TestResultWebApp

v. 0.1.2

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05.10.2022

Contents

Chapter 1

Introduction

TestResultWebApp is web-based application which was developed and used at BOSCH since 2016 and was published as open source on Github in 2020.

TestResultWebApp is used for visualizing and tracking test execution results of developing software versions. It provides from the overview of the test result to the detail of all included test cases.

It also provides abilities to control the quality of developing software version (under testing) by the comparisons to the previous test results in same project/variant or other test test results on different project/variant.

Chapter 2

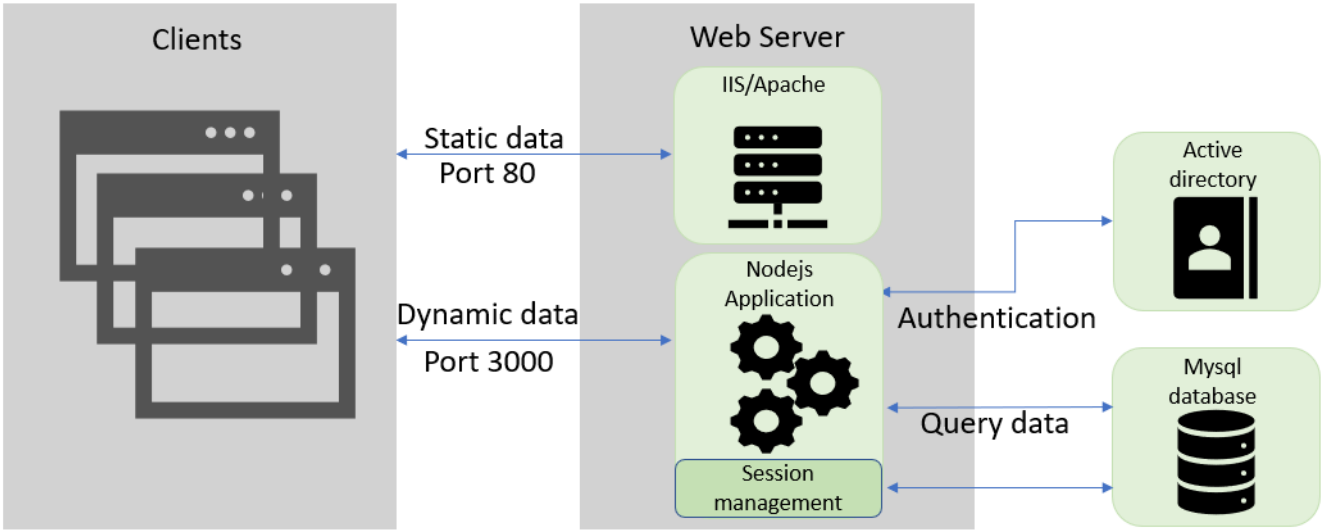
Description

2.1 TestResultWebApp Architecture:

The TestResultWebApp application includes:

- The database: mysql is used - which contains on the test execution results. For detail of all tables in databse, please refer the database model.
- Active Directory: for the authentication.
- Web server: which is hosted for static data and run the nodejs application for the dynamic data (API call).
- Web client: is written in javascript which also use some libraries such as Jquery for Ajax requests and chartjs, d3js for data visualization.

Please refer below architecture for more detail:



2.2 Import Data:

The data which will be visualized on webapp are get directly from the database. So that the test execution result information should be transformed first follows the defined database model then imported to database.

We have already provided the RobotResults2DB which helps to import the Robot Framework result file(s) *output.xml* to the database of testresult webapp.

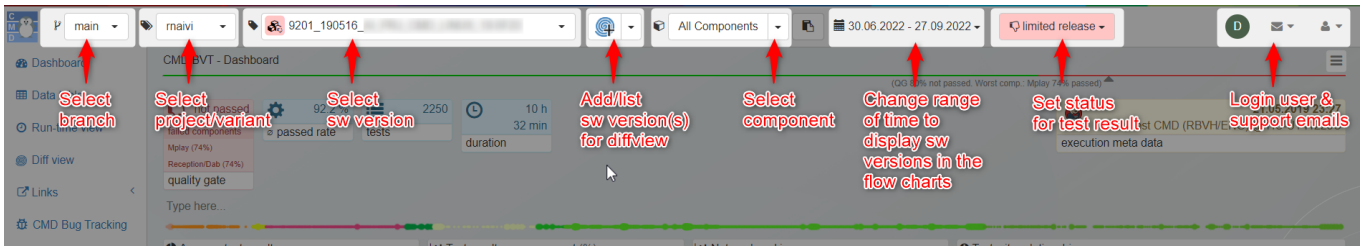
You will need to provide only the Robot Framework result file(s) and database's information, that import tool will parse the test execution result information and interact with provided database to import the according data.

Please refer RobotResults2DB's usage and its document for more detail.

2.3 Data Visualization:

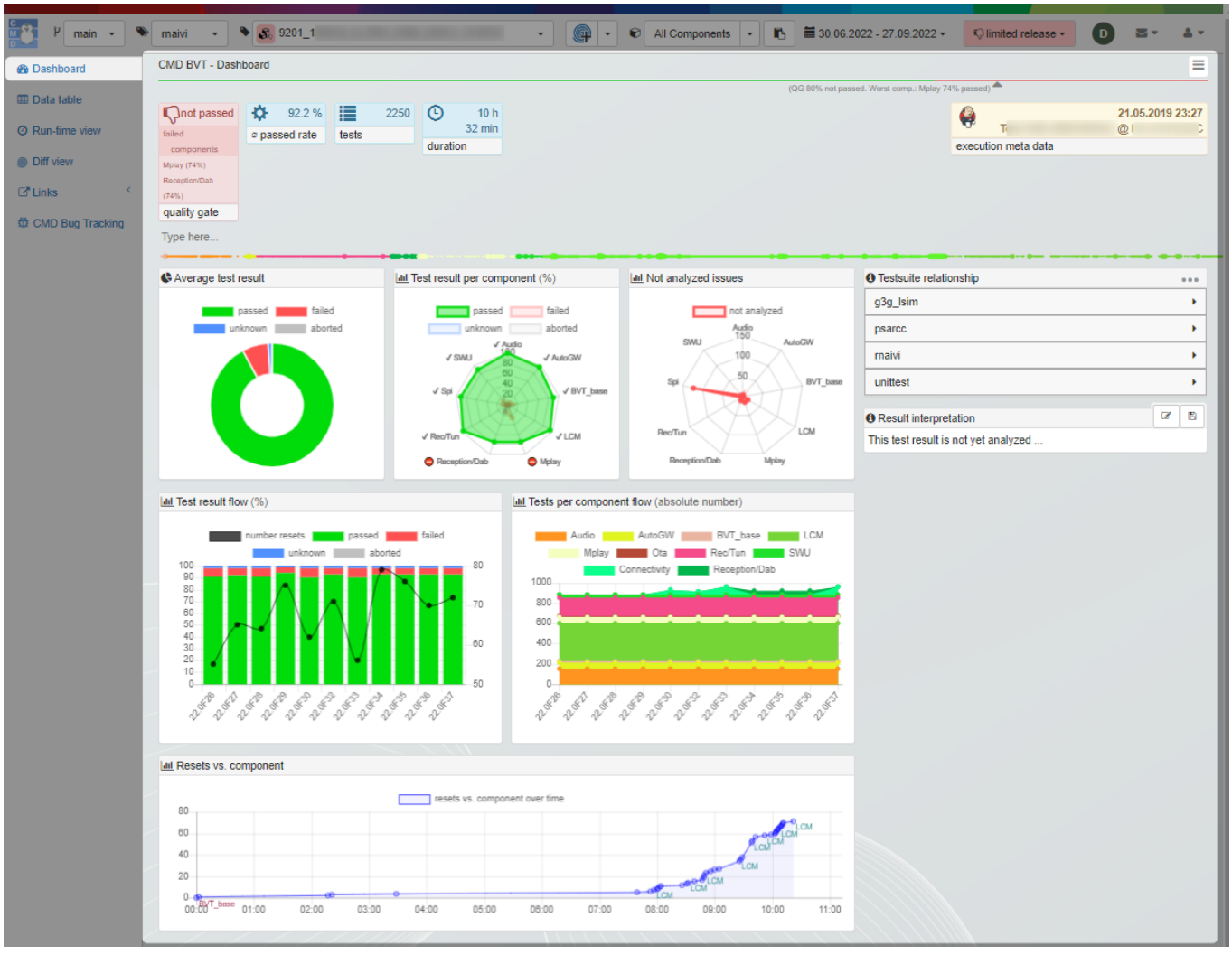
2.3.1 Main menu:

WebApp provides the main menu for user to select the specific **branch**, **project/variant** and **software version** to be displayed.



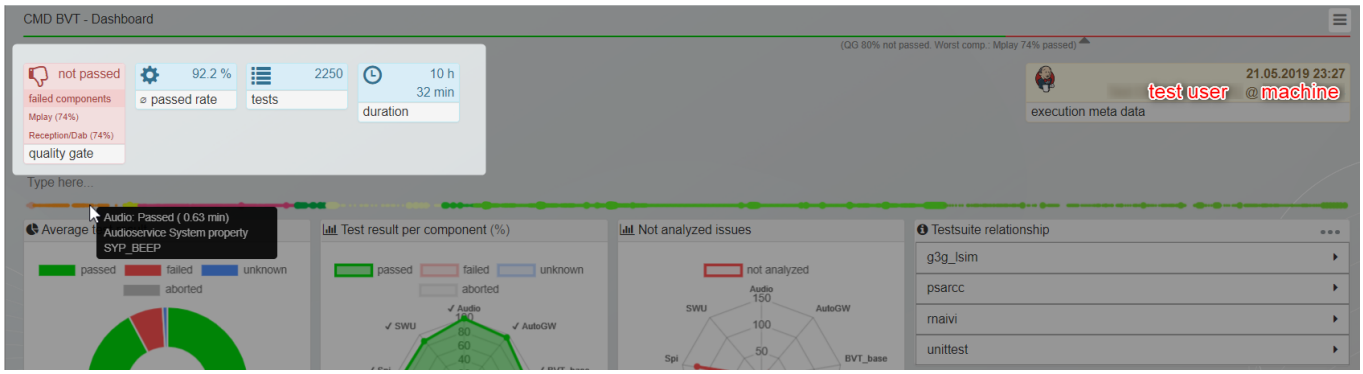
2.3.2 Dashboard View:

Dashboard view does not only provide an overview of test execution results but also shows the correlation betweeen components within the result and relationship with other test execution results.



Result overview:

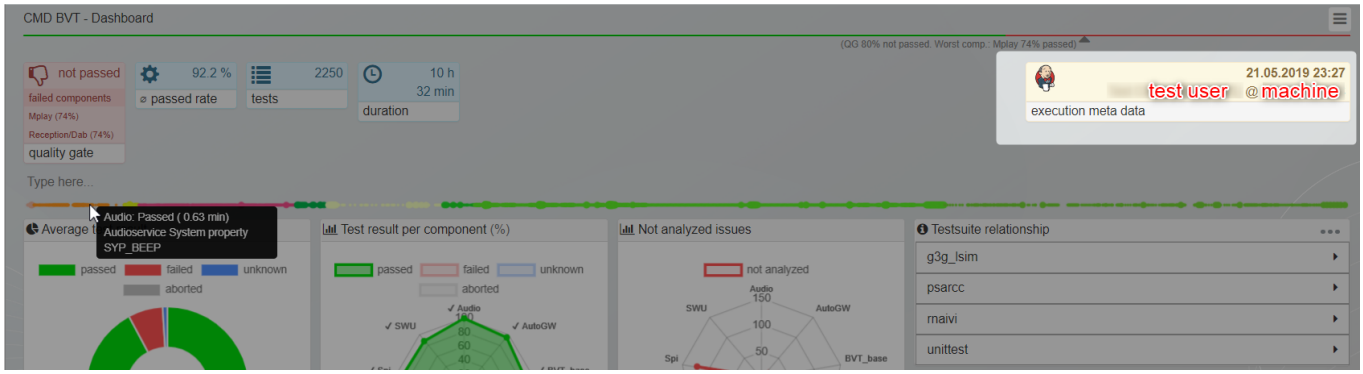
On the top left conner of the Dashboard view, there is test execution result statistics:



Which contains:

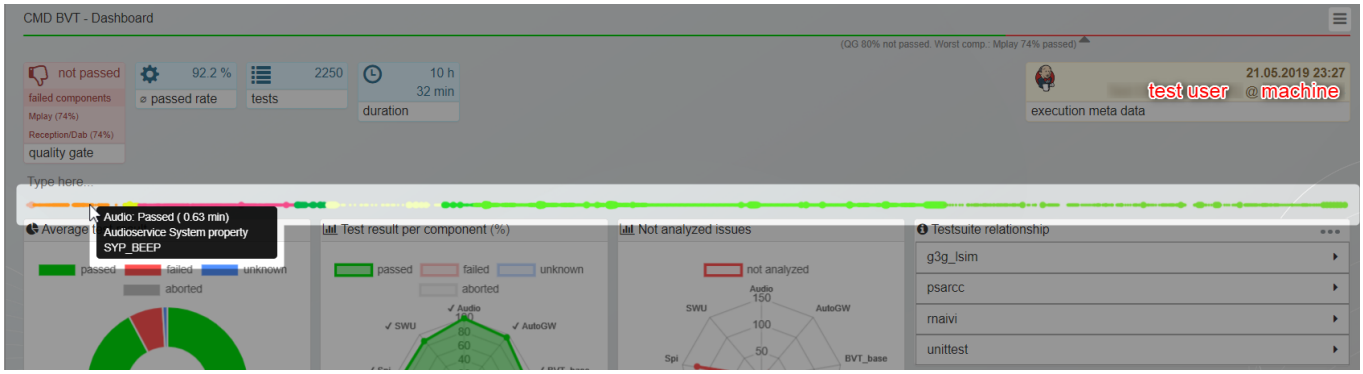
- Overrall status.
- Passed rate.
- Total executed test cases.
- Test execution duration.

On other right-hand side, there is information about execution environemnt:



- Execution time
- Test machine
- Test user
- Jenkins link (embedded URL in the Jenkins's icon)

Below them is the test execution result timeline:



It provides:

- The timeline of the executed test cases which are grouped by components (different color).
- How much time is consumed by the individual test case by the distance to the next test on time line or the detail pop-up when hovering on the dot of the timeline.
- Test status result: small dot for Passed status and big dot for others.

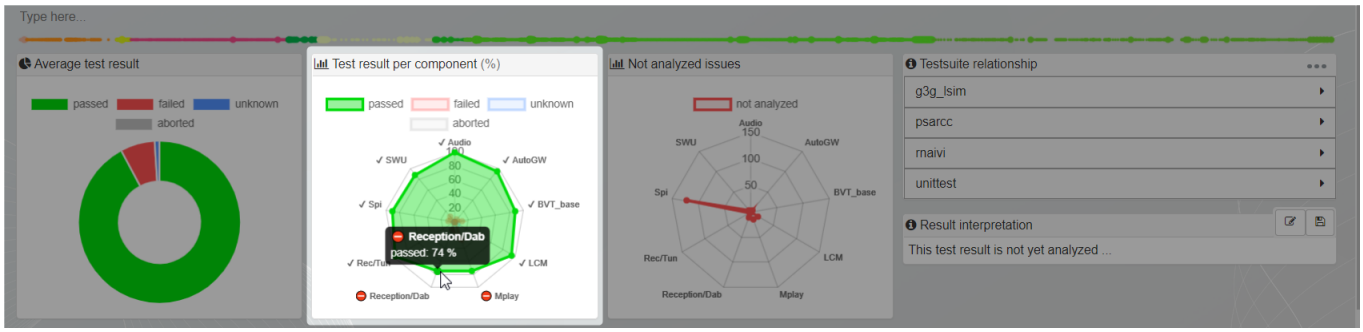
The next **Average test result** chart will give you the detail of test result with the percentage (number of test cases will be showed when mousing over the pie chart) of each result status (Passed, Failed, Unknown or Aborted) in the execution.

So that, you can qualify this test execution result is good or not.

Component's correlation:

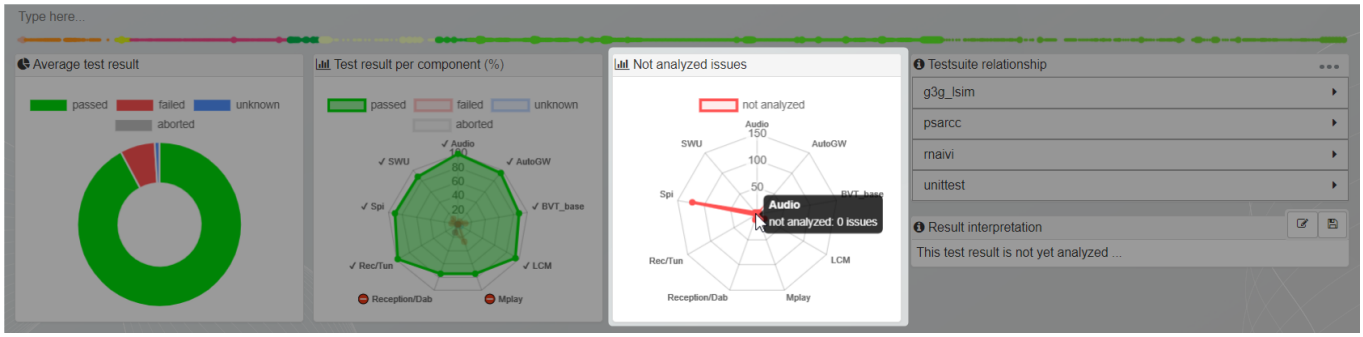
The next charts will help you to get the correlation between components within the test result, so that you can know which component(s) is impacted to the test result.

- **Test result per component** chart: provides the passed percentages of all components within test results and the quality of them compare the expectated quality gate (default: 80%).
So that, you can justify the impact of component to the whole test execution result.



- **Not analyzed issues** chart: you can known how many test cases of components are issued without any analysis.

So that, you can have the appropriate actions to the component team.



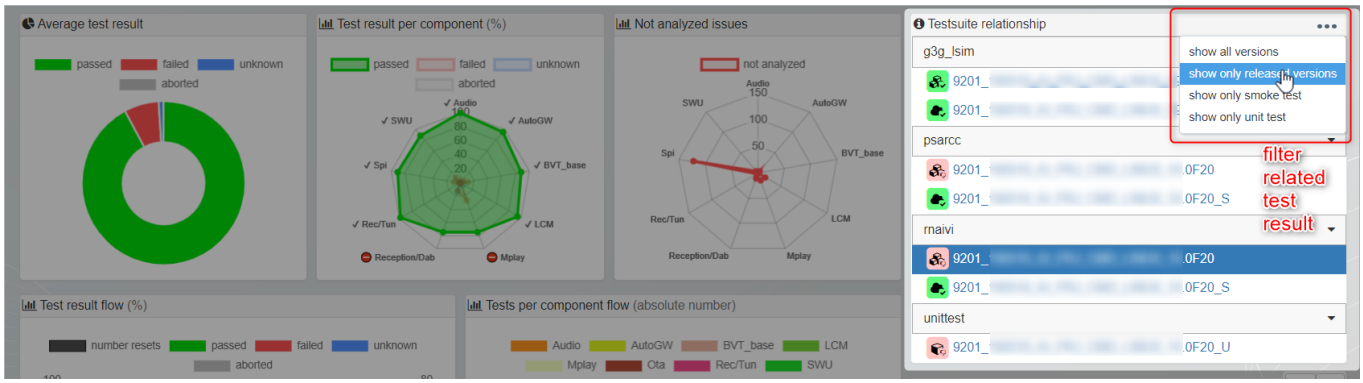
Relationships with other test execution results:

- **Testsuite relationship**: will let you know all the related test results (grouped by project/variant) of the the current selected version.

So that you can quickly go to the related test results to have the comparison about the quality of the selected version across the projects/variants.

For example: the selected version have been executed for 4 projects/variants: *g3g_lsim*, *psarcc*, *rnaivi* and *unittest*. Each variant (except the *unittest*) has 2 test results (one for the smoke test and one for the whole test execution result).

Then, all the related test execution results will be displayed as below:



There is also the context menu (**...**) that allows you to filter the related test results.

- **Test result flow** chart: provides the picture of quality change (percentages of each status) between versions.

So that, you can understand the quality of testing software is being improved or vice versa.

- **Tests per component flow** chart: provides the change of number test cases per component between versions.

You can aware the number of test cases per component and how many test cases are added or removed (per component or the whole test result) from those versions.

> **Notice**
>
> The versions which are displayed in **Test result flow** and **Tests per component flow** charts are the executed test results within the selected range of time in the main menu (default is **Last 90 Days**).

Result interpretation:

You can give more information, provide an analysis, take notes, ... on the execution result by leaving comments in the **Result interpretation** section.

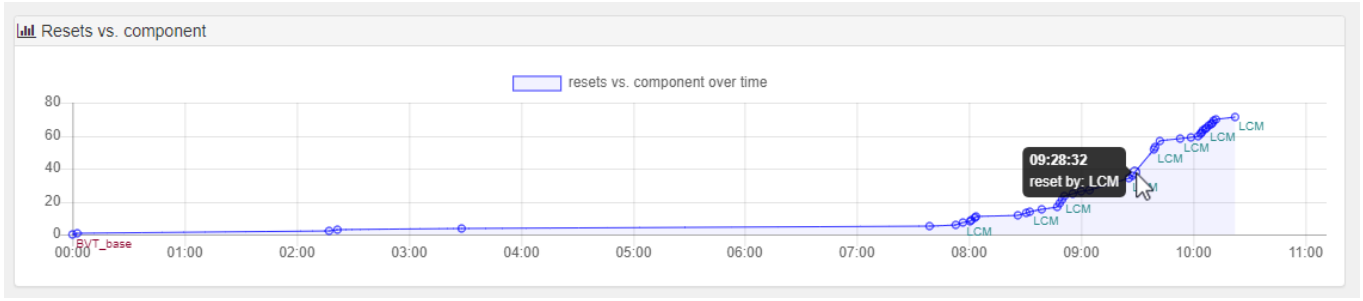
As soon as the comment(s) is saved, that information will be updated to the database. So that, other users who browse to this test result can see the analysis/comment for reference.

Resets vs. component:

The **Resets vs. component** chart will helps you to know the interaction of component with the DUT (device under test) by providing the the reset counter per component during the execution.

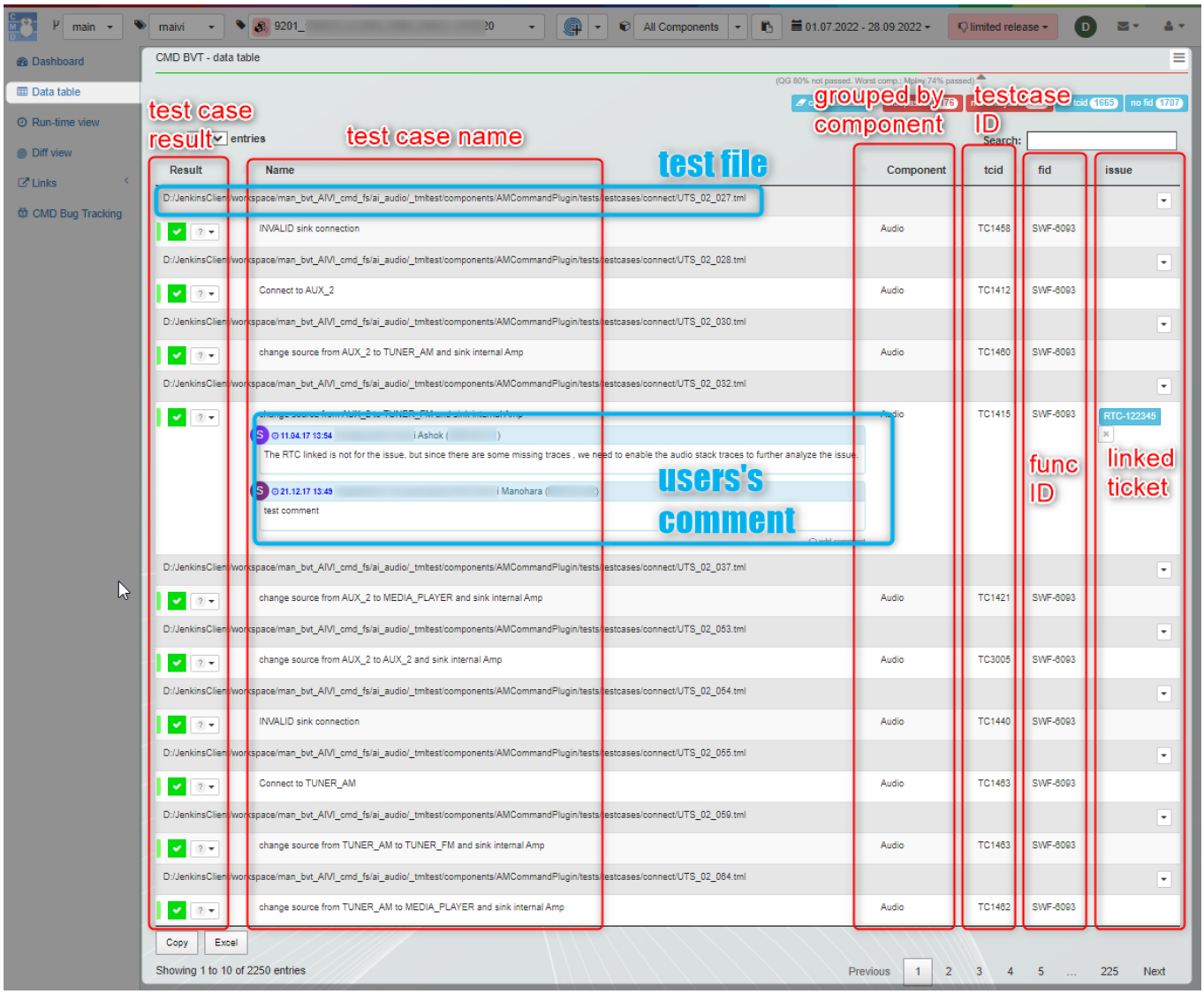
You can have awareness that:

- When DUT has been reset.
- Which component has reset the DUT.
- How many reset has been done during each component and the whole test execution.



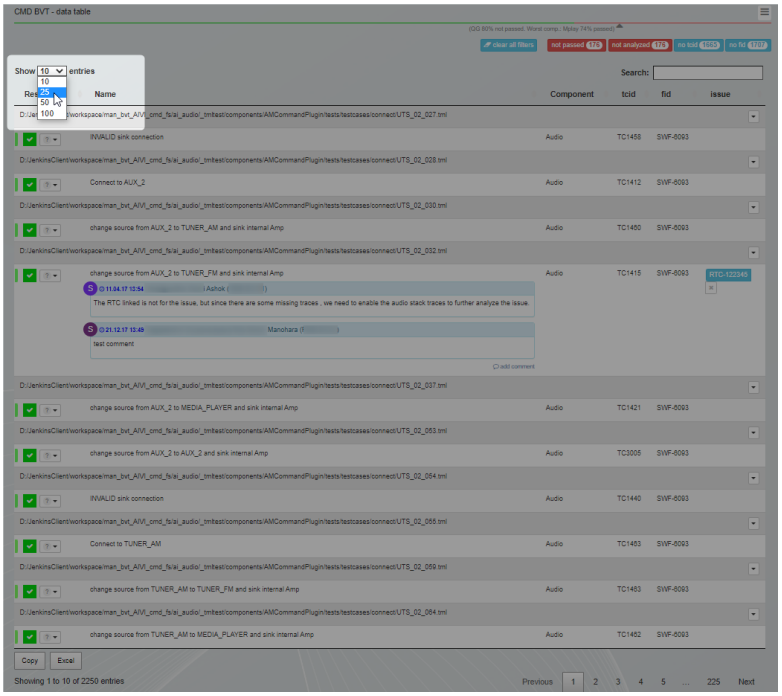
2.3.3 DataTable View

Datatable view provides the summary table which contains the detail information of each test case (grouped by component) within the test execution.

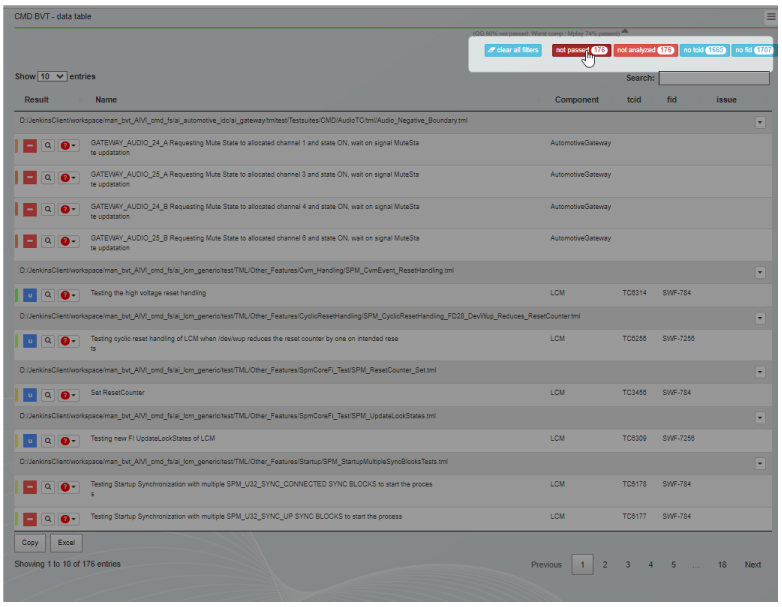


Besides, you can aslo:

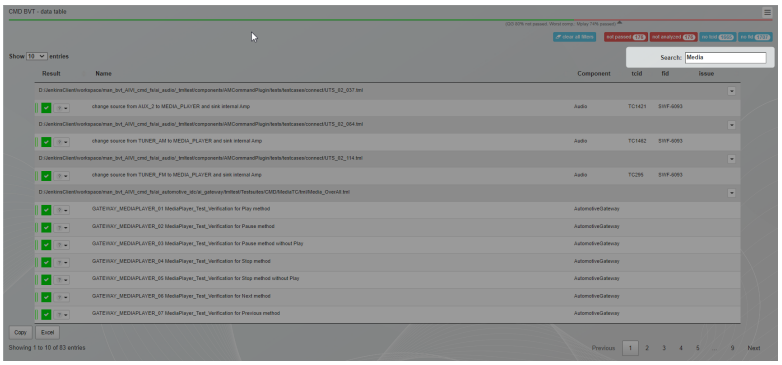
- determine how many test cases (entries) are displayed in the table page.



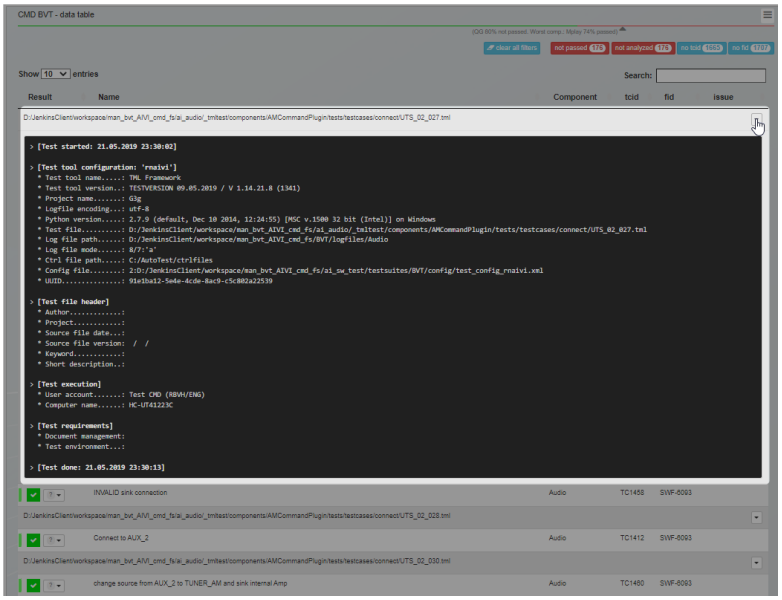
- apply filters to display such as not Passed test cases.



- search for the specific test case for reference.

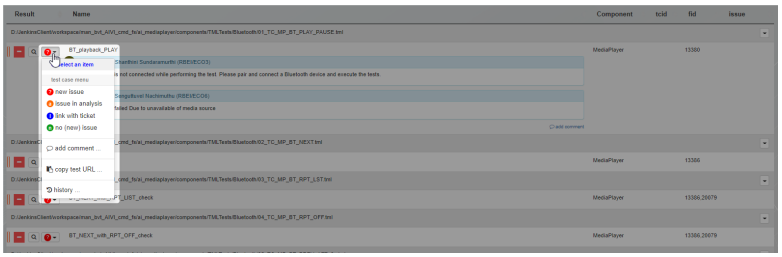


- get more information about test environment, configurations.

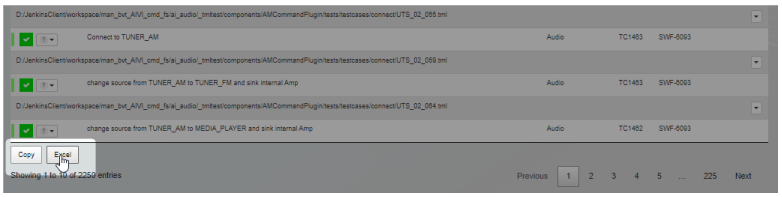


- get traceback information for not passed test case(s). An pop-up will be displayed which show all record traceback (error) information.

- give comment to test case, link issue ticket to test case or observe the history of the user interaction on the test case.



- copy data table or export them to the excel file.

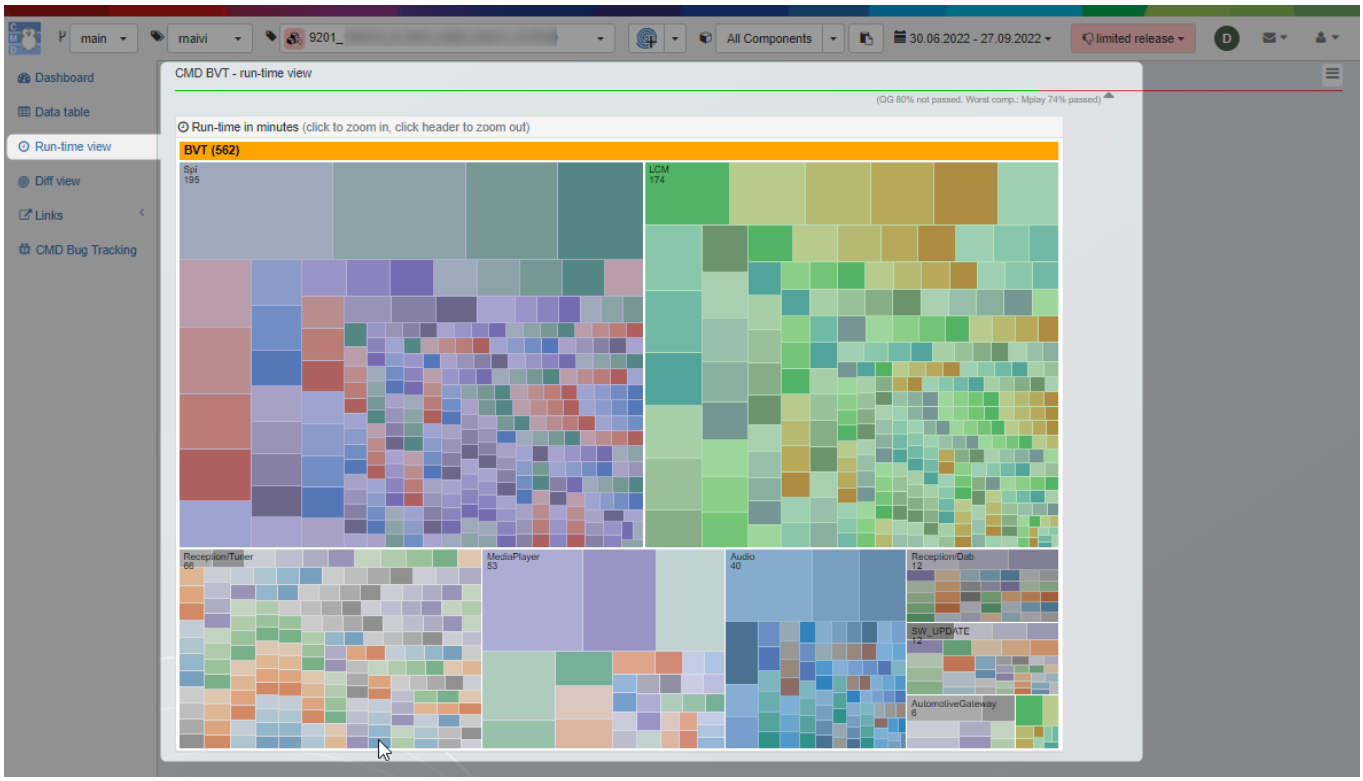


2.3.4 Runtime View

The runtime provides the treemap chart which helps you to know the runtime of components within test execution result or test cases within each component.

You can click on the component to go to detail runtime of all test cases within it and go back by clicking the component header.

With this view, you can understand the runtime of a your test suite then optimize the specific component or testcase if required.

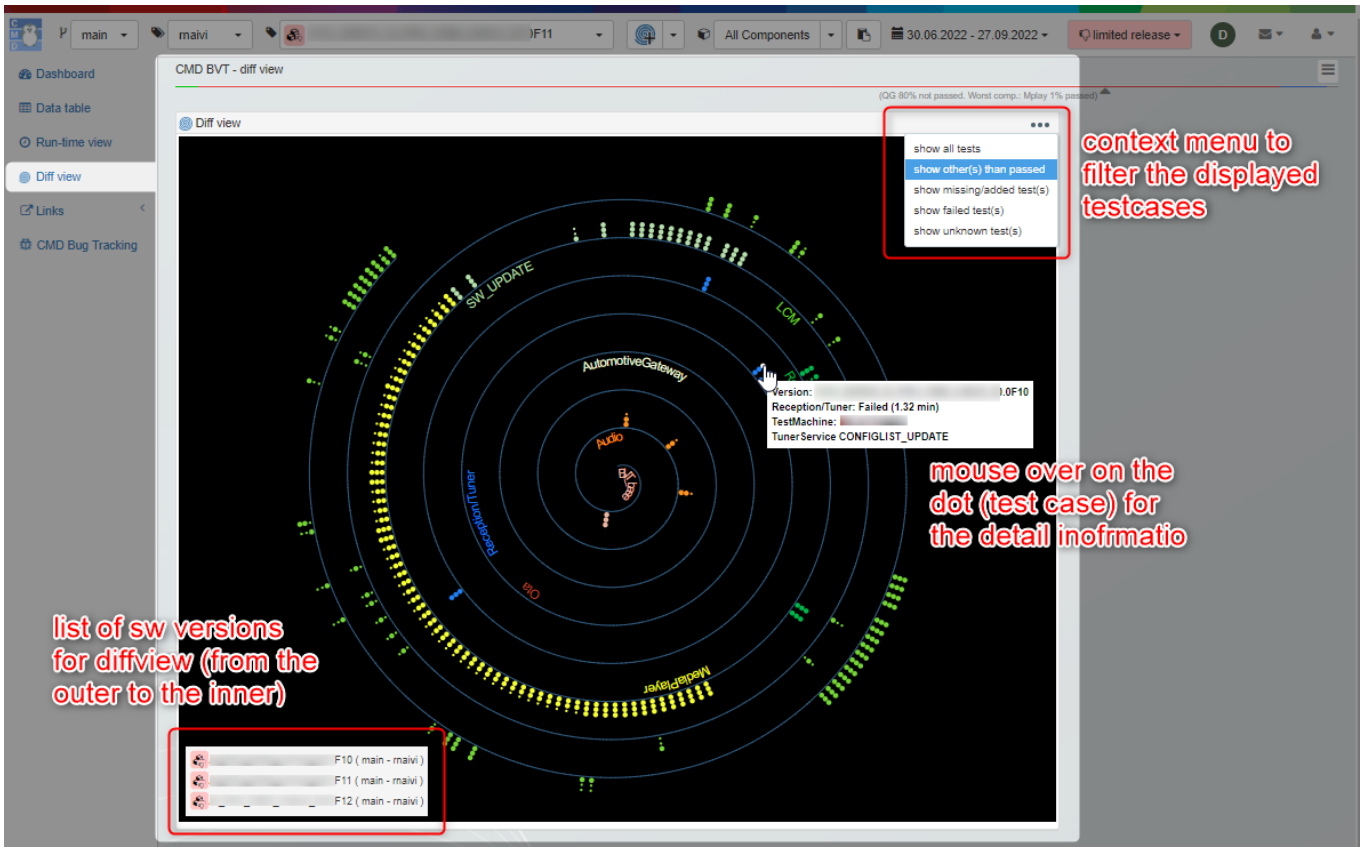


2.3.5 Diff View

The diffview contains only the spiral chart which displays the differences between the software versions you want to compare. So that you can:

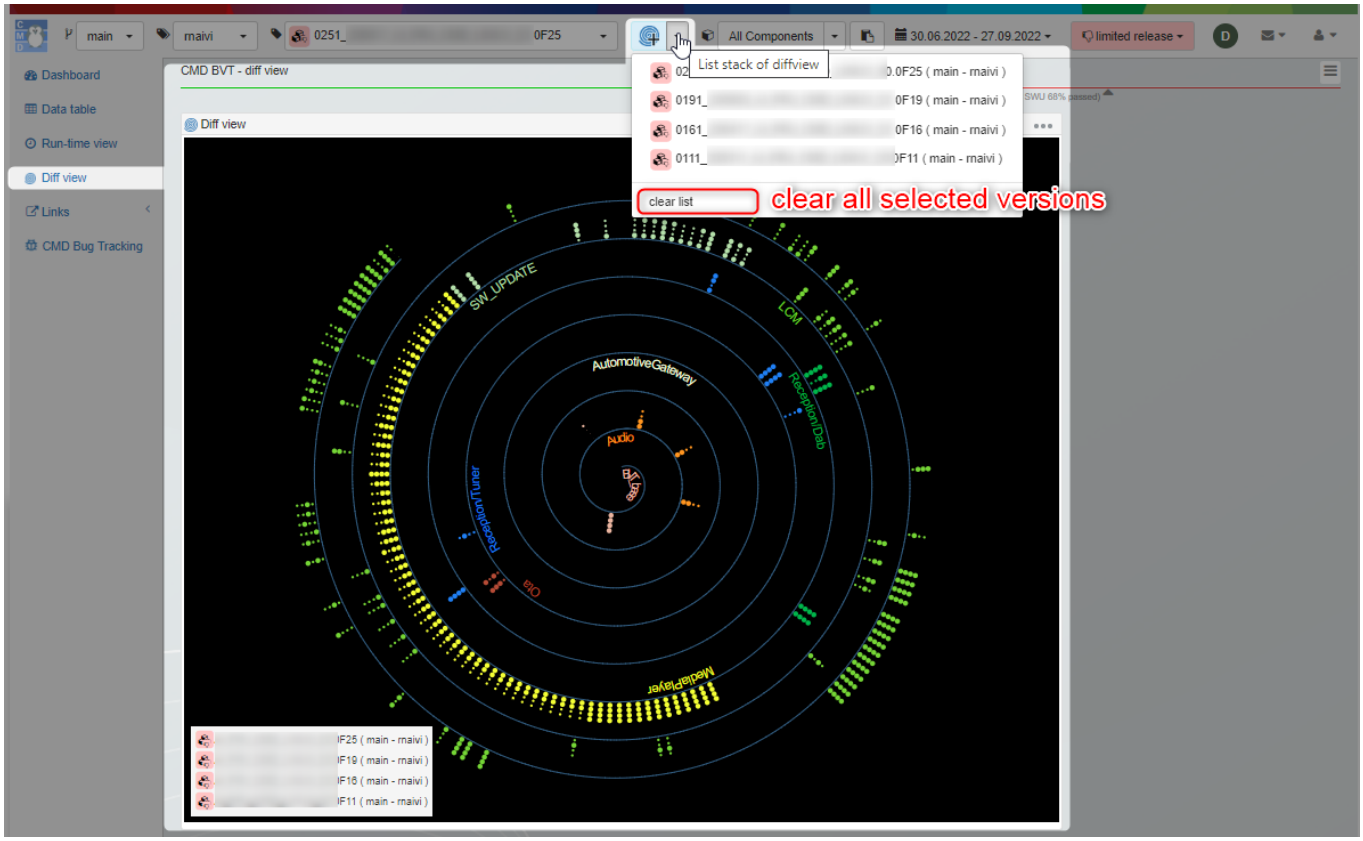
- observe the test case result change (e.g from Passed to Failed).
- aware the new or removed test case(s).
- recognize the unstable test case(s)/component(s).

Be default, without adding the version for diffview, the current selected version and its around versions (the previous and the next version if existing) will be chosen for diffview as below:



In case, you want to add the specific versions for diffview, select the version from the version select box then click the add button  to add it to the list of diffview.

The next dropdown button is used for viewing your selected versions. You can also clear your selection with **clear list** option.

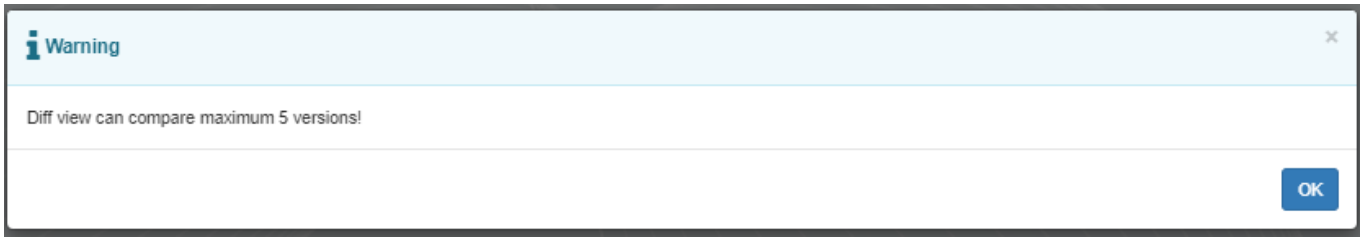


As soon as the new version is added for diffview, the spiral chart is updated immediately.

The dots which present for the test cases along the spiral line (small dot is Passed and bigger one for other status) are interactable. It means that you can:

- mouse over the dots to see the test case information.
- click on the failed test case (bigger dot) for the traceback information.

> **Notice:**
>
> You can only select maximum of **5** versions for diffview.
> If the maximum of selected versions is reached and you click on the button to add more, the warning message will be displayed to prevent that action.



2.4 Developer guidance:

> **Notice:**
>
> In order to run up the TestResultWebApp, it requires some knowledge about:
>
> - Web server: setup and run web server for web hosting.
> - Nodejs platform and Express framework: adapt the sourcecode with your environemnt: domain, configurations, ...
> - Mysql database: schema, tables, SQL scripting. We propose to use MySQL Workbench tool for working with Mysql database.

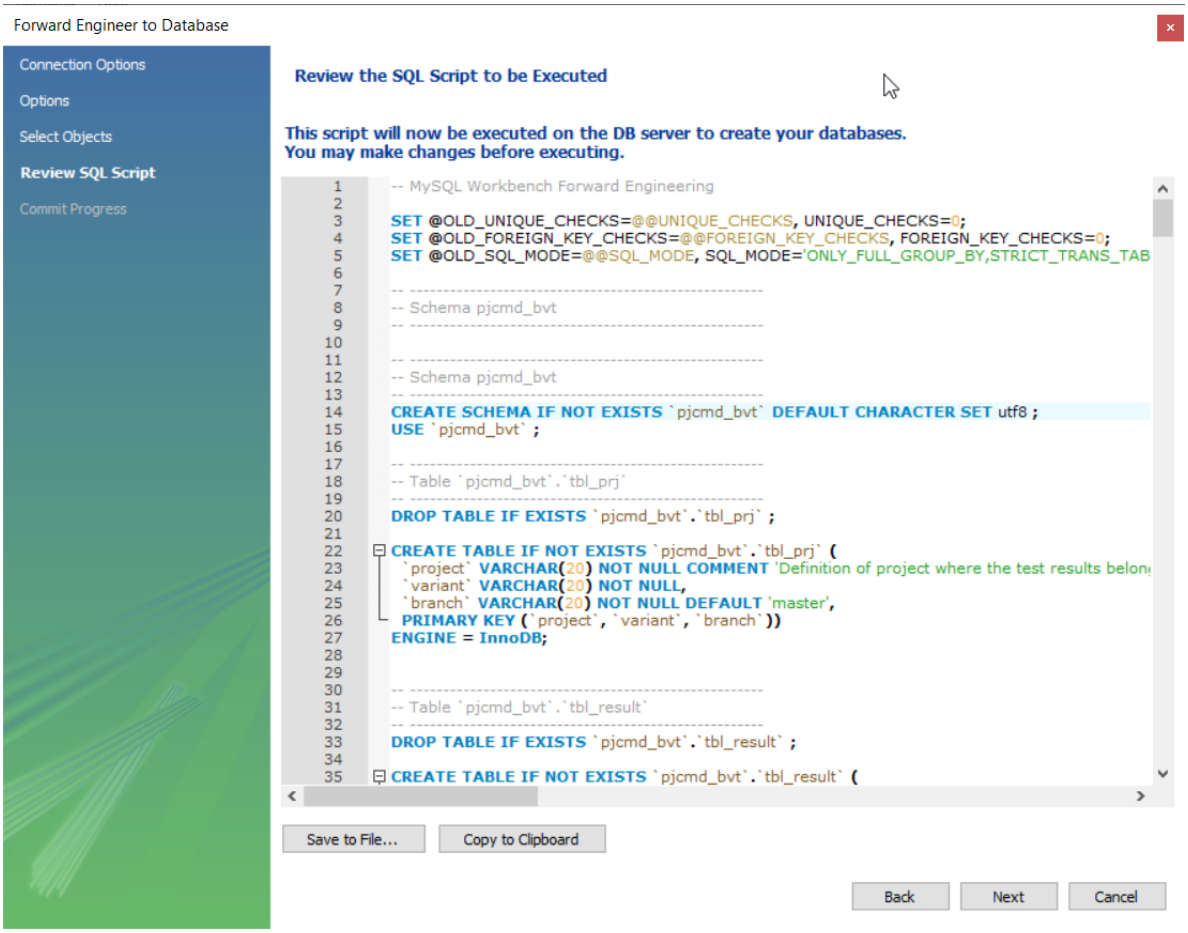
2.4.1 How to run new TestResultWebApp instant:

1. Precondition:
   - Nodejs shoulde be installed.
   - mysql server should be installed.
   - A cloned package's resource from Github repo

     ```
     git clone https://github.com/test-fullautomation/testresultwebapp.git
     ```

   - The port which will run nodejs application (default is **3000**) is opened (enable) in firewall.
2. Setup mysql database:
   - create *user*, *password* and *schema* then update them as `global.mySQLOptions` in `webapp/web_server/lib/global.js` file.
   - create required tables in your database schema with MySQL Workbench.
     - open the datamodel which is located at `mysql_server/datamodel/test_result.mwb`
     - export all defined tables in datamodel to your schema, use **Foreward Enginneer to Database** feature of MySQL Workbench.

       ```
       EER Diagram > Database > Forward Engineer... > your schema
       ```



> **Notice**
>
> If you have created your schema with other name than the default name *pjcmd_bvt*, you should replace the schema name at the **Review SQL Script** step:
>
> * copy SQL script to text editor such as VsCode
> * replace *pjcmd_bvt* which your new schema name
> * paste SQL script back to the **Foreward Enginneer to Database** tool
>
> before moving to next step to execute SQL script.

– create all store procedures by loading all SQL scripts under `mysql_server/TMLdb_sproc/` folder then execute them.

> **Notice**
>
> If you have created your schema with other name than the default name *pjcmd_bvt*, you should replace the schema name before executing SQL scripts.

3. Import the initial data to the database with RobotResults2DB tool.
4. Adapt Web server:
   - `web_server/lib/global.js` : for domain, database's configuration, keys for authentication, ldap server for authentication, ...
   - `web_server/test.js` : for listening port of nodejs application.
5. Adapt Web client:
   - `web_client/dashboard/dist/js/common/global.js` : for domain.
   - `web_client/dashboard/dist/js/common/communication.js` : for listening port of nodejs application's API.
6. Start nodejs application by command:

```
node testdb.js
```

7. Start web server for hosting the static files:

   You can use any web server Apache, IIS or Nginx for hosting the static files under `web_client/dashboad/` folder when running as production.

   For development, you can use directly `express.static` which is supported by Express framework for hosting static files. The `web_server/test.js` file should be modified to add this setting.

```
'use strict';

var global = require('./lib/global');
var path = require('path');

...

//for local GUI tests deliver static HTML
//content from port 3000
app.use(express.static(path.join(__dirname, "../web_client/dashboad/")));

var session = require('express-session');
var MySQLStore = require('express-mysql-session')(session);
...
```

8. Now open your favourite browser, go to the domain of webapp and enjoy.

Chapter 3

Appendix

About this package:

Table 3.1: Package setup

Setup parameter	Value
Name	TestResultWebApp
Version	0.1.2
Date	05.10.2022
Description	Web based display of test results
Package URL	testresultwebapp
Author	Thomas Pollerspöck
Email	Thomas.Pollerspoeck@de.bosch.com
Language	Programming Language :: JavaScript
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 4

History

0.1.0	07/2022
Initial version	
0.1.1	09/2022
Update README file and package's document	
0.1.2	05/10/2022
Fix findings with package's document	

TestResultWebApp.pdf

Created at 06.10.2022 - 16:59:42

by GenPackageDoc v. 0.33.0