Oracle Utilities Testing Accelerator
User's Guide for Cloud
Release 20C
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Preface

Welcome to the Oracle Utilities Testing Accelerator User's Guide for Cloud.

The guide explains how to use Oracle Utilities Testing Accelerator to automate the business test flows for testing the Oracle Utilities' cloud services.

This preface focuses on the following:

- Audience
- Prerequisite Knowledge
- Abbreviations
- Related Documents
- Conventions

Audience

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

Prerequisite Knowledge

The metadata driven automation development paradigm of Oracle Utilities Testing Accelerator does not require any in-depth programming experience to develop scripts for testing. However, good understanding and working knowledge of Oracle Utilities Application Framework and its metadata based objects along with in-depth functional understanding of the application being tested, is required. The advanced programming features available in the application require experience with the programming concepts and groovy scripting language.

Abbreviations

The following abbreviations are used throughout this document:

Term	Expanded Form
UTA	Oracle Utilities Testing Accelerator

Related Documents

For more information, refer to the following Oracle resources.

Release Notes
- *Oracle Utilities Testing Accelerator Release Notes*

User and Reference Guides
- *Oracle Utilities Testing Accelerator Reference Guide for Core*
- *Oracle Utilities Testing Accelerator in Oracle Utilities Customer Cloud Service Enablement Guide*

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.

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 for creating the web service based 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

The different terms used in this document are as follows:

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.
Product	Represents an Oracle Utilities application. For example: CCS A product contains one or more modules.

Term	Description
Module	Represents an Oracle Utilities application functional area. For example: Billing in CCS
	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.

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.
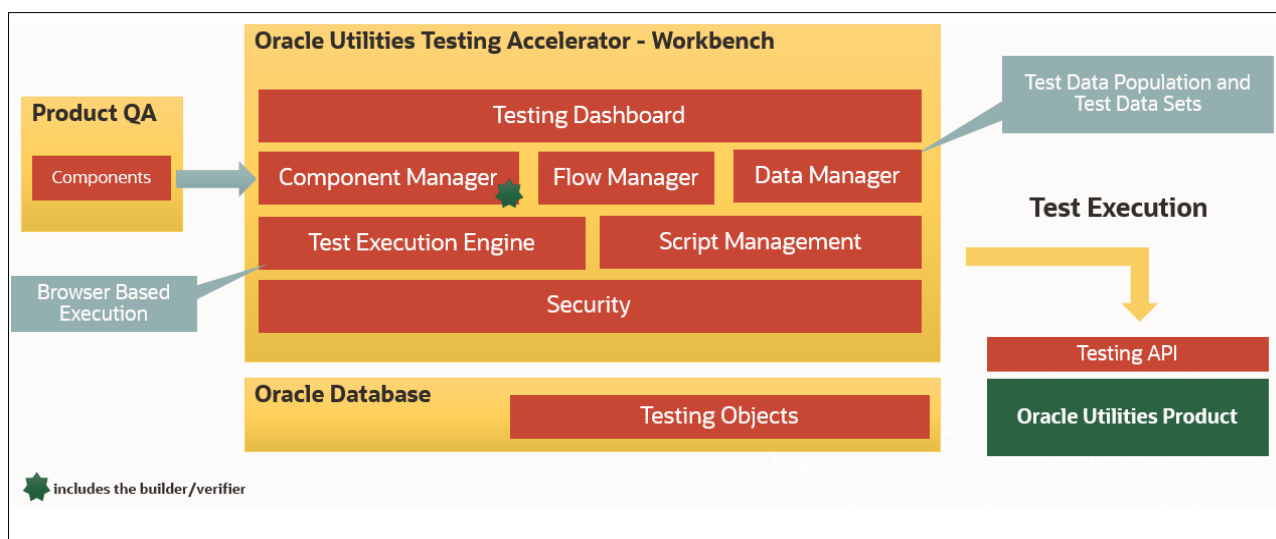
Components are defined using metadata in Oracle Utilities Testing Accelerator. Using these components a flow can be assembled and run.

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

This table lists the Oracle Utilities' applications supporting this Oracle Utilities Testing Accelerator v20C release.

Product	Version
Oracle Utilities Customer Cloud Service	20C
Oracle Utilities Meter Solution Cloud Service	20C
Oracle Utilities Work and Asset Cloud Service	20C
Oracle Utilities Operational Device Cloud Service	20C

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 modules

    - Purge/manage test run logs and history

    - Create custom function libraries

    - Upgrade custom flows from an older version of a product pack to a later version

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 request 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 and displays the following information:

- Notifications assigned to your role

- Statistics about the number of custom components/flows in the application

- Total number of custom components vs total number of approved custom components

- Total number of custom flows vs total number of approved custom flows

- Total number of flows run and their break down into passed vs failed

- Total number of flowsets run and their break down into passed vs failed

Notifications

The **Dashboard** page displays notifications of interest to the user currently logged in and also some basic analytics on the total number of components and flows in Oracle Utilities Testing Accelerator and a breakdown of those based on their lifecycle state.

On the **Dashboard** page, you can do the following:

- Click the bell icon 🔔 to navigate directly to the **Notifications** page.

- 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 an FYI notification for more information about the event and also mark the notification as 'read'. Select the check box corresponding to the notification. After an FYI notification is read, it is removed from the notification area.

- **ToDo Notifications/FYA Notifications** - For a component/flow when submitted for approval of an approver/administrator. It requires some action from the user. They are displayed in the **Notification** area for users with Approver/Administrator role.

  A ToDo notification displays detailed information about the respective event. It also allows users to take appropriate action as applicable. (for example: Reject, Revert to Approve, Approve, or Send to in progress (Flow)). Select the check box corresponding to the ToDo notification to mark it 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

- Create a new flow module

- Define the flow structure

- Submit the flow for approval

- Accept/reject the approval request 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 the available flow sets imported/created in the application. You can do the following:

- 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. Using the Component Generator tool, web service components can be automatically generated by specifying the WSDL URL end point of the web service that the component makes a call to in the Oracle Utilities applications, such as Oracle Utilities Customer Cloud Service.

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, 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

- Configuring the 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 test automation flows 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.
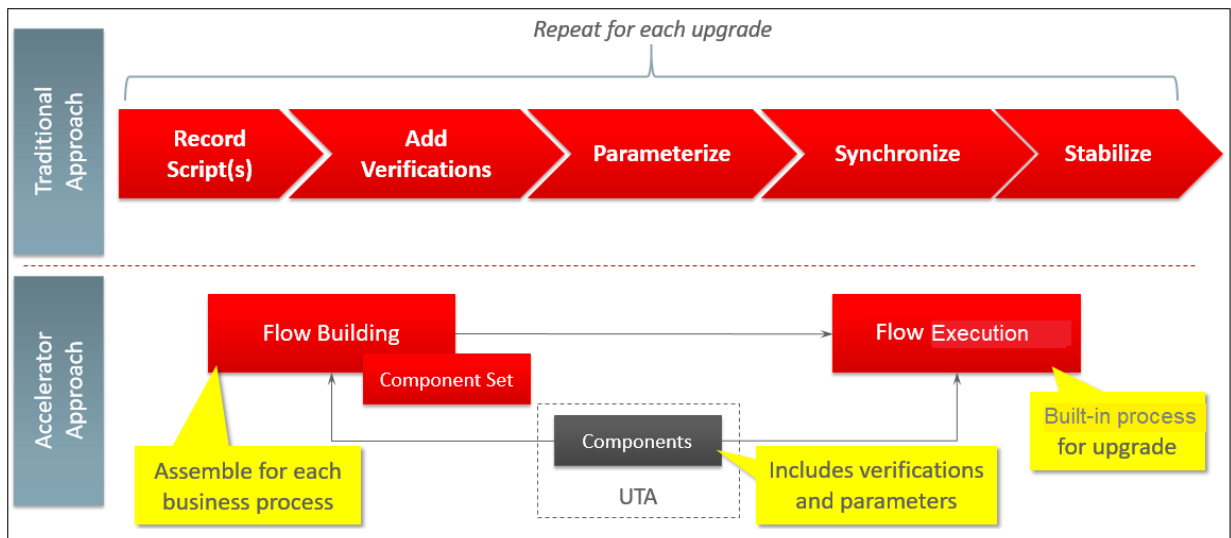
For the Oracle Utilities applications built on Oracle Utilities Application Framework, web service based automated testing is proven to be more robust, maintainable, and faster to develop and run. Oracle Utilities Testing Accelerator comprises web services components that enable creation and running 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 custom 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, follow these steps:

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 the Test Data Management section in Chapter 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, run the script in Oracle Utilities Testing Accelerator.

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

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

Configuring the Automation Development Environment

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

• Step 1: Setting Up Flow and User Configuration Sets

• Step 2: Setting Up Application under Test

Setting Up Flow and User Configuration Sets

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

Setting Up Application under Test

For the test flows to be able to communicate with the Oracle Utilities SaaS service, corresponding Inbound Web Services should exist in the Oracle Utilities SaaS service. Each of the Utilities SaaS service content (components/flows) pack comes with an ImportBundles flow in the Pre-Requisites module under the corresponding flow tree structure. This flow containing all the requisite Inbound Web Services should to be run to setup the application under test.

For more details about the flows and components, refer to the corresponding Oracle Utilities SaaS Service Oracle Utilities Testing Accelerator component reference guides.

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

- Upgrade CM content (flows) from one version of an Oracle Utilities application to a later version.

  For example: From Oracle Utilities Customer Cloud Service 19B to Oracle Utilities Customer Cloud Service 19C

- Add custom function libraries to Oracle Utilities Testing Accelerator

- Purging old flow run logs/results

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

- Custom Content Upgrade

- Purging Flow Run Data

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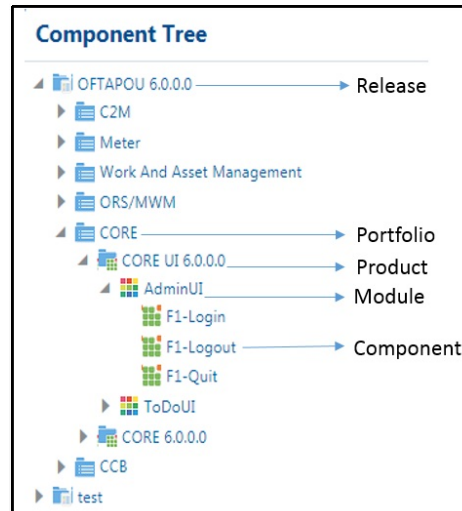
Managing Products

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

For example: CCB

Deleting a Product

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

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** (context menu option only appears if the product is empty).

Managing Modules

A module represents an Oracle Utilities application functional area. For example: Billing in CCS

> **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).

Custom Content Upgrade

Oracle Utilities Cloud Service's/application's version specific Oracle Utilities Testing Accelerator test components are released with each of the Oracle Utilities cloud major version updates, such as 20B, 20C, 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 Cloud Service.

Example: Flows may have been built using components from Oracle Utilities Customer Cloud Service 20A version. When a new version say Oracle Utilities Customer Cloud Service 20B is released, a corresponding set of components for 20B are also released as part of UTA. Using the CM Content Upgrade option in the administration, the flows can be automatically upgraded to use the components from the latest 20B version instead of components from 20A version.

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

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.
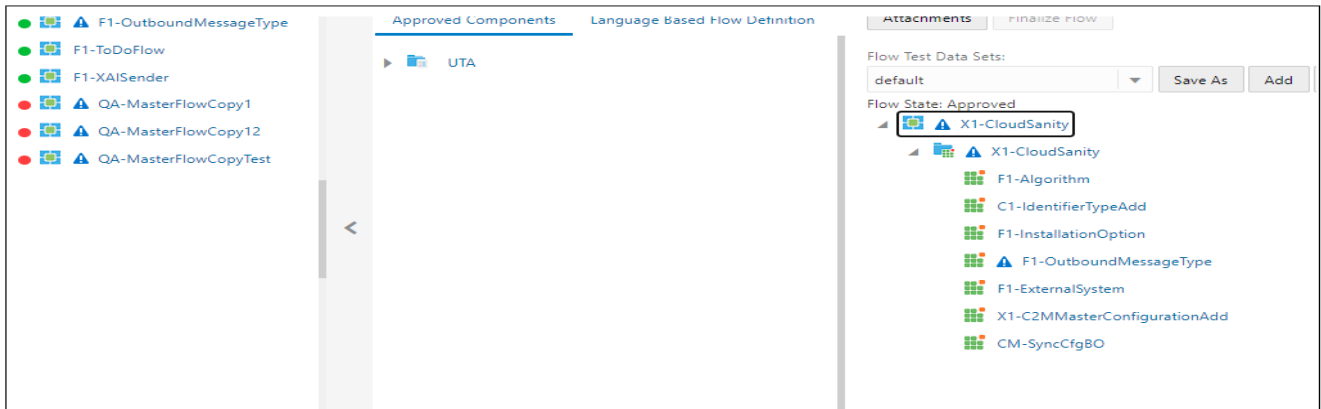
Clearing the Highlight Markers

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 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 has been 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 Cloud Services or a combination of product packs belonging to Oracle Utilities Cloud Services and Oracle Utilities Applications installed on premise.

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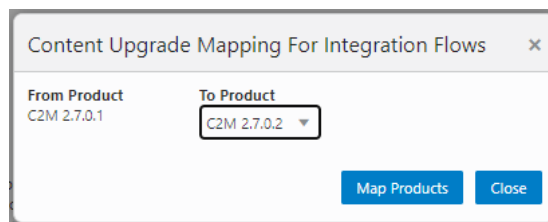
After selecting the appropriate "from" and "to" product versions, click **Map Products**. The CM Upgrade process upgrades the flows by mapping the components appropriately between various product packs.

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.

Purging Flow Run Data

When the flow run logs and flow run history entries accumulate, it impacts 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.

Chapter 5

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 REST Web Service Components
- Copying Components

Component Structure

The following figure shows the high-level component structure.
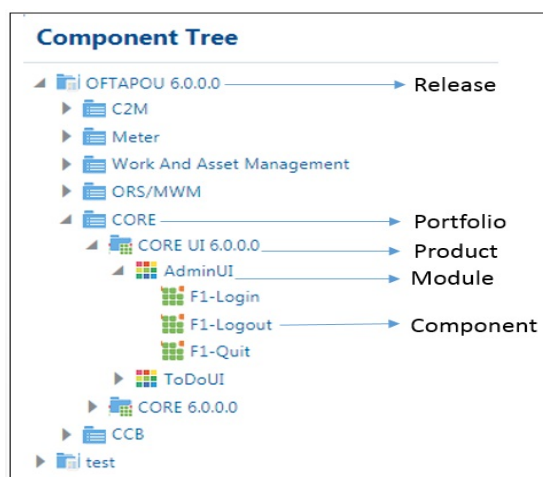
Component Lifecycle

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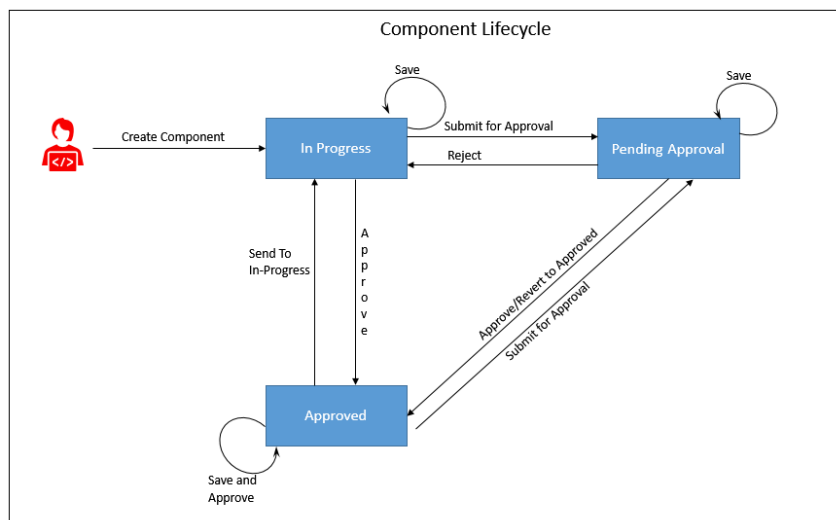
The state of a component determines the actions that can be performed on the component. The following table summarizes the component states, and the possible actions and roles that can take the actions.

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 ⬤ 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 ComponentsREST Web Service Components

Web Service Based Components

A web service based component represents an Business Object/Business Service/Service Script exposed using a web service in Oracle Utilities Customer Cloud Service.

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.

REST Web Service Components

A REST web service component represents a REST interface in Oracle Utilities Customer Cloud Service application.

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, follow these steps:

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.
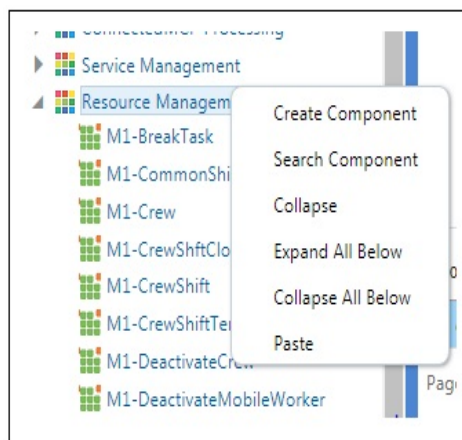
Creating a Component

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.

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. This is applicable for component lines whose keyword is set as FUNCTIONCALL.

- **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. This is applicable for component lines whose keyword is set as FUNCTIONCALL.

- **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. This is applicable for component lines whose keyword is set as FUNCTIONCALL.

- **Tooltip**: The information presented as a tool tip during the flow creation.

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

Component Definition Page

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-MobileWorker component in Oracle Utilities Mobile Workforce Management. This component maps to the MobileWorker business object. It includes elements, such as:

   ```
   <mobileWorkerType />
   <contractorId />
   ```

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 the test data is 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 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 copied from component to flow using the "Set Default Data" option available 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 executing 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.

For example: To create a new mobile worker, or to update or delete an existing mobile worker, set up the transaction type for appropriate the instance of the component in the flow.

Using Runtime Variables in Components

In some cases, few elements from the response of the component run have to be passed as inputs to another component's request XML. To achieve this, store the output of first component in the global variable by using the FUNCTIONCALL keyword along with the library rSVALIDATELIB and the function getElementValue. This function 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. For information

about how a dependent component reads such global variables, refer to the Using Global Variables section.

file: prefix - csv file

Any attribute value containing a csv filename as value should be prefixed with "file:" to allow Oracle Utilities Testing Accelerator to process it correctly.

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 provided 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 definition** window using the FUNCTIONCALL key word and specifying the library name in the **Object** column and the function name in the **Function Name** column. If the function is designed return any output value, 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 the Test Data Management section in 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. 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".

2. Use the FUNCTIONCALL keyword to call the functions available in the CORERESPONSEUTILLIB library.

   Several functions area available in the CORERESPONSEUTILLIB library that allows for retrieving the value(s) from a response XML based on the parameters passed. The functions outputs can be stored in the global variables.Functions have been included to retrieve a value based on specific conditions within a repeating list element.

For a list of libraries and functions available, refer to 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 in the post validations section of component test data page in a flow, by adding functions that validate on the response.

  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 definition structure.

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.

WebService Test Data									
Select Test Data Set: ▾	Save As Test Data Set	Fetch Test Data	Upload Data						
Flow Test Data Set: default									
			Pre Validations			Test Data			Post Validations
New Row									
Keyword	Add Row	Delete	Object	OP Variable Name	Function Name	Logical Name	Value 1	Value 2	Value 3
function call	⌃ ⌄	✕	CCBCMLIB ▾	SSNNumber	ssnGenerator ▾		novalue ▾ 1 ▾		

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 generated for every run and separate logs are generated for each flow. Click **View Logs** on the flow run results page in the workbench to view them.

- **Summary Report**: The test run summary report is generated for every run. Click **Summary** on the run results page in the workbench to access the report.

- **Email report in HTML format**: The test run summary email provides brief information about the overall test run. It comprises the following:

  - Test step

  - Test data

  - Result (Pass/Fail)

The Email report is generated and sent to the email ids defined in the flow or user configuration sets. If no email ids are provided in the configuration, then the email is not sent. This applies to both flows and flow set run.

To explicitly trigger an email of the test run summary report for a given test run, click **Summary** and provide the recipient email ID in the corresponding field. Click **OK**. The Summary report will be sent to the recipient via an email.

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>
```

Sample Partial Schema

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

Defining Schema

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 Inputting Test Data section).

Inputting Test Data

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

For 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** next to the desired element.

For example: To have two instances of usagePeriods inside usageDetails, click **Add** 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.

Add	◢ usageDetails	
Add	◢ usagePeriods	
Add	◢ serviceQty	
	seq	☐ 1
	uom	☐ TH
	tou	☐ ON
	sqi	☐ LOSSADJ
	qty	☐ 103.772922
Add	◢ serviceQty	
	seq	☐ 2
	uom	☐ TH
	tou	☐ SH
	sqi	☐ LOSSADJ
	qty	☐ 61.976037
Add	▶ serviceQty	
	startDateTime	☐ 2012-12-01T02:00:00
	standardStartDateTime	☐ 2012-12-01T02:00:00
	endDateTime	☐ 2013-02-01T02:00:00
	standardEndDateTime	☐ 2013-02-01T02:00:00
	usageRequestType	☐ C1IS
Add	◢ usagePeriods	
Add	▶ serviceQty	
Add	▶ serviceQty	
Add	▶ serviceQty	
Add	▶ serviceQty	

Entering Test Data

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**: The 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.

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**.

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

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

Form Data

RAW Data

Binary

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.

3. From the context menu, select **Paste Component**.

   If the component name already exists in the module, a prompt is displayed to provide a new name to the component.

4. Click **Save as New Component**.

   The component is copied successfully.

Chapter 6

Creating Test Flows

Test flows are actual business tests run 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 Flows

* Creating Scenarios

* Creating Flow Modules

* Adding the Email Capabilities to Flows

* Support for Integration Flows

* Running Test Flows

* Encrypting Passwords

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.

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 in the flow tree to create the flow.

2. Right-click the product 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.

   For information about adding scenarios to a flow, refer to the Creating Scenarios section.

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.
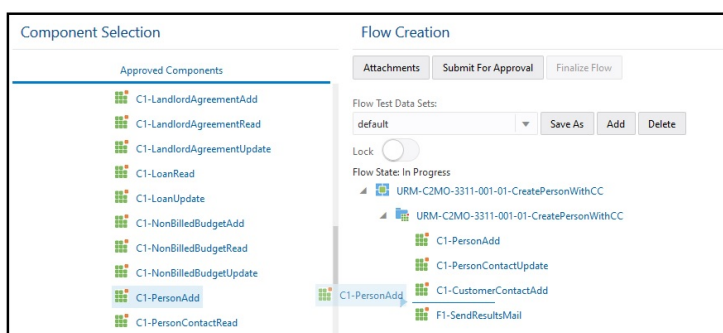
> **Note**: Flow definition can be modified (components added or removed) only if the flow is in an "In Progress" state.

The test data needs to be entered 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**

Click **New Row** to add new rows. The **Pre Validations** section is used to add functions in the components that may be specific to the flow being developed.

Example: A function to generate random test data such as name, social security number or mobile number, for creating a person using C1-PersonAdd component.

The library in which the function exists can be selected in the column "Object": Based on the library selected the function can be selected from the "Function Name" drop-down list. If the function outputs a value, provide the custom global variable name in the **OP Variable Name** column into which the function output is stored. This variable can be used as test data in the **Test Data** section. The function inputs can be specified against the Value1, Value2 through to Value 6 columns based on the number of input parameters of 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 column's drop down (value 1 through value 6 columns), so they can clearly be distinguished from the global variables defined in the component definition.

b. **Test Data**

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

- The test data pertaining to a component line can be specified against the Value 1 column. The keyword defines what the component lines does and the **Caption/Name** columns specify the details of the component line in context of the keyword.

- If the element is a repeatable group or list element, the "ADD" button under the "Add" column is used to add multiple repetition of the list elements.

- To select global variables as inputs to the test data, the drop-down button under the column, select "Value 1" for each row and appropriate variable.

- The default data column holds a set of default test data that can be used in the component. The default data can be copied across to the test data field, "Value 1" by clicking **Set Default Data**.

- Enable or disable the validations/functions defined in the component by appropriately switching the **Enable** checkbox in the first column. If the checkbox is not selected, during the course of the test run, the function/validation will not be triggered. The checkbox only appears for rows to which this feature is applicable.

  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 by not selecting the checkbox 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 to the component 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. For more details, refer to the **Flow-Level Validations** section in Chapter 5: Creating Components.

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

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.
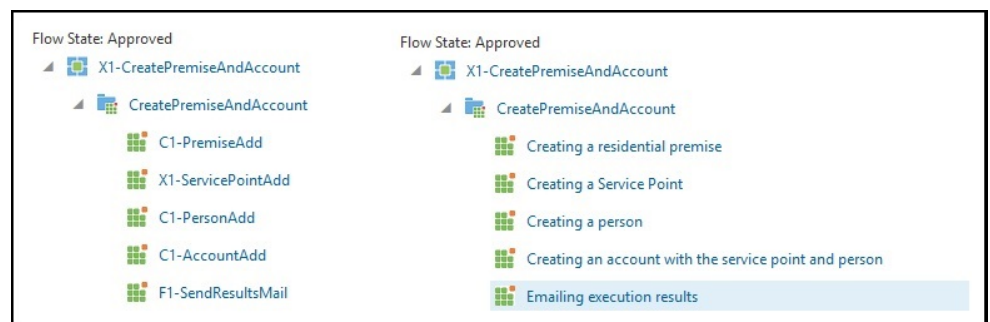
This figure shows a flow without and with annotations.

Creating Scenarios

To create a scenario:

1. Navigate to the flow to be modified.

2. Select **Create/Update Flow Structure**.

3. Select and right-click the flow or a scenario inside the flow. You can create a scenario from the **Flow** menu or from the **Scenario** menu.

4. Click **Add Scenario** from the **Flow** menu.

   Alternatively, click **Add Scenario Above/Add Scenario Below** from the **Scenario** menu.

5. Enter the new scenario name.

6. Click **Go**.

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**.

Using Global Variables

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

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 "Value 1" drop-down list. This lists all variables that are exposed by the preceding components; in this case, the 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.

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

These 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.

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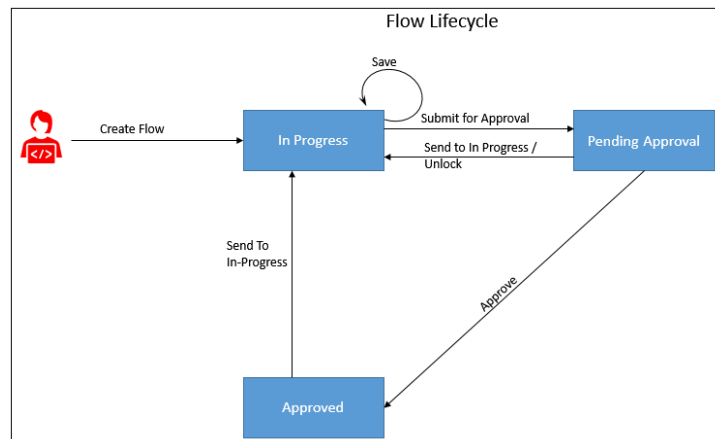
The state of a flow determines the actions that can be performed on the component. The following table summarizes the component states, and the possible actions and roles that can take the actions.

Flow Lifecycle State	Permitted Actions	Role	Resultant State (after 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 ⬤ icon to lock/unlock a flow in the Oracle Utilities Testing Accelerator application.

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.

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. Log into the application.

2. Navigate to the **Flows** menu.

3. In the left pane, right-click the flow for which components have to be reordered.

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. Log into 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.). Select the User, Flow configuration and provide the web service name and the transaction/operation name to access the WSDL and then provide values against 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, operation name, username, and password. Then, 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 cloud service) 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 then click **Fetch Test Data**.

8. After the data is retrieved from the target application and populated in the test data GUI of the component in the flow, review/validate it. Click **Save and Close**.

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 run 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 (search-able), 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. Ensure that nested subroutines do not create a cyclic dependency.

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**.

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.

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.

Executing 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 figure below shows the **Loop** subroutine switch and **Open Looping Interface**.

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, 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.

- **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).

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

- **Exit Condition**: The exit condition controls when the subroutine loop would end before the Maximum Number of Iterations. 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.

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.

Select TestDataSet:	▼	Save As Testdata Set	Save	MoveAllDefaultData	Upload data	SaveAndClose	Fetch 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.

Select TestDataSet:	▼	Save As Testdata Set	Save	MoveAllDefaultData	Upload data	SaveAndClose	Fetch Test Data
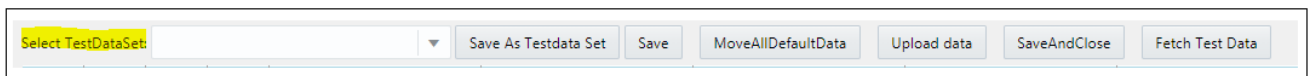
Deleting Component Test Data Sets

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.

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 executing 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, refer to Iterative Flow Run.

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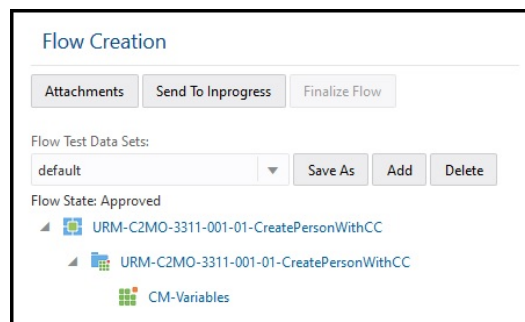
This figure shows flow test data sets option for the selected flow.

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 the Email Capabilities to Flows

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.

> **Note**: The generateAndSendReport function in WSCOMMONLIB is redundant and need not be included in the flow as the last step.

Support for Integration Flows

This section includes the support for integration flows as follows:

- Hybrid Integration Flow Support
- Oracle Utilities Cloud Services Integration Flow Support

Hybrid Integration Flow Support

Support for integration flows allows users to create a single test flow that can interact with multiple applications. Individual components in the flow can be configured to post web service requests to different application URLs. The integration flow support includes support for creation, management and running of hybrid test flows, where Oracle Utilities Testing Accelerator that is within Oracle Utilities Enterprise SaaS cloud service can have a test flow that interacts with that cloud service and one or more Oracle Utilities enterprise applications that may be at customer's premise/data center.

By default, Oracle Utilities Testing Accelerator automatically constructs the web service end point URL based on the web service provided in the flow test data. This default URL runs test flows against the Oracle Utilities Enterprise SaaS cloud service that it is part of. To configure a component in a flow to post a request to a different application outside of the Oracle Utilities Enterprise SaaS cloud, 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 on-premise Oracle Utilities Enterprise application. 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: Oracle Utilities Customer Care and Billing is the on-premise application and the custom keyword chosen 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 with "@ext_pub@", 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 - "@ext_pub@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 figure below shows a sample setup of environment configuration for integration flows.

The integration flow in Oracle Utilities Testing Accelerator may contain a mix of components pertaining to the cloud service that it is part of and components pertaining to on-premise 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 on-premise application 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.

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.

Oracle Utilities Cloud Services Integration Flow Support

For integration flows spanning multiple Oracle Utilities Enterprise cloud services, a single test flow can be developed that interacts with these multiple services. Individual components in the flow can be configured to post web service requests to different Oracle Utilities Enterprise cloud services as long as the services are under same tenant. The integration flow support includes support for creation, management and running of integration test flows, where Oracle Utilities Testing Accelerator that is part of one Oracle Utilities Enterprise cloud service can have a test flow that interacts with that cloud service and one or more Oracle Utilities Enterprise cloud services that are in the same tenant as the first one.

Example: An integration flow between Oracle Utilities Customer Cloud Service and Oracle Utilities Work and Asset Cloud Service.

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 data. This default URL runs test flows against the Oracle Utilities Enterprise cloud service that it is part of. To configure a component in a flow to post a request to a different Oracle Utilities Enterprise cloud service, 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 other Oracle Utilities Enterprise cloud service. 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: Assuming that Oracle Utilities Testing Accelerator provisioned as part of Oracle Utilities Work and Asset Cloud Service is being used to develop and run an integration flow between Oracle Utilities Work and Asset Cloud Service (OUWACS) and Oracle Utilities Customer Cloud Service (OUCCS should be in the same tenant as OUWACS) and the custom keyword chosen is "CCS". In the flow configuration set or user configuration set, use the "Add Property" option and add the following properties:

Property Name	Property Value
CCS	$ccs
CCS_gStrApplicationUserName	<username>
CCS_gStrApplicationUserPassword	<encryptedpassword>

Oracle Utilities Customer Cloud Service property holds the web service end point URL pertaining to Oracle Utilities Customer Cloud Service, which is auto-populated by Oracle Utilities Testing Accelerator when user specifies the value as $ccs.

The properties CCS_gStrApplicationUserName and CCS_gStrApplicationUserPassword hold the user name and password respectively for authenticating the user posting the web service request to Oracle Utilities Customer Cloud Service from the Oracle Utilities Testing Accelerator instance which is part of Oracle Utilities Work and Asset Cloud Service.

The URL pertaining to each of the supported Oracle Utilities Cloud Services can be set in the flow configuration set or user configuration set by providing the below as value against the custom environment URL property:

• For Oracle Utilities Customer Cloud Service provide $ccs as the value (in lower case)

- For Oracle Utilities Work and Asset Cloud Service provide $wacs as the value (in lower case)

- For Oracle Utilities Meter Services Cloud Service provide $mscs as the value (in lower case)

- For Oracle Utilities Operational Device Cloud Service provide $odcs as the value (in lower case)

The integration flow in Oracle Utilities Testing Accelerator may contain a mix of components pertaining to the Oracle Utilities Enterprise Cloud Service that it is part of and components pertaining to another Oracle Utilities Enterprise Cloud Service, within the same tenant. To get a component in flow to post a request to the other Oracle Utilities Enterprise Cloud Service, the web service name in the component step's test data should be prefixed with the keyword.

In the example where Oracle Utilities Customer Cloud Service is the product being integrated to Oracle Utilities Work and Asset Cloud Service (in which Oracle Utilities Testing Accelerator is being used) and "CCS" is the keyword, the web service name for the C1-PersonAdd component's test data in the integration flow should be specified as "CCS/ATC1PersonAdd". This ensures that the C1- PersonAdd component posts the request to Oracle Utilities Customer Cloud Service whose configuration has been specified in the flow configuration set or user configuration set using the keyword prefix "CCS".

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

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 Execution on Validation Failure

- Viewing Flow Run Details

- Viewing Flow Run Summary Report

- Debugging Flows using Conversational Test Data Management

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 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 run logs.

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 run 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 execution. 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 runs of the flow with second data set.

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

> **Note**: For more details about flow configuration and user configuration, see Runtime Configuration for Flow Run.

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".

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.

The **Flow Run Status** page displays the details about the flow run, including logs and request and response for each of the component.

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:

a. Open the failed request of a component.

b. Make changes to the test data and resend the request to edge application (without executing the flow multiple times).

c. Observe the response for the modified request.

d. 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.
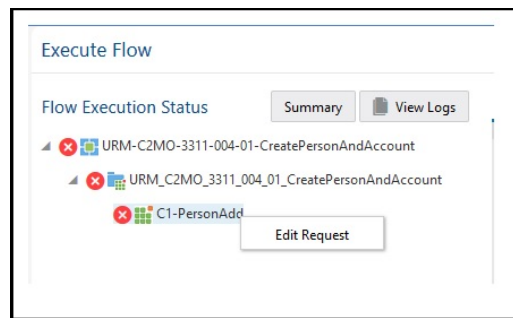
After selecting the **Edit Request** option from the right-click menu, a new window is displayed and prompts to select the configuration sets to be used. Modify the request by either changing test data value of one or more elements, adding/deleting new elements in the request and click **Send** to send 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.

Runtime Configuration for Flow Run

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**: For Oracle Utilities Testing Accelerator that is available as part of Oracle Utilities Enterprise SaaS services, the corresponding environment's URL is predefined within Oracle Utilities Testing Accelerator. The web service URL

for the same need not be provided. However, user name and password for authentication should be provided.

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 being 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 then 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 recommended that sensitive information (such as passwords) be encrypted. Click **Encrypt** to encrypt the corresponding row of 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 then 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 then 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 then click **Copy**.

5. Enter the new configuration set name and click **Confirm** to create a copy.

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. Multiple flow sets can be run in parallel, whereas flows in a flow set will be run in the specified sequence. Unlike the flow subroutines, the flows in a flow set do not have a direct dependency on each other. The test data/outputs cannot be passed from one-flow to another, within Oracle Utilities Testing Accelerator.

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 Run 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. Select the flows that need to be added to the flow set and add them.

7. Select a test data set for each flow in the flow set, if applicable. By default, the default test data set is selected.

8. 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 then click **Delete**.

6. Click **Save** to save the flow set.

Running Flow Sets

To run 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 (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 flowset 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 flow set name whose run needs to 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 run. 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 Run Summary Report

To view the run 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

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

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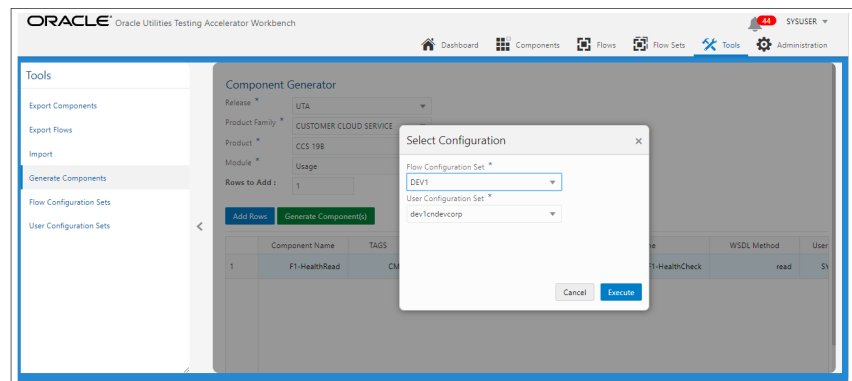
Note: When attempting to generate components from more than one application at the same time, prefix the URLs with keywords in the configuration files that can be used while specifying the WSDL to connect to.

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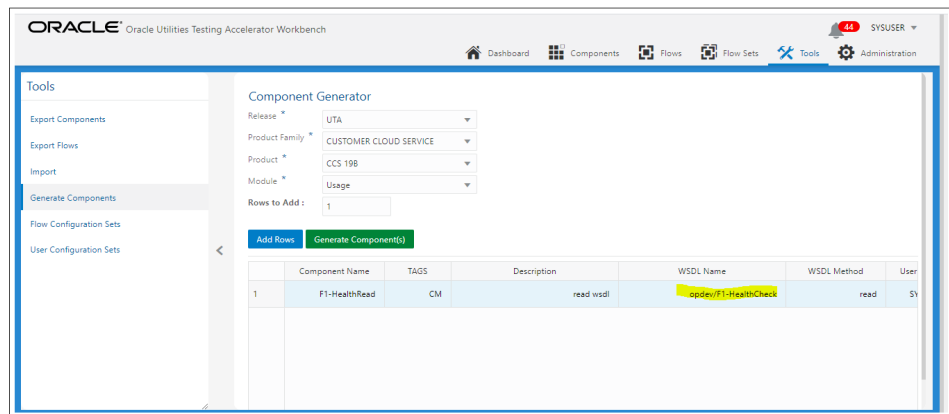
8. Upon successful component generation, a list of generated components and failed components is displayed.

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

Chapter 9

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:

- WSVALIDATELIB

- RESPONSEUTILLIB

- COREDATETIMELIB

- COREDATAGENLIB

- COREVALIDATEVARIABLELIB

- 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.

```
setVariable (String valueToBeStored)

Input Parameters:
valueToBeStored - value to be set/stored into a variable.

Return Type: String
```

getCurrentTimeInMilliSeconds

Gets the time in milliseconds and stores the value into a global variable specified in the OP Variable Name column.

Example:

```
getCurrentTimeInMilliSeconds ()

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

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)

Input Parameters:
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 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: the 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.

Usage:

```
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.

Usage:

```
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 xpath,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 ("description", "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
```

RESPONSEUTILLIB

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

This function 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 i.e., 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
```

Refer to setVariableFromResponseListWithFilter function for details on valid comparison conditions and their usage.

getValueFromListWithIndex

This is a supporting util function for the setVariableFromReponseListWithFilter & setVariableFromReponseListWithFilters 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 will have to be retrieved and used in later components in the same flow, then this function can be used to retrieve the groups of XML elements and their values.

This 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. Further 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 that will have to be retrieved and used in later components in the same flow, then this function can be used to retrieve the groups of XML elements and their values.

This 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. Further functions in this library can be used 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.

The function needs to be called 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 that will have to be retrieved and used in later components in the same flow, then this function can be used to retrieve the groups of XML elements and their values.

This 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 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.

Further functions in this library can be used 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 &
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 & 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>
```

In order to retrieve the group of elements under the batchJobExtraParameter for first 2 occurrences of the group.

The function needs to be called 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 that will have to be retrieved and used in later components in the same flow, then this function can be used to retrieve the groups of XML elements and their values.

This function retrieves all the 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. Further functions in this library can be used 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 &
values need to be retrieved.

Output Parameters:
String - The XML string holding all the elements & 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.

The function needs to be called 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 that will have to be retrieved and used in later components in the same flow, then this function can be used to retrieve the groups of XML elements and their values.

This 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. Further functions in this library can be used 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 &
values need to be retrieved.

Output Parameters:
String - The XML string holding the elements & 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.

The function needs to be called using 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 that will have to be retrieved and used in later components in the same flow, then this function can be used to retrieve the groups of XML elements and their values.

This 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 &
values need to be retrieved.
    NumberOfLastNOccurrences - the 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.

The function needs to be called 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 that will have 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, then this function can be used to retrieve the groups of XML elements and their values.

This 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 &
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 & 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, the function needs to be called 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, then this function can be used 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 - The count of the number of occurrences of the specified
group.
```

getGroupsInIntervalFromGroupVariable

This function is the same as the function getGroupsInIntervalFromResponse, except that this function is applied on variables instead of the response XML of the component in a flow. The variable that is used as input to this function needs to hold the XML as String. It 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.

> **Note**: This function can be applied to retrieve a subgroup after a group has been retrieved from the response using other functions.

```
getGroupsInIntervalFromGroupVariable (String groupVariable, String
xpath, String startIndex, String endIndex)

Input Parameters:
    groupVariable - variable holding the group elements in the form
of an XML.
    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.
```

Refer to getGroupsInIntervalFromResponse function for a detailed example.

getGroupsFromGroupVariableWithFilter

This function is the same as the function getGroupsFromResponseWithFilter, except that this function is applied on variables instead of the response XML of the component in a flow. The variable that is used as input to this function needs to hold the XML as String. It 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.

> **Note**: This function can be applied to retrieve a subgroup after a group has been retrieved from the response using other functions.

```
getGroupsFromGroupVariableWithFilter (String groupVariable, String
xpath, String conditionElementXpath, String condition)

Input Parameters:
    groupVariable - variable holding the XML as a string
    xpath - xpath of the parent element of the list whose elements &
values need to be retrieved.
    conditionElementXpath - 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 & values of repeating
group of elements between whose element matches the conditional
statement specified.
```

Refer to getGroupsFromResponseWithFilter function for a detailed example.

getListFromGroupVariable

This function retrieves the value/values against the specified xpath, within an XML string stored in a variable. It is provided as a support function to the above functions that help retrieve groups from a response/variable.

If the xpath specified as input parameter has multiple occurrences in the XML in the group variable, then the values are returned as a comma separated list. The function outputs the value or list of values under the specified xpath.

The getValueFromListWithIndex function can be used to pick up individual values from the list.

```
getListFromGroupVariable (String groupVariable,String xpath)

Input Parameters:
    groupVariable - The variable holding the XML String from which
value needs to be retrieved.
    xpath - xpath of the element whose value needs to be retrieved.

Output Parameters:
String - The value of the specified element or the comma separated
values of the specified element, if the element is repeating in the
XML.
```

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
```

getCurrentTZDatetimeWithGivenDateFormat

Gets the current date and time in the specified time zone and format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
getCurrentTZDateTimeWithGivenDateFormat(String dFormat, String
timeZone)
dFormat- Java date formats are supported.
time
getCurrentDateTimeWithGivenDateFormat("mm-dd-yyyy:hh.mm.ss")
```

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
```

addDaysToCurrentTZDateWithGivenFormat

Calculates the date and time after adding the specified number of days to current date time of the specified time zone in the specified date/time format and stores it into a global variable specified in the OP Variable Name column.

Usage:

```
addDaysToCurrentTZDateWithGivenFormat(String noOfDays, String
dFormat,String timeZone)
addDaysToCurrentDateWithGivenFormat("45", "mm-dd-yyyy","PST")

Input Parameters: String noOfDays, String dFormat, String timezone
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
```

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
```

CORESTOREVALUES

Use this function library to store values into a variable.

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

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 - The value to be stored in a global variable.

Return Type: String
```

COREFILEOPS

Use this function library to read files that are stored in flow attachments.

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

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 - The name of file in flow attachments.
fileEncoding - The encoding of the file being read.

Return Type: String
```

CORESTRINGOPS

Use this function library perform String operations such as append etc.

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

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 & 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 & 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 & 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 & 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 of input numbers specified in the value 1 & 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 & 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 & 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 UTA 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
```

Chapter 10

Custom Libraries

This chapter focuses on creating custom libraries that include custom validation functions used for component validation.

> **Note**: Only Groovy script language custom libraries are supported. Due to security constraints, only a few approved Groovy packages are allowed in custom libraries.

- 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. It is used only for web services based requests, UI or REST requests, or all type of requests.

5. Click **Create**.

    Note: This step only creates a definition of the library, the actual code supporting/implementing the definition is expected to have been already developed using an IDE like Eclipse or Groovy 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), definition of parameters (as @param1 and @param2), comments and description.

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.

    *   **Parameters**: Name of the parameter(s). If more than one parameter exists, separate them by a comma and should be named as @param1, @param2 ..@param6.

    *   **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 a Groovy script 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 **Compile**. This triggers the compilation of the custom library Groovy code and displays errors if any. Rectify the code and click on compile again to verify the changes.

14. Click **Save** to overwrite any existing library with an updated version or a new library being created.
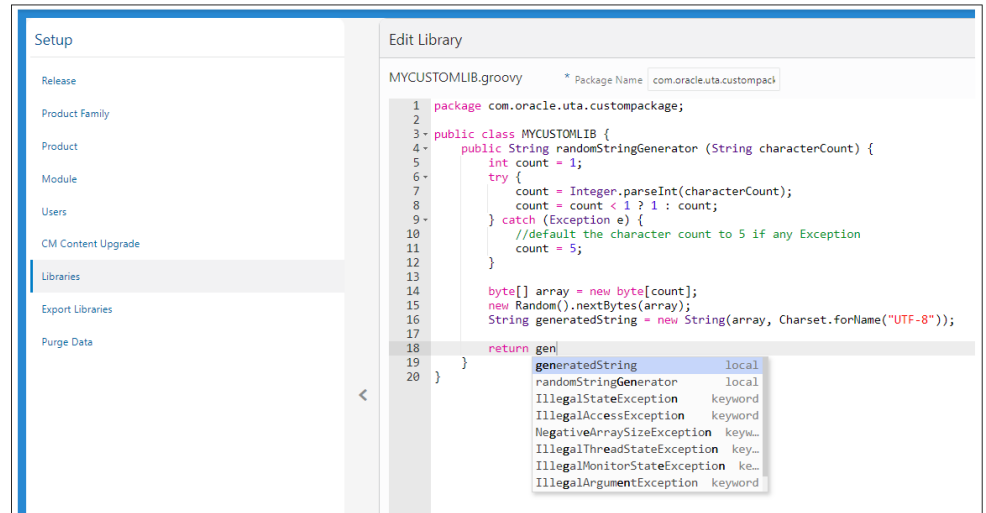
Example: **Creating a Groovy Library**

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. Create a UTATEST.groovy file with the function's implementation.

The UTATEST.groovy contents are as follows:

```
package uta.oracle;

import java.util.ArrayList;

import java.util.List;

import com.oracle.utilities.core.plugin.FunctionalTestScript;

import com.oracle.utilities.core.lib.WSCOMMONLIB;

import java.util.logging.Logger;

import com.oracle.utilities.core.lib.OUTSPCORELIB;

public class UTATEST {

private static final Logger _logger =
        Logger.getLogger(UTATEST.class.getName());

public String generateSSN(String prefix) throws Exception{

        Random random = new Random();

        int x = random.nextInt(900) + 100;

        int y = random.nextInt(90) + 10;

        int z=random.nextInt(9000) + 1000;

        String zz = x+"-"+y+"-"+z;

        return prefix+zz;

    }}
```

Below is the function definition in Oracle Utilities Testing Accelerator.

	Function	Parameter Count	Parameters	Parameter Comments	Description	Delete
1	generateSSN	1	@param1	The prefix of the social securit	Random SSN generator	🗑

Library Functions   + Add   Upload Library File   ✓ Save

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 to 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, click **Export**. An export file of the custom function library currently displayed is generated.

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 and 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 is 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

Usage Details	Value
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

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 C

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, follow these steps:

1. Login to the Oracle Utilities application.

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. Select the **Annotation**.

7. Enter the **Operation Name**.

8. Select the **Schema Type**, **Schema Name**, and **Transaction Type**.

9. Click **Save**.

Importing Inbound Web Services

To import an Inbound Web Service into the Oracle Utilities application, follow these steps:

> **Note**: Ensure the exported Inbound Web Services are available in the local machine.

1. Login to the Oracle Utilities application.

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 application, follow these steps:

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 D

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 E

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 F

OUTA REST Services

Oracle Utilities Testing Accelerator provides below REST services which users can use to integrate with any compatible third party application. Example: test management applications, Jenkins etc.

This chapter focuses on the Oracle Utilities Testing Accelerator REST services to execute flows and retrieve flow/flowset execution analytics. It describes the following services:

- Prerequisites
- Running a Flow
- Running a Flow Set
- Flow Run Analytics
- Flow Set Run Analytics

Prerequisites

All the REST services require an authentication token as one of the parameters. Use the following command to obtain an authentication token.

Endpoint

/oauth/token?grant_type=password

Curl command

curl -X POST -k -F 'username=<login username>' -F 'password=<login password>' 'https://<hostname>:<port>/oauth/token?grant_type=password' -H 'authorization: Basic dXRhOnV0YXBhc3M= ' -H 'cache-control: no-cache' -H 'content-type: multipart/form-data'

Parameters

<login username>: Valid OUTA application user's username

<login password>: OUTA application user's password

<hostname>: OUTA Application host name

<port> : OUTA application port

Below is a sample response from the call.

Response

{

"access_token": "dafc110a-13f8-464c-bc72-c6c07a674efc",

"token_type": "bearer",

"refresh_token": "c2a59f64-59e1-42aa-8c3a-23308b38bc05",

"expires_in": 17999,

"scope": "read write"

}

Running a Flow

The Flow run service provides an endpoint allowing a flow to be executed by passing the relevant flow details.

Endpoint

>/rest/execute/flow

Curl command for Running a Flow

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": "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 to 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 executed

<configuration> : Configuration to be used for executing the flow

<user configuration>: The user configuration to be used for executing the flow

<flowtestdataset>: The flow test data set that needs to be used during execution of the flow

Example

Running a Flow

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": "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 execution is triggered, the service responds with a response similar to the one below. The response includes a flowExecutionId value which can be used to request for the status/result of the flow run.

{"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: Bearer <access_token>'

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 execution ID received when the flow execution was triggered.

Example

> curl -i -k -X GET 'https://my.server.com:8080/rest/execute/
> flowstatus?flowExecutionId=1810' -H 'authorization: bearer 62593bbd-b057-4f38-8a3e-
> 5915d4ab559f'

The service responds to the flow run status query with a response similar to the one below.

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.

Running a Flow Set

The Flow Set run service provides an endpoint allowing a flow set to be executed by passing relevant flow set details.

Endpoint

> \>/rest/execute/flow

Curl command for running Flow Set:

> 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>   : OUTA Application host name
>
> <port>   : OUTA 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

Running a Flow Set

> 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","status":"Running"}]

Querying Status of Running Flow Set

User can query the status of running a flow set.

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>   : OUTA Application host name

<port>   : OUTA 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 (see above)

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":"Runni
ng"}]'

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 (e.g. 10-JAN-20)

<toDate>: The end date to query for analytics - format DD-MON-YY (e.g. 20-JAN-20)

Example

Flow Run Analytics

> curl -i -k -X GET -k https://my.server.com:8080/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,"totalFlowsRanByUserFailur
> e":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 (e.g. 10-JAN-20)
>
> <toDate>: The end date to query for analytics - format DD-MON-YY (e.g. 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,"totalFlowSetsRanByU
> serFailure":1,"totalFlowSetsRanByUserRunning":0}