Oracle® Financial Services
Analytical Applications Infrastructure
Scheduler Services User Guide

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Document Control

List of documentation updates.

Table   Document Control

Version Number	Revision Date	Change Log
1.0	November 2021	Created the user guide for release 8.1.2.0.0.

Preface

This preface provides information for the Oracle Financial Services Scheduler Services User Guide.

Audience

This document is intended for the system administrators and users configuring the Scheduler Services.

Documentation Accessibility

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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.

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About Scheduler Services

Scheduler Services automates behind-the-scenes work that is necessary to sustain various enterprise applications and their operations.

Scheduler Services helps the applications to control unattended background jobs program execution.

> ⓘ **Note**
>
> To use this feature, Oracle Financial Services Analytical Applications Infrastructure Extension Pack (OFS AAIEP) is required. For more details, refer OFS AAIEP Release Notes.

The functionalities in Scheduler facilitates you a graphical user interface and a single point of control for the definition and monitoring of the background executions.

- **Batch**: Date and time-based execution of the background tasks based on a defined period during which the resources were available for batch processing.
- **Job**: A batch job is a piece of a program meant to meet specific and business-critical functions. The program is a RESTful API used in a batch.
- **Job Dependency**: When the batch job is submitted, it is moved to the job queue until the system is ready to process. If, the job queue contains many job waiting to be processed, the system process the job based on the chronological order or by priority.
- **Schedule**: Batch jobs are used to automate the tasks that require to be performed on a regular basis but don't necessarily need to occur during the day or have an employee interacted with the system are batch schedule. Jobs that happen on a regular basis are incorporated into batch schedules.
- **Monitor**: Scheduler provide options to monitor your executions using a web-browser. It provides real-time feedback on the status of the current encoding job and lists the jobs pending in the batch. You can abort or restart the service when required.

Components of Scheduler

The Scheduler consists of the Batch Maintenance, Batch Scheduler and Batch Monitoring modules:
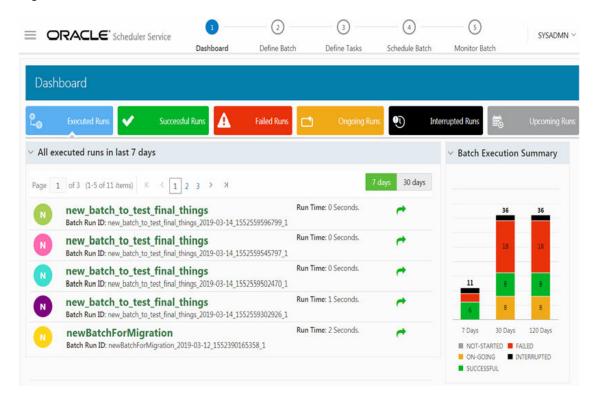
- Define batches - for creating a new batch, modifying batch details, and deleting unwanted batches.
- Define tasks - for creating tasks for the batches.
- Schedule batches - for executing a batch instantaneously and schedule batches.
- Monitor batches - for tracking the execution of the batches to view the real time status.

Scheduler Landing Screen
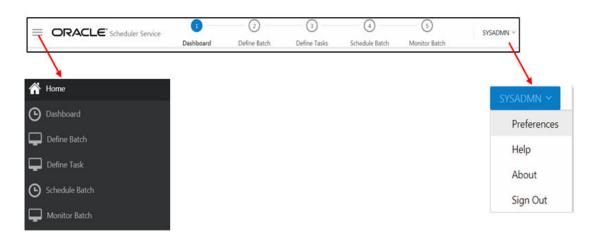
On accessing Scheduler using your browser window, the Dashboard window is displayed.

Figure 1-1   Dashboard window

The Header Details in the Dashboard window is displayed in the following figure.

Figure 1-2   Header Details

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User Roles

Following are the user roles that need to be mapped to a user group to access various functionalities within the scheduler service.

Table 2-1   User Roles

Role Code	Role Name	Description
BATCH_READ	Batch Read	This role provides access to batch definition screens with view permission.
BATCH_WRITE	Batch Write	This role provides access to batch definition screens with view, write and modify permissions.
BATCH_MAINT	Batch Maintenance	This role provides access to batch definition screens with view and modify permissions.
BATCH_OPER	Batch Operation	This role provides access to batch definition screens with view, schedule and execute permissions.
BATCH_ADV	Batch Advanced	This role provides access to batch definition screens with write, modify, delete, schedule and execute permissions.

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Scheduler Dashboard

To access the **Scheduler**, In the **Home** page, select the menu, select **Batch Administration**, and then select **Scheduler**.

To view the demonstration of the **Dashboard** window, see the **Scheduler Home page Introduction** video.

On accessing the Scheduler Service using your browser window, the **Dashboard** window is displayed. **Dashboard** is the landing page of the Scheduler. On this page, you can view the following details:

- Tabs such as **Executed Runs**, **Successful Runs**, **Failed Runs**, **Ongoing Runs**, **Interrupted Runs**, and **Upcoming Runs**. You can click the tabs to view the details of the batches based on their status. For example, click **Ongoing Runs** to view the details of the batches which are currently running.

- The batches that are executed in the last 7 days with details such as Batch Name, Batch Run ID, and Run Time. Click 30 days to view the batches executed for last 30 days. You can click the **Next** icon corresponding to a batch to monitor it.

- The **Batch Execution Summary** pane, which displays the count of total batches executed for last 7 days, 30 days and 120 days. Additionally, you can see the separate count of successful batches, failed batches, interrupted batches, on-going batches, and the batches which are yet to start, by placing your cursor over the color given for each batch status.

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Define Batch

The **Define Batch** window displays the details of all existing batches like Batch ID, Batch Name, Batch Description, Last Modified By and Last Modified Date.

This window allows you to create a new, edit, copy, and delete the batches. To navigate to the **Define Batch** window, click **Define Batch** option from the header in the Dashboard window. After selecting the batch you can select the **Next** icon corresponding to the batch and proceed to create or edit tasks.

Create a New Batch

You can create a new batch in the **Define Batch** window and schedule and monitor the batch that you created.

To create a new batch, perform the following steps:

1. In the **Define Batch** window, click the **+** icon. The **Create a New Batch** window is displayed.

2. Specify the details as tabulated in the **Create a New Batch** window as described in the following table.

Table 4-1   Fields on the Create a New Batch window and their description

Field	Description
Batch Details	
Batch Name	The Batch Name is auto generated by the system. You can edit to specify a batch name based on the following conditions: ⓘ **Note** • The batch name should be unique across the information domain. • The batch name must be alphanumeric and should not start with a number. • The batch name should not exceed 60 characters in length. • The batch name should not contain any special characters except "_".

Table 4-1   (Cont.) Fields on the Create a New Batch window and their description

Field	Description
Batch Description	Enter a description for the batch based on the batch name. ⓘ **Note** The batch description should be alphanumeric. The allowed special characters are_.:- and <blank space>. It should not exceed 200 characters in length.
Service URL Name/ Service URL	• Select the service URL name from the drop-down list, if it is available. The service URL is displayed in the **Service URL** field. • To add a new service URL, enter a name to identify it in the **Service URL Name** field and enter the proper URL in the **Service URL** field. You can give partial URL here and the remaining URL in the **Task Service URL** field.

3. From the **Batch Parameters** pane, click the **+** icon to add a new batch parameter. By default, $FICMISDATE$ and $BATCHRUNID$ are added as batch parameters.

> ⓘ **Note**
>
> Parameters whose value to be given at run time should be enclosed with $. For example, $paramName$

a. Enter the parameter name in the **Param Name** field.

b. Enter the parameter value in the **Param Value** field.

You can delete a parameter by clicking the **-** icon corresponding to the parameter.

4. Click **Save**. The new batch is created and displayed in the **Define Batch** window.

Edit a Batch

The **Edit Batch** option allows you to edit the batch details such as batch description, service URL name and service URL and also add a new batch parameter.

To modify a batch, perform the following steps:

1. In the **Define Batch** window, click the pencil icon corresponding to the batch you want to modify. The **Edit Batch** window is displayed.

2. Modify the required batch details. For more information, see Creating a New Batch section.

3. Click **Save**. The edited batch is saved and displayed in the **Define Batch** window.

Copy a Batch

The **Copy Batch** option allows you to copy a batch, which you want to clone or create instances in the system from the **Define Batch** window.

To copy a batch, perform the following steps:

1. In the **Define Batch** window, click the batch icon corresponding to the batch you want to copy. The **Copy Batch** window is displayed.

2. Specify the batch details as you want to clone and copy the existing batch. For more information, see [Creating a New Batch](#) section.

3. Click **Save**. The copied batch is saved and displayed in the **Define Batch** window.

Delete a Batch

The **Delete Batch** option allows you to delete batches, which are no longer required in the system, from the **Define Batch** window.

To delete a batch, perform the following steps:

1. From the **Define Batch** window, click the **x** icon corresponding to the batch you want to delete.

2. Click **OK** in the confirmation dialog to confirm deletion. If the batch has any active schedules, a warning is displayed. Upon confirmation, all schedules of the batch are also deleted.

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Define Tasks

The **Define Tasks** window displays the list of tasks associated with a specific batch definition.

You can create new tasks, edit the existing tasks or delete unwanted tasks. Additionally, you can specify task precedence for each task in the **Task Precedence** window and click the **clock** icon to schedule the batch.

Add a new task

The **Create a new task** option allows you to add new tasks to a selected batch definition.

To add a new task, perform the following steps:

1. Click **Define Tasks** from the Header panel. The **Formulate Task** window is displayed.

2. Select the batch for which you want to add new task from the **Batch Name** drop-down list.

3. Click the **+** icon. The **Create a New Task** window is displayed.

4. Enter the details as tabulated:

Table 5-1   Fields in the Create a New Task window and their Description

Field	Description
Task Details	
Task Name	Enter the task name.
	ⓘ **Note**
	a. The task name must be alphanumeric and should not start with a number.
	b. The task name should not exceed 60 characters in length.
	c. The task name should not contain any special characters except underscore (_).
Task Description	Enter the task description. No special characters are allowed in task description. Words like **Select From** or **Delete From** (identified as potential SQL injection vulnerable strings) should not be entered in the description.
Task Type	Select the task type from the drop-down list. The options are REST, EXTERNAL API, and SCRIPT. Currently only REST is supported.
Batch Service URL	Select the required Batch Service URL from the drop-down list. This can be blank and you can provide the full URL in the Task Service URL field.

Table 5-1   (Cont.) Fields in the Create a New Task window and their Description

Field	Description
Task Service URL	Enter task service URL if it is different from Batch Service URL.

5. From the **Task Parameters** pane, click the **+** icon to add a new task parameter. By default, all batch level parameters are added and enabled as task parameters. To disable, deselect the checkbox corresponding to the task parameter.

   a. Enter the parameter name in the **Param Name** field.

   b. Enter the parameter value in the **Param Value** field. You can delete a parameter by clicking the **-** icon corresponding to the parameter.

6. Click **Save**.

Define Task Precedence

The task precedence indicates the execution-flow of a batch. The task precedence value facilitates you to determine the order in which the specific tasks of a batch are executed.

For example, consider a batch consisting of 4 tasks. First 3 tasks do not have a precedence defined and hence will be executed simultaneously during the batch execution. But, task 4 has precedence value as task 1 which indicates that, task 4 is executed only after task 1 has been successfully executed. You can set the task precedence between tasks or define to run a task after a set of other tasks. However, multiple tasks can be executed simultaneously and cyclical execution of tasks is not permitted. If the precedence for a task is not set, the task is executed immediately on batch execution. To define the task precedence in the **Define Task** window, perform the following steps:

1. Click the button corresponding to the task for which you want to add precedence task. The **Task Precedence Mapping** window is displayed. The **Task Precedence** option is disabled if a batch has only one task associated.

   a. Select the task you want to execute before the current task, from the **Available Tasks** pane and click **>**. You can press the **Ctrl** key for multiple selections.

   b. To select all the listed tasks, click **>>**.

   c. To remove a task, select the task from the **Selected Tasks** pane and click **<**.

   d. To remove all the selected tasks, click **<<**.

2. Click **Save** to update the task precedence.

Modify a Task

The **Edit Task** option allows you to modify the details of existing tasks of a batch definition such as task description, task type, batch service URL and task service URL. You can also add a new task parameter, and enable or disable already existing task parameters.

To modify a batch:

1. From the **Formulate Task** window, select the batch whose task details you want to modify, from the **Batch Name** drop-down list.

2. Click the pencil icon corresponding to the task whose details you want to modify. The **Edit Task** window is displayed.

3. Modify the required task details. For more information, see Adding a new Task section.

4. Click **Save**.

Delete a Task

You can remove tasks from a batch definition which are no longer required in the system by deleting them from the **Define Task** window.

To delete a task:

1. From the **Formulate Task** window, select the batch for which you want to delete a task from the **Batch Name** drop-down list.

2. Click **x** corresponding to the task you want to delete.

3. Click **OK** in the confirmation dialog to confirm deletion.

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Schedule Batch

The Schedule Batch window facilitates you to run, schedule, re-start, re-run the batches in the Scheduler Service.

After you upload the data in the required format into the Object Storage, you must load the data into the system using the Scheduler Service. You can schedule them to run in a required pattern and view the run time status of the scheduled services using the **Monitor Batch** feature.

The **Schedule Batch** window allows you to perform the following operations to a batch:

- [Execute a Batch](#)
- [Schedule a Batch](#)
- [Re-start a Batch](#)
- [Re-run a Batch](#)

Execute a Batch

The **Execute Batch** option allows you to run a batch instantaneously.

To execute a batch:

1. Click **Schedule Batch** from the Header panel. The **Schedule** window is displayed.

2. Select the batch name from the **Batch Name** drop-down menu. For example, AMLDataLoad.

3. Click **Execute**. The **Execution Status** dialog box is displayed with the **Batch executed successfully** message. This indicates the unique identification reference number for the batch and date of the batch execution.

4. In the **Execution Status** dialog box, click **Monitor** to monitor the batch.

5. If you want to exclude/include some tasks, click **Exclude Tasks**. For more information, see **To exclude/include tasks** section in the **Modifying Task Definitions of a Batch** topic.

6. If you want to hold/release some tasks, click Hold Tasks. For more information, see **To hold/release tasks** section in the **Modifying Task Definitions of a Batch** topic.

7. If you want to edit the dynamic parameters of the batch, click **Edit Dynamic Parameters**.

Scheduling a Batch

You can schedule a batch to run just for Once, Daily, Weekly, or Cron Expression for scheduling the batches.

You can also have a user-defined schedule to schedule and run a batch.

To schedule a batch:

1. Click **Schedule Batch** from the Header panel.

2. In the **Schedule Batch** window, select from the following options:

- **Once** - Run only once.

- **Daily** - Run daily.

- **Weekly** - Run weekly on selected days and time.

- **Monthly** - Run monthly on selected days and time.

- **Quarter** -Run every quarter on selected days and time.

- **Cron Expression** - A Cron Expression is a string comprising of six or seven fields separated by white space. Fields can contain any of the allowed values, along with various combinations of the allowed special characters for that field.
To execute a batch/batch group using a Cron expression, enter the Cron Expression for your schedule. For more information about the Cron Expression, click **Information** next to the **Cron Expression** field.

3. Click **Schedule**.

Re-start a Batch

Re-start a batch that has not executed successfully or has been explicitly interrupted, canceled, or put on hold during the execution process.

Restarting a batch enables you to continue execution directly from the point of interruption or failure, allowing you to complete executing the remaining tasks.

To re-start a batch:

1. Click **Schedule Batch** from the Header panel.

2. From the **Schedule Batch** window, select the **Re-start** tab.

3. Select the batch you want to re-start from the drop-down list.

4. Select the **Batch Run ID**.

5. Click **Re-start**.

Re-run a Batch

Re-running a batch facilitates you to run the batch irrespective of the previous execution state.

When you re-run a batchthat has been previously executed, a new Run ID is generated, and the batch is executed as if it were a new run.

To re-run a batch::

1. Click **Schedule Batch** from the Header panel.

2. In the **Schedule Batch** window, select the **Re-run** tab.

3. Select the **Batch** you want to re-run.

4. Select the **Batch Run ID**.

5. Click **Re-run**.

Edit Dynamic Parameters

Dynamic Parameters facilitates you to the modify the dynamic parameters for the batch.

You can change the param value from the **Edit Dynamic Params** window and save the changes to the batch. The **Edit Dynamic Parameters** option is available in all the tab in the **Schedule Batch** window.

To edit the dynamic parameters, from the **Schedule Batch** page:

1. In the **Schedule Batch** window, click **Edit Dynamic Parameters**. The **Edit Dynamic Params** window is dislayed.

2. In the **Edit Dynamic Params** window, modify the values as required.

3. Click **Save**. The modified parameters are applied to the batch.

Modify Task Definitions of a Batch

You can modify the task definition state in the **Batch Execution** window to exclude or hold the defined task in a batch from execution.

The excluded tasks are therefore assumed to have completed execution and get excluded during the batch run. While executing or scheduling a batch from the **Schedule Batch** window, you can:

- Exclude a task or include the excluded task
- Hold a task or release the held task.

You can exclude tasks or include the excluded tasks during batch execution. The excluded task components are therefore executed in the normal process assuming that the excluded task have completed execution.

To exclude/include tasks:

1. In the **Schedule Batch** window, click **Exclude Tasks**. The **Select Tasks** window is displayed.

2. To exclude tasks:

   a. Select the required task from the Included Tasks list and click the **>** icon. You can press **Ctrl** key for multiple selections.

   b. To exclude all tasks, click the **>>** icon.

3. To include the excluded tasks:

   a. Select the required task from the **Excluded Tasks** list and click the **<** icon. You can press **Ctrl** key for multiple selections.

   b. To include all excluded tasks, click the **<<** icon.

4. Click **Save**.

You can hold tasks or release the held tasks during batch execution. The tasks which are on hold along with the defined components are skipped during execution. However, at least one task should be available in a batch without being held/excluded for batch execution.

To hold/release tasks:

1. In the **Schedule Batch** window, click **Hold Tasks**. The **Select Tasks** window is displayed.

2. To hold tasks:

   a. Select the required task from the **Released Tasks** list and click the **>** icon. You can press Ctrl key for multiple selections.

   b. To hold all tasks, click the **>>** icon.

3. To release held tasks:

   a. Select the required task from the **Held Tasks** list and click the **<** icon. You can press Ctrl key for multiple selections.

   b. To release all held tasks, click the **<<** icon.

4. Click **Save**.

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Monitor a Batch

Using the **Monitor Batch** option, you can view the status of executed batches, along with the tasks details.

Monitoring enables users to track and identify issues at regular intervals, ensuring smoother batch execution. Both a visual representation and a tabular view of the status of each task in the batch are available.

To monitor a batch:

1. Click **Monitor Batch** from the Header panel.

2. Select the **Batch Name** and the **Batch Run ID** to monitor the execution.

3. Click **Start Monitor** to view the following details in the execution results.

    - **Batch Status**: Task execution status - **Not-Started**, **On-going**, **Successful**, **Failed**, **Interrupted**, **Excluded** and **Undefined**.

    - **Start Time**: Task execution start time.

    - **End Time**: Task execution end time.

    - **Task Details**: Mouse-over the task to display its status and details.

4. To access the execution details in tabular form, click **List View**.

5. Click **More information**, to display the message returned by the Rest Service.

Viewing Execution History

Execution History enables you to view the complete history of job execution.

You can access the details such as the start and end time of the job execution, status of the job execution, log messages generated during job execution, in the execution history.

To view execution history:

1. On the Jobs page, click the job for which you want to view the execution history.

    You can view the historical information such as Batch ID, the date and time during which a job is executed, and the status of the job execution

2. Click **Monitor Execution** corresponding to the batch ID for which you want to view more information of a batch.

    You can view the following details in the **Execution Monitor** page:

    - The pipeline for which the job is created. The widgets in the pipeline are represented in different colors. Widgets are color coded to indicate the widget type and status of the job

    - Log messages generated during the execution of the pipeline.

> ⓘ **Note**
>
> You can click the **Create Event** widget to display the Log Messages window. Only in case of a Scenario Pipeline, you can click the **Add Hint** option to add hints. Hints provide a mechanism to direct the optimizer to choose a certain query execution plan based on the specific criteria

3. Click the widget marked as complete (with a check mark) to view the Log Messages dialog box with detailed information of the widget.