Meson Fast build system

CONCEPTS

Meson generates build files (Ninja by default) and always builds out of source: meson.build stays in the source tree, every build directory is separate and can use different options.

meson.build project definition
↓ `meson setup`
Build dir options + Ninja files
↓ `meson compile`
Artifacts targets
↓ `meson test`
Test results testlog
↓ `meson install`
Install tree prefix / DESTDIR

Configure once per build dir, then build, test and install from it

Edits to meson.build trigger an automatic reconfigure on the next compile. Options set with -D are remembered in the build dir.

SETUP

`meson setup <builddir>`
Configure source in cwd into builddir

`meson setup <builddir> <srcdir>`
Configure another source dir

`meson setup <builddir> --buildtype=<type>`
debug, debugoptimized, release, plain

`meson setup <builddir> --prefix=<dir>`
Set the install prefix

`meson setup <builddir> -D<opt>=<val>`
Set a project or built-in option

`meson setup <builddir> --reconfigure`
Re-run configure with same options

`meson setup <builddir> --wipe`
Delete and recreate the build dir

`meson setup <builddir> --cross-file <file>`
Cross-compile with a machine file

CONFIGURE

`meson configure <builddir>`
List all options and values

`meson configure <builddir> -D<opt>=<val>`
Change an option later

`-Dwarning_level=<0-3|everything>`
Compiler warning level

`-Dwerror=true`
Treat warnings as errors

`-Db_sanitize=<kind>`
address, undefined, thread

BUILD

`meson compile -C <builddir>`
Build all targets

`meson compile -C <builddir> <target>`
Build one target

`meson compile -C <builddir> -j <N>`
Limit parallel jobs

`meson compile -C <builddir> -v`
Show full command lines

`meson compile -C <builddir> --clean`
Remove build outputs

TEST

`meson test -C <builddir>`
Run all tests

`meson test -C <builddir> --print-errorlogs`
Show output of failures

`meson test -C <builddir> <name>`
Run tests by name

`meson test -C <builddir> --suite <suite>`
Run one suite

`meson test -C <builddir> --gdb <name>`
Run one test under gdb

INSTALL AND DIST

`meson install -C <builddir>`
Install to the prefix

`meson install -C <builddir> --destdir <dir>`
Stage into a root dir

INSTALL AND DIST (cont.)

`meson dist -C <builddir>`
Create a release tarball

SUBPROJECTS AND WRAPS

`meson wrap search <name>`
Search WrapDB

`meson wrap install <name>`
Add a wrap file to subprojects/

INTROSPECT AND TOOLS

`meson introspect <builddir> --targets`
List build targets (JSON)

`meson devenv -C <builddir>`
Shell with the build's environment

MESON.BUILD

`project('<name>', 'c', version: '<x.y>')`
Declare project and languages

`executable('<name>', '<main.c>')`
Define an executable

`library('<name>', <sources>)`
Shared or static per default_library

`dependency('<name>')`
Find a lib via pkg-config/CMake

`dependency('<n>', required: false)`
Optional dependency

`include_directories('<dir>')`
Add include paths

`subdir('<dir>')`
Descend into a directory

`test('<name>', <exe>)`
Register a test

`declare_dependency( link_with: <lib>)`
Expose a library to parents

`meson_options.txt`
Project-defined options file

`option('<name>', type: 'boolean', value: true)`
Declare an option