasing= Warn about code which might break strict aliasing

rules.

-Wstrict-null-sentinel Warn about uncasted NULL used as sentinel.

-Wstrict-overflow= Warn about optimizations that assume that signed

overflow is undefined.

-Wstrict-prototypes Warn about unprototyped function declarations.

-Wstrict-selector-match Warn if type signatures of candidate methods do

not match exactly.

-Wsubobject-linkage Warn if a class type has a base or a field whose

type uses the anonymous namespace or depends on a

type with no linkage.

-Wsuggest-attribute=format Warn about functions which might be candidates

for format attributes.

-Wsuggest-override Suggest that the override keyword be used when

the declaration of a virtual function overrides

another.

-Wswitch Warn about enumerated switches, with no default,

missing a case.

-Wswitch-bool Warn about switches with boolean controlling

expression.

-Wswitch-default Warn about enumerated switches missing a

"default:" statement.

-Wswitch-enum Warn about all enumerated switches missing a

specific case.

-Wsync-nand Warn when \_\_sync\_fetch\_and\_nand and

\_\_sync\_nand\_and\_fetch built-in functions are used.

-Wsynth Deprecated. This switch has no effect.

-Wsystem-headers Do not suppress warnings from system headers.

-Wtautological-compare Warn if a comparison always evaluates to true or

false.

-Wtemplates Warn on primary template declaration.

-Wterminate Warn if a throw expression will always result in

a call to terminate().

-Wtraditional Warn about features not present in traditional C.

-Wtraditional-conversion Warn of prototypes causing type conversions

different from what would happen in the absence

of prototype.

-Wtrigraphs Warn if trigraphs are encountered that might

affect the meaning of the program.

-Wundeclared-selector Warn about @selector()s without previously

declared methods.

-Wundef Warn if an undefined macro is used in an #if

directive.

-Wuninitialized Warn about uninitialized automatic variables.

-Wunknown-pragmas Warn about unrecognized pragmas.

-Wunsuffixed-float-constants Warn about unsuffixed float constants.

-Wunused Enable all -Wunused- warnings.

-Wunused-const-variable Warn when a const variable is unused. Same as

-Wunused-const-variable=.

-Wunused-const-variable= Warn when a const variable is unused.

-Wunused-local-typedefs Warn when typedefs locally defined in a function

are not used.

-Wunused-macros Warn about macros defined in the main file that

are not used.

-Wunused-result Warn if a caller of a function, marked with

attribute warn\_unused\_result, does not use its

return value.

-Wunused-variable Warn when a variable is unused.

-Wuseless-cast Warn about useless casts.

-Wvarargs Warn about questionable usage of the macros used

to retrieve variable arguments.

-Wvariadic-macros Warn about using variadic macros.

-Wvirtual-inheritance Warn on direct virtual inheritance.

-Wvirtual-move-assign Warn if a virtual base has a non-trivial move

assignment operator.

-Wvla Warn if a variable length array is used.

-Wvolatile-register-var Warn when a register variable is declared

volatile.

-Wwrite-strings In C++, nonzero means warn about deprecated

conversion from string literals to 'char \*'. In

C, similar warning, except that the conversion is

of course not deprecated by the ISO C standard.

-Wzero-as-null-pointer-constant Warn when a literal '0' is used as null

pointer.

#### 其他

-ansi A synonym for -std=c89 (for C) or -std=c++98 (for

C++).

-d<letters> Enable dumps from specific passes of the compiler.

-fRTS= Select the runtime.

-fabi-compat-version= The version of the C++ ABI used for -Wabi

warnings and link compatibility aliases.

-faccess-control Enforce class member access control semantics.

-fada-spec-parent= -fada-spec-parent=unit Dump Ada specs as child

units of given parent.

-fall-virtual This option lacks documentation. Uses of this

option are diagnosed.

-fallow-parameterless-variadic-functions Allow variadic functions without

named parameter.

-falt-external-templates No longer supported. Uses of this option are

diagnosed.

-fasm Recognize the "asm" keyword.

-fbuilding-libgcc This option lacks documentation.

-fbuiltin Recognize built-in functions.

-fbuiltin- This option lacks documentation.

-fcanonical-system-headers Where shorter, use canonicalized paths to systems

headers.

-fcheck-pointer-bounds Add Pointer Bounds Checker instrumentation.

fchkp-\* flags are used to control

instrumentation. Currently available for C, C++

and ObjC.

-fchkp-check-incomplete-type Generate pointer bounds checks for variables

with incomplete type.

-fchkp-check-read Generate checks for all read accesses to memory.

-fchkp-check-write Generate checks for all write accesses to memory.

-fchkp-first-field-has-own-bounds Forces Pointer Bounds Checker to use

narrowed bounds for address of the first field in

the structure. By default pointer to the first

field has the same bounds as pointer to the whole

structure.

-fchkp-instrument-calls Generate bounds passing for calls.

-fchkp-instrument-marked-only Instrument only functions marked with

bnd\_instrument attribute.

-fchkp-narrow-bounds Control how Pointer Bounds Checker handle

pointers to object fields. When narrowing is on,

field bounds are used. Otherwise full object

bounds are used.

-fchkp-narrow-to-innermost-array Forces Pointer Bounds Checker to use bounds

of the innermost arrays in case of nested static

arryas access. By default outermost array is

used.

-fchkp-optimize Allow Pointer Bounds Checker optimizations. By

default allowed on optimization levels >0.

-fchkp-store-bounds Generate bounds stores for pointer writes.

-fchkp-treat-zero-dynamic-size-as-infinite With this option zero size

obtained dynamically for objects with incomplete

type will be treated as infinite.

-fchkp-use-fast-string-functions Allow to use \*\_nobnd versions of string

functions by Pointer Bounds Checker.

-fchkp-use-nochk-string-functions Allow to use \*\_nochk versions of string

functions by Pointer Bounds Checker.

-fchkp-use-static-bounds Use statically initialized variable for vars

bounds instead of generating them each time it is

required.

-fchkp-use-static-const-bounds Use statically initialized variable for

constant bounds instead of generating them each

time it is required.

-fchkp-use-wrappers Transform instrumented builtin calls into calls

to wrappers.

-fchkp-zero-input-bounds-for-main Use zero bounds for all incoming arguments

in 'main' function. It helps when instrumented

binaries are used with legacy libs.

-fcilkplus Enable Cilk Plus.

-fconcepts Enable support for C++ concepts.

-fcond-mismatch Allow the arguments of the '?' operator to have

different types.

-fconserve-space Does nothing. Preserved for backward

compatibility.

-fconst-string-class=<name> Use class <name> for constant strings.

-fconstexpr-depth=<number> Specify maximum constexpr recursion depth.

-fdebug-cpp Emit debug annotations during preprocessing.

-fdeclone-ctor-dtor Factor complex constructors and destructors to

favor space over speed.

-fdeduce-init-list enable deduction of std::initializer\_list for a

template type parameter from a brace-enclosed

initializer-list.

-fdefault-inline Does nothing. Preserved for backward

compatibility.

-fdirectives-only Preprocess directives only.

-fdollars-in-identifiers Permit '$' as an identifier character.

-fdump-ada-spec Write all declarations as Ada code transitively.

-fdump-ada-spec-slim Write all declarations as Ada code for the given

file only.

-felide-constructors This option lacks documentation.

-femit-struct-debug-baseonly Aggressive reduced debug info for structs.

-femit-struct-debug-detailed=<spec-list> Detailed reduced debug info for

structs.

-femit-struct-debug-reduced Conservative reduced debug info for structs.

-fenforce-eh-specs Generate code to check exception specifications.

-fenum-int-equiv This option lacks documentation. Uses of this

option are diagnosed.

-fexec-charset=<cset> Convert all strings and character constants to

character set <cset>.

-fext-numeric-literals Interpret imaginary, fixed-point, or other gnu

number suffix as the corresponding number literal

rather than a user-defined number literal.

-fextended-identifiers Permit universal character names (\u and \U) in

identifiers.

-fextern-tls-init Support dynamic initialization of thread-local

variables in a different translation unit.

-fexternal-templates This option lacks documentation. Uses of this

option are diagnosed.

-ffor-scope Scope of for-init-statement variables is local to

the loop.

-ffreestanding Do not assume that standard C libraries and

"main" exist.

-ffriend-injection Inject friend functions into enclosing namespace.

-fgnu-keywords Recognize GNU-defined keywords.

-fgnu-runtime Generate code for GNU runtime environment.

-fgnu89-inline Use traditional GNU semantics for inline

functions.

-fguiding-decls This option lacks documentation. Uses of this

option are diagnosed.

-fhandle-exceptions Same as -fexceptions. Use the latter option

instead. Uses of this option are diagnosed.

-fhonor-std This option lacks documentation. Uses of this

option are diagnosed.

-fhosted Assume normal C execution environment.

-fhuge-objects No longer supported. Uses of this option are

diagnosed.

-fimplement-inlines Export functions even if they can be inlined.

-fimplicit-inline-templates Emit implicit instantiations of inline templates.

-fimplicit-templates Emit implicit instantiations of templates.

-finput-charset=<cset> Specify the default character set for source

files.

-fvisibility=[private|protected|public|package] Set the default symbol

visibility.

-flabels-ok This option lacks documentation. Uses of this

option are diagnosed.

-flax-vector-conversions Allow implicit conversions between vectors with

differing numbers of subparts and/or differing

element types.

-flocal-ivars Allow access to instance variables as if they

were local declarations within instance method

implementations.

-fms-extensions Don't warn about uses of Microsoft extensions.

-fmudflap This option lacks documentation. Uses of this

option are diagnosed.

-fmudflapir This option lacks documentation. Uses of this

option are diagnosed.

-fmudflapth This option lacks documentation. Uses of this

option are diagnosed.

-fname-mangling-version- This option lacks documentation. Uses of this

option are diagnosed.

-fnew-abi This option lacks documentation. Uses of this

option are diagnosed.

-fnext-runtime Generate code for NeXT (Apple Mac OS X) runtime

environment.

-fnil-receivers Assume that receivers of Objective-C messages may

be nil.

-fnonansi-builtins This option lacks documentation.

-fnonnull-objects This option lacks documentation. Uses of this

option are diagnosed.

-fnothrow-opt Treat a throw() exception specification as

noexcept to improve code size.

-fobjc-abi-version= Specify which ABI to use for Objective-C family

code and meta-data generation.

-fobjc-direct-dispatch Allow fast jumps to the message dispatcher.

-fobjc-exceptions Enable Objective-C exception and synchronization

syntax.

-fobjc-gc Enable garbage collection (GC) in Objective-C/

Objective-C++ programs.

-fobjc-nilcheck Enable inline checks for nil receivers with the

NeXT runtime and ABI version 2.

-fobjc-sjlj-exceptions Enable Objective-C setjmp exception handling

runtime.

-fobjc-std=objc1 Conform to the Objective-C 1.0 language as

implemented in GCC 4.0.

-fopenacc Enable OpenACC.

-fopenacc-dim= Specify default OpenACC compute dimensions.

-fopenmp Enable OpenMP (implies -frecursive in Fortran).

-fopenmp-simd Enable OpenMP's SIMD directives.

-foperator-names Recognize C++ keywords like "compl" and "xor".

-foptional-diags Does nothing. Preserved for backward

compatibility.

-fpch-deps This option lacks documentation.

-fpch-preprocess Look for and use PCH files even when

preprocessing.

-fpermissive Downgrade conformance errors to warnings.

-fplan9-extensions Enable Plan 9 language extensions.

-fpreprocessed Treat the input file as already preprocessed.

-fpretty-templates -fno-pretty-templates Do not pretty-print

template specializations as the template

signature followed by the arguments.

-freplace-objc-classes Used in Fix-and-Continue mode to indicate that

object files may be swapped in at runtime.

-frepo Enable automatic template instantiation.

-frtti Generate run time type descriptor information.

-fshort-enums Use the narrowest integer type possible for

enumeration types.

-fshort-wchar Force the underlying type for "wchar\_t" to be

"unsigned short".

-fsigned-bitfields When "signed" or "unsigned" is not given make the

bitfield signed.

-fsigned-char Make "char" signed by default.

-fsized-deallocation Enable C++14 sized deallocation support.

-fsquangle This option lacks documentation. Uses of this

option are diagnosed.

-fsso-struct=[big-endian|little-endian] Set the default scalar storage order.

-fstats Display statistics accumulated during compilation.

-fstrict-enums Assume that values of enumeration type are always

within the minimum range of that type.

-fstrict-prototype This option lacks documentation. Uses of this

option are diagnosed.

-ftabstop=<number> Distance between tab stops for column reporting.

-ftemplate-backtrace-limit= Set the maximum number of template instantiation

notes for a single warning or error.

-ftemplate-depth- Same as -ftemplate-depth=. Use the latter option

instead.

-ftemplate-depth=<number> Specify maximum template instantiation depth.

-fthis-is-variable This option lacks documentation. Uses of this

option are diagnosed.

-fno-threadsafe-statics Do not generate thread-safe code for initializing

local statics.

-ftrack-macro-expansion This option lacks documentation.

-ftrack-macro-expansion= -ftrack-macro-expansion=<0|1|2> Track locations

of tokens coming from macro expansion and display

them in error messages.

-funsigned-bitfields When "signed" or "unsigned" is not given make the

bitfield unsigned.

-funsigned-char Make "char" unsigned by default.

-fuse-cxa-atexit Use \_\_cxa\_atexit to register destructors.

-fuse-cxa-get-exception-ptr Use \_\_cxa\_get\_exception\_ptr in exception handling.

-fvisibility-inlines-hidden Marks all inlined functions and methods as having

hidden visibility.

-fvisibility-ms-compat Changes visibility to match Microsoft Visual

Studio by default.

-fvtable-gc No longer supported. Uses of this option are

diagnosed.

-fvtable-thunks No longer supported. Uses of this option are

diagnosed.

-fweak Emit common-like symbols as weak symbols.

-fwide-exec-charset=<cset> Convert all wide strings and character constants

to character set <cset>.

-fworking-directory Generate a #line directive pointing at the

current working directory.

-fxref No longer supported. Uses of this option are

diagnosed.

-fzero-link Generate lazy class lookup (via objc\_getClass())

for use in Zero-Link mode.

-gant Catch typos.

-gen-decls Dump declarations to a .decl file.

-gnat<options> Specify options to GNAT.

-gnatO Set name of output ALI file (internal switch).

-idirafter <dir> Add <dir> to the end of the system include path.

-imacros <file> Accept definition of macros in <file>.

-imultilib <dir> Set <dir> to be the multilib include subdirectory.

-include <file> Include the contents of <file> before other files.

-iprefix <path> Specify <path> as a prefix for next two options.

-iquote <dir> Add <dir> to the end of the quote include path.

-isysroot <dir> Set <dir> to be the system root directory.

-isystem <dir> Add <dir> to the start of the system include path.

-iwithprefix <dir> Add <dir> to the end of the system include path.

-iwithprefixbefore <dir> Add <dir> to the end of the main include path.

-nostdinc Do not search standard system include directories

(those specified with -isystem will still be

used).

-nostdinc++ Do not search standard system include directories

for C++.

-nostdlib Do not look for object files in standard path.

-o <file> Place output into <file>.

-pedantic Same as -Wpedantic. Use the latter option

instead.

-print-objc-runtime-info Generate C header of platform-specific features.

-remap Remap file names when including files.

#### 编译标准设置

-std=c++03 Conform to the ISO 1998 C++ standard revised by

the 2003 technical corrigendum. Same as

-std=c++98.

-std=c++0x Deprecated in favor of -std=c++11. Same as

-std=c++11.

-std=c++11 Conform to the ISO 2011 C++ standard.

-std=c++14 Conform to the ISO 2014 C++ standard.

-std=c++17 Same as -std=c++1z. Use the latter option

instead.

-std=c++1y Deprecated in favor of -std=c++14. Same as

-std=c++14.

-std=c++1z Conform to the ISO 2017(?) C++ draft standard

(experimental and incomplete support).

-std=c++98 Conform to the ISO 1998 C++ standard revised by

the 2003 technical corrigendum.

-std=c11 Conform to the ISO 2011 C standard.

-std=c1x Deprecated in favor of -std=c11. Same as

-std=c11.

-std=c89 Conform to the ISO 1990 C standard. Same as

-std=c90.

-std=c90 Conform to the ISO 1990 C standard.

-std=c99 Conform to the ISO 1999 C standard.

-std=c9x Deprecated in favor of -std=c99. Same as

-std=c99.

-std=gnu++03 Conform to the ISO 1998 C++ standard revised by

the 2003 technical corrigendum with GNU

extensions. Same as -std=gnu++98.

-std=gnu++0x Deprecated in favor of -std=gnu++11. Same as

-std=gnu++11.

-std=gnu++11 Conform to the ISO 2011 C++ standard with GNU

extensions.

-std=gnu++14 Conform to the ISO 2014 C++ standard with GNU

extensions.

-std=gnu++17 Same as -std=gnu++1z. Use the latter option

instead.

-std=gnu++1y Deprecated in favor of -std=gnu++14. Same as

-std=gnu++14.

-std=gnu++1z Conform to the ISO 201z(7?) C++ draft standard

with GNU extensions (experimental and incomplete

support).

-std=gnu++98 Conform to the ISO 1998 C++ standard revised by

the 2003 technical corrigendum with GNU

extensions.

-std=gnu11 Conform to the ISO 2011 C standard with GNU

extensions.

-std=gnu1x Deprecated in favor of -std=gnu11. Same as

-std=gnu11.

-std=gnu89 Conform to the ISO 1990 C standard with GNU

extensions. Same as -std=gnu90.

-std=gnu90 Conform to the ISO 1990 C standard with GNU

extensions.

-std=gnu99 Conform to the ISO 1999 C standard with GNU

extensions.

-std=gnu9x Deprecated in favor of -std=gnu99. Same as

-std=gnu99.

-std=iso9899:1990 Conform to the ISO 1990 C standard. Same as

-std=c90.

-std=iso9899:199409 Conform to the ISO 1990 C standard as amended in

1994.

-std=iso9899:1999 Conform to the ISO 1999 C standard. Same as

-std=c99.

-std=iso9899:199x Deprecated in favor of -std=iso9899:1999. Same

as -std=c99.

-std=iso9899:2011 Conform to the ISO 2011 C standard. Same as

-std=c11.

-traditional-cpp Enable traditional preprocessing.

-trigraphs Support ISO C trigraphs.

-undef Do not predefine system-specific and GCC-specific

macros.

-v Enable verbose output.

-w Suppress warnings.

The --param option recognizes the following as **parameters**:

predictable-branch-outcome Maximal estimated outcome of branch considered

predictable.

inline-min-speedup The minimal estimated speedup allowing inliner to

ignore inline-insns-single and inline-isnsns-auto.

max-inline-insns-single The maximum number of instructions in a single

function eligible for inlining.

max-inline-insns-auto The maximum number of instructions when

automatically inlining.

max-inline-insns-recursive The maximum number of instructions inline

function can grow to via recursive inlining.

max-inline-insns-recursive-auto The maximum number of instructions non-inline

function can grow to via recursive inlining.

max-inline-recursive-depth The maximum depth of recursive inlining for

inline functions.

max-inline-recursive-depth-auto The maximum depth of recursive inlining for

non-inline functions.

min-inline-recursive-probability Inline recursively only when the probability

of call being executed exceeds the parameter.

max-early-inliner-iterations The maximum number of nested indirect inlining

performed by early inliner.

comdat-sharing-probability Probability that COMDAT function will be shared

with different compilation unit.

partial-inlining-entry-probability Maximum probability of the entry BB of

split region (in percent relative to entry BB of

the function) to make partial inlining happen.

max-variable-expansions-in-unroller If -fvariable-expansion-in-unroller is

used, the maximum number of times that an

individual variable will be expanded during loop

unrolling.

min-vect-loop-bound If -ftree-vectorize is used, the minimal loop

bound of a loop to be considered for

vectorization.

max-delay-slot-insn-search The maximum number of instructions to consider to

fill a delay slot.

max-delay-slot-live-search The maximum number of instructions to consider to

find accurate live register information.

max-pending-list-length The maximum length of scheduling's pending

operations list.

max-modulo-backtrack-attempts The maximum number of backtrack attempts the

scheduler should make when modulo scheduling a

loop.

large-function-insns The size of function body to be considered large.

large-function-growth Maximal growth due to inlining of large function

(in percent).

large-unit-insns The size of translation unit to be considered

large.

inline-unit-growth How much can given compilation unit grow because

of the inlining (in percent).

ipcp-unit-growth How much can given compilation unit grow because

of the interprocedural constant propagation (in

percent).

early-inlining-insns Maximal estimated growth of function body caused

by early inlining of single call.

large-stack-frame The size of stack frame to be considered large.

large-stack-frame-growth Maximal stack frame growth due to inlining (in

percent).

max-gcse-memory The maximum amount of memory to be allocated by

GCSE.

max-gcse-insertion-ratio The maximum ratio of insertions to deletions of

expressions in GCSE.

gcse-after-reload-partial-fraction The threshold ratio for performing partial

redundancy elimination after reload.

gcse-after-reload-critical-fraction The threshold ratio of critical edges

execution count that permit performing redundancy

elimination after reload.

gcse-cost-distance-ratio Scaling factor in calculation of maximum distance

an expression can be moved by GCSE optimizations.

gcse-unrestricted-cost Cost at which GCSE optimizations will not

constraint the distance an expression can travel.

max-hoist-depth Maximum depth of search in the dominator tree for

expressions to hoist.

max-pow-sqrt-depth Maximum depth of sqrt chains to use when

synthesizing exponentiation by a real constant.

max-unrolled-insns The maximum number of instructions to consider to

unroll in a loop.

max-average-unrolled-insns The maximum number of instructions to consider to

unroll in a loop on average.

max-unroll-times The maximum number of unrollings of a single loop.

max-peeled-insns The maximum number of insns of a peeled loop.

max-peel-times The maximum number of peelings of a single loop.

max-peel-branches The maximum number of branches on the path

through the peeled sequence.

max-completely-peeled-insns The maximum number of insns of a completely

peeled loop.

max-completely-peel-times The maximum number of peelings of a single loop

that is peeled completely.

max-once-peeled-insns The maximum number of insns of a peeled loop that

rolls only once.

max-completely-peel-loop-nest-depth The maximum depth of a loop nest we

completely peel.

max-unswitch-insns The maximum number of insns of an unswitched loop.

max-unswitch-level The maximum number of unswitchings in a single

loop.

max-iterations-to-track Bound on the number of iterations the brute force

# of iterations analysis algorithm evaluates.

max-iterations-computation-cost Bound on the cost of an expression to compute

the number of iterations.

sms-max-ii-factor A factor for tuning the upper bound that swing

modulo scheduler uses for scheduling a loop.

sms-min-sc The minimum value of stage count that swing

modulo scheduler will generate.

sms-dfa-history The number of cycles the swing modulo scheduler

considers when checking conflicts using DFA.

sms-loop-average-count-threshold A threshold on the average loop count

considered by the swing modulo scheduler.

hot-bb-count-ws-permille A basic block profile count is considered hot if

it contributes to the given permillage of the

entire profiled execution.

hot-bb-frequency-fraction Select fraction of the maximal frequency of

executions of basic block in function given basic

block needs to have to be considered hot.

unlikely-bb-count-fraction The minimum fraction of profile runs a given

basic block execution count must be not to be

considered unlikely.

align-threshold Select fraction of the maximal frequency of

executions of basic block in function given basic

block get alignment.

align-loop-iterations Loops iterating at least selected number of

iterations will get loop alignement..

max-predicted-iterations The maximum number of loop iterations we predict

statically.

builtin-expect-probability Set the estimated probability in percentage for

builtin expect. The default value is 90%

probability.

tracer-dynamic-coverage-feedback The percentage of function, weighted by

execution frequency, that must be covered by

trace formation. Used when profile feedback is

available.

tracer-dynamic-coverage The percentage of function, weighted by execution

frequency, that must be covered by trace

formation. Used when profile feedback is not

available.

tracer-max-code-growth Maximal code growth caused by tail duplication

(in percent).

tracer-min-branch-ratio Stop reverse growth if the reverse probability of

best edge is less than this threshold (in

percent).

tracer-min-branch-probability-feedback Stop forward growth if the probability

of best edge is less than this threshold (in

percent). Used when profile feedback is available.

tracer-min-branch-probability Stop forward growth if the probability of best

edge is less than this threshold (in percent).

Used when profile feedback is not available.

max-crossjump-edges The maximum number of incoming edges to consider

for crossjumping.

min-crossjump-insns The minimum number of matching instructions to

consider for crossjumping.

max-grow-copy-bb-insns The maximum expansion factor when copying basic

blocks.

max-goto-duplication-insns The maximum number of insns to duplicate when

unfactoring computed gotos.

max-cse-path-length The maximum length of path considered in cse.

max-cse-insns The maximum instructions CSE process before

flushing.

lim-expensive The minimum cost of an expensive expression in

the loop invariant motion.

iv-consider-all-candidates-bound Bound on number of candidates below that all

candidates are considered in iv optimizations.

iv-max-considered-uses Bound on number of iv uses in loop optimized in

iv optimizations.

iv-always-prune-cand-set-bound If number of candidates in the set is smaller,

we always try to remove unused ivs during its

optimization.

scev-max-expr-size Bound on size of expressions used in the scalar

evolutions analyzer.

scev-max-expr-complexity Bound on the complexity of the expressions in the

scalar evolutions analyzer.

vect-max-version-for-alignment-checks Bound on number of runtime checks

inserted by the vectorizer's loop versioning for

alignment check.

vect-max-version-for-alias-checks Bound on number of runtime checks inserted

by the vectorizer's loop versioning for alias

check.

vect-max-peeling-for-alignment Max number of loop peels to enhancement

alignment of data references in a loop.

max-cselib-memory-locations The maximum memory locations recorded by cselib.

ggc-min-expand Minimum heap expansion to trigger garbage

collection, as a percentage of the total size of

the heap.

ggc-min-heapsize Minimum heap size before we start collecting

garbage, in kilobytes.

max-reload-search-insns The maximum number of instructions to search

backward when looking for equivalent reload.

sink-frequency-threshold Target block's relative execution frequency (as a

percentage) required to sink a statement.

max-sched-region-blocks The maximum number of blocks in a region to be

considered for interblock scheduling.

max-sched-region-insns The maximum number of insns in a region to be

considered for interblock scheduling.

max-pipeline-region-blocks The maximum number of blocks in a region to be

considered for interblock scheduling.

max-pipeline-region-insns The maximum number of insns in a region to be

considered for interblock scheduling.

min-spec-prob The minimum probability of reaching a source

block for interblock speculative scheduling.

max-sched-extend-regions-iters The maximum number of iterations through CFG

to extend regions.

max-sched-insn-conflict-delay The maximum conflict delay for an insn to be

considered for speculative motion.

sched-spec-prob-cutoff The minimal probability of speculation success

(in percents), so that speculative insn will be

scheduled.

sched-state-edge-prob-cutoff The minimum probability an edge must have for

the scheduler to save its state across it.

selsched-max-lookahead The maximum size of the lookahead window of

selective scheduling.

selsched-max-sched-times Maximum number of times that an insn could be

scheduled.

selsched-insns-to-rename Maximum number of instructions in the ready list

that are considered eligible for renaming.

sched-mem-true-dep-cost Minimal distance between possibly conflicting

store and load.

sched-autopref-queue-depth Hardware autoprefetcher scheduler model control

flag. Number of lookahead cycles the model looks

into; at '0' only enable instruction sorting

heuristic. Disabled by default.

max-last-value-rtl The maximum number of RTL nodes that can be

recorded as combiner's last value.

max-combine-insns The maximum number of insns combine tries to

combine.

integer-share-limit The upper bound for sharing integer constants.

ssp-buffer-size The lower bound for a buffer to be considered for

stack smashing protection.

min-size-for-stack-sharing The minimum size of variables taking part in

stack slot sharing when not optimizing.

max-jump-thread-duplication-stmts Maximum number of statements allowed in a

block that needs to be duplicated when threading

jumps.

max-fields-for-field-sensitive Maximum number of fields in a structure before

pointer analysis treats the structure as a single

variable.

max-sched-ready-insns The maximum number of instructions ready to be

issued to be considered by the scheduler during

the first scheduling pass.

max-dse-active-local-stores Maximum number of active local stores in RTL dead

store elimination.

prefetch-latency The number of insns executed before prefetch is

completed.

simultaneous-prefetches The number of prefetches that can run at the same

time.

l1-cache-size The size of L1 cache.

l1-cache-line-size The size of L1 cache line.

l2-cache-size The size of L2 cache.

use-canonical-types Whether to use canonical types.

max-partial-antic-length Maximum length of partial antic set when

performing tree pre optimization.

sccvn-max-scc-size Maximum size of a SCC before SCCVN stops

processing a function.

sccvn-max-alias-queries-per-access Maximum number of disambiguations to

perform per memory access.

ira-max-loops-num Max loops number for regional RA.

ira-max-conflict-table-size Max size of conflict table in MB.

ira-loop-reserved-regs The number of registers in each class kept unused

by loop invariant motion.

lra-max-considered-reload-pseudos The max number of reload pseudos which are

considered during spilling a non-reload pseudo.

lra-inheritance-ebb-probability-cutoff Minimal fall-through edge probability

in percentage used to add BB to inheritance EBB

in LRA.

switch-conversion-max-branch-ratio The maximum ratio between array size and

switch branches for a switch conversion to take

place.

loop-block-tile-size size of tiles for loop blocking.

graphite-max-nb-scop-params maximum number of parameters in a SCoP.

graphite-max-bbs-per-function maximum number of basic blocks per function to

be analyzed by Graphite.

graphite-max-arrays-per-scop maximum number of arrays per scop.

graphite-min-loops-per-function minimal number of loops per function to be

analyzed by Graphite.

max-isl-operations maximum number of isl operations, 0 means

unlimited

loop-max-datarefs-for-datadeps Maximum number of datarefs in loop for

building loop data dependencies.

loop-invariant-max-bbs-in-loop Max basic blocks number in loop for loop

invariant motion.

profile-func-internal-id use internal function id in profile lookup.

indir-call-topn-profile track topn target addresses in indirect-call

profile.

slp-max-insns-in-bb Maximum number of instructions in basic block to

be considered for SLP vectorization.

min-insn-to-prefetch-ratio Min. ratio of insns to prefetches to enable

prefetching for a loop with an unknown trip count.

prefetch-min-insn-to-mem-ratio Min. ratio of insns to mem ops to enable

prefetching in a loop.

max-vartrack-size Max. size of var tracking hash tables.

max-vartrack-expr-depth Max. recursion depth for expanding var tracking

expressions.

max-vartrack-reverse-op-size Max. size of loc list for which reverse ops

should be added.

min-nondebug-insn-uid The minimum UID to be used for a nondebug insn.

ipa-sra-ptr-growth-factor Maximum allowed growth of size of new parameters

ipa-sra replaces a pointer to an aggregate with.

tm-max-aggregate-size Size in bytes after which thread-local aggregates

should be instrumented with the logging functions

instead of save/restore pairs.

sra-max-scalarization-size-Ospeed Maximum size, in storage units, of an

aggregate which should be considered for

scalarization when compiling for speed.

sra-max-scalarization-size-Osize Maximum size, in storage units, of an

aggregate which should be considered for

scalarization when compiling for size.

ipa-cp-value-list-size Maximum size of a list of values associated with

each parameter for interprocedural constant

propagation.

ipa-cp-eval-threshold Threshold ipa-cp opportunity evaluation that is

still considered beneficial to clone..

ipa-cp-recursion-penalty Percentage penalty the recursive functions will

receive when they are evaluated for cloning..

ipa-cp-single-call-penalty Percentage penalty functions containg a single

call to another function will receive when they

are evaluated for cloning..

ipa-max-agg-items Maximum number of aggregate content items for a

parameter in jump functions and lattices.

ipa-cp-loop-hint-bonus Compile-time bonus IPA-CP assigns to candidates

which make loop bounds or strides known..

ipa-cp-array-index-hint-bonus Compile-time bonus IPA-CP assigns to candidates

which make an array index known..

ipa-max-aa-steps Maximum number of statements that will be visited

by IPA formal parameter analysis based on alias

analysis in any given function.

lto-partitions Number of partitions the program should be split

to.

lto-min-partition Minimal size of a partition for LTO (in estimated

instructions).

cxx-max-namespaces-for-diagnostic-help Maximum number of namespaces to search

for alternatives when name lookup fails.

max-stores-to-sink Maximum number of conditional store pairs that

can be sunk.

case-values-threshold The smallest number of different values for which

it is best to use a jump-table instead of a tree

of conditional branches, if 0, use the default

for the machine.

allow-store-data-races Allow new data races on stores to be introduced.

tree-reassoc-width Set the maximum number of instructions executed

in parallel in reassociated tree. If 0, use the

target dependent heuristic..

max-tail-merge-comparisons Maximum amount of similar bbs to compare a bb

with.

max-tail-merge-iterations Maximum amount of iterations of the pass over a

function.

max-tracked-strlens Maximum number of strings for which strlen

optimization pass will track string lengths.

sched-pressure-algorithm Which -fsched-pressure algorithm to apply.

max-slsr-cand-scan Maximum length of candidate scans for straight-

line strength reduction.

asan-stack Enable asan stack protection.

asan-globals Enable asan globals protection.

asan-instrument-writes Enable asan store operations protection.

asan-instrument-reads Enable asan load operations protection.

asan-memintrin Enable asan builtin functions protection.

asan-use-after-return Enable asan detection of use-after-return bugs.

asan-instrumentation-with-call-threshold Use callbacks instead of inline code

if number of accesses in function becomes greater

or equal to this number.

uninit-control-dep-attempts Maximum number of nested calls to search for

control dependencies during uninitialized

variable analysis.

chkp-max-ctor-size Maximum number of statements to be included into

a single static constructor generated by Pointer

Bounds Checker.

fsm-scale-path-stmts Scale factor to apply to the number of statements

in a threading path when comparing to the number

of (scaled) blocks.

fsm-maximum-phi-arguments Maximum number of arguments a PHI may have before

the FSM threader will not try to thread through

its block.

fsm-scale-path-blocks Scale factor to apply to the number of blocks in

a threading path when comparing to the number of

(scaled) statements.

max-fsm-thread-path-insns Maximum number of instructions to copy when

duplicating blocks on a finite state automaton

jump thread path.

max-fsm-thread-length Maximum number of basic blocks on a finite state

automaton jump thread path.

max-fsm-thread-paths Maximum number of new jump thread paths to create

for a finite state automaton.

parloops-chunk-size Chunk size of omp schedule for loops parallelized

by parloops.

parloops-schedule Schedule type of omp schedule for loops

parallelized by parloops (static, dynamic,

guided, auto, runtime).

max-ssa-name-query-depth Maximum recursion depth allowed when querying a

property of an SSA name.

max-rtl-if-conversion-insns Maximum number of insns in a basic block to

consider for RTL if-conversion.

hsa-gen-debug-stores Level of hsa debug stores verbosity

max-speculative-devirt-maydefs Maximum number of may-defs visited when

devirtualizing speculatively

#### 编译警告

The following options control compiler warning messages:

--extra-warnings Same as -Wextra. Use the latter option instead.

-W This switch is deprecated; use -Wextra instead.

Same as -Wextra.

-Waggregate-return Warn about returning structures, unions or arrays.

-Waggressive-loop-optimizations Warn if a loop with constant number of

iterations triggers undefined behavior.

-Warray-bounds Warn if an array is accessed out of bounds.

-Warray-bounds= Warn if an array is accessed out of bounds.

-Wattributes Warn about inappropriate attribute usage.

-Wcast-align Warn about pointer casts which increase alignment.

-Wcoverage-mismatch Warn in case profiles in -fprofile-use do not

match.

-Wdeprecated-declarations Warn about uses of \_\_attribute\_\_((deprecated))

declarations.

-Wdisabled-optimization Warn when an optimization pass is disabled.

-Wframe-larger-than=<number> Warn if a function's stack frame requires more

than <number> bytes.

-Wfree-nonheap-object Warn when attempting to free a non-heap object.

-Whsa Warn when a function cannot be expanded to HSAIL.

-Winline Warn when an inlined function cannot be inlined.

-Winvalid-memory-model Warn when an atomic memory model parameter is

known to be outside the valid range.

-Wlarger-than- Same as -Wlarger-than=. Use the latter option

instead.

-Wlarger-than=<number> Warn if an object is larger than <number> bytes.

-Wlto-type-mismatch During link time optimization warn about

mismatched types of global declarations.

-Wmissing-noreturn Same as -Wsuggest-attribute=noreturn. Use the

latter option instead.

-Wnull-dereference Warn if dereferencing a NULL pointer may lead to

erroneous or undefined behavior.

-Wodr Warn about some C++ One Definition Rule

violations during link time optimization.

-Woverflow Warn about overflow in arithmetic expressions.

-Wpacked Warn when the packed attribute has no effect on

struct layout.

-Wpadded Warn when padding is required to align structure

members.

-Wreturn-local-addr Warn about returning a pointer/reference to a

local or temporary variable.

-Wshadow Warn when one local variable shadows another.

-Wstack-protector Warn when not issuing stack smashing protection

for some reason.

-Wstack-usage= Warn if stack usage might be larger than

specified amount.

-Wstrict-aliasing Warn about code which might break strict aliasing

rules.

-Wstrict-overflow Warn about optimizations that assume that signed

overflow is undefined.

-Wsuggest-attribute=const Warn about functions which might be candidates

for \_\_attribute\_\_((const)).

-Wsuggest-attribute=noreturn Warn about functions which might be candidates

for \_\_attribute\_\_((noreturn)).

-Wsuggest-attribute=pure Warn about functions which might be candidates

for \_\_attribute\_\_((pure)).

-Wsuggest-final-methods Warn about C++ virtual methods where adding final

keyword would improve code quality.

-Wsuggest-final-types Warn about C++ polymorphic types where adding

final keyword would improve code quality.

-Wtrampolines Warn whenever a trampoline is generated.

-Wtype-limits Warn if a comparison is always true or always

false due to the limited range of the data type.

-Wunreachable-code Does nothing. Preserved for backward

compatibility.

-Wunsafe-loop-optimizations Warn if the loop cannot be optimized due to

nontrivial assumptions.

-Wunused-but-set-parameter Warn when a function parameter is only set,

otherwise unused.

-Wunused-but-set-variable Warn when a variable is only set, otherwise

unused.

-Wunused-function Warn when a function is unused.

-Wunused-parameter Warn when a function parameter is unused.

-Wunused-value Warn when an expression value is unused.

-Wvector-operation-performance Warn when a vector operation is compiled

outside the SIMD.

#### 优化

The following options control optimizations:

-O<number> Set optimization level to <number>.

-Ofast Optimize for speed disregarding exact standards

compliance.

-Og Optimize for debugging experience rather than

speed or size.

-Os Optimize for space rather than speed.

-faggressive-loop-optimizations Aggressively optimize loops using language

constraints.

-falign-functions Align the start of functions.

-falign-jumps Align labels which are only reached by jumping.

-falign-labels Align all labels.

-falign-loops Align the start of loops.

-fassociative-math Allow optimization for floating-point arithmetic

which may change the result of the operation due

to rounding.

-fasynchronous-unwind-tables Generate unwind tables that are exact at each

instruction boundary.

-fauto-inc-dec Generate auto-inc/dec instructions.

-fbranch-count-reg Replace add, compare, branch with branch on count

register.

-fbranch-probabilities Use profiling information for branch

probabilities.

-fbranch-target-load-optimize Perform branch target load optimization before

prologue / epilogue threading.

-fbranch-target-load-optimize2 Perform branch target load optimization after

prologue / epilogue threading.

-fbtr-bb-exclusive Restrict target load migration not to re-use

registers in any basic block.

-fcaller-saves Save registers around function calls.

-fcombine-stack-adjustments Looks for opportunities to reduce stack

adjustments and stack references.

-fcompare-elim Perform comparison elimination after register

allocation has finished.

-fconserve-stack Do not perform optimizations increasing

noticeably stack usage.

-fcprop-registers Perform a register copy-propagation optimization

pass.

-fcrossjumping Perform cross-jumping optimization.

-fcse-follow-jumps When running CSE, follow jumps to their targets.

-fcx-fortran-rules Complex multiplication and division follow

Fortran rules.

-fcx-limited-range Omit range reduction step when performing complex

division.

-fdce Use the RTL dead code elimination pass.

-fdefer-pop Defer popping functions args from stack until

later.

-fdelayed-branch Attempt to fill delay slots of branch

instructions.

-fdelete-dead-exceptions Delete dead instructions that may throw

exceptions.

-fdelete-null-pointer-checks Delete useless null pointer checks.

-fdevirtualize Try to convert virtual calls to direct ones.

-fdevirtualize-speculatively Perform speculative devirtualization.

-fdse Use the RTL dead store elimination pass.

-fearly-inlining Perform early inlining.

-fexceptions Enable exception handling.

-fexpensive-optimizations Perform a number of minor, expensive

optimizations.

-ffinite-math-only Assume no NaNs or infinities are generated.

-ffloat-store Don't allocate floats and doubles in extended-

precision registers.

-fforward-propagate Perform a forward propagation pass on RTL.

-ffp-contract= -ffp-contract=[off|on|fast] Perform floating-

point expression contraction.

-ffunction-cse Allow function addresses to be held in registers.

-fgcse Perform global common subexpression elimination.

-fgcse-after-reload Perform global common subexpression elimination

after register allocation has finished.

-fgcse-las Perform redundant load after store elimination in

global common subexpression elimination.

-fgcse-lm Perform enhanced load motion during global common

subexpression elimination.

-fgcse-sm Perform store motion after global common

subexpression elimination.

-fgraphite Enable in and out of Graphite representation.

-fgraphite-identity Enable Graphite Identity transformation.

-fguess-branch-probability Enable guessing of branch probabilities.

-fhoist-adjacent-loads Enable hoisting adjacent loads to encourage

generating conditional move instructions.

-fif-conversion Perform conversion of conditional jumps to

branchless equivalents.

-fif-conversion2 Perform conversion of conditional jumps to

conditional execution.

-findirect-inlining Perform indirect inlining.

-finline Enable inlining of function declared "inline",

disabling disables all inlining.

-finline-atomics Inline \_\_atomic operations when a lock free

instruction sequence is available.

-finline-functions-called-once Integrate functions only required by their

single caller.

-finline-small-functions Integrate functions into their callers when code

size is known not to grow.

-fipa-cp Perform interprocedural constant propagation.

-fipa-cp-alignment Perform alignment discovery and propagation to

make Interprocedural constant propagation

stronger.

-fipa-cp-clone Perform cloning to make Interprocedural constant

propagation stronger.

-fipa-icf Perform Identical Code Folding for functions and

read-only variables.

-fipa-icf-functions Perform Identical Code Folding for functions.

-fipa-profile Perform interprocedural profile propagation.

-fipa-pta Perform interprocedural points-to analysis.

-fipa-pure-const Discover pure and const functions.

-fipa-ra Use caller save register across calls if possible.

-fipa-reference Discover readonly and non addressable static

variables.

-fipa-sra Perform interprocedural reduction of aggregates.

-fira-algorithm= -fira-algorithm=[CB|priority] Set the used IRA

algorithm.

-fira-hoist-pressure Use IRA based register pressure calculation in

RTL hoist optimizations.

-fira-loop-pressure Use IRA based register pressure calculation in

RTL loop optimizations.

-fira-region= -fira-region=[one|all|mixed] Set regions for IRA.

-fira-share-save-slots Share slots for saving different hard registers.

-fira-share-spill-slots Share stack slots for spilled pseudo-registers.

-fisolate-erroneous-paths-attribute Detect paths that trigger erroneous or

undefined behavior due a null value being used in

a way forbidden by a returns\_nonnull or nonnull

attribute. Isolate those paths from the main

control flow and turn the statement with

erroneous or undefined behavior into a trap.

-fisolate-erroneous-paths-dereference Detect paths that trigger erroneous or

undefined behavior due to dereferencing a null

pointer. Isolate those paths from the main

control flow and turn the statement with

erroneous or undefined behavior into a trap.

-fivopts Optimize induction variables on trees.

-fjump-tables Use jump tables for sufficiently large switch

statements.

-fkeep-gc-roots-live This option lacks documentation.

-flifetime-dse Tell DSE that the storage for a C++ object is

dead when the constructor starts and when the

destructor finishes.

-flifetime-dse= This option lacks documentation.

-flive-range-shrinkage Relief of register pressure through live range

shrinkage.

-floop-nest-optimize Enable the loop nest optimizer.

-floop-parallelize-all Mark all loops as parallel.

-flra-remat Do CFG-sensitive rematerialization in LRA.

-fmath-errno Set errno after built-in math functions.

-fmodulo-sched Perform SMS based modulo scheduling before the

first scheduling pass.

-fmodulo-sched-allow-regmoves Perform SMS based modulo scheduling with

register moves allowed.

-fmove-loop-invariants Move loop invariant computations out of loops.

-fnon-call-exceptions Support synchronous non-call exceptions.

-fomit-frame-pointer When possible do not generate stack frames.

-fopt-info Enable all optimization info dumps on stderr.

-foptimize-sibling-calls Optimize sibling and tail recursive calls.

-foptimize-strlen Enable string length optimizations on trees.

-fpack-struct Pack structure members together without holes.

-fpack-struct=<number> Set initial maximum structure member alignment.

-fpartial-inlining Perform partial inlining.

-fpeel-loops Perform loop peeling.

-fpeephole Enable machine specific peephole optimizations.

-fpeephole2 Enable an RTL peephole pass before sched2.

-fplt Use PLT for PIC calls (-fno-plt: load the address

from GOT at call site).

-fpredictive-commoning Run predictive commoning optimization.

-fprefetch-loop-arrays Generate prefetch instructions, if available, for

arrays in loops.

-freciprocal-math Same as -fassociative-math for expressions which

include division.

-freg-struct-return Return small aggregates in registers.

-frename-registers Perform a register renaming optimization pass.

-freorder-blocks Reorder basic blocks to improve code placement.

-freorder-blocks-algorithm= -freorder-blocks-algorithm=[simple|stc] Set the

used basic block reordering algorithm.

-freorder-blocks-and-partition Reorder basic blocks and partition into hot

and cold sections.

-freorder-functions Reorder functions to improve code placement.

-frerun-cse-after-loop Add a common subexpression elimination pass after

loop optimizations.

-freschedule-modulo-scheduled-loops Enable/Disable the traditional scheduling

in loops that already passed modulo scheduling.

-frounding-math Disable optimizations that assume default FP

rounding behavior.

-fsched-critical-path-heuristic Enable the critical path heuristic in the

scheduler.

-fsched-dep-count-heuristic Enable the dependent count heuristic in the

scheduler.

-fsched-group-heuristic Enable the group heuristic in the scheduler.

-fsched-interblock Enable scheduling across basic blocks.

-fsched-last-insn-heuristic Enable the last instruction heuristic in the

scheduler.

-fsched-pressure Enable register pressure sensitive insn

scheduling.

-fsched-rank-heuristic Enable the rank heuristic in the scheduler.

-fsched-spec Allow speculative motion of non-loads.

-fsched-spec-insn-heuristic Enable the speculative instruction heuristic in

the scheduler.

-fsched-spec-load Allow speculative motion of some loads.

-fsched-spec-load-dangerous Allow speculative motion of more loads.

-fsched-stalled-insns Allow premature scheduling of queued insns.

-fsched-stalled-insns-dep Set dependence distance checking in premature

scheduling of queued insns.

-fsched-stalled-insns-dep=<number> Set dependence distance checking in

premature scheduling of queued insns.

-fsched-stalled-insns=<number> Set number of queued insns that can be

prematurely scheduled.

-fsched2-use-superblocks If scheduling post reload, do superblock

scheduling.

-fschedule-fusion Perform a target dependent instruction fusion

optimization pass.

-fschedule-insns Reschedule instructions before register

allocation.

-fschedule-insns2 Reschedule instructions after register allocation.

-fsection-anchors Access data in the same section from shared

anchor points.

-fsel-sched-pipelining Perform software pipelining of inner loops during

selective scheduling.

-fsel-sched-pipelining-outer-loops Perform software pipelining of outer loops

during selective scheduling.

-fsel-sched-reschedule-pipelined Reschedule pipelined regions without

pipelining.

-fselective-scheduling Schedule instructions using selective scheduling

algorithm.

-fselective-scheduling2 Run selective scheduling after reload.

-fshrink-wrap Emit function prologues only before parts of the

function that need it, rather than at the top of

the function.

-fsignaling-nans Disable optimizations observable by IEEE

signaling NaNs.

-fsigned-zeros Disable floating point optimizations that ignore

the IEEE signedness of zero.

-fsimd-cost-model= Specifies the vectorization cost model for code

marked with a simd directive.

-fsingle-precision-constant Convert floating point constants to single

precision constants.

-fsplit-ivs-in-unroller Split lifetimes of induction variables when loops

are unrolled.

-fsplit-paths Split paths leading to loop backedges.

-fsplit-wide-types Split wide types into independent registers.

-fssa-backprop Enable backward propagation of use properties at

the SSA level.

-fssa-phiopt Optimize conditional patterns using SSA PHI nodes.

-fstack-reuse= -fstack-reuse=[all|named\_vars|none] Set stack

reuse level for local variables.

-fstdarg-opt Optimize amount of stdarg registers saved to

stack at start of function.

-fstrict-aliasing Assume strict aliasing rules apply.

-fstrict-overflow Treat signed overflow as undefined.

-fstrict-volatile-bitfields Force bitfield accesses to match their type width.

-fthread-jumps Perform jump threading optimizations.

-ftracer Perform superblock formation via tail duplication.

-ftrapping-math Assume floating-point operations can trap.

-ftrapv Trap for signed overflow in addition, subtraction

and multiplication.

-ftree-bit-ccp Enable SSA-BIT-CCP optimization on trees.

-ftree-builtin-call-dce Enable conditional dead code elimination for

builtin calls.

-ftree-ccp Enable SSA-CCP optimization on trees.

-ftree-ch Enable loop header copying on trees.

-ftree-coalesce-vars Enable SSA coalescing of user variables.

-ftree-copy-prop Enable copy propagation on trees.

-ftree-cselim Transform condition stores into unconditional

ones.

-ftree-dce Enable SSA dead code elimination optimization on

trees.

-ftree-dominator-opts Enable dominator optimizations.

-ftree-dse Enable dead store elimination.

-ftree-forwprop Enable forward propagation on trees.

-ftree-fre Enable Full Redundancy Elimination (FRE) on trees.

-ftree-loop-distribute-patterns Enable loop distribution for patterns

transformed into a library call.

-ftree-loop-distribution Enable loop distribution on trees.

-ftree-loop-if-convert Convert conditional jumps in innermost loops to

branchless equivalents.

-ftree-loop-if-convert-stores Also if-convert conditional jumps containing

memory writes.

-ftree-loop-im Enable loop invariant motion on trees.

-ftree-loop-ivcanon Create canonical induction variables in loops.

-ftree-loop-optimize Enable loop optimizations on tree level.

-ftree-loop-vectorize Enable loop vectorization on trees.

-ftree-lrs Perform live range splitting during the SSA-

>normal pass.

-ftree-parallelize-loops= Enable automatic parallelization of loops.

-ftree-partial-pre In SSA-PRE optimization on trees, enable partial-

partial redundancy elimination.

-ftree-phiprop Enable hoisting loads from conditional pointers.

-ftree-pre Enable SSA-PRE optimization on trees.

-ftree-pta Perform function-local points-to analysis on

trees.

-ftree-reassoc Enable reassociation on tree level.

-ftree-scev-cprop Enable copy propagation of scalar-evolution

information.

-ftree-sink Enable SSA code sinking on trees.

-ftree-slp-vectorize Enable basic block vectorization (SLP) on trees.

-ftree-slsr Perform straight-line strength reduction.

-ftree-sra Perform scalar replacement of aggregates.

-ftree-switch-conversion Perform conversions of switch initializations.

-ftree-tail-merge Enable tail merging on trees.

-ftree-ter Replace temporary expressions in the SSA->normal

pass.

-ftree-vectorize Enable vectorization on trees.

-ftree-vrp Perform Value Range Propagation on trees.

-funconstrained-commons Assume common declarations may be overridden with

ones with a larger trailing array.

-funroll-all-loops Perform loop unrolling for all loops.

-funroll-loops Perform loop unrolling when iteration count is

known.

-funsafe-loop-optimizations Allow loop optimizations to assume that the loops

behave in normal way.

-funsafe-math-optimizations Allow math optimizations that may violate IEEE or

ISO standards.

-funswitch-loops Perform loop unswitching.

-funwind-tables Just generate unwind tables for exception

handling.

-fvar-tracking Perform variable tracking.

-fvar-tracking-assignments Perform variable tracking by annotating

assignments.

-fvar-tracking-assignments-toggle Toggle -fvar-tracking-assignments.

-fvar-tracking-uninit Perform variable tracking and also tag variables

that are uninitialized.

-fvariable-expansion-in-unroller Apply variable expansion when loops are

unrolled.

-fvect-cost-model= Specifies the cost model for vectorization.

-fvpt Use expression value profiles in optimizations.

-fweb Construct webs and split unrelated uses of single

variable.

-fwrapv Assume signed arithmetic overflow wraps around.

#### 编译目标环境设置（ABI Application Binary Interface相关）

The following options are target specific:

-mabi= Specify an ABI.

-mabort-on-noreturn Generate a call to abort if a noreturn function

returns.

-mapcs This option lacks documentation.

-mapcs-float Pass FP arguments in FP registers.

-mapcs-frame Generate APCS conformant stack frames.

-mapcs-reentrant Generate re-entrant, PIC code.

-mapcs-stack-check This option lacks documentation.

-march= Specify the name of the target architecture.

-marm Generate code in 32 bit ARM state.

-masm-syntax-unified Assume unified syntax for inline assembly code.

-mbig-endian Assume target CPU is configured as big endian.

-mcallee-super-interworking Thumb: Assume non-static functions may be called

from ARM code.

-mcaller-super-interworking Thumb: Assume function pointers may go to non-

Thumb aware code.

-mcmse Specify that the compiler should target secure

code as per ARMv8-M Security Extensions.

-mcpu= Specify the name of the target CPU.

-mfix-cortex-m3-ldrd Avoid overlapping destination and address

registers on LDRD instructions that may trigger

Cortex-M3 errata.

-mflip-thumb Switch ARM/Thumb modes on alternating functions

for compiler testing.

硬件除法启用选项

**-mfloat-abi= Specify if floating point hardware should be used.**

-mfp16-format= Specify the \_\_fp16 floating-point format.

-mfpu= Specify the name of the target floating point

hardware/format.

-mhard-float Same as -mfloat-abi=. Use the latter option

instead.

-mlittle-endian Assume target CPU is configured as little endian.

-mlong-calls Generate call insns as indirect calls, if

necessary.

-mneon-for-64bits Use Neon to perform 64-bits operations rather

than core registers.

-mnew-generic-costs Use the new generic RTX cost tables if new core-

specific cost table not available (transitional).

-mold-rtx-costs Use the old RTX costing tables (transitional).

-mpic-data-is-text-relative Assume data segments are relative to text segment.

-mpic-register= Specify the register to be used for PIC

addressing.

-mpoke-function-name Store function names in object code.

-mprint-tune-info Print CPU tuning information as comment in

assembler file. This is an option used only for

regression testing of the compiler and not

intended for ordinary use in compiling code.

-mpure-code Do not allow constant data to be placed in code

sections.

-mrestrict-it Generate IT blocks appropriate for ARMv8.

-msched-prolog Permit scheduling of a function's prologue

sequence.

-msingle-pic-base Do not load the PIC register in function

prologues.

-mslow-flash-data Assume loading data from flash is slower than

fetching instructions.

-msoft-float Same as -mfloat-abi=. Use the latter option

instead.

-mstructure-size-boundary= Specify the minimum bit alignment of structures.

**-mthumb Generate code for Thumb state.**

-mthumb-interwork Support calls between Thumb and ARM instruction

sets.

-mtls-dialect= Specify thread local storage scheme.

-mtp= Specify how to access the thread pointer.

-mtpcs-frame Thumb: Generate (non-leaf) stack frames even if

not needed.

-mtpcs-leaf-frame Thumb: Generate (leaf) stack frames even if not

needed.

-mtune= Tune code for the given processor.

-munaligned-access Enable unaligned word and halfword accesses to

packed data.

-mvectorize-with-neon-double Use Neon double-word (rather than quad-word)

registers for vectorization.

-mvectorize-with-neon-quad Use Neon quad-word (rather than double-word)

registers for vectorization.

-mword-relocations Only generate absolute relocations on word sized

values.

Known ARM **ABIs** (for use with the -mabi= option):

aapcs aapcs-linux apcs-gnu atpcs iwmmxt

Known ARM **ARCHs** **architectures** (for use with the -march= option):

armv2 armv2a armv3 armv3m armv4 armv4t armv5 armv5e armv5t armv5te armv6

armv6-m armv6j armv6k armv6kz armv6s-m armv6t2 armv6z armv6zk armv7 armv7-a

armv7-m armv7-r armv7e-m armv7ve armv8-a armv8-a+crc armv8-m.base

armv8-m.main armv8-m.main+dsp armv8.1-a armv8.1-a+crc iwmmxt iwmmxt2 native

Known **\_\_fp16 formats** (for use with the -mfp16-format= option):

alternative ieee none

Known ARM **FPUs** (for use with the -mfpu= option):

crypto-neon-fp-armv8 fp-armv8 fpv4-sp-d16 fpv5-d16 fpv5-sp-d16 neon

neon-fp-armv8 neon-fp16 neon-vfpv4 vfp vfp3 vfpv3 vfpv3-d16 vfpv3-d16-fp16

vfpv3-fp16 vfpv3xd vfpv3xd-fp16 vfpv4 vfpv4-d16

Valid arguments to **-mtp=:**

auto cp15 soft

Known **floating-point ABIs** (for use with the -mfloat-abi= option):

hard soft softfp

Known **ARM CPUs** (for use with the -mcpu= and -mtune= options):

arm1020e arm1020t arm1022e arm1026ej-s arm10e arm10tdmi arm1136j-s

arm1136jf-s arm1156t2-s arm1156t2f-s arm1176jz-s arm1176jzf-s arm2 arm250

arm3 arm6 arm60 arm600 arm610 arm620 arm7 arm70 arm700 arm700i arm710

arm7100 arm710c arm710t arm720 arm720t arm740t arm7500 arm7500fe arm7d

arm7di arm7dm arm7dmi arm7m arm7tdmi arm7tdmi-s arm8 arm810 arm9 arm920

arm920t arm922t arm926ej-s arm940t arm946e-s arm966e-s arm968e-s arm9e

arm9tdmi cortex-a12 cortex-a15 cortex-a15.cortex-a7 cortex-a17

cortex-a17.cortex-a7 cortex-a32 cortex-a35 cortex-a5 cortex-a53 cortex-a57

cortex-a57.cortex-a53 cortex-a7 cortex-a72 cortex-a72.cortex-a53 cortex-a8

cortex-a9 cortex-m0 cortex-m0.small-multiply cortex-m0plus

cortex-m0plus.small-multiply cortex-m1 cortex-m1.small-multiply cortex-m23

cortex-m3 cortex-m33 cortex-m4 cortex-m7 cortex-r4 cortex-r4f cortex-r5

cortex-r7 cortex-r8 ep9312 exynos-m1 fa526 fa606te fa626 fa626te fa726te

fmp626 generic-armv7-a iwmmxt iwmmxt2 marvell-pj4 mpcore mpcorenovfp native

qdf24xx strongarm strongarm110 strongarm1100 strongarm1110 xgene1 xscale

**TLS** **dialect** to use:

gnu gnu2

The following options are **language-independent:**

--debug Same as -g. Use the latter option instead.

--dumpbase Same as -dumpbase. Use the latter option instead.

--dumpdir Same as -dumpdir. Use the latter option instead.

--help Display this information.

--help=<class> Display descriptions of a specific class of

options. <class> is one or more of optimizers,

target, warnings, undocumented, params.

--optimize Same as -O. Use the latter option instead.

--param <param>=<value> Set parameter <param> to value. See below for a

complete list of parameters.

--param= Same as --param. Use the latter option instead.

--pedantic-errors Same as -pedantic-errors. Use the latter option

instead.

--profile Same as -p. Use the latter option instead.

--target-help Alias for --help=target.

--version This option lacks documentation.

-Werror= Treat specified warning as error.

-Wfatal-errors Exit on the first error occurred.

-aux-info <file> Emit declaration information into <file>.

-aux-info= Same as -aux-info. Use the latter option instead.

-auxbase This option lacks documentation.

-auxbase-strip This option lacks documentation.

-dumpbase <file> Set the file basename to be used for dumps.

-dumpdir <dir> Set the directory name to be used for dumps.

-fPIC Generate position-independent code if possible

(large mode).

**-fPIE** Generate **position-independent code** for

executables if possible (large mode).

-fabi-version= The version of the C++ ABI in use.

-falign-functions= This option lacks documentation.

-falign-jumps= This option lacks documentation.

-falign-labels= This option lacks documentation.

-falign-loops= This option lacks documentation.

-fargument-alias Does nothing. Preserved for backward

compatibility.

-fargument-noalias Does nothing. Preserved for backward

compatibility.

-fargument-noalias-anything Does nothing. Preserved for backward

compatibility.

-fargument-noalias-global Does nothing. Preserved for backward

compatibility.

-fasan-shadow-offset=<number> Use custom shadow memory offset.

-fauto-profile Use sample profile information for call graph

node weights. The default profile file is

fbdata.afdo in 'pwd'.

-fauto-profile= Use sample profile information for call graph

node weights. The profile file is specified in

the argument.

-fbounds-check Generate code to check bounds before indexing

arrays.

-fcall-saved-<register> Mark <register> as being preserved across

functions.

-fcall-used-<register> Mark <register> as being corrupted by function

calls.

-fcheck-data-deps This switch is deprecated; do not use.

-fcheck-new Check the return value of new in C++.

-fchecking Perform internal consistency checkings.

-fcommon Do not put uninitialized globals in the common

section.

-fcompare-debug-second Run only the second compilation of -fcompare-

debug.

-fcompare-debug[=<opts>] Compile with and without e.g. -gtoggle, and

compare the final-insns dump.

-fcse-skip-blocks Does nothing. Preserved for backward

compatibility.

-fdata-sections Place data items into their own section.

-fdbg-cnt-list List all available debugging counters with their

limits and counts.

-fdbg-cnt=<counter>:<limit>[,<counter>:<limit>,...] Set the debug counter

limit.

-fdebug-prefix-map= Map one directory name to another in debug

information.

-fdebug-types-section Output .debug\_types section when using DWARF v4

debuginfo.

-fdevirtualize-at-ltrans Stream extra data to support more aggressive

devirtualization in LTO local transformation mode.

-fdiagnostics-color Same as -fdiagnostics-color=. Use the latter

option instead.

-fdiagnostics-color=[never|always|auto] Colorize diagnostics.

-fdiagnostics-show-caret Show the source line with a caret indicating the

column.

-fdiagnostics-show-location=[once|every-line] How often to emit source

location at the beginning of line-wrapped

diagnostics.

-fdiagnostics-show-option Amend appropriate diagnostic messages with the

command line option that controls them.

-fdisable- -fdisable-[tree|rtl|ipa]-<pass>=range1+range2

disables an optimization pass.

-fdump-<type> Dump various compiler internals to a file.

-fdump-final-insns=filename Dump to filename the insns at the end of

translation.

-fdump-go-spec=filename Write all declarations to file as Go code.

-fdump-internal-locations Dump detailed information on GCC's internal

representation of source code locations.

-fdump-noaddr Suppress output of addresses in debugging dumps.

-fdump-passes Dump optimization passes.

-fdump-unnumbered Suppress output of instruction numbers, line

number notes and addresses in debugging dumps.

-fdump-unnumbered-links Suppress output of previous and next insn numbers

in debugging dumps.

-fdwarf2-cfi-asm Enable CFI tables via GAS assembler directives.

-feliminate-dwarf2-dups Perform DWARF duplicate elimination.

-feliminate-unused-debug-symbols Perform unused symbol elimination in debug

info.

-feliminate-unused-debug-types Perform unused type elimination in debug info.

-femit-class-debug-always Do not suppress C++ class debug information.

-fenable- -fenable-[tree|rtl|ipa]-<pass>=range1+range2

enables an optimization pass.

-fexcess-precision=[fast|standard] Specify handling of excess floating-point

precision.

-ffast-math This option lacks documentation.

-ffat-lto-objects Output lto objects containing both the

intermediate language and binary output.

-ffixed-<register> Mark <register> as being unavailable to the

compiler.

-fforce-addr Does nothing. Preserved for backward

compatibility.

-ffunction-sections Place each function into its own section.

-fgnat-encodings=[all|gdb|minimal] Select the balance between GNAT encodings

and standard DWARF emitted in the debug

information

-fgnu-tm Enable support for GNU transactional memory.

-fgnu-unique Use STB\_GNU\_UNIQUE if supported by the assembler.

-fhelp Same as --help. Use the latter option instead.

-fhelp= Same as --help=. Use the latter option instead.

-fident Process #ident directives.

-finhibit-size-directive Do not generate .size directives.

-finline-limit- Same as -finline-limit=. Use the latter option

instead.

-finline-limit=<number> Limit the size of inlined functions to <number>.

-finstrument-functions Instrument function entry and exit with profiling

calls.

-finstrument-functions-exclude-file-list= -finstrument-functions-exclude-file-

list=filename,... Do not instrument functions

listed in files.

-finstrument-functions-exclude-function-list= -finstrument-functions-exclude-

function-list=name,... Do not instrument listed

functions.

-fipa-icf-variables Perform Identical Code Folding for variables.

-fipa-matrix-reorg Does nothing. Preserved for backward

compatibility.

-fipa-struct-reorg Does nothing. Preserved for backward

compatibility.

-fira-verbose=<number> Control IRA's level of diagnostic messages.

-fkeep-inline-functions Generate code for functions even if they are

fully inlined.

-fkeep-static-consts Emit static const variables even if they are not

used.

-fkeep-static-functions Generate code for static functions even if they

are never called.

-fleading-underscore Give external symbols a leading underscore.

-floop-block Enable loop nest transforms. Same as -floop-nest-

optimize. Same as -floop-nest-optimize.

-floop-flatten Does nothing. Preserved for backward

compatibility.

-floop-interchange Enable loop nest transforms. Same as -floop-nest-

optimize. Same as -floop-nest-optimize.

-floop-optimize Does nothing. Preserved for backward

compatibility.

-floop-strip-mine Enable loop nest transforms. Same as -floop-nest-

optimize. Same as -floop-nest-optimize.

-floop-unroll-and-jam Enable loop nest transforms. Same as -floop-nest-

optimize. Same as -floop-nest-optimize.

-flto Enable link-time optimization.

-flto-compression-level=<number> Use zlib compression level <number> for IL.

-flto-odr-type-merging Merge C++ types using One Definition Rule.

-flto-partition= Specify the algorithm to partition symbols and

vars at linktime.

-flto-report Report various link-time optimization statistics.

-flto-report-wpa Report various link-time optimization statistics

for WPA only.

-flto= Link-time optimization with number of parallel

jobs or jobserver.

-fmax-errors=<number> Maximum number of errors to report.

-fmem-report Report on permanent memory allocation.

-fmem-report-wpa Report on permanent memory allocation in WPA only.

-fmerge-all-constants Attempt to merge identical constants and constant

variables.

-fmerge-constants Attempt to merge identical constants across

compilation units.

-fmerge-debug-strings Attempt to merge identical debug strings across

compilation units.

-fmessage-length=<number> Limit diagnostics to <number> characters per

line. 0 suppresses line-wrapping.

-fno-vect-cost-model Enables the unlimited vectorizer cost model.

Preserved for backward compatibility. Same as

-fvect-cost-model=.

-foffload-abi= -foffload-abi=[lp64|ilp32] Set the ABI to use

in an offload compiler.

-foffload= -foffload=<targets>=<options> Specify offloading

targets and options for them.

-fopt-info[-<type>=filename] Dump compiler optimization details.

-foptimize-register-move Does nothing. Preserved for backward

compatibility.

-fpcc-struct-return Return small aggregates in memory, not registers.

-fpic Generate position-independent code if possible

(small mode).

-fpie Generate position-independent code for

executables if possible (small mode).

-fplugin-arg-<name>-<key>[=<value>] Specify argument <key>=<value> for plugin

<name>.

-fplugin= Specify a plugin to load.

-fpost-ipa-mem-report Report on memory allocation before

interprocedural optimization.

-fpre-ipa-mem-report Report on memory allocation before

interprocedural optimization.

-fprofile Enable basic program profiling code.

-fprofile-arcs Insert arc-based program profiling code.

-fprofile-correction Enable correction of flow inconsistent profile

data input.

-fprofile-dir= Set the top-level directory for storing the

profile data. The default is 'pwd'.

-fprofile-generate Enable common options for generating profile info

for profile feedback directed optimizations.

-fprofile-generate= Enable common options for generating profile info

for profile feedback directed optimizations, and

set -fprofile-dir=.

-fprofile-reorder-functions Enable function reordering that improves code

placement.

-fprofile-report Report on consistency of profile.

-fprofile-use Enable common options for performing profile

feedback directed optimizations.

-fprofile-use= Enable common options for performing profile

feedback directed optimizations, and set

-fprofile-dir=.

-fprofile-values Insert code to profile values of expressions.

-frandom-seed This option lacks documentation.

-frandom-seed=<string> Make compile reproducible using <string>.

-frecord-gcc-switches Record gcc command line switches in the object

file.

-free Turn on Redundant Extensions Elimination pass.

-fregmove Does nothing. Preserved for backward

compatibility.

-freport-bug Collect and dump debug information into temporary

file if ICE in C/C++ compiler occured.

-frerun-loop-opt Does nothing. Preserved for backward

compatibility.

-fsanitize-coverage=trace-pc Enable coverage-guided fuzzing code

instrumentation. Inserts call to

\_\_sanitizer\_cov\_trace\_pc into every basic block.

-fsanitize-recover This switch is deprecated; use -fsanitize-

recover= instead.

-fsanitize-recover= After diagnosing undefined behavior attempt to

continue execution.

-fsanitize-sections=<sec1,sec2,...> Sanitize global variables in user-defined

sections.

-fsanitize-undefined-trap-on-error Use trap instead of a library function for

undefined behavior sanitization.

-fsanitize= Select what to sanitize.

-fsched-verbose=<number> Set the verbosity level of the scheduler.

-fsched2-use-traces Does nothing. Preserved for backward

compatibility.

-fsee Does nothing. Preserved for backward

compatibility.

-fsemantic-interposition Allow interposing function (or variables) by ones

with different semantics (or initializer)

respectively by dynamic linker.

-fshow-column Show column numbers in diagnostics, when

available. Default on.

-fsplit-stack Generate discontiguous stack frames.

-fstack-check Insert stack checking code into the program.

Same as -fstack-check=specific. Same as -fstack-

check=.

-fstack-check=[no|generic|specific] Insert stack checking code into the

program.

-fstack-limit This option lacks documentation.

-fstack-limit-register=<register> Trap if the stack goes past <register>.

-fstack-limit-symbol=<name> Trap if the stack goes past symbol <name>.

-fstack-protector Use propolice as a stack protection method.

-fstack-protector-all Use a stack protection method for every function.

-fstack-protector-explicit Use stack protection method only for functions

with the stack\_protect attribute.

-fstack-protector-strong Use a smart stack protection method for certain

functions.

-fstack-usage Output stack usage information on a per-function

basis.

-fstrength-reduce Does nothing. Preserved for backward

compatibility.

-fsync-libcalls Implement \_\_atomic operations via libcalls to

legacy \_\_sync functions.

-fsyntax-only Check for syntax errors, then stop.

-ftarget-help Same as --target-help. Use the latter option

instead.

-ftest-coverage Create data files needed by "gcov".

-ftime-report Report the time taken by each compiler pass.

-ftls-model=[global-dynamic|local-dynamic|initial-exec|local-exec] Set the

default thread-local storage code generation

model.

-ftoplevel-reorder Reorder top level functions, variables, and asms.

-ftree-coalesce-inlined-vars Does nothing. Preserved for backward

compatibility.

-ftree-copyrename Does nothing. Preserved for backward

compatibility.

-ftree-loop-linear Enable loop nest transforms. Same as -floop-nest-

optimize. Same as -floop-nest-optimize.

-ftree-salias Does nothing. Preserved for backward

compatibility.

-ftree-store-ccp Does nothing. Preserved for backward

compatibility.

-ftree-store-copy-prop Does nothing. Preserved for backward

compatibility.

-ftree-vect-loop-version Does nothing. Preserved for backward

compatibility.

-ftree-vectorizer-verbose= Does nothing. Preserved for backward

compatibility.

-funit-at-a-time Compile whole compilation unit at a time.

-fuse-ld=bfd Use the bfd linker instead of the default linker.

-fuse-ld=gold Use the gold linker instead of the default linker.

-fuse-linker-plugin This option lacks documentation.

-fvect-cost-model Enables the dynamic vectorizer cost model.

Preserved for backward compatibility. Same as

-fvect-cost-model=.

-fverbose-asm Add extra commentary to assembler output.

-fversion This option lacks documentation.

-fvisibility=[default|internal|hidden|protected] Set the default symbol

visibility.

-fvtable-verify= Validate vtable pointers before using them.

-fvtv-counts Output vtable verification counters.

-fvtv-debug Output vtable verification pointer sets

information.

-fwhole-program Perform whole program optimizations.

-fzee Does nothing. Preserved for backward

compatibility.

-fzero-initialized-in-bss Put zero initialized data in the bss section.

-g Generate debug information in default format.

-gcoff Generate debug information in COFF format.

-gdwarf Generate debug information in default version of

DWARF format.

-gdwarf- Generate debug information in DWARF v2 (or later)

format.

-ggdb Generate debug information in default extended

format.

-ggnu-pubnames Generate DWARF pubnames and pubtypes sections

with GNU extensions.

-gno-pubnames Don't generate DWARF pubnames and pubtypes

sections.

-gno-record-gcc-switches Don't record gcc command line switches in DWARF

DW\_AT\_producer.

-gno-split-dwarf Don't generate debug information in separate .dwo

files.

-gno-strict-dwarf Emit DWARF additions beyond selected version.

-gpubnames Generate DWARF pubnames and pubtypes sections.

-grecord-gcc-switches Record gcc command line switches in DWARF

DW\_AT\_producer.

-gsplit-dwarf Generate debug information in separate .dwo files.

-gstabs Generate debug information in STABS format.

-gstabs+ Generate debug information in extended STABS

format.

-gstrict-dwarf Don't emit DWARF additions beyond selected

version.

-gtoggle Toggle debug information generation.

-gvms Generate debug information in VMS format.

-gxcoff Generate debug information in XCOFF format.

-gxcoff+ Generate debug information in extended XCOFF

format.

-gz Generate compressed debug sections.

-gz=<format> Generate compressed debug sections in format

<format>.

-imultiarch <dir> Set <dir> to be the multiarch include

subdirectory.

-iplugindir=<dir> Set <dir> to be the default plugin directory.

-p Enable function profiling.

-pedantic-errors Like -pedantic but issue them as errors.

-quiet Do not display functions compiled or elapsed time.

GNU C11 (GNU Tools for ARM Embedded Processors 6-2017-q2-update) version 6.3.1 20170620 (release) [ARM/embedded-6-branch revision 249437] (arm-none-eabi)

compiled by GNU C version 5.3.1 20160211, GMP version 6.1.0, MPFR version 3.1.4, MPC version 1.0.3, isl version 0.15

GGC heuristics: --param ggc-min-expand=100 --param ggc-min-heapsize=131072

COLLECT\_GCC\_OPTIONS='--help' '-v'

h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/bin/as.exe -v -meabi=5 --help -o C:\Users\ADMINI~1\AppData\Local\Temp\ccEi3CVb.o C:\Users\ADMINI~1\AppData\Local\Temp\ccKXMdhN.s

GNU assembler version 2.28.0 (arm-none-eabi) using BFD version (GNU Tools for ARM Embedded Processors 6-2017-q2-update) 2.28.0.20170620

Usage: h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/bin/as.exe [option...] [asmfile...]

Options:

-a[sub-option...] turn on listings

Sub-options [default hls]:

c omit false conditionals

d omit debugging directives

g include general info

h include high-level source

l include assembly

m include macro expansions

n omit forms processing

s include symbols

=FILE list to FILE (must be last sub-option)

--alternate initially turn on alternate macro syntax

--compress-debug-sections[={none|zlib|zlib-gnu|zlib-gabi}]

compress DWARF debug sections using zlib

--nocompress-debug-sections

don't compress DWARF debug sections [default]

-D produce assembler debugging messages

--debug-prefix-map OLD=NEW

map OLD to NEW in debug information

--defsym SYM=VAL define symbol SYM to given value

--execstack require executable stack for this object

--noexecstack don't require executable stack for this object

--size-check=[error|warning]

ELF .size directive check (default --size-check=error)

--elf-stt-common=[no|yes]

generate ELF common symbols with STT\_COMMON type

--sectname-subst enable section name substitution sequences

-f skip whitespace and comment preprocessing

-g --gen-debug generate debugging information

--gstabs generate STABS debugging information

--gstabs+ generate STABS debug info with GNU extensions

--gdwarf-2 generate DWARF2 debugging information

--gdwarf-sections generate per-function section names for DWARF line information

--hash-size=<value> set the hash table size close to <value>

--help show this message and exit

--target-help show target specific options

-I DIR add DIR to search list for .include directives

-J don't warn about signed overflow

-K warn when differences altered for long displacements

-L,--keep-locals keep local symbols (e.g. starting with `L')

-M,--mri assemble in MRI compatibility mode

--MD FILE write dependency information in FILE (default none)

-nocpp ignored

-no-pad-sections do not pad the end of sections to alignment boundaries

-o OBJFILE name the object-file output OBJFILE (default a.out)

-R fold data section into text section

--reduce-memory-overheads

prefer smaller memory use at the cost of longer

assembly times

--statistics print various measured statistics from execution

--strip-local-absolute strip local absolute symbols

--traditional-format Use same format as native assembler when possible

--version print assembler version number and exit

-W --no-warn suppress warnings

--warn don't suppress warnings

--fatal-warnings treat warnings as errors

-w ignored

-X ignored

-Z generate object file even after errors

--listing-lhs-width set the width in words of the output data column of

the listing

--listing-lhs-width2 set the width in words of the continuation lines

of the output data column; ignored if smaller than

the width of the first line

--listing-rhs-width set the max width in characters of the lines from

the source file

--listing-cont-lines set the maximum number of continuation lines used

for the output data column of the listing

@FILE read options from FILE

ARM-specific assembler options:

-k generate PIC code

-mthumb assemble Thumb code

-mthumb-interwork support ARM/Thumb interworking

-mapcs-32 code uses 32-bit program counter

-mapcs-26 code uses 26-bit program counter

-mapcs-float floating point args are in fp regs

-mapcs-reentrant re-entrant code

-matpcs code is ATPCS conformant

-mbig-endian assemble for big-endian

-mlittle-endian assemble for little-endian

-mapcs-frame use frame pointer

-mapcs-stack-check use stack size checking

-mno-warn-deprecated do not warn on use of deprecated feature

-mwarn-syms warn about symbols that match instruction names [default]

-mno-warn-syms disable warnings about symobls that match instructions

-mcpu=<cpu name> assemble for CPU <cpu name>

-march=<arch name> assemble for architecture <arch name>

-mfpu=<fpu name> assemble for FPU architecture <fpu name>

-mfloat-abi=<abi> assemble for floating point ABI <abi>

-meabi=<ver> assemble for eabi version <ver>

-mimplicit-it=<mode> controls implicit insertion of IT instructions

-mccs TI CodeComposer Studio syntax compatibility mode

-EB assemble code for a big-endian cpu

-EL assemble code for a little-endian cpu

--fix-v4bx Allow BX in ARMv4 code

Report bugs to <http://www.sourceware.org/bugzilla/>

COMPILER\_PATH=h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/;h:/software/6 2017-q2-update/bin/../lib/gcc/;h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/bin/

LIBRARY\_PATH=h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/;h:/software/6 2017-q2-update/bin/../lib/gcc/;h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/lib/;h:/software/6 2017-q2-update/bin/../arm-none-eabi/lib/

COLLECT\_GCC\_OPTIONS='--help' '-v'

h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/collect2.exe -plugin h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/liblto\_plugin-0.dll -plugin-opt=h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/lto-wrapper.exe -plugin-opt=-fresolution=C:\Users\ADMINI~1\AppData\Local\Temp\ccMa99lO.res -plugin-opt=-pass-through=-lgcc -plugin-opt=-pass-through=-lc --sysroot=h:\software\6 2017-q2-update\bin\../arm-none-eabi -X --help h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/crti.o h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/crtbegin.o h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/lib/crt0.o -Lh:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1 -Lh:/software/6 2017-q2-update/bin/../lib/gcc -Lh:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/lib -Lh:/software/6 2017-q2-update/bin/../arm-none-eabi/lib C:\Users\ADMINI~1\AppData\Local\Temp\ccEi3CVb.o --start-group -lgcc -lc --end-group h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/crtend.o h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/crtn.o

Usage: collect2 [options]

Wrap linker and generate constructor code if needed.

Options:

-debug Enable debug output

--help Display this information

-v, --version Display this program's version number

Overview: http://gcc.gnu.org/onlinedocs/gccint/Collect2.html

Report bugs: <http://gcc.gnu.org/bugs.html>

Usage: h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/bin/ld.exe [options] file...

Options:

-a KEYWORD Shared library control for HP/UX compatibility

-A ARCH, --architecture ARCH

Set architecture

-b TARGET, --format TARGET Specify target for following input files

-c FILE, --mri-script FILE Read MRI format linker script

-d, -dc, -dp Force common symbols to be defined

-e ADDRESS, --entry ADDRESS Set start address

-E, --export-dynamic Export all dynamic symbols

--no-export-dynamic Undo the effect of --export-dynamic

-EB Link big-endian objects

-EL Link little-endian objects

-f SHLIB, --auxiliary SHLIB Auxiliary filter for shared object symbol table

-F SHLIB, --filter SHLIB Filter for shared object symbol table

-g Ignored

-G SIZE, --gpsize SIZE Small data size (if no size, same as --shared)

-h FILENAME, -soname FILENAME

Set internal name of shared library

-I PROGRAM, --dynamic-linker PROGRAM

Set PROGRAM as the dynamic linker to use

--no-dynamic-linker Produce an executable with no program interpreter header

-l LIBNAME, --library LIBNAME

Search for library LIBNAME

-L DIRECTORY, --library-path DIRECTORY

Add DIRECTORY to library search path

--sysroot=<DIRECTORY> Override the default sysroot location

-m EMULATION Set emulation

-M, --print-map Print map file on standard output

-n, --nmagic Do not page align data

-N, --omagic Do not page align data, do not make text readonly

--no-omagic Page align data, make text readonly

-o FILE, --output FILE Set output file name

-O Optimize output file

--out-implib FILE Generate import library

-plugin PLUGIN Load named plugin

-plugin-opt ARG Send arg to last-loaded plugin

-flto Ignored for GCC LTO option compatibility

-flto-partition= Ignored for GCC LTO option compatibility

-fuse-ld= Ignored for GCC linker option compatibility

--map-whole-files Ignored for gold option compatibility

--no-map-whole-files Ignored for gold option compatibility

-Qy Ignored for SVR4 compatibility

-q, --emit-relocs Generate relocations in final output

-r, -i, --relocatable Generate relocatable output

-R FILE, --just-symbols FILE

Just link symbols (if directory, same as --rpath)

-s, --strip-all Strip all symbols

-S, --strip-debug Strip debugging symbols

--strip-discarded Strip symbols in discarded sections

--no-strip-discarded Do not strip symbols in discarded sections

-t, --trace Trace file opens

-T FILE, --script FILE Read linker script

--default-script FILE, -dT Read default linker script

-u SYMBOL, --undefined SYMBOL

Start with undefined reference to SYMBOL

--require-defined SYMBOL Require SYMBOL be defined in the final output

--unique [=SECTION] Don't merge input [SECTION | orphan] sections

-Ur Build global constructor/destructor tables

-v, --version Print version information

-V Print version and emulation information

-x, --discard-all Discard all local symbols

-X, --discard-locals Discard temporary local symbols (default)

--discard-none Don't discard any local symbols

-y SYMBOL, --trace-symbol SYMBOL

Trace mentions of SYMBOL

-Y PATH Default search path for Solaris compatibility

-(, --start-group Start a group

-), --end-group End a group

--accept-unknown-input-arch Accept input files whose architecture cannot be determined

--no-accept-unknown-input-arch

Reject input files whose architecture is unknown

--as-needed Only set DT\_NEEDED for following dynamic libs if used

--no-as-needed Always set DT\_NEEDED for dynamic libraries mentioned on

the command line

-assert KEYWORD Ignored for SunOS compatibility

-Bdynamic, -dy, -call\_shared

Link against shared libraries

-Bstatic, -dn, -non\_shared, -static

Do not link against shared libraries

-Bsymbolic Bind global references locally

-Bsymbolic-functions Bind global function references locally

--check-sections Check section addresses for overlaps (default)

--no-check-sections Do not check section addresses for overlaps

--copy-dt-needed-entries Copy DT\_NEEDED links mentioned inside DSOs that follow

--no-copy-dt-needed-entries Do not copy DT\_NEEDED links mentioned inside DSOs that follow

--cref Output cross reference table

--defsym SYMBOL=EXPRESSION Define a symbol

--demangle [=STYLE] Demangle symbol names [using STYLE]

--embedded-relocs Generate embedded relocs

--fatal-warnings Treat warnings as errors

--no-fatal-warnings Do not treat warnings as errors (default)

-fini SYMBOL Call SYMBOL at unload-time

--force-exe-suffix Force generation of file with .exe suffix

--gc-sections Remove unused sections (on some targets)

--no-gc-sections Don't remove unused sections (default)

--print-gc-sections List removed unused sections on stderr

--no-print-gc-sections Do not list removed unused sections

--gc-keep-exported Keep exported symbols when removing unused sections

--hash-size=<NUMBER> Set default hash table size close to <NUMBER>

--help Print option help

-init SYMBOL Call SYMBOL at load-time

-Map FILE Write a map file

--no-define-common Do not define Common storage

--no-demangle Do not demangle symbol names

--no-keep-memory Use less memory and more disk I/O

--no-undefined Do not allow unresolved references in object files

--allow-shlib-undefined Allow unresolved references in shared libraries

--no-allow-shlib-undefined Do not allow unresolved references in shared libs

--allow-multiple-definition Allow multiple definitions

--no-undefined-version Disallow undefined version

--default-symver Create default symbol version

--default-imported-symver Create default symbol version for imported symbols

--no-warn-mismatch Don't warn about mismatched input files

--no-warn-search-mismatch Don't warn on finding an incompatible library

--no-whole-archive Turn off --whole-archive

--noinhibit-exec Create an output file even if errors occur

-nostdlib Only use library directories specified on

the command line

--oformat TARGET Specify target of output file

--print-output-format Print default output format

--print-sysroot Print current sysroot

-qmagic Ignored for Linux compatibility

--reduce-memory-overheads Reduce memory overheads, possibly taking much longer

--relax Reduce code size by using target specific optimizations

--no-relax Do not use relaxation techniques to reduce code size

--retain-symbols-file FILE Keep only symbols listed in FILE

-rpath PATH Set runtime shared library search path

-rpath-link PATH Set link time shared library search path

-shared, -Bshareable Create a shared library

-pie, --pic-executable Create a position independent executable

--sort-common [=ascending|descending]

Sort common symbols by alignment [in specified order]

--sort-section name|alignment

Sort sections by name or maximum alignment

--spare-dynamic-tags COUNT How many tags to reserve in .dynamic section

--split-by-file [=SIZE] Split output sections every SIZE octets

--split-by-reloc [=COUNT] Split output sections every COUNT relocs

--stats Print memory usage statistics

--target-help Display target specific options

--task-link SYMBOL Do task level linking

--traditional-format Use same format as native linker

--section-start SECTION=ADDRESS

Set address of named section

-Tbss ADDRESS Set address of .bss section

-Tdata ADDRESS Set address of .data section

-Ttext ADDRESS Set address of .text section

-Ttext-segment ADDRESS Set address of text segment

-Trodata-segment ADDRESS Set address of rodata segment

-Tldata-segment ADDRESS Set address of ldata segment

--unresolved-symbols=<method>

How to handle unresolved symbols. <method> is:

ignore-all, report-all, ignore-in-object-files,

ignore-in-shared-libs

--verbose [=NUMBER] Output lots of information during link

--version-script FILE Read version information script

--version-exports-section SYMBOL

Take export symbols list from .exports, using

SYMBOL as the version.

--dynamic-list-data Add data symbols to dynamic list

--dynamic-list-cpp-new Use C++ operator new/delete dynamic list

--dynamic-list-cpp-typeinfo Use C++ typeinfo dynamic list

--dynamic-list FILE Read dynamic list

--warn-common Warn about duplicate common symbols

--warn-constructors Warn if global constructors/destructors are seen

--warn-multiple-gp Warn if the multiple GP values are used

--warn-once Warn only once per undefined symbol

--warn-section-align Warn if start of section changes due to alignment

--warn-shared-textrel Warn if shared object has DT\_TEXTREL

--warn-alternate-em Warn if an object has alternate ELF machine code

--warn-unresolved-symbols Report unresolved symbols as warnings

--error-unresolved-symbols Report unresolved symbols as errors

--whole-archive Include all objects from following archives

--wrap SYMBOL Use wrapper functions for SYMBOL

--ignore-unresolved-symbol SYMBOL

Unresolved SYMBOL will not cause an error or warning

--push-state Push state of flags governing input file handling

--pop-state Pop state of flags governing input file handling

--print-memory-usage Report target memory usage

--orphan-handling =MODE Control how orphan sections are handled.

@FILE Read options from FILE

h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/bin/ld.exe: supported targets: elf32-littlearm elf32-bigarm elf32-little elf32-big plugin srec symbolsrec verilog tekhex binary ihex

h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/bin/ld.exe: supported emulations: armelf

h:/software/6 2017-q2-update/bin/../lib/gcc/arm-none-eabi/6.3.1/../../../../arm-none-eabi/bin/ld.exe: emulation specific options:

ELF emulations:

--build-id[=STYLE] Generate build ID note

--compress-debug-sections=[none|zlib|zlib-gnu|zlib-gabi]

Compress DWARF debug sections using zlib

Default: none

-z common-page-size=SIZE Set common page size to SIZE

-z max-page-size=SIZE Set maximum page size to SIZE

-z defs Report unresolved symbols in object files.

-z muldefs Allow multiple definitions

-z execstack Mark executable as requiring executable stack

-z noexecstack Mark executable as not requiring executable stack

--audit=AUDITLIB Specify a library to use for auditing

-Bgroup Selects group name lookup rules for DSO

--disable-new-dtags Disable new dynamic tags

--enable-new-dtags Enable new dynamic tags

--eh-frame-hdr Create .eh\_frame\_hdr section

--no-eh-frame-hdr Do not create .eh\_frame\_hdr section

--exclude-libs=LIBS Make all symbols in LIBS hidden

--hash-style=STYLE Set hash style to sysv, gnu or both

-P AUDITLIB, --depaudit=AUDITLIB

Specify a library to use for auditing dependencies

-z combreloc Merge dynamic relocs into one section and sort

-z nocombreloc Don't merge dynamic relocs into one section

-z global Make symbols in DSO available for subsequently

loaded objects

-z initfirst Mark DSO to be initialized first at runtime

-z interpose Mark object to interpose all DSOs but executable

-z lazy Mark object lazy runtime binding (default)

-z loadfltr Mark object requiring immediate process

-z nocopyreloc Don't create copy relocs

-z nodefaultlib Mark object not to use default search paths

-z nodelete Mark DSO non-deletable at runtime

-z nodlopen Mark DSO not available to dlopen

-z nodump Mark DSO not available to dldump

-z now Mark object non-lazy runtime binding

-z origin Mark object requiring immediate $ORIGIN

processing at runtime

-z relro Create RELRO program header

-z norelro Don't create RELRO program header (default)

-z common Generate common symbols with STT\_COMMON type

-z nocommon Generate common symbols with STT\_OBJECT type

-z stacksize=SIZE Set size of stack segment

-z text Treat DT\_TEXTREL in shared object as error

-z notext Don't treat DT\_TEXTREL in shared object as error

-z textoff Don't treat DT\_TEXTREL in shared object as error

armelf:

--thumb-entry=<sym> Set the entry point to be Thumb symbol <sym>

--be8 Output BE8 format image

--target1-rel Interpret R\_ARM\_TARGET1 as R\_ARM\_REL32

--target1-abs Interpret R\_ARM\_TARGET1 as R\_ARM\_ABS32

--target2=<type> Specify definition of R\_ARM\_TARGET2

--fix-v4bx Rewrite BX rn as MOV pc, rn for ARMv4

--fix-v4bx-interworking Rewrite BX rn branch to ARMv4 interworking veneer

--use-blx Enable use of BLX instructions

--vfp11-denorm-fix Specify how to fix VFP11 denorm erratum

--fix-stm32l4xx-629360 Specify how to fix STM32L4XX 629360 erratum

--no-enum-size-warning Don't warn about objects with incompatible

enum sizes

--no-wchar-size-warning Don't warn about objects with incompatible

wchar\_t sizes

--pic-veneer Always generate PIC interworking veneers

--long-plt Generate long .plt entries

to handle large .plt/.got displacements

--cmse-implib Make import library to be a secure gateway import

library as per ARMv8-M Security Extensions

--in-implib Import library whose symbols address must

remain stable

--stub-group-size=N Maximum size of a group of input sections that

can be handled by one stub section. A negative

value locates all stubs after their branches

(with a group size of -N), while a positive

value allows two groups of input sections, one

before, and one after each stub section.

Values of +/-1 indicate the linker should

choose suitable defaults.

--[no-]fix-cortex-a8 Disable/enable Cortex-A8 Thumb-2 branch erratum fix

--no-merge-exidx-entries Disable merging exidx entries

--[no-]fix-arm1176 Disable/enable ARM1176 BLX immediate erratum fix

Report bugs to <http://www.sourceware.org/bugzilla/>

COLLECT\_GCC\_OPTIONS='--help' '-v'

For bug reporting instructions, please see:

<http://gcc.gnu.org/bugs.html>