TF-M Tests Out-of-Tree Build
Purposes

TF-M supports two ways to maintain platform specific tests code

• Creating a folder for vendors to upstream the code
  • Welcome upstream!

• **Out-of-tree build:**
  • Perform tests quickly during development to improve test efficiency.
  • Maintain tests code outside tf-m-tests repo in case of confidential information or IP issues.

• [TF-M patch][tf-m-tests patch][tf-m-extras patch] for out-of-tree build are under review.
Proposal

- Two new configurations via command line
  - `EXTRA_NS_TEST_SUITES_PATHS`
    - A list of the absolute directories of the out-of-tree non-secure test suites source code folder(s).
  - `EXTRA_S_TEST_SUITES_PATHS`
    - A list of the absolute directories of the out-of-tree secure test suites source code folder(s).

```
cmake -S . -B build
......
-DEXTRA_NS_TEST_SUITES_PATHS=<Absolute-path-extra-test-folder>
```
Implementation details--Code

STEP1: Provide interfaces for extra source code to initialize platform specific tests

STEP2: Copy extra test suites from extra source code

STEP3: Register non-secure extra test suites into test framework

Extra ns test folder
Source code
Implementation details -- Library

```
- tfm-tests/test/suites/extra
  - non_secure
    - extra_ns_test.c
    - extra_ns_test.h
  - secure
    - extra_s_test.c
    - extra_s_test.h
  - CMakeLists.txt
  - extra_test_common.c
  - extra_test_common.h

- tfm_test_suite
  - extra_ns_interface
    - tfm_test_framework_ns
      - extra_ns_test.c
      - extra_ns_test.h
    - tfm_test_suite
      - extra_s_interface
        - tfm_test_framework_s
          - tfm_secure_api
          - platform_s
  - example_test_ns
  - example_test_s

- Extra ns test folder
  - CMakeLists.txt
  - test_config.cmake (optional)

- Extra s test folder
  - CMakeLists.txt
  - test_config.cmake (optional)

- tfm_ns_tests
- tfm_s_tests
```

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Usage

- The example is in [tf-m-extras patch].
- Function 'ns_test' is the high-level function of the total tests.
- The declaration of function 'extra_ns_tests_init' is in tf-m-tests repo, it shall be defined in extra source code.
- The last step in function 'extra_ns_tests_init' is to copy 'plat_ns_t' to tf-m-tests repo.

```c
int32_t ns_test(void)
{
    /* Add platform specific non-secure test suites code here. */
    return EXTRA_TEST_SUCCESS;
}
```

```c
const struct extra_tests_t plat_ns_t = {
    .test_entry = ns_test,
    .expected_ret = EXTRA_TEST_SUCCESS
};
```

```c
enum test_suite_err_t extra_ns_tests_init(struct extra_tests_t *internal_test_t)
{
    /* Add platform init code here. */

    return register_extra_tests(internal_test_t, &plat_ns_t);
}
```
Result

The out-of-tree test source has been registered and are named as TFM_EXTRA_TEST_1001.
Thank You
Danke
Gracias
谢谢
ありがとう
Asante
Merci
감사합니다
धन्यवाद
شكرًا
ধন্যবাদ
תודה