

NAME

gold – The GNU ELF linker

SYNOPSIS

ld.gold [*options*] *file...*

OPTIONS

- help** Report usage information
- v, --version** Report version information
- V** Report version and target information
- add-needed** Not supported
- no-add-needed** Do not copy DT_NEEDED tags from shared libraries (default)
- allow-multiple-definition** Allow multiple definitions of symbols
- no-allow-multiple-definition** Do not allow multiple definitions (default)
- allow-shlib-undefined** Allow unresolved references in shared libraries
- no-allow-shlib-undefined** Do not allow unresolved references in shared libraries (default)
- apply-dynamic-relocs** Apply link-time values for dynamic relocations (default)
- no-apply-dynamic-relocs** (aarch64 only) Do not apply link-time values for dynamic relocations
- as-needed** Use DT_NEEDED only for shared libraries that are used
- no-as-needed** Use DT_NEEDED for all shared libraries (default)
- assert** [ignored] Ignored
- b** [elf,binary], **--format** [elf,binary] Set input format
- be8** Output BE8 format image
- build-id** [=STYLE] Generate build ID note
- build-id-chunk-size-for-treehash** SIZE
Chunk size for '--build-id=tree'
- build-id-min-file-size-for-treehash** SIZE
Minimum output file size for '--build-id=tree' to work differently than '--build-id=sha1'
- Bdynamic** -lsearches for shared libraries (default)
- Bstatic** -ldoes not search for shared libraries
- dy** alias for **-Bdynamic** (default)
- dn** alias for **-Bstatic**

- Bgroup**
Use group name lookup rules for shared library
- Bshareable**
Generate shared library (alias for **-G/-shared**)
- Bno-symbolic**
Don't bind default visibility defined symbols locally for **-shared** (default)
- Bsymbolic-functions**
Bind default visibility defined function symbols locally for **-shared**
- Bsymbolic**
Bind default visibility defined symbols locally for **-shared**
- check-sections**
Check segment addresses for overlaps (default)
- no-check-sections**
Do not check segment addresses for overlaps
- compress-debug-sections** [none,zlib,zlib-gnu,zlib-gabi]
Compress .debug_* sections in the output file
- copy-dt-needed-entries**
Not supported
- no-copy-dt-needed-entries** Do not copy DT_NEEDED tags from shared libraries (default)
- cref** Output cross reference table
- no-cref**
Do not output cross reference table (default)
- ctors-in-init-array**
Use DT_INIT_ARRAY for all constructors (default)
- no-ctors-in-init-array**
Handle constructors as directed by compiler
- d, --define-common**
Define common symbols
- no-define-common**
Do not define common symbols in relocatable output (default)
- dc** Alias for **-d**
- dp** Alias for **-d**
- debug** [all,files,script,task][,...]
Turn on debugging
- defsym** SYMBOL=EXPRESSION
Define a symbol
- demangle** [=STYLE]
Demangle C++ symbols in log messages
- no-demangle**
Do not demangle C++ symbols in log messages
- dependency-file** FILE
Write a dependency file listing all files read
- detect-odr-violations**
Look for violations of the C++ One Definition Rule

--no-detect-odr-violations
Do not look for violations of the C++ One Definition Rule (default)

--dynamic-list-data
Add data symbols to dynamic symbols

--dynamic-list-cpp-new
Add C++ operator new/delete to dynamic symbols

--dynamic-list-cpp-typeinfo Add C++ typeinfo to dynamic symbols

--dynamic-list FILE
Read a list of dynamic symbols

--emit-stub-syms
(PowerPC only) Label linker stubs with a symbol (default)

--no-emit-stub-syms
(PowerPC only) Do not label linker stubs with a symbol

-e ADDRESS, --entry ADDRESS Set program start address

--eh-frame-hdr
Create exception frame header

--no-eh-frame-hdr
Do not create exception frame header (default)

--enable-new-dtags
Enable use of DT_RUNPATH (default)

--disable-new-dtags
Disable use of DT_RUNPATH

--no-enum-size-warning
(ARM only) Do not warn about objects with incompatible enum sizes

--exclude-libs lib,lib ...
Exclude libraries from automatic export

-E, --export-dynamic
Export all dynamic symbols

--no-export-dynamic
Do not export all dynamic symbols (default)

--export-dynamic-symbol SYMBOL
Export SYMBOL to dynamic symbol table

-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

--fatal-warnings
Treat warnings as errors

--no-fatal-warnings
Do not treat warnings as errors (default)

-fini SYMBOL
Call SYMBOL at unload-time

--fix-arm1176
 (ARM only) Fix binaries for ARM1176 erratum (default)

--no-fix-arm1176
 (ARM only) Do not fix binaries for ARM1176 erratum

--fix-cortex-a8
 (ARM only) Fix binaries for Cortex-A8 erratum

--no-fix-cortex-a8
 (ARM only) Do not fix binaries for Cortex-A8 erratum (default)

--fix-cortex-a53-843419
 (AArch64 only) Fix Cortex-A53 erratum 843419

--no-fix-cortex-a53-843419
 (AArch64 only) Do not fix Cortex-A53 erratum 843419 (default)

--fix-cortex-a53-835769
 (AArch64 only) Fix Cortex-A53 erratum 835769

--no-fix-cortex-a53-835769
 (AArch64 only) Do not fix Cortex-A53 erratum 835769 (default)

--fix-v4bx
 (ARM only) Rewrite BX rn as MOV pc, rn for ARMv4

--fix-v4bx-interworking
 (ARM only) Rewrite BX rn branch to ARMv4 interworking veneer

-fuse-ld [gold,bfd]
 Ignored for GCC linker option compatibility

-g Ignored

--gc-sections
 Remove unused sections

--no-gc-sections
 Don't remove unused sections (default)

--gdb-index
 Generate .gdb_index section

--no-gdb-index
 Do not generate .gdb_index section (default)

--gnu-unique
 Enable STB_GNU_UNIQUE symbol binding (default)

--no-gnu-unique
 Disable STB_GNU_UNIQUE symbol binding

-G, -shared
 Generate shared library

-h FILENAME, **-soname** FILENAME
 Set shared library name

--hash-bucket-empty-fraction FRACTION
 Min fraction of empty buckets in dynamic hash

--hash-style [sysv,gnu,both]
 Dynamic hash style

-i Alias for **-r**

- icf** [none,all,safe]
Identical Code Folding. '**--icf=safe**' Folds ctors, dtors and functions whose pointers are definitely not taken
- icf-iterations** COUNT
Number of iterations of ICF (default 3)
- incremental**
Do an incremental link if possible; otherwise, do a full link and prepare output for incremental linking
- no-incremental**
Do a full link (default)
- incremental-full**
Do a full link and prepare output for incremental linking
- incremental-update**
Do an incremental link; exit if not possible
- incremental-base** FILE
Set base file for incremental linking (default is output file)
- incremental-changed**
Assume files changed
- incremental-unchanged**
Assume files didn't change
- incremental-unknown**
Use timestamps to check files (default)
- incremental-startup-unchanged**
Assume startup files unchanged (files preceding this option)
- incremental-patch** PERCENT Amount of extra space to allocate for patches (default 10)
- init** SYMBOL
Call SYMBOL at load-time
- I** PROGRAM, **--dynamic-linker** PROGRAM
Set dynamic linker path
- just-symbols** FILE
Read only symbol values from FILE
- keep-files-mapped**
Keep files mapped across passes (default)
- no-keep-files-mapped**
Release mapped files after each pass
- keep-unique** SYMBOL
Do not fold this symbol during ICF
- l** LIBNAME, **--library** LIBNAME
Search for library LIBNAME
- ld-generated-unwind-info**
Generate unwind information for PLT (default)
- no-ld-generated-unwind-info**
Do not generate unwind information for PLT
- L** DIR, **--library-path** DIR
Add directory to search path

--long-plt
(ARM only) Generate long PLT entries

--no-long-plt
(ARM only) Do not generate long PLT entries (default)

-m EMULATION
Set GNU linker emulation; obsolete

--map-whole-files
Map whole files to memory (default)

--no-map-whole-files
Map relevant file parts to memory

--merge-exidx-entries
(ARM only) Merge exidx entries in debuginfo (default)

--no-merge-exidx-entries
(ARM only) Do not merge exidx entries in debuginfo

--mmap-output-file
Map the output file for writing (default)

--no-mmap-output-file
Do not map the output file for writing

-M, --print-map
Write map file on standard output

-Map MAPFILENAME
Write map file

-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 (default)

--no-keep-memory
Use less memory and more disk I/O (included only for compatibility with GNU ld)

--no-undefined
Report undefined symbols (even with **---shared**)

--noinhibit-exec
Create an output file even if errors occur

-nostdlib
Only search directories specified on the command line

-o FILE, --output FILE
Set output file name

--oformat [binary]
Set output format

-O LEVEL, --optimize LEVEL
Optimize output file size

--orphan-handling [place,discard,warn,error]
Orphan section handling

-p Ignored for ARM compatibility

- pie** Create a position independent executable
- no-pie**
Do not create a position independent executable (default)
- pic-executable**
Create a position independent executable
- no-pic-executable**
Do not create a position independent executable (default)
- pic-veneers**
Force PIC sequences for ARM/Thumb interworking veneers
- no-pipeline-knowledge**
(ARM only) Ignore for backward compatibility (default)
- plt-align [=P2ALIGN]**
(PowerPC only) Align PLT call stubs to fit cache lines
- plt-localentry**
(PowerPC64 only) Optimize calls to ELFv2 localentry:0 functions
- no-plt-localentry**
(PowerPC64 only) Don't optimize ELFv2 calls (default)
- plt-static-chain**
(PowerPC64 only) PLT call stubs should load r11
- no-plt-static-chain**
(PowerPC64 only) PLT call stubs should not load r11 (default)
- plt-thread-safe**
(PowerPC64 only) PLT call stubs with load-load barrier
- no-plt-thread-safe**
(PowerPC64 only) PLT call stubs without barrier (default)
- plugin PLUGIN**
Load a plugin library
- plugin-opt OPTION**
Pass an option to the plugin
- posix-fallocate**
Use posix_fallocate to reserve space in the output file (default)
- no-posix-fallocate**
Use fallocate or ftruncate to reserve space
- power10-stubs [=auto,no,yes]**
(PowerPC64 only) stubs use power10 insns
- no-power10-stubs**
(PowerPC64 only) stubs do not use power10 insns
- preread-archive-symbols**
Preread archive symbols when multi-threaded
- print-gc-sections**
List removed unused sections on stderr
- no-print-gc-sections**
Do not list removed unused sections (default)
- print-icf-sections**
List folded identical sections on stderr

--no-print-icf-sections
Do not list folded identical sections (default)

--print-output-format
Print default output format

--print-symbol-counts FILENAME
Print symbols defined and used for each input

--push-state
Save the state of flags related to input files

--pop-state
Restore the state of flags related to input files

-q, --emit-relocs
Generate relocations in output

-Qy Ignored for SVR4 compatibility

-r, --relocatable
Generate relocatable output

--relax
Relax branches on certain targets

--no-relax
Do not relax branches (default)

--retain-symbols-file FILE
keep only symbols listed in this file

--rosegment
Put read-only non-executable sections in their own segment

--no-rosegment
Do not put read-only non-executable sections in their own segment (default)

--rosegment-gap OFFSET
Set offset between executable and read-only segments

-R DIR
Add DIR to runtime search path

-rpath DIR
Add DIR to runtime search path

--rpath-link DIR
Add DIR to link time shared library search path

-s, --strip-all
Strip all symbols

-S, --strip-debug
Strip debugging information

--strip-debug-non-line
Emit only debug line number information

--strip-debug-gdb
Strip debug symbols that are unused by gdb (at least versions <= 7.4)

--strip-lto-sections
Strip LTO intermediate code sections (default)

--section-ordering-file FILENAME
Layout sections in the order specified

--section-start SECTION=ADDRESS
Set address of section

--secure-plt
(PowerPC only) Use new-style PLT (default)

--sort-common [= {ascending, descending}]
Sort common symbols by alignment

--sort-section [none, name]
Sort sections by name. '---no-text-reorder' will override '--sort-section=name' for .text

--spare-dynamic-tags COUNT
Dynamic tag slots to reserve (default 5)

--stub-group-size SIZE
(ARM, PowerPC only) The maximum distance from instructions in a group of sections to their stubs. Negative values mean stubs are always after the group. 1 means use default size

--stub-group-multi
(PowerPC only) Allow a group of stubs to serve multiple output sections (default)

--no-stub-group-multi
(PowerPC only) Each output section has its own stubs

--split-stack-adjust-size SIZE
Stack size when **-fsplit-stack** function calls non-split

--static Do not link against shared libraries

--start-lib
Start a library

--end-lib
End a library

--stats Print resource usage statistics

--sysroot DIR
Set target system root directory

-t, --trace
Print the name of each input file

--target1-abs
(ARM only) Force R_ARM_TARGET1 type to R_ARM_ABS32

--target1-rel
(ARM only) Force R_ARM_TARGET1 type to R_ARM_REL32

--target2 [rel, abs, got-rel]
(ARM only) Set R_ARM_TARGET2 relocation type

--text-reorder
Enable text section reordering for GCC section names (default)

--no-text-reorder
Disable text section reordering for GCC section names

--threads
Run the linker multi-threaded

--no-threads
Do not run the linker multi-threaded (default)

--thread-count COUNT
Number of threads to use

--thread-count-initial COUNT
Number of threads to use in initial pass

--thread-count-middle COUNT
Number of threads to use in middle pass

--thread-count-final COUNT
Number of threads to use in final pass

--tls-optimize
(PowerPC/64 only) Optimize GD/LD/IE code to IE/LE (default)

--no-tls-optimize
(PowerPC/64 only) Don't try to optimize TLS accesses

--tls-get-addr-optimize
(PowerPC/64 only) Use a special __tls_get_addr call (default)

--no-tls-get-addr-optimize
(PowerPC/64 only) Don't use a special __tls_get_addr call

--toc-optimize
(PowerPC64 only) Optimize TOC code sequences (default)

--no-toc-optimize
(PowerPC64 only) Don't optimize TOC code sequences

--toc-sort
(PowerPC64 only) Sort TOC and GOT sections (default)

--no-toc-sort
(PowerPC64 only) Don't sort TOC and GOT sections

-T FILE, **--script** FILE
Read linker script

-Tbss ADDRESS
Set the address of the bss segment

-Tdata ADDRESS
Set the address of the data segment

-Ttext ADDRESS
Set the address of the text segment

-Ttext-segment ADDRESS
Set the address of the text segment

-Trodata-segment ADDRESS
Set the address of the rodata segment

-u SYMBOL, **--undefined** SYMBOL
Create undefined reference to SYMBOL

--unresolved-symbols ignore-all,report-all,ignore-in-object-files,ignore-in-shared-libs
How to handle unresolved symbols

--verbose
Alias for **--debug=files**

--version-script FILE
Read version script

--warn-common
Warn about duplicate common symbols

--no-warn-common
Do not warn about duplicate common symbols (default)

--warn-constructors
Ignored

--no-warn-constructors
Ignored

--warn-drop-version
Warn when discarding version information

--no-warn-drop-version
Do not warn when discarding version information (default)

--warn-execstack
Warn if the stack is executable

--no-warn-execstack
Do not warn if the stack is executable (default)

--no-warn-mismatch
Don't warn about mismatched input files

--warn-multiple-gp
Ignored

--warn-search-mismatch
Warn when skipping an incompatible library (default)

--no-warn-search-mismatch
Don't warn when skipping an incompatible library

--warn-shared-textrel
Warn if text segment is not shareable

--no-warn-shared-textrel
Do not warn if text segment is not shareable (default)

--warn-unresolved-symbols
Report unresolved symbols as warnings

--error-unresolved-symbols
Report unresolved symbols as errors (default)

-z buildid
Dummy z option

--no-wchar-size-warning
(ARM only) Do not warn about objects with incompatible wchar_t sizes

--weak-unresolved-symbols
Convert unresolved symbols to weak references

--whole-archive
Include all archive contents

--no-whole-archive
Include only needed archive contents (default)

--wrap SYMBOL
Use wrapper functions for SYMBOL

-x, --discard-all
Delete all local symbols

-X, --discard-locals
Delete all temporary local symbols

- discard-none**
Keep all local symbols
- y SYMBOL, --trace-symbol SYMBOL**
Trace references to symbol
- undefined-version**
Allow unused version in script (default)
- no-undefined-version**
Do not allow unused version in script
- Y PATH**
Default search path for Solaris compatibility
- (, --start-group**
Start a library search group
-), --end-group**
End a library search group
- z bndplt**
(x86-64 only) Generate a BND PLT for Intel MPX
- z nobndplt**
Generate a regular PLT (default)
- z combrelloc**
Sort dynamic relocs (default)
- z nocombreloc**
Do not sort dynamic relocs
- z common-page-size=SIZE**
Set common page size to SIZE
- z defs** Report undefined symbols (even with **--shared**)
- z execstack**
Mark output as requiring executable stack
- 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 unique**
Mark DSO to be loaded at most once, and only in the main namespace
- z nunique**
Do not mark the DSO as one to be loaded only in the main namespace (default)
- z lazy** Mark object for lazy runtime binding (default)
- z loadfltr**
Mark object requiring immediate process
- z max-page-size=SIZE**
Set maximum page size to SIZE
- z muldefs**
Allow multiple definitions of symbols

-z nocopyreloc
 Do not create copy relocations

-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 noexecstack
 Mark output as not requiring executable stack

-z now Mark object for immediate function binding

-z origin
 Mark DSO to indicate that needs immediate \$ORIGIN processing at runtime

-z relro
 Where possible mark variables read-only after relocation (default)

-z norelro
 Don't mark variables read-only after relocation

-z stack-size=SIZE
 Set PT_GNU_STACK segment p_memsz to SIZE

-z start-stop-visibility=[default,internal,hidden,protected]
 ELF symbol visibility for synthesized __start_* and __stop_* symbols

-z text Do not permit relocations in read-only segments

-z notext
 Permit relocations in read-only segments (default)

-z textoff
 Permit relocations in read-only segments (default)

-z text-unlikely-segment
 Move .text.unlikely sections to a separate segment.

-z notext-unlikely-segment
 Do not move .text.unlikely sections to a separate segment. (default)

-z keep-text-section-prefix Keep .text.hot, .text.startup, .text.exit and .text.unlikely as separate sections in the final binary.

-z nokeep-text-section-prefix
 Merge all .text.* prefix sections. (default)

debian/tmp/usr/bin/ld.gold: supported targets: elf32-x86-64 elf32-x86-64-freebsd elf32-x86-64-nacl
 elf64-x86-64 elf64-x86-64-freebsd elf64-x86-64-nacl elf32-iamcu elf32-i386 elf32-i386-freebsd
 elf32-i386-nacl debian/tmp/usr/bin/ld.gold: supported emulations: elf32_x86_64 elf32_x86_64_nacl
 elf_x86_64 elf_x86_64_nacl elf_iamcu elf_i386 elf_i386_nacl

REPORTING BUGS

Report bugs to <<https://sourceware.org/bugzilla/>>

COPYRIGHT

Copyright © 2022 Free Software Foundation, Inc. This program is free software; you may redistribute it under the terms of the GNU General Public License version 3 or (at your option) a later version. This program has absolutely no warranty.