Squash TF Cucumber Java Runner Documentation

squashtest

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CHAPTER 1

Overview

The **Squash Test Factory** (**Squash TF**) **Cucumber Java Runner** allows you to run your tests written in Gherkin language with the TF ecosystem. The Java implementation of your Gherkin scripts must just be compatible with the cucumber framework.

The runner (Maven based) enables to run your scripts (a selection of feature files) from an IDE, command line, TF Server but also from **Squash T**est Management (**Squash TM**).

As with TF framework, different reporting are available. But with Cucumber Java Runner you can also have an HTML report specific to Gherkin scripts with among other informations, the result of the execution at each level (suite, feature, scenario, dataset, step), as well as the step by step feature display with the matching java methods executed.

In the case where the execution launcher is Squash Test Management (Squash TM), and simply by configuring TF, the runtime test status and the final report can be automatically forward to Squash TM.

The runner allows either to run the features either to check if the features are runnable (dryrun), ie if the automation work was done which means that a java implementation of each step exists, is not empty and not reduce to throw an 'cucumber.api.PendingException'.

CHAPTER 2

Contents

The purpose of this section is to describe how to create a test project from scratch or how to configure an existing Gherkin/Java project so it can be launched by the TF Runner. This includes of course the case where feature files have been written with squashTM and extract from a GIT repository.

Note: Please, check your Maven and JDK installations first as explains here

2.1 Java project

2.1.1 > From scratch

In the case you are starting from scratch, it is recommended to create the test project with the squash-ta-cucumber-archetype. Before typing the line below in a terminal, please update the version of the archetype if necessary.

```
mvn archetype:generate -DarchetypeGroupId=org.squashtest.ta.galaxia -

→DarchetypeArtifactId=squash-ta-cucumber-archetype -DarchetypeVersion=1.1.0-RELEASE -

→Dpackage=jar -Dversion=1.0.0-SNAPSHOT -DinteractiveMode=true
```

The version of the archetype is 1.1.0-RELEASE in this sample,

```
Invite de commandes

— — X

C:\example>mvn_archetype:generate_-DarchetypeGroupId=org.squashtest.ta.galaxia_-DarchetypeArtifactId=squash-ta-cucumber-archetype

-DarchetypeVersion=1.1.0-RELEASE
-Dpackage=jar -Dversion=1.0.0-SNAPSHOT -DinteractiveMode=true
```

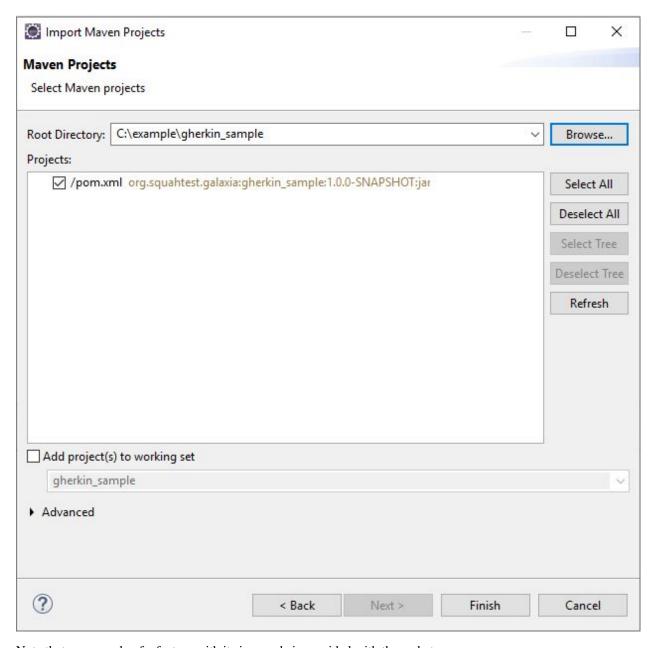
and you can find all available versions in our repository: http://repo.squashtest.org/maven2/release/archetype-catalog.xml

After typing the command line on top and supplying a groupId and an artifactId ('org.squashtest.galaxia' and 'gherkin_sample' in the example above), you should have 'BUILD SUCCESS'.

```
] Scanning for projects...
.
Downloading: http://repo.squashtest.org/maven2/releases/org/apache/maven/plugins/maven-metadata.xml
Downloading: http://repo.squashtest.org/maven2/releases/org/codehaus/mojo/maven-metadata.xml
Downloaded: http://repo.squashtest.org/maven2/releases/org/codehaus/mojo/maven-metadata.xml (281 B at 2.1
Downloading: http://repo.squashtest.org/maven2/releases/org/apache/maven/plugins/maven-archetype-plugin/ma
         Building Maven Stub Project (No POM) 1
         >>> maven-archetype-plugin:3.0.1:generate (default-cli) > generate-sources @ standalone-pom >>>
         <<< maven-archetype-plugin:3.0.1:generate (default-cli) < generate-sources @ standalone-pom <<</pre>
         --- maven-archetype-plugin:3.0.1:generate (default-cli) @ standalone-pom ---
      ] Generating project in Interactive mode
[WARNING] Archetype not found in any catalog. Falling back to central repository.
[WARNING] Add a repsoitory with id 'archetype' in your settings.xml if archetype's repository is elsewhere
Downloading: http://repo.squashtest.org/maven2/releases/org/squashtest/ta/galaxia/squash-ta-cucumber-arche
/maven-metadata.xml
Define value for property 'groupId': org.squahtest.galaxia Define value for property 'artifactId': gherkin_sample
      ] Using property: version = 1.0.0-SNAPSHOT
[IMFO] Using property: package = jar
Confirm properties configuration:
groupId: org.squahtest.galaxia
artifactId: gherkin_sample
version: 1.0.0-SNAPSHOT
package: jar
 Y: : y
        Using following parameters for creating project from Archetype: squash-ta-cucumber-archetype:2.0.0
        Parameter: groupId, Value: org.squahtest.galaxia
        Parameter: artifactId, Value: gherkin_sample
        Parameter: version, Value: 1.0.0-SNAPSHOT
Parameter: package, Value: jar
Parameter: packageInPathFormat, Value: jar
        Parameter: package, Value: jar
Parameter: version, Value: 1.0.0-SNAPSHOT
         Parameter: groupId, Value: org.squahtest.galaxia
         Parameter: artifactId, Value: gherkin_sample
         Project created from Archetype in dir: C:\example\gherkin_sample
```

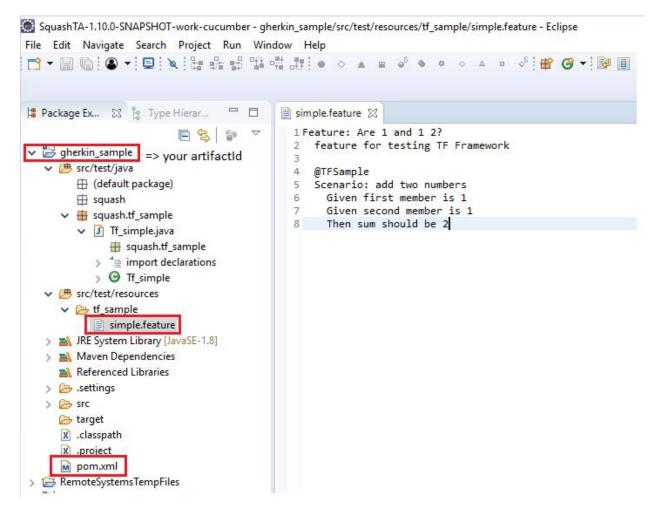
If not, please read the note about *environment-configuration*. The most common causes of errors are: Maven is not installed or not in path, the access to our repository are not declared in the Maven's setting.xml file, the TF archetype version does not exist in our repository.

Now you just have to open the newly created project in an IDE and start writing your tests. With Eclipse:



Note that an example of a feature with its java code is provided with the archetype.

2.1. Java project 5



See *here* for how to run it.

See *here* for how to implement your own tests.

See *here* for how to change TF runner's default options.

2.1.2 > Existing project

In the case you already have a test project gherkin/cucumber and want to run it with TF, add or modify these 4 blocks to your pom.xml file (located at the root of your project) as shown hereafter.

```
⊕ <project
     xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd"
     xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <modelVersion>4.0.0</modelVersion>
      <groupId> xx.your.groupID.xx
                                     </groupId>
      <artifactId>x.your.artifactId.x</artifactId>
      <packaging>jar</packaging>
      <version>1.0.0-SNAPSHOT</version>
      <!-- Properties definition -->
      properties>...
     <build>
          <plugins>
              <!-- Configuration of the Squash TF framework used by the project -->
              <plugin>...
          </plugins>
      </build>
      <!-- Squash TF mayen plugin repository -->
      <pluginRepositories>...
      <dependencies>...
  </project>
```

Add the property for runner's version (and the sources's encoding if necessary) like this

Add this <plugin> block above in your build/plugins block.

```
<build>
       <plugins>
               <!-- Configuration of the Squash TA framework used by the project -->
               <plugin>
                       <groupId>org.squashtest.ta.galaxia
                       <artifactId>squash-tf-gherkin-maven-plugin</artifactId>
                       <version>${ta.cucumber.runner.version}</version>
                       <configuration>
                                <featuresList>${ta.feature}</featuresList>
                                <squashRoot>squash</squashRoot>
                               <!-- DryRunOptions for dryrun goal only -->
                                <additionnalDryRunChecks>true</
→additionnalDryRunChecks>
                                <!-- Define exporters -->
                                <gkexporters>
                                        <exporter
                                                implementation="org.squashtest.ta.
→commons.exporter.surefire.SurefireSuiteResultExporter">
                                               <jenkinsAttachmentMode>${ta.jenkins.
→attachment.mode}</jenkinsAttachmentMode>
                                        </exporter>
```

(continues on next page)

2.1. Java project 7

```
<exporter
                                                 implementation="org.squashtest.ta.
→gherkin.exporter.HtmlGherkinSuiteResultExporter" />
                                </gkexporters>
                                <!-- Define configurers -->
                                <qkconfiqurers>
                                        <configurer implementation="org.squashtest.ta.</pre>
→maven.TmCallBack">
                                                 <!-- <tmCallBack> -->
                                                 <endpointURL>${status.update.events.
→url}</endpointURL>
                                                 <executionExternalId>${squash.ta.
→external.id}</executionExternalId>
                                                 <jobName>${jobname}</jobName>
                                                 <hostName>${hostname}
                                                 <endpointLoginConfFile>${squash.ta.
→conf.file}</endpointLoginConfFile>
                                                <reportBaseUrl>${ta.tmcallback.
→reportbaseurl }</reportBaseUrl>
                                                <jobExecutionId>${ta.tmcallback.
→ jobexecutionid}</jobExecutionId>
                                                <reportName>${ta.tmcallback.
→reportname } </reportName>
                                                 <!-- </tmCallBack> -->
                                        </configurer>
                                </gkconfigurers>
                        </configuration>
                        <executions>
                                <execution>
                                        <goals>
                                        <!-- to execute feature files -->
                                                <goal>run</goal>
                                                <!-- to check feature files are_
→runable (DryRun) -->
                                                 <goal>dryrun</goal>
                                        </goals>
                                </execution>
                        </executions>
                </plugin>
        </plugins>
</build>
```

Add the this block for the path to our repository:

(continues on next page)

Add these dependencies:

Except for the TF-TM link parameters and eventually the runner's version, you can use all default settings. See *Runner's options* to modify them.

2.2 Scripting / Coding

2.2.1 > Overview

Note: Your project should be based on the Cucumber framework. Your tests written in Gherkin language should be implemented in java language.

We recommend that you structure your project as follows:

- the feature files should be in src/test/resources (or any subdirectory)
- the Java implementation in src/test/java

Below the very simple example of a feature and its implementation provided with the TF archetype.

```
1 Pack... ⋈ % Type... □
                                     i simple.feature ⋈

☑ Tf_simple.java 

□
                 E & > ~
                                                                                                                                This file is part of the Squashtest platform.
                                        Feature: Are 1 and 1 2?
gherkin_sample
                                           feature for testing TF Framework
                                                                                                                        package squash.tf_sample;
     src/test/java
                                           @TFSample
                                                                                                                      import cucumber.api.java.en.Given;
         (default package)
                                            Scenario: add two numbers
                                                                                                                        import cucumber.api.java.en.Then;

→ 

→ squash.tf sample

                                            Given first member is 1
Given second member is 1
         > I Tf_simple.java
                                                                                                                        import static org.junit.Assert.*;
   Then sum should be 2

→ B tf_sample

                                                                                                                        public class Tf_simple {
                                                                                                                             private int member1;
private int member2;
             simple.feature
   > M JRE System Library [J2SE-1.5]
   > Maven Dependencies
                                                                                                                            @Given("first member is {int}")
public void first member_is(Integer int1) {
     Referenced Libraries
   > 🥭 .settings
                                                                                                                                 member1 = int1;
   > 🍃 target
                                                                                                                             @Given("second member is {int}")
      x .classpath
x .project
                                                                                                                             public void second_member_is(Integer int2) {
                                                                                                                                  member2 = int2;
      pom.xml
> AmoteSystemsTempFiles
                                                                                                                             @Then("sum should be {int}")
public void sum_should be(Integer result) {
    assertEquals(member1 +member2, result.intValue());
```

See:

- https://docs.cucumber.io/gherkin/reference/ for Gherkin Language Reference
- https://docs.cucumber.io/cucumber/step-definitions/ for how to write your *Step Definitions*, ie the java methods that link them to steps of your Gherkin script.

2.2.2 > Advices

About the encoding and the language used:

- If you use the TF artifact to create your project, the encoding is set to UTF-8 (java/feature). Of course, you can modify it through the property 'project.build.sourceEncoding' in the POM.xml file.
- If you declare an encoding in your feature files (#encoding: utf-8 by example), make sure there is no inconsistency with what is declared in your POM.xml file.
- If your feature files are written with UTF-8 (or any special encoding), a good practice is to name your java methods only with ASCII characters.

```
D SpecialCharcjava ⊠
package mypackage;

⊕ import cucumber.api.java.fr.Alors;□ Good practice
public class SpecialCharc {

⊕ @Etantdonnéque("l'annotation contient des é è à c €")
public void l annotation_contient_des_characteres_speciaux() {
    assertTrue(true);
}

⊕ @Alors("ca doit être OK")
public void ca_doit_etre_OK() {
    assertTrue(true);
}

⊕ @Alors("ca doit être OK")
public void ca_doit_etre_OK() {
    assertTrue(true);
}

⊕ @Alors("ca doit être OK")
public void ca_doit_etre_OK() {
    assertTrue(true);
}
```

You can of course use keywords in a given language by declaring it in your feature files (check only the consistency of implied encoding)

```
# language: fr

Fonctionnalité: xxxx

Scénario: xxxxx
Etant donné xxxx
Alors xxx
```

About the glue:

All the classes of the project will be used to find the methods matching with a step of the features. There should not be multiple implementations for the same step. That is, each annotation that identifies a step must be on a single java method (even if the method with the duplicate annotation is in a different class or classpath).

2.3 Listing (list)

This Mojo enables one to list as a Json file the available implemented tests. In order to do so one only needs to run the following command:

```
mvn squash-tf-gherkin:list
```

The command is structured as follows

- mvn : launch Maven
- squash-tf-gherkin:list: the actual listing Mojo provided by the Squash TF Java Gherkin Runner. It lists all Gherkin tests that can be discovered in the test project.

If the build is successful, a generated report (JSON file) named testTree.json is created at **target/squashTA/test-tree**. It is a simple JavaScript table listing available test grouped by "ecosystems".

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2.3. Listing (list)

```
"contents": [{
                                             "name": "What to do when concombre is_
⇔broken",
                                             "contents": null
                                             "name": "What to do when concombre is_
→broken again",
                                             "contents": null
                    }, {
                            "name": "src/test/resources/with-empty-scenario.feature",
                            "contents": [{
                                             "name": "",
                                             "contents": null
                                    }, {
                                             "name": "What to do when concombre is_
→broken again",
                                             "contents": null
                            "name": "typical.feature",
                            "contents": [{
                                             "name": "What to do when concombre is_
⇒broken",
                                             "contents": null
                                    }, {
                                             "name": "What to do when concombre is_
→broken again",
                                             "contents": null
                            ]
           1
   }
```

2.4 Execute (run, dryrun)

Note: Please, if you want to start feature files execution from TM, refer to the Squash TM corresponding documentation. If you want to start execution from Squash TF execution Server, use the template involved.

2.4.1 > Command line

To start the execution of all the tests (feature files) of the project from a terminal, go to the directory of your project (where the POM.xml file is located) and use one the following commands by replacing /path/to/project with the valid path:

• for the goal "run":

```
mvn squash-tf-gherkin:run -Dta.feature=/path/to/project/src/test/resources
```

• for the goal "dryrun":

```
mvn squash-tf-gherkin:dryrun -Dta.feature=/path/to/project/src/test/resources
```

With our sample and for the goal dryrun

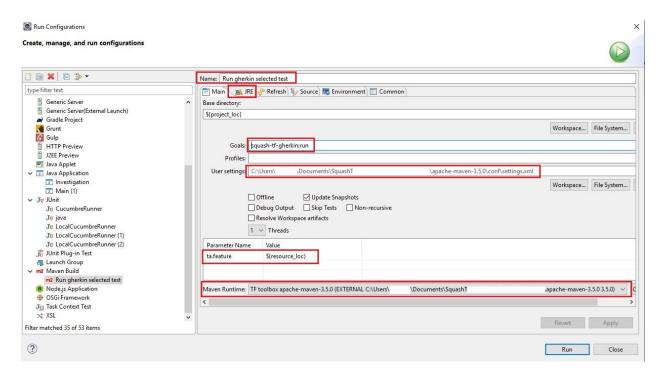
```
ple\gherkin_sample\mvn squash-tf-gherkin:dryrun -Dta.feature=C:\example\gherkin_sample\src\test\resources
       Scanning for projects...
       Building gherkin_sample 1.0.0-SNAPSHOT
                                   Launching Squash TA C3PO edition.
       SquashTAGherkinTestRunableMojo (Maven Mojo to check if feature filesare runable)starting ... with additionnalDryRunChecks to: tru
       Listing sqhashTA engine component packages
       Loading plugin configuration for: org.squashtest.ta.plugin.cucumber
       Loading plugin configuration for: org.squashtest.ta.plugin.local.process
       Loading plugin configuration for: org.squashtest.ta.enginecore
Loading plugin configuration for: org.squashtest.ta.plugin.commons-component
Loading XML bean definitions from Byte array resource [Computed squashTA engine configuration]
Refreshing org.springframework.context.support.GenericXmlApplicationContext@430fa4ef: startup date [Fri Apr 12 15:55:23 CEST 2019]
context hierarchy
       Loading plugin configuration for: org.squashtest.ta.enginecore
[MARNING] The endpoint URL is set to its default value: "file://dev/null", so the call back is not activated
       Beginning execution of ecosystem FeatureList
Beginning execution of test Eco.setup
       Beginning execution of test tf\_sample.simple.feature
       Exporting results
       SquashTA Gherkin Mojo: class of exporter processing: org.squashtest.ta.commons.exporter.surefire.SurefireSuiteResultExporter SquashTA Gherkin Mojo: class of exporter processing: org.squashtest.ta.gherkin.exporter.HtmlGherkinSuiteResultExporter
       Cleaning resources
Squash TA : build complete.
       All the files from C:\Users\CJUILL~1\AppData\Local\Temp\Squash_TA were properly deleted.
       BUILD SUCCESS
       Total time: 3.284 s
       Finished at: 2019-04-12T15:55:24+02:00
       Final Memory: 25M/271M
```

See Selecting tests for how to select the tests to execute or Expected results

2.4.2 > Eclipse launcher

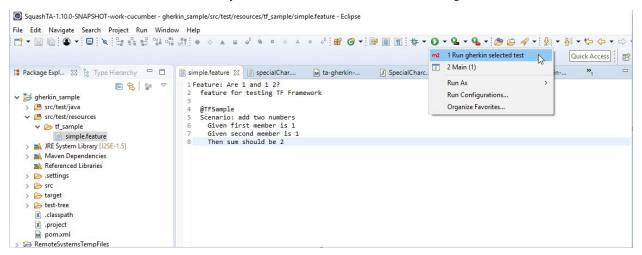
If you use Eclipse, you can create specific launch configurations (one to run and one to dryrun). Select the menu "run" then "run Configuration..." and create a launch like this for a run goal:

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Check your Maven and JDK (JRE tab) configurations.

Then, select a feature file or a subdirectory of src/test/resources and click run / Run gherkin selected test



2.5 Runner's options (POM)

Some options or parameters can be configured with the pom.xml file of your test project.

2.5.1 > Runner's version

See http://repo.squashtest.org/maven2/release/org/squashtest/ta/galaxia/squash-ta-cucumber/ for all available versions.

2.5.2 > **Encoding**

Before changing the encoding, please read About encoding

2.5.3 > Selecting tests

```
<featuresList>${ta.feature}</featuresList>
```

You can choose the features to be processed by changing the ta.feature parameter above for both goals. The supported values are:

- /path/to/project/src/test/resources/../subfolder => for all feature files in the given subfolder of src/test/resources.
- /path/to/project/src/test/resources/../myTest.feature => for a single feature.
- {file:path/to/JSONfile/MyFeatureList.json} => for a file containing a list of feature files. The contents of the json file should look like this example:

where the given path for the feature should be relative to the src/test/resources/squash folder. You can change this relative path by changing the <squashRoot> value in the project POM file.

• a json containing a list of feature files like:

```
{
  "test": [
      {
          "script": "pathRelativeToSrcTestResources/test1.feature"
      },
      {
          "script": "pathRelativeToSrcTestResources/test2.feature"
      }
    ]
}
```

Warning: the Gherkin files should have a ".feature" extension otherwise they will be ignored.

2.5.4 > TM squashRoot

```
<squashRoot>squash</squashRoot>
```

This parameter specifies a subpath for the feature files when the tests suite execution is requested by SquashTM. If you do not start running from Squash TM, you can change the value of squashRoot or disable it by commenting the line. But if you start running from TM, do not change this parameter otherwise all the feature files will be "NOT_FOUND".

The value of this tag point out the root folder where TF runner should look for the gherkin files to run. It is taken into account only if the parameter "ta.feature" is a JSON file (ie ignored otherwise). The value should be a directory and its relative path from src/test/resources folder. For example and for the JSON above, the runner will look for the file TEST1.feature in /pathToProject/src/test/resources/squash/pathRelativeToSquashRoot.

2.5.5 > Additional DryRun Checks

```
<additionnalDryRunChecks>true</additionnalDryRunChecks>
```

Boolean used only if the goal is 'dryrun', ignored otherwise. If activate (true), the TF Gherkin plugin will help you improve the 'dryrun' diagnosis of Cucumber by a search:

- · for empty methods
- for methods reduce to the skeleton cucumber: "throw new cucumber.api.PendingException();"

2.5.6 > Reports selection

The same reports as for a TA scripts are available (Html, Junit, Surfire). You can request them by configuring the corresponding exporters. Refer to TA documentation for these topics, only replace the <exporters> tag's name for a SquashTA project with <gkexporters> and add exporter(s) as you want.

If you used our artifact, the specific HTML reporting for the Gherkin tests suite is configured by default as follow:

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Note that you can only have one HTML reporting, either SquashTA ("org.squashtest.ta.commons.exporter.html.HtmlSuiteResultExporter or Cucumber's runner ("org.squashtest.ta.gherkin.exporter.HtmlGherkinSuiteResultExporter")

2.5.7 > TF-TM link

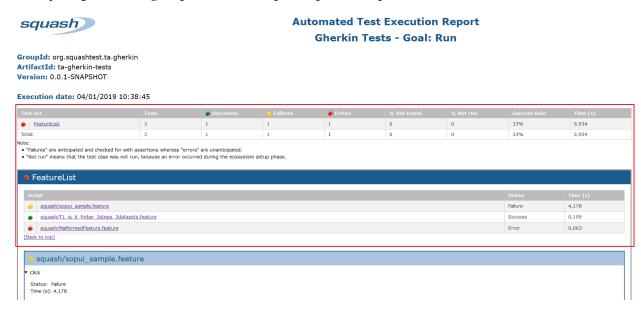
The <gkconfigurers> block of the POM.xml file contains the items for the configuration of the Squash TF Server and squash TM link. It is identical to the <configurers> blocks of other TF projects (same subfields). Refer to TF documentation for this topic.

2.6 Expected results

2.6.1 > overview

All TF reports are in the **target/squashTA** subfolder from your java project. We recommend you the most complete reporting for the Gherkin Suite Tests namely to use the TF HTML Gherkin exporter. If you did not create the project with the squash-ta-cucumber-archetype, check you have configured it (line with 'HtmlGherkinSuiteResultExporter' in the POM.xml file).

This reporting, the file target/squashTA/html-reports/squash-ta-report.html starts like this:

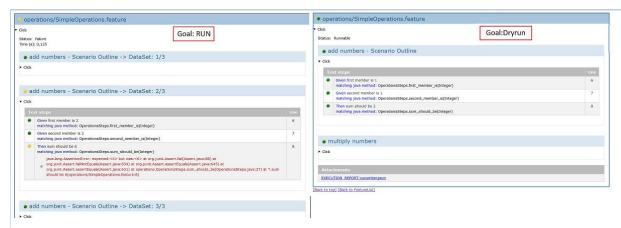


The status of the test suite gives you a summary of the execution of each feature files of the suite (framed in red above).

Except if feature file is NOT_RUN or NOT_FOUND, you can watch for details for each feature file in corresponding dedicated HTML block.

Each block representing a feature contains a sub-block for each scenario.

For a run goal each execution of a outline scenario with a dataset is displayed as a scenario. For a dryrun goal, each scenario outline is displayed only once.



If a result of a scenario is failure or error the following scenarios are executed. For the run goal, the step following the step in error are obviously not run, but for the dryrun goal all the steps are always checked.

Please note that if there is a technical or configuration error by example during compilation or during parsing a malformed feature file, technical informations will be displayed instead of the feature file.

2.6.2 > Definition of Status

The table below gives you the TF status of the feature file/scenario/step for different cases of error. In the case where a feature file contains several scenarios and/or outline scenarios (same scenario with several datasets), the status of the feature is the result is the compilation of any intermediate results.

	Test Status
Ecosystem's setup:	
no compiling project	NOT_RUN
existing duplicate implementation	(for all tests)
Feature loading:	
Feature file not found	NOT_FOUND
Feature file not ending by .feature	ERROR
Malformed feature (not parsable file)	ERROR
Executing goal 'run':	
Step not implemented (no matching)	ERROR
Runtime error (/0, nullPOinter,)	ERROR
Cucumber.runtime.* exception	ERROR
JUNIT assert	FAILURE
Executing goal 'dryrun':	
Step not implemented (no matching)	FAILURE
Step matching with empty java method	FAILURE (1)
cucumber.api.PendingException()	FAILURE (1)

(1): only if <additionnalDryRunChecks> is set to true, else status is SUCCESS.