TF-M dependency on tf-m-tests

Code repo management

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Dependency auto downloading in TF-M Build System

- The TF-M build system downloads dependency repos automatically on a clean build
- Great feature but has some issues with the tf-m-tests repo

```
set(TFM_TEST_REPO_PATH) = "DOWNLOAD" CACHE PATH
set(TFM_TEST_REPO_VERSION) = "master" CACHE STRING
set(CMSIS_5_PATH) = "DOWNLOAD" CACHE PATH

set(MCUBOOT_PATH) = "DOWNLOAD" CACHE PATH
set(MCUBOOT_VERSION) = "81d1f0" CACHE STRING

set(PSA_ARCH_TESTS_PATH) = "DOWNLOAD" CACHE PATH
set(PSA_ARCH_TESTS_VERSION) = "90c8e580" CACHE STRING

if ("${TFM_TEST_REPO_PATH}" STREQUAL "DOWNLOAD")
  FetchContent_Declare(tfm_test_repo
    GIT_REPOSITORY https://git.trustedfirmware.org/TF-M/tf-m-tests.git
    GIT_TAG ${TFM_TEST_REPO_VERSION}
    GIT_PROGRESS TRUE
  )
```

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The issue with the tf-m-tests repo

The latest test repo is downloaded by default

- Working on the latest code base has no issues.
- When there are dependency changes merged (B and b), developers working on old versions (A) will get build broken.
- The developers must:
  - rebase their works to the latest master – which might be a huge effort
  - use a local copy of the test repo with an old compatible version – there is no explicit information of the mapping between the repos.
Why is it “master”

• The tf-m-tests repo is part of the TF-M project, not an independent project
• It’s currently coupled with the main repo a lot
• The two repos should keep aligned
• Hard to manage it like an “external” project
The possible solution

Having 1-1 map between the repos

- Every commit of TF-M has a fixed workable version of tf-m-tests
- Build will not be broken even breaking patches merged
- Version information for every commit
When to update the TFM_TEST_REPO_VERSION

The version should be updated when there is a complete change in test repo

None-breaking changes

• A complete change is one or more patches which are for the same purpose, such as a new test case and an enhancement in the framework
• Patches can be merged individually provided they don’t break anything
• The TFM_TEST_REPO_VERSION updates to last commit when all the patches in one change are merged
• The version shouldn’t be updated between patches of one change
  • The change has not been completed, updating the version wouldn’t bring benefits but overhead

Dependency patches

• The version is updated along with the dependency patch in TF-M
Working Model

Simplest cases

tf-m

A  B  C

Updates version

• Dependency updates
• Version updates

tf-m-tests

z  c1  c2  c3

No dependencies

y

Dependency Changes

g

Dependency Changes

g
Working Model

Complex cases

Both a & b are no dependency changes

Updates version

• Dependency updates
• Version updates

a has no dependency
b is dependency change
Thank You
Danke
Merci
Merci
谢谢
ありがとう
Gracias
Kiitos
감사합니다
धन्यवाद
شكرًا
ধন্যবাদ
תודה
More feedbacks are welcome

• mailing list: tf-m@lists.trustedfirmware.org
• Patch: https://review.trustedfirmware.org/c/TF-M/trusted-firmware-m/+/7550