Oracle Utilities Testing Accelerator

User's Guide

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Contents

Preface .... **i**
Audience ii
Prerequisite Knowledge ii
Abbreviations ii
Related Documents ii
Updates to the Documentation iii
Documentation Accessibility iii
Conventions iii
Deprecation Notice iii

Chapter 1
Overview **1-1**
Introduction 1-2
Terminology 1-2
Application Architecture 1-3
Application Features 1-4
Supported Oracle Utilities Applications 1-4

Chapter 2
Oracle Utilities Testing Accelerator Features **2-1**
Administration 2-2
Components 2-2
Dashboard 2-2
Flows 2-5
Flow Sets 2-5
Tools 2-6

Chapter 3
Developing Metadata Driven Web Service Based Test Automation **3-1**
Metadata Driven Automation Development Methodology 3-2
Planning 3-3
Design and Development 3-3
Test Run 3-3
Setting Up Automation Development Environment 3-4
Setting Up Oracle Utilities Testing Accelerator Server 3-4
Setting Up Workstations for Development/ Testing 3-5
Setting Up Flow and User Configuration Sets 3-8
Setting Up Application under Test 3-8

Chapter 4
Oracle Utilities Testing Accelerator Administration **4-1**
Overview 4-2
Administration Tab 4-2

Managing Products 4-3
Managing Modules 4-4
Managing Users 4-5
User Access Types 4-6
Purging Flow Run Data 4-7
Purging Notification Data 4-7
Custom Content Upgrade 4-7

Chapter 5

Creating Test Flows 5-1
Creating Flow Modules 5-2
Creating Flows 5-2
Creating Flows By Dragging-and-Dropping Components 5-3
Adding Test Data in a Flow 5-3
Moving Data Between Components without Using Global Variables 5-7
Annotating Components in a Flow 5-11
Using Global Variables 5-11
Flow Lifecycle 5-13
Locking/Unlocking Flows 5-13
Copying Flows 5-14
Reordering Components in a Flow 5-14
Copying Test Data from One Component to Another in a Flow 5-15
Fetching Component Test Data from an Utilities Application 5-15
Unit Testing a Component in a Flow 5-16
Bulk Replacing Component Test Data in Multiple Flows 5-17
Flow Subroutines 5-18
Running Subroutine in a Loop 5-20
Conditional Bypass of Components in a Flow Run (Skip Component) 5-23
Component Test Data Sets 5-24
Creating Reference Test Data for a Component 5-24
Loading Test Data from a Component Test Data Set 5-25
Deleting Component Test Data Sets 5-25
Loading Test Data from a .csv File 5-25
Flow Test Data Sets 5-26
Adding Email Capabilities to Flows 5-27
Support for HTTPS Web Services 5-28
Support for Integration Flows 5-28
Running Test Flows 5-31
Running Test Flows Using a Browser 5-31
Iterative Flow Run 5-32
Stopping Flow Run on Validation Failure 5-32
Stopping Flow Run Manually 5-33
Viewing Flow Run Details 5-33
Viewing Flow Run Failure Details 5-33
Viewing Flow Run Summary Report 5-34
Conversational Test Data Management 5-34
Generating Oracle Utilities Testing Accelerator Scripts 5-35
Importing the Generated Oracle Utilities Testing Accelerator Script into Eclipse IDE 5-36
Running Flows from Command Line 5-37
Encrypting Passwords 5-37
Generating Keystore for Encryption from Windows Explorer 5-38
Generating Keystore for Encryption from Command Prompt 5-38
Using Password Encryptor Tool From Windows Explorer 5-38
Using PasswordEncryptor Tool From Console/Command Line 5-39
Configuring the Runtime Properties (For Run Using Eclipse) 5-39
Runtime Configuration for Flow Run (For Run Using Browser) 5-40

Chapter 6

Creating Components 6-1

Component Structure 6-2
Component Lifecycle 6-2
Locking/Unlocking Components 6-3
Component Types 6-4
Web Service Based Components 6-4
GUI Based Components 6-4
REST Web Service Components 6-4
Creating Web Service Based Components 6-4
Creating a Component 6-5
Creating a Component Definition 6-6
Defining Default Data at Component Level 6-8
Setting Up Operation Name for a Web Service 6-8
Using Runtime Variables in Components 6-8
file: prefix - csv file 6-9
Using Function Libraries 6-9
Resolving the Repeating Elements in Response XML 6-9
Adding Validations 6-10
Logging and Reporting 6-10
Handling the List Elements 6-11
Creating GUI Based Components 6-13
Creating a Component Definition for GUI Components 6-14
Creating REST Web Service Components 6-15
Creating a REST Service Component Definition 6-16
Entering Test Data for a REST Component 6-17
Copying Components 6-19

Chapter 7

Creating Test Flow Sets 7-1

Creating Flow Sets 7-2
Adding Flows to a Flow Set 7-2
Deleting Flows from a Flow Set 7-2
Running Flow Sets 7-3
Stopping Flow Set Run 7-3
Exporting Flow Sets 7-3
Viewing Flow Set Run History 7-3
Viewing Flow Set Execution Summary Report 7-4

Chapter 8

Creating Test Plans 8-1

About Test Plans 8-2
Creating a Test Plan 8-2
Adding and Removing Flow Sets in a Test Plan 8-3
Managing Test Plan Lifecycle 8-3
Running a Test Plan 8-4
Viewing Test Plan Run Results 8-5

Chapter 9

Development Accelerator Tools 9-1

Component Export Tool 9-2
Flow Export Tool 9-2
Component/ Flow Import Tool 9-2
Component Generation Tool 9-3
Password Encryption Tool 9-4
Overview 9-4
Running the Password Encryption Tool 9-5
Component Definition Validation Tool 9-5

Chapter 10

Function Library Reference 10-1

OUTSPCORELIB 10-2
WSVALIDATELIB 10-7
CORERESPONSEUTILLIB 10-12
COREDATETIMELIB 10-31
COREDATAGENLIB 10-34
COREVALIDATEVARIABLELIB 10-35
COREVERIFYCONDITIONVARIABLELIB 10-41
CORESTOREVALUES 10-46
COREFILEOPS 10-48
CORESTRINGOPS 10-49
CORENUMBEROPS 10-49
COREUTAOPS 10-52

Chapter 11

Custom Libraries 11-1

Creating/Updating Custom Libraries 11-2
Exporting/Importing Custom Libraries 11-4
Using Custom Library Functions 11-4

Appendix A

Web Service Component Keywords A-1

WS-SETWEBSERVICENAME A-2
WS-SETXMLELEMENT A-2
WS-SETXMLLISTELEMENT A-2
WS-SETVARIABLE A-3
WS-SETVARIABLEFROMRESPONSE A-3
WS-SETTRANSACTIONTYPE A-3
WS-LOGMESSAGE A-4
WS-CREATEWSREQUEST A-4
WS-PROCESSWSREQUEST A-4
WS-STARTPOLLWS A-4
WS-STOPPOLLWSIF A-5

Appendix B

GUI Component Keywords B-1

APPROVE B-2
CANCEL B-2
CHECK B-2
CLICK B-3
CLOSE B-3
GET_ATTRIBUTE_VALUE B-3
GET_ATTRIBUTE_ID B-4
LAUNCH B-4
MAXIMIZE B-4
MINIMIZE B-5
POPUP B-5
PRESSTABKEY B-5
SELECT B-6
SETTEXT B-6
SWITCHTO B-6
UNCHECK B-7
UNSELECT B-7
UI-STARTBROWSER B-7
UI-ENDBROWSER B-8
WAIT B-8

Appendix C
REST Component Keywords C-1
RS-SETREQUESTHEADER C-2
RS-SETENDPOINT C-2
RS-ARGUMENT C-2
RS-SETMETHOD C-3
RS-PROCESSRESTREQUEST C-3

Appendix D
Setting Up Inbound Web Services D-1
Creating Inbound Web Services D-2
Importing Inbound Web Services D-2
Searching Inbound Web Services D-2

Appendix E
Generating Re-runnable Test Data E-1

Appendix F
Connecting to Multiple Databases F-1

Appendix G
Configuring Authentication for Web Service Requests G-1

Appendix H
OUTA REST Services H-1
Prerequisites H-2
Flow Run H-2
Flow Set Run H-4
Flow Run Analytics H-5
Flow Set Run Analytics H-6
Flow Run Summary H-7
Flow Set Run Summary H-8

Preface

Welcome to the Oracle Utilities Testing Accelerator User’s Guide.

The guide explains how to use Oracle Utilities Testing Accelerator to automate the business test flows for testing the Oracle Utilities’ applications.

This preface focuses on the following:

- Audience
- Prerequisite Knowledge
- Abbreviations
- Related Documents
- Updates to the Documentation
- Documentation Accessibility
- Conventions
- Deprecation Notice

Audience

This guide is intended for Automation Developers, and Test Engineers who automate the business test flows for testing the Oracle Utilities' applications.

Prerequisite Knowledge

The metadata driven automation development paradigm of Oracle Utilities Testing Accelerator does not require any programming experience to develop scripts for testing. However, the advanced programming features available in the application require experience with the Java programming language.

Abbreviations

The following terms are used in this document:

Term	Expanded Form
CCB	Oracle Utilities Customer Care and Billing
C2M	Oracle Utilities Customer to Meter
MDM	Oracle Utilities Meter Data Management
MWM	Oracle Utilities Mobile Workforce Management
WAM	Oracle Utilities Work and Asset Management
UTA	Oracle Utilities Testing Accelerator

Related Documents

For more information, refer to the following Oracle resources.

Release Notes

- Oracle Utilities Testing Accelerator Release Notes

Installation and Administration Guide

- Oracle Utilities Testing Accelerator Installation and Administration Guide

User and Reference Guides

- Oracle Utilities Testing Accelerator Custom Flows Upgrade Guide
- Oracle Utilities Testing Accelerator Security Guide
- Oracle Utilities Testing Accelerator Licensing Information User Manual

Additional Documentation

The following resources are available on My Oracle Support.

- *Practice exercises for Oracle Utilities Testing Accelerator (Doc ID 2726629.1)*

- *Flow Subroutines and Test Data Sets (Doc ID 2632033.1)*
- *Building Custom Components And Functions for Oracle Utilities Application Framework Based Products (Doc ID 2662058.1)*
- *Test Strategy Best Practices Guidance for Oracle Utilities Application Framework Based Products (Doc ID 2659556.1)*

Training Material

- Training Material on Oracle Video Hub Oracle Utilities Testing Accelerator channel

Updates to the Documentation

Documentation updates are posted on Oracle Help Center as they become available.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle's Accessibility Program website.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. If you are hearing impaired, visit the Oracle Accessibility Learning and Support website for more information.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Deprecation Notice

The following features will be deprecated in the next Oracle Utilities Testing Accelerator release:

- **Eclipse plugin for running** Oracle Utilities Testing Accelerator **flows on a local machine**: The Eclipse plugin will be deprecated in the next Oracle Utilities

Testing Accelerator release. This deprecation in turn removes any support for GUI based test flows and components.

- Groovy script language support for custom library will be deprecated in the next Oracle Utilities Testing Accelerator release.

Chapter 1
Overview

This chapter introduces the Oracle Utilities Testing Accelerator application and provides an overview of the application architecture and features.

- Introduction
- Terminology
- Application Architecture
- Application Features
- Supported Oracle Utilities Applications

Introduction

Oracle Utilities Testing Accelerator comprises test automation accelerators for the automated testing of Oracle Utilities applications. It is a framework based on Java and Selenium for creating the web services and user interface automation scripts.

Oracle Utilities Testing Accelerator enables you to create the automation scripts using keywords or metadata, and without using any programming language. This saves the test automation development effort and avoid programming the scripts manually.

The accelerators contain out-of-the-box delivered test components that can be used to build test flows for the Oracle Utilities applications. You can extend the delivered components or create new custom components to build customized test flows. For information about the reference guides included in this release, refer to the Related Documents section in Preface.

Terminology

This table lists the different terms used in the document:

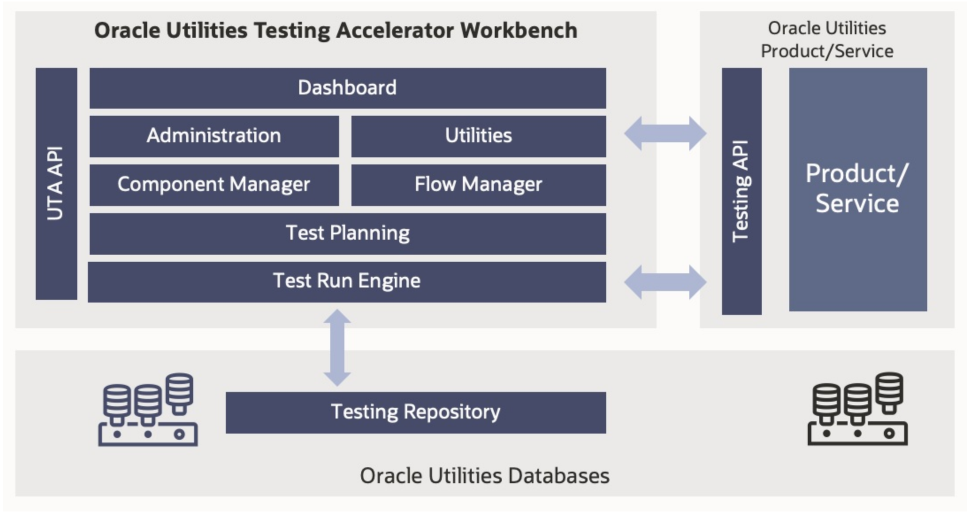
Term	Description
Oracle Utilities Test Accelerator (UTA)	Helps to build and maintain components and flows for automated testing.
Keyword	A pre-defined word used to define a specific step in a test case.
Component	Reusable automated test or part of a test. A component is the building block of an automated test flow. Each component is made up of a definition which allows users to define a keyword and associate values and parameters for the keyword.
Flow	An automated test. A flow comprises one or more components and/or component sets that are called in a pre-determined sequence.
Flow Test Data	A test data set specific for a given flow.
All components and flows in Oracle Utilities Testing Accelerator are organized into hierarchy for better manageability. The hierarchy is: Release > Portfolio > Product > Module	
Release	Represents the highest level of hierarchy. There is one release per an Oracle Utilities Testing Accelerator version, and it contains one or more portfolios.
Portfolio	Represents a product family consisting of one or more related products. A portfolio contains one or more products.

Term	Description
Product	Represents an Oracle Utilities application. For example: CCB A product contains one or more modules.
Module	Represents an Oracle Utilities application functional area. For example: Billing in CCB A module contains one or more components that are used to automate a specific functional area in an Oracle Utilities application. A module in the flow tree hierarchy can be used for logical grouping of custom flows for easier access. **Note**: The module in the hierarchy of flow and component tree structure is different.
Flow Module	Represents a group of flows typically a group of related flows meant to test a functional area.

For information about these terms, refer to Chapter 2: Oracle Utilities Testing Accelerator Features.

Application Architecture

The following diagram depicts the high-level architecture of Oracle Utilities Testing Accelerator.



Oracle Utilities Testing Accelerator's workbench can be accessed using a web browser, such as Mozilla Firefox or Google Chrome. The workbench allows users to create and manage components and flows. Additionally, flow runs and their corresponding history can be managed from the workbench.

There are various modules within the workbench:

- **Component Manager** supports auto generation creation, update and delete of components.

- **Flow Manager** provides features to create and manage test flows in Oracle Utilities Testing Accelerator.
- **Test Planning** helps to manage flow runs corresponding to testing of specific product upgrades/updates.
- **Utilities** help manage flow upgrades, export-import and custom component creation.

Security module in Oracle Utilities Testing Accelerator workbench makes sure that only authorized users have access to the workbench. The module also provides necessary support to add authentication to outbound requests that are used for testing an application. Additionally, the module controls the access to the flow runs using the Oracle Utilities Testing Accelerator REST APIs.

All the components and flows are defined using metadata as Testing Objects. The metadata and the flow run history gets stored in the database for unified, concurrent access by various users of Oracle Utilities Testing Accelerator.

Oracle Utilities Testing Accelerator comes with several predefined components provided by the corresponding product's Quality Assurance teams.

All the web service based test flow runs use Testing APIs on the Oracle Utilities Enterprise products. These APIs are web service end points on the Enterprise applications and are delivered along with Oracle Utilities Testing Accelerator.

For more information about Oracle Utilities Testing Accelerator, refer to the *Oracle Utilities Testing Accelerator Installation and Administration Guide*.

Application Features

The features available in this Oracle Utilities Testing Accelerator release are the dashboard, components, flows, flow sets, various tools, and administration.

For more information about these features and their significance, refer to Chapter 2: Oracle Utilities Testing Accelerator Features.

Supported Oracle Utilities Applications

Oracle Utilities Testing Accelerator v7.0.0.0 release supports the respective versions that each of the below listed Oracle Utilities product currently supports:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Customer to Meter
- Oracle Utilities Work and Asset Management
- Oracle Utilities Operational Device Management
- Oracle Utilities Meter Data Management
- Oracle Utilities Smart Grid Gateway

Refer to the *Certification Matrix for Oracle Utilities Products* (Document ID 1454143.1) on My Oracle Support to determine if support for newer versions of the listed products has been added.

Chapter 2

Oracle Utilities Testing Accelerator Features

This chapter describes the features available in this Oracle Utilities Testing Accelerator release:

- Administration
- Components
- Dashboard
- Flows
- Flow Sets
- Tools

Administration

The **Administration** tab allows the users with Administrator role to do the following:

- Create/edit release, portfolio, product and modules
- Create/manage Oracle Utilities Testing Accelerator application user accounts
- Upgrade CM (custom) content from one version of an Oracle Utilities application's Test Accelerator pack to a later version

  For example: From Oracle Utilities Customer Care and Billing v2.6.0.0 to Oracle Utilities Customer Care and Billing v2.6.0.1
- Purging old flow run log and history
- Create and manage custom function libraries

For more details, refer to Chapter 4: Oracle Utilities Testing Accelerator Administration.

Components

The **Components** page displays all the available components imported/created in the application. On this page, you can do the following:

- Create a new component
- Define/update the definition of a component
- Submit the component for approval
- Accept/reject the approval based on the state of the component

For more information about components, refer to Chapter 6: Creating Components.

Dashboard

This is the **Home** page of the application. The **Dashboard** page includes two tabs:

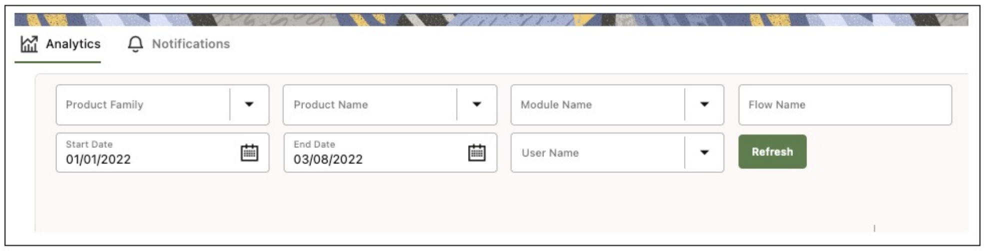
Analytics

This tab displays test run analytics with the ability to filter the data using several data points. The tab has three zones:

- The **first** zone has two visualizations that can be used to visualize the flow run data based on the filters provided at the top of the dashboard:
  - **Product Family**: Filters the visualization data to include flows that belong to the product family selected.
  - **Product Name**: Filters the visualization data based on the selected product name
  - **Module Name**: Filters the visualization data to include flows that belong to the module name selected.
  - **Flow Name**: Filters the visualization data to include flows that start or end with a set of characters.

- **Start Date**: Filters the visualization data to include flow runs that are after the start date.
- **End Date**: Filters the visualization data to include flow runs that are before the end date.

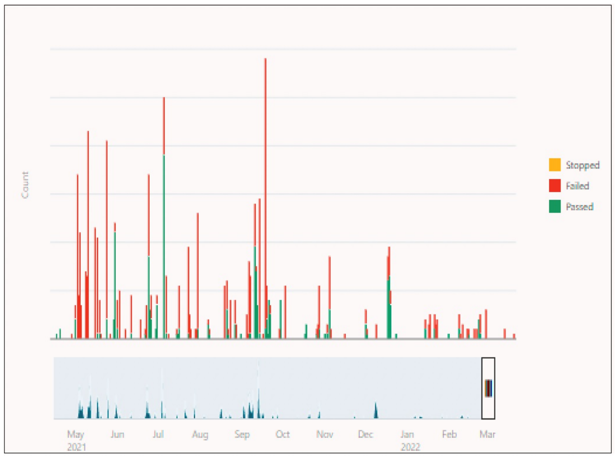
The following figure shows the filters applicable for visualizations in the first zone.



After selecting the filter criteria, click **Refresh** to refresh the visualizations in the first zone. The results are displayed based on the filtered data.

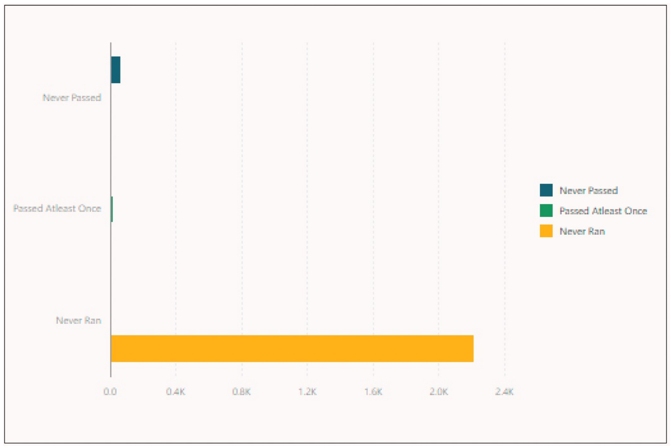
- The first visualization, **Flow Run History**, provides a view of the cumulative of test flow run results based on the filter criteria. This graph also supports rolling window based visualization, so results can be further filtered across time windows. This visualization shows the count of flow runs divided by their statuses (Stopped, Failed and Passed) subject to the filters.

  The following figure shows the rolling window based visualization under the first zone in the dashboard.



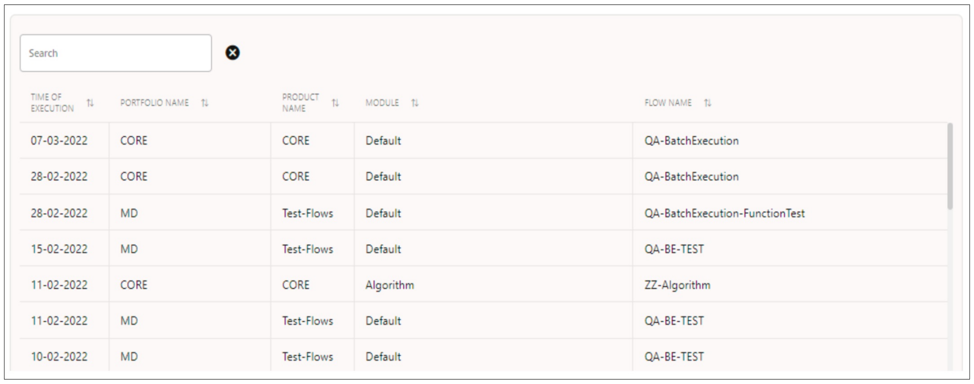
- The second visualization, **Flow Usage** helps ascertain the count of flows between flows that were never run, flows that were run but had never passed, and flows that had passed at least once, subject to the filters.

  The following figure shows the second visualization related to flow run status.



Run List

The **second** zone has a run list of flows that are dependent on the filters at the top of the dashboard. The run list shows the list of flow runs based on the values selected against the filters. The generic search provided at the top of the run list can be used to find appropriate results from within the displayed list of values, if required.



TIME OF EXECUTION	PORTFOLIO NAME	PRODUCT NAME	MODULE	FLOW NAME
07-03-2022	CORE	CORE	Default	QA-BatchExecution
28-02-2022	CORE	CORE	Default	QA-BatchExecution
28-02-2022	MD	Test-Flows	Default	QA-BatchExecution-FunctionTest
15-02-2022	MD	Test-Flows	Default	QA-BE-TEST
11-02-2022	CORE	CORE	Algorithm	ZZ-Algorithm
11-02-2022	MD	Test-Flows	Default	QA-BE-TEST
10-02-2022	MD	Test-Flows	Default	QA-BE-TEST

- The zone on the right holds the dashboard that details **Flow Status Summary** and **Component Status Summary**. The flow count displays the count of flows in the various states that are applicable to the flows. Similarly, the component count displays the count of components in various states that are applicable to the components.

Note: The filters provided in the dashboard are not applicable to this zone.

Notifications

The **Notifications** tab displays notifications of interest to the user currently logged in to Oracle Utilities Testing Accelerator.

Click **Get All Notifications** to display all unread notifications applicable to the current user. Any event of interest in the application triggers a notification that is sent to one or more users.

Events could be either of the following:

- Creating/updating any hierarchy related entity (for example: Release/Portfolio/Product/Module)
- Change in lifecycle state of a component/flow (for example: submitting a component for approval/rejection, etc.)

The different types of notifications are as follows:

- **FYI Notifications:** For informational purpose only and are generated when the following are performed:
  - A component/flow for all users is created.
  - A release/portfolio/product/module for an administrator is created.
  - A user for an administrator is created.
  - A flow/component for approval for a developer is submitted.

  Click a FYI notification for more information about the event and also mark the notification as 'read'. Once an FYI notification is read, it is removed from the notification area.

- **To Do Notifications/FYA Notifications**: For a component/flow when submitted for approval by an approver/administrator. They require some action from the user. They are displayed in the **Notification** area for users with Approver/Administrator role.

  A To Do notification displays detailed information about the respective event. It also allows users to take appropriate action as applicable. (example: Reject, Revert to Approve, Approve, or Send to in progress (Flow)). Select the **Read** column corresponding to the **To Do** to mark a To Do notification as 'read'.

Flows

This page displays all the available flows imported/created in the application. On this page, you can do the following:

- Create a new flow
- Define the flow
- Submit the flow for approval
- Accept/reject the approval based on the state of the flow

For more details, refer to the Creating Flows section in Chapter 5: Creating Test Flows.

Flow Sets

This page displays all available flow sets imported/created in the application. You can:

- Create a new flow set
- Define/manage a flow set

Tools

This feature provides access to various tools that allow you to import/export components and flows in the application. web service components are automatically generated by specifying the WSDL of the web service that the component makes a call to in the Oracle Utilities applications, such as Oracle Utilities Customer Care and Billing or Oracle Utilities Customer to Meter.

For more details, refer to Chapter 8: Development Accelerator Tools.

Chapter 3

Developing Metadata Driven Web Service Based Test Automation

The Oracle Utilities Testing Accelerator components, component sets, and flows are organized in a tree hierarchy. This hierarchy compartmentalizes these for different Oracle Utilities applications.

This chapter is intended primarily for automation developers and testers. It describes the metadata-driven automation development methodology and the set up of automation development environment.

- Metadata Driven Automation Development Methodology
- Setting Up Automation Development Environment

Metadata Driven Automation Development Methodology

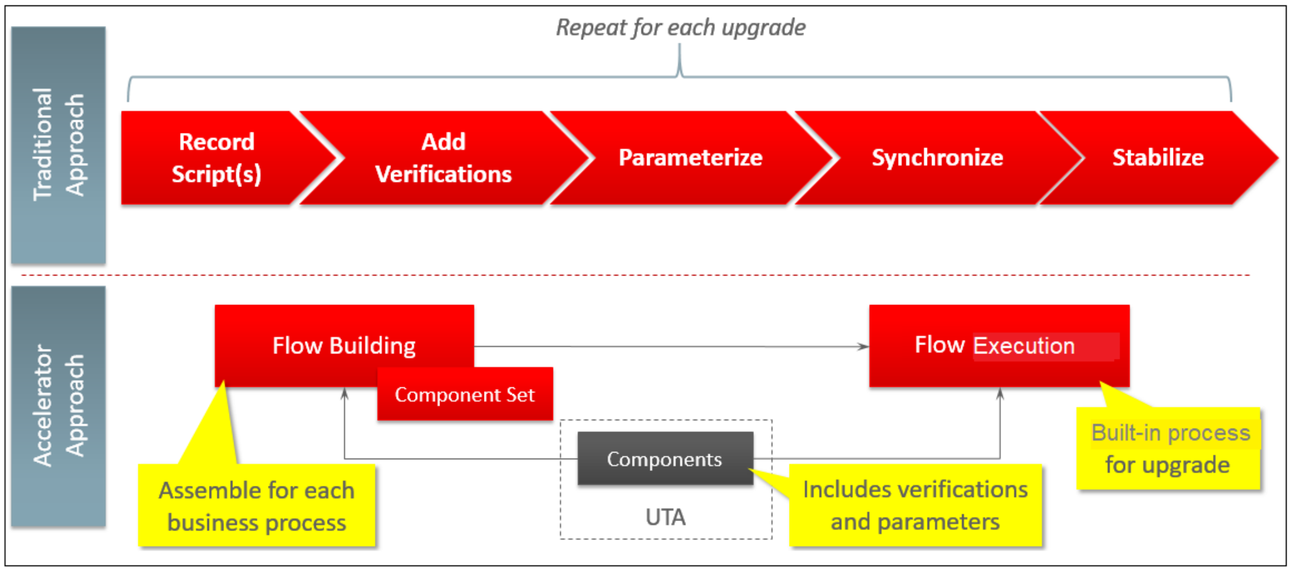
This section describes the metadata-driven automation development methodology that enables a test automation engineer to create automation scripts for an Oracle Utilities application.

An application has to be tested for its base functionality and extensions or customization. For this, you can create granular tests or larger end-to-end business test flows. Irrespective of the test design techniques, these tests can be used for regression testing the application in case of upgrades or customization to ensure that the existing functionality is not broken.

Typically, automation development is a time consuming exercise and teams have challenges in knowing and implementing the industry best practices and automation tools that work best for their product technology stack, helping them be successful in their efforts. Few of such challenges are:

- Selecting an automation tool
- Creating the automation framework
- Identifying the automation development methodology
- Ensuring the automated tests are updated for new releases
- Ensuring the coverage levels are up to date
- Configuration management of automated test programs

The metadata-driven automation development methodology provides solutions to such challenges.



For the Oracle Utilities applications built on Oracle Utilities Application Framework, web service based automated testing is proven to be more robust, maintainable, and faster to develop and execute. Oracle Utilities Testing Accelerator comprises web services and UI based components that enable creation and running of test flows.

The following sections provide the test automation development phases in which an automated test flow is created.

- Planning
- Design and Development
- Test Run

Planning

To plan an automated test flow, identify the business test flow to be automated and the components required for the flow. If necessary, create additional components or extend the delivered components.

For details about how to extend the components, refer to the Copying Components section in Chapter 6: Creating Components.

Design and Development

A flow design explains the order in which the components will be used to interact with each other in the flow. It also defines the test data combinations to use.

To design and develop an automated test flow:

1. Create/extend the required components that are identified in planning phase.
2. Create a test flow in Oracle Utilities Testing Accelerator that maps to the identified business test flow in the application.

   For details about how to create a test flow, refer to the Creating Flows section in Chapter 5: Creating Test Flows.

   For information about delivered sample flows to understand the flow creation, refer to the **Sample Work Flows** chapter in the respective product-specific reference guides. For a list of reference guides available in this release, refer to the Related Documents section in Preface.
3. Drag and drop the required components into the flow.
4. Add the test data for the flow.

   The test data can be modified at the runtime using the standard Oracle Utilities Testing Accelerator databanks. For more details, refer to Chapter 5: **Appendix 5: Creating Test Flows**.
5. Assemble and generate the script for the test flow.
6. Download the test script.

Test Run

To run the automated test flow, execute the script in Oracle Utilities Testing Accelerator workbench. Alternately, the scripts can be generated and run using the Eclipse IDE.

For more details, refer to the Running Test Flows section in **Appendix 5: Creating Test Flows**.

The components and test flows developed using this approach are stored and components are version controlled (upto the previous approved version) in the Oracle Utilities Testing Accelerator database. It takes care of the challenges in configuration management of automated tests.

Setting Up Automation Development Environment

The steps involved to set up the development environment for Oracle Utilities Testing Accelerator are as follows:

- Step 1: Setting Up Oracle Utilities Testing Accelerator Server
- Step 2: Setting Up Workstations for Development/ Testing
- Step 3: Setting Up Flow and User Configuration Sets
- Step 4: Setting Up Application under Test

Setting Up Oracle Utilities Testing Accelerator Server

This section explains the steps to be performed to setup the server.

- Installing Oracle Utilities Testing Accelerator
- Installing Oracle Utilities Testing Accelerator Client Runtime
- Creating Users

Installing Oracle Utilities Testing Accelerator

For detailed instructions to install Oracle Utilities Testing Accelerator, refer to the *Oracle Utilities Testing Accelerator Installation and Administration Guide*.

Installing Oracle Utilities Testing Accelerator Client Runtime

Oracle Utilities Testing Accelerator Client Runtime can be installed on a client workstation.

Note: Oracle Utilities Testing Accelerator Client Runtime is required only for GUI based flow run. For web service based flow run, it is recommended to use Oracle Utilities Testing Accelerator work bench (the client runtime need not be installed for running web services based test flows in OUTA).

For installation instructions, refer to the **Installing on Client Admin Workstation** section in *Oracle Utilities Testing Accelerator Installation and Administration Guide*.

Note: The Oracle Utilities Testing Accelerator application need not be installed on the user workstations. Users only need:

- A browser access to it for the component and flow development.
- An installation of Eclipse IDE for Java Developers with Oracle Utilities Testing Accelerator Eclipse plugin to enable the run of flows.

Creating Users

Create users with Administrator access. A user with Administrator access can create the necessary users with various roles (Developer/Approver/Administrator) so the automation developers can start using the Oracle Utilities Testing Accelerator application.

Setting Up Workstations for Development/ Testing

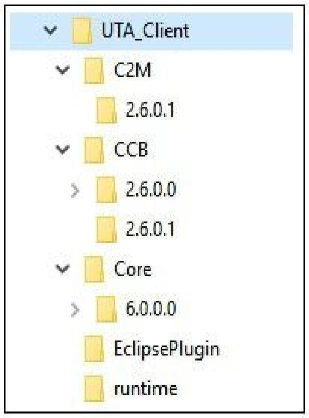
This section provides the steps to set up the Oracle Utilities Testing Accelerator developer workstations. The tasks include:

- Extracting Oracle Utilities Testing Accelerator Client Runtime
- Installing Oracle Utilities Testing Accelerator Eclipse IDE for Java Developers
- Installing Oracle Utilities Testing Accelerator Eclipse Plugin

Extracting Oracle Utilities Testing Accelerator Client Runtime

The Oracle Utilities Testing Accelerator package downloaded from Oracle Software Delivery Cloud (OSDC) (https://edelivery.oracle.com/) contains UTA_Client.zip file that includes all the Client Runtime artifacts.

After the UTA_Client.zip file is unzipped, a folder structure similar to as shown in the following diagram is created.



Creating Oracle Utilities Testing Accelerator Client Runtime Folder Structure

To create a Oracle Utilities Testing Accelerator client runtime folder structure:

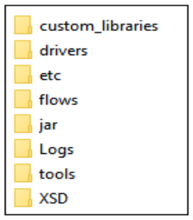
1. Create/select a folder to use as your runtime folder.

   Note: This folder is referred to as <UTA_CLIENT_WORK_DIR> in the following sections.

2. Copy the contents of the runtime folder from UTA_Client.zip zip into <UTA_CLIENT_WORK_DIR>.

   For more details about UTA_Client.zip refer to the Extracting Oracle Utilities Testing Accelerator Client Runtime section.

After copying the contents of the runtime folder, the <UTA_CLIENT_WORK_DIR> should look as follows.



- drivers

  The Chrome and Firefox browser drivers are used to invoke the browser during running of flows that contain Graphical User Interface (GUI) based components.

- **etc**

  The configuration.properties file includes all the properties that the Oracle Utilities Testing Accelerator flows refer to during the flow run. The log4j.properties file controls the logging output from flows.

  Note: All passwords contained in this file have to be encrypted. The Password Encryption Tool can be used to encrypt plain-text passwords. For more details, refer to the **Encrypting Passwords** section in **Appendix 5: Creating Test Flows**.

- **flows**

  The scripts that are generated and downloaded from Oracle Utilities Testing Accelerator should be placed in this folder.

- **jar**

  The 3rd party jar files that are needed to execute the Oracle Utilities Testing Accelerator flows.

- **Logs**

  The runtime generated test run logs that can be later used for debugging.

- **tools**

  The Password Encryption Tool that you can use to encrypt any passwords. For information about how to encrypt passwords that are stored in the configuration.properties file, refer to the **Encrypting Passwords** section in **Appendix 5: Creating Test Flows**.

- **xsd**

  The run-time generated XSDs required for processing the web services request.

Installing Oracle Utilities Testing Accelerator Eclipse IDE for Java Developers

Make sure Eclipse IDE for Java Developers is installed on each user workstation where automation run is performed or where component and flow development is intended to be performed.

For certified Eclipse IDE for Java Developers version details, refer to the **System Requirements** section in *Oracle Utilities Testing Accelerator Installation and Administration Guide*.

To install Eclipse IDE for Java Developers:

1. Download Eclipse IDE for Java Developers from the following location:

   https://www.eclipse.org/downloads/packages/release/2019-09/r/eclipse-ide-java-developers

2. Extract the downloaded zip file to a folder. For example: C:\UTA_Eclipse
3. Navigate to the unzipped Eclipse folder and double-click the eclipse.exe file to launch the Eclipse IDE.
4. When prompted for workspace, select the <UTA_CLIENT_WORK_DiR>/flows folder (as created in the Creating Oracle Utilities Testing Accelerator Client Runtime Folder Structure section) as the workspace folder.

Oracle Utilities Testing Accelerator Eclipse IDE for Java Developers is successfully installed.

Installing Oracle Utilities Testing Accelerator Eclipse Plugin

The Oracle Utilities Testing Accelerator Eclipse Plugin provides a custom Eclipse perspective with necessary information about the Oracle Utilities Testing Accelerator generated script run (such as components executed, request/response xml content, etc.).

To install the Oracle Utilities Testing Accelerator Eclipse Plugin:

1. Extract the UTA_Eclipse_Plugin.zip file from the EclipsePlugin folder.

   For instructions to extract the plugin, refer to the Extracting Oracle Utilities Testing Accelerator Client Runtime section.

2. Launch Eclipse.

   For instructions to install Eclipse, refer to the Installing Oracle Utilities Testing Accelerator Eclipse IDE for Java Developers section.

3. Navigate to **Help** menu > **Install New Software**.
4. In the **Install** dialog box, click **Add**.
5. Navigate to **Location**. Enter the following URL and click **Add**. The URL is added as one of the update sites to Eclipse.

   http://download.eclipse.org/nebula/releases/latest

6. In the **Install** dialog box, click **Add**.
7. On the **Add Repository** dialog box, click **Local.**
8. Browse to the location where the UTA_Eclipse_Plugin.zip was extracted and click **OK**.
9. Click the **OUTA Eclipse Plugin** check box.
10. Click **Next**.
11. Accept the **License Agreement** and click **Finish**.
12. When prompted for click **Install Anyway**.
13. Restart Eclipse IDE to use the Oracle Utilities Testing Accelerator Eclipse Plugin.

14. To use the Oracle Utilities Functional Test perspective, navigate to **Window** > **Perspective** > **Open Perspective** > **Other...**
15. Select Oracle Utilities Functional Test from the list of perspectives.
16. Click **Open**.

The Eclipse with the Oracle Utilities Testing Accelerator plugin is now setup.

Setting Up Flow and User Configuration Sets

Before a flow can be executed, appropriate flow and user configuration sets have to created. These hold user credentials for authentication of the user to access Oracle Utilities cloud service being tested.

Setting Up Application under Test

For setup details, refer to the respective Oracle Utilities' application-specific installation guide.

Make sure that Oracle Utilities Testing Accelerator related metadata exists in this application instance. For more details, refer to the **Post-Installation Tasks** section in *Oracle Utilities Testing Accelerator Installation and Administration Guide*.

Chapter 4

Oracle Utilities Testing Accelerator Administration

This chapter introduces the Administration feature in Oracle Utilities Testing Accelerator. It focuses on the following:

- Overview
- Administration Tab

Overview

The Administration feature in Oracle Utilities Testing Accelerator allows the users with Administrator role to do the following:

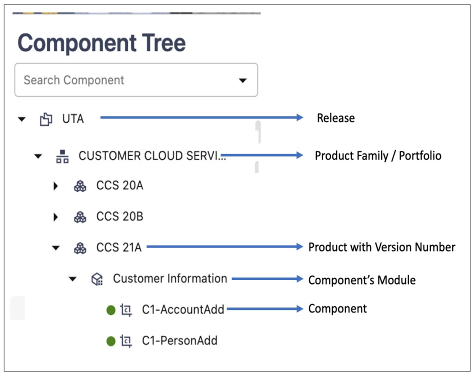
- Create/edit release, portfolio, product, and modules
- Create/manage Oracle Utilities Testing Accelerator application user accounts
- Upgrade CM content from one version of an Oracle Utilities application to a later version.
- Example: From Oracle Utilities Customer Care and Billing V2.6.0.0 to Oracle Utilities Customer Care and Billing V2.6.0.1Purging old flow run logs/results
- Create and manage custom function libraries

Administration Tab

The **Administration** tab in the Oracle Utilities Testing Accelerator application allows users with Administrator role to perform the following actions:

- Managing Products
- Managing Modules
- Managing Users
- User Access Types
- Purging Flow Run Data
- Purging Notification Data
- Custom Content Upgrade

The following diagram shows the organization of components and flows as per hierarchy in the Oracle Utilities Testing Accelerator application.



Note: Though flows are also organized under modules, flow modules are different from component modules and should be managed separately.

Managing Products

A product represents an Oracle Utilities application. A product contains one or more modules.

For example: CCB

Creating a Product

To create a new product:

1. On the **Administration** tab, click **Products** in the left pane.
2. In the **Create Product** window, enter the product name and its description.
3. Click **Save**.

Alternatively, you can create a new product:

1. On the **Components** (or **Flows**) tab, expand the **Component** (or **Flow**) tree.
2. Select and right-click the portfolio under which the product has to be created. From the **Context** menu, click **Create Product**.
3. Enter the new product name and its description.
4. Click **Save**.

Updating a Product

Note that you can only edit a custom product.

To update an existing product:

1. On the **Components** (or **Flows**) tab, expand the **Component** (or **Flow**) tree.
2. Select and right-click the product name to be updated. From the **Context** menu, click **Update Product**.
3. Enter the modified description and click **Update**.

Deleting a Product

Though this is an admin function, a product can be deleted via the component or flow tree structure only. Only an administrator can exercise the delete option.

It is always a best practice to export all the custom flows and components from a product hierarchy before deleting the product as a whole. Deleting a product removes all the flows and components under the product hierarchy permanently. Appropriate caution should be exercised while using this feature.

To delete an existing product:

1. On the **Components** tab, expand the **Component** tree.
2. Select and right-click the product name to be deleted.
3. From the **Context** menu, click **Delete Product**.

   Note: If a product (example: Oracle Utilities Customer Care and Billing V2.7.0.3.0) includes flows that use components from another product (example: Oracle Utilities Meter Data Management V2.3.0.1.0), to delete the Oracle Utilities Meter Data Management product, the flows in the first product (Oracle Utilities Customer Care and Billing V2.7.0.3.0) that use the components from the second product should be deleted first.

Managing Modules

A module represents an Oracle Utilities application functional area for the components. Example: Billing in CCB

Note: Modules created through the Administration section only apply to the component tree hierarchy. Flow modules should be created and managed through the flow hierarchy tree structure.

Creating a Module

To create a new module:

1. On the **Administration** tab, click **Modules** in the left pane.
2. In the **Create Module** window, enter the module name and its description.
3. Click **Save**.

Alternatively, you can create a module.

1. On the **Components** (or Flows) tab, expand the **Component** (or Flow) tree.
2. Select and right-click the product under which the module has to be created.
3. From the **Context** menu, click **Create Module**.
4. Enter the new module name and its description.
5. Click **Save**.

Updating a Module

Note that you can only edit a custom module.

To update an existing module:

1. On the **Components** (or Flows) tab, expand the **Component** (or Flow) tree.
2. Select and right-click the module name to be updated.
3. From the **Context** menu, click **Update Module.**
4. Enter the modified description and click **Update**.

Deleting a Module

Note that you can only delete an empty module.

To delete an existing module:

1. On the **Components** tab, expand the **Component** tree.
2. Select and right-click the module name to be deleted.
3. From the **Context** menu, click **Delete Module** (context menu option only appears if the module is empty).

Managing Users

Only users with an Administrator role can manage the other users.

To create, search for, upgrade, or delete a user, you need to be on the **Administration** page to perform the task. You can also change the password from this page.

To get to the **Administration** page:

1. Login to the application.
2. Navigate to the **Administration** tab.
3. On the **Administration** page, details of all users are shown in the right pane.

Creating a User

To create a new user:

1. On the **Administration** page, click **Add** to create a new user.
2. Fill in the following fields and click **Save**.
    - Username
    - Full name
    - Manager name
    - Password (length should be 6-15 characters)
    - E-mail
    - Access type (for information about access types, refer to the User Access Types section.)

   On success, the “User created successfully” message is displayed. If the user name entered already exists, the “User Name already exists” message is displayed.

Tip: Click **Back** to get redirected to the **Search Users** page. Click **Cancel** to refresh all the fields.

Searching for User(s)

To search for a user:

1. On the **Administration** page, click **Search** to search for a specific user.
2. Enter “%” in the **User Name** field to view all the existing users.

   You can also search based on a particular name or use a wild card search (Example: “J%” will fetch all the users starting with the alphabet “J”).

Updating User Details

To update the details of an existing user:

1. On the **Administration** page, click **Search** and select the record you want to update.
2. Modify the required fields and click the update icon ✎.

Deleting a User

To delete an existing user:

1. On the **Administration** page, click **Search** to select the record to be deleted.
2. Click the delete icon .

   A window appears asking for confirmation about the deletion.
3. Select **Yes** to delete the user.

Please note that deleting the default "administrator" user is not allowed.

Changing a User's Password

To change the password of an existing user:

1. On the **Administration** page, click **Search** and select the record for which you want to change the password.
2. Click the change password icon .
3. On the **Update Password** window, enter the new password in both the fields.
4. Click **Submit**.

   On success, the "Password is changed" message is displayed.

User Access Types

The following table lists the privileges provided to users for various types of access.

Access	Developer	Approver	Administrator
Approve/reject a component		✓	✓
Approve/reject a flow		✓	✓
Change Password (self)	✓	✓	✓
Component - Create/update/view/delete	✓	✓	✓
Copy Component	✓	✓	✓
Create Module			✓
Create Portfolio			✓
Create Product			✓
Create Release			✓
Export Component	✓	✓	✓
Export Flow	✓	✓	✓
Flow - Create/update/view/delete	✓	✓	✓
Generate a component from WSDL	✓	✓	✓

Access	Developer	Approver	Administrator
Import Component	✓	✓	✓
Import Flow	✓	✓	✓
Update Module	✓	✓	✓
Update Portfolio	✓	✓	✓
Update Release	✓	✓	✓
User Management • Create/update/view/ delete • Change other user password			✓

Purging Flow Run Data

When the flow run logs and flow run history entries accumulate over time, it may impact the performance/usability. An administrator can decide to purge some of the existing flow run data for maintenance purposes. The flow run can be purged by specifying the cut-off date for purging entries; the data older than the specified date will be purged.

- **Flow Run Logs**: Allows purging of all the flow run log files that meet the specified criteria.
- **Flow Run History**: Allows purging of flow run history that helps in keeping the Flow Run History page more manageable.

Purging Notification Data

An administrator can decide to purge some of the existing notifications for maintenance purposes. The notifications can be purged by specifying the cut-off date for purging entries; the data older than the specified date will be purged.

- **Notifications**: Allows purging of all the notifications that meet the specified criteria.

Custom Content Upgrade

Version specific Oracle Utilities Testing Accelerator test components are released with each of the Oracle Utilities Enterprise major version updates, such as Oracle Utilities Customer Care and Billing V2.7.0.1.0, V2.7.0.3.0, etc. The custom content upgrade process allows custom flows to be automatically upgraded to the latest component pack version that corresponds to the latest version of Oracle Utilities Enterprise application.

Example: Flows may have been built using components from Oracle Utilities Customer Care and Billing V2.6.0.1.0. When a new version (Oracle Utilities Customer Care and Billing V2.6.0.1.0) is released, a corresponding set of components for V2.7.0.3.0 are also released as part of Oracle Utilities Testing Accelerator. Using the CM Content Upgrade option in the administration, the flows can be automatically upgraded to use the components from the latest V2.7.0.3.0 instead of components from V2.6.0.1.0.

This ensures that the flows are using the components that correspond to the latest release of Oracle Utilities Enterprise application.

The CM Content Upgrade process checks to see if there are any structural changes in each of the components between old and newer versions of the product pack. If any changes are found, the flows using the updated components are automatically highlighted, so you can review (updated test data if required) and clear the highlight marker for each flow. If required, the highlight marker can be cleared at once for all the flows directly at the module or product level.

Running the CM Content Upgrade Process

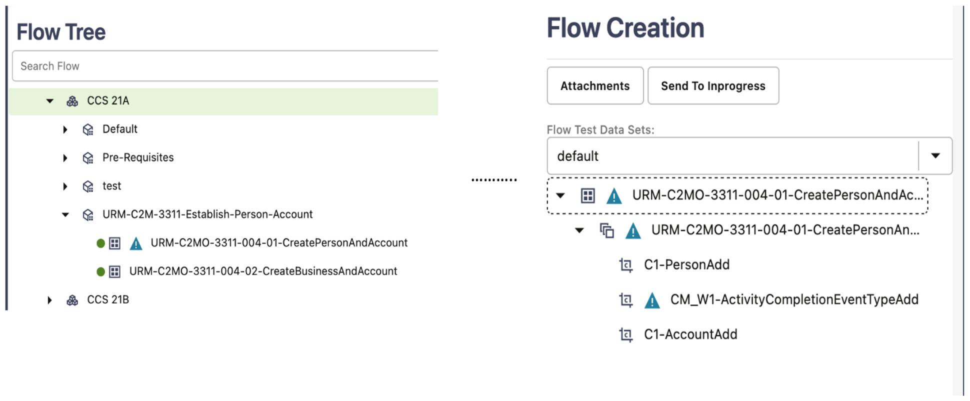
To upgrade an existing set of flows:

1. Select a **Release Name**.
2. Select the **Product Family** under which the flows exist.
3. From the **From Product** field select the product version under which the flows exit.
4. From the **To Product** field select the product version to which the flows should be upgraded.
5. If only a subset of flows have to be upgraded, provide a "Tag" corresponding to these flows (the tag that has been specified in the flows header). "%" can also be used.
6. If the destination product version already has a set of flows, these can either be overwritten during the upgrade or skipped from being upgraded. It applies only to the flows in the destination product that have the same name as the flows from the source product. Select either "Override" or "Skip" based on the requirement.
7. Click **Upgrade**.

   The upgrade process should run to completion with appropriate messages displayed.

   When you upgrade the custom test flows to a newer version of a product pack using the CM Content Upgrade feature in Oracle Utilities Testing Accelerator, flows using components that have been updated between the older and the newer version will automatically be highlighted with a marker. This ensures that you have clear visibility into the impact of changes in the application being tested on the automated test flows.

The following figure shows the flows marked with the highlight marker as part of the CM Content Upgrade process.


Flow Tree
Search Flow
CCS 21A
Default
Pre-Requisites
test
URM-C2M-3311-Establish-Person-Account
URM-C2MO-3311-004-01-CreatePersonAndAccount
URM-C2MO-3311-004-02-CreateBusinessAndAccount
CCS 21B
Flow Creation
Attachments
Send To Inprogress
Flow Test Data Sets:
default
URM-C2MO-3311-004-01-CreatePersonAndAc...
URM-C2MO-3311-004-01-CreatePersonAn...
C1-PersonAdd
CM_W1-ActivityCompletionEventTypeAdd
C1-AccountAdd

Clearing the Highlight Markers

The CM Content Upgrade process checks to see if there are any changes in the component between the current/older and a newer version of the product pack and highlights a Flow with a marker, if any component used in the flow has changed in its structure. The feature also highlights the component in the flow which caused the flow to be highlighted. This enables you to quickly identify and update the test data in the flows that may have been impacted because of the upgrade, without having to run the flows first. Navigate to each of the highlighted flows, review it, update test data if necessary.

After updating the test data, clear the highlight marker. Right-click the flow and select **Clear Highlight** to clear the highlight marker. Alternately, the highlight marker can be cleared for multiple flows at once at the module or product level. Right-click the module/ product in the flow tree in the leftmost frame and select **Clear Highlighted Flows**. Clearing the highlight marker at the product or the module level clears the marker for all the flows under the corresponding module/product.

Note: For a flow to be picked up by the upgrade process, the flow header should have a tag specified.

- If a custom component is created and used in the flows being upgraded, the upgrade process checks for the custom component name to start with “CM”. If the name doesn't start with CM, the upgrade process copies the custom component across and prefixes “CM” to the component name. All references to this component in flows will be updated accordingly so that the flow remains intact. If the name starts with “CM”, the upgrade process simply copies the custom component across from the source to the destination product.
- The test data defined in the flows in the source product will remain intact in the destination product flows.

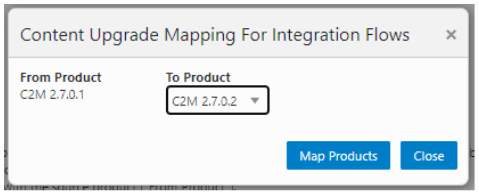
Running the CM Content Upgrade Process for Integration Flows

Integration flows are developed using components from two or more Oracle Utilities Testing Accelerator product packs belonging to different Oracle Utilities Enterprise applications.

Triggering the CM Content Upgrade process is the same for both the integration flows and non-integration flows. To upgrade an existing set of flows, follow the steps in the Running the CM Content Upgrade Process section.

After step 7, during the initiation phase, the CM Content Upgrade process checks to see if any of the flows being upgraded use components from two or more product packs. If it finds such a flow/flows, it determines them as integration flows. The CM Content Upgrade process will then prompt to select the "from" and "to" product pack versions for each of the source product from which components have been used in the flow.

The following figure shows the mapping option for upgrading integration flows.



From Product: C2M 2.7.0.1

To Product: C2M 2.7.0.2

After selecting the appropriate "from" and "to" product versions, click **Map Products**. The CM Upgrade process upgrades the flows by mapping the components appropriately between various product packs.

The flows being upgraded will still be created under the **To Product** specified in the main screen of the CM Content Upgrade process (before step 7 of the process). The upgrade mapping for integration flows only defines the component mapping to be done for integration flows.

Example: If one or more flows are created in CCB 2.7.0.3 product and they use components from WAM 2.0.0.0 along with CCB 2.7.0.3 components, during the course of the CM content upgrade process, the product mapping screen will be displayed with the source product as WAM 2.0.0.0 and the destination product containing a list of available product packs in UTA, such as WAM 2.0.0.0/WAM 2.1.0.0 etc. To proceed with the upgrade, the appropriate destination product needs to be selected. If WAM 2.1.0.0 is selected as the destination product for WAM 2.0.0.0 components, in this example, then the upgrade process will upgrade the flows from CCB 2.7.0.3 to CCB 2.9.0.0 and will also upgrade all the WAM 2.0.0.0 components being used in the upgraded CCB 2.7.0.3 flows to WAM 2.1.0.0.

Chapter 5

Creating Test Flows

Test flows are actual business tests executed on the application under test. The flows are assembled in Oracle Utilities Testing Accelerator by using predetermined components and are updated with data to guide the flow run.

A test flow consists of one or more scenarios, which in turn consist of one or more components.

This chapter describes the steps to create a flow, including:

- Creating Flow Modules
- Creating Flows
- Adding Email Capabilities to Flows
- Support for HTTPS Web Services
- Support for Integration Flows
- Running Test Flows
- Running Flows from Command Line
- Encrypting Passwords

Creating Flow Modules

Related flows can be grouped into a flow module. By default, each product has a "Default" module under which all flows are created unless they are explicitly created under a named module.

To create a flow module:

1. Navigate to **Flow** menu > product under which the flow module should be created.
2. Right-click the product and click **Create Flow Module** to create a new flow module.

To create a flow under a flow module:

1. Navigate to **Flow** menu > product and flow module under which the new flow should be created.
2. Right-click the flow module and click **Create Flow** to create a new flow under the selected flow module.

To move an existing flow to a flow module:

1. Navigate to **Flow** menu > flow that should be moved to a flow module.
2. Right-click the flow and click **Move to Flow Module**.
3. Select the target flow module.
4. Click **Move**.

Creating Flows

A flow simulates a business process that needs to be tested. Flows may be synonymous with test cases or test scenarios based on how test automation strategy is developed. Each flow may have one or more test scenarios. You can create a flow by dragging and dropping components into a default scenario under the flow.

This section includes the following:

- Creating Flows By Dragging-and-Dropping Components
- Adding Test Data in a Flow
- Moving Data Between Components without Using Global Variables
- Annotating Components in a Flow
-
- Using Global Variables

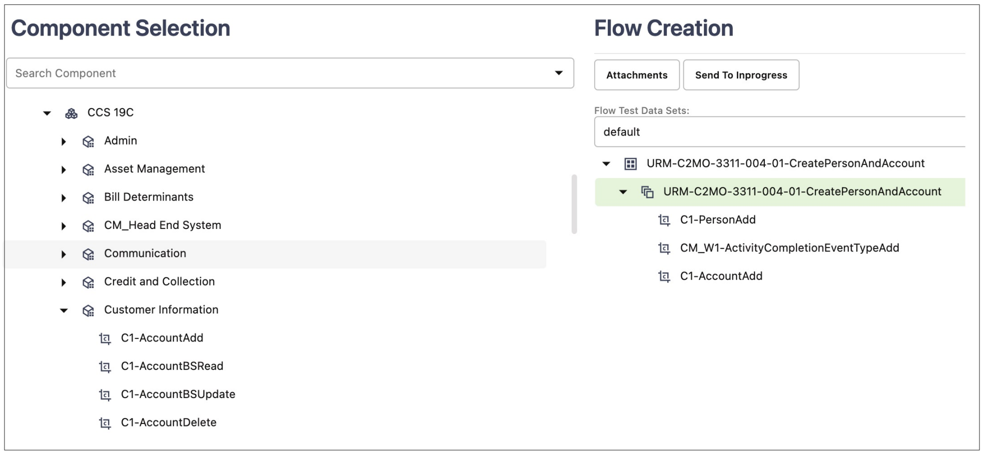
Creating Flows By Dragging-and-Dropping Components

Before creating a flow, identify the components required to create the flow.

Note: The components delivered with Oracle Utilities Testing Accelerator may have to be extended or new components have to be created.

To create a flow:

1. Navigate to the product/module in the flow tree to create the flow.
2. Right-click the product/module and select **Create Flow**.
3. In the **Create Flow** pane, enter the **Flow Name**, **Flow Type**, **Tags**, and **Description**.
4. Save in either of the following ways:
   - **Save**: Saves the flow and redirects to the **Search Flow** page.
   - **Create Structure**: Creates the flow with a default scenario and redirects to the **Flow Structure** page.
5. Expand the flow tree. The flow contains a default scenario with the same name as the flow name.
6. In the sequence defined by the business scenario being tested, drag and drop the components from the **Approved Components** pane to the flow scenario or components within the flow structure. The component moved will be added below the scenario/component to which it was moved.



Note: Flow definition can be modified (components added or removed) only if the flow is in “In Progress” state.

7. Make sure to enter the test data at the component step level while defining a flow.

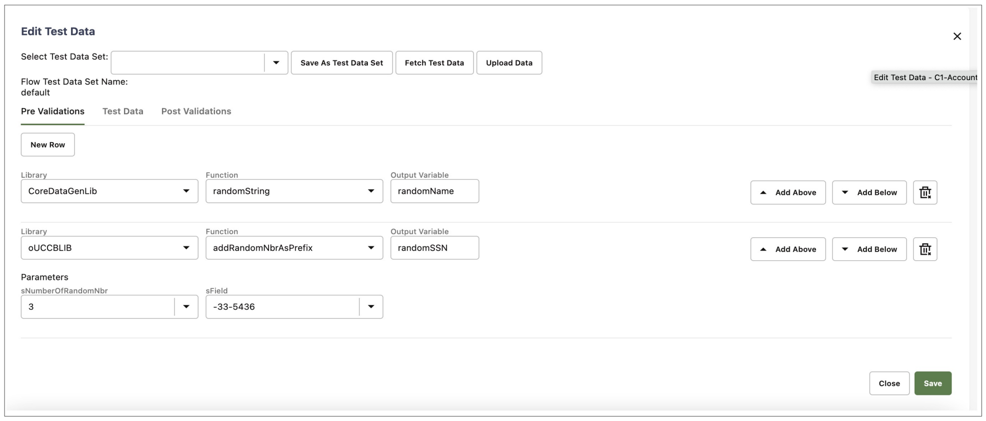
Adding Test Data in a Flow

To add data to a component in a flow:

1. In the flow tree structure, right-click the component and select **Edit Test Data**.
2. Enter the test data in the **Test Data** page. The **Webservice Test Data** page has 3 sections.

a. **Pre Validations**

The **Pre Validations** section can be used for specifying functions that can generate randomized test data for the flow/component step. It is used to add functions in the components that may be specific to the flow being developed. Click **New Row** to add new rows.


Edit Test Data

Select Test Data Set:

Flow Test Data Set Name:
default

Edit Test Data - C1-Account

Library: CoreDataGenLib
Function: randomString
Output Variable: randomName

Library: oUCCBLIB
Function: addRandomNbrAsPrefix
Output Variable: randomSSN

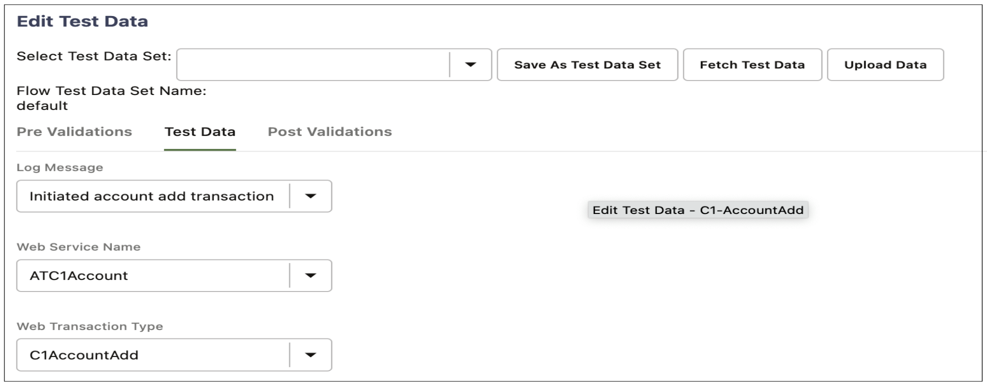
Parameters
sNumberOfRandomNbr: 3
sField: -33-5436

The library in which the function exists can be selected in the **Library** field. Based on the library selected the function can be selected from the **Function** drop-down list. If the function outputs a value, provide the custom global variable name in the **Output Variable** field into which the function output is stored. This variable can be used as test data in the **Test Data** section or in subsequent pre validations or post validations sections. The function inputs can be specified against the parameter fields, based on the number of input parameters that the function needs. The variable names defined in the pre validations and post validations sections will be automatically prefixed with "fvar" and presented in the test data field's drop down under the **Global Variables** section, so they can clearly be distinguished from the global variables defined in the component definition.

b. **Test Data**

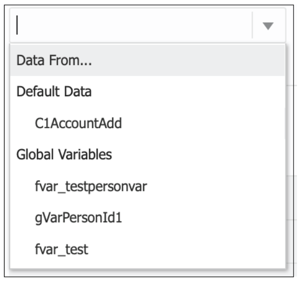
The test data corresponding to each of the elements in the component can be specified in the Test Data GUI.

- The **Web Service Name** and **Web Transaction Type** fields help define the web service end point to which the request needs to be posted to during the test execution. Most of the components have the web service name and transaction type specified as the default data in the component definition. You can select the corresponding values by clicking on the test data drop down corresponding to the web service name/transaction type fields and selecting the value under the **Default Data** section in the list of values.
- The **Log Message** field appears for most of the components that have this option enabled. This is free text field and any value entered in this field will be added to the flow run summary report. This helps to identify what a component step does in a flow, by looking at the summary report.



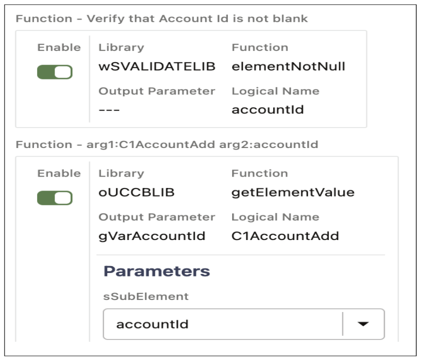
- Test data pertaining to a component line can be specified against that specific line in the test data **Value** field in the **Test Data** section. The test data field is an editable drop down field, so test data can either be selected from the drop-down list or can be keyed into the test data field. The test data field drop down provides 3 options to populate the test data:
  - **Data From..**: This option allows the test data to be set from the web service response of any preceding component in the flow. It allows test data to be passed between components, without the use of global variables.

    Refer to the Moving Data Between Components without Using Global Variables for more information on this feature usage.
  - **Default Data**: This section allows test data to be set from the default data specified in the component definition. For most of the UTA components, the default data is set only for the web service name and the transaction type fields. If the default data is not specified in the component definition for a given field, this option will not be displayed in the test data field drop down.
  - **Global Variables**: This section allows test data to be set using the global variables defined in the preceding components in the same flow. The list of available global variables are displayed under this section. A global variable can be set as test data input for a given field, in which case, during the course of test flow run, the value populated into the global variable in the preceding component steps will be used as the test data.



- If an element is a repeatable group or list element, click **Add List** in the **Action** column to add multiple repetitions of the list elements. You can add a new instance of the list elements under the group, so another set of test data can be provided.

- The bottom part of the Test Data GUI shows the functions defined in the component. Enable or disable the validations/functions defined in the component by appropriately switching **Enable** in the first cell. If the switch is not enabled, during the course of the test run, the function/validation will not be triggered. The switch only appears for rows to which this feature is applicable.



Function - Verify that Account Id is not blank

Enable	Library	Function
	wSVALIDATELIB	elementNotNull
	Output Parameter	Logical Name
	---	accountId

Function - arg1:C1AccountAdd arg2:accountId

Enable	Library	Function
	oUCCBLIB	getElementValue
	Output Parameter	Logical Name
	gVarAccountId	C1AccountAdd

Parameters

sSubElement: accountId

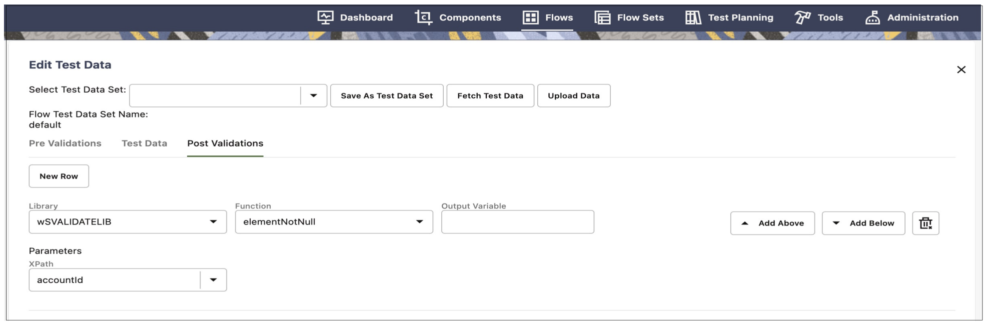
Note: If the test data includes the double quotes character (**" "**), it needs to be escaped with another double quote character. Example: To enter My "Test Data", enter it as My ""Test Data"".

c. **Post Validations**

The **Post Validations** section is used to add verification functions post the base validations. Each of the component comes with a base set of validations and these can be disabled or enabled in the **Test Data** GUI using the switch corresponding to the validation line in the test data UI for the component. And, if any new or more of these verifications are to be added based on the flow specific requirements or if a specific set of values have to be retrieved from the response of the component run, the **Post Validations** section can be used.

The post validations section allows users to add any number of functions/ validations to the component step in a flow. These will be specific to the component's instance in that flow. These will not apply to the component when used in other flows. Specification of functions in the **Post Validations** section follows the same pattern as the one specified in the **Pre-validations** section.

Only function calls can be added in the **Post Validations** section.



Edit Test Data

Select Test Data Set:

Flow Test Data Set Name: default

Library: wSVALIDATELIB

Function: elementNotNull

Output Variable:

Parameters

XPath: accountId

3. Click **Save & Close** to return to the **Flow Creation** page.

Moving Data Between Components without Using Global Variables

Test data can be linked/moved from the response of one component to the input test data field of a subsequent or a later component without using global variables. You can directly select and map the component data fields so the corresponding values are mapped.

To invoke the GUI that supports this mapping feature, click the **Search** icon next to the input test data fields in the **Flow Test Data** page.

The following sections include steps to map the test data between components without variables.

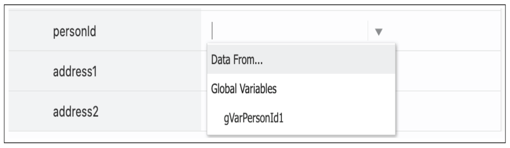
Example: Mapping personId from the response for C1-PersonAdd component to the personId field in C1-AccountAdd component.

To map to non-list elements in a response:

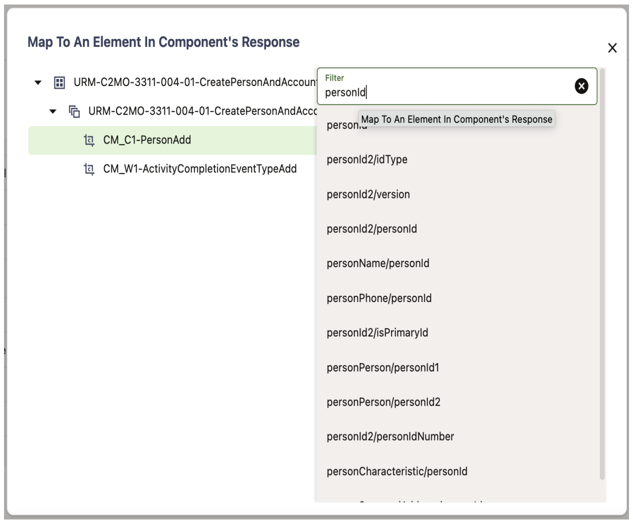
1. Navigate to the **Create/Update Flow Structure** for the test flow.
2. Navigate to the **Flow Test Data** page of the component into which test data should be linked to. Click the downward arrow corresponding to the test data field to show the drop-down list.
3. From the list, select **Data From...**

   In the example, the test data page corresponds to C1-AccountAdd component in the flow, which has C1-PersonAdd component preceding the C1-AccountAdd component.

   The flow tree structure up to the preceding component of the current component is displayed.



4. Click the component from whose response the value should to be mapped. The corresponding elements in the component is displayed.

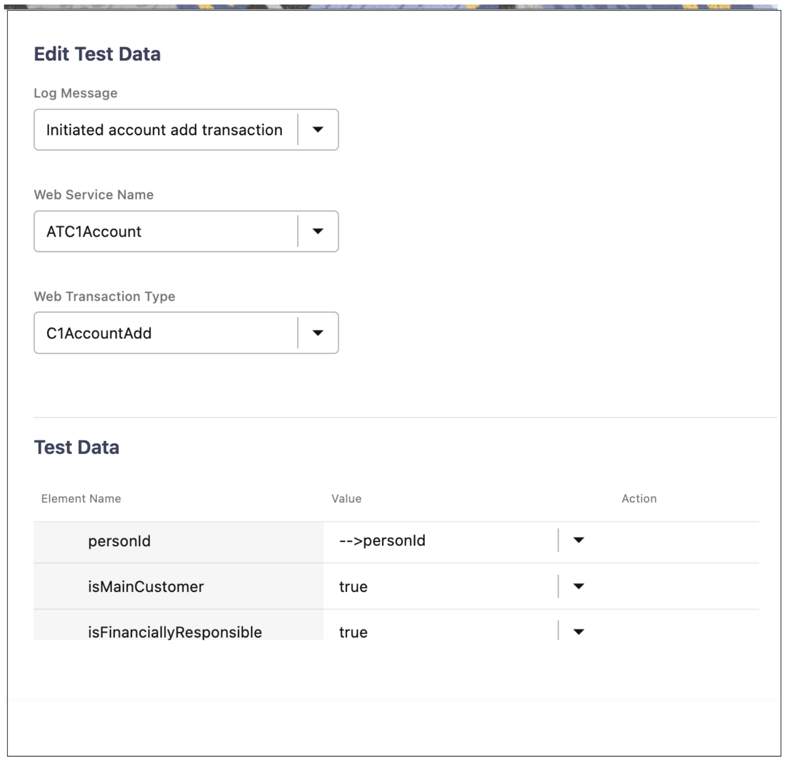

Map To An Element In Component's Response
URM-C2MO-3311-004-01-CreatePersonAndAccoun
URM-C2MO-3311-004-01-CreatePersonAndAcco
CM_C1-PersonAdd
CM_W1-ActivityCompletionEventTypeAdd
Filter
personId
Map To An Element In Component's Response
personId2/idType
personId2/version
personId2/personId
personName/personId
personPhone/personId
personId2/isPrimaryId
personPerson/personId1
personPerson/personId2
personId2/personIdNumber
personCharacteristic/personId

5. Select the element from the component's response whose value needs to be mapped to this field in the current component. The filter at the top of the xpath attributes can be used to quickly find the xpath that is needed.

   In the case of the example, select the personId field from the C1-PersonAdd component.

   The test data field is populated with the selected element. "-->" is prefixed to the selected element name to differentiate it from the global variables and static test data.

   The following figure shows the selected personId field mapped between the components.



Edit Test Data

Log Message: Initiated account add transaction

Web Service Name: ATC1Account

Web Transaction Type: C1AccountAdd

Test Data

Element Name	Value	Action
personId	-->personId	
isMainCustomer	true	
isFinanciallyResponsible	true	

6. To view/update an existing mapping, click the **Test Data** drop-down list and select **Data From**. The **Map To An Element In Component's Response** screen highlights the existing mapping.

   Note:

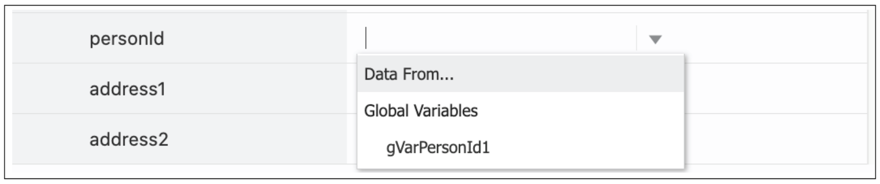
   - The mapping feature extracts the value from the web service response of the component used in the mapping and provides it as test data to the test data field to which it is mapped.
   - This feature can also be used in the **Pre-validations** and **Post-validations** sections to map a response value from the prior component as input to base or custom functions.

To map to list elements in a response:

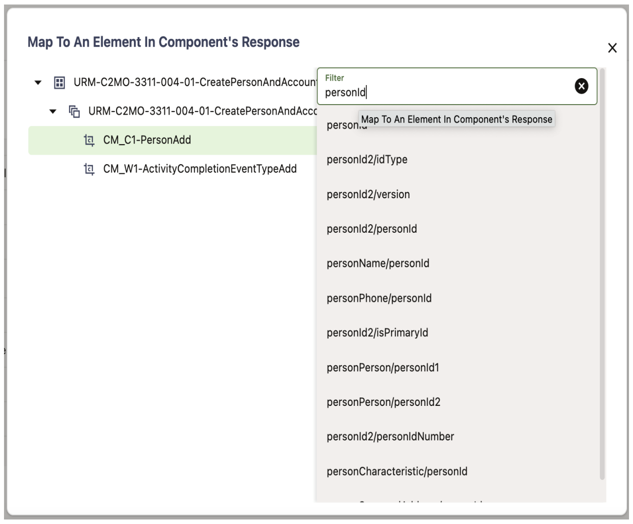
1. Navigate to the **Create/Update Flow Structure** for the test flow.
2. Navigate to the **Flow Test Data** page of the component into which test data should be linked to. Click the downward arrow corresponding to the test data field to show the drop-down list.
3. From the list, select **Data From...**

In the example, the test data page corresponds to C1-AccountAdd component in the flow, which has C1-PersonAdd component preceding the C1-AccountAdd component.

The flow tree structure up to the preceding component of the current component is displayed.

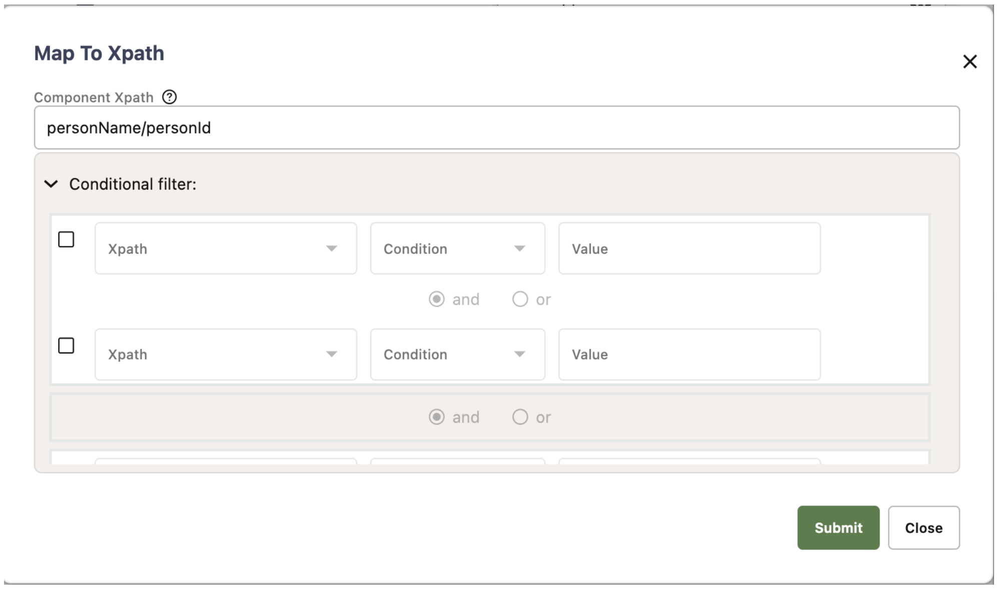


4. Click the component from whose response the value should to be mapped. The corresponding elements in the component is displayed.


Map To An Element In Component's Response
URM-C2MO-3311-004-01-CreatePersonAndAccoun
URM-C2MO-3311-004-01-CreatePersonAndAcco
CM_C1-PersonAdd
CM_W1-ActivityCompletionEventTypeAdd
Filter
personId
Map To An Element In Component's Response
personId2/idType
personId2/version
personId2/personId
personName/personId
personPhone/personId
personId2/isPrimaryId
personPerson/personId1
personPerson/personId2
personId2/personIdNumber
personCharacteristic/personId

5. Select the element from the component's response whose value needs to be mapped to this field in the current component.

   The following figure shows the option to map to a specific occurrence of the list element:

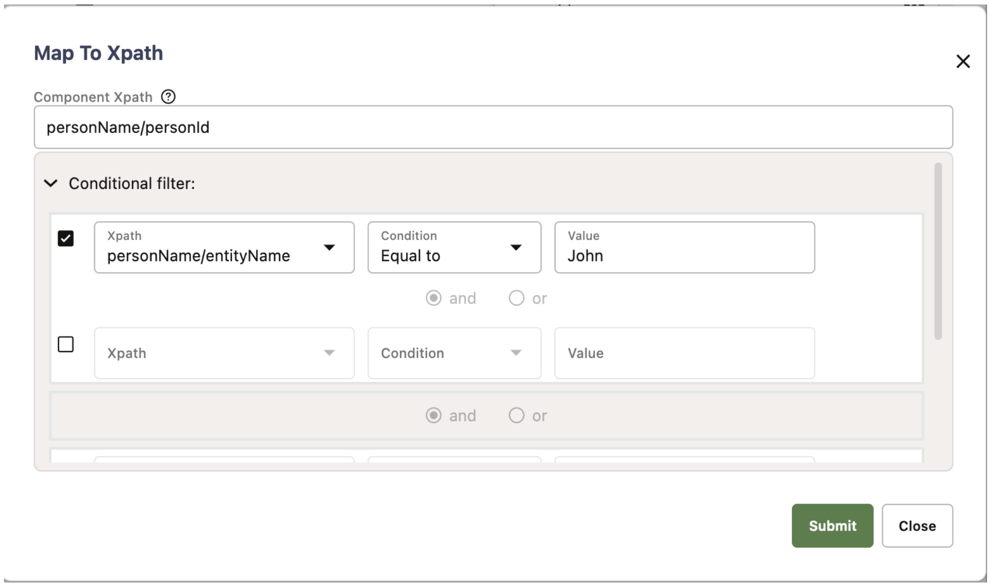


6. If a specific occurrence of the list element is already known, the xpath value can be updated to point to that specific occurrence of that list.

   Example: personName[2]/personId will map the personId from second occurrence of the personName list

7. If the specific occurrence is not known, conditions may be applied on one or more of the list elements to find the required value from the list.

   In the above example: To find the personId corresponding to the person with the name "John", the first condition can be enabled and the condition can be specified in the condition filter.



Map To Xpath

Component Xpath: personName/personId

Conditional filter:

	Xpath	Condition	Value
✓	personName/entityName	Equal to	John
	Xpath	Condition	Value

   The list element on which the condition needs to be specified should be selected in the xpath field and a condition type can selected from the condition drop down. Based on the condition type, the value can be provided.

   The supported conditions are:

   - "Less than", "Less than or equal to", "Greater than", "Greater than or equal to": These are applicable only to value type Number.
   - "Equal to", "Not equal to", "contains": These are applicable to value type String.
   - "Equal to" and "Not equal to" condition types as applicable to value type Number as well.

   If more than one condition needs to be specified, the appropriate conditions may be added by enabling succeeding condition filters. The corresponding join type also needs to be selected for multiple filters. The support join types are "And" and "Or".

8. After specifying all conditions, click **Submit** to save the conditions for mapping.

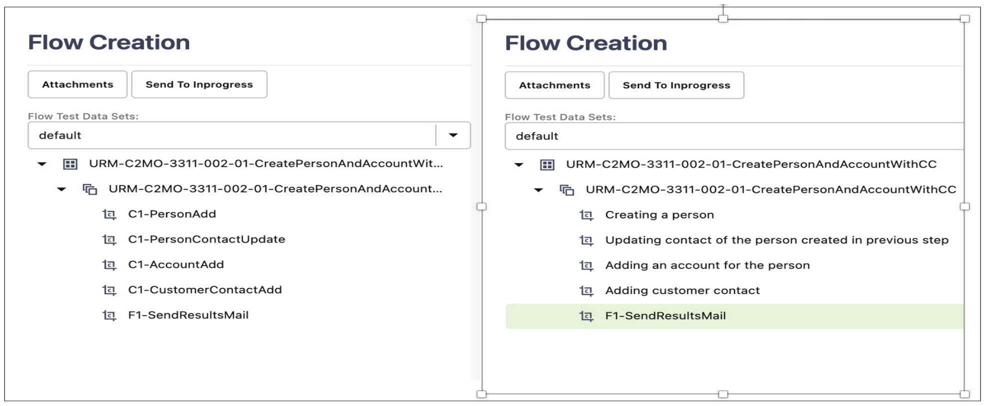
9. To review or update the conditions, click the **Test Data** drop-down list corresponding to this field and then select **Data From** option. The **Map to Xpath** window is displayed with the current conditions.

Annotating Components in a Flow

Annotations can be added for each component step to describe the purpose of each of the steps in an Oracle Utility Testing Accelerator test flow. This helps in understanding the functional aspects of the flow just by looking at the flow tree structure.

To add an annotation right-click a component step in the flow definition. Select **Update Component Description** and enter the description. The description replaces the default display of the component name in the flow step. The annotation can be removed or updated through the same process. Clearing the component description in the flow removes the annotation and displays the component name.

The following figure shows a flow without and with annotations:



URM-C2MO-3311-002-01-CreatePersonAndAccountWit...
URM-C2MO-3311-002-01-CreatePersonAndAccount...
C1-PersonAdd
C1-PersonContactUpdate
C1-AccountAdd
C1-CustomerContactAdd
F1-SendResultsMail

URM-C2MO-3311-002-01-CreatePersonAndAccountWithCC
URM-C2MO-3311-002-01-CreatePersonAndAccountWithCC
Creating a person
Updating contact of the person created in previous step
Adding an account for the person
Adding customer contact
F1-SendResultsMail

10.

Using Global Variables

This section explains the usage of global variables to pass data across components.

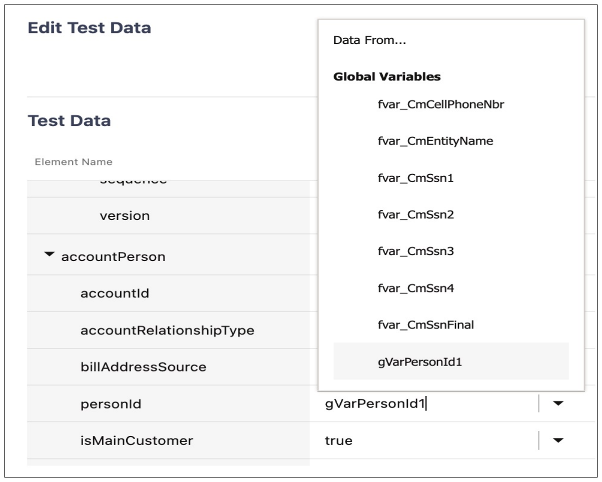
In a simple test flow, add a new person in Oracle Utilities Customer Care and Billing and add a customer contact for that person. The C1-CustomerContactAdd component is a dependent component and during runtime needs the ID of the person, created using C1-PersonAdd component within the same flow.

To add component references to a dependent component (C1-CustomerContactAdd):

1. In the **Edit Test Data** GUI of the C1-CustomerContactAdd component, find the component line that requires the personId as input.
2. Against the personId row, click the downward arrow to open the **Test Data** drop-down list. All variables exposed by the preceding components are diaplayed in the **Global Variables** section.

   In this case, personId exposed by the C1- PersonAdd component.

3. Select the personId variable from the drop down list and set it as test data against this element.



version	
accountPerson	
accountId	
accountRelationshipType	
billAddressSource	
personId	gVarPersonId1
isMainCustomer	true

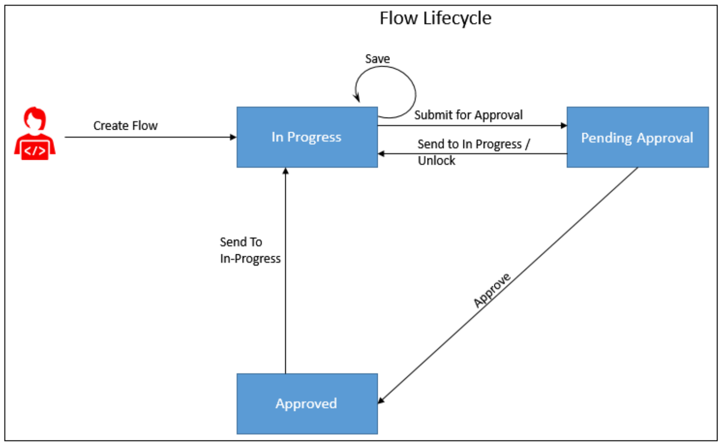
Each of the base components expose one or more global variables that hold the output of the component during execution. These global variables can be used to set the output of one component as the input of another component.

Additionally, global variables are also created to hold output of functions used in pre-validations or post-validations sections. These global variables are defined in the Output Variable field and are to be set against only functions that return an output value. These function based global variables are automatically pre-fixed with “fVar_” and these can be used as input in the test data of subsequent steps in the flow.

All the global variables are automatically suffixed with their occurrence number. If the C1-PersonAdd component is used twice in the flow, there will be two variables (gVarPersonId1, gVarPersonId2) one for each occurrence of the component, suffixed with it's occurrence number. Custom global variables can be defined and exposed by the components through the **Pre-Validations** and **Post Validations** sections. These variables are automatically prefixed with “fvar_”, to differentiate them from the component's base global variables. These variables are also suffixed with their occurrence number in the flow, similar to the global variables specified in the component definition.

Flow Lifecycle

The flow lifecycle begins once a flow is created in Oracle Utilities Testing Accelerator. It can exist in one of the several possible lifecycle states as shown in the following diagram.



The state of a flow determines the actions that can be performed on the component. The following table summarizes the component states, and the possible actions and roles that can take the actions.

Flow Lifecycle State	Permitted Actions	Role	Resultant State (post action)
In Progress	Submit for Approval	Developer, Approver, Administrator	Pending Approval
Pending Approval	Send to In Progress	Developer, Approver, Administrator	In Progress
	Unlock	Developer, Approver, Administrator	In Progress
	Approve	Approver, Administrator	Approved
Approved	Send to In Progress	Developer, Approver, Administrator	In Progress

Locking/Unlocking Flows

A flow is/can be locked in the following scenarios:

- To prevent any other users from editing the flow until the flow is complete.
- By default when the flow is submitted for approval.
- If the flow is unlocked while in the ‘Pending Approval’ state, its state is changed back to ‘In Progress’. However, if it is moved to ‘In Progress’ state from ‘Pending Approval’ state, it stays locked until the user unlocks it.

Click the Lock icon to lock/unlock a flow in Oracle Utilities Testing Accelerator.

Note that scripts can be generated only when the flow is in an “Approved” state.

Copying Flows

To copy a flow from one product to another product(s):

1. Login to the application.
2. Navigate to the **Flows** menu.
3. In the left navigation pane, expand the flow to be copied.

   Note: Use the **Search Component** field on the top of the approved component tree to find the components you need. The available components are listed similar to a type ahead search, with the product and module names under which the component is available. Select the appropriate component from the prompted results and the corresponding component is highlighted in the approved component tree.
4. Right-click the flow to be copied and select **Copy Flow**.
5. Navigate to the product to which the flow needs to be copied.
6. Right-click the product and select **Paste Flow**.
7. In the pop-up window, enter the name for the new flow.
8. Click **Paste flow**.

Reordering Components in a Flow

Note that a flow needs to be “In progress” for components to be re-ordered. You cannot re-order components in a flow that is locked by another user.

To change the sequence of components in a scenario:

1. Login to the application.
2. Navigate to the **Flows** menu.
3. In the left pane, right-click the flow for which components have to be reordered.

   Note: Use the **Search Component** field on the top of the approved component tree to find the components you need. The available components are listed similar to a type ahead search, with the product and module names under which the component is available. Select the appropriate component from the prompted results and the corresponding component is highlighted in the approved component tree.
4. Select **Create/update Flow Structure**.
5. Reorder the components in any of the following ways:
   - By drag-and-drop method
   - Moving the components to a desired location using menu
6. Right-click the component to be moved and select **Move Component.**

7. Move the selected component in any of the following ways:
   - Right-click another component in the flow and choose **Paste Component Above**.
   - Right-click another component in the flow and choose **Paste Component Below**.
   - Right-click a scenario in the flow and choose **Paste Component Inside**. This will move the selected component to the first position in the scenario.
8. After reordering the components, click **Save** to save the modified flow.

The popup closes and the flow tree is refreshed to reflect the correct order of components.

Copying Test Data from One Component to Another in a Flow

To copy the test data from one instance of a component to another instance of the same component within and across the scenario/flow:

1. Login to application and navigate to the **Flows** tab.
2. In the left navigation pane, right-click the flow and select **Create/update Flow Structure**.
3. Expand the flow.
4. Right-click a component from which you want copy the test data and select **Copy Test Data**.
5. Navigate to the component in the flow.
6. Right-click the component where you want to paste the test data and select **Paste**.

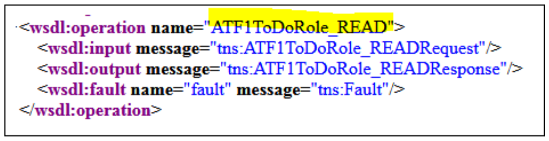
Fetching Component Test Data from an Utilities Application

Instead of manually entering the test data for a component, you can fetch the test data from a Utilities application (such as Customer Care and Billing, Meter Data Management, etc.). Provide the required WSDL name, operation name (typically read operation), the user credentials to access the WSDL and required fields that are mandatory for the specified operation. Oracle Utilities Testing Accelerator calls the WSDL with provided details and fetches the response from web service and populates in the test data of the component.

To fetch the test data:

1. Navigate to the **Flows** tab.
2. Select and right-click the flow and then click **Create/Update Flow Structure**.
3. On the **Flow Definition** page, navigate to the component. Right-click and select **Edit Test Data**.
4. On the **Edit Test Data** page, click **Fetch Test Data**.
5. On the **Fetch Test Data** page, enter in the web service name from which the test data has to be retrieved, operation (typically READ operation) to invoke and

necessary credentials and any required info (for example: to retrieve data related to ToDoRole).



```
<wsdl:operation name="ATF1ToDoRole_READ">
   <wsdl:input message="tns:ATF1ToDoRole_READRequest"/>
   <wsdl:output message="tns:ATF1ToDoRole_READResponse"/>
   <wsdl:fault name="fault" message="tns:Fault"/>
</wsdl:operation>
```

6. Enter the WSDL name and operation name. Select the user and flow configuration set. Click **Populate Form** to populate the form with all fields that the web service supports.

   Alternatively, use the URL and user credentials from the Flow/User Configuration properties file. Click **Use Configuration Properties** and select the appropriate flow/user configuration from the respective drop-down menus.

   Note: While creating an integration flow (a flow where components may send requests to more than one environment) prefix the URLs with keywords that can be used while specifying the WSDL to connect to.

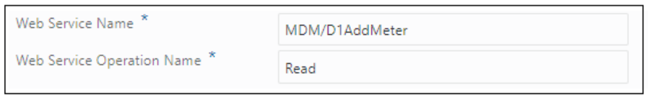
   Example: If a flow should connect to an Oracle Utilities Meter Data Management instance apart from the Oracle Utilities Customer Cloud Service instance, specify the three properties mentioned below either in the flow or user configuration properties.

   ```
   MDM=<MDM url>
   MDM_gStrApplicationUserName=johnDoe
   MDM_gStrApplicationUserPassword=enc(pj0TFjXMczsoyzmQ8GuXPt2PSyd
   O7VCbR2jhxtkUH06Fuz+zmChpGSCr241KggFC6FwgMg==)
   ```

   To fetch the test data for an Oracle Utilities Meter Data Management component:

   a. Select the flow/user configuration file from the drop-down menu.

   b. Enter the WSDL URL as shown below.



Web Service Name *	MDM/D1AddMeter
Web Service Operation Name *	Read

7. Provide the necessary key information to retrieve data (for example: in this case the ToDoRole name) and click **Fetch Test Data**.

8. After the data is retrieved from the target application, review/validate it. Click **Save and Close**.

Unit Testing a Component in a Flow

As part of the flow development, test data needs to be provided for a component in a flow. After the test data is added, a component may have to be unit tested to make sure that the provided test data gets the flow working as expected.

To unit test a component that is part of a flow:

1. Navigate to the **Flows** tab.

2. Select and right-click the flow. Click **Create/Update Flow Structure**.

3. On the **Flow Definition** page, navigate to the component. Right-click and select **Edit Test Data**.
4. On the **Edit Test Data** page, provide the web service name in the component's test data. Also, provide the operation name/transaction type in the appropriate component's test data field. Fill up all the test data for the component as necessary.
5. Save the test data and click **Close**.
6. On the **Flow Definition** page, right-click the component and select the test component.

   This will open up the conversational test data entry screen for the component.
7. Select the flow and user configuration needed to test the component. Click **OK**.
8. Click **Send** to post the request to the application being tested.
9. After receiving the response, validate it (for errors) to see if the test data provided is appropriate. Else, adjust the test data and click **Send** to send a new request to the application being tested.
10. Repeat step 9 till the expected response is obtained.
11. Once the appropriate test data is set and the response is as expected, click **Save** to save the updated test data into the component's test data in the flow.

    Note: Clicking **Save** will only replace any static values provided in the component's test data for a given element. If the **Test Data** field for a component line contains a global variable, the variable in the field will not be replaced by the static data in the request being saved.

Bulk Replacing Component Test Data in Multiple Flows

The **Replace Test Data** feature allows to replace/edit value of one or more elements of a component in multiple flows, at once. If the component is used in multiple flows, select all or specific flows in which the test data needs to be changed for the component. This feature allows an easy way to change an existing test data value in several flows to a new value to reflect change in test data setup.

- Access the option to replace component test data. Navigate to the **Component** menu and right-click the component whose test data needs to be edited/ replaced. Click **Find Component Usage**.
- In the **Find Component Usage** interface, select the flows under which the component test data needs to be replaced. Select the checkbox next to the flow name(s) and click **Replace Test Data**.
- Click **Add Row** to add a row to choose the element of the component whose specified existing test data value needs to be replaced with a new value. To replace the test data of multiple elements of the component, add multiple rows that specify the xpath of the element whose test data value needs to be replaced.
- Set an existing element value to blank or enter test data for component element whose current test data value does not exist. Use #EMPTY as the value in appropriate field (**Existing Value/New Value**).
- Specify a particular occurrence of an element in a group element. Indicate the index of the element in the group. To replace the zip code of second address group element, specify similar to /user/address[2]/zipCode and specify the **Existing Value** and **New Value**.

- Use wildcard "%" in the **Existing Value** field to indicate replacing of any existing value that matches the pattern. Example: To replace a field value that contain anything that starts with a “Building” to “Apartment 123” specify the **Existing Value** as “Building%” and **New Value** as “Apartment 123”.

Flow Subroutines

A flow subroutine is a flow that can be included/used in other flows. It improves reuse of a flow. For example: Many test cases expect a ‘V’ setup to be available before being able to verify some business test cases. In this case, create a flow for ‘V’ setup and all other test case flows can reuse this ‘V’ setup flow as a subroutine in their respective flows. Specify any variables/parameters that the subroutine expects from the parent flow and also expose any variables/parameters that are created in the subroutine. Right-click **Edit Test Data** on the flow subroutine component in the flow.

Note: The default test data set of the subroutine is used when the subroutine is executed as part of the parent flow.

- For a given flow test data set pertaining to the flow calling the subroutines, the test data set of the subroutine can be selected in the subroutine's test data GUI. Right-click the subroutine and select **Edit Test Data**.
- Only the variables defined in the default test data set of a subroutine flow can be used as input or output of the subroutine. This is to ensure standardized API for the subroutine.

Adding Subroutines to a Flow

To add an existing flow as a subroutine in a flow:

1. Right-click the scenario/component in the flow.
2. Select **Add SubRoutine**.
3. Specify the **Release**, **Product Family**, and **Product** to filter the flows.
4. From the **Flows** drop-down list , select the flow to be included.
5. Click **Add** to add it to the current flow as a subroutine.

   Note: A flow cannot be added to itself as a subroutine. Make sure not to nest the subroutines to include other subroutines.

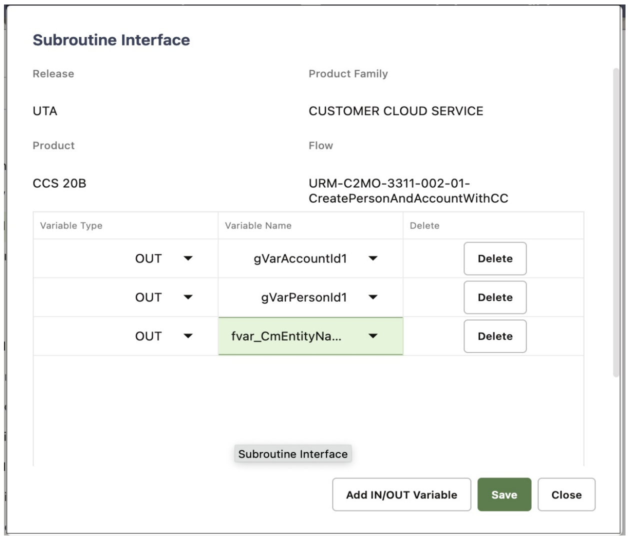
Defining Input-Output Parameters of a Subroutine

To define input and output parameters for a subroutine:

1. Navigate to the **Flows** tab.
2. Right-click the flow name in the product and navigate to module > flow tree structure in the left pane. Select **Define Subroutine Interface**.
3. Specify the parameters the subroutine expects from the calling flow and the parameters the subroutine exposes to the calling flow.

   Example: If the subroutine creates an Account, it expects a personId value to be provided for it to create an Account. After an account is created, it returns the accountId. The subroutine should be defined with one input variable “personId” and another output variable “accountId”.

4. Add additional input/output variable.
   a. Click **Add IN/OUT Variable**.
   b. Enter the name and parameter type.
   c. Click **Save**.



Subroutine Interface

Release	Product Family
UTA	CUSTOMER CLOUD SERVICE

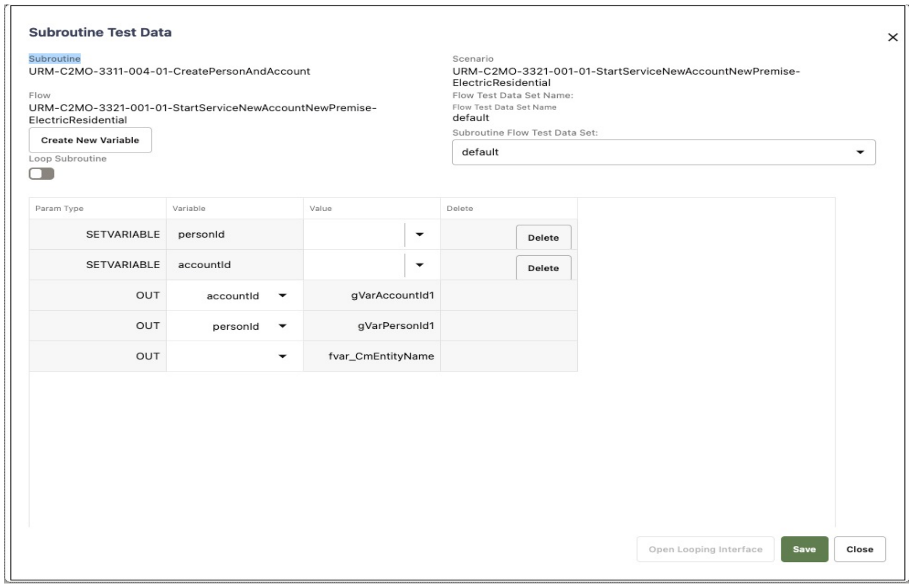
Product	Flow
CCS 20B	URM-C2MO-3311-002-01-CreatePersonAndAccountWithCC

Variable Type	Variable Name	Delete
OUT	gVarAccountId1	Delete
OUT	gVarPersonId1	Delete
OUT	fvar_CmEntityNa...	Delete

   This figure shows a subroutine interface definition for a flow that creates both a person and account and exposes personId and accountId as outputs, so they can be used by the calling flow.

5. After a subroutine is added to a flow calling a subroutine, map the input or output variable(s) of the subroutine.
   a. Right-click the subroutine in the flow tree structure of the calling flow and select **Edit Test Data**.
   b. Map the input/output variable of the subroutine to a variable in the calling flow.

   Example: The subroutine might be exposing accountId as the variable. To use the exposed variable in the calling flow, create a new variable in the calling flow using **Create New Variable**. Map the output accountId variable from the subroutine flow to the newly created variable in the calling flow. This new variable can be used in the test data GUI of any component that succeeds the subroutine in the calling flow.



Subroutine Test Data

Subroutine
URM-C2MO-3311-004-01-CreatePersonAndAccount

Flow
URM-C2MO-3321-001-01-StartServiceNewAccountNewPremise-ElectricResidential

Scenario
URM-C2MO-3321-001-01-StartServiceNewAccountNewPremise-ElectricResidential

Flow Test Data Set Name:
Flow Test Data Set Name
default

Subroutine Flow Test Data Set:
default

Loop Subroutine

Param Type	Variable	Value	Delete
SETVARIABLE	personId		Delete
SETVARIABLE	accountId		Delete
OUT	accountId	gVarAccountId1	
OUT	personId	gVarPersonId1	
OUT		fvar_CmEntityName	

This figure shows the **Edit Test Data** screen for a subroutine that outputs a personId and accountId. New variables, personId and accountId are created and mapped to the outputs of the subroutine, which are gVarAccountId1 and gVarPersonId1.

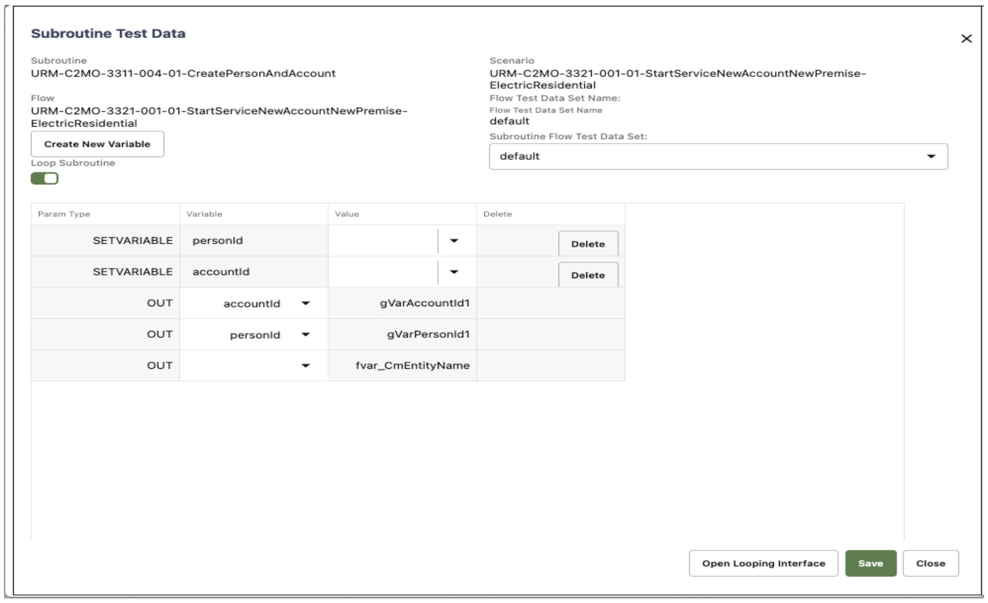
Running Subroutine in a Loop

To achieve the capability to loop one or more components within a flow, create the component(s) as a subroutine. A subroutine in a loop can be run either a fixed number of times or until an exit condition is satisfied. Example: If the subroutine creates a meter read, the user can loop the subroutine 24 times to create a meter read for every hour of a particular day.

> **Note**: This feature only works with simple subroutines and not intended for nested subroutines. The flow re-run (from the point of failure) feature will not work if the flow has a loop defined.

To define subroutine looping, add the sub-routine flow to the parent flow. To specify the loop criteria and other details for the subroutine, open the **Test Data** page of the subroutine within the parent flow. Enable the **Loop** subroutine switch and click **Open Looping Interface** to provide the criteria for executing the subroutine in a loop.

The following figure shows the **Loop** subroutine switch and **Open Looping Interface**.



Subroutine Test Data

Subroutine
URM-C2MO-3311-004-01-CreatePersonAndAccount

Flow
URM-C2MO-3321-001-01-StartServiceNewAccountNewPremise-ElectricResidential

Scenario
URM-C2MO-3321-001-01-StartServiceNewAccountNewPremise-ElectricResidential

Flow Test Data Set Name:
Flow Test Data Set Name
default

Subroutine Flow Test Data Set:
default

Loop Subroutine

Param Type	Variable	Value	Delete
SETVARIABLE	personId		Delete
SETVARIABLE	accountId		Delete
OUT	accountId	gVarAccountId1	
OUT	personId	gVarPersonId1	
OUT		fvar_CmEntityName	

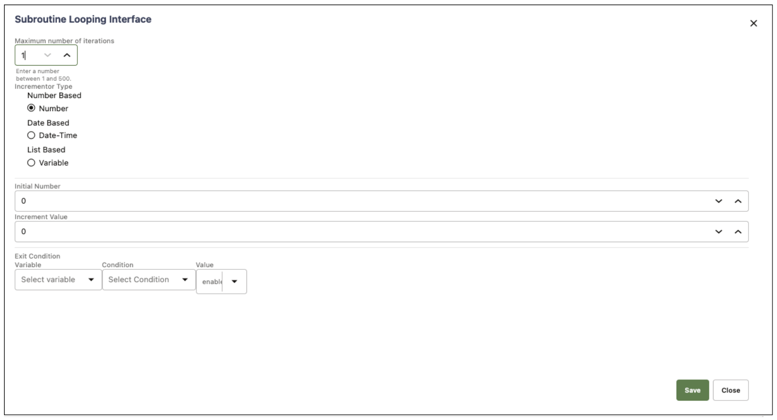
Open Looping Interface provides the following options:

- **Maximum Number of Iterations**: Represents the maximum number of iterations that the subroutine will be run for, irrespective of the exit criteria specified. This is useful in scenarios where the subroutine can wait but not run indefinitely (either due to wrong test data/unexpected application behavior). Use this option to run the subroutine a fixed number of times.

  Example: If the subroutine creates a person entity in the application, specify the value 10 to run the subroutine for 10 times resulting in creation of 10 person entities in Oracle Utilities Customer Cloud Service.

- **Incrementor Type**: Indicates if the loop incrementor would be a number or a date-time or list variable based, user can choose date as incrementor in case the subroutine creates meter reads for a meter and user wants to run the subroutine to create meter reads in a certain date range.
- **Initial Number/Initial Date-Time**: Based on the **Incrementor Type** selected, specify the starting number or the starting date-time to be used. This is not applicable for list variable based looping.
- **Increment Value**: Based on the **Incrementor Type** selected, specify by how much the initial number would be incremented by (either a number or in days, hours, minutes and seconds). This is not applicable for list variable based looping.

The following figure shows a subroutine looping interface with the incrementor type selected as number.



Subroutine Looping Interface

Maximum number of iterations: 1

Enter a number between 1 and 500.

Incrementor Type

Number Based
[✓ Number]

Date Based
Date-Time

List Based
Variable

Initial Number: 0

Increment Value: 0

Exit Condition

Variable: Select variable
Condition: Select Condition
Value: enabl

- **Exit Condition**: The exit condition controls when the subroutine loop would end before the Maximum Number of Iterations. This is not applicable for list variable based looping. Specify the exit condition as follows:
  - **Variable**: Can be either based on a value of the incrementor variable or any OUT variable of the subroutine.
  - **Condition**: Specifies if the value of variable should be less than, greater than, equal to etc. of the value that is specified for the Exit Condition.
  - **Value**: The value that the variable is compared with using the condition specified above, to check if the loop needs to be terminated or continued.

    Example: Assuming that the Incrementer Type was number and Initial value was 1 and Increment Value was 1 then the below values for the Exit Condition means that the subroutine is looped until the Incrementer value is equal to 5.

    Variable: "Incrementer" Condition: "equals to" Value: "5"

    The incrementer is a global variable that can used for setting incrementing test data in the flow.

  Note: To specify the exit condition value when using a date, the date format to be specified is the same as the initial date format. To use the incrementer date as an input to a test data field, the date format may be converted to suite the test data needs, using the delivered functions in the COREDATETIMELIB or if necessary, a custom function may be created.

  - **List variable based looping**: Subroutine looping can be used to iterate through a list of values stored in a variable.

    Example: A list of values retrieved from a component's response, such as accountIds retrieved using a search component. The setVariableFromResponseList function from CORERESPONSEUTILIB can be used to retrieve a list of values from the response into a variable. Similarly, the output of any preceeding subroutine iterations in the same flow can be stored in a variable using the function "appendValueToList" from the library "CORESTOREVALUES".

    - After the incrementor type is set as "Variable" in the Subroutine looping interface GUI, the select variable field will be enabled.

- Select the variable containing the list of values that need to be iterated through, as part of the subroutine looping runs. Click **Save** to set the subroutine looping based on list values in a variable.
- The subroutine iterations will continue until the list of values in the variable is exhausted or until it reaches the maximum number of iterations specified, which ever comes first.
- For each iteration through the list of values, the corresponding value from the list will be automatically stored in the incrementer variable, which can be used as input to any component within the subroutine.

Conditional Bypass of Components in a Flow Run (Skip Component)

This feature supports finer control of a flow run. It can be specified whether a component has to be skipped or run as part of the flow run, based on the custom conditions in the component's test data in the flow. The feature can be used to selectively run or skip one or more components based on the outcome of the previous component step or based on the Flow Test Data set that is used, as part of the flow run.

To bypass/skip the running of a component within a flow:

1. Login to the application and navigate to the **Flows** tab.
2. On the left navigation pane, right-click the flow name and select **Create/Update Flow Structure**.
3. On the right pane, expand the flow structure.
4. Right-click a component and select **Edit Test Data**.
5. In the component's **Test Data** section, click the **Pre-Validations** tab.
6. Add the “skipStep” function from the “CoreUTAOps” library. Set the test data to “true” so that the component may be skipped during the flow run.
7. If the component should not be skipped during the flow run, set the test data for the function to “false”.

Multiple test data sets can be used to set different test data for the function making sure that the specific components in which the function exists may be skipped or run based on the input to the function.

Skipping more than one component in a flow

Additionally, the function can take in global variable which holds the values true or false as input. If certain components in a flow have to skipped during a run, then set a global variable in the **Pre Validations** section of the first component. The global variable can be used as an input to the skipStep function in various components. Changing the value of the global variable (using flow level test data sets) will make sure that the defined set of components are either skipped or run as part of the flow run.

Skipping components based on outcome of a component step

In cases where certain component/components have to be skipped based on the outcome of a component step result in a flow, the “CoreVerifyConditionVariableLib” library can be used. The functions in the library can be used to validate the response for a component request, much like the functions in the WSValidateLib that are used to validate a response. But, the functions in the “CoreVerifyConditionVariableLib” library output either a false or true value, but do not fail or pass the test.

The output of the functions in “CoreVerifyConditionVariableLib” can be stored into a global variable and then the global variable may be used as input to the “skipStep” function. This allows conditional bypass/running of a component based on the outcome of another component.

> **Note**: If a certain set of components have to be skipped as part of the flow run using this feature, add the “skipStep” function in the **Pre Validations** section of each of the components.

Component Test Data Sets

The component level test data sets allow to create test data sets specific to the component. These can be thought of as master test data sets for a component.

Example: For a C1-PremiseAdd component in Oracle Utilities Customer Cloud Service, the component level test data sets can be residential premise test data set and commercial premise test data set. Every time the C1-PremiseAdd component is used in a flow, instead of filling up the test data manually, the appropriate component test data set can be selected which automatically populates the test data from the component test data set into the component's test data GUI in the flow. This reduces a lot of work while providing test data in a flow.

Component test data sets save current test data of a component with a given name, which can later be retrieved and auto-populated it into another instance of the component either in the same flow or another flow.

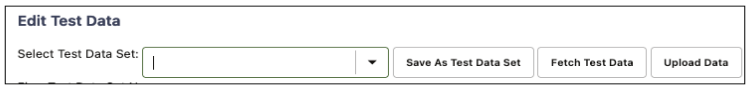
Creating Reference Test Data for a Component

Save the current test data of a component for future use by saving it as a component test data set. After saving the test data set, the component can be populated with the test data contained in a **Test Data Set**. On the **Edit Test Data** page, select **Test Data Set** from the drop-down menu.

To create a test data set:

1. Login to Oracle Utilities Testing Accelerator.
2. On the **Flows** menu, navigate to the flow in which the component is used. Right-click and select **Create/Update Flow Structure** to open the **Flow Definition** page.
3. Navigate to the component for which the test data set needs to be created. Right-click the component and click **Edit Test Data**.
4. Click **Save As Test Data Set** to save the test data of the component. Specify the name of the test data set and click Save. Then, click **OK** to return to the **Edit Test Data** page.

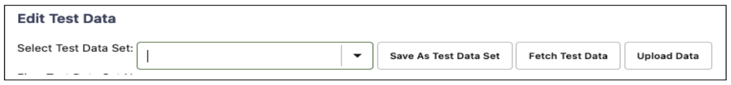
   > **Note**: If a test data set with the same name already exists, the application asks for confirmation to overwrite the test data.



Loading Test Data from a Component Test Data Set

To populate the test data from a given component test data set:

1. Login to Oracle Utilities Testing Accelerator.
2. On the **Flows** menu, navigate to the flow in which the component is used.
3. Right-click the flow and select **Create/Update Flow Structure**.
4. On the **Flow Definition** page, navigate to the component for which the test data set needs to be created.
5. Right-click the component and then click **Edit Test Data**.
6. Select the test data set from the drop-down menu. The test data gets populated into the component.



Deleting Component Test Data Sets

To delete one or more component test data sets for a given component:

1. Login to Oracle Utilities Testing Accelerator.
2. On the **Components** menu, navigate to the component for which the test data set needs to be deleted.
3. Right-click the component and select **Delete Test Data Sets**.
4. Select the test data set from the popup window. Click **Yes** to delete the selected component test data sets. The test data set/sets should be deleted.

Loading Test Data from a .csv File

Populate the test data of a component using the component's generated databank and filling in the data in the databank. Note that this upload feature is not supported for components with nested groups.

Note:

- The upload will fail if the databank is not in the same format as the generated databank for the component. The upload capability is limited to test data that does not have multilists/groups. It is recommended to use the component test data sets and flow test data sets in place of CSVs, as the features are designed to provide better reusability of test data.

To upload test data using the .csv file:

1. Login to Oracle Utilities Testing Accelerator.
2. Navigate to the **Flows** menu and select the flow in which the component is used.
3. Right-click the flow and select **Create/Update Flow Structure**.
4. On the **Flow Definition** page, navigate to the component for which test data set needs to be created. Right-click the component and click **Edit Test Data**.
5. Click **Load Data**. From the window displayed, drag-and-drop the .csv file to upload.
6. Click **Save** to start loading the test data.

Flow Test Data Sets

Flow Test Data Sets allow users to create and manage multiple test data sets for the same flow. These test data sets can be used for selective or iterative run of the flow. This feature is aimed at creating multiple sets of test data per flow and swap between these test data sets before running a flow.

The Flow Test Data sets store the data specified against all the components within the flow, as a single data set. Users can copy the data set to create a new test data set and update it to reflect any changes. This feature has been provided to enhance reusability where test cases which do not differ in the flow structure, but only in the test data that is used, can be automated without having to recreate a test automation flow.

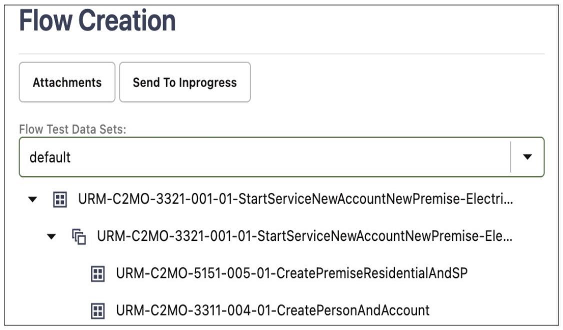
For more information, see the Iterative Flow Run section.

Creating Flow Test Data Sets

To create a flow test data set:

1. Login to Oracle Utilities Testing Accelerator.
2. On the **Flows** menu, navigate to the flow for which the test data set should be created.
3. Right-click and select **Create/Update Flow Structure**.
4. On the **Flow Definition** page, click **Add** under **Flow Test Data Sets**.
5. Specify the data set name and click **Add**.
6. Click **Save As** to save the test data of the flow.
7. Specify the name of the test data set and click **OK**.

   Note: If a test data set with the same name already exists, the application asks for confirmation to overwrite the test data.
8. If the flow definition includes a subroutine, select the test data set for the subroutine. Right-click the subroutine and select **Edit Test Data**. Select the test data set from the **Subroutine Flow Test Data Set** drop-down list.
9. To edit or add test data against a flow test data set, the corresponding flow test data set has to be selected on the flow structure definition pane.
10. Navigate to the **Edit Test Data** page of each component in the flow and update/ add the test data.



Flow Test Data Sets:
default

- URM-C2MO-3321-001-01-StartServiceNewAccountNewPremise-Electri...
  - URM-C2MO-3321-001-01-StartServiceNewAccountNewPremise-Ele...
    - URM-C2MO-5151-005-01-CreatePremiseResidentialAndSP
    - URM-C2MO-3311-004-01-CreatePersonAndAccount

This figure shows flow test data sets option for the selected flow.

Loading Test Data from Flow Test Data Sets

To populate the test data from a given test data set:

1. Login to Oracle Utilities Testing Accelerator.
2. On the **Flows** menu, navigate to the flow in which the component is used.
3. Right-click the flow and select **Create/Update Flow Structure**.
4. On the **Flow Definition** page, select the test data set to be populated in the flow from the **Flow Test Data Sets** drop-down list.

   To edit or add test data against a flow test data set, the corresponding flow test data set has to be selected on the flow structure definition pane. Navigate to the **Edit Test Data** page of each component in the flow and update/add the test data.
5. If the flow definition includes a subroutine, select the test data set for the subroutine. Right-click the subroutine and select **Edit Test Data**. Select the test data set from the **Subroutine Flow Test Data Set** drop-down list.

Adding Email Capabilities to Flows

For Eclipse based test run

The test run report can be sent to users as an email. To add email capabilities in a flow, add the component line mentioned in the following table towards the end in the flow.

Usage Details	Value
Keyword	FUNCTIONCALL
Object	wSCOMMONLIB
Function Name	generateAndSendReport

The email related properties have to be specified in the configuration.properties file located under <UTA-CLIENT>/etc folder, where <UTA-CLIENT> is the location of the folder where the UTA_Client_FolderStructure.zip was extracted.

Update the following values as mentioned to configure the email:

```
#Email Details
gStrSMTP_HOST_NAME=<mention your SMTP server details here>
gStrSMTP_PORT=<mention SMTP port here>
gStrTO_EMAIL_RECIPIENTS=<mention target user/group email id>
```

For Browser based test run

The email capability allows the flow run summary report to be e-mailed to the specified email accounts. Specify the email account IDs to which the report needs to be sent in the flow configuration set or the user configuration set. The email capability for a flow or flow set run is auto enabled if the user configuration set or flow configuration set has the email property defined. The SMTP email server details should be entered in the Oracle Utilities Testing Accelerator application for email capability to work.

Note: The generateAndSendReport function in WSCOMMONLIB is redundant and need not be included in the flow as the last step for browser based (work bench) flow run.

Support for HTTPS Web Services

While connecting to the edge applications that use the HTTPS protocol, before executing the Oracle Utilities Testing Accelerator scripts, the security certificate should be saved on the system from where the Oracle Utilities Testing Accelerator test cases are being executed. Register the certificate in the Java security certificates repository.

To import the security key store into Java key store:

1. Enter the URL (HTTPS) of the application in the browser (Example: Internet Explorer).
2. Click **Continue to this Website (not recommended)** link on the **Security certificate** page.
3. Click **Certificate error** in the address bar.
4. Click the **View certificates** link on the **Certificate Invalid** pop-up window.
5. On the **Details** tab, click **Copy to File**.
6. Click **Browse** and select the file you want to export. Click **Next**.
7. Review the settings and click **Finish**.
8. Login to the machine where this certificate has to be imported into the Java key store, and open the command prompt.
9. If the Java path is not set in the environment variables, navigate to the Java/jdk/bin directory and execute the following command:

   ```
   keytool -import -alias <Alias Name> -file <path of the file which
   we exported in Step 7> -keystore <Java keystore path>
   ```

10. Enter “changeit” as the **Password**.
11. Click **Yes** to import the certificate. The property file attributes for HTTPS requests are as follows:

    ```
    ##Handling Https WSDL - Java key Store
    gStrJavaKeyStorePath=C:\\jdk8\\jre\\lib\\security\\
    gStrJavaKeyStorePwd=changeit
    ```

The setup is ready to process the HTTPS requests.

Support for Integration Flows

To test an end-to-end flow, the functional testing typically involves accessing different applications integrated for running the flow. In order to execute the integration tests, create flows that span multiple applications. These flows send/receive information to and from different applications.

To perform complete end-end tests, add the URL as an attribute in the properties file as follows:

configuration.properties

```
# Integration Environments gStrMWMApplication=https\://<server
name>\:<port>/ouaf/webservices/ gStrCCBAppliation=https\://<server
name>\:<port>/ouaf/webservices/ gStrMDMAppliation=https\://<server
name>\:<port>/ouaf/webservices/
```

Following is the example where the Oracle Utilities Customer Care and Billing service AT-C1Premise is called.

Test data:

```
Calling CCB service: gStrCCBAppliation/AT-C1Premise
Calling MWM Service: gStrMWMApplication/AT-M1CrewShift
```

Note that this test data is a combination of environment and application service names.

In cases where the integration environments used for testing have different authentication credentials (userID/password), support is provided for setting the username and password for each environment. To enable this support, in the configuration.properties file, provide the user name/password variable prefixed with the environment URL variable, separated by an underscore.

Following is an example that extends the above integration environments example to use different user names and passwords for each environment:

configuration.properties

```
# Integration Environments gStrMWMApplication=https\://<server
name>\:<port>/ouaf/webservices/
gStrCCBAppliation=https\://<server name>\:<port>/ouaf/webservices/
gStrMDMAppliation=https\://<server name>\:<port>/ouaf/webservices/
```

Setting user name/password for a Oracle Utilities Customer Care and Billing service:

```
gStrCCBAppliation_gStrApplicationUserName=<%CCBUsername%>
gStrCCBAppliation_gStrApplicationUserPassword=<%CCBPassword%>
```

Setting user name/password for a Oracle Utilities Mobile Workforce Management service:

```
gStrMWMApplication_gStrApplicationUserName=<%MWMUsername%>
gStrMWMApplication_gStrApplicationUserPassword=<%MWMPassword%>
```

> **Note**: If the integration flow spans across multiple environments that use common user credentials (user name and password), then the above setting is not required.

The sample configuration file in this case is as follows.

configuration.properties

```
# Integration Environments
gStrMWMApplication=https\://<server name>\:<port>/ouaf/webservices/
gStrCCBApplication=https\://<server name>\:<port>/ouaf/webservices/
gStrMDMApplication=https\://<server name>\:<port>/ouaf/webservices/
gStrApplicationUserName=<%CommonUsername%>
gStrApplicationUserPassword=<%CommonPassword%>
```

Configuring Integration Flows for UTA Workbench Based Run

By default, Oracle Utilities Testing Accelerator automatically constructs the web service end point URL based on the web service name provided in the flow test dataand the application URL provided in the flow/user configuration sets. To configure a component in a flow to post a request to a different application as part of an integration flow, the following configuration needs to be added to either the flow configuration set or the user configuration set.

Define the environment configuration properties pertaining to the second Oracle Utilities Enterprise application with which integration testing should be done. Example: Integration testing between Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management.

Prefix them with a custom keyword. This keyword is used in the component's test data in a flow to specify the application configuration context to a component for running it.

Example: Assume that Oracle Utilities Customer Care and Billing is the application to be used with Oracle Utilities Meter Data Management for integration testing where the Oracle Utilities Meter Data Management environment details are set as default against the flow and user configuration sets and the Oracle Utilities Customer Care and Billing application's access details are to be specified. Assume the custom keyword chosen to specify the Oracle Utilities Customer Care and Billing details is “CCB”. In the flow configuration set or user configuration set, use the “Add Property” option, and add the following properties.

Property Name	Property Value
CCB	<CCB url>
CCB_gStrApplicationUserName	<username>
CCB_gStrApplicationUserPassword	<encryptedpassword>

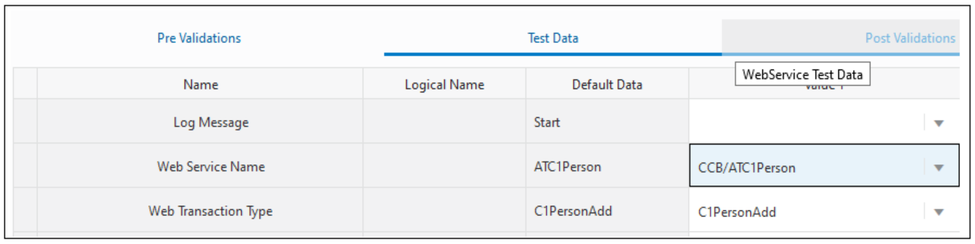
CCB property holds the external web service end point URL prefixed up to but not including the web service name. If the web service end point URL for the WSDL of person object in CCB is https:myccbserver.mycompany.com/webservices/ ATC1PersonAdd?WSDL, the CCB property should hold the value - “myccbserver.mycompany.com/webservices/”.

The properties CCB_gStrApplicationUserName and CCB_gStrApplicationUserPassword hold the user name and password respectively for authenticating the user posting the web service request to Oracle Utilities Customer Care and Billing.

The integration flow in Oracle Utilities Testing Accelerator may contain a mix of components to two or more Oracle Utilities Enterprise applications. To get a component in flow to post a request to the on-premise Oracle Utilities Enterprise applications, the web service name in the component step's test data should be prefixed with the keyword.

In the example where Oracle Utilities Customer Care and Billing is the application with which integration testing needs to be performed for Oracle Utilities Meter Data Management and “CCB” is the keyword, the web service name for the C1-PersonAdd component's test data in the integration flow should be specified as “CCB/ ATC1PersonAdd”. This ensures that the C1- PersonAdd component posts the request to Oracle Utilities Customer Care and Billing whose configuration has been specified in the flow configuration set or user configuration set using the keyword prefix “CCB”.

The figure below shows a sample usage of prefix keyword in component step’s test data, to specify the application’s context.



Name	Logical Name	Default Data	Value
Log Message		Start	
Web Service Name		ATC1Person	CCB/ATC1Person
Web Transaction Type		C1PersonAdd	C1PersonAdd

During the integration flow run, the flow configuration set and user configuration set that have the required environment properties should be selected.

More than one such configuration can be set so that a test flow can interact with multiple applications. Each application can have its own custom keyword which is used while specifying the web service name in the component step's test data in a flow.

Running Test Flows

This section focuses on executing a test flow.

- Running Test Flows Using a Browser
- Iterative Flow Run
- Stopping Flow Run on Validation Failure
- Stopping Flow Run Manually
- Viewing Flow Run Details
- Viewing Flow Run Failure Details
- Viewing Flow Run Summary Report
- Conversational Test Data Management
- Generating Oracle Utilities Testing Accelerator Scripts
- Importing the Generated Oracle Utilities Testing Accelerator Script into Eclipse IDE

Running Test Flows Using a Browser

To run a test flow using a browser:

1. Login to Oracle Utilities Testing Accelerator.
2. On the **Flows** menu, select the product to which the flow belongs. Right-click the test flow and select **Run Flow**.

   Note: The test flow can be run only if it is in either “Pending Approval” or “Approved” state.
3. Select the **Flow Configuration** and **User Configuration** to be used to run the test flow.

4. Click **Run** to start the test flow run.

   Note: For more details about flow configuration and user configuration, refer to the Runtime Configuration for Flow Run (For Run Using Browser) section.

5. On the **Flow Run** page, the run details are displayed.

   The tree shows each of the scenarios and components of the flow. Select a component in the tree to display the corresponding request and response details. Click **View Logs** to view the logs of the run.

Iterative Flow Run

To run a test flow using a browser:

1. Login to Oracle Utilities Testing Accelerator.
2. On the **Flows** menu, select the product to which the flow belongs.
3. Right-click the test flow and select **Run Flow**.

   Note: The test flow can be executed only if it is either in “Pending Approval” or “Approved” state.

4. Select the Flow Configuration and User Configuration used to run the test flow.
5. Select **Iterative** as the **Flow Run Type**.
6. In the **Number of Iterations** field, specify the number of iterations to run the flow.
7. If the flow has more than one flow test data set, specify more than one flow test data set to be used during the iterative run. Select the checkbox next to the flow test data set name.

   Note: Based on the number of iterations and flow test data sets specified, application will use test data sets for each of the iterations. Example: If number of iterations is specified as 10 and two flow test data sets are selected, the application runs the flow with first data set for first iteration and second data set for second iteration, and switch back to first data set for 3rd iteration and so on. At the end of 10 flow iterations, there would be total of 5 runs of the flows with first data set and 5 run of the flow with second data set.

8. Click **Run** to start the test flow run.

   Note: For more details about flow configuration and user configuration, see Runtime Configuration for Flow Run (For Run Using Browser).

The run details are displayed on the **Flow Run** page.

The tree shows each of the scenarios and components of the flow. Select a component in the tree to display the corresponding request and response details. Click **View Logs** to view the run logs.

Stopping Flow Run on Validation Failure

By default, the flow run continues until the last component in the flow even if there is a validation failure for a component in the flow. This behavior can be changed to make the flow run stop when a validation fails by setting the property "continueExecutionOnFailure" in the user or flow configuration to "false".

Stopping Flow Run Manually

When a flow starts running, the **Stop Flow** button is enabled in the **Flow Run** page.

To stop a running flow, on the **Flow Run** page showing the current running state of a flow, click **Stop Flow**. The flow run will be stopped.

Note that for flows including subroutines, the parent flow that calls the subroutines should be stopped to stop the flow run. Individual subroutine flow runs cannot be stopped. A stopped flow cannot be resumed.

Viewing Flow Run Details

To view the run details of a flow:

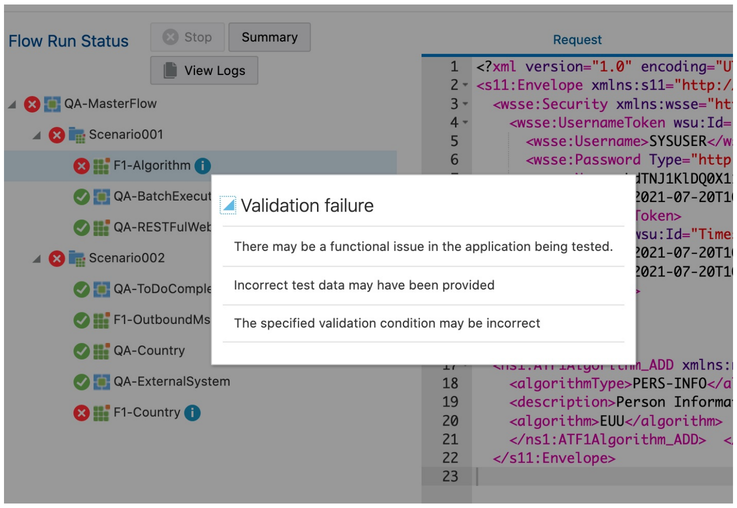
1. Login to Oracle Utilities Testing Accelerator.
2. Navigate to the **Flow** menu.
3. On the left pane, navigate and right-click the flow to view the run summary. Click **View Run History**.
4. Click the flow run entries to view the respective details of that run.
5. Click the info icon next to the failed component step in the flow run. The following error is displayed along with a list of possible reasons leading to the error.

Viewing Flow Run Failure Details

If a flow run fails, the possible reasons for failure can be viewed. Click the **Info** icon next to the failed component step in the **Flow Run Status** tree structure.

To view the failure details for a flow run:

1. Login to Oracle Utilities Testing Accelerator.
2. Navigate to the **Flow** menu.
3. On the left pane, navigate to the flow and right-click it to view the run summary. Click **View Run History**.
4. Click the flow run entries to view the respective details of that run.
5. Click the **Info** icon next to the failed component step in the flow run. The error is displayed along with a list of possible reasons leading to the error.



Validation failure

There may be a functional issue in the application being tested.

Incorrect test data may have been provided

The specified validation condition may be incorrect

```
<?xml version="1.0" encoding="U
<s11:Envelope xmlns:s11="http:/
  <wsse:Security xmlns:wsse="ht
    <wsse:UsernameToken wsu:Id=
      <wsse:Username>SYSUSER</w
      <wsse:Password Type="http
                           dTNJ1KlDQ0X1
                           2021-07-20T1
                           Token>
                           wsu:Id="Time
                           2021-07-20T1
                           2021-07-20T1
                           >
  <ns1:ATF1Algorithm_ADD xmlns:
    <algorithmType>PERS-INFO</a
    <description>Person Informa
    <algorithm>EUU</algorithm>
    </ns1:ATF1Algorithm_ADD>  <
  </s11:Envelope>
```

Viewing Flow Run Summary Report

To view the run summary of a flow:

1. Login to Oracle Utilities Testing Accelerator.
2. Navigate to the **Flow** menu.
3. On the left pane, navigate and right-click the flow to view the run summary.
4. Click **View Run History**.
5. Click any of the flow run entries to view the respective details.
6. On the **Flow Run Status** page, click **Summary**.
7. On the **Flow Run Summary Report** page, click **Summary**. The summary of the flow run is displayed, including total scenarios passed/failed, percentage of pass/fail, etc. You can also drill down individual scenarios and check more details.

The flow run summary can be sent via email. Specify the email address in the **Summary Report** page and click **Email**.

Conversational Test Data Management

As an alternative to the **Edit Test Data** GUI, test data can also be provided in XML format through the conversational **Test Data Entry** page. Before accessing this GUI, the component's test data needs to be populated by providing the web service name and the transaction type.

To navigate to the **Conversational Test Data** GUI, right-click the component in the flow tree structure (in flow development screen) and select **Edit Request**.

Note: This feature is only supported for web service components.

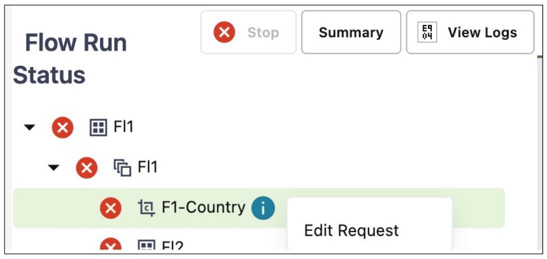
The **Edit Request** feature allows to:

1. Open the failed request of a component.
2. Make changes to the test data and resend the request to edge application (without running the flow multiple times).

3. Observe the response for the modified request.
4. Save the modified request as test data for the flow’s component step.

Repeat the above steps until the test data for the successful request is identified.

The **Edit Request** feature can be accessed from the flow structure screen/flow run interface (including from flow run history, flow set run/history, iterative run/history). User can invoke the **Edit Request** user interface. Right-click a component from the flow run status tree and selecting the **Edit Request** option.



After selecting the **Edit Request** option from the right-click menu, a new window is displayed and prompts to select the configuration sets to be used. Modify the request by either changing test data value of one or more elements, adding/deleting new elements in the request and click **Send** to send the request to the application being tested and observe the response. Continue to make modifications until the desired response is received from the edge application.

The user has below options to manage request content better:

- Repopulate all schema elements. Click **Refresh Schema**. This helps in resetting fields that are required to make a successful request that were not present/left out in the previous/original request.
- Click **Settings** to allow the user to control some header level information that is sent as part of the request, including username token, timestamp and whether the request should include any schema elements that do not have any test data filled in.
- Choose to save the test data of the request to a flow test data set. Click **Save** to select the flow test data set to which the test data needs to be saved to in the dialog box.

  Note: While saving the test data in the request XML in to the component step's test data, only static test data values defined in the component are replaced. The variables defined in the component's test data are not replaced with the test data in the XML request.

Generating Oracle Utilities Testing Accelerator Scripts

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow execution feature in all other cases.

To generate Oracle Utilities Testing Accelerator scripts for a flow:

1. Login to the Oracle Utilities Testing Accelerator application.
2. On the flow tree page, right-click a flow and select **Generate Scripts**.

Note that the **Generate Scripts** option is available only for those flows in “Approved” state.

A zip file containing the generated flow is downloaded by the browser.

The Oracle Utilities Testing Accelerator scripts generated for the test flow have the following structure:

- **Databank** folder - The databanks (text files with comma separated values (.csv)) for the flow that was downloaded. Each component in the flow has a corresponding databank(s) file generated that contains the test data.
- **src** folder - The generated script files for the flow.

Importing the Generated Oracle Utilities Testing Accelerator Script into Eclipse IDE

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

To import the Oracle Utilities Testing Accelerator scripts into Eclipse IDE:

1. Launch the Eclipse IDE for Java Developers that has the Oracle Utilities Testing Accelerator Eclipse plugin installed.

   For instructions to install Eclipse IDE, refer to the Installing Oracle Utilities Testing Accelerator Client Runtime section in **Appendix 3: Developing Metadata Driven Web Service Based Test Automation**.

2. In the Eclipse IDE, right-click the **Project Explorer** panel and click **Import**.
3. Click **General** and select **Existing Projects into Workspace**.
4. Click **Next**.
5. Select **Select archive file:** and click **Browse**.
6. Navigate to the downloaded zip file and click **Open**.
7. Click **Finish**.

   You can now view the project in the **Project Explorer** panel.

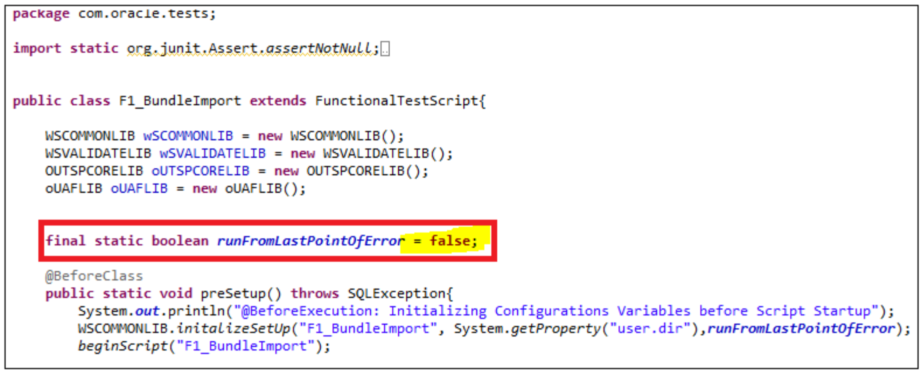
8. Right-click the masterdrive and click **Run**.

   Important: Before running GUI component based flows, make sure to download the ChromeDriver v2.40/geckodriver v0.20.1 and copy it into the 'drivers' folder mentioned in the Creating Oracle Utilities Testing Accelerator Client Runtime Folder Structure section in **Appendix 3: Developing Metadata Driven Web Service Based Test Automation**.

   Download the drivers from the following URLs:

   - **Geckodriver**: https://github.com/mozilla/geckodriver/releases/download/v0.20.1/geckodriver-v0.20.1-win64.zip
   - **ChromeDriver**: http://chromedriver.storage.googleapis.com/2.40/chromedriver_win32.zip

While executing the Sentinel script, if a failure occurs at any point, it is possible to resume run from the point of failure by setting the runFromLastPointOfError flag to “true” in the script.



```
package com.oracle.tests;

import static org.junit.Assert.assertNotNull;


public class F1_BundleImport extends FunctionalTestScript{

    WSCOMMONLIB wSCOMMONLIB = new WSCOMMONLIB();
    WSVALIDATELIB wSVALIDATELIB = new WSVALIDATELIB();
    OUTSPCORELIB oUTSPCORELIB = new OUTSPCORELIB();
    oUAFLIB oUAFLIB = new oUAFLIB();

    final static boolean runFromLastPointOfError = false;

    @BeforeClass
    public static void preSetup() throws SQLException{
        System.out.println("@BeforeExecution: Initializing Configurations Variables before Script Startup");
        WSCOMMONLIB.initalizeSetUp("F1_BundleImport", System.getProperty("user.dir"),runFromLastPointOfError);
        beginScript("F1_BundleImport");
```

Running Flows from Command Line

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

To run the scripts downloaded from Oracle Utilities Testing Accelerator from the command line:

1. Navigate to the directory where the runtime folder is created.
2. Open a Windows command line window at this location.
3. Run the flow.

   ```
   java -jar utascriptwrapper.jar -f "<directory containing the flow>"
   -t "<Scenario name>"
   ```

4. After the script execution is complete, the Console shows the run status.

   The detailed status can be found in the log file under the logs directory.

Encrypting Passwords

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

All the password fields (gStrApplicationUserPassword, gStrApplicationDBPassword, gStrJavaKeyStorePwd) in the configuration.properties file must be encrypted. Before encrypting the configuration.properties file, the keystore should be generated.

You can generate the keystore in either of the following ways:

- From Windows Explorer (Generating Keystore for Encryption from Windows Explorer)
- From Command Line (Generating Keystore for Encryption from Command Prompt)

Use the Password Encryptor Tool to encrypt the configuration.properties file. You can use the Password Encryptor Tool in either of the following ways:

- From Windows Explorer (Using Password Encryptor Tool From Windows Explorer)
- From Command Line (Using PasswordEncryptor Tool From Console/ Command Line)

Generating Keystore for Encryption from Windows Explorer

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

To generate the keystore for encryption from Windows Explorer:

1. Launch **Windows Explorer**.
2. Navigate to the **<UTA-CLIENT-WORK-DIR>\tools** folder.
3. Double-click the **KeystoreGenerator.jar** file.
4. If the keystore and password store do not exist, they will be generated. Else, you will be prompted to confirm to overwrite the existing keystore and password store with the new one.
5. Click **Yes** to overwrite the existing keystore.

   To continue with the existing keystore and password store, click **No**.

If you regenerate a keystore, all the passwords should be re-encrypted using the Password Encryptor tool.

Generating Keystore for Encryption from Command Prompt

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

To generate the keystore for encryption from the command prompt:

1. Navigate to the <UTA-CLIENT-WORK-DIR>/tools folder.
2. Run the command: java -jar KeystoreGenerator.jar.
3. If the keystore and the password store for the keystore do not already exist, they will be generated. Else, you will be prompted to overwrite the existing keystore.
4. Enter **'y'** to generate a new keystore. Enter **'n'** if you want to continue using the existing keystore.

If you regenerate a keystore, all the passwords should be re-encrypted using the Password Encryptor tool.

Using Password Encryptor Tool From Windows Explorer

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

Important! Make sure to generate the keystore before encrypting the configuration.properties file. For instructions, refer to the Generating Keystore for Encryption from Windows Explorer section.

To use the password encryption tool from Windows:

1. Launch **Windows Explorer**.
2. Navigate to the **<UTA-CLIENT-WORK-DIR>\tools** folder.
3. Double-click the P**asswordEncryptor.jar** file.

   You will be prompted to enter the password.
4. After entering the password, click **OK**.

   A dialog box with encrypted text appears.
5. Copy this text and enter it as the value of the respective password field in the configuration.properties file.

Using PasswordEncryptor Tool From Console/Command Line

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

To use the password encryption tool from console/command line:

1. Navigate to **<UTA-CLIENT-WORK-DIR>/tools** directory.
2. Enter the following command:

   ```
   java -jar PasswordEncryptor.jar
   ```

   The tool prompts to enter a password.
3. Type in the password and press **Enter**. A dialog box with encrypted text appears.
4. Copy this text and enter it as the value of the respective password field in the configuration.properties file.

Configuring the Runtime Properties (For Run Using Eclipse)

Note that this section is applicable only for flows containing GUI based components. It is recommended to use the Oracle Utilities Testing Accelerator browser based flow run feature in all other cases.

The **configuration.properties** file is located in the <UTA-CLIENT-WORK-DIR>\etc\ folder. It is used to store the runtime test run parameters, such as application URL, application access information, email configuration, etc.

To use the email functionality for receiving the test run report, provide the following values as mentioned in the configuration.properties file.

```
#Email Details
gStrSMTP_HOST_NAME=
gStrSMTP_PORT=
gStrTO_EMAIL_RECIPIENTS=
```

To provide the test environment details, provide the following values:

```
# Application URL pointing to test run
```

```
gStrApplicationURL =
gStrApplicationXAIServerPath=
gStrEnvironmentName=
```

To provide the application user information for login, provide the values for the following keys:

```
gStrApplicationUserName =
gStrApplicationUserPassword =<Encrypted Password>
```

If the test suite has any database-side validations, provide the database details as follows:

```
gStrApplicationDBConnectionString =
gStrApplicationDBUsername =
gStrApplicationDBPassword =<Encrypted Password>
```

The path for the output files generated for reporting is as follows:

```
# Output file details
gStrOutputFilePath =
gStrXSDFiles=
```

For properties related to the integration environment, refer to the Support for Integration Flows section.

Runtime Configuration for Flow Run (For Run Using Browser)

A test flow is run using flow configuration sets and user flow configuration sets that contain the required properties, such as URL of the environment against which the flow to be run, username/password to be used, etc.

The *flow configuration set* includes configuration applicable for a particular environment. It is expected that the flow level configuration sets do not contain any user specific properties, thereby allowing many users to use a single flow configuration set.

The *user configuration sets*, on the other hand, are specific to each user and typically contain user-specific properties, such as the username/password used to connect to an environment.

It is expected that customers setup some generic flow configuration sets with common runtime properties and users have their personal user configuration sets that contain their credentials. While running a test flow/flow set, specify a flow configuration set and a user configuration set in combination to get generic runtime properties and user specific properties to be used for test flow/flow set run.

> **Note**: Configuration in the user configuration sets overrides configuration in the flow configuration if the same parameter is defined in both the configuration sets.

This section focuses on managing the flow and user configuration sets:

- Creating a Flow Configuration Set
- Creating a User Configuration Set
- Editing a Flow Configuration Set
- Editing a User Configuration Set
- Copying a Flow Configuration Set
- Copying a User Configuration Set

Creating a Flow Configuration Set

1. Login to the application.
2. Navigate to the **Tools** menu.
3. On the left pane, click **Flow Configuration Sets**.
4. On the **Manage Flow Configuration Sets** page, click **Create**.
5. Specify the name of the flow configuration set being created and click **Create**.
6. If the flow configuration set is created successfully, a message appears confirming that the operation was successful and redirects to the **Manage Flow Configuration Sets** page.
7. Search for the configuration set created and click **Edit** to create flow level configuration properties.
8. Each of the property is a key-value pair. By default some of the property names are listed on the **Edit** page. You can either enter a value for the existing property or choose to create a new property by clicking **Add Property**.

Important! It is recommended that sensitive information (such as passwords) be encrypted. Click **Encrypt** to encrypt the corresponding row of the property.

Creating a User Configuration Set

1. Login to the application.
2. Navigate to the **Tools** menu.
3. On the left pane, click **User Configuration Sets**.
4. On the **Manage User Configuration Sets** page, click **Create**.
5. Specify the name of the user configuration set to be created and click **Create**.
6. If the user configuration set is created successfully, a message appears confirming that the operation was successful and redirects to the **Manage User Configuration Sets** page.
7. Search for the configuration set created and click **Edit** to create user level configuration properties.
8. Each of the property is a key-value pair. By default some of the property names are listed on the **Edit** page. You can either enter a value for the existing property or choose to create a new property by clicking **Add Property**.

Important! It is recommended that sensitive information (such as passwords) be encrypted. Click **Encrypt** to encrypt the corresponding row of the property.

Editing a Flow Configuration Set

1. Login to the application.
2. Navigate to the **Tools** menu.
3. On the left pane, click **Flow Configuration Sets**.
4. On the **Manage Flow Configuration Sets** page, search for the flow configuration set to be edited, and click **Edit**.
5. On the **Update Flow Configuration Set** page, click **Add Property** to either enter a value for the existing property or choose to create a new property.

Important! It is required that sensitive information (such as passwords) be encrypted. Click **Encrypt** against the corresponding row to encrypt the property.

Editing a User Configuration Set

1. Login to the application.
2. Navigate to the **Tools** menu.
3. On the left pane, click **User Configuration Sets**.
4. On the **Manage User Configuration Sets** page, search for the user configuration set to be edited, and click **Edit**.
5. On the **Update User Configuration Sets** page, click **Add Property** to either enter a value for the existing property or choose to create a new property.

Important! It is recommended that sensitive information (such as passwords) be encrypted. Click **Encrypt** to encrypt the corresponding row of the property.

Copying a Flow Configuration Set

1. Login to the application.
2. Navigate to the **Tools** menu.
3. On the left pane, click **Flow Configuration Sets**.
4. On the **Manage Flow Configuration Sets** page, search for the flow configuration set to be copied, and click **Copy**.
5. Enter the new configuration set name and click **Confirm** to create a copy.

Copying a User Configuration Set

1. Login to the application.
2. Navigate to the **Tools** menu.
3. On the left pane, click **User Configuration Sets**.
4. On the **Manage User Configuration Sets** page, search for the user configuration set to be copied, and click **Copy**.
5. Enter the new configuration set name and click **Confirm** to create a copy.

Chapter 6

Creating Components

The Oracle Utilities Testing Accelerator components, component sets, and flows are organized in a tree hierarchy. The hierarchy is organized as follows:

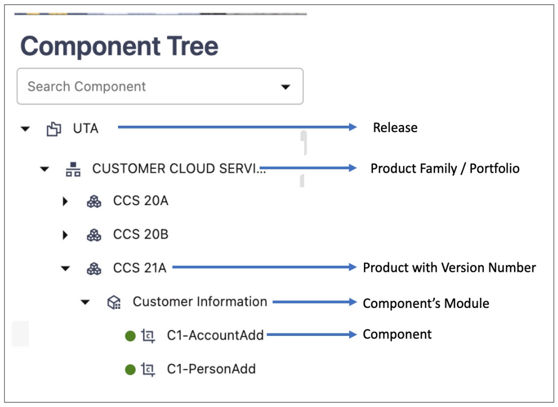
Oracle Utilities Testing Accelerator Release > Portfolio> Product > Module > Components

This chapter describes the component hierarchy and also the steps to create different types of components in Oracle Utilities Testing Accelerator.

- Component Structure
- Component Lifecycle
- Component Types
- Creating Web Service Based Components
- Creating GUI Based Components
- Creating REST Web Service Components
- Copying Components

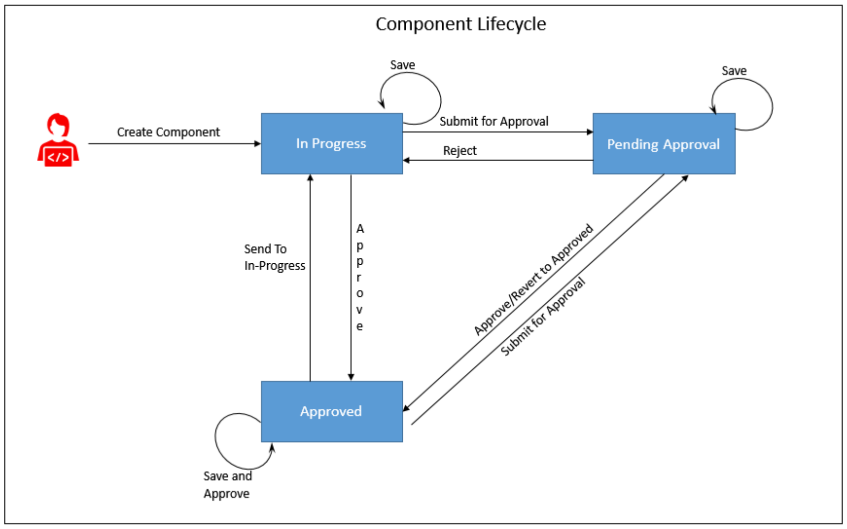
Component Structure

The following figure shows the high-level component structure.



Component Lifecycle

The component lifecycle begins once a component is created in Oracle Utilities Testing Accelerator. It can exist in one of the several possible lifecycle states as shown in the following diagram.



The state of a component determines the actions that can be performed on the component. The following table summarizes the component states, and the possible actions and roles that can take the actions.

Component Lifecycle State	**Permitted Actions**	**Role**	**Resultant State (after action)**
In Progress	Submit for Approval	Developer Approver Administrator	Pending Approval
	Approve	Approver Administrator	Approved
	Save	Developer Approver Administrator	In Progress
Pending Approval	Send to In Progress / Reject	Approver Administrator	In Progress
	Approve	Approver Administrator	Approved
	Revert to Approved	Approver Administrator	Approved (Reverts to Previous Approved version of the component)
	Save	Developer Approver Administrator	Pending Approval
Approved	Send to In Progress	Developer Approver Administrator	In Progress
	Submit for Approval	Developer Approver Administrator	Pending Approval
	Approve (save and approve)	Approver Administrator	Approved

Locking/Unlocking Components

A component is/can be locked in the following scenarios:

- To prevent any other users from editing the component until the component definition is complete.
- By default when the component is submitted for approval.
- When moved to the ‘In Progress’ state, the component gets locked. You can then unlock and edit it as needed.

Click the Lock icon to lock/unlock a component in the Oracle Utilities Testing Accelerator application.

Tip: After a component is moved to ‘Approved’ status, it gets unlocked automatically.

Component Types

Ensure the component is created under the required hierarchy level.

Oracle Utilities Testing Accelerator supports the following types of components:

- Web Service Based Components
- GUI Based Components
- REST Web Service Components

Web Service Based Components

A web service based component represents an Inbound Web Service/Business Object/ Business Service in an Oracle Utilities application (such as CCB/C2M/WAM/Meter).

A distinguishing feature of the web service component is that its component type is defined as "WS" and the keywords used in defining it are specific to a web service request.

For information about web service specific keywords, refer to Appendix A: Web Service Component Keywords.

GUI Based Components

A GUI based component typically represents a page/part of the page in an Oracle Utilities application (such as CCB/C2M/WAM/Meter).

A distinguishing feature of the GUI based component is that it's component type is defined as "Web" and the keywords used in defining the component are specific to a web page.

Example: Click, Edit, etc.

For information about GUI-specific keywords, refer to **Appendix B: GUI Component Keywords**.

REST Web Service Components

A REST web service component represents a REST interface in an Oracle Utilities application (such as CCB/C2M/WAM/Meter).

A distinguishing feature of the REST based component is that its component type is defined as "REST" and the keywords used in defining the component are specific to a REST web service.

For information about REST-specific keywords, refer to Appendix C: REST Component Keywords.

Creating Web Service Based Components

You can create web service based components in either of the following ways:

- Using the Component Generation Tool feature in Oracle Utilities Testing Accelerator

For detailed instructions about the Component Generation Tool, refer to the **Component Generation Tool** section in Chapter 8: Development Accelerator Tools.

- Create the component manually

This section focuses on the following:

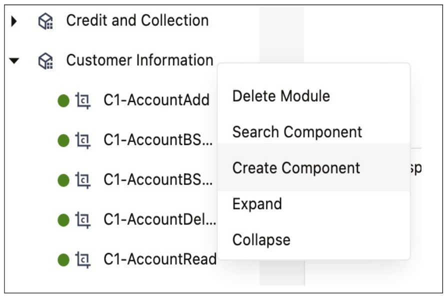
- Creating a Component
- Creating a Component Definition
- Defining Default Data at Component Level
- Setting Up Operation Name for a Web Service
- Using Runtime Variables in Components
- Using Function Libraries
- Resolving the Repeating Elements in Response XML
- Adding Validations
- Logging and Reporting
- Handling the List Elements

Creating a Component

To create a web service based component manually:

1. Navigate to the component tree where the component has to be created.
2. Right-click the feature (release/product/module) in the component tree.

   Note: Create a new feature folder if it is not found in the delivered tree structure.



3. Select **Create Component**.

   Note: The component name must be prefixed with 'CM' and the **Tags** field should have a CM tag for every component. The tagging enables porting the custom components to latest Oracle Utilities Testing Accelerator release.

4. Enter the component name in the **Component** field.

   Note: For information about extending components, refer to the Copying Components section.

5. Select **Web Service** in the **ComponentType** drop-down list.
6. Enter a description in the **Description** field.

7. Click **Attach Code** to add the metadata. The **Component** window is displayed.
8. Create component definitions.
9. Click **Save & Unlock** to save and create the component.

Following is an example to create the CM-MobileWorker component under the Resource Management feature for the Oracle Real-Time Scheduler v2.3.0.0.

1. Navigate to **UTA 6.0.0.0** > **ORS / MWM Portfolio** > **ORS 2.3.0.0** > **Resource Management**.
2. Right-click the **Resource Management** module.
3. Select **Create Component**.
4. Enter **CM-MobileWorker** in the **Component** field to name the component.
5. Select **Web Service** in the **ComponentType** drop-down list.
6. Enter a description in the **Description** field.
7. Click **Attach Code** to add the metadata. The **Component** window is displayed.
8. Create component definitions.
9. Click **Save & Unlock** to save and create the component.

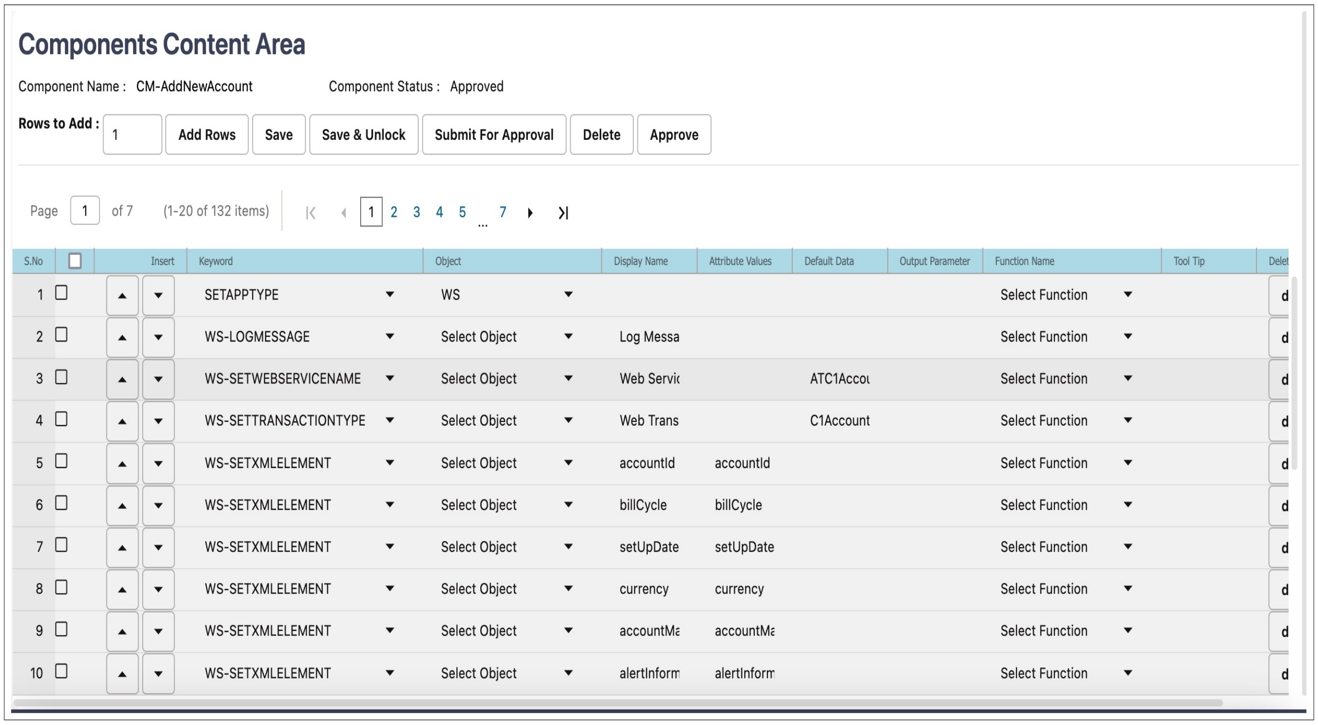
Creating a Component Definition

A component consists of several component definition lines. Each component definition line comprises a keyword, object, display name, attribute values, default data, function name, and output parameters.

The following list describes each entity in a component definition:

- **Keyword**: Defines the action to be performed by the component line. Example: WS-SETVARIABLEFROM RESPONSE, WS-VALIDATE, etc
- **Object**: The name of the function library whose functions may be used for defining a component.
- **Display Name**: Description of the component line that is made visible to the user while entering test data against the component line in a flow.
- **Attribute Values**: The xpath of the component's element as defined in the Oracle Utilities Enterprise application.
- **Default Data**: The default data that may be used while providing test data for a component in a flow.
- **Function Name**: The name of the function that is used as a plugin to perform actions such as generating randomized test data or performing validation on web service response values.
- **Output Parameters**: If a function returns an output, the output can be stored in a variable which is defined against the Output Parameters field. This variable can be used across components in a flow to pass test data from one component to another.
- **Tooltip**: The information presented as a tool tip during the flow creation.

The following figure shows the **Component** page with the available component definitions.



Components Content Area

Component Name : CM-AddNewAccount   Component Status : Approved

Rows to Add : 1   Add Rows   Save   Save & Unlock   Submit For Approval   Delete   Approve

Page 1 of 7 (1-20 of 132 items)   1 2 3 4 5 ... 7

S.No	☐	Insert	Keyword	Object	Display Name	Attribute Values	Default Data	Output Parameter	Function Name	Tool Tip	Delet
1	☐	▲ ▼	SETAPPTYPE	WS					Select Function		d
2	☐	▲ ▼	WS-LOGMESSAGE	Select Object	Log Messa				Select Function		d
3	☐	▲ ▼	WS-SETWEBSERVICENAME	Select Object	Web Servic		ATC1Accou		Select Function		d
4	☐	▲ ▼	WS-SETTRANSACTIONTYPE	Select Object	Web Trans		C1Account		Select Function		d
5	☐	▲ ▼	WS-SETXMLELEMENT	Select Object	accountId	accountId			Select Function		d
6	☐	▲ ▼	WS-SETXMLELEMENT	Select Object	billCycle	billCycle			Select Function		d
7	☐	▲ ▼	WS-SETXMLELEMENT	Select Object	setUpDate	setUpDate			Select Function		d
8	☐	▲ ▼	WS-SETXMLELEMENT	Select Object	currency	currency			Select Function		d
9	☐	▲ ▼	WS-SETXMLELEMENT	Select Object	accountMa	accountMa			Select Function		d
10	☐	▲ ▼	WS-SETXMLELEMENT	Select Object	alertInform	alertInform			Select Function		d

Add the required component definition lines using the **Keyword** drop-down list to define the web services based component.

For a list of keywords used to define the web service based components, refer to Appendix A: Web Service Component Keywords.

The following example shows different component lines created for the CM-MobileWorker component.

1. Select SETAPPTYPE in the **Keyword** drop-down list to define the component type.
2. Select WS in the **Object** drop-down list to denote that it is a web service based component.
3. Select the WS-SETWEBSERVICENAME keyword to allow for the web service name to be set for this component in a flow.
4. Select the WS-SETTRANSACTIONTYPE keyword to allow for the transaction type of the web service call to be set for this component, in a flow.

   Note: The final script of a component is web service call to create, update, and delete.

5. Select the WS-LOGMESSAGE keyword to log comments in component step as part of a flow run. This helps in better understanding of the Flow run results in which the component is used.
6. Select the WS-SETXMLELEMENT keyword to allow test data to be set against a specific element of request XML.

   Consider the CM-Account component in Oracle Utilities Customer Cloud Service. This component maps to the C1-Account business object. It includes elements, such as:

```
<accountId/>
<billCycle/>
```

7. Select the WS-SETXMLLISTELEMENT keyword to allow multiple sets of test data to be set against the list element of request XML. The list element is 'skills'.

   Note: The schema of a web service/business object/business service can be complex (the schema has group elements which in turn may have group elements within them).

   For instructions about how to handle such scenarios, refer to the Handling the List Elements section.

Defining Default Data at Component Level

In Oracle Utilities Testing Accelerator some of the test data can be maintained at component level for quick and easy use at the flow level.

In each component definition line the "Default Data" column is available to hold the default test data. Using this field, default test data can be populated in the component. While using a component with default data in a flow, the default data can easily be selected into the test data field by selecting from the drop down option available for each of the test data entry fields on the **Flow Test Data** window.

Even after the default data is populated in the flow test data, data elements in the test data entry page can still be edited, if required. This helps to build the flow faster for cases where administration and master test data are pre-determined.

Setting Up Operation Name for a Web Service

An operation name determines the action to be taken while running a web service request. This is dictated by the operation name of the web service in Oracle Utilities Application Framework based applications. The value for the WS-SETTRANSACTIONTYPE keyword is specified while adding the test data for the flow. If designed so, the same component can be used to add record, update record, or delete record operations.

Using Runtime Variables in Components

In some cases, few elements from the component run's response may have to be passed as inputs to another component's request XML. This can be achieved using the "Moving Data Between Components without Using Global Variables" feature. Or another option is to store the output of first component in the global variable by using the WS-SETVARIABLEFROMRESPONSE keyword. This keyword requires Xpath of the response element whose value is to be stored. It should be specified in the **Attribute Values** column. The global variable which holds this value in the script is defined in the **Output Parameter** column. This method of passing data between components allows for a single global variable to be used as input in multiple component's test data, where ever it is applicable.

The WS-SETVARIABLEFROMRESPONSE keyword stores the mobileWorkerId obtained after a mobile worker component run to the global variable gVar_mobileWorkerId1 declared in the **Output Parameter** column.

file: prefix - csv file

Any test data value containing ".csv" filename as value should be prefixed with "file:" to allow Oracle Utilities Testing Accelerator to process it correctly. For example: If a component contains an attribute name inputFile for which "InputData.csv" is the value, ensure to prefix the filename with "file:". The value of "inputFile" should be "file:InputData.csv".

Using Function Libraries

This section explains how to use the function libraries shipped with this Oracle Utilities Testing Accelerator release and create new help libraries.

Function libraries shipped with Oracle Utilities Testing Accelerator can be accessed in the **Component** window using the FUNCTIONCALL key word and specifying the library name in the **Object** column and the function name in the **Function Name** column. Define the variable name in the **Output Parameters** field to store the return value of the function.

Function parameters can be provided while entering test data for the component in a flow. For more details, refer to Chapter 5: Creating Test Flows.

For a list of libraries and functions available in Oracle Utilities Testing Accelerator, refer to Chapter 9: Function Library Reference.

Resolving the Repeating Elements in Response XML

If the response XML has repeating elements, the value embedded within the repeating elements is retrieved as follows:

```
<ContactDetails>
<Phone> 123-456-7890 </Phone>
<Phone>234-567-8901 </Phone>
<email> joe@oracle.com </email>
</ContactDetails>
```

1. If building a custom component, you can use the WS-SETVARIABLEFROMRESPONSE keyword to retrieve the response of the web service invocation into the global variable. gVar1 is defined in the **Output Parameter** column.

   The keyword resolves all occurrences of the Phone element and stores all values in the gVar1 variable separated by comma. gVar1 will be set to "123-456-7890,234-567-8901".

   Or, you can use the FUNCTIONCALL keyword and use appropriate functions from the base delivered function libraries, such as coreResponseUtillib library.

2. If trying to retrieve a value from the response XML for a component in a flow, in the post validations sections, use the FUNCTIONCALL keyword to call the appropriate function available in the coreResponseUtillib libraries.

For more information, refer to the Chapter 9: Function Library Reference.

Adding Validations

The different ways in which you can add validations are:

- Using the FUNCTIONCALL keyword

  To validate the response, use the FUNCTIONCALL keyword to validate the content; in particular, the Xpath of response XML.

  Select the wSVALIDATELIB function library from the **Object** drop-down list. Select the function to be called from the **Function Name** drop-down list.

  For a complete reference of the validation function library, refer to Chapter 9: Function Library Reference.

- Using flow-level validations

  Validations can be added before and after a component step in a flow. The same flow can be reused with different or no validations before (pre-level validations) and after (post-level validations). The pre-validations can be used to determine if that component step needs to be run or skipped as part of the flow run, while the post validations can be used for validating the component step results.

  For more information about the flow-level validations, refer to the **Flow-Level Validations** section.

Flow-Level Validations

Note that this feature is available only for web service based components.

Apart from being able to define validations at the component level, you can also define validations at a flow level as follows:

1. Navigate to the component in the flow.
2. Right-click and select **Edit Test Data** from the context menu.
3. On the **Test Data** page, click **Pre Validations** or **Post Validations** to specify validations that need to be performed either before sending the request or after the response is received from a Utilities application.

   Note: In addition to adding validations in the pre-validations section, function calls can be made to generate (randomization) test data and stored in variables. These variables can then be used to set test data against component elements.

   The post validation section can be used to add functions that retrieve and store any values from the response that can be used further down the flow, as test data in other components.

Logging and Reporting

Oracle Utilities Testing Accelerator provides the following types of logging and reporting:

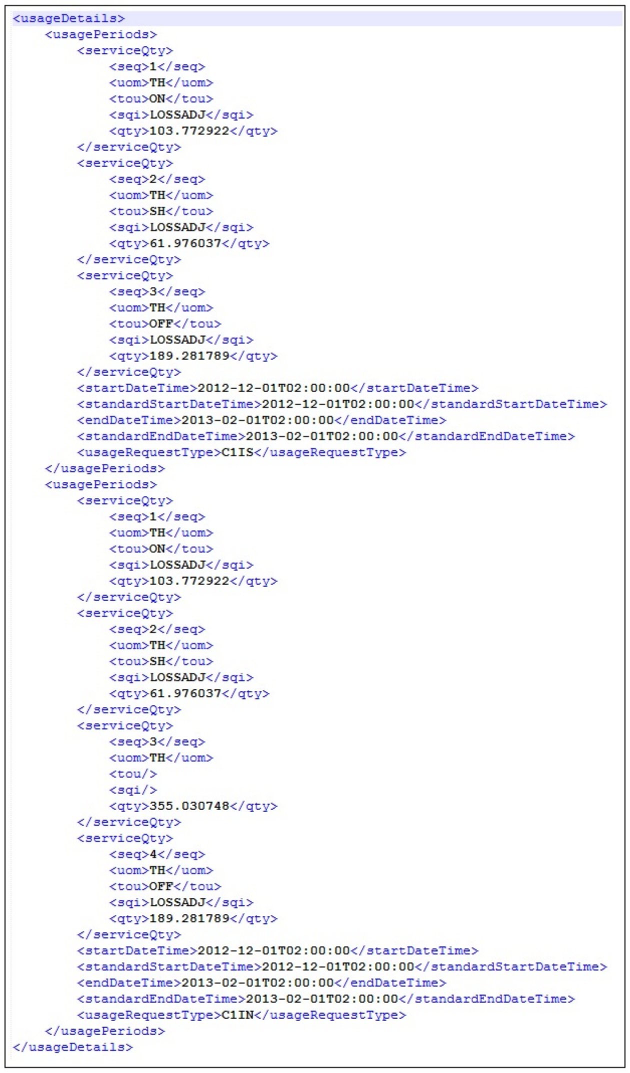
- **Test run log file**: The test run logs are created and separate logs are generated for each flow .
- **Email report in HTML format**: The summary report can be automatically sent as an email to a specified list of email ids, which can be defined in the user configuration set or the flow configuration set. If no email IDs are provided in

the configuration, the email is not sent. This applies to both flows and flow set run.

Handling the List Elements

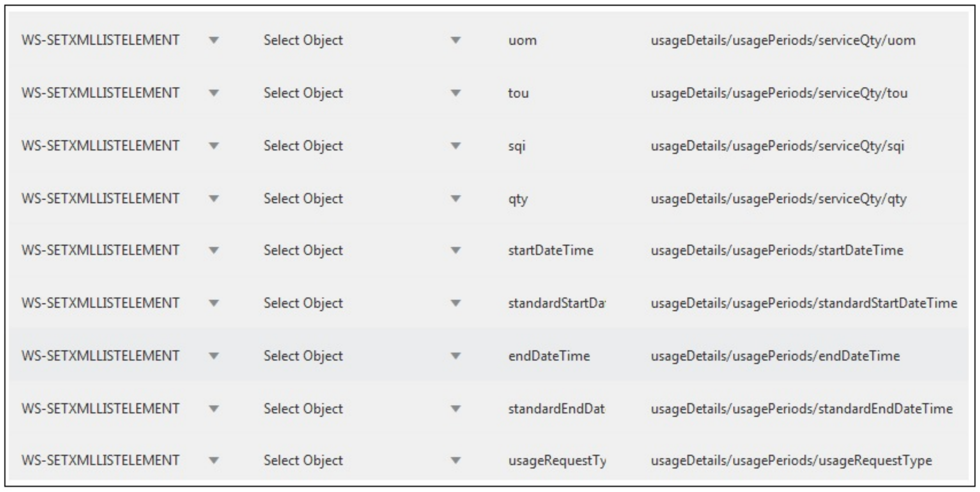
The list elements of a schema should be defined using the keyword WS-SETXMLLISTELEMENT.

Consider the following partial schema. Note that the node usageDetails has a usagePeriods list element which in turn has another list element serviceQty and other non-list nodes (leaf nodes) (such as startDateTime, standardStartDateTime, endDateTime, etc.,). The list node serviceQty has non-list nodes such as seq, UOM, TOU, etc.



```
<usageDetails>
    <usagePeriods>
        <serviceQty>
            <seq>1</seq>
            <uom>TH</uom>
            <tou>ON</tou>
            <sqi>LOSSADJ</sqi>
            <qty>103.772922</qty>
        </serviceQty>
        <serviceQty>
            <seq>2</seq>
            <uom>TH</uom>
            <tou>SH</tou>
            <sqi>LOSSADJ</sqi>
            <qty>61.976037</qty>
        </serviceQty>
        <serviceQty>
            <seq>3</seq>
            <uom>TH</uom>
            <tou>OFF</tou>
            <sqi>LOSSADJ</sqi>
            <qty>189.281789</qty>
        </serviceQty>
        <startDateTime>2012-12-01T02:00:00</startDateTime>
        <standardStartDateTime>2012-12-01T02:00:00</standardStartDateTime>
        <endDateTime>2013-02-01T02:00:00</endDateTime>
        <standardEndDateTime>2013-02-01T02:00:00</standardEndDateTime>
        <usageRequestType>C1IS</usageRequestType>
    </usagePeriods>
    <usagePeriods>
        <serviceQty>
            <seq>1</seq>
            <uom>TH</uom>
            <tou>ON</tou>
            <sqi>LOSSADJ</sqi>
            <qty>103.772922</qty>
        </serviceQty>
        <serviceQty>
            <seq>2</seq>
            <uom>TH</uom>
            <tou>SH</tou>
            <sqi>LOSSADJ</sqi>
            <qty>61.976037</qty>
        </serviceQty>
        <serviceQty>
            <seq>3</seq>
            <uom>TH</uom>
            <tou/>
            <sqi/>
            <qty>355.030748</qty>
        </serviceQty>
        <serviceQty>
            <seq>4</seq>
            <uom>TH</uom>
            <tou>OFF</tou>
            <sqi>LOSSADJ</sqi>
            <qty>189.281789</qty>
        </serviceQty>
        <startDateTime>2012-12-01T02:00:00</startDateTime>
        <standardStartDateTime>2012-12-01T02:00:00</standardStartDateTime>
        <endDateTime>2013-02-01T02:00:00</endDateTime>
        <standardEndDateTime>2013-02-01T02:00:00</standardEndDateTime>
        <usageRequestType>C1IN</usageRequestType>
    </usagePeriods>
</usageDetails>
```

To define this schema in the component, consider the non-list nodes and enter a row for each of them, with the keyword as WS-SETXMLLISTELEMENT and Attribute value as the full xpath of the element, making sure to enter the appropriate Display names.



WS-SETXMLLISTELEMENT	Select Object	uom	usageDetails/usagePeriods/serviceQty/uom
WS-SETXMLLISTELEMENT	Select Object	tou	usageDetails/usagePeriods/serviceQty/tou
WS-SETXMLLISTELEMENT	Select Object	sqi	usageDetails/usagePeriods/serviceQty/sqi
WS-SETXMLLISTELEMENT	Select Object	qty	usageDetails/usagePeriods/serviceQty/qty
WS-SETXMLLISTELEMENT	Select Object	startDateTime	usageDetails/usagePeriods/startDateTime
WS-SETXMLLISTELEMENT	Select Object	standardStartDa	usageDetails/usagePeriods/standardStartDateTime
WS-SETXMLLISTELEMENT	Select Object	endDateTime	usageDetails/usagePeriods/endDateTime
WS-SETXMLLISTELEMENT	Select Object	standardEndDat	usageDetails/usagePeriods/standardEndDateTime
WS-SETXMLLISTELEMENT	Select Object	usageRequestTy	usageDetails/usagePeriods/usageRequestType

Note: If any of the list nodes repeat (serviceQty occurrs thrice inside usagePeriods, which in turn occurrs twice in usageDetais), do not define the elements multiple times in the component definition. The number of occurrences can be controlled in the test data (as defined in the Providing Test Data section).

Providing Test Data

On the test data page, each of the list nodes (usageDetails, usagePeriods and serviceQty for example) has an **Add List** button next to them under the **Action** column and are expandable. Expand the list node to view the children of that particular node.

Example: Expand usageDetails to view usagePeriods, and expand usagePeriods to view serviceQty, startDateTime, standardStartDateTime, etc.

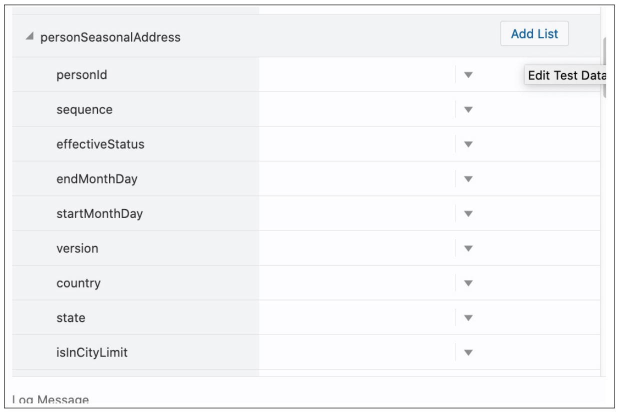
Initially only one instance exists for all the list nodes. To add more nodes, click **Add List** next to the desired element under the **Action** column.

Example: To have two instances of usagePeriods inside usageDetails, click **Add List** next to usagePeriods. There will be two usagePeriods nodes inside usageDetials, each of which will have the same content.

To view three serviceQty nodes in the first usagePeriods node and four in the second one:

1. Expand the first usagePeriods and add three serviceQty nodes.
2. Expand the second usagePeriods and add four serviceQty nodes.

The complete structure of the final schema is ready. You can add data to all the leaf nodes.

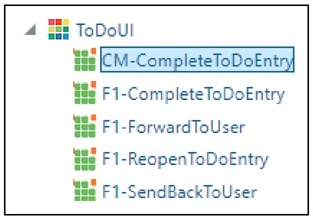


Creating GUI Based Components

To manually create a GUI based component:

1. Navigate to the component tree where the component has to be created.
2. Right-click the feature (release/product/module) in the component tree.

   Note: Create a new feature folder if it is not found in the delivered tree structure.
3. Select **Create Component**.
4. Enter the name of the component in the **Component** field.



   Note: The component name must be prefixed with 'CM' and the **Tags** field should have a CM tag for every component. The tagging enables porting the custom components to latest Oracle Utilities Testing Accelerator release.

   For information about extending components, refer to the Copying Components section.
5. Select **User Interface** in the **ComponentType** drop-down list.
6. Enter a description in the **Description** field.
7. Click **Attach Code** to add the metadata. The **Component** window is displayed.
8. Create component definitions.
9. Click **Save & Unlock** to save and create the component.

Following is an example to create the CM-CompleteToDoEntry component under the ToDoUI feature for the Core product:

1. Navigate to **UTA 6.0.0.0** > **CORE 6.0.0.0 Portfolio** > **CORE UI 6.0.0.0** > **ToDoUI**.
2. Right-click the **ToDoUI** module.
3. Select **Create Component**.
4. Enter CM-CompleteToDoEntry in the **Component** field.
5. Follow steps 5 to 9 as mentioned in the procedure above.

Creating a Component Definition for GUI Components

A user interface component consists of several component definition lines. Each component definition line comprises of a keyword, object, display name, attribute values, default data, function name, and output parameters.

The following list describes each entity in a component definition:

- **Keyword**: The step to be performed.

  Example: WS-SETVARIABLEFROM RESPONSE, WS-VALIDATE, etc
- **Object**: The Oracle Utilities Testing Accelerator function library name from where the function is called.
- **Display Name**: The component definition (mandatory).
- **Attribute Values**: The xpath/ID of the UI element (mandatory).

  For example: If ID is specified, specify the attribute value as id;TD_ENTRY_ID, where TD_ENTRY_ID is the unique ID of the UI element being defined.

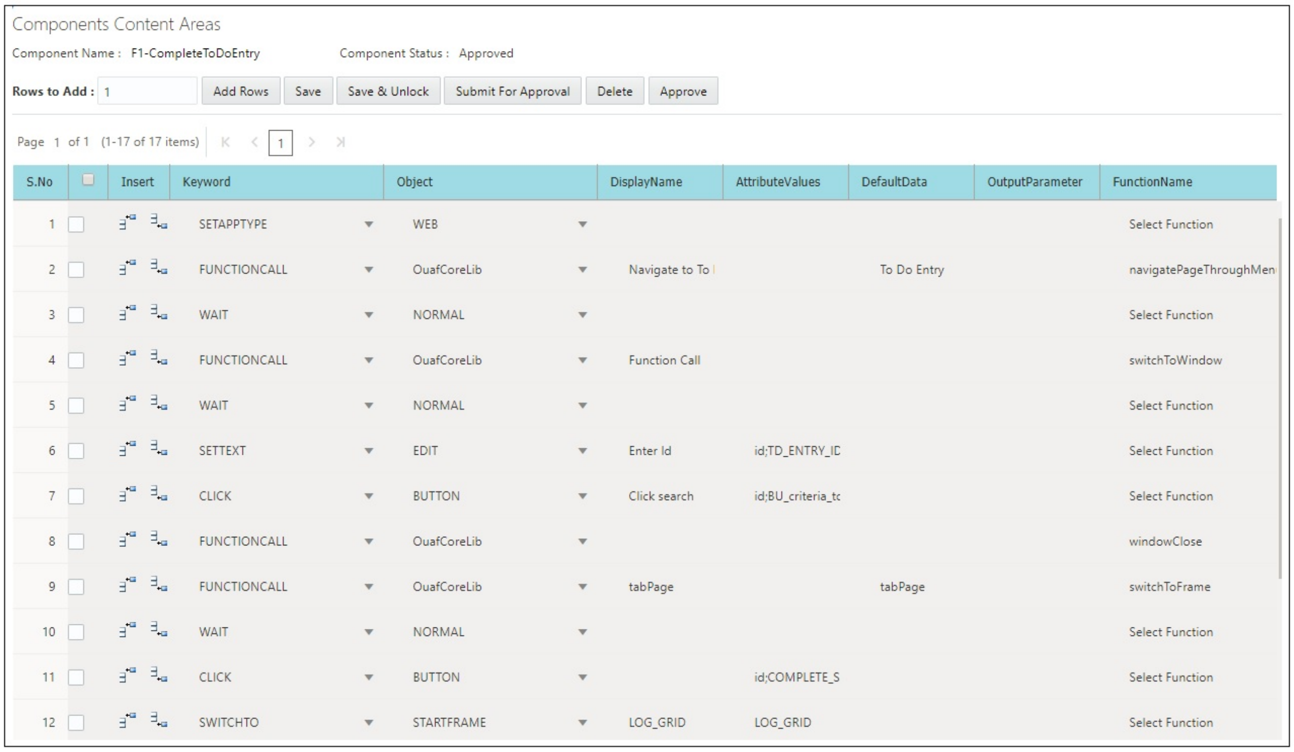
  If xpath is specified, it can be provided similar to //li[@id='CI_ADMINMENU_topMenuItem0x18']/span

  Note: If the attribute values contain special characters (such as '$'), the character should be prefixed by the backslash ('\') character.

  For example: To input the attribute value as id;ZONE_PRM\:0$ZONE_PARM_VAL, specify it as id;ZONE_PRM\:0\$ZONE_PARM_VAL.
- **Default Data**: The default data used in the component definition.
- **Function Name**: The function name called from the library.
- **Output Parameters**: The output in the form of a variable.

  For more options, refer to Appendix E: Generating Re-runnable Test Data.
- **Tooltip**: The data presented as a tool tip during the flow creation.

The following figure shows the **Component** page with the available component definitions.



Components Content Areas

Component Name : F1-CompleteToDoEntry   Component Status : Approved

Rows to Add : 1

Page 1 of 1 (1-17 of 17 items)

S.No		Insert	Keyword	Object	DisplayName	AttributeValues	DefaultData	OutputParameter	FunctionName
1			SETAPPTYPE	WEB					Select Function
2			FUNCTIONCALL	OuafCoreLib	Navigate to To		To Do Entry		navigatePageThroughMen
3			WAIT	NORMAL					Select Function
4			FUNCTIONCALL	OuafCoreLib	Function Call				switchToWindow
5			WAIT	NORMAL					Select Function
6			SETTEXT	EDIT	Enter Id	id;TD_ENTRY_ID			Select Function
7			CLICK	BUTTON	Click search	id;BU_criteria_tc			Select Function
8			FUNCTIONCALL	OuafCoreLib					windowClose
9			FUNCTIONCALL	OuafCoreLib	tabPage		tabPage		switchToFrame
10			WAIT	NORMAL					Select Function
11			CLICK	BUTTON		id;COMPLETE_S			Select Function
12			SWITCHTO	STARTFRAME	LOG_GRID	LOG_GRID			Select Function

Add the required component definition lines using the **Keyword** drop-down list to define the web services based component.

For a list of keywords used to define the GUI based components, refer to **Appendix B: GUI Component Keywords**.

The following example shows different component lines created for the CM-CompleteToDoEntry component.

1. Select SETAPPTYPE in the **Keyword** drop-down list to define the application type.
2. Select **Web** in the **Object** drop-down list to denote that it is a web services based component.
3. Select the WS-LOGMESSAGE keyword to log comments in component definition. This helps in debugging the script code for that component.
4. Add more component definition lines as needed and select appropriate keywords based on the GUI page that the component represents.
5. Click **Save**.

Creating REST Web Service Components

To create REST web service based component:

1. Login to the application.
2. Navigate to the **Components** menu.

3. In the left pane, navigate to the module where the new component needs to be added.
4. Right-click the component and select **Create Component**.
5. On the **Create Component** page, select the component type as REST SERVICE.
6. Fill in the required fields and click Save.
7. Click **Attach Code** to save the component and edit it.

This section focuses on the following:

- Creating a REST Service Component Definition
- Entering Test Data for a REST Component

Creating a REST Service Component Definition

A component consists of several component definition lines. Each component definition line comprises a keyword, object, display name, attribute values, default data, function name, and output parameters.

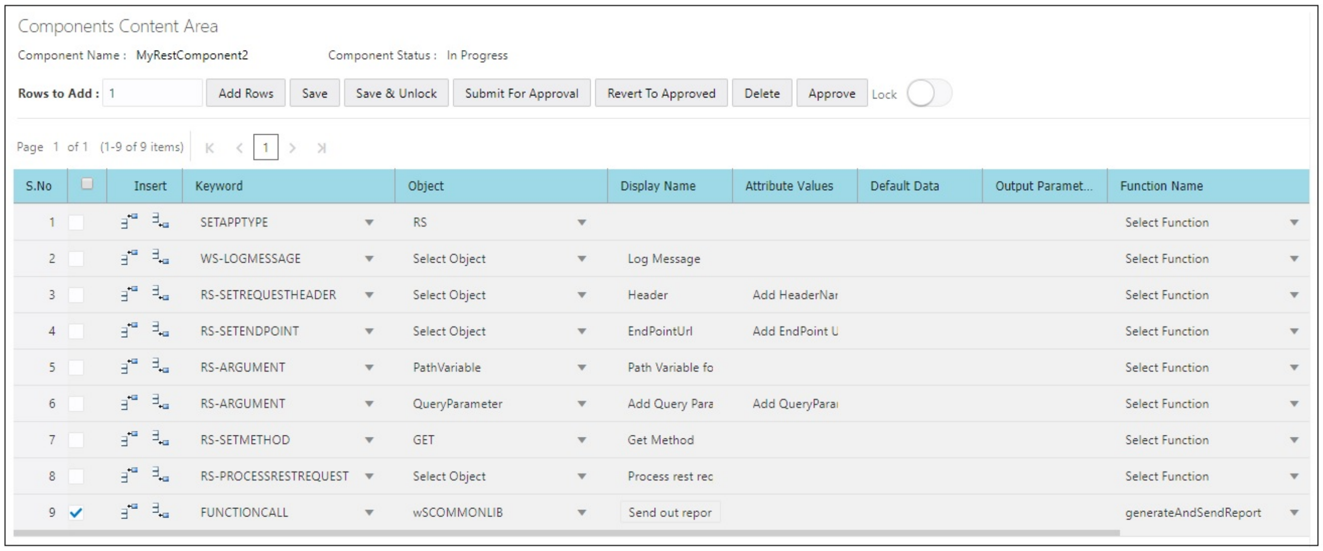
The following list describes each entity in a component definition:

- **Keyword**: The step to be performed.

  For example: RS-SETREQUESTHEADER, RS-SETENDPOING, RS-PROCESSREQUEST, etc
- **Object**: The Oracle Utilities Testing Accelerator function library name from where the function is called.
- **Display Name**: Component definition
- **Attribute Values**: The web service XML tag name used as variable to store its value.
- **Default Data**: The default data used in the component definition.
- **Function Name**: The function name called from the library.
- **Output Parameters**: The output in the form of a variable.

  For more options, refer to Appendix E: Generating Re-runnable Test Data.
- **Tooltip**: The data presented as a tool tip during the flow creation.

The following figure shows the **Component** page with the available component definitions.



Components Content Area

Component Name : MyRestComponent2 Component Status : In Progress

Rows to Add : 1

S.No		Insert	Keyword	Object	Display Name	Attribute Values	Default Data	Output Paramet...	Function Name
1			SETAPPTYPE	RS					Select Function
2			WS-LOGMESSAGE	Select Object	Log Message				Select Function
3			RS-SETREQUESTHEADER	Select Object	Header	Add HeaderNar			Select Function
4			RS-SETENDPOINT	Select Object	EndPointUrl	Add EndPoint U			Select Function
5			RS-ARGUMENT	PathVariable	Path Variable fo				Select Function
6			RS-ARGUMENT	QueryParameter	Add Query Para	Add QueryParai			Select Function
7			RS-SETMETHOD	GET	Get Method				Select Function
8			RS-PROCESSRESTREQUEST	Select Object	Process rest rec				Select Function
9	✓		FUNCTIONCALL	wSCOMMONLIB	Send out repor				generateAndSendReport

Add the required component definition lines using the Keyword drop-down list to define the REST web service based component.

For a list of keywords used to define the REST web service based components, refer to Appendix C: REST Component Keywords.

The following example shows different component lines that can be created.

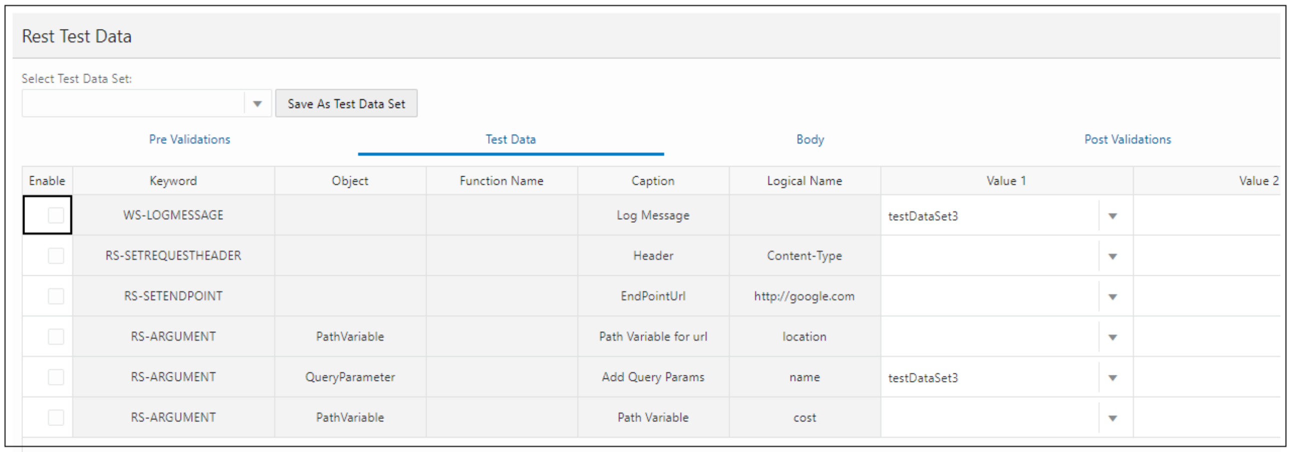
1. Select **SETAPPTYPE** in the **Keyword** drop-down list to define the application type.
2. Select **RS** in the **Object** drop-down list to denote that it is a web services based component.
3. Select the **WS-LOGMESSAGE** keyword to log comments in component definition. This helps in debugging the script code for that component.
4. Select **RS-SETREQUESTHEADER** keyword to specify any headers that need to be passed to the REST end point.
5. Select **RS-SETMETHOD** keyword to specify whether the REST end point needs to be invoked using a GET/POST call.
6. Select **RS-PROCESSRESTREQUEST** keyword to specify processing of the response from the REST end point.
7. Add more component definition lines as needed and select appropriate keywords based on the REST web service that the component represents.
8. Click **Save**.

Entering Test Data for a REST Component

To enter test data for a REST component:

1. Navigate to the **Flows** menu.
2. On the left pane, right-click the flow and select **Create/Update Flow Structure**.

3. On the **Flow Definition** page, right-click the REST component and select **Edit Test Data**.



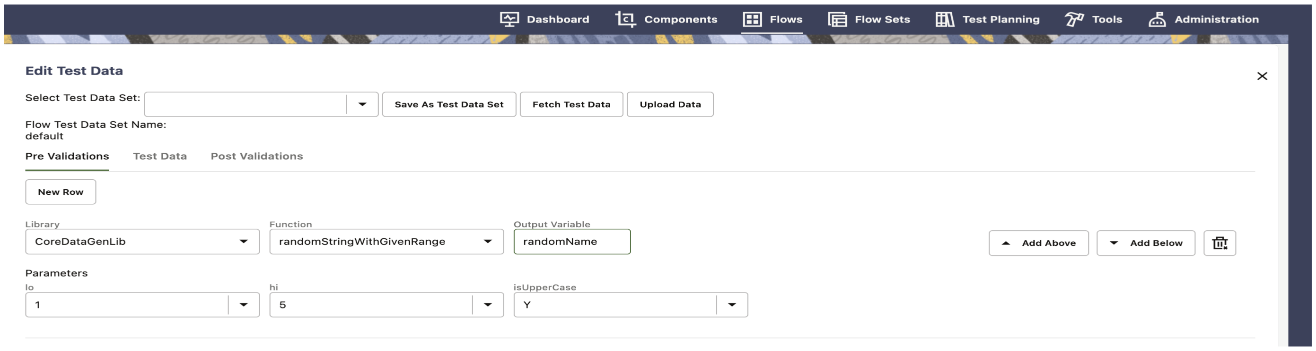
Rest Test Data

Select Test Data Set: Save As Test Data Set

Pre Validations | Test Data | Body | Post Validations

Enable	Keyword	Object	Function Name	Caption	Logical Name	Value 1	Value 2
	WS-LOGMESSAGE			Log Message		testDataSet3	
	RS-SETREQUESTHEADER			Header	Content-Type		
	RS-SETENDPOINT			EndPointUrl	http://google.com		
	RS-ARGUMENT	PathVariable		Path Variable for url	location		
	RS-ARGUMENT	QueryParameter		Add Query Params	name	testDataSet3	
	RS-ARGUMENT	PathVariable		Path Variable	cost		

4. Add any pre-validation and post-validation functions by specifying the library and function details in the **Pre Validations** and **Post Validations** tabs.



Edit Test Data

Select Test Data Set: Save As Test Data Set | Fetch Test Data | Upload Data

Flow Test Data Set Name:
default

Pre Validations | Test Data | Post Validations

New Row

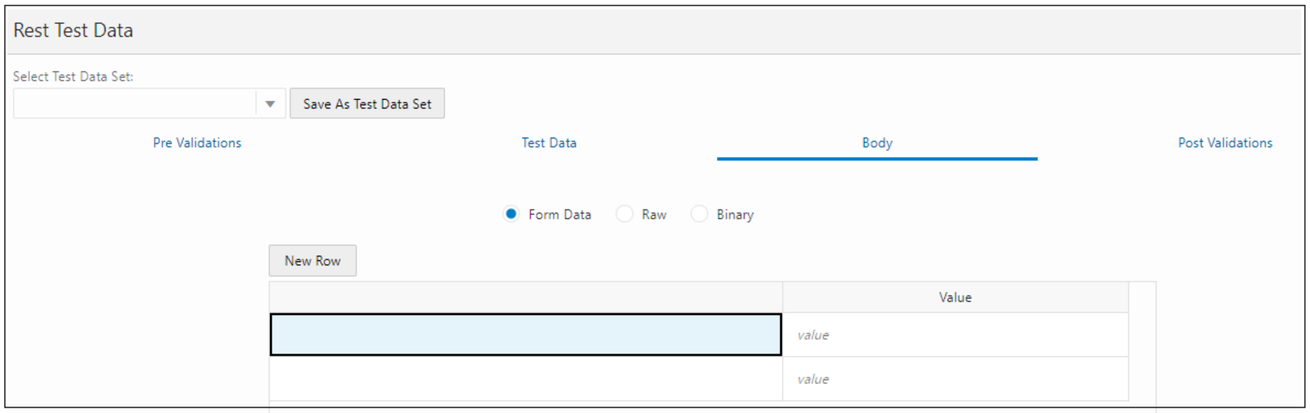
Library: CoreDataGenLib
Function: randomStringWithGivenRange
Output Variable: randomName

Add Above | Add Below

Parameters
lo: 1
hi: 5
isUpperCase: Y

The REST request body can be any of the following:

- Form Data: Key pair values
- RAW Data: Raw text that would be sent out as body
- Binary: Attach a file that contains the request that would be sent as request to REST end point



Rest Test Data

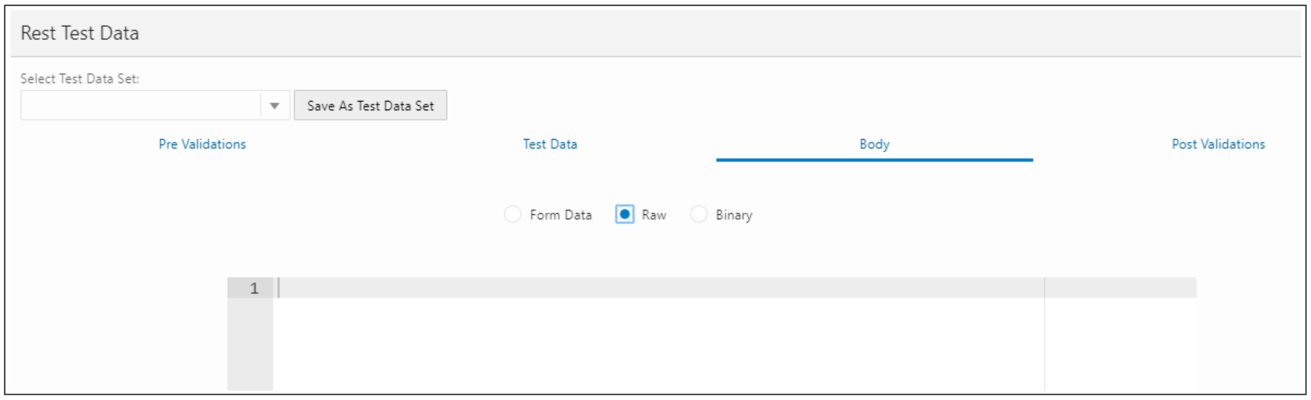
Select Test Data Set: Save As Test Data Set

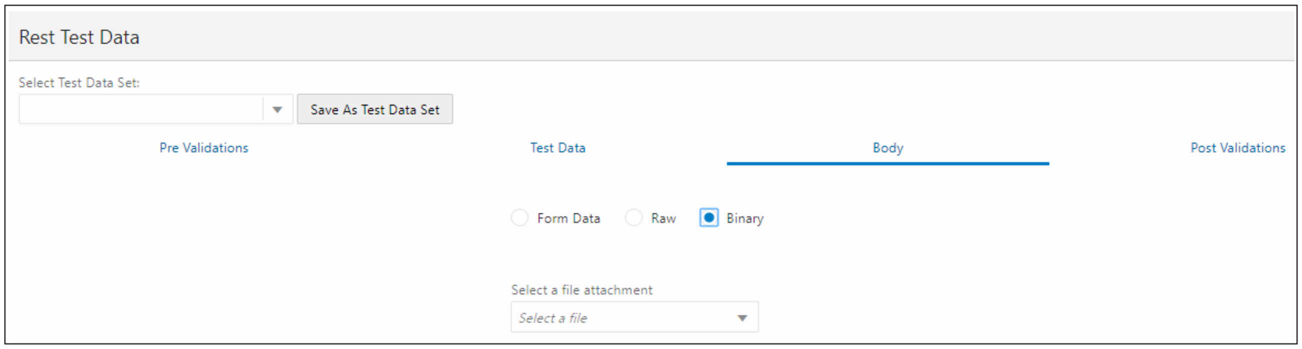
Pre Validations | Test Data | Body | Post Validations

[✓ Form Data] Raw Binary

New Row

	Value
	value
	value





Copying Components

The components delivered can be customized; however, modifying the existing components is not a good practice.

A component can be extended by making its copy and saving it with a different name prefixed and tagged by CM, and then adding or modifying the metadata or key words as follows:

1. Right-click an existing component and select **Copy Component**.
2. Select and right-click a module. It is recommended to create a new module named “Custom Components” to hold any custom components.
3. From the context menu, select **Paste Component**.

   If the component name already exists in the module, then a warning will be displayed followed with a prompt for providing a new name to the component.
4. Click **Save**. The component is copied successfully.

Chapter 7

Creating Test Flow Sets

Flow sets offer a level of abstraction above the flows that allows more flexibility in managing flows. Several related flows can be grouped into a flow set and can be run in sequence. This chapter focuses on flow sets including:

- Creating Flow Sets
- Adding Flows to a Flow Set
- Deleting Flows from a Flow Set
- Running Flow Sets
- Stopping Flow Set Run
- Exporting Flow Sets
- Viewing Flow Set Run History
- Viewing Flow Set Execution Summary Report

Creating Flow Sets

To create a flow set:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.
3. On the left pane, click **Create Flow Set**.
4. Provide the **Flow Set Name** and **Description**, and click **Save** to save the flow set.
5. Navigate to the **Manage Flow Set** menu to add flows to the flow set.

Adding Flows to a Flow Set

To add flows to a flow set:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.
3. On the left pane, click **Manage Flow Set**. The list of available flow sets is displayed.
4. Select the flow set name to which the flow(s) needs to be added.
5. Click **Add Flows**. You can search for one or more flows using the wildcard "%" to search for flows matching a name.

   For example: Search for all flows that contain the text "person" in their name by searching for string "%person%".
6. In the test data set column's drop down, select the flow test data set used to run the flow.
7. Click **Save** to save the flow set.

Deleting Flows from a Flow Set

To delete flows from a flow set:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.
3. In the left pane, click **Manage Flow Set**. The list of available flow sets is displayed.
4. Select the flow set from which the flow(s) needs to be deleted.
5. Delete one or more flows from the flows displayed. Select the checkbox for each of the flow to be deleted and click **Delete**.
6. Click **Save** to save the flow set.

Running Flow Sets

To execute a flow set:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.
3. In the left pane, click **Manage Flow Set**. The list of available flow sets is displayed.
4. Select the flow set to be run and click **Run**.
5. Select the flow configuration and user configuration to be used to run the flow set.
6. Click **Confirm**.

    Note: For more details about on flow configuration and user configuration, refer to the Runtime Configuration for Flow Run (For Run Using Browser) section.

7. Once the flow set run starts, click each of the flows to view more details about the run.

Stopping Flow Set Run

The Stop feature allows the active flow run to complete and stops all subsequent flows in the flow set from running.

To stop a flow set run:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.
3. On the left pane, click **Manage Flow Set**. A list of available flow sets are displayed.
4. Click **View History** on the name of the flow set whose run should be stopped.
5. Select the currently running instance of the flow set and click **Stop**.

Exporting Flow Sets

To export a flow set:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.
3. On the left pane, click **Manage Flow Set**. A list of available flow sets are displayed.
4. Click **Export** against the flow set to be exported.

Viewing Flow Set Run History

To view the run history of a flow set:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.

3. On the left pane, click **Manage Flow Set**. A list of available flow sets are displayed.
4. Click **View History** of a flow set to display all previous runs. You can view details such as the flow set run status, date and time of the run, the user who triggered the run, etc.
5. Click any of the previous runs to view flow-level details of that particular run.

   You can drill-down even further by clicking a flow name and view the details of the flow run, including overall status, request and response details for each of the component and even view the log file details of a particular component run.

Viewing Flow Set Execution Summary Report

To view the execution summary of a flow set:

1. Login to the application.
2. Navigate to the **Flow Sets** menu.
3. On the left pane, click **Manage Flow Set**. A list of available flow sets are displayed.
4. Click **View History** of a flow set to display all previous runs. You can view details such as the flow set run status, date and time of the run, the user who triggered the run, etc.
5. Click any of the previous runs to view flow-level details of that particular run.
6. Click **Summary** to display a summary of the flow set run, including total flows passed/failed, percentage of pass/fail, etc. You can also drill down individual flows to view the respective details.
7. Email the flow set run summary. Specify the email address on the **Summary Report** page and click **Email**.

Chapter 8

Creating Test Plans

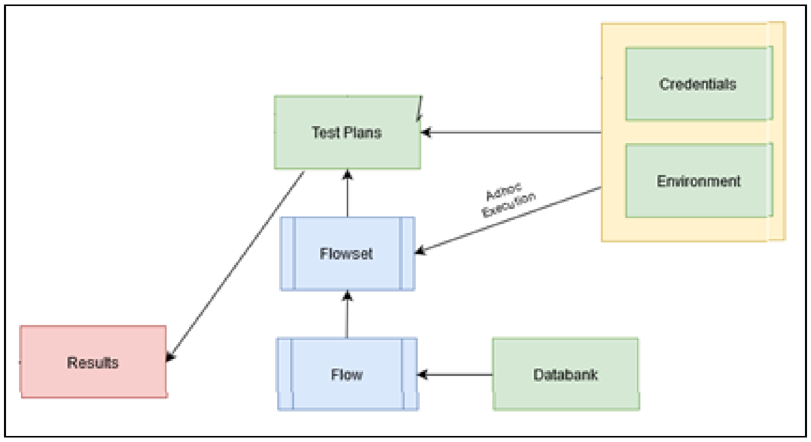
This chapter focuses on test plans, including:

- About Test Plans
- Creating a Test Plan
- Adding and Removing Flow Sets in a Test Plan
- Managing Test Plan Lifecycle
- Running a Test Plan
- Viewing Test Plan Run Results

About Test Plans

A test plan is an object that brings all the test assets together to make the test automation process simpler and easy to use. Using a test plan, the test flows can be grouped to meet an objective (positive and negative tests/assertions) as part of testing. It can be defined using flow sets, which in turn hold all the requisite flows.

The following figure defines the test plan process.



Run the specified set of flows with the prescribed environment using the **Credentials, On-demand**.

Running the tests to meet a given objective may take multiple iterations.

Example:

- A test plan may be created to successfully generate bills for any given customer.
- The test plan may include some automated test flows that verify the objective.
- Users can run this test plan ‘n’ number of times (during sprints in agile), logging bugs/issues during the each iterative run of the test plan.

The Test Plan object encompasses the Flow Set object. One or more flow sets can be grouped together to form a single test plan. It can be executed as a whole, which provides consolidated run results of all the tests within the test plan (under the flow sets).

Creating a Test Plan

To create a test plan:

1. Login to the application.
2. Navigate to the **Test Planning** menu.
3. Click **New** under the **Test Plans** section.
4. Provide the **Test Plan Name** (a unique identifier for a test plan).
5. Provide a **Short Description** and a **Long Description** for the test plan.
6. Select the type of the test plan from the **Type** drop-down list. It helps to differentiate if the test plan pertains to new feature testing, sanity testing or other types of testing. You can also use it when searching for a test plan.
7. Click **Create**.

The test plan will be created and displayed in the **Test Plan** page. The new test plan will be in the "Planning" stage.

Adding and Removing Flow Sets in a Test Plan

To add a flow set to a test plan:

1. Login to the application.
2. Navigate to the **Test Planning** menu.
3. Search for the test plan using the search filters.
4. Select the test plan to be edited.
5. Click **Edit** next to the **Test Plan Definition**.

   Alternatively, click **Add Flow Set**.
6. In the **Edit Test Plan** screen, select the flow set to be added to the test plan and drag and drop it into the **Test Plan Definition** column.

   Make sure to select the flow set before it is dragged into the **Test Plan Definition** column. Use the **Flow Sets** filter to find one or more flow sets based on the flow set name.
7. Click **Save** to save the test plan definition.

To remove a flow set from a test plan:

1. Login to the application.
2. Navigate to the **Test Planning** menu.
3. Search for the test plan using the search filters.
4. Select the test plan to be edited.
5. Click **Edit** next to the **Test Plan Definition**.
6. Select the flow set and click **X** next to it in the **Test Plan Definition** column.
7. Click **Save** to save the test plan definition.

Managing Test Plan Lifecycle

A test plan object supports various lifecycle states for easier and robust management of a test plan. Based on its lifecycle state, certain operations may or may not be allowed on the test plan.

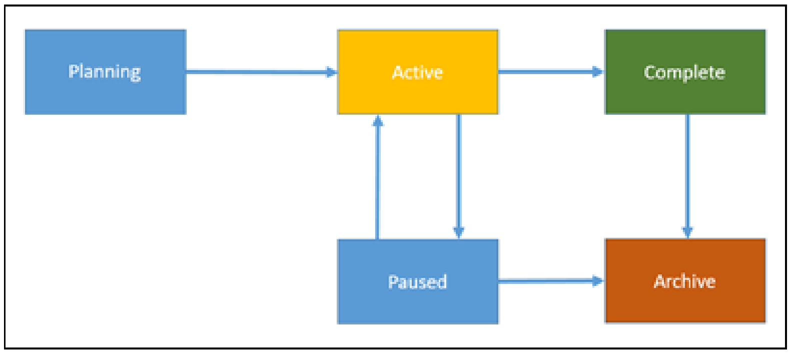
The following lifecycle states are supported:

- **Planning**: This is the initial state of the test plan. All (newly created) test plans will be in the planning state. The test plan definition is allowed in this stage. Flow sets under the test plan can be added or removed when the test plan is in the planning state. The test plan cannot be run in this state, but can be deleted.
- **Active**: After the test plan planning is complete, to run it, it should be moved to the active state. It can be moved to active state from the planning state. An active

test plan can be run. Flow sets cannot be edited/updated when the test plan is in this lifecycle state. The descriptions and type can be updated. The test plan can be moved to paused or complete state from the active state, but cannot be deleted in this state.

- **Paused**: If the test plan definition needs to be changed after moving it to the active state, pause it so that the test plan runs are not triggered during the update. In this state, the test plan can no longer be run. It can be edited or updated and the corresponding flow sets under the test plan can be added or removed. It can be moved to active or archive state, but cannot be deleted.
- **Complete**: The test plan in Complete state signifies that the runs have been completed and the objective has been met, but it still needs to be maintained in the application for tracking/reporting purposes. Updates to the test plan are no longer allowed and the runs are also not allowed. The only state allowed from this is the archived state. The test plan cannot be deleted.
- **Archive**: This is the end state for a test plan that allows a test plan to be deleted. The test plan updates and runs are not allowed in this state. It can be deleted.

The following figure shows the possible test plan lifecycle state transitions.



To update a test plan lifecycle:

1. Login to the application.
2. Navigate to the **Test Planning** menu.
3. Search for the test plan using the search filters.
4. Select the test plan to be edited.
5. Select the appropriate state from the drop-down list. The test plan will be moved to the selected lifecycle state.

Running a Test Plan

To run a test plan:

1. Login to the application.
2. Navigate to the **Test Planning** menu.
3. Search for the test plan using the search filters.
4. Select the test plan to be run (make sure that the test plan is in “Active” state).
5. Click **Run** in the **Test Plan Definition** section on the **Test Plan** page.

6. Select the **Flow Configuration Set** and the **User Configuration Set**. Click **Confirm**.

   The test plan run page is displayed showing the state of the flow set runs for the test plan.

7. To view detailed results of the flow set runs, click the corresponding flow set on the **Test Plan Results** page.

Viewing Test Plan Run Results

To view the run results of a test plan:

1. Login to the application.
2. Navigate to the **Test Planning** menu.
3. Search for the test plan using the search filters.
4. Select the test plan.
5. Click **Run History** in the **Test Plan Definition** section on the **Test Plan** page. The test plan run history page is displayed with the test plan run details.
6. Click the appropriate test plan run record. The test plan run page displays the state of the flow set runs under the test plan.
7. To view the detailed results of the flow set runs, click the corresponding flow set on the **Test Plan Results** page.

Chapter 9

Development Accelerator Tools

This chapter describes the development accelerator tools available in this Oracle Utilities Testing Accelerator release:

- Component Export Tool
- Flow Export Tool
- Component/ Flow Import Tool
- Component Generation Tool
- Password Encryption Tool
- Component Definition Validation Tool

Component Export Tool

This tool is used to export one or more components to another environment. Note that only components in "Approved" state can be exported.

To export a component pack:

1. Login to the application.
2. Navigate to the **Tools** tab.
3. Click **Export Components** in the left pane.
4. Select the **Release**, **Portfolio**, **Product**, **Module**, **Component Name**, **Tags** (example: CM) and **Owner Flag** as required.
5. Click **Export**.

   A prompt appears on the screen to open or save the generated zip file "component.zip".
6. Click **Save** to download the zip file.

The component has been exported as a .zip file.

Flow Export Tool

This feature is used to export one or more flows to another environment. Note that only flows in "Approved" state can be exported.

To export a flow:

1. Login to the application.
2. Navigate to the **Tools** tab.
3. Click **Export Flows** in the left pane.
4. Select the **Release**, **Portfolio**, **Product**, **Flow Name**, **Tags** (example: CM) and **Owner Flag** as required.
5. Click **Export**.

   A prompt appears on the screen to open or save the generated zip file "flow.zip".
6. Click **Save** to download the zip file.

The flow has been exported as a .zip file.

Component/ Flow Import Tool

This feature is used to import components and/or flows to another environment.

To import a component/flow:

1. Login to the application.
2. Navigate to the **Tools** tab.
3. Click **Import** in the left pane.
4. Drop the component/flow pack in to **Import** wizard in the right pane.

When a file is selected/ dropped in the wizard, the file name appears.

5. Click **Save**.
6. If the component/flow already exists in the database, a pop-up is displayed giving a choice to continue or abort the process.
7. When you click **Cancel**, the import component/flow process is not triggered and it goes back to step 3 (you can still import it again).
8. When you click **OK** on the pop-up, the process of importing component/flows begins with progress bar.

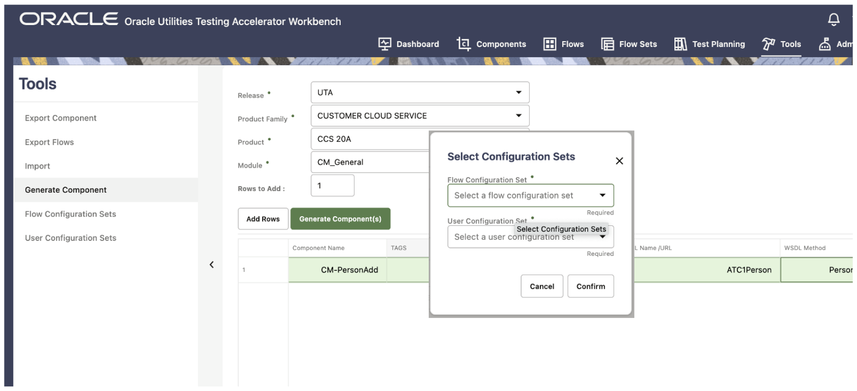
   The component/flow is imported successfully.

Component Generation Tool

This feature is used to generate components from WSDL.

To generate components:

1. Login to the application.
2. Navigate to the **Tools** tab.
3. Click **Generate Components** on the left pane.
4. Enter the data in the required fields.
5. Specify the number of rows to add and click **Add Rows**.
6. Enter the component name, tags, and description, and provide a webservice name, operation name.
7. Click **Generate Component(s)** and select the **Flow/User configuration**. The application URL and user credentials will be taken from the specified configuration file.



Release: UTA
Product Family: CUSTOMER CLOUD SERVICE
Product: CCS 20A
Module: CM_General
Rows to Add : 1

Flow Configuration Set: Select a flow configuration set (Required)
User Configuration Set: Select a user configuration set (Required)

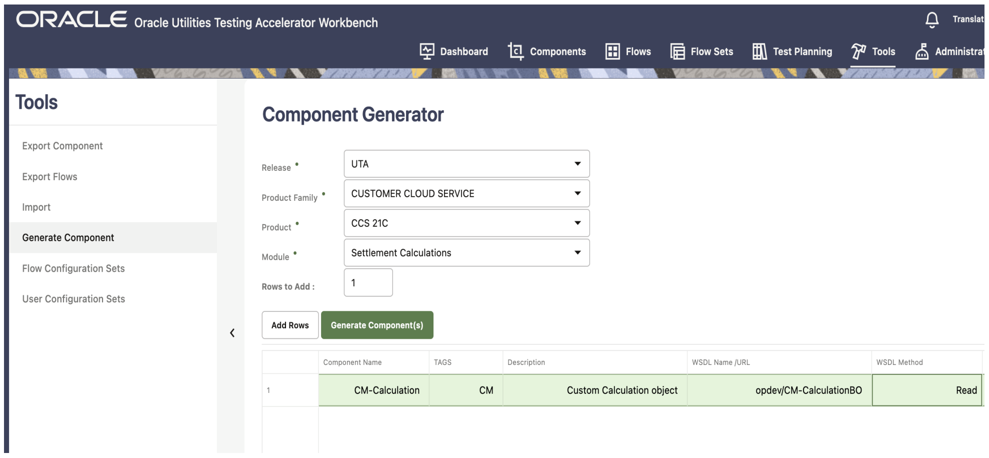
	Component Name	TAGS	L Name /URL	WSDL Method
1	CM-PersonAdd		ATC1Person	Persor

Note: When attempting to generate components from more than one application at the same time, prefix the URLs with keywords in the configuration files that can be used while specifying the WSDL to connect to.

Example: If an Oracle Utilities Meter Data Management component should be generated along with an Oracle Utilities Customer Cloud Service component, specify the three properties mentioned below either in flow or user configuration properties.

```
opdev=<MDM url>
opdev_gStrApplicationUserName=johnDoe
opdev_gStrApplicationUserPassword=enc(pj0TFjXMczsoyzmQ8GuXPt2PS
ydO7VCbR2jhxtkUH06Fuz+zmChpGSCr241KggFC6FwgMg==)
```

To generate a Oracle Utilities Meter Data Management component, enter the webservice name prefixed with "opdev/".



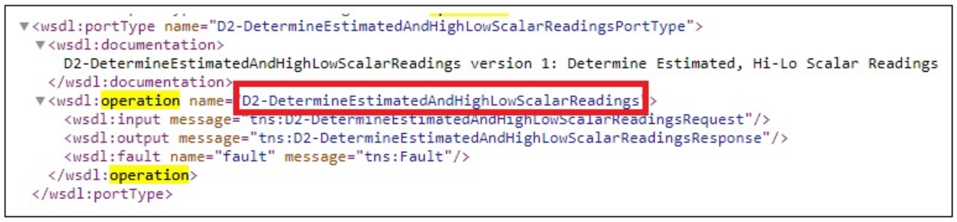
Component Generator

Release: UTA
Product Family: CUSTOMER CLOUD SERVICE
Product: CCS 21C
Module: Settlement Calculations
Rows to Add : 1

	Component Name	TAGS	Description	WSDL Name /URL	WSDL Method
1	CM-Calculation	CM	Custom Calculation object	opdev/CM-CalculationBO	Read

8. Upon successful component generation, a list of generated components and failed components is displayed.

   Tip: The **WSDL Method** column is an operation in WSDL. The following figure shows the name of operation in WSDL.



```
<wsdl:portType name="D2-DetermineEstimatedAndHighLowScalarReadingsPortType">
  <wsdl:documentation>
    D2-DetermineEstimatedAndHighLowScalarReadings version 1: Determine Estimated, Hi-Lo Scalar Readings
  </wsdl:documentation>
  <wsdl:operation name="D2-DetermineEstimatedAndHighLowScalarReadings">
    <wsdl:input message="tns:D2-DetermineEstimatedAndHighLowScalarReadingsRequest"/>
    <wsdl:output message="tns:D2-DetermineEstimatedAndHighLowScalarReadingsResponse"/>
    <wsdl:fault name="fault" message="tns:Fault"/>
  </wsdl:operation>
</wsdl:portType>
```

Password Encryption Tool

The Password Encryption Tool is used to encrypt passwords for additional security.

This section provides the following details about the tool:

- Overview
- Running the Password Encryption Tool

Overview

All the password fields (gStrApplicationUserPassword, gStrApplicationDBPassword) in the configuration.properties file and security.properties file, if any, must be encrypted.

Use the PasswordEncryptor tool to encrypt the password.

Running the Password Encryption Tool

To encrypt plain text using the Password Encryption Tool:

1. Double-click the **PasswordEncryptor.jar** file. when asked for, enter the password.
2. Click **OK**. A dialog box with the encrypted text is displayed.
3. Copy this text and paste it in the respective password field in the configuration.properties or security.properties file.

Alternatively, you can perform the following steps in the console:

1. Navigate to <ECLIPSE-WORKDIR>/tools.
2. Enter the following command:

   ```
   java -jar PasswordEncryptor.jar
   ```

3. When prompted, enter the password.
4. Press **Enter**.
5. Copy this text and paste it in the respective password field in the configuration.properties or security.properties file.

Component Definition Validation Tool

Use the Component Definition Validation Tool to assess the impact of the custom components while upgrading to a newer version of the product. The impact can be assessed either at a product level (report changes to all components of the given product in the newer version) or at a component level.

> **Note**: This tool is intended to be used with only web service based components.

To generate a report at the product level:

1. Login to the application.
2. Navigate to the **Components** menu.
3. On the left pane, select and right-click the product.
4. Select **Validate Components**.
5. Enter the URL of the Utilities application against which the currently selected product components should be validated.

   https://<server-name>:<port>/ouaf/webservices/

6. Click **Validate Components** to generate the report.
7. After generating the report, the tool prompts to save the HTML report to your local system.

   Open the report in a browser to assess the impact.

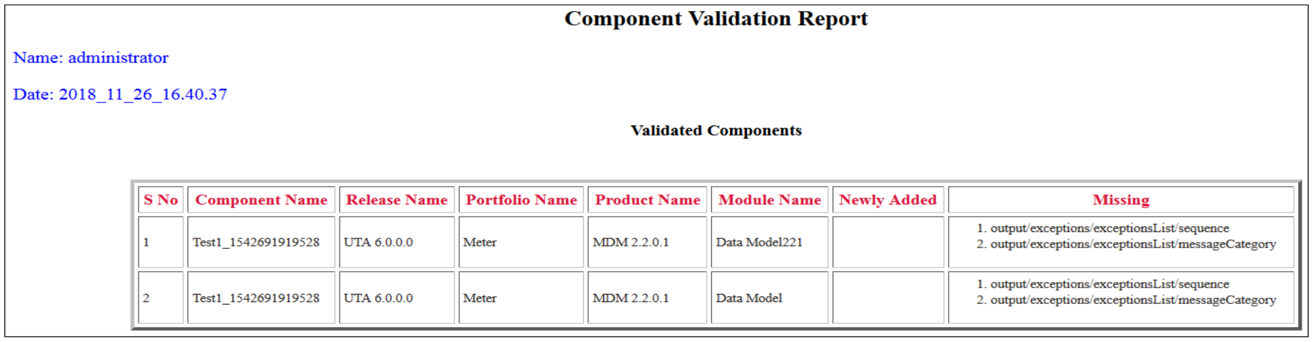
   > **Note**: In the report, the **Newly Added** column lists all the new attributes added to the web service and the **Missing** column lists all the existing attributes that are no longer supported by the web service.

To generate a report at the component level:

1. Login to the application.
2. Navigate to the **Components** menu.
3. On the left pane, select and right-click the component to be validated.
4. Select **Validate Components**.
5. Enter the URL of the Utilities application against which the currently selected product components should be validated.

   https://<server-name>:<port>/ouaf/webservices/
6. Click **Validate Components** to generate the report.
7. After generating the report, the tool prompts to save the HTML report to your local system.

   Open the report in a browser to assess the impact.



Component Validation Report

Name: administrator

Date: 2018_11_26_16.40.37

Validated Components

S No	Component Name	Release Name	Portfolio Name	Product Name	Module Name	Newly Added	Missing
1	Test1_1542691919528	UTA 6.0.0.0	Meter	MDM 2.2.0.1	Data Model221		1. output/exceptions/exceptionsList/sequence 2. output/exceptions/exceptionsList/messageCategory
2	Test1_1542691919528	UTA 6.0.0.0	Meter	MDM 2.2.0.1	Data Model		1. output/exceptions/exceptionsList/sequence 2. output/exceptions/exceptionsList/messageCategory

Note: In the report, the **Newly Added** column lists all the new attributes added to the web service and the **Missing** column lists all the existing attributes that are no longer supported by the web service.

Chapter 10

Function Library Reference

This chapter lists the Oracle Utilities Testing Accelerator function libraries and functions available to create components and flows in Oracle Utilities Testing Accelerator Workbench for testing Oracle Utilities Testing Accelerator.

The following function libraries are described:

- OUTSPCORELIB
- WSVALIDATELIB
- CORERESPONSEUTILLIB
- COREDATETIMELIB
- COREDATAGENLIB
- COREVALIDATEVARIABLELIB
- COREVERIFYCONDITIONVARIABLELIB
- CORESTOREVALUES
- COREFILEOPS
- CORESTRINGOPS
- CORENUMBEROPS
- COREUTAOPS

Note that all input parameters and output parameters of functions are of type String. Type conversions are handled inside the functions.

The input parameters for the functions need to be specified against the logical, Value1, Value2, Value3, Value4, Value5 and Value6 columns, depending on the function definitions.

OUTSPCORELIB

This library develops the component code and flows for web services and general applications. It includes functions with date and time processing and string processing capabilities, as well as database and file operations.

This section provides a list of the functions included in the library, along with their usage details.

setVariable

Stores/sets the value provided in the test data Value1 column into a global variable specified in the OP Variable Name column, so it can be used across the flow.

Example:

```
setVariable (String valueToBeStored)

Input Parameters:
valueToBeStored - value to be set/stored into a variable
Return Type: String
```

getCurrentTimeInMilliSeconds

Gets the time in milliseconds.

Example:

```
getCurrentTimeInMilliSeconds ()

Input Parameters: <none>
Return Type: Sting
```

Randomstring

Generates a random string of random size and stores it into a global variable specified in the OP Variable Name column.

Example:

```
randomstring ()

Input Parameters: <none>
Return Type: String
```

compare2Strings

Compares two strings and returns a boolean result based on the result of comparison which gets stores it into a global variable specified in the OP Variable Name column.

> **Note**: This function returns "True" if strings provided are same. Else, it returns 'False'.

Example:

```
compare2Strings (String_stringA, String_stringB)

stringA - The first String to be compared
stringB - The second String to be compared to stringA
Return Type: String
```

randomNumberUsingDateTime

Generates a random string with date and time in it and stores it into a global variable specified in the OP Variable Name column.

Example:

```
randomNumberUsingDateTime()

Input Parameters: <none>
Return Type: String
```

getCurrentDateTimeWithGivenDateFormat

Gets the current date and time in the specified format and stores it into a global variable specified in the OP Variable Name column.

Example:

```
getCurrentDateTimeWithGivenDateFormat(String dFormat)
dFormat- Java date formats are supported

dFormat - The format of the date output by the function
Return Type: String
```

getDateDiffInSecsWithGivenDateFormat()

Takes a start date and end data as and the corresponding data format as input parameters and calculates the difference between the dates in seconds and stores it into a global variable specified in the OP Variable Name column.

Example:

```
getDateDiffInSecsWithGivenDateFormat("12-13-2014", "12-29-2014",
"mm-dd-yyy")

Input Parameters:
dateStart - The start date for calculating the difference
dateEnd - The end date for calculating the difference
dFormat - the format of the date in which start and end dates have
been specified.

Return Type: String
```

getAdjustedTimeWithGivenDateTime

Calculates a date based on the specified date and an offset(adds or subtracts to the specified date) along with the dateformat, gets the adjusted time and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getAdjustedTimeWithGivenDateTime(String dateTime, String offset,
String dFormat)
```

Example:

```
getAdjustedTimeWithGivenDateTime("12-13-2014", "-02:30","mm-dd-
yyyy")

Input Parameters:
```

```
dateTime - The datetime to which the offset needs to be added.
offset - The offset of time in hh:mi format that needs to be added
to the given datetime.
dFormat - The format of the dateTime input parameter

Return Type: String
```

getAdjustedTimeWithCurrentDateTime

Calculates the date and time after adding the specified offset to the current date and time in the specified date/time format and stores it into a global variable specified in the OP Variable Name column.

Example:

```
getAdjustedTimeWithCurrentDateTime(String offset, String dFormat)
getAdjustedTimeWithCurrentDateTime("-2.30", "mm-dd-yyyy")

Input Parameters: String dateTime, String offset, String dFormat
Return Type: String
```

getAdjustedTimeWithGivenDateAndTime

Calculates the date and time after adding the specified offset to specified date and time in the specified date/time format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getAdjustedTimeWithCurrentDateTime(String offset, String dFormat)
```

Example:

```
getAdjustedTimeWithCurrentDateTime("-2.30", "mm-dd-yyyy")

Input Parameters:
Offset - The offset to be added to the current date time, specified
in hh:mi format
dFormat - The format in which the function should output the
datetime

Return Type: String
```

getAdjustedTimeWithGivenDateAndTime

Calculates the date and time after adding the specified offset to specified date and time in the specified date/time format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getAdjustedTimeWithGivenDateAndTime(String cuDate,String
cuTime,String offset, String dFormat)
```

Example:

```
getAdjustedTimeWithGivenDateAndTime("12-13-2014","12:15:00","-
2.30", "mm-dd-yyyy")

Input Parameters:
```

```
cuDate - The date provided as input
cuTime - Time provided as input
offset - Offset to be added to the date time
dFormat - The format of the date time that the function needs to
output in

Return Type: String
```

addDaysToCurrentDateWithGivenFormat

Calculates the date and time after adding the specified number of days to current date and time in the specified date/time format and stores it into a global variable specified in the OP Variable Name column.

Example:

```
addDaysToCurrentDateWithGivenFormat(String noOfDays, String
dFormat)
addDaysToCurrentDateWithGivenFormat("45", "mm-dd-yyyy")
Input Parameters: String noOfDays, String dFormat
Return Type: String
```

waitForTime

Pauses the flow run for the time duration specified, in minutes.

Usage:

```
waitForTime(String strWaitTimeInMinutes)
```

Example:

```
waitForTime("15")

Input Parameters:
String strWaitTimeInMinutes - The duration to pause a flow run,
specified in minutes.
Return Type: void
```

addDaysToAGivenDate

Adds days to the specified date and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
addDaysToAGivenDate(String date, String noOfDays)
```

Example:

```
addDaysToAGivenDate("12-13-2014", "19")

Input Parameters:
Date - The date to which the number of days have to be added
noOfDays - number of days to be added to the provided date

Return Type: String
```

randomNumber

Adds days to the specified date and stores the output into a global variable specified in the OP Variable Name column.

Example:

```
randomNumber()
Input Parameters: <none>
Return Type: String
```

setVariableValueUsingListIndex

Handles the retrieval of individual values from repeating elements in a comma separated list. The function retrieves the value based on the list index passed. It retrieves the value from the list which matches the specified index and stores the output into a global variable specified in the OP Variable Name column. The parameters passed are global variable (gVar1)/comma separated list and index value. This function is designed to be used in conjunction with other functions that allow for retrieving repeating elements from the response XML.

Usage:

```
setVariableValueUsingListIndex(String listVariableName,String
index)
```

Example:

```
setVariableValueUsingListIndex("data1,data2,data3", 2) - Retrieves
data2

Input Parameters:
listVariableName - List of values separated by comma
index - Index number of the value in the list that needs to be
retrieved

Return Type: String: Value
```

appendStrings

Concatenates strings provided in the parameters and stores the output into a global variable specified in the OP Variable Name column. The default input values to this function are 6 parameters. To concatenate less than 6 strings, provide #EMPTY against the parameters which do not hold any string.

Usage:

```
appendStrings (String strValue1, String strValue2, String
strValue3, String strValue4, String strValue5, String strValue6
```

Input Parameters:

```
strValue1 - The base string
strValue2 - The string to be appended to strValue1
strValue3 - The string to be appended to strValue1+strValue2
strValue4 - The string to be appended to
strValue1+strValue2+strValue3
strValue5 - The string to be appended to
strValue1+strValue2+strValue3+strValue4 strValue6 - The string to
be appended to
strValue1+strValue2+strValue3+strValue4+strValue5
Return Type: String
```

getCurrentMonth

Retrieves the current month and stores the output into a global variable specified in the OP Variable Name column.

Example:

```
getCurrentMonth()

Input Parameters: none
Return Type: String
```

readAttachmentAsString

Retrieves the content of the attachment file whose name is specified as the input parameter and stores the content into a global variable specified in the OP Variable Name column.

Example:

```
readAttachmentAsString(String Filename)

Input Parameters: Name of the attachment file that needs to be read
Return Type: String
```

WSVALIDATELIB

Use the WSVALIDATELIB function library to validate the test components (referred to as verification points) in the components. The library covers validation routines for string and XML elements in the returned response XML. The function automatically fails or passes a flow run subject to the satisfaction of the specified condition.

This section provides a list of functions in the library, along with the usage details.

elementListNotNull

Verifies if all the elements with the specified xpath in response are not null. The xpath to be verified needs to be provided in the Logical Name column in the pre/post validations sections. If the value is null, this function validation will fail the flow run.

Example:

```
elementListNotNull(String xPath)
elementNotNull(contact/mobileNumber)

Input Parameters:
xPath - xpath of the element whose value needs to be checked.
Return Type: void
```

elementListNull

Verifies if all the elements in response with the specified xpath are null. The xpath to be verified needs to be provided in the Logical Name column in the pre/post validations sections. If the value is NOT null, this function validation will fail the flow run.

Example:

```
elementListNull(String xPath) elementNotNull(contact/mobileNumber)
```

```
Input Parameters:
xPath- xpath of the element whose value needs to be checked.
Return Type: void
```

validateXpathOccurrenceCount

Verifies if the specified xpath occurs the specified number of times in the response. The xpath to be verified needs to be provided in the Logical Name column in the pre/post validations sections. The function counts the number of occurrences of the xpath and will fail the flow run, if the count in the response doesn't match the specified number. The expected number of occurrences should be specified in the Value1 column.

Usage:

```
validateXpathOccurenceCount (String xpath,String expectedCount)
```

Example:

```
validateXpathOccurenceCount(contact/mobileNumber,20)

Input Parameters:
xpath - xpath of the element whose occurrence count needs to be
checked.
expectedCount - the expected count of occurrences of the element
Return Type: void
```

elementNotNull

Verifies if the specified element in response is null. The xpath to be verified needs to be provided in the Logical Name column in the pre/post validations sections. This function fails the flow run if the specified element is found to be null in the response.

Usage:

```
elementNotNull(String xpath)
```

Example:

```
elementNotNull(mobileNumber)

Input Parameters:
xpath - xpath of the element whose value needs to be checked.
Return Type: void
```

elementIsNull

Verifies if the specified element in response is not null.

Usage:

```
elementIsNull (String xpath)
```

Example:

```
elementIsNull (mobileNumber)

Input Parameters:
Xpath - xpath of the element whose value needs to be checked.
Return Type: void
```

elementValueEquals

Verifies if the specified element value in response is equal to the provided value.

Usage:

```
elementValueEquals(String xpath, String expectedValue)
```

Example:

```
elementValueEquals(mobileNumber, "1234567890")

Input Parameters:

Xpath - xpath of the element whose value needs to be checked.
expectedValue - the expected value to be compared to for validation

Return Type: void
```

elementValueNotEquals

Verifies if the specified element value in response is not equal to the provided value.

Usage:

```
elementValueNotEquals(String xpath, String expectedValue)
```

Example:

```
elementValueNotEquals(mobileNumber, "1234567890")

Input Parameters:
Xpath - xpath of the element whose value needs to be checked.
expectedValue - the expected value to be compared to for validation

Return Type: void
```

elementValueGreaterThan

Verifies if the specified element value in response is greater than the provided value.

Usage:

```
elementValueGreaterThan(String xpath, String valueToCompare)
```

Example:

```
elementValueGreaterThan("count","5")

Input Parameters:

Xpath - xpath of the element whose value needs to be checked.
valueToCompare - the expected value to be compared to for
validation

Return Type: void
```

elementValueGreaterThanEqualTo

Verifies if the specified element value in response is greater than or equal to the provided value.

Example:

```
elementValueGreaterThanEqualTo(String responseTag,String
valueToCompare)
elementValueGreaterThanEqualTo("totalRecords", "50")

Input Parameters:
Xpath - xpath of the element whose value needs to be checked.
valueToCompare - the expected value to be compared to for
validation

Return Type: void
```

elementValueLesserThan

Verifies if the specified element value in response is less than the provided value.

Usage:

```
elementValueLesserThan(String xpath,String valueToCompare)
```

Example:

```
elementValueLesserThan ("counter", "50")

Input Parameters:
Xpath - xpath of the element whose value needs to be checked.
valueToCompare - the expected value to be compared to for
validation

Return Type: void
```

elementValueLesserThanEqualTo

Verifies if the specified element value in response is less than or equal to the provided value.

Example:

```
elementValueLesserThanEqualTo(String responseTag,String
valueToCompare)
```

Usage:

```
elementValueLesserThanEqualTo ("attempts", "10")

Input Parameters:
Xpath - xpath of the element whose value needs to be checked.
valueToCompare - the expected value to be compared to for
validation

Return Type: void
```

elementContains

Verifies if the specified element is available in the response.

Usage:

```
elementContains(String xpath,String valueToBeChecked)
```

Example:

```
elementContains("batchName", "F1-BILLING)
```

Input Parameters:

```
Xpath - xpath of the element whose value needs to be checked.
valueToBeChecked - the expected value to be compared to for
validation

Return Type: void
```

elementNotContains

Verifies if the specified element is not available in the response.

Usage:

```
elementNotContains(String xpath,String valueToBeChecked)
```

Example:

```
elementNotContains("batchName", "F1-BILLING)
```

Input Parameters:

```
Xpath - xpath of the element whose value needs to be checked.
valueToBeChecked - the expected value to be compared to for
validation

Return Type: void
```

reponseNotContains

Verifies if the specified value or element is not available in the response.

Usage:

```
reponseNotContains(String value)
```

Example:

```
reponseNotContains("Failed")
```

Input Parameters:

```
value - the value to be compared to for validation
Return Type: void
```

responseContains

Verifies if the specified value or element is available in the response.

Usage:

```
responseContains(String value)
```

Example:

```
responseContains("Exception")
```

Input Parameters:

```
value - the value to be compared to for validation
```

```
Return Type: void
```

CORERESPONSEUTILLIB

Use the RESPONSEUTILLIB function library to retrieve/extract specific values from the response XML for a component request, generated as part of the flow run. The library covers data retrieval routines for in the returned response XML.

This section provides a list of functions in the library, along with the usage details.

setVariableFromResponseList

Takes the xpath of an element as input and outputs the value of the xpath in the response into a global variable specified against the OP Variable Name column. If there are multiple occurrences of the element, the corresponding values will be returned as a comma separated list and stored in to the variable specified against the OP Variable Name column.

Usage:

```
setVariableFromResponseList(String xPath)
setVariableFromResponseList (contact/mobileNumber)
```

Input Parameters:

```
String xPath
Return Type: String
```

setVariableFromResponseListWithFilter

This function helps to retrieve specific values from a reoccurring list in the response, based on certain condition that can be applied on other elements in the same list. It takes the xpath of an element whose value needs to be retrieved, the xpath of an element whose value needs to be compared and a filter condition for comparison operation as inputs and outputs the value/values of the xpath in the response that corresponds to the filter condition into a global variable specified against the OP Variable Name column. If there are multiple occurrences of the element satisfying the provided condition, then the corresponding values will be returned as a comma separated list and stored in to the output variable.

The first parameter holds the xpath of the element whose value has to be retrieved.

The second parameter holds the xpath of the element within the repeated list, whose value needs to be compared for a specific condition.

The third parameter holds the comparison condition.

Example:

```
setVariableFromResponseListWithFilter(String xPathToRetrieve,
String xPathToCompare, String Comparison)
```

Input Parameters:

```
String xPath, String xPath, String comparisionCondition
Return Type: String
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve all the bacthJobId values, where the batchParameterValue is "K1-STAGING" the function call would be as follows:

```
setVariableFromResponseListWithFilter("batchJobExtraParameter/
batchJobId", "batchJobExtraParameter/batchParameterValue", "==K1-
STAGING")
```

The "==" operator in the 3rd input parameter to the function performs an "is equal to" comparision with the specified value.

The following are the supported operators for comparison operation:

- ""==" compares to check if the value in the response is equal to the value in the condition
- ""!=" compares to check if the value in the response is not equal to the value in the condition
- "">" compares to check if the value in the response is greater than the value in the condition (works only with numerical values)
- "">=" compares to check if the value in the response is greater than or equal to the value in the condition (works only with numerical values
- ""<" compares to check if the value in the response is less than the value in the condition (works only with numerical values)
- ""<=" compares to check returns true if the value in the response is less than or equal to the value in the condition (works only with numerical values
- ""*" compares to check for any character
    - If the condition starts with "*", it will evaluate the condition as satisfied if the value in response ends with the value in the condition.

      Example: *close will be evaluated as valid for values like enclose.
    - If the condition ends with "*", it will evaluate the condition as satisfied if the value in response starts with the value in the condition.

      Example: pen* will be evaluated as valid for values like pending.
    - If the condition begins and ends with "*", it will evaluate the condition as satisfied if the value in response contains the value in the condition.

      Example: *en* will return true for values like pending.
    - If only "*" is provided without any value, the function checks for the existence of the element and will evaluate the condition as valid if the element exists irrespective of the value.

- If "!*" is present, it will check for the non-existence of the element and will consider the condition as valid if the element is not present in the list.

setVariableFromResponseListWithFilters

This is an extension of the setVariableFromReponseListWithFilter function that helps to retrieve specific values from a reoccurring list in the response, based on a condition that can be applied on other elements in the same list, but, instead of a single condition that was allowed in the setVariableFromReponseListWithFilter function, this function allows users to provide two conditions.

This function takes the xpath of an element whose value needs to be retrieved, the xpath of the elements whose values need to be compared and two filter conditions corresponding to those xpath elements for comparison operation as inputs. The function outputs the value/ values of the xpath in the response that corresponds to the filter conditions into a global variable specified against the OP Variable Name column. If there are multiple occurrences of the element satisfying the provided conditions, then the corresponding values will be returned as a comma separated list and stored in to the output variable.

The first parameter holds the xpath of the element whose value has to be retrieved.

The second parameter holds the xpath of the element within the repeated list, whose value needs to be compared as the first condition.

The third parameter holds the comparison condition corresponding to the second parameter. The fourth parameter holds the xpath of the element within the repeated list, whose value needs to be compared as the second condition.

The fifth parameter holds the comparison condition corresponding to the fourth parameter (the second condition to be evaluated).

Example:

```
setVariableFromResponseListWithFilter(String xPathToRetrieve,
String xPathToCompareFirstCondition, String ComparisonForFirst
Condition, String xPathToCompareForSecondCondition, String
ComparisonForSecondCondition)
```

Input Parameters:

```
String xPath, String xPath, String comparisionCondition, String
xPath, String comparisionCondition
Return Type: String
```

See the setVariableFromResponseListWithFilter function for details on valid comparison conditions and their usage.

getValueFromListWithIndex

This is a supporting util function for the setVariableFromResponseListWithFilter and setVariableFromResponseListWithFilters functions, which takes the a comma separated list of values and returns the value in the list corresponding to the index provided as the second input to the function.

Example:

```
getValueFromListWithIndex(String commaSeperatedList, String
indexNumber)
```

Input Parameters:

```
String CommaSeperatedList , String InderNumber
Return Type: String
```

getGroupsInIntervalFromResponse

If an XML response to a component request has multiple occurrences of a group of list elements that should be retrieved and used in later components in the same flow, this function can be used to retrieve the groups of XML elements and their values.

The function retrieves a set of the XML group elements under the provided parent element's xpath. The occurrences of reoccurring groups to be retrieved for the given xpath can specified using the startIndex and endIndex parameters. The output of the function is a group of list elements in XML format that can be stored in to a global variable.

The other functions in this library can be used to extract specific values from the output variable containing the repeating list groups.

Example:

```
getGroupsInIntervalFromResponse (String xpath, String startIndex,
String endIndex)
```

Input Parameters:

```
xpath - xpath of the parent element of the list whose elements &
values need to be retrieved.
startIndex - starting occurrence number of list that needs to be
retrieved.
endIndex - Ending occurrence number of the list that needs to be
retrieved.
```

Output Parameters:

```
String - The XML string holding all the elements & values of
repeating group of elements between the start and end indexes
specified.
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
```

```
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve the group of elements under the batchJobExtraParameter for the second and third occurrence of the group, call the function using the following input parameters:

```
xpath: batchJobExtraParameter startIndex: 2
endIndex: 3
```

Output XML String:

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

getFirstGroupFromResponse

If an XML response to a component request has multiple occurrences of a group of list elements to be retrieved and used in later components in the same flow, this function can be used to retrieve the groups of XML elements and their values.

The function retrieves a first set of the XML group elements under the provided parent element's xpath. The output of the function is a group of list elements in XML format that can be stored in to a global variable.

Use the other functions in this library to extract specific values from the output variable containing the XML string.

Example:

```
getFirstGroupFromResponse (String xpath)
```

Input Parameters:

```
xpath - xpath of the parent element of the list whose first
occurrence of elements & values need to be retrieved.
```

Output Parameters:

```
String - The XML string holding all the elements & values of the
first occurrence of the repeating group of elements.
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
```

```
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

```
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve the first group of elements under the batchJobExtraParameter, call the function using the following input parameters:

```
xpath: batchJobExtraParameter
```

Output XML String:

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

getFirstNGroupsFromResponse

If an XML response to a component request has multiple occurrences of a group of list elements to be retrieved and used in later components in the same flow, use this function to retrieve the groups of XML elements and their values.

The function retrieves a set of the XML group elements under the provided parent element's xpath. The occurrences of reoccurring groups to be retrieved for the given xpath can be specified using the numberOfOccurrences parameter. The output of the function is a group of list elements in XML format that can be stored in to a global variable.

Use the other functions in this library to extract specific values from the output variable containing the repeating list groups.

Example:

```
getFirstNGroupsFromResponse (String xpath, String
numberOfOccurrences)
```

Input Parameters:

```
xpath - xpath of the parent element of the list whose elements and
values need to be retrieved.
NumberOfOccurrences - the occurrences of the group of list elements
starting from 1, whose elements and values have to be retrieved.
```

Output Parameters:

```
String - The XML string holding all the elements and values of
repeating group of elements for the specified number of
occurrences.
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
```

```
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
```

```
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve the group of elements under the batchJobExtraParameter for first 2 occurrences of the group, call the function using the following input parameters:

```
xpath: batchJobExtraParameter numberOfOccurrences: 2
```

Output XML String:

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

getAllGroupsFromResponse

If an XML response to a component request has multiple occurrences of a group of list elements to be retrieved and used in later components in the same flow, use this function to retrieve the groups of XML elements and their values.

The function retrieves all sets (occurrences) of the XML group elements under the provided parent element's xpath. The output of the function is a group of list elements in XML format that can be stored in to a global variable.

Use the other functions in this library to extract specific values from the output variable containing the repeating list groups.

Example:

```
getAllGroupsFromResponse (String xpath)
```

Input Parameters:

```
xpath - xpath of the parent element of the list whose elements and
values need to be retrieved
```

Output Parameters:

```
String - The XML string holding all the elements and values of
repeating group of under the parent element
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
```

```
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve the group of elements under the batchJobExtraParameter for all the occurrences of the group, call the function using the following input parameters:

```
xpath: batchJobExtraParameter
```

Output XML String:

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

getLastGroupFromResponse

If an XML response to a component request has multiple occurrences of a group of list elements to be retrieved and used in later components in the same flow, use this function to retrieve the groups of XML elements and their values.

The function retrieves the last set (occurrence) of the XML group elements under the provided parent element's xpath. The output of the function is a group of list elements in XML format that can be stored in to a global variable.

Use the other functions in this library to extract specific values from the output variable containing the repeating list groups.

Example:

```
getLastGroupFromResponse (String xpath)
```

Input Parameters:

```
xpath - xpath of the parent element of the list whose elements and
values need to be retrieved.
```

Output Parameters:

```
String - The XML string holding the elements and values of the last
occurrence of the repeating group of elements under the parent
element.
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
```

```
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve the group of elements under the batchJobExtraParameter for the last occurrence of the group, use this function to call the following input parameters:

```
xpath: batchJobExtraParameter
```

Output XML String:

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

getLastNGroupsFromResponse

If an XML response to a component request has multiple occurrences of a group of list elements to be retrieved and used in later components in the same flow, use this function to retrieve the groups of XML elements and their values.

The function retrieves a set of the XML group elements under the provided parent element's xpath. The occurrences (starting from the end of reoccurrence group) of reoccurring groups to be retrieved for the given xpath can specified using the numberOfLastNOccurrences parameter. The output of the function is a group of list elements in XML format that can be stored in to a global variable.

The other functions in this library can be used to extract specific values from the output variable containing the repeating list groups.

Example:

```
getLastNGroupsFromResponse (String xpath, String
numberOfLastNOccurrences)
```

Input Parameters:

```
xpath - xpath of the parent element of the list whose elements and
values need to be retrieved.
NumberOfLastNOccurrences - occurrences of the group of list
elements starting from the end/total, whose elements and values
have to be retrieved.
```

Output Parameters:

```
String - The XML string holding all the elements and values of
repeating group of elements for the specified number of occurrences
from last.
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
```

```
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve the group of elements under the batchJobExtraParameter for last 2 occurrences of the group, call the function using the following input parameters:

```
xpath: batchJobExtraParameter numberOfOccurrences: 2
```

Output XML String:

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
```

```
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

getGroupsFromResponseWithFilter

If an XML response to a component request has multiple occurrences of a group of list elements to be retrieved based on some conditions to be applied on the elements in the group, to be used in later components in the same flow, use this function to retrieve the groups of XML elements and their values.

The function retrieves a set of the XML group elements under the provided parent element's xpath subject to a specified condition. The condition based on which the reoccurring groups are to be retrieved for the given xpath can specified using the corresponding xpath and the conditional parameters. The output of the function is a group of list elements in XML format that can be stored in to a global variable.

The other functions in this library can be used to extract specific values from the output variable containing the repeating list groups.

Example:

```
getGroupsFromResponseWithFilter (String xpath, String
elementXpathForCondition, String condition)
```

Input Parameters:

```
xpath - xpath of the parent element of the list whose elements and
values need to be retrieved.
elementXpathForCondition - xpath of the element within the list
whose value needs to be validated against the specified condition,
for match.
condition - The condition to be applied on the element specified
against elementXpathForCondition parameter. For the supported list
of conditions, refer to the list of conditional statements
specified under the function "setVariableFromReponseListWithFilter"
```

Output Parameters:

```
String - The XML string holding the elements and values of
repeating group of elements between whose element matches the
conditional statement specified.
```

Example:

Consider the following XML as the response XML for a component in a flow:

```
<env:Envelope xmlns:env=\"http://schemas.xmlsoap.org/soap/
envelope/\">
<env:Header/>
<env:Body>
<ouaf:ATF1BatchSubmission_READ xmlns:ouaf=\"http://
```

```
ouaf.oracle.com/webservices/cm/ATF1BatchSubmission\">
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:batchControl>K1-SCLTB</ouaf:batchControl>
<ouaf:submissionMethod>F1OT</ouaf:submissionMethod>
<ouaf:batchNumber>1</ouaf:batchNumber>
<ouaf:batchRerunNumber>0</ouaf:batchRerunNumber>
<ouaf:user>SYSUSER</ouaf:user>
<ouaf:submissionUser>SYSUSER</ouaf:submissionUser>
<ouaf:language>ENG</ouaf:language>
<ouaf:batchStartDateTime>2020-07-02T22:40:31+08:00</
ouaf:batchStartDateTime>
<ouaf:threadCount>0</ouaf:threadCount>
<ouaf:batchThreadNumber>0</ouaf:batchThreadNumber>
<ouaf:maximumCommitRecords>0</
ouaf:maximumCommitRecords>
<ouaf:maximumTimeoutMinutes>0</
ouaf:maximumTimeoutMinutes>
<ouaf:isTracingProgramStart>false</
ouaf:isTracingProgramStart>
<ouaf:isTracingProgramEnd>false</
ouaf:isTracingProgramEnd>
<ouaf:isTracingSQL>false</ouaf:isTracingSQL>
<ouaf:isTracingStandardOut>false</
ouaf:isTracingStandardOut>
<ouaf:batchJobStatus>ST</ouaf:batchJobStatus>
<ouaf:version>3</ouaf:version>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049025</ouaf:batchJobId>
<ouaf:sequence>10</ouaf:sequence>
<ouaf:batchParameterName>targetSchema</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049026</ouaf:batchJobId>
<ouaf:sequence>20</ouaf:sequence>
<ouaf:batchParameterName>targetSchema2</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1-STAGING</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

```
</ouaf:ATF1BatchSubmission_READ>
</env:Body>
</env:Envelope>
```

To retrieve the group of elements under the batchJobExtraParameter parent element, whose sequence is greater than 20, call the function using the following input parameters:

```
xpath: batchJobExtraParameter elementXpathForCondition: sequence
condition: >20
```

Output XML String:

```
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049027</ouaf:batchJobId>
<ouaf:sequence>30</ouaf:sequence>
<ouaf:batchParameterName>table</
ouaf:batchParameterName>
<ouaf:batchParameterValue>CI_NT_UP</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
<ouaf:batchJobExtraParameter>
<ouaf:batchJobId>82503583049028</ouaf:batchJobId>
<ouaf:sequence>40</ouaf:sequence>
<ouaf:batchParameterName>action</
ouaf:batchParameterName>
<ouaf:batchParameterValue>K1BT</
ouaf:batchParameterValue>
<ouaf:version>1</ouaf:version>
</ouaf:batchJobExtraParameter>
```

getResponseGroupSize

If an XML response to a component request has multiple occurrences of a group of list elements whose group count needs to be determined, use this function to retrieve the number of occurrences of the groups of XML elements. The output of the function is the number of occurrences of the group that can be stored in to a global variable.

Example:

```
getResponseGroupSize (String xpath)
```

Input Parameters:

```
xpath - xpath of the parent element of the group whose occurrence
count needs to be determined.
```

Output Parameters:

```
String - count of the number of occurrences of the specified group
```

COREDATETIMELIB

Use the COREDATETIMELIB function library to calculate date time operations to be used as test data inputs in a component of a flow. The library also has date time conversion functions to format the date time.

This section provides a list of functions in the library, along with the usage details.

getCurrentDatetimeWithGivenDateFormat

Gets the current date and time in the specified format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getCurrentDateTimeWithGivenDateFormat(String dFormat) dFormat- Java
date formats are supported.
getCurrentDateTimeWithGivenDateFormat("mm-dd-yyyy:hh.mm.ss")
```

Input Parameters:

```
Date Format String
Return Type: String
```

getFormattedDateWithGivenDate

Converts the date time input provided in to the specified format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getFormattedDateWithGivenDate(String sourceDatetime, String
sourceDateFromat, String outputDateFormat)

dFormat- Java date formats are supported

getFormattedDateWithGivenDate ("02/01/2020:23:00:00","dd/mm/
YYYY:HH24:mi:ss","mm-dd-yyyy:hh.mi.ss")
```

getDateDiffInSecsWithGivenDateFormat

Takes a start date and end data and the corresponding data format as input parameters and calculates the difference between the dates in seconds and stores it into a global variable specified in the OP Variable Name column.

Example:

```
getDateDiffInSecsWithGivenDateFormat(String dateStart, String
dateEnd, String dFormat)

getDateDiffInSecsWithGivenDateFormat("12-13-2014", "12-29-2014",
"mm-dd-yyy")
```

Input Parameters:

```
String dateStart, String dateEnd, String dFormat
Return Type: String
```

getAdjustedTimeWithGivenDateTime

Calculates a date based on the specified date and an offset (adds or subtracts to the specified date) along with the dateformat, gets the adjusted time and stores it into a global variable specified in the OP Variable Name column.

Note: Supports the offset in hours:minutes:seconds = hh:mm:ss.

Example:

```
getAdjustedTimeWithGivenDateTime(String dateTime, String offset,
String dFormat)
```

```
getAdjustedTimeWithGivenDateTime("12-13-2014", "-02:30","mm-dd-
yyyy")
```

Input Parameters:

```
String dateTime, String offset, String dFormat
Return Type: String
```

getAdjustedTimeWithCurrentDateTime

Calculates the date and time after adding the specified offset to the current date and time in the specified date/time format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getAdjustedTimeWithCurrentDateTime(String offset, String dFormat)

getAdjustedTimeWithCurrentDateTime("-2.30", "mm-dd-yyyy")
```

Input Parameters:

```
String offset, String dFormat
Return Type: String
```

addDaysToCurrentDateWithGivenFormat

Calculates the date and time after adding the specified number of days to current date and time in the specified date/time format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
addDaysToCurrentDateWithGivenFormat(String noOfDays, String
dFormat)
addDaysToCurrentDateWithGivenFormat("45", "mm-dd-yyyy")
```

Input Parameters:

```
String noOfDays, String dFormat
Return Type: String
```

getCurrentTimeinMilliSeconds

Gets the current date time in milliseconds and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getCurrentDateTimeinMilliSeconds()
```

Input Parameters: None

```
Return Type: String
```

getEpochInGivenDateTimeFormat

Supports the conversion of the date time value from epoch format, which is the format used for incrementer in the subroutine looping interface, when user selects the incrementer type as date time.

This function takes two parameters, the first is the name of the variable that has the timestamp in epoch (example: incrementer in sub-routine loop), and the second is a valid date-time output format. It returns a string with the date-time in the format specified.and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getEpochInGivenDateTimeFormat(String epochDateTime, String
outputDateFormat)
```

Input Parameters:

```
epochDateTime - The epoch that needs to be converted
outputDateFormat - The format of the date to be output by the
function
Return Type: String
```

getNthDayOfCurrentMonth

Calculates and returns the date for Nth day of the current month based on the input date format and day of the month.

Usage:

```
getNthDayOfCurrentMonth(String dFormat, String noOfDays)
getNthDayOfCurrentMonth("yy-MM-dd", "15")
```

Input Parameters:

```
dFormat - Format of the output date
noOfDays - Day of the month for which the date has to be calculated
```

getNthDayOfCurrentYear

Calculates and returns the date for Nth day of the current year based on the input date format and day of the year.

Usage:

```
getNthDayOfCurrentMonth(String dFormat, String noOfDays)
getNthDayOfCurrentMonth("yy-MM-dd", "45")
```

Input Parameters:

```
dFormat - Format of the output date
```

COREDATAGENLIB

This library contains functions that help with the generation of random numbers and strings which can be used as test data inputs for a flow.

This section provides a list of functions in the library, along with the usage details.

randomStringWithGivenRange

Generates a random string within the specified number of characters, either in upper case of lower case based on the input parameters and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
randomStringWithGivenRange(String minCharacters, String
maxCharacters, String isUpperCase)
```

Input Parameters:

```
minCharacters- The minimum number of characters(min size) in the
random string. Only numbers are allowed.
maxCharacters- The maximum number of characters(max size) in the
random string. Only numbers are allowed.
isUpperCase - Set to "true" if the random string needs to be in
UpperCase, else set to "false". Only Boolean values are allowed.
```

randomString

Generates a random string of random length and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
randomString ()
```

Input Parameters: None

```
ReturnType - String
```

randomNumber

Generates a random number of specified size and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
randomNumber(String length)
```

Input Parameters:

```
length - The length of the random number to be generated. Only
numbers are allowed.
```

COREVALIDATEVARIABLELIB

Use this function library to validate the values/elements stored in variables (referred to as verification points) in a flow. The library covers validation routines for string and XML elements in the variables. It includes all the functions of the WSVALIDATELIB, except that the functions in this library work on the values/elements stored in variables instead of a response to component request in flow run.

This section provides a list of functions in the library, along with the usage details.

elementListNotNull

Verifies if all the elements with the specified xpath in the XML string stored in a variable are not null. The xpath to be verified needs to be provided in the value column in the pre/post validations sections. If the value is null, this function validation will fail the flow run.

Usage:

```
elementListNotNull(String variableName, String xPath)
elementNotNull(gVarVariable,contact/mobileNumber)
```

Input Parameters:

```
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
xpath - xpath of the element to be validated. To be provided in the
Value column of test data. Return Type: void
```

elementListNull

Verifies if all the elements with the specified xpath are null in the XML string stored in a variable. The xpath to be verified needs to be provided in the value column in the pre/post validations sections. If the value is NOT null, this function validation will fail the flow run.

Usage:

```
elementListNull(String variableName, String xPath)
elementNotNull(gVarVariable,contact/mobileNumber)
```

Input Parameters:

```
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value1
column.
xpath - xpath of the element to be validated. To be provided in the
Value column of test data.
Return Type: void
```

validateXpathOccurrenceCount

Verifies if the specified xpath occurs the specified number of times in the XML string stored in a variable. The xpath to be verified needs to be provided in the value column in the pre/post validations sections. The function counts the number of occurrences of the xpath and will fail the flow run, if the count in the response doesn't match the specified number.

Usage:

```
validateXpathOccurenceCount (String xpath,String VariableName,
String expectedCount) validateXpathOccurenceCount(contact/
mobileNumber,20)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
Value column of test data.
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
expectedOccurrenceCount - The expected number of occurrences needs
to be specified in the Value column.

Return Type: void
```

elementNotNull

Verifies if the specified element in the XML string stored in a variable is null. This function fails the flow run if the specified element is found to be null in the response.

Usage:

```
elementNotNull(String xpath, String VariableName)
elementNotNull(mobileNumber)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.

Return Type: void
```

elementIsNull

Verifies if the specified element in the XML string stored in a variable is not null.

Usage:

```
elementIsNull(String xpath, String variableName)
elementIsNull(mobileNumber)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.

Return Type: void
```

elementValueEquals

Verifies if the specified element value in the XML string stored in a variable is equal to the provided value. The functions fails the flow if the value does not match.

Usage:

```
elementValueEquals(String xpath,String variableName, String
expectedValue)
elementValueEquals(mobileNumber,gVarVariable, "1234567890")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections.
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
expectedValue - The value to be compared to for validation.

Return Type: void
```

elementValueNotEquals

Verifies if the specified element value in the XML string stored in a variable is not equal to the provided value. The functions fails the flow if the value matches.

Usage:

```
elementValueNotEquals(String xpath,String variableName, String
expectedValue)
elementValueNotEquals(mobileNumber,gVarVariable, "1234567890")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections.
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
expectedValue - The value to be compared to for validation

Return Type: void
```

elementValueGreaterThan

Verifies if the specified element value in the XML string stored in a variable is greater than the provided value. This function fails the flow if the value is not greater than the specified value.

Usage:

```
elementValueGreaterThan(String xpath, String variableName String
valueToCompare)
elementValueGreaterThan("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections.
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column.

Return Type: void
```

elementValueGreaterThanEqualTo

Verifies if the specified element value in the XML string stored in a variable is greater than or equal the provided value. The function fails the flow if the value is not greater than or equal to the specified value.

Usage:

```
elementValueGreaterThanEqualTo(String xpath, String variableName
String valueToCompare)
elementValueGreaterThanEqualTo("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
```

```
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column.

Return Type: void
```

elementValueLesserThan

Verifies if the specified element value in the XML string stored in a variable is less than the provided value. The functions fails the flow if the value is not less than the specified value.

Usage:

```
elementValueLesserThan(String xpath, String variableName String
valueToCompare)
elementValueLesserThan("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column

Return Type: void
```

elementValueLesserThanEqualTo

Verifies if the specified element value in the XML string stored in a variable is lesser than or equal the provided value. The functions fails the flow if the value is not greater than or equal to the specified value.

Usage:

```
elementValueLesserThanEqualTo(String xpath, String variableName
String valueToCompare)
elementValueLesserThanEqualTo("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the value column

Return Type: void
```

elementContains

Verifies if the specified element contains the specified value in the XML string stored in a variable. The function fails the flow if the element does not contain the specified value.

Usage:

```
elementContains(String xpath,String varibleName, String
valueToCompare) elementContains("batchName",gVarVariable, "F1-
BILLING)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column

Return Type: void
```

elementNotContains

Verifies if the specified element does not contain the specified value in the XML string stored in a variable. The function fails the flow run if the element contains the specified value.

Usage:

```
elementContains(String xpath,String varibleName, String
valueToCompare) elementContains("batchName",gVarVariable, "F1-
BILLING)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column
```

variableNotContains

Verifies if the specified value or element is not available in the XML string held in the variable. The function fails the flow run if the element contains the specified value.

Usage:

```
reponseNotContains(String variableName,String valueToCompare)
reponseNotContains(gVarVariable,"Failed")
```

Input Parameters:

```
variableName - the name of the variable that holds the XML string.
valueToCompare - value to compare to

Return Type: void
```

variableContains

Verifies if the specified value or element is available in the XML string held in a variable. The function fails the flow run if the element does not contain the specified value.

Usage:

```
responseContains(String variableName,String value)
responseContains(gVarVariable,"Exception")
```

Input Parameters:

```
variableName - the name of the variable that holds the XML string.
valueToCompare - value to compare to
Return Type: void
```

COREVERIFYCONDITIONVARIABLELIB

This library has been designed to be used in conjunction with the skip component feature of Oracle Utilities Testing Accelerator. Use this function library to validate the values/ elements stored in variables (referred to as verification points) in a flow. The library covers validation routines for string and XML elements in the variables. The library validates the conditions on the response XML and outputs true or false value, which can be stored into an output global variable.

The functions in this library take a variable holding the response XML as one of the inputs and apply the validation condition on the XML in the variable.

The response of a component step can be stored in to a global variable using the "setReponseIntoVariable" function in the CORERESPONSEUTILLIB.

This section provides a list of functions in the library, along with the usage details.

elementListNotNull

Verifies if all the elements with the specified xpath in the XML string stored in a variable are not null. The variable holding the response XML and the xpath to be verified needs to be provided in the value column in the pre/post validations sections. If the value is null, this function will return false, else it will return true.

Usage:

```
elementListNotNull(String variableName, String xPath)
elementNotNull(gVarVariable,contact/mobileNumber)
```

Input Parameters:

```
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
xpath - xpath of the element to be validated. To be provided in the
Value column of test data.

Return Type: String (true|false)
```

elementListNull

Verifies if all the elements with the specified xpath are null in the XML string stored in a variable. The variable holding the response XML and the xpath to be verified needs to be provided in the value columns in the pre/post validations sections. If the value is NOT null, this function will return false, else it will return true..

Usage:

```
elementListNull(String variableName, String xPath)
```

```
elementNotNull(gVarVariable,contact/mobileNumber)
```

Input Parameters:

```
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value1
column.
xpath - xpath of the element to be validated. To be provided in the
Value column of test data.
Return Type: String (true|false)
```

validateXpathOccurrenceCount

Verifies if the specified xpath occurs the specified number of times in the XML string stored in a variable. The xpath to be verified needs to be provided in the value column in the pre/post validations sections. The function counts the number of occurrences of the xpath and this function will return false, if the count in the response does not match the specified number, else it will return true.

Usage:

```
validateXpathOccurenceCount (String xpath,String VariableName,
String expectedCount)
validateXpathOccurenceCount(contact/ mobileNumber,20)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
Value column of test data.
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
expectedOccurrenceCount - The expected number of occurrences needs
to be specified in the Value column.
Return Type: string (true|false)
```

elementNotNull

If the specified element in the XML string stored in a variable is null, then this function will return false, else it will return true.

Usage:

```
elementNotNull(String xpath, String VariableName)
elementNotNull(mobileNumber)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
Return Type: String (true|false)
```

elementIsNull

If the specified element in the XML string stored in a variable is null, then the function returns true, else it will return false.

Usage:

```
elementIsNull(String xpath, String variableName)
elementIsNull(mobileNumber)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
Return Type: String (true|false)
```

elementValueEquals

If the specified element value in the XML string stored in a variable is equal to the provided value, then the function returns true, else it returns false.

Usage:

```
elementValueEquals(String xpath,String variableName, String
expectedValue)
elementValueEquals(mobileNumber,gVarVariable, "1234567890")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
expectedValue - The value to be compared to for validation
Return Type: String {true|false)
```

elementValueNotEquals

If the specified element value in the XML string stored in a variable is not equal to the provided value, then the function returns true, else it returns false.

Usage:

```
elementValueNotEquals(String xpath,String variableName, String
expectedValue)
elementValueNotEquals(mobileNumber,gVarVariable, "1234567890")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
expectedValue - The value to be compared to for validation
Return Type: String (true|false)
```

elementValueGreaterThan

If the specified element value in the XML string stored in a variable is greater than the provided value, then the function returns true else it returns false.

Usage:

```
elementValueGreaterThan(String xpath, String variableName String
valueToCompare)
elementValueGreaterThan("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column.
Return Type: String (true|false)
```

elementValueGreaterThanEqualTo

If the specified element value in the XML string stored in a variable is greater than or equal the provided value, then function returns true, else it returns false.

Usage:

```
elementValueGreaterThanEqualTo(String xpath, String variableName
String valueToCompare)
elementValueGreaterThanEqualTo("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column.
Return Type: String (true|false)
```

elementValueLesserThan

If the specified element value in the XML string stored in a variable is less than the provided value, then the function returns true, else it returns false.

Usage:

```
elementValueLesserThan(String xpath, String variableName String
valueToCompare)
elementValueLesserThan("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column
Return Type: String (true|false)
```

elementValueLesserThanEqualTo

If the specified element value in the XML string stored in a variable is lesser than or equal the provided value, then the function returns false, else it returns true.

Usage:

```
elementValueLesserThanEqualTo(String xpath, String variableName
String valueToCompare)
elementValueLesserThanEqualTo("count",gVarVariable,"5")
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the value column
Return Type: String (true|false)
```

elementContains

If the specified element contains the specified value in the XML string stored in a variable, the function returns true. Else, it returns false.

Usage:

```
elementContains(String xpath,String varibleName, String
valueToCompare) elementContains("batchName",gVarVariable, "F1-
BILLING)
```

Input Parameters

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
valueToCompare - The value to be compared to for validation. To be
provided in the Value column
Return Type: void
```

elementNotContains

Verifies if the specified element does not contain the specified value in the XML string stored in a variable. The function fails the flow run if the element contains the specified value.

Usage:

```
elementContains(String xpath,String varibleName, String
valueToCompare) elementContains("batchName",gVarVariable, "F1-
BILLING)
```

Input Parameters:

```
xpath - xpath of the element to be validated. To be provided in the
value column of test data in the pre/post validations sections
variableName - Name of the variable that holds the XML string to be
validated. The variable name needs to be provided in the Value
column.
```

```
valueToCompare - The value to be compared to for validation. To be
provided in the Value column.
```

variableNotContains

If the specified value or element is not available in the XML string held in the variable, the function returns true. Else, it returns false.

Usage:

```
reponseNotContains(String variableName,String valueToCompare)
reponseNotContains(gVarVariable,"Failed")
```

Input Parameters:

```
variableName - the name of the variable that holds the XML string.
valueToCompare - value to compare to
Return Type: String (true|false)
```

variableContains

If the specified value or element is available in the XML string held in a variable, the function returns true. Else, it returns false.

Usage:

```
responseContains(String variableName,String value)
responseContains(gVarVariable,”Exception”)
```

Input Parameters:

```
variableName - the name of the variable that holds the XML string
valueToCompare - value to compare to
Return Type: String {true|false)
```

CORESTOREVALUES

Use this function library to store values into a variable.

setVariable

Stores the specified input value into a global variable specified in the OP Variable Name column.

Usage:

```
setVariable(String valueToStore)
elementNotNull("32425683235")
```

Input Parameters:

```
valueToStore - value to be stored in a global variable

Return Type: String
```

appendValueToList

This function Appends a value to a list of values. The input to the function can either be a value or a variable. The output will be a list stored into a global variable. The function is used as part of subroutine looping to store a list of values into the function, one from each iteration of the subroutine.

Example: Consider a subroutine that has a component that adds a new meter read into Oracle Utilities Meter Solution Cloud Service, for each loop that it runs for. Oracle Utilities Meter Solution Cloud Service responds with the meterReadId for each of the meter read add transactions, which can be stored as a list of values (the list of meterReadIds that are generated as part of subroutine looping). MeterReadId can be extracted from the response into a variable using coreresponseutilib functions and then this variable can be used as input to the appendValueToList function.

Users can also use the value of the incrementer from the subroutine looping data as the input.

Stores the list of values in a global variable specified in the **OP Variable Name** column.

Usage:

```
appendValueToList (String variable)
```

Input Parameters:

```
variable: The value to be appended to the list
Return Type: list
```

getListValueUsingIndex

This function fetches a particular value from the a list of values based on the provided index. This function complements the above appendValueToList function in that it allows for extracting individual values from the list of values generated by the appendValueToList function. The input to the function is the index of the value that we need.

Stores the fetched value from the list into a global variable specified in the OP Variable Name column.

Usage:

```
getListValueUsingIndex (String index)
```

Input Parameters:

```
index - The index of the value that needs to be retrieved from a
list of values
Return Type: String
```

appendKeyValueToList

Creates a key based list of values, which users can later use to retrieve specific values. This is an extension of the appendValuesToList function wherein the index has been replaced with a custom key.

The function appends a key and a value/variable to a map. The input to the function will be a key and a corresponding value/variable. The output will be a map stored into a global variable.

An example is a subroutine iteration that needs to create activities and complete them. After the completion of the subroutine loop run with 10 iterations that create 10 activities, subsequent steps in the parent flow will be able to get the id of an activity that could not be completed or that was stuck in started state.

Usage:

```
appendKeyValueToList (String key,String value)
```

Input Parameters:

```
key - The key for the corresponding value
value - The value to be added along with the key to the map.
Return Type: map
```

getListValueUsingKey

Fetches a particular value from the key value pair map generated by appendKeyValueToList function based on the provided key. The input to the function is a key.

Stores the fetched value from the map into a global variable specified in the OP Variable Name column

Usage:

```
getListValueUsingKey (String key)
```

Input Parameters:

```
key - The key corresponding to a value that needs to be fetched from
the map.
Return Type: String
```

COREFILEOPS

Use this function library to read files that are stored in flow attachments.

readAttachmentAsString

Reads the content of the attachment whose filename is provided as input parameter and stores the content as string into a global variable specified in the OP Variable Name column. The encoding of the file needs to be specified as a second input parameter.

Usage:

```
readAttachmentAsString(String fileName, String fileEncoding)
readAttachmentAsString("testFile.txt","UTF-8")
```

Input Parameters:

```
fileName - name of file in flow attachments
fileEncoding - encoding of the file being read

Return Type: String
```

CORESTRINGOPS

Use this function library perform String operations such as append, etc.

appendStrings

Appends the inputs strings specified in the value 1 to value 6 columns in that sequence and stores the output into a global variable specified in the OP Variable Name column.

The function takes 6 parameters as inputs by default. If less than 6 strings have to concatenated, then provide #EMPTY in the value columns where test data need not be specified.

Usage:

```
appendStrings(String strValue1, String strValue2, String strValue3,
String strValue4, String strValue5, String strValue6)
appendStrings("string1", "string2", "string3", "string4",
"string5", "string6",)
```

Input Parameters:

```
strValue1 - The base string
strValue2 - The string to be appended to strValue1
strValue3 - The string to be appended to strValue1+strValue2
strValue4 - The string to be appended to
strValue1+strValue2+strValue3
strValue5 - The string to be appended to
strValue1+strValue2+strValue3+strValue4
strValue6 - The string to be appended to
strValue1+strValue2+strValue3+strValue4+strValue5

Return Type: String
```

CORENUMBEROPS

Use this function library perform numeric operations such as addition, subtraction etc. This section provides a list of functions in the library, along with the usage details.

getSumOfTwoNumbers

Gets the sum of two input numbers specified in the value 1 and value 2 columns and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
getSumOfTwoNumbers(String number1, String number2)
getSumOfTwoNumbers ("3", "5")
```

Input Parameters:

```
number1 - The first number
number2 - The second number to be added to number1

Return Type: String
```

getDiffOfTwoNumbers

Gets the difference of two input numbers specified in the value 1 and value 2 columns and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
getDiffOfTwoNumbers(String number1, String number2)
getDiffOfTwoNumbers ("3", "5")
```

Input Parameters:

```
number1 - The first number
number2 - The second number to be subtracted from number1

Return Type: String
```

getProductOfTwoNumbers

Gets the product of two input numbers specified in the value 1 and value 2 columns and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
getProductOfTwoNumbers(String number1, String number2)
getProductOfTwoNumbers ("3", "5")
```

Input Parameters:

```
number1 - The first number
number2 - The second number to be multiplied with number1

Return Type: String
```

getModOfTwoNumbers

Gets the modulus of two input numbers specified in the value 1 and value 2 columns and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
getModulusOfTwoNumbers(String number1, String number2)
getModulusOfTwoNumbers ("3", "5")
```

Input Parameters:

```
number1 - The first number
number2 - The second number to be used as a divisor for the first
number

Return Type: String
```

getDivisionOfTwoNumbers

Gets the quotient of the division of input numbers specified in the value 1 and value 2 columns and stores the content as byte array into a global variable specified in the OP Variable Name column.

Usage:

```
getDivisionOfTwoNumbers(String number1, String number2)
getDivisionOfTwoNumbers ("3", "5")
```

Input Parameters:

```
number1 - The first number
number2 - The second number to be used as a divisor for the first
number

Return Type: String
```

getMaxOfTwoNumbers

Gets the maximum value among two input numbers specified in the value 1 and value 2 columns and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
getMaxOfTwoNumbers(String number1, String number2)
getMaxOfTwoNumbers ("3", "5")
```

Input Parameters:

```
number1 - The first number
number2 - The second number to be compared to the first to
determine the maximum of two numbers.

Return Type: String
```

getMinOfTwoNumbers

Gets the minimum value among two input numbers specified in the value 1 and value 2 columns and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
getMinOfTwoNumbers(String number1, String number2)
getMinOfTwoNumbers ("3", "5")
```

Input Parameters:

```
number1 - The first number
number2 - The second number to be compared to the first to
determine the minimum of two numbers.

Return Type: String
```

getAbsoluteOfNumber

Gets the absolute value of the number specified in the value 1 column and stores the output into a global variable specified in the OP Variable Name column.

Usage:

```
getAbsoluteOfNumber(String number1)
getAbsoluteOfNumber ("3.754")
```

Input Parameters:

```
number1 - The number whose absolute value needs to be determined.

Return Type: String
```

COREUTAOPS

Use this function library to perform operations specific to flow run in Oracle Utilities Test Accelerator such as pausing a flow run for a specified time, conditional constructs to exit polling of a specific component IWS.

This section provides a list of functions in the library, along with the usage details.

waitForTime

Pauses the flow run for the specified number of minutes. The flow run is resumed after the completion of the wait time.

Usage:

```
waitForTime(String timeInMinutes)
waitForTime ("3")
```

Input Parameters:

```
timeInMinutes - Number of minutes for which the flow run needs to
be paused.

Return Type: void
```

customLog

This function can be used to add custom messages to the flow run summary report. It concatenates the input parameters and adds the final concatenated message to the flow execution summary report.

Usage:

```
customLog(String message1,String message2)
```

Input Parameters:

```
message1: string that needs to be printed into to the summary
report,
message2: suffix to the message1 that needs to be appended to the
summary report.
Return Type: void
```

Note: If more than two strings need to be appended and printed to the output, use the appendStrings function from CORESTRINGOPS and store the output into a global variable and use the global variable as a parameter to customLog function.

If only one message needs to be printed and there is no suffix to it, then you can set #EMPTY in the second input parameter filed.

Chapter 11
Custom Libraries

This chapter focuses on creating custom libraries that include custom validation functions used for component validation.

Note:

- Only Java Script language can be used to develop new custom function libraries.
- Any existing custom libraries developed using Groovy language will be supported in V7.0.0.0 of Oracle Utilities Testing Accelerator.
- Due to security constraints, only a few approved Java Script packages are allowed in custom libraries.
- Groovy script based libraries will not be supported in Oracle Utilities Testing Accelerator in a future release (later than V7.0.0.0). So, if any custom libraries have been created using Groovy, they should be migrated to Java Script manually.

The chapter covers the following:

- Creating/Updating Custom Libraries
- Exporting/Importing Custom Libraries
- Using Custom Library Functions

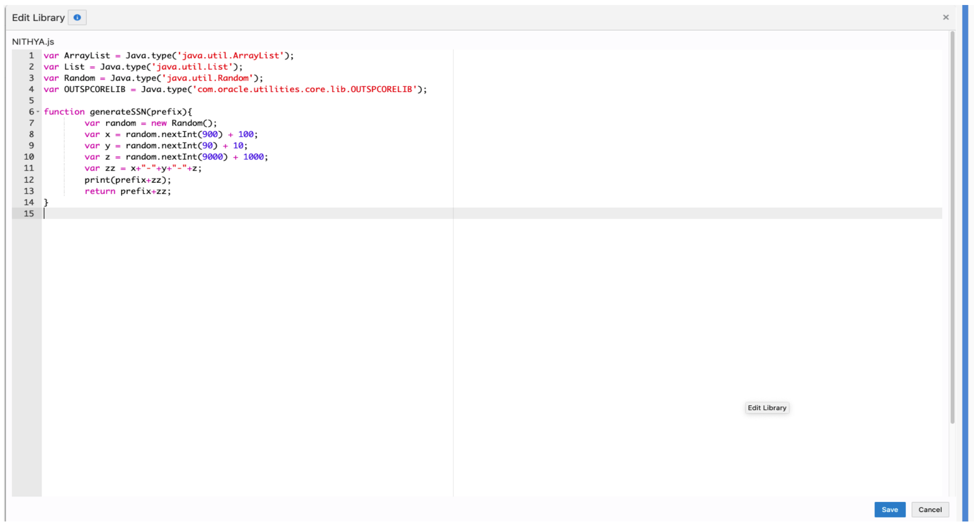
Creating/Updating Custom Libraries

Make sure to have Administrator privileges to manage custom libraries.

To create a custom library:

1. Login to Oracle Utilities Testing Accelerator as an Administrator.
2. Navigate to the **Administration** tab and click **Libraries** on the left pane.
3. Enter the name of the new custom library in the **Library Name** field. Click **Create Library**.
4. From the **Library Type** drop-down list, select the library type being created. Based on the library type selected, it can only be used for web services based components, REST based components, or all type of components.
5. Click **Create**.

   Note: This step only creates a header definition of the library, the actual code supporting/implementing the definition is expected to have been already developed using an IDE like Eclipse or JavaScript consoles. See the example at the end of this section for more details.
6. Once a library is created, add the function definitions using “+Add”. The function definition should specify the function name (Function), number of input parameters of the function (Parameter Count), comma separated comments for each of the input parameters, which gets displayed against the parameter in the test data screen and description of the function.
7. On the **Create/Update Library** page, click “+” in the **Library Functions** section. Add functions exposed by the custom library and other details, such as parameters of the functions.
8. Add separate rows for each exposed function in the custom library.
   - **Function**: Function name in the custom library
   - **Parameter Count**: Total number of parameters for the function. A function can have a maximum of 6 parameters.
   - **Parameter Comments**: Description about parameters, helps to show more information about the parameters. If the function has more than one parameter, descriptions should be separated by a comma.
   - **Description**: Function description
9. Click **Save**.
10. Click **Open Editor** to develop or upload/code a Java Script library containing actual implementation of the functions included.
11. Specify the package name of the custom library.
12. Enter the code or paste it from an external source.
13. Click **Save**. This triggers the compilation of custom library Java Script code and displays errors if any. Rectify the code and click **Save** again to verify and save the changes.



```
var ArrayList = Java.type('java.util.ArrayList');
var List = Java.type('java.util.List');
var Random = Java.type('java.util.Random');
var OUTSPCORELIB = Java.type('com.oracle.utilities.core.lib.OUTSPCORELIB');

function generateSSN(prefix){
	var random = new Random();
	var x = random.nextInt(900) + 100;
	var y = random.nextInt(90) + 10;
	var z = random.nextInt(9000) + 1000;
	var zz = x+"-"+y+"-"+z;
	print(prefix+zz);
	return prefix+zz;
}
```

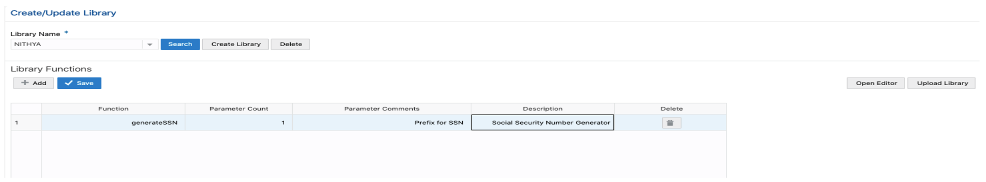
To create a function to generate a random social security number as test data to create a person, create a .groovy file with the function definition. The library name is "UTATEST" and the function name is "generateSSN". It takes an input prefix and returns a random set of digits prefixed with the input value.

The script contents are as follows:

```
var ArrayList = Java.type('java.util.ArrayList');
var List = Java.type('java.util.List');
var Random = Java.type('java.util.Random');
var OUTSPCORELIB =
Java.type('com.oracle.utilities.core.lib.OUTSPCORELIB');

function generateSSN(prefix){
    var random = new Random();
    var x = random.nextInt(900) + 100;
    var y = random.nextInt(90) + 10;
    var z = random.nextInt(9000) + 1000;
    var zz = x+"-"+y+"-"+z;
    print(prefix+zz);
    return prefix+zz;
}
```

Below is the function definition in Oracle Utilities Testing Accelerator.



Library Name * NITHYA

	Function	Parameter Count	Parameter Comments	Description	Delete
1	generateSSN	1	Prefix for SSN	Social Security Number Generator	🗑

Click **Open Editor** to create the implementation of the groovy library. It can be plugged into any custom component or the pre-validations and post-validations section of flow test data definition.

Exporting/Importing Custom Libraries

Make sure you have Administrator privileges to manage custom libraries.

To export a single custom library:

1. Login to Oracle Utilities Testing Accelerator as an Administrator.
2. Navigate to the **Administration** tab and click **Libraries** on the left pane.
3. Enter the name of the new custom library in the **Library Name** field. Click **Search**.
4. After the library functions are displayed in the GUI, click **Export**. This generates an export file of the custom function library currently being displayed.

To export multiple custom libraries:

1. Login to Oracle Utilities Testing Accelerator as an Administrator.
2. Navigate to the **Administration** tab and click **Export Libraries** on the left pane.
3. Search for the library based on names. Select two or more custom function libraries to be exported.
4. Click **Export**. The selected custom function libraries should be exported into an archive file that can be downloaded.

To import custom libraries:

1. Login to Oracle Utilities Testing Accelerator as an Administrator.
2. Navigate to the **Tools** tab and click **Import** on the left pane.
3. Select the archive file that has the library definitions and click **Import**.

The library should be imported and available for use in the components/flows.

Using Custom Library Functions

After successfully uploading the custom library into Oracle Utilities Testing Accelerator use any of the exposed custom library functions in any of their components/flows. It is similar to how the built-in libraries are provided with Oracle Utilities Testing Accelerator.

Appendix A

Web Service Component Keywords

This chapter provides the list of keywords used in a web service based component.

- WS-SETWEBSERVICENAME
- WS-SETXMLELEMENT
- WS-SETXMLLISTELEMENT
- WS-SETVARIABLE
- WS-SETVARIABLEFROMRESPONSE
- WS-SETTRANSACTIONTYPE
- WS-LOGMESSAGE
- WS-CREATEWSREQUEST
- WS-PROCESSWSREQUEST
- WS-STARTPOLLWS
- WS-STOPPOLLWSIF

WS-SETWEBSERVICENAME

Sets the name of the application web service.

Use Case: Defines the web service to which the component’s web service request is sent. The web service name is provided in the attribute values column during the component development. This service name is appended with the WebContainerURL to form a complete WSDL URL for processing the request. The WebContainerURL has to be specified in the flow runtime configuration property file.

Usage Details	**Value**
Keyword	WS-SETWEBSERVICENAME
Display Name	User Defined Display Name
Attribute Values	Web Service Name

WS-SETXMLELEMENT

Sets the element (Xpath) value in the web service request using either a variable or a value.

Use Case: Enables the web service creation request (XML) with the element values populated by setting each value for the defined element.

Usage Details	**Value**
Keyword	WS-SETXMLELEMENT
Display Name	User Defined Display Name
Attribute Values	Xpath of the element

WS-SETXMLLISTELEMENT

Sets the repeating list element (Xpath) value in the web service request using either a variable or a value.

Use Case: Enables the web service creation request (XML) with repeating list element values populated by setting each value set for the defined element list. The values are provided from the test data.

Usage Details	**Value**
Keyword	WS-SETXMLLISTELEMENT
Display Name	User Defined Display Name
Attribute Values	Xpath of the element

WS-SETVARIABLE

Sets a value to a global variable.

Use Case: Used for setting a value to a global variable used across the flow for validations or for setting XML elements. The values are provided from the test data.

Usage Details	**Value**
Keyword	WS-SETVARIABLE
Display Name	User Defined Display Name
Output Parameters	Variable Name

WS-SETVARIABLEFROMRESPONSE

Used to retrieve the XML element value from the response and stores it in a global variable for further processing.

Use Case: Enables use of a response value, such as ID from a component, as an input to a request in another component.

Usage Details	**Value**
Keyword	WS-SETVARIABLEFROMRESPONSE
Display Name	User Defined Display Name
Attribute Values	Xpath of the element in response
Output Parameters	Variable Name

WS-SETTRANSACTIONTYPE

Sets a value for the transaction type.

Use Case: Used to set a value to a transaction type variable used in the request XML to pass a request for specific operations, such as ADD, UPDATE, READ, DELETE, etc. The transaction type is provided from the test data.

Usage Details	**Value**
Keyword	WS-SETTRANSACTIONTYPE
Display Name	User Defined Display Name

WS-LOGMESSAGE

Used to set custom log messages in the run results report.

Use Case: Provides the necessary extensibility to provide custom log messages for the generated results report, such as to identify the start and completion of a transaction, etc.

Usage Details	Value
Keyword	WS-LOGMESSAGE
Display Name	User Defined Value
Attribute Values	Message

WS-CREATEWSREQUEST

Creates a web service request XML and stores it in the “WSDLXML” global variable.

Use Case: Enables the manipulation of the web service XML request generated before submitting it to the application for processing, giving greater flexibility in development.

Usage Details	Value
Keyword	WS-CREATEWSREQUEST
Display Name	User Defined Display Name
Attribute Values	Web Service Name

WS-PROCESSWSREQUEST

Sends the web services request and receives the response from the application for the specified WSDL name.

Use Case: Posts the generated XML request from WS-CREATEWSREQUEST to the application and processes the response. This keyword performs the core process of the web services based request-response model.

Usage Details	Value
Keyword	WS-PROCESSWSREQUEST
Display Name	User Defined Display Name
Attribute Values	Web Service Name

WS-STARTPOLLWS

Starts the polling of the web services request and receives the response from the application for the specified WSDL name. It takes two parameters, the first is for the total time for which polling should occur and the second is the interval between polls.

Use Case: Provides a means to run a loop to keep polling a web service for a specified time measure or till a condition is met (specified in WS-STOPPOLLWSIF).

Usage Details	**Value**
Keyword	WS-STARTPOLLWS
Display Name	User Defined Display Name
Attribute Values	User Defined Display Name

WS-STOPPOLLWSIF

Indicates the end of the polling specified by WS-STARTPOLLWS.

Use Case: The condition to stop the poll can be specified here. The attribute takes the xpath of the element against which the condition is to be compared. The condition is specified while entering the test data. If the test data is just a string, say <val>, then polling would stop when element value is <val>.

For example, if a web service needs to be polled unless the element BatchJobId is “ED”, the attribute value should be set as the xpath of BatchJobId and the test data should be entered as “ED”.

Similarly, if polling needs to continue as long as a certain value is returned, a “!” should be prefixed to the value of test data. If we want to continue polling as long as the BatchJobId is “PD”, test data should be “!PD” (the symbol ! indicates “not equals”). Similar conditions can be set for greater than, less than, greater than equal to and less than equal to, by prefixing the test data with “>”, “<“, “>=” and “<=” respectively.

Usage Details	**Value**
Keyword	WS- STOPPOLLWSIF
Display Name	User Defined Display Name
Attribute Values	Xpath of element

Appendix B
GUI Component Keywords

This chapter provides the list of keywords used in a GUI based component.

- APPROVE
- CANCEL
- CHECK
- CLICK
- CLOSE
- GET_ATTRIBUTE_VALUE
- GET_ATTRIBUTE_ID
- LAUNCH
- MAXIMIZE
- MINIMIZE
- POPUP
- PRESSTABKEY
- SELECT
- SETTEXT
- SWITCHTO
- UNCHECK
- UNSELECT
- UI-STARTBROWSER
- UI-ENDBROWSER
- WAIT

APPROVE

Approves the specified object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format.

You can replace xpath with ID or name.

Usage Details	Value
Keyword	APPROVE
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	ALERT - Closes the Alert box, gets its text, and sets the value to ‘true’.

CANCEL

Cancels the specified object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format.

You can replace xpath with ID or name.

Usage Details	Value
Keyword	CANCEL
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	ALERT

CHECK

Checks a checkbox object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format.

You can replace xpath with ID or name.

Usage Details	Value
Keyword	CHECK
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	CHECKBOX

CLICK

Cancel the specified object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format.

You can replace xpath with ID or name.

Usage Details	**Value**
Keyword	CLICK
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	IMAGE LINK TAB EDIT (edit is for a text box) BUTTON ELEMENT

CLOSE

Closes the specified window object. It is used to close a single browser window.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format.

You can replace xpath with ID or name.

Usage Details	**Value**
Keyword	CLOSE
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	CLOSE

GET_ATTRIBUTE_VALUE

Retrieves the “value” attribute of the specified object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format.

You can replace xpath with ID or name.

Usage Details	**Value**
Keyword	GET_ATTRIBUTE_VALUE

Usage Details	Value
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	No objects required

GET_ATTRIBUTE_ID

Retrieves the “ID” attribute of the specified object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format.

You can replace xpath with ID or name.

Usage Details	Value
Keyword	GET_ATTRIBUTE_ID
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	No objects required

LAUNCH

Launches the specified browser object.

Use Case: The attribute value takes the browser URL.

Usage Details	Value
Keyword	LAUNCH
Display Name	User Defined Display Name
Attribute Values	Browser URL
Objects Valid	BROWSER

MAXIMIZE

Maximizes the specified window object.

Usage Details	Value
Keyword	MAXIMIZE
Display Name	User Defined Display Name

Usage Details	Value
Attribute Values	None
Objects Valid	WINDOW

MINIMIZE

Minimizes the specified window object.

Usage Details	Value
Keyword	MINIMIZE
Display Name	User Defined Display Name
Attribute Values	None
Objects Valid	WINDOW

POPUP

Handles the pop-up of the window.

Usage Details	Value
Keyword	POPUP
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	STARTPOPUP - To go to the popup ENDPOPUP - To come out from the popup

PRESSTABKEY

Performs a tab key press on the specified object.

Use Case: The attribute value takes xpath of an element in the "xpath; actual xpath of the element" format.

You can replace xpath with ID or name.

Usage Details	Value
Keyword	PRESSTABKEY
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	EDIT

SELECT

Performs a ‘select’ action on the specified object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format. You can replace xpath with ID or name. The test data should be given a value from the list of values present in the select list.

Usage Details	**Value**
Keyword	SELECT
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	LISTBOX RADIOBUTTON LIST

SETTEXT

Closes the specified window object. It can be used to close a single browser window.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format. You can replace xpath with ID or name. Provide the actual text for that object in the test data.

Usage Details	**Value**
Keyword	SETTEXT
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	EDIT (edit is for a text box) TEXTAREA PASSWORD DATE

SWITCHTO

Used to switch between different frames.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format. You can replace xpath with ID or name.

Usage Details	**Value**
Keyword	SWITCHTO
Display Name	User Defined Display Name

Usage Details	Value
Attribute Values	Xpath of the element for STARTFRAME None for ENDFRAME
Objects Valid	STARTFRAME - Switches to the specified frame ENDFRAME - Navigates back to the parent frame

UNCHECK

Uncheck the specified checkbox object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format. You can replace xpath with ID or name.

Usage Details	Value
Keyword	UNCHECK
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	CHECKBOX

UNSELECT

Unselects the specified object.

Use Case: The attribute value takes xpath of an element in the “xpath; actual xpath of the element” format. You can replace xpath with ID or name. The test data should be given a value from the list of values in the list selected previously.

Usage Details	Value
Keyword	UNSELECT
Display Name	User Defined Display Name
Attribute Values	Xpath of the element
Objects Valid	LISTBOX

UI-STARTBROWSER

Starts the browser.

Usage Details	Value
Keyword	UI-STARTBROWSER

Usage Details	Value
Display Name	User Defined Display Name
Attribute Values	None
Objects Valid	No objects required

UI-ENDBROWSER

Closes the browser.

Usage Details	Value
Keyword	UI-ENDBROSER
Display Name	User Defined Display Name
Attribute Values	None
Objects Valid	No objects required

WAIT

Waits for the specified object. It is used to communicate to wait for a certain amount of time before throwing an exception that it cannot find the element on the page.

Use Case: The attribute value takes the xpath of the element in the "xpath; actual xpath of the element" format. xpath can be replaced with ID or name.

In the test data, provide the wait time(number) for LIST, LISTBOX, TEXTAREA, LINK, and BUTTON objects. For EDIT, IMAGE, WINDOW, and NORMAL objects, no test data is required.

Usage Details	Value
Keyword	WAIT
Display Name	User Defined Display Name
Attribute Values	Xpath of the element EDIT, IMAGE, WINDOW, NORMAL - None
Objects Valid	LIST LISTBOX TEXTAREA LINK BUTTON EDIT IMAGE WINDOW NORMAL - Can be used for any element

Appendix C

REST Component Keywords

This chapter provides the following REST component keywords:

- RS-SETREQUESTHEADER
- RS-SETENDPOINT
- RS-ARGUMENT
- RS-SETMETHOD
- RS-PROCESSRESTREQUEST

RS-SETREQUESTHEADER

Sets the header in the defined REST request.

Use case: The attribute value takes the name of the request header.

Usage Details	Value
Keyword	RS-SETREQUESTHEADER
Display Name	User Defined Display Name
Attribute Values	User Defined Header Name
Objects Valid	No objects required

RS-SETENDPOINT

Sets the endpoint for the REST request.

Use Case: Defines the static part of the application's REST endpoint.

Usage Details	Value
Keyword	RS-SETENDPOINT
Display Name	User Defined Display Name
Attribute Values	User Defined End Point
Objects Valid	No objects required

RS-ARGUMENT

Sets the query parameter or the path parameter for the REST request.

Use Case: Used for setting the query parameter and path variable in the REST request. The values are provided from the test data.

Usage Details	Value
Keyword	RS-ARGUMENT
Display Name	User Defined Display Name
Attribute Values	User Defined Query Parameter Name for QueryParameter None for PathVariable
Objects Valid	QueryParameter - Appends the query parameter name in the component definition and value given in the test data to the REST end point. PathVariable - Appends the user defined value in test data to the REST end point.

RS-SETMETHOD

Sets the method type for the REST request.

Use Case: Used to set the REST request method type.

Usage Details	Value
Keyword	RS-SETMETHOD
Display Name	User Defined Display Name
Attribute Values	None
Objects Valid	GET - Creates a GET method to hit the REST end point. POST - Creates a POST method to hit the REST end point.

RS-PROCESSRESTREQUEST

Sends the REST request and receives the response from the application for the specified REST.

Use Case: Used to send the REST request using the methods and data provided using the above keywords.

Usage Details	Value
Keyword	RS-PROCESSRESTREQUEST
Display Name	User Defined Display Name
Attribute Values	None
Objects Valid	No objects required

Appendix D

Setting Up Inbound Web Services

The Oracle Utilities application-specific components are developed using the web services method, and these components need the Inbound Web Services to be defined in the application.

This chapter includes the following sections:

- Creating Inbound Web Services
- Importing Inbound Web Services
- Searching Inbound Web Services

Creating Inbound Web Services

To create an Inbound Web Service for any custom component to be created:

1. Login to the Oracle Utilities cloud service.
2. Navigate to **Admin** > **Integration** > **Inbound Web Service** > **Add**.
3. On the **Inbound Web Service** page, enter the **Inbound Web Service Name**.
4. Enter the **Description** and the **Detailed Description**.
5. Select the appropriate **trace,debug.active,post error** option from the drop down.
6. Enter the **Operation Name**.
7. Select the **Schema Type**, **Schema Name** and **Transaction Type**.
8. Click **Save**.

Importing Inbound Web Services

To import an Inbound Web Service into the Oracle Utilities cloud service:

1. Login to the Oracle Utilities cloud service.
2. Click **Admin** > **Implementation Tools** > **Bundle Import** > **Add**.
3. On the **Bundle Import** page, enter the reference and detailed description.
4. Copy paste the bundle details from the Inbound Web Services bundle.
5. Click **Apply bundle**. The "Imported Successfully" message appears in the **Message text** column.

Searching Inbound Web Services

To search an Inbound Web Service in an Oracle Utilities cloud service:

1. Login to the Oracle Utilities application.
2. Navigate to **Admin** > **Integration** > **Inbound Web Service** > **Search**.
3. On the **Inbound Web Service Search** page, enter the name of the required web service in the **Name** field.
4. Enter the description in the **Description** field.
5. Click **Refresh**.

   The web service, if found, is retrieved and displayed.

Appendix E

Generating Re-runnable Test Data

To run a flow multiple times, some fields might need unique values for each run. Instead of changing the value in the databank, we can enable re-runnable test data so that the test data is generated randomly every time the flow is run.

This chapter describes the options available on how the random data generated can be configured.

Requirement	Test Data Structure	Example Test Data	Generated String
A specified number of random lower case characters need to be appended to the given test data.	<int>?data	4?van 3?appl 6?AC 2? ?	vancara applxtg ACkdbvdl nd ufdbn
A specified number of random upper case characters need to be appended to the given test data.	<int>U?data	4U?van 3u?appl 6U?AC 2U? U?	vanCARA applXTG ACKDBVDL ND UFDBN
A specified number of random lower case characters need to be prefixed to the given test data.	<int>B?data	4B?van 3b?appl 6B?AC 2B? B?	caravan xtgappl kdbvdlAC nd ufdbn
A specified number of random upper case characters need to be prefixed to the given test data.	<int>BU?data	4BU?van 3bu?appl 6Bu?AC 2BU? BU?	CARAvan XTGappl KDBVDLAC ND UFDBN
A specified number of random numbers need to prefixed to the given test data	<int> d?data	d?ABCD 2d?ABCD	ABCD32940 ABCD43
A specified number of random numbers need to suffixed to the given test data	<int> bd?data	bd?ABCD 4bd?ABCD	32940ABCD 1534ABCD

Appendix F

Connecting to Multiple Databases

While building the integration flows that involve using components from various product packs, there might be a need to access databases of individual products as part of verification process. Users can connect to different databases by specifying the database connection properties prefixed with the application prefix. This is similar to the application prefix that is used for connecting to different application URLs.

Following is a sample configuration.properties file. It shows the entries for two environments.

> **Note**: Users are expected to write custom functions for connecting/ accessing databases.

```
# ***********************************************
# Test Environment Details - UAT1
# ***********************************************

# Application URL pointing to test run
gStrUAT1_gStrApplicationURL = http://myuat1environment:8001/ouaf
gStrUAT1_gStrApplicationXAIServerPath=/webservices/
gStrUAT1_gStrEnvironmentName=UAT1

# Application Database Details
gStrUAT1_gStrApplicationDBConnectionString
=jdbc\:oracle\:thin\:@myuatserver1\:1521\:UATSID1
gStrUAT1_gStrApplicationDBUsername=mydbuser1
gStrUAT1_gStrApplicationDBPassword==<Entrypted Password>

# ***********************************************
# Test Environment Details - UAT2
# ***********************************************

# Application URL pointing to test run
gStrUAT2_gStrApplicationURL = http:// myuat1environment2:8001/ouaf
gStrUAT2_gStrApplicationXAIServerPath=/webservices/
gStrUAT2_gStrEnvironmentName=UAT2

# Application Database Details
gStrUAT2_gStrApplicationDBConnectionString =jdbc\:oracle\:thin\:@
myuatserver2\:1521\: UATSID2
gStrUAT2_gStrApplicationDBUsername= mydbuser2
gStrUAT2_gStrApplicationDBPassword= <Entrypted Password>

##Handling Https  WSDL - Java key Store
gStrJavaKeyStorePath=
gStrJavaKeyStorePwd=<Entrypted Password>
```

```
#Email Details
gStrSMTP_HOST_NAME==<SMTP server address>
gStrSMTP_PORT=25
gStrTO_EMAIL_RECIPIENTS=

# Application user name
gStrApplicationUserName=<Your OUAF Application Username>

# Application user password
gStrApplicationUserPassword=<Encrypted Password>

# Output file details
gStrOutputFilePath=/<UTA-CLIENT-WORK-DIR>//Logs/
gStrXSDFiles=/<UTA-CLIENT-WORK-DIR>//XSD/
```

Appendix G

Configuring Authentication for Web Service Requests

Based on the version of the Oracle Utilities application (and the Oracle Utilities Application Framework), the web service requests are expected to include additional information apart from the user credentials. In order to support this, two new properties have been introduced in the configuration.properties file using which users can specify the authentication used by the environment.

For the latest versions of Oracle Utilities applications, a timestamp is expected in the web service requests. For these environments, specify the header type as TIMESTAMP, the other property gStrTimeToLive specifies the validity of the request in seconds.

```
#Header Type
gStrApplicationHeaderType=TIMESTAMP
#Timestamp interval
gStrTimeToLive=120
```

In cases where the configuration.properties contains details of more than one environment, prefix the header property with the application string.

```
#Header Type
gStrUAT_gStrApplicationHeaderType=TIMESTAMP
#Timestamp interval
gStrUAT_gStrTimeToLive=120
```

For the older versions of Oracle Utilities applications, only the user credentials are expected. So specify the header as USERTOKEN.

```
#Header Type
gStrApplicationHeaderType=USERTOKEN
```

In cases where there is a mix of environments that use the new header type and old header type in the same configuration.properties file, specify the properties for individual environments as follows.

```
#Header Type
gStrUAT_gStrApplicationHeaderType=TIMESTAMP
#Timestamp interval
gStrUAT_gStrTimeToLive=120

#Header Type
gStrINT_gStrApplicationHeaderType=USERTOKEN
```

Note: The user credentials are sent as digest by default. To send them as plain text, set the property mentioned needs to 'true'.

```
gStrSendPasswordAsText = true
```

Appendix H

OUTA REST Services

Oracle Utilities Testing Accelerator provides REST services that can be used to integrate with any compatible third party application, such as test management applications, Jenkins, etc.

While the REST APIs available before the 7.0.0.0 release of Oracle Utilities Testing Accelerator continue to be supported, a new set of REST APIs that follow Open API specification are included in Oracle Utilities Testing Accelerator 7.0.0.0 release.

This chapter focuses on the Oracle Utilities Testing Accelerator REST services to run flows and retrieve flow run analytics. It describes the following services:

- Prerequisites
- Flow Run
- Flow Set Run
- Flow Run Analytics
- Flow Set Run Analytics
- Flow Run Summary
- Flow Set Run Summary

Prerequisites

All the REST services require an authentication token as one of the parameters. Use the following command to obtain an authentication token.

Endpoint

```
/token/generate-token
```

Curl command

```
curl --insecure -X POST https://<hostname>:<port>/token/generate-
token -H 'content- type: application/json' -d '{ "username":
"<username>", "password": "<password>"}'
```

Note: The option --insecure is only needed if the application uses a self signed certificate.

Parameters

- < username>: Valid Oracle Utilities Testing Accelerator application user's username
- < password>: Oracle Utilities Testing Accelerator application user's password
- <hostname>: Oracle Utilities Testing Accelerator application host name
- <port>: Oracle Utilities Testing Accelerator application port

Below is a sample response from the call.

```
{
"token":
"eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiJsb2NhbGhvc3QiLCJzY29wZXMiOiJST0xF
X0FkbWl
uaXN0cmF0b3IiLCJpYXQiOjE2MjAwMzQ1NjMsImV4cCI6MTYyMDA1MjU2M30.2SrK
iZPslj6Ba2S8zqJm8YakjaFdZfhIhfuXcEsSE-Q"
}
```

Flow Run

The Flow Run service provides an endpoint allowing a flow to run by passing the relevant flow details.

Endpoint

```
>/rest/run/flow
```

Curl command for Flow Run

```
curl -i -X POST 'https://<hostname>:<port>/...../ uta/rest/run/flow'
-H 'authorization:Basic <Base64 encoded username & password>' -H
'cache-control: no-cache' -H 'content-type: application/json' -d '{
"executionType": "flow",
"release" : "<release>",
"portfolio" : "<portfolio>",
"product" : "<product>",
"flow" : "<flow>",
"configuration":"<configuration>",
"identity": "<user configuration>",
"flowtestdataset": "<flowtestdataset>"
}'
```

Note: <flowtestdataset> parameter is optional, if user does not provide the parameter then the default test data set will be used for run.

Parameters

- <hostname>: OUTA application host name
- <port>: OUTA application port
- <access token>: Authentication token from the step in pre-requisites above
- <release>: The name of the release to which the flow belongs to
- <portfolio>: The name of the portfolio/product family to which the flow belongs to
- <product>: The name of the product to which the flow belongs to
- <flow>: Name of the flow to be run
- <configuration>: Configuration to be used for running the flow
- <user configuration>: The user configuration to be used for run the flow
- <flowtestdataset>: The flow test data set that needs to be used during the flow run

Example

Flow Run

```
curl -X POST -k https://my.server.com:8080/dev01/ccs/uta/rest/
execute/flow -H 'authorization:  Basic bXJpbmFsOk9yYWNsZTEyMw==' -H
'content-type: application/json' -d' {"executionType": "flow",
"release" :  "UTA", "portfolio" : "CUSTOMER CARE AND BILLING",
"product" : "CCB 2.7.0.1",  "flow" : "CreateBusinessWithCC",
"configuration":"myCCBConfig", "identity": "myCCBConfig
","flowtestdataset":"CCBTestDataSet"  }'
```

Once a flow run is triggered, the service responds with a response similar as follows.

```
{"flowExecutionId":1810,"trackingCode":" CreateBusinessWithCC
_100000065_2020_01_29_04.00.24.604_26843725-5fe4-4c38-a481-
b7e775ddcff0"}
```

Querying Status of Flow Run

Query the status of the flow run as follows.

Endpoint

```
>/rest/execute/flowstatus
```

Curl for Flow Run Status

```
curl -i -k -X GET -k 'https://<hostname>:<port>/rest/execute/
flowstatus?flowExecutionId=<flowExecutionId>' -H
'authorization:Basic <Base64 encoded username & password>'
```

Parameters

- <hostname> : Oracle Utilities Testing Accelerator host name
- <port> : Oracle Utilities Testing Accelerator port
- <access token> : Authentication token (See Prerequisites for more information.)

- <flowExecutionId >: The flow run ID received when the flow run was triggered.

Example

```
curl -i -k -X GET 'https://my.server.com:8080/rest/execute/
flowstatus?flowExecutionId=1810' -H 'authorization:  Basic
bXJpbmFsOk9yYWNsZTEyMw=='
```

The service responds to the flow run status query with a response.

Response

```
{"product":"CCB 2.7.0.1","portfolio":"CUSTOMER CARE AND
BILLING","release":"UTA","flowName":"CreateBusinessWithCC","status
":"Running"}
```

The status element in the response contains the current flow run status.

Flow Set Run

The Flow Set Run service provides an endpoint allowing a flow set to be run by passing relevant flow set details.

Endpoint

```
>/rest/execute/flow
```

Curl command for Flow Set Run

```
curl -i -X POST 'https://<hostname>:<port>/rest/execute/flow' -H
'authorization: Bearer
<access_token>' -H 'cache-control: no-cache' -H 'content-type:
application/json' -d '{ "executionType" : "flowSet",
"flowSet" : "<flowSet>", "configuration":"<configuration>",
"identity": "<user configuration>"
}'
```

Parameters

- <hostname>: Oracle Utilities Testing Accelerator application host name
- <port>: Oracle Utilities Testing Accelerator application port
- <access token>: Authentication token from the step in pre-requisites above
- <flowSet>: Name of the flow set to be executed
- <configuration>: Configuration to be used for executing the flow
- <user configuration>: The user configuration to be used for executing the flow

Example

Flow Set Run

```
curl -X POST -k https://my.server.com:8080/rest/execute/flow -H
'authorization: bearer
62593bbd-b057-4f38-8a3e-5915d4ab559f' -H 'content-type:
application/json' -d
```

```
'{"executionType": "flowSet",  "flowSet" : "MyBillingTestSuite",
"configuration":"myCCBConfig", "identity": "myCCBConfig"  }'
```

Once a flow set run is triggered, the service responds with a response as follows:

```
[{"flowSetExecutionId":"502","flowSetName":"MyBillingTestSuite","s
tatus":"Running"}]
```

Querying Status of Flow Set Run

User can query the status of flow set run.

Curl for Flow Set Run Status

```
curl -i  -X GET -k 'https://<hostname>:<port>/flowset/
status?flowSet=<flowSet>&flowSetExecutionId=<flowSetExecutionId>'
-H 'authorization: Bearer <access_token>
```

Parameters

- <hostname>: Oracle Utilities Testing Accelerator Application host name
- <port>: Oracle Utilities Testing Accelerator application port
- <access token>: Authentication token from the step in pre-requisites above
- <flowSetExecutionId>: The flow set run ID that was received when the flow set run was triggered.

Example

```
curl -i -k -X GET 'https://my.server.com:8080/rest/execute/flowset/
status?flowSet=MyBillingTestSuite &flowSetExecutionId=502' -H
'authorization: bearer
62593bbd-b057-4f38-8a3e-5915d4ab559f'
```

The service responds to the flow run status query with a response as follows.

Response

[{"flowStatuses":[{"timeStamp":"Jan 19, 2020 04:00:25 PST","product":"CCB 2.7.0.1","portfolio":"CUSTOMER CARE AND BILLING","release":"UTA","flowExecutionId":"1811","id":1,"flowName":"X1-MDMFlow","portProdXrefId":"100000065","status":"Not Started"}],"flowSetExecutionId":"502","flowSetName":"MyBillingTestSuite","status":"Running"}]'

The status element in the response contains the current flow set overall run status. The flowStatuses element in the response contains individual flow status for each of the flows that were/are run in the flow set.

Flow Run Analytics

The Flow Run Analytics service provides analytics for the flows run in Oracle Utilities Testing Accelerator by a specific user for a given period.

Endpoint

```
>/rest/analytics/user
```

Curl Command for Flow Run Analytics

```
curl -i -k -X GET -k 'https://<hostname>:<port>/rest/analytics/
user/<username>/flowExecutionAnalytics/from/<fromDate>/to/
<toDate>' -H 'authorization: Bearer <access_token>'
```

Parameters

- <hostname>: OUTA application host name
- <port>: OUTA application port
- <access token>: Authentication token from the step in pre-requisites above
- <username>: Name of the user who executed the flow(s)
- <fromDate>: The start date to query for analytics - format DD-MON-YY (example: 10-JAN-20)
- <toDate>: The end date to query for analytics - format DD-MON-YY (example: 20-JAN-20)

Example

Flow Run Analytics

```
curl -i -k -X GET -k https://<hostname>:<port>/rest/analytics/user/
admin/flowExecutionAnalytics/from/01-JAN-20/to/15-JAN-20 -H
'authorization: bearer 62593bbd-b057-4f38-8a3e-5915d4ab559f'
```

Once a flow set run is triggered, the service responds with a response as follows.

```
{"totalFlowsRanByUser":50,"totalFlowsRanByUserSuccess":48,"totalFl
owsRanByUserFailure":2,"totalFlowsRanByUserRunning":0}'
```

Flow Set Run Analytics

The Flow Set Run Analytics service provides analytics for the flow sets run in Oracle Utilities Testing Accelerator by a specific user for a given period.

Endpoint

```
>/rest/analytics/user
```

Curl Command for Flow Run Analytics

```
curl -i -k -X GET -k 'https://<hostname>:<port>/rest/analytics/
user/<username>/flowSetExecutionAnalytics/from/<fromDate>/to/
<toDate>' -H 'authorization: Bearer <access_token>'
```

Parameters

- <hostname>: OUTA application host name
- <port>: OUTA application port
- <access token>: Authentication token from the step in pre-requisites above
- <username>: Name of the user who executed the flow(s)
- <fromDate>: The start date to query for analytics - format DD-MON-YY (example: 10-JAN-20)

- <toDate>: The end date to query for analytics - format DD-MON-YY (example: 20-JAN-20)

Example

Flow Run Analytics

```
curl -i -k -X GET -k https://my.server.com:8080/rest/analytics/
user/admin/
flowSetExecutionAnalytics/from/01-JAN-20/to/15-JAN-20 -H
'authorization: bearer
62593bbd-b057-4f38-8a3e-5915d4ab559f'
```

Once a flow set run is triggered, the service responds with a response as follows:

```
{"totalFlowSetsRanByUser":30,"totalFlowSetsRanByUserSuccess":29,"t
otalFlowSetsRanByUserFailure":1,"totalFlowSetsRanByUserRunning":0}
```

Flow Run Summary

The Flow Run Summary service provides summary file for the flow run in Oracle Utilities Testing Accelerator.

Endpoint

```
>/rest/summary/report
```

Curl Command for Flow Run Summary

```
curl -X POST \
'https://<hostname>:<port>/rest/summary/
report?type=flow&flowName=x' \
-H 'accept: application/xml' \
-H 'authorization: Bearer <token>' \
-H 'content-type: application/json' \
-d '["<flow execution id>"]'
```

Parameters

- <hostname>: Oracle Utilities Testing Accelerator application host name
- <port>: Oracle Utilities Testing Accelerator application port
- < token>: Authentication token from the steps mentioned in pre-requisites above
- <flow execution id>: Flow execution ID of the flow for which the summary is being requested

Example

Flow Run Summary

```
curl -X POST \
'https://my.server.com:8080/rest/summary/
report?type=flow&flowName=x' \
-H 'accept: application/xml' \
-H 'authorization: Bearer 3fdb6422-b62c-4398-8781-a05fa4d9fecd' \
-H 'content-type: application/json' \
-d '["2507"]'
```

The server responds with a HTML summary file as response upon receiving this request.

Flow Set Run Summary

The Flow Set Run Summary service provides summary file for the flow set run in Oracle Utilities Testing Accelerator.

Endpoint

```
>/rest/summary/report
```

Curl Command for Flow Set Run Summary

```
curl -X POST \
'https://<hostname>:<port>/rest/summary/
report?type=flowset&flowSetName=x' \
-H 'accept: application/xml' \
-H 'authorization: Bearer <token>' \
-H 'content-type: application/json' \
-d '["<flow execution id>"]'
```

Parameters

- <hostname>: Oracle Utilities Testing Accelerator application host name
- <port>: Oracle Utilities Testing Accelerator application port
- < token>: Authentication token from the steps mentioned in pre-requisites above
- <flow execution id>: Flow execution ID of the flow set for which the summary is being requested

Example

Flowset Run Summary

```
curl -X POST \
  'https://<hostname>:<port>/rest/summary/
report?type=flowset&flowSetName=x' \
  -H 'accept: application/xml' \
  -H 'authorization: Bearer 3fdb6422-b62c-4398-8781-a05fa4d9fecd' \
  -H 'content-type: application/json' \
  -d '["2507"]'
```

The server responds with a HTML summary file of the flow set as response.