TF-M Regression Test Refinements Summary
Since TF-M v1.4.0

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Summary

Major Features
- Add control of individual test suite
- Support extra test suites for out-of-tree build
- Run secure tests alone in IPC model without NS side

Restructure
- Test services are moved into related test suites folders
- Test specific configurations are moved to tf-m-tests repo

Minor Improvements
- Get rid of test result from each test suite structure
- Add TEST_SKIPPED in test results
Add Individual Test Suite Control

- Those new control flags are added, TEST_NS/TEST_S are still used to control all non-secure and secure test suites.

- Now we can use single test configuration to control what we want to build. This will help:
  - Decrease the binary size and build time.
  - Decrease the runtime cost.
  - Developers focus on specific tests and thus debug quickly.

<table>
<thead>
<tr>
<th>-DTEST_NS=OFF</th>
<th>-DTEST_S=OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>-DTEST_NS_ATTESTATION=OFF</td>
<td>-DTEST_S_ATTESTATION=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_AUDIT=OFF</td>
<td>-DTEST_S_AUDIT=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_CRYPTO=OFF</td>
<td>-DTEST_S_CRYPTO=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_ITS=OFF</td>
<td>-DTEST_S_ITS=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_PS=OFF</td>
<td>-DTEST_S_PS=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_PLATFORM=OFF</td>
<td>-DTEST_S_PLATFORM=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_FWU=OFF</td>
<td>-DTEST_S_FWU=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_IPC=OFF</td>
<td>-DTEST_S_IPC=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_FPU=OFF</td>
<td>-DTEST_S_FPU=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_CORE=OFF</td>
<td>-DTEST_S_CORE=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_QCBOR=OFF</td>
<td>-DTEST_S_QCBOR=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_T_COSE=OFF</td>
<td>-DTEST_S_T_COSE=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_MULTI_CORE=OFF</td>
<td>-DTEST_S_MULTI_CORE=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_SLIH_IRQ=OFF</td>
<td>-DTEST_S_SLIH_IRQ=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_FLIH_IRQ=OFF</td>
<td>-DTEST_S_FLIH_IRQ=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_SFNI_BACKEND=OFF</td>
<td>-DTEST_S_SFNI_BACKEND=OFF</td>
</tr>
<tr>
<td>-DTEST_NS_MANAGE_NSID=OFF</td>
<td>-DTEST_S_MANAGE_NSID=OFF</td>
</tr>
</tbody>
</table>
Add Individual Test Suite Control

+ Note:
  - A new single test suite configuration should begin with ‘TEST_NS_’/’TEST_S_’
  - Need to check dependencies like:
    - Platform support
    - Partitions or test services
    - Conflicts with other test cases
  - More details: Adding a new test suite
  - Those files need attention:

<table>
<thead>
<tr>
<th>File</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>set_config.cmake</td>
<td>Silence test configurations if dependencies are not supported</td>
</tr>
<tr>
<td>default_test_config.cmake</td>
<td>Default test configurations when TEST_NS=OFF and TEST_S=OFF</td>
</tr>
<tr>
<td>default_ns_test_config.cmake</td>
<td>Default non-secure configurations when TEST_NS=ON</td>
</tr>
<tr>
<td>default_s_test_config.cmake</td>
<td>Default secure configurations when TEST_S=ON</td>
</tr>
<tr>
<td>check_config.cmake</td>
<td>Check the valid configurations from command line</td>
</tr>
</tbody>
</table>
Extra test suites

- Extra test folder is provided for developers to implement their local tests quickly.
  - Perform tests quickly to improve test efficiency.
  - Maintain tests code outside tf-m-tests repo in case of confidential information or IP issues

- How to use:
  - EXTRA_NS_TEST_SUITES_PATHS and EXTRA_S_TEST_SUITES_PATHS are provided for users to import extra test suites code paths.
  - tf-m-tests/test/secure_fw/suites/extra folder provides several interfaces for developers to connect to TF-M test framework to join secure or non-secure tests.
  - More details: Out-of-tree regression test suites
Run secure tests alone

- Now secure tests can run without non-secure side in **IPC model**. Developers of platforms can verify the secure test image first without preparing non-secure image especially in dual-core platform.

- For 'A+M' platforms, secure image for Cortex-M core can be built individually, and these interfaces or services required by NS side (like Linux) will be selected.
  - We can build a secure image first to meet NS side requirements
  - This secure image can run individually on Cortex-M core to run secure test
  - Platform maintainers don’t need to create the NS image at the very beginning
Move service to related test suite folder

- Help users/developers to more easily understand the dependencies between test suites and services.
- It becomes more flexible for developers to organize the test folder structure.
- It becomes more easier for developers to implement those complex tests, including:
  - Multiple suites may depend on the same service. We put a common_test_services folder to maintain these services.
  - Some suites and services may share definitions/implementations.
    - It is easier to find head files in CMakeLists.txt
Some other changes

- Test specific configurations are moved into tf-m-tests repo.
  - It will help further decouple TF-M and tf-m-tests repo.

- Minor changes:
  - Remove test result from each test suite structure to decrease code size.
  - TEST_SKIPPED will be supported in test framework.
Thank You
Danke
Gracias
Grazie
谢谢
ありがとう
Asante
Merci
감사합니다
धन्यवाद
Kiitos
شكرًا