
The RobotResults2RQM tool

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ROBOTRESULTS2RQM TOOL'S DOCUMENTATION

1.1 Introduction:

RobotResults2RQM tool provides the ability to interact with RQM resources (test plan, test case, build, ...).

RobotResults2RQM tool uses RqmAPI to:

- get resource: by given ID or all available entities of resource type.
- update resource: by given ID.
- create new resource: with resource templates under `RQM_templates` folder

1.2 Sample RobotFramework Testcase:

For test case management, we need some traceable information such as version, testcase ID, component, ... to manage and track testcase(s) on RQM.

So, this information can be provided in **Metadata** (for the whole testsuite/execution info: version, build, ...) and **[Tags]** information (for specific testcase info: component, testcase ID, requirement ID, ...).

Sample Robot testcase with the necessary information for importing to RQM:

```
*** Settings ***
Metadata  project      ROBFW          # Test Environment
Metadata  version_sw   SW_VERSION_0.1 # Build Record
Metadata  component    Import_Tools   # Component - is used for test case
Metadata  machine       %{COMPUTERNAME} # Hostname
Metadata  team-area    Internet Team RQM # team-area (case-sensitive)

*** Test Cases ***
Testcase 01
    [Documentation]  This test is traceable with provided tcid
    [Tags]          TCID-1001  FID-112  FID-111
    Log             This is Testcase 01

Testcase 02
    [Documentation]  This new testcase will be created if -createmissing argument
                    ... is provided when importing
    [Tags]          FID-113
    Log             This is Testcase 02
```

1.3 Tool features:

By default, tool will base on provided arguments (see [Usage](#usage)) and *tcid* information in Robot test case(s) to:

- Login the RQM server and verify the provided `project`, `testplan`.
- Create build record and test environment (if already provided in Robot test case and not existing on RQM) for execution.
- Create new Test Case Execution Record - TCER (if it is not existing) bases on test case ID and `testplan` ID.
- Create new Test Case Execution Result which contents the detail and result state of test case.
- Link all test case(s) to provided `testplan`.

Besides, **RobotResults2RQM** tool also supports to create new test case(s) which is not existing on RQM (do not have *tcid* information) while importing result(s) to RQM with optional argument `-createmissing`.

1.4 Robot Testcase information on RQM:

For more detail how the RobotFramework testcase information is displayed on RQM, please refer be mapping table:

RQM data		RobotFramework	
Resource	Attribute/Field	Testsuite/Testcase	Output.xml
Build Record	Title	Metadata version_sw <i>\${Build}</i>	//suite/metadata/item[@name="version_sw"]
Test Environment	Title	Metadata project <i>\${Environment}</i>	//suite/metadata/item[@name="project"]
Test Case	ID	[Tags] tcid-xxx	//suite/test/tags/tag[@text="tcid-xxx*"]
	Name	test name	//suite/test/@name
	Team Area	Metadata team-area <i>\${Team_Area}</i>	//suite/metadata/item[@name="team-area"]
	Description	test doc - [Documentation]	//suite/test/doc/@text
	Owner	provided user in cli	
	Component/Categories	Metadata component <i>\${Component}</i>	//suite/metadata/item[@name="component"]
	Requirement ID	[Tags] fid-yyy	//suite/test/tags/tag[@text="fid-yyy*"]
Test Case Execution Record (TCER)	Owner	provided user in cli	
	Team Area	Metadata team-area <i>\${Team_Area}</i>	//suite/metadata/item[@name="team-area"]
	Test Plan	Interaction URL to provided testplan in cli	
	Test Case	Interaction URL to provided testcase ID: - Testcase ID which provided in [Tags]: tcid-xxx - Generated testcase ID if argument -createmissing is used in cli	//suite/test/tags/tag[@text="tcid-xxx*"]
	Test Environment	Metadata project <i>\${Environment}</i>	//suite/metadata/item[@name="project"]
Test Result	Owner	provided user in cli	
	Tested By	provided user in cli - userid must be used (value as username Metadata: tester does not work now)	
	Team Area	Metadata team-area <i>\${Team_Area}</i>	//suite/metadata/item[@name="team-area"]
	Actual Result	Test case result (PASSED, FAILED, UNKNOWN)	//suite/test/status/@status
	Host Name	Metadata machine <i>%{COMPUTER-NAME}</i>	//suite/metadata/item[@name="machine"]
	Test Plan	Interaction URL to provided testplan in cli	
	Test Case	Interaction URL to provided testcase ID: - Testcase ID which provided in [Tags]: tcid-xxx - Generated testcase ID if -createmissing is used	//suite/test/tags/tag[@text="tcid-xxx*"]
	Test Case Execution Record	Interaction URL to TCER ID	
	Build	Metadata version_sw <i>\${Build}</i>	//suite/metadata/item[@name="version_sw"]
	Start Time	Test case start time	//suite/test/status/@starttime
	End Time	Test case end time	//suite/test/status/@endtime
	Total Run Time	Calculated from start and end time	
	Result Details	Test case message log	//suite/test/status/@text

1.4. Robot Testcase information on RQM:

ROBOTRESULTS2RQM PACKAGE

2.1 Module contents

class RobotResults2RQM.CRQM.CRQMClient(*user, password, project, host*)

Bases: object

CRQMClient class uses RQM REST APIs to get, create and update resources (testplan, testcase, test result, ...) on RQM - Rational Quality Manager

Resource type mapping:

- buildrecord: Build Record
- configuration: Test Environment
- testplan: Test Plan
- testsuite: Test Suite
- suiteexecutionrecord: Test Suite Execution Record (TSER)
- testsuitelog: Test Suite Log
- testcase: Test Case
- executionworkitem: Test Execution Record (TCER)
- executionresult: Execution Result

RESULT_STATES = ['paused', 'inprogress', 'notrun', 'passed', 'incomplete', 'inconclusive', 'part_blocked', 'failed', 'error', 'blocked', 'perm_failed', 'deferred']

addTeamAreaNode(*root, sTeam*)

Append *team-area* node which contains URL to given team-area into xml template

Note: *team-area* information is case-casesensitive

Args: root : xml root object.

sTeam : team name to be added.

Returns: root : xml root object with addition *team-area* node.

config(*plan_id, build_name=None, config_name=None, createmissing=False, suite_id=None*)

Configure RQMClient with testplan ID, build, configuration, createmissing, ...

- Verify the existence of provided testplan ID.
- Verify the existences of provided build and configuration names before creating new ones.

Args: plan_id : testplan ID of RQM project for importing result(s).

build_name (optional) [the *Build Record* for linking result(s).] Set it to *None* if not be used, the empty name "" may lead to error.

config_name (optional) [the *Test Environment* for linking result(s).] Set it to *None* if not be used, the empty name "" may lead to error.

createmissing (optional) [in case this argument is set to *True*,] the testcase without *tcid* information will be created on RQM.

suite_id (optional) : testsuite ID of RQM project for importing result(s).

Returns: None.

createBuildRecord(sBuildSWVersion, forceCreate=False)

Create new build record.

Note: Tool will check if build record is already existing or not (both on RQM and current execution).

Args: sBuildSWVersion : build version - *Build Record* name.

forceCreate (optional) : if True, force to create new build record without existing verification.

Returns:

returnObj: a response dictionary which contains status, ID, status_code and error message.

{ 'success' : False, 'id': None, 'message': '', 'status_code': '' }.

createBuildRecordTemplate(buildName)

Return build record template from provided build name

Args: buildName : *Build Record* name.

Returns: xml template as string.

createConfiguration(sConfigurationName, forceCreate=False)

Create new configuration - test environment.

Note: Tool will check if configuration is already existing or not (both on RQM and current execution).

Args: sConfigurationName : configuration - *Test Environment* name.

forceCreate (optional) : if True, force to create new Test Environment without existing verification.

Returns:

returnObj: a response dictionary which contains status, ID, status_code and error message. {
'success' : False, 'id': None, 'message': '', 'status_code': '' }

createConfigurationTemplate(confName)

Return configuration - Test Environment template from provided configuration name

Args: buildName : configuration - *Test Environment* name.

Returns: xml template as string.

createExecutionResultTemplate(testCaseID, testCaseName, testplanID, TCERID, resultState,
startTime="", endTime="", duration="", testPC="", testBy="", lastlog="",
buildrecordID="", sTeam="", sOwnerID="")

Return testcase execution result template from provided information

Args: testCaseID : testcase ID.

testCaseName : testcase name.

testplanID : testplan ID for linking.
 TCERID : testcase execution record (TCER) ID for linking.
 resultState : testcase result status.
 startTime : testcase start time.
 endTime (optional) : testcase end time.
 duration (optional) : testcase duration.
 testPC (optional) : test PC which executed testcase.
 testBy (optional) : user ID who executed testcase.
 lastlog (optional) : traceback information (for Failed testcase).
 buildrecordID (optional) : *Build Record* ID for linking.
 sTeam (optional) : team name for linking.
 sOwnerID (optional) : user ID of testcase owner.

Returns: xml template as string.

createResource(resourceType, content)

Create new resource with provided data from template by POST method.

Args: resourceType : resource type.

content: xml template as string.

Returns:

returnObj: a response dictionary which contains status, ID, status_code and error message. {
 'success' : False, 'id': None, 'message': '', 'status_code': '' }

createTCERTemplate(testCaseID, testCaseName, testplanID, confID="", sTeam="", sOwnerID="")

Return testcase execution record template from provided information

Args: testCaseID : testcase ID.

testCaseName : testcase name.

testplanID : testplan ID for linking.

confID (optional) : configuration - *Test Environment* for linking.

sTeam (optional) : team name for linking.

sOwnerID (optional) : user ID of testcase owner.

Returns: xml template as string.

createTSERTemplate(testsuiteID, testsuiteName, testplanID, confID="", sOwnerID="")

Return testsuite execution record (TSER) template from provided configuration name

Args: testsuiteID : testsuite ID.

testsuiteName : testsuite name.

testplanID : testplan ID for linking.

confID (optional) : configuration - *Test Environment* ID for linking.

sOwnerID (optional) : user ID of testsuite owner.

Returns: xml template as string.

createTestcaseTemplate(*testcaseName*, *sDescription*="", *sComponent*="", *sFID*="", *sTeam*="", *sTestType*="", *sASIL*="", *sOwnerID*="")

Return testcase template from provided information.

Args: *testcaseName* : testcase name.

sDescription (optional) : testcase description.

sComponent (optional) : component which testcase is belong to.

sFID (optional) : function ID(requirement ID) for linking.

sTeam (optional) : team name for linking.

sTestType (optional) : test type information.

sASIL (optional) : ASIL information.

sOwnerID (optional) : user ID of testcase owner.

Returns: xml template as string.

createTestsuiteResultTemplate(*testsuiteID*, *testsuiteName*, *TSERID*, *ITCER*, *ITCResults*, *startTime*="", *endTime*="", *duration*="", *sOwnerID*="")

Return testsuite execution result template from provided configuration name

Args: *testsuiteID* : testsuite ID.

testsuiteName : testsuite name.

TSERID : testsuite execution record (TSER) ID for linking.

ITCER : list of testcase execution records (TCER) for linking.

ITCResults : list of testcase results for linking.

startTime (optional) : testsuite start time.

endTime (optional) : testsuite end time.

duration (optional) : testsuite duration.

sOwnerID (optional) : user ID of testsuite owner.

Returns: xml template as string.

disconnect()

Disconnect from RQM

getAllBuildRecords()

Get all available build records of project on RQM and store them into *dBuildVersion* property.

getAllByResource(*resourceType*)

Return all entries of provided resource by GET method.

Note: This method will try to fetch all entries in all pages of resource.

Args: *resourceType* : the RQM resource type.

Returns: *dReturn* : a dictionary which contains response status, message and data.

getAllConfigurations()

Get all available configurations of project on RQM and store them into *dConfiguration* property.

getAllTeamAreas()

Get all available team-areas of project on RQM and store them into *dTeamAreas* property.

Example: { 'teamA' : '{host}/qm/process/project-areas/{project-id}/team-areas/{teamA-id}', 'teamB' : '{host}/qm/process/project-areas/{project-id}/team-areas/{teamB-id}' }

getResourceByID(resourceType, id)

Return data of provided resource and ID by GET method

Args: resourceType : the RQM resource type.

id : ID of resource.

Returns: res : response data of GET request.

integrationURL(resourceType, id=None, forceinternalID=False)

Return interaction URL of provided resource and ID.

Note: ID can be internalID (contains only digits) or externalID.

Args: resourceType : the RQM resource type (e.g: "testplan", "testcase", ...)

id (optional) [ID of given resource.] If given: the specified url to resource ID is returned. If *None*: the url to resource type (to get all entity) is returned.

forceinternalID (optional) : force to return the url of resource as internal ID.

Returns: integrationURL : interaction URL of provided resource and ID.

linkListTestcase2Testplan(testplanID, lTestcases=None)

Link list of test cases to provided testplan ID.

Args: testplanID : testplan ID to link given testcase(s).

lTestcases [list of testcase(s) to be linked with given testplan.] If *None* (as default), *lTestcaseIDs* property will be used as list of testcase.

Returns:

res [response object which contains status and error message.] { 'success' : False, 'message': '' }

linkListTestcase2Testsuite(testsuiteID, lTestcases=None)

Link list of test cases to provided testsuite ID

Args: testsuiteID : testsuite ID to link given testcase(s).

lTestcases [list of testcase(s) to be linked with given testsuite.] If *None* (as default), *lTestcaseIDs* property will be used as list of testcase.

Returns:

res [response object which contains status and error message.] { 'success' : False, 'message': '' }

login()

Log in RQM by provided user & password.

Note: When the authentication is successful, the JSESSIONID from cookies will be stored as header for later POST method.

Returns: True if successful, False otherwise.

updateResourceByID(resourceType, id, content)

Update data of provided resource and ID by PUT method.

Args: resourceType : resource type.

id : resource id.

content : xml template as string.

Returns: res : response object from PUT request.

userURL(userID)

Return interaction URL of provided userID

Args: userID : the user ID

Returns: userURL : the interaction URL of provided userID

verifyProjectName()

Verify the project name by searching it in *project-areas* XML response.

Note:

The found project ID will be stored and:

- required for *team-areas* request (project name cannot be used)
- used for all later request urls instead of project name

Returns:

- True if the authentication is successful.
- False if the authentication is failed.

webIDfromGeneratedID(resourceType, generateID)

Return web ID (ns2:webId) from generate ID by get resource data from RQM.

Note:

- This method is only used for generated *testcase*, *executionworkitem* and *executionresult*.
- *buildrecord* and *configuration* does not have *ns2:webId* in response data.

Args: resourceType : the RQM resource type.

generateID : the Slug ID which is returned in *Content-Location* from POST response.

Returns: webID : web ID (number).

webIDfromResponse(response, tagID='rqm:resultId')

Get internal ID (number) from response of POST method.

Note: Only *executionresult* has response text. Other resources has only response header.

Args: response : the response from POST method.

tagID : tag name which contains ID information.

Returns: resultId : internal ID (as number).

RobotResults2RQM.CRQM.get_xml_tree(file_name, bdt_validation=True)

Parse xml object from file.

Args: file_name : path to file or file-like object. bdt_validation : if True, validate against a DTD referenced by the document.

Returns: oTree : xml etree object

class RobotResults2RQM.robot2rqm.Logger

Bases: object

Logger class for logging message.

color_error = '\x1b[31m\x1b[1m'

color_normal = '\x1b[37m\x1b[22m'

color_reset = '\x1b[0m\x1b[39m\x1b[49m'

```
color_warn = '\x1b[33m\x1b[1m'
```

```
classmethod config(output_console=True, output_logfile=None, indent=0, dryrun=False)
```

Configure Logger class.

Args: output_console : write message to console output.

output_logfile : path to log file output.

indent : offset indent.

dryrun : if set, a prefix as 'dryrun' is added for all messages.

Returns: None.

```
dryrun = False
```

```
classmethod log(msg="", color=None, indent=0)
```

Write log message to console/file output.

Args: msg : message to write to output.

color : color style for the message.

indent : offset indent.

Returns: None.

```
classmethod log_error(msg, fatal_error=False)
```

Write error message to console/file output.

Args: msg : message to write to output.

fatal_error : if set, tool will terminate after logging error message.

Returns: None.

```
classmethod log_warning(msg)
```

Write warning message to console/file output.

Args: msg : message to write to output.

Returns: None.

```
output_console = True
```

```
output_logfile = None
```

```
prefix_all = ''
```

```
prefix_error = 'ERROR: '
```

```
prefix_fatalerror = 'FATAL ERROR: '
```

```
prefix_warn = 'WARN: '
```

```
RobotResults2RQM.robot2rqm.RobotResults2RQM(args=None)
```

Import robot results from output.xml to RQM - IBM Rational Quality Manager.

Flow to import Robot results to RQM:

1. Process provided arguments from command line
2. Login Rational Quality Management (RQM)
3. Parse Robot results
4. Import results into RQM
5. Link all executed testcases to provided testplan/testsuite ID

Args:

args [Argument parser object:]

- *outputfile* : path to the output file or directory with output files to be imported.
- *host* : RQM host url.
- *project* : RQM project name.
- *user* : user for RQM login.
- *password* : user password for RQM login.
- *testplan* : RQM testplan ID.
- *recursive* : if True, then the path is searched recursively for log files to be imported.
- *createmissing* : if True, then all testcases without fcid are created when importing.
- *dryrun* : if True, then just check the RQM authentication and show what would be done.

Returns: None.

`RobotResults2RQM.robot2rqm.convert_to_datetime(time)`

Convert time string to datetime.

Args: time : string of time.

Returns: dt : datetime object

`RobotResults2RQM.robot2rqm.get_from_tags(ITags, reInfo)`

Extract testcase information from tags.

Example: TCID-xxxx, FID-xxxx, ...

Args: ITags : list of tag information.

reInfo : regex to get the expected info (ID) from tag info.

Returns: lInfo : list of expected information (ID)

`RobotResults2RQM.robot2rqm.process_metadata(metadata, default_metadata={'author': '', 'category': '', 'component': 'unknown', 'configfile': '', 'description': '', 'machine': '', 'project': 'ROBFW', 'tags': '', 'team-area': '', 'tester': '', 'testtool': '', 'version_hw': '', 'version_sw': '', 'version_test': ''})`

Extract metadata from suite result bases on DEFAULT_METADATA

Args: metadata : Robot metadata object.

default_metadata: initial Metadata information for updating.

Returns: dMetadata : dictionary of Metadata information.

`RobotResults2RQM.robot2rqm.process_suite(RQMClient, suite)`

process robot suite for importing to RQM.

Args: RQMClient : RQMClient object.

suite : Robot suite object.

Returns: None.


```
RobotResults2RQM.robot2rqm.process_suite_metadata(suite, default_metadata={'author': '', 'category': '',  
                                                                           'component': 'unknown', 'configfile': '',  
                                                                           'description': '', 'machine': '', 'project': 'ROBFW',  
                                                                           'tags': '', 'team-area': '', 'tester': '', 'testtool': '',  
                                                                           'version_hw': '', 'version_sw': '', 'version_test': ''})
```

Try to find metadata information from all suite levels.

Note: Metadata at top suite level has a highest priority.

Args: suite : Robot suite object.

default_metadata: initial Metadata information for updating.

Returns: dMetadata : dictionary of Metadata information.

```
RobotResults2RQM.robot2rqm.process_test(RQMClient, test)  
process robot test for importing to RQM.
```

Args: RQMClient : RQMClient object.

test : Robot test object.

Returns: None.

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