

# **Oracle® Revenue Management and Billing Cloud Services**

Release 8

## **Batch Scheduler User Guide**

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# Preface

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## About This Document

This document will help you understand how to schedule jobs using the ORMB platform. It will help you to understand the important topics with respect to scheduler, describes screens related to the features and explains how to perform various tasks in the application.

## Intended Audience

This document is intended for the following audience:

- End-Users
- Administrators
- Consulting Team
- Implementation Team

## Organization of the Document

The information in this document is organized into the following sections:

Section No.	Section Name	Description
Section 1	ORMB Scheduler	Explains the ORMB Scheduler feature.
Section 2	Scheduler Modules	Lists and describes the set of activities that need to be completed to use scheduler feature in ORMB. It also explains how to define and work with the different modules of scheduler.

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# 1. ORMB Scheduler

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The Scheduler is a set of processes and objects that are defined and executed within the ORMB framework using the objects implemented by the DBMS\_SCHEDULER package that is embedded in every installation of the Oracle Database. ORMB uses the DBMS scheduler objects to schedule Jobs/Batches in the background.

Some features of ORMB DBMS scheduler include:

- User Interface to help define workflows and/or job dependencies
- User Interface to submit/schedule, monitor and administration of Batch Jobs

The DBMS Scheduler supports the following scheduling methods:

- Time based scheduling - Scheduling job based upon dates and times
- Dependency scheduling - Scheduling based upon job dependencies using [Chains](#)

The ORMB DBMS scheduler uses the following objects:

**Program:** The lowest object in a scheduler is the Program. A program describes what is to be run by the schedule. The program object includes a definition of the physical object as well as arguments to execute them.

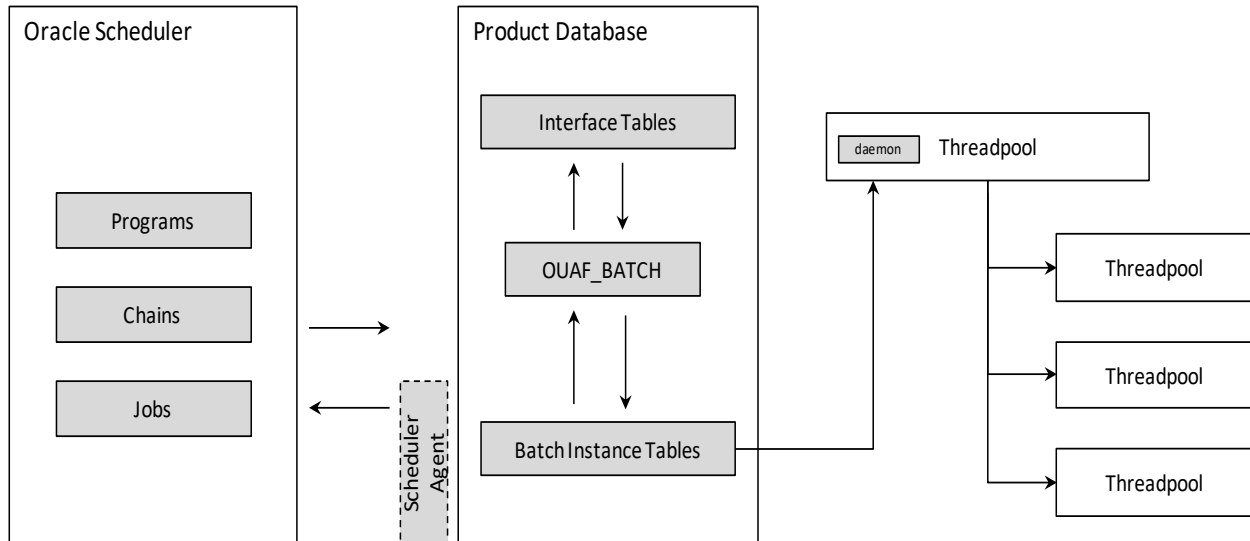
**Job:** An instance of a program, is a Job. The job is a collection of metadata that defines the program to execute as well as where to execute it (for remote executions), its related schedule (which dictates when it is executed) and any related information. Jobs are subject to scheduling using the time based, event based and/or dependency of other jobs.

**Schedule:** The Schedule object defines when and how many times the job is executed. The schedule object uses a rich calendaring syntax to define repeating schedules. Jobs also contain data used for prioritizing as well as resource profiles including support for Windows and Resource Manager.

**Chains:** Chains represent the sequences of jobs expressing the dependencies. Chains define steps which link a job or file watcher and also contains Rules to decide the sequence and outcomes based upon the state of another job in the chain. For example, Job B needs to run only if Job A has completed successfully. Chains can support multiple branches and also chains can include other chains for greater reuse.

## 1.1 Oracle Scheduler Interface Architecture

The Oracle Scheduler interface has a flexible architecture that exploits the underlying features of the product to execute and monitor background processes.



From an architecture perspective, the following applies:

- The Oracle Scheduler objects are held as dictionary objects in the Schedule Administrator schema. At a minimum, Oracle Scheduler uses Programs, Jobs and Chains. Other Schedule objects can be defined as necessary.
- The Oracle Scheduler interface is installed on the product schema which includes a number of interface tables, the OUAF\_BATCH pl/sql package and permissions to product batch tables.

## 1.2 Advantages of Using Oracle Scheduler Interface

- License free implementation
- ORMB embedded user interfaces for setting up Batch Scheduling
- Less Administration
- Supports High Availability
- Maximum Flexibility



## 2. Scheduler Modules

This section lists and describes the following activities that you need to complete in the specified order to work with scheduler feature in ORMB:

1. Create a Program
2. Create a Chain
3. Create a Schedule
4. Create and Run a Job
5. Monitor a job

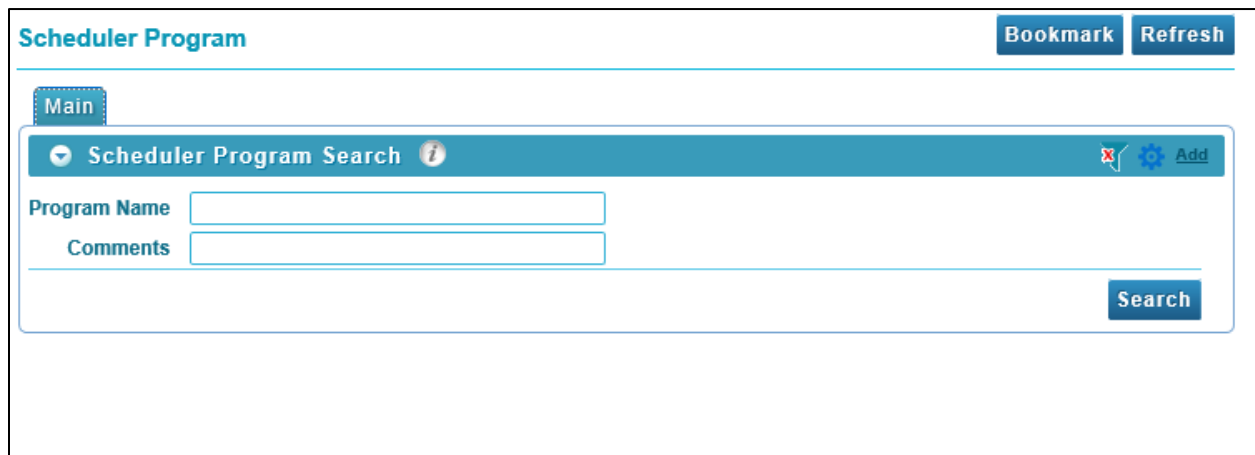
### 2.1 Program

A program should be defined for each Batch Job that needs to be scheduled by the DBMS scheduler.

#### 2.1.1 Defining a New Program

To define a new program:

1. From the **Menu** tab, select **Scheduler** and then click **Program**. The **Scheduler Program Search** zone appears.



The screenshot shows the 'Scheduler Program Search' interface. At the top, there is a header with the title 'Scheduler Program' and two buttons: 'Bookmark' and 'Refresh'. Below the header is a 'Main' tab. The main content area is titled 'Scheduler Program Search' and contains a search bar with a close button, a gear icon, and an 'Add' link. Below the search bar are two input fields: 'Program Name' and 'Comments'. A 'Search' button is located at the bottom right of the search zone.

Figure 1: Scheduler Program Search

2. Click the **Add** link present in upper right corner of the **Scheduler Program Search** zone. The **Scheduler Program Maintenance** screen appears.

The screenshot shows a web-based form titled "Scheduler Program" with a close button (X) in the top right corner. The form contains the following fields:



- PROGRAM NAME: Text input field
- DETAILED DESCRIPTION: Text area
- BATCH CONTROL: Text input field with a search icon (Q)
- USER ID: Text input field with a search icon (Q)
- THREAD COUNT: Text input field
- INVOKE FUNCTION: Checkmark input field
- BATCH BUSINESS DATE: Text input field with a date picker icon
- MAXIMUM TIMEOUT MINUTES: Text input field
- BATCH RERUN NUMBER: Text input field
- THREAD POOL NAME: Text input field
- RUN STATUS: Dropdown menu
- RAISE ERROR: Text input field
- THREAD NOTIFICATION: Text input field

At the bottom of the form, there is a table with the following headers:

PARAMETER NAME	DESCRIPTION	PARAMETER VALUE	REQUIRED
----------------	-------------	-----------------	----------

**Figure 2: Scheduler Program Maintenance Screen**


3. The **Scheduler Program Maintenance** screen has following fields:

Field Name	Description	Mandatory (Yes or No)
Program Name	Used to define program name	Yes  <b>Note:</b> Note: It is mandatory to prefix program name with CM (customer modification) when defining a program on a deployed environment (for example, changes performed during and after installation of the product) and C1 when defining a program on development environment (for example, any changes to Customer Modification data).  The valid values are:  C1_BILL C1BILL CM_Bill CMBILL  However, following formats are not allowed:  C1 – BILL C1 BILL CM – BILL CM BILL
Long Description	Used to describe the program	No
Batch Control	Used to define the code that executes the logic associated with the background process  <b>Tip:</b> Use the <b>Search</b> (  ) icon to search batch name.	Yes
User	Used to define the user name  <b>Tip:</b> Use the <b>Search</b> (  ) icon to search user name.	Yes
Thread Count	Used to define total number of parallel threads that have been scheduled	No


Field Name	Description	Mandatory (Yes or No)
Invoke Function Checkbox	Used to allow the user to invoke a function for Batch business date instead of choosing a date from date picker.  If checked, Batch business date field will accept String value instead of Date value.	No
Batch Business Date	Used for background processes that use a date in their processing. For example, scheduling a job using the business date to determine which programs or chains should be scheduled.  This field also accepts a function call as a value if Invoke Function check box is checked.  User can provide an existing function name and the output value of the function will be used as business date.  <b>Note:</b> If this parameter is left blank, the system date is used.	No
Maximum Timeout Minutes	Used to specify time duration for overriding each background process	No
Batch Rerun Number	Used for background processes that download information that belongs to given run number.  <b>Note:</b> It should only be supplied if you need to download a historical run (rather than the latest run).	No
Thread Pool Name	Used to specify the thread pool on which you want to execute the batch.	No

Field Name	Description	Mandatory (Yes or No)
Run Status	Used to indicate the status of the batch run. The valid values are: <ul style="list-style-type: none"> <li>• Complete</li> <li>• Error</li> <li>• In Progress</li> <li>• Thread Ready</li> </ul>	No  <b>Note:</b> Set <b>Run Status</b> value as Error and <b>Raise Error</b> value as True to raise an application error and end the job.
Raise Error	Used to define if errors are to be raised. The valid values are: <ul style="list-style-type: none"> <li>• True</li> <li>• False</li> </ul>	No  <b>Note:</b> Set <b>Run Status</b> value as Error and <b>Raise Error</b> to True to make the procedure raise an application error and end the job.
Thread Notification	Used to define if email notifications for failed threads are to be sent. The valid values are: <ul style="list-style-type: none"> <li>• True</li> <li>• False</li> </ul>	No

4. Enter program name in **Program Name** field.
5. Enter value in **Batch Control** field. Note that the batch control code should be defined in the application.

**Tip:** To search for existing batch control name, you can use the Search () icon corresponding to the Batch Control field.

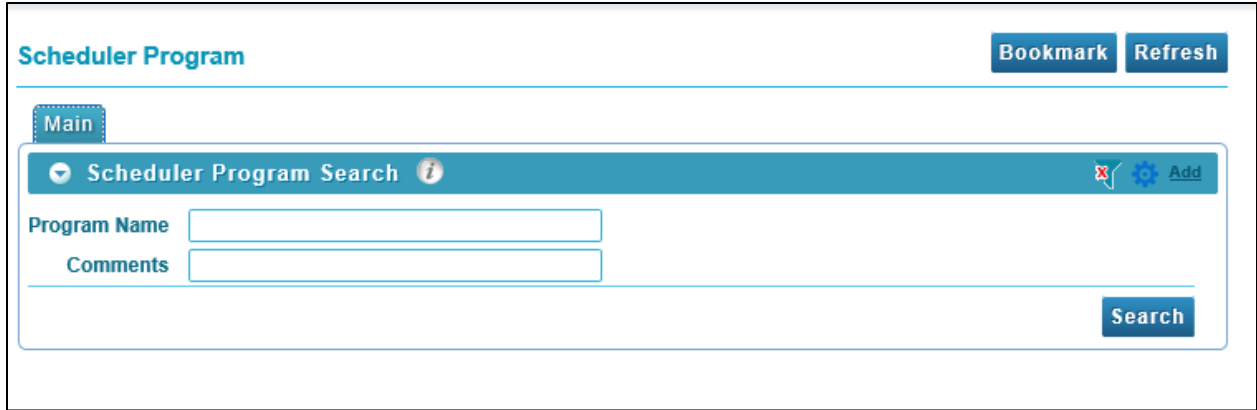
**Note:** When the batch control code is populated in **Batch Control** field, the parameter details linked with the respective batch control appear in the **Parameter Details** pane below the basic user defined fields.

6. Enter value in User field. To search for an existing user name, you can use the **Search** () icon corresponding to User field.
7. Click **Save**. The Scheduler Program Maintenance screen closes and the newly created program is added to the Program list in Filter section.

## 2.1.2 Searching a Program

To search for an existing program:

1. From the **Menu** tab, select **Scheduler** and then click **Program**. The **Scheduler Program Search** zone appears.



**Figure 3: Scheduler Program Search**

2. To search a Program, enter text in any one of the following:
  - Program Name
  - Comments

**Tip:** You can also use wildcard character ‘%’ to search for Program Name or Comments. Click **Search** button present in Search zone to view the list of all existing programs.

3. Click **Search**. The search results are filtered based on the specified search criteria.
4. The Filter section has following columns:

Column Name	Description
Program Name	Displays the program name. Note: It has a link. Click on the link to view the program details.
Comments	Displays the description of the program.
Edit	Allows you to edit the program details.
Delete	Allows you to delete the program.

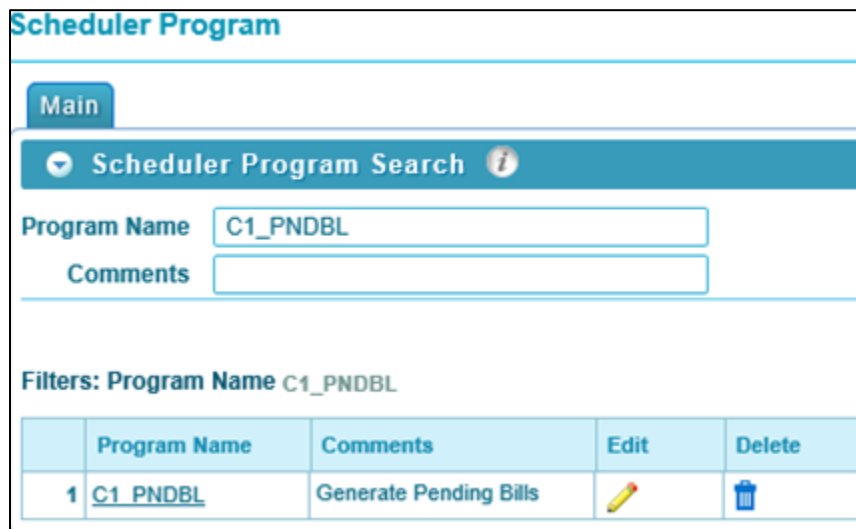


Figure 4: Program - Search Results

### 2.1.3 Viewing a Program

To view details of an existing program:

1. From the **Menu** tab, select **Scheduler** and then click **Program**. The **Scheduler Program** Search zone appears.
2. Search a Program for which you want to view the details. For more information, refer to the [Searching a Program](#) section.
3. Click on the text in Program Name column. The Scheduler Program Read screen appears with the details of the respective program.

The Scheduler Program Read screen displays the user specified details and the parameters associated with the applied batch. These parameter details are represented in a tabular format.

Column Name	Description
Parameter	Displays the name of the parameter linked with the respective batch.
Description	Displays the description of the parameter.
Parameter Value	Displays the default value, if applicable.
Required	Indicates whether or not this is a required parameter.

### Scheduler Program Read

**Program Name**

**Long Description**

**Batch Control**   ILM Crawler - Business Flag

**User**   Banking, Admin

**Thread Count**

**Batch Business Date**

**Maximum Timeout Minutes**

**Batch Rerun Number**

**Thread Pool Name**

**Run Status**

**Raise Error**

**Thread Notification**

Parameter	Description	Parameter Value	Required
maintenanceObject	Maintenance Object	<input type="text" value="F1-BUSFLG"/>	Yes
cutoffDate	Override Cutoff Date	<input type="text"/>	


Figure 5: Scheduler Program - Read Mode

### 2.1.4 Editing a Program

To edit an existing program:

1. From the **Menu** tab, select **Scheduler** and then click **Program Plan**. The **Scheduler Program Search** zone appears.
2. Search a Program, which you want to edit. For more information, refer to the [Searching a Program](#) section.



- Click **Edit** (  ) icon corresponding to the respective program name. The **Scheduler Program Maintenance** screen appears.

**Scheduler Program Maintenance**

**Program Name**   
**Long Description**   
**Batch Control**    
**User**    
**Thread Count**   
**Batch Business Date**    
**Maximum Timeout Minutes**   
**Batch Rerun Number**   
**Thread Pool Name**   
**Run Status**   
**Raise Error**   
**Thread Notification**

Parameter	Description	Parameter Value	Required
CIS-DIVISION	Division	<input type="text" value="930"/>	
BILL-CYC-CD	Bill Cycle	<input type="text" value="BDD"/>	
DEL-BILL-SW	Delete Existing Bill	<input type="text"/>	
BILLING-MODE	Bill Generation Type	<input type="text"/>	
BATCH-RUN-DESCR	Description for Trial Billing Batch Run	<input type="text"/>	
SELECTED-ACCTS	Process All or Selected Accounts	<input type="text"/>	
ACCT-ID	Account ID	<input type="text" value="9116287127"/>	
MAX-ERRORS	Override Maximum Number of Errors	<input type="text"/>	

**Figure 5: Scheduler Program Maintenance Screen**

- Edit the required fields. Note that you cannot edit the Program name.
- Click **Save**. The changes are saved.

## 2.1.5 Deleting a Program

To delete an existing program:

- From the **Menu** tab, select **Scheduler** and then click **Program**. The **Scheduler Program Search** zone appears.

2. Search a Program, which you want to delete. For more information, refer to [the Searching a Program](#) section.
3. Click **Delete** (🗑️) icon corresponding to the respective Program name.
4. A confirmation message appears indicating “Are you sure you want to delete this object?”
5. Click **OK** to confirm deletion.

**Note:** Program can be deleted only if it is not being used in any of the jobs.

## 2.2 Chain

A Chain defines a series of steps with dependency rules between them. A step references a program, with the program performing the actual work for that step. A rule is attached to each step to identify its dependent steps and the condition for when that step should be executed. For example, in a chain consisting of STEP\_A and STEP\_B, where STEP\_B can only start if STEP\_A was successful, the rule for STEP\_B to start would specify a condition of "STEP\_A SUCCEEDED".

### 2.2.1 Defining a New Chain



To define a new chain:

1. From the **Menu** tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.

**Figure 6: Scheduler Chain Search**

2. Click the **Add** link present in upper right corner of the Scheduler Chain Search zone. The **Scheduler Chain Maintenance** screen appears.
3. The Scheduler Chain Maintenance screen has following fields:

Field Name	Description	Mandatory (Yes or No)
Chain Name	Used to define the chain name	Yes  <b>Note:</b> Note: It is mandatory to prefix chain name with CM (customer modification) when defining a chain on a deployed environment (for example, changes performed during and after installation of the product) and C1 when defining a chain on development environment (for example, any changes to Customer Modification data).  The valid values are: C1_BILL C1BILL CM_Bill CMBILL  However, following formats are not allowed: C1 – BILL C1 BILL CM – BILL CM BILL
Long Description	Used to describe the chain	No
Step Name	Used to specify name of the step	Yes
Program Name	Used to specify program name to be linked with the chain	Yes
Step Condition	Used to specify condition for the step	Yes

4. In **Chain Name**, enter chain name.
5. In **Long Description**, enter description text.
6. In **Step Name**, enter step name.
7. In **Program Name**, enter Program Name. You can also use Search () to search for a program name. For more information, refer to [Searching a Program](#) section.
8. Specify **Step Condition**.
9. To add multiple steps, click (  ) icon.

**Note:** 1<sup>st</sup> step condition should always be set as 'TRUE'. Chain definition must include an 'End' step. For example, "ACCNO" SUCCEEDED.

Step Name	Program Name	Step Condition
PNDBL	C1_PNDBL	TRUE
END		"PNDBL" SUCCEEDED

**Figure 8: Scheduler Chain Maintenance**

10. Click **Save**. The Scheduler Chain Maintenance screen closes and the new created chain is added to the Chain list in Filter section.

### Effects on Chains

Depending on the setup of the chain rules, the chain will react differently to a job cancellation:

- If the chain rule has an end condition for a FAILED execution, then the chain will stop executing.
- If the chain rule is setup for a SUCCEEDED execution, the default, then the chain will be in a STALLED state and must be manually set to resume.
- If the chain rule is setup for COMPLETED execution, then the next job in the chain will be executed.

## 2.2.2 Searching a Chain

To search an existing chain:

1. From the **Menu** tab, select **Scheduler** and then **click Chain**. The **Scheduler Chain Search** zone appears.

**Figure 9: Scheduler Chain Search**

2. To search a Chain, enter one of the following text:
  - Chain Name
  - Comments

**Tip:** You can also use wildcard character '%' to search for Chain Name or Comments. Click Search button present in Search zone to view the list of all existing chains.

3. Click **Search**. The search results are filtered based on the specified search criteria.
4. The Filter section has following columns:

Column Name	Description
Chain Name	Displays the name of the chain <b>Note:</b> It has a link. Click on the link to view the chain details.
Comments	Displays the description of the chain
Edit	Allows you to edit the chain details
Delete	Allows you to delete the chain

The screenshot shows the 'Scheduler Chain' interface. At the top, there is a 'Main' tab and a 'Scheduler Chain Search' section with an information icon. Below this, there are input fields for 'Chain Name' (containing 'C1\_BILL') and 'Comments'. A 'Filters' section shows 'Chain Name C1\_BILL'. Below the filters is a table with search results:

	Chain Name	Comments	Edit	Delete
1	<a href="#">C1 BILLING_CHAIN</a>	Chain for Billing batches		
2	<a href="#">C1 BILLOPENCHNT</a>	Test chain		

Figure 10: Scheduler Chain - Search Results

## 2.2.3 Viewing a Chain

To view details of an existing chain:

1. From the Menu tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.
2. Search a Chain for which you want to view the details. For more information, refer to the [Searching a Chain](#) section.
3. Click on the text in **Chain Name** column. The **Scheduler Chain Read** screen appears with the details of the respective chain.
4. The Scheduler Chain Read screen has following fields:

Column Name	Description
Chain Name	Displays the name of the chain
Long Description	Displays the description of the chain

5. The Scheduler Chain Read screen also shows the steps associated with the respective chain.

Scheduler Chain Read

Chain Name

Long Description







	Step Name	Program Name	Step Condition
 	<input type="text" value="STEP1"/>	<input type="text" value="C1_BILLOPEN"/>  BILLOPEN	<input type="text" value="TRUE"/>
 	<input type="text" value="END"/>	<input type="text" value=""/>	<input type="text" value="'STEP1' SUCCEEDED"/>

Figure 11: Scheduler Chain Read Mode

## 2.2.4 Editing a Chain

To edit an existing chain:

1. From the **Menu** tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.
2. Search a Chain for which you want to view the details. For more information, refer to the [Searching a Chain](#) section.
3. Click **Edit** () icon corresponding to the respective Chain Name. The **Scheduler Chain Maintenance** screen appears.

Scheduler Chain Maintenance

Chain Name

Long Description











	Step Name	Program Name	Step Condition
 	<input type="text" value="PNDBL"/>	<input type="text" value="C1_PNDBL"/>  Generate Pending Bills1212	<input type="text" value="TRUE"/>
 	<input type="text" value="BLGEN"/>	<input type="text" value="C1_BLGEN"/>  Generate bills	<input type="text" value="'PNDBL' SUCCEEDED"/>
 	<input type="text" value="END"/>	<input type="text" value=""/>	<input type="text" value="'BLGEN' SUCCEEDED"/>

Figure 12: Scheduler Chain Maintenance Screen

4. Edit the required fields. Note that you cannot edit the Chain name.
5. To add additional steps, click () icon.
6. Click **Delete** () icon corresponding to Step Name to delete the Step Name and corresponding Program Name and Step Condition.
7. Click **Save**. The changes are saved.

## 2.2.5 Deleting a Chain

To delete an existing chain:

1. From the **Menu** tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.
2. Search a Chain, which you want to delete. For more information, refer to the [Searching a Chain](#) section.
3. Click **Delete** (🗑️) icon corresponding to the respective Chain name.
4. A confirmation message appears indicating “Are you sure you want to delete this object?”
5. Click **OK** to confirm deletion.

**Note:** Chain can be deleted only if it is not being used in any of the jobs.

## 2.3 Schedule

A schedule is a predefined frequency for jobs that need to be run. It defines when and how many times a job is to be executed.

### 2.3.1 Defining a New Schedule

To define a new schedule:

1. From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule Search** zone appears.

Figure 13: Scheduler Schedule Search

2. Click the **Add** link present in upper right corner of the Scheduler Schedule Search zone. The **Scheduler Schedule Maintenance** screen appears.

Figure 14: Scheduler Schedule Maintenance Screen

3. The **Scheduler Schedule Maintenance** screen has following fields:

Field Name	Description	Mandatory (Yes or No)
Schedule Name	Used to define the schedule code	Yes  <b>Note:</b> Note: It is mandatory to prefix schedule name with CM (customer modification) when defining a schedule on a deployed environment (for example, changes performed during and after installation of the product) and C1 when defining a schedule on development environment (for example, any changes to Customer Modification data).  The valid values are: C1_BILL C1BILL CM_Bill CMBILL  However, following formats are not allowed: C1 – BILL C1 BILL CM – BILL CM BILL
Long Description	Used to describe the schedule	No
Repeat Interval	Used to define the interval when the system should start a job scheduling	Yes
Frequency	Used to define the frequency of recurrence	Yes (Conditional)  Tip: Click Generate to select a frequency type.

4. In **Schedule Name**, enter a schedule name.
5. In **Long Description**, enter description text.
6. Enter the date and time on which the system should automatically run a job.

**Tip:** You can have the system to generate a time interval.

To set a time interval:

- i. Click **Generate**. Select a frequency from the drop-down list.



The screenshot shows a web form titled "Scheduler Schedule Maintenance". It contains four input fields: "Schedule Name", "Long Description", "Repeat Interval", and "Frequency". A blue "Generate" button is located to the right of the "Repeat Interval" field. The "Frequency" dropdown menu is open, displaying a list of options: "YEARLY", "MONTHLY", "WEEKLY", "DAILY", "HOURLY", "MINUTELY", and "SECONDLY". The current selection in the dropdown is "-- select a frequency --".

**Figure 15: Scheduler Schedule Maintenance – Set Frequency**

ii. Frequency field has following drop-down options:

List Options	Description	Parameter Values
Yearly	Used to set yearly schedules	Interval - define if the schedule should be created every year (a value of 1), every other year (a value of 2), every third year (a value of 3), etc. On Date – Select month and date from the list At Time – Used to specify the start time Use Time Picker (🕒) to select a time.
Monthly	Used to set monthly schedules	Interval - define if the schedule should be created every month (a value of 1), every other month (a value of 2), every third month (a value of 3), etc. Month Day – Select day from the list Week Day – Enter a number. This number relates to the occurrence of the day. Select a day from the list. For example, 3 <sup>rd</sup> Tuesday of every month. At Time – used to specify the start time. Use Time Picker (🕒) to select a time.
Weekly	Used to set weekly schedules	Interval – define if the schedule should be created every week (a value of 1), every other week (a value of 2), every third week (a value of 3), etc. WeekDay – Select a week day At Time – Used to specify the start time. Use Time Picker (🕒) to select a time.

List Options	Description	Parameter Values
Daily	Used to set daily schedules.	Interval –define if the schedule should be created every day (a value of 1), every other day (a value of 2), every third day (a value of 3), etc. WeekDay – Select a week day At Time – Used to specify the start time. Use Time Picker (🕒) to select a time.
Hourly	Used to set hourly schedule	Interval – define if schedule records should be created every hour (a value of 1), every other hour (a value of 2), every third hour (a value of 3), etc. WeekDay – Select a week day At Time – Used to specify the start time <b>Note:</b> Specify time in min:sec format.
Minutely	Used to set minutely schedule	Interval –define if the schedule should be created every minute (a value of 1), every other minute (a value of 2), every third minute (a value of 3), etc. WeekDay – Select a week day
Secondly	Used to set secondly schedule	Interval - define if the schedule should be created every second (a value of 1), every other second (a value of 2), every third second (a value of 3), etc. Weekday – Select a week day

- iii. Select appropriate pattern from the options.
  - iv. Click **OK**. The Repeat Interval field is populated with the selected intervals.
7. Click **Save**. The Scheduler Schedule Maintenance screen closes and the new created schedule is added to the Schedule list in Filter section.

### 2.3.2 Searching a Schedule

To search an existing schedule:

- 1. From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule Search** zone appears.

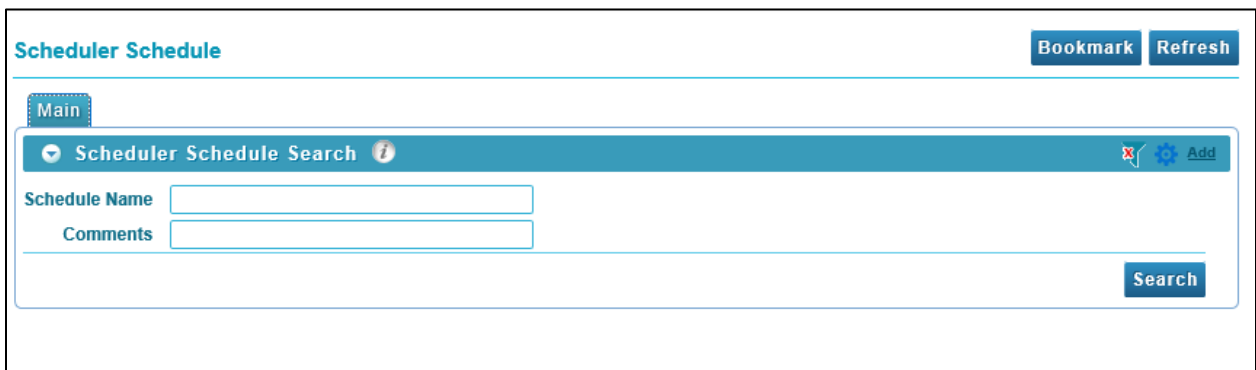


Figure 16: Scheduler Schedule Search

2. To search a Schedule, text in any one of the following fields:
  - Schedule Name
  - Comments

**Tip:** You can also use wildcard character ‘%’ to search for Schedule Name or Comments. Click **Search** button present in Search zone to view the list of all existing schedules.

3. Click **Search**. The search results are filtered based on the specified search criteria.
4. The Filter section has following columns:

Column Name	Description
Schedule Name	Displays the name of the schedule <b>Note:</b> It has a link. Click on the link to view the schedule details.
Comments	Displays the description of the schedule
Repeat Interval	Displays the set time interval
Edit	Allows you to edit the schedule details
Delete	Allows you to delete the schedule

### Scheduler Schedule

Main

🔍 Scheduler Schedule Search ?

Schedule Name

Comments

**Filters:** Schedule Name C1\_SCH

	Schedule Name	Comments	Repeat Interval	Edit	Delete
1	<a href="#">C1_SCH</a>	Schedule	FREQ=SECONDLY;INTERVAL=899;BYDAY=TUE,THU		
2	<a href="#">C1_SCH1</a>	Schedule 1	FREQ=DAILY		
3	<a href="#">C1_SCH2</a>	New Test Schedule	FREQ=Monthly		
4	<a href="#">C1_SCHEDULETEST</a>	Schedule Test	FREQ=DAILY		

Figure 17: Scheduler Schedule - Search Results

### 2.3.3 Viewing a Schedule

To view details of an existing schedule:

1. From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule Search** zone appears.
2. Search a schedule for which you want to view the details. For more information, refer to the [Searching a Schedule](#) section.

- Click on the text in **Schedule Name** column. The **Scheduler Schedule - Read only** screen appears with the details of the respective program.
- The **Scheduler Schedule - Read only** screen has following fields:

Column Name	Description
Schedule Name	Displays the name of the schedule
Long Description	Displays the description of the schedule
Repeat Interval	Indicates the interval defined


### Scheduler Schedule - Read only

**Schedule Name** C1\_BILLING  
**Long Description** Billing batch schedule  
**Repeat Interval** FREQ=MINUTELY;INTERVAL=5;BYDAY=MON,SUN

Figure 18: Scheduler Schedule - Read Only Mode

## 2.3.4 Editing a Schedule

To edit an existing schedule:

- From the **Menu** tab, select **Scheduler** and then click **Schedule**. The Scheduler Schedule Search zone appears.
- Search a Schedule which you want to edit. For more information, refer to the [Searching a Schedule](#) section.
- Click **Edit** (  ) icon corresponding to the respective Schedule name. The **Scheduler Schedule Maintenance** screen appears.

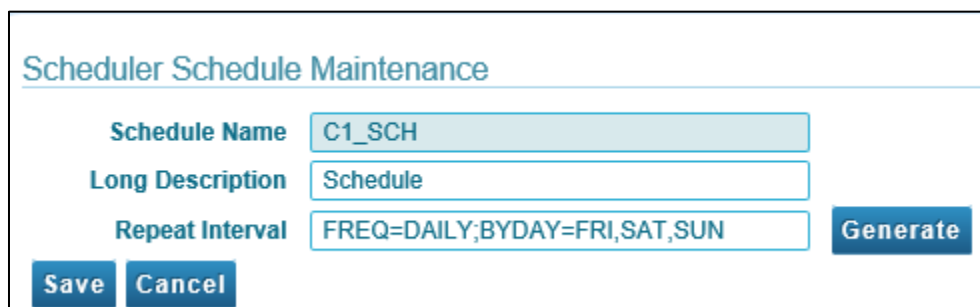


Figure 19: Scheduler Schedule Maintenance Screen

- Edit the required fields. Note that you cannot edit the Schedule name.
- Click **Save**. The changes are saved.

## 2.3.5 Deleting a Schedule

To delete an existing schedule:

- From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule Search** zone appears.
- Search a Schedule.

3. Click **Delete** (🗑️) icon corresponding to the respective Schedule name.
4. A confirmation message appears indicating “Are you sure you want to delete this object?”
5. Click **OK** to delete the respective Schedule.

**Note:** Schedule can be deleted only if it is not being used in any of the jobs.

## 2.4 Job

A job is collection of metadata which defines program to execute, where to execute as well as its related schedule. Running a job relates to trigger a chain which will further trigger set of programs (Batch Jobs) with given sequence and rules.

### 2.4.1 Defining a New Job

To define a new job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.




**Figure 20: Scheduler Job Search**

2. Click the **Add** link present in upper right corner of the Scheduler Job Search zone. The **Scheduler Job Maintenance** screen appears.


#### Scheduler Job Maintenance

**Figure 21: Scheduler Job Maintenance Screen**

3. The Scheduler Job Maintenance screen has following fields::

Field Name	Description	Mandatory (Yes or No)
Job Name	Used to define job name	Yes  Note: It is recommended to prefix job name with CM (for customer modification) while defining a job on an already deployed environment (for example, changes performed during and after installation of the product) and to prefix job name with C1 while defining a job on development environment (for example, any changes to Customer Modification data).  The valid values are: <ul style="list-style-type: none"> <li>• C1_BILL or CM_Bill</li> <li>• C1BILL or CMBILL</li> </ul> However, following formats are not supported: <ul style="list-style-type: none"> <li>• C1 - BILL or CM - BILL</li> </ul> C1 BILL or CM BILL
Long Description	Used to describe the job	No
Program Name	Used to link a program name  <b>Tip:</b> Use the <b>Search</b> (  ) icon to search program name.	Yes
Chain Name	Used to link a chain name  <b>Tip:</b> Use the <b>Search</b> (  ) icon to search chain name.	Yes
Schedule Name	Used to link a schedule name  <b>Tip:</b> Use the <b>Search</b> (  ) icon to search schedule name.	No

**Note:** Program Name and Chain Name fields are interlinked. If you enter Program Name, Chain Name field is disabled and you cannot add Chain Name. Similarly, if you enter Chain Name, Program Name field is disabled and you cannot add Program Name.

4. In Program Name, enter Program Name. You can also use **Search** () to search an existing program. For more information, refer the [Searching a Program](#) section.

5. In Chain Name, enter Chain Name. You can also use **Search** (🔍) to search for an existing chain. For more information, refer [Searching a Chain](#) section.
6. In Schedule Name, enter Schedule Name. You can also use **Search** (🔍) to search an existing schedule. For more information, refer [Searching a Schedule](#) section.
7. Click **Save**. The Scheduler Job Maintenance screen closes and the new created job is added to the Job list in Filter section.

## 2.4.2 Searching a Job

To **search** an existing job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.

**Figure 22: Scheduler Job Search**

2. To search a Job, enter one of the following text:
  - Job Name
  - Comments

**Tip:** You can also use wildcard character ‘%’ to search for Chain Name or Comments. Click Search button present in Search zone to view the list of all existing jobs.

3. Click **Search**. The search results are filtered based on the specified search criteria.
4. The Filter section has following columns:

Column Name	Description
Job Name	Displays the name of the job <b>Note:</b> It has a link. Click on the link to view the job details.
Comments	Displays the description of the job
Edit	Allows you to edit the job details
Delete	Allows you to delete the job
Submit Job	Allows you to submit a job

## 2.4.3 Viewing a Job

To view details of an existing job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.

2. Search a job for which you want to view the details. For more information, refer to the [Searching a Job](#) section.
3. Click on the text in **Job Name** column. The **Scheduler Job Read** screen appears with the details of the respective job.
4. The Scheduler Job Read screen has following fields:

Column Name	Description
Job Name	Displays the name of the job
Long Description	Displays the description of the job
Program Name	Displays the respective program attached with the job
Chain Name	Displays the respective chain attached with the job
Schedule Name	Displays the respective schedule attached with the job

### Scheduler Job Read

The screenshot shows the Scheduler Job Read interface. It contains the following fields and values:


- Job Name:** C1\_PGMTESTJOB
- Long Description:** test PGM JOB
- Program Name:** C1\_FLUSH (with a search icon and the text "Flush Batch for Testing")
- Chain Name:** (empty) (with a search icon)
- Schedule Name:** C1\_PGMTESTSCH (with a search icon and the text "Test PGM Schedule")

At the bottom left, there are two buttons: "Save" and "Cancel".

Figure 23: Scheduler Job Read Mode

## 2.4.4 Editing a Job

To edit an existing job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.
2. Search a job that you want to edit. For more information, refer to the [Searching a Job](#) section.
3. Click **Edit** (  ) icon corresponding to the respective Job name. The **Scheduler Job Maintenance** screen appears.

The screenshot shows the Scheduler Job Maintenance interface. It contains the following fields and values:

- Job Name:** C1\_BILLOPEN
- Long Description:** Bilopen test job
- Program Name:** (empty)
- Chain Name:** C1\_BILLOPENCHNT (with a search icon and the text "Test chain")
- Schedule Name:** (empty) (with a search icon)

At the bottom left, there are two buttons: "Save" and "Cancel".



**Figure 24: Scheduler Job Maintenance Screen**

4. Edit the required fields. Note that you cannot edit the Job name.
5. Click **Save**. The changes are saved.

## 2.4.5 Deleting a Job

To **delete** an existing job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.
2. Search a job that you want to delete. For more information, refer to the [Searching a Job](#) section.
3. Click **Delete** (🗑️) icon corresponding to the respective Job name.
4. A confirmation message appears indicating “Are you sure you want to delete this object?”
5. Click **OK** to confirm deletion.

## 2.4.6 Submitting a Job

Most batch jobs are submitted via a batch scheduler. Batch jobs may be configured as Timed, which means they will automatically be run based on the set timer frequency.

However, if you want to execute another predefined job, you have an option to submit the same using the **Submit Job** icon. When you click on Submit Job icon, it triggers the job and starts the job execution process.

To **submit** an existing job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.
2. Search a job that is to be submitted. For more information, refer to the [Searching a Job](#) section.
3. Click **Submit Job** (👉) icon corresponding to the respective job name.
4. A confirmation message appears indicating “Are you sure you want to submit this job?”
5. Click **OK** to confirm submission.

## 2.5 Job Monitor

This section explains the Job Monitor feature in ORMB. The job monitor allows you to see the status of submitted jobs. This feature allows you to

- View all running jobs
- View the steps and step status of a specific job
- Viewing completed jobs based on time interval

To monitor jobs:

1. From the **Menu** tab, select **Scheduler** and then click **Job Monitor**. The **Scheduler Monitoring Jobs** zone appears. It has following three fields:

Field Name	Description	Comments
<b>DBMS Job Status</b>	Allows you to search by status of the job. The values are: <ul style="list-style-type: none"> <li>Completed</li> <li>In Progress</li> </ul>	<b>Note:</b> All jobs which are succeeded, failed or stopped are considered as Complete.
<b>Start Date</b>	Allows you to search by starting date of the job.	<b>Note:</b> You must specify the date in MM-DD-YYYY format
<b>End Date</b>	Allows you to search by ending date of the job.	<b>Note:</b> You must specify the date in MM-DD-YYYY format

**Figure 25: Scheduler Monitoring Jobs**

2. Select a DBMS Job Status from the drop-down list. The default value is set as Completed. You can also search by 'In Progress' status.
3. Enter a Start or End date in MM-DD-YYYY format.

Tip: You can also use **Date Picker** () icon to select the date.

4. Click **Search**. The jobs with Completed status appear as results.

DBMS Job Status: Completed

Start Date:

End Date:

Search

Job Name	Job Status	Run Start Date	Run Duration	Details	Cancel	Restart
C1_USER	FAILED	29-MAY-18 12.26.08.498409 PM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_JOB	SUCCEEDED	28-MAY-18 11.55.41.391720 PM ASIA/CALCUTTA	+000 00:02:15	Details	Cancel	Restart
C1_PGMTESTJOB	STOPPED	28-MAY-18 03.38.13.123259 PM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_BILLOPEN	FAILED	25-MAY-18 10.10.58.349464 AM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_PGMDELEJOB	FAILED	22-MAY-18 12.28.09.099850 PM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_BILLOPENJT	FAILED	22-MAY-18 11.41.17.375222 AM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart

Figure 26: Job Monitor – Complete Status

- To view the details, click **Details**.
- To start the failed job, click **Restart**. A confirmation message appears indicating “Are you sure you want to restart this job?”
- Click **OK**.

To monitor ‘In Progress’ jobs:

- Select ‘In Progress’ from the **DBMS Job Status** drop-down list.
- Click **Search**.
- All the jobs which have ‘In Progress’ status appear as results in tabular format.
- To view the details, click **Details**.
- To cancel any ongoing job, click **Cancel**.

DBMS Job Status: In Progress

Start Date:

End Date:

Search

Job Name	Job Status	Run Start Date	Run Duration	Details	Cancel	Restart
C1_BILL	RUNNING		+001 21:52:52.99	Details	Cancel	Restart

Figure 27: Job Monitor - In Progress Status

## 2.6 Job Monitor Dashboard

This section explains the Job Monitor Dashboard feature in ORMB. The job monitor dashboard allows you to get an overview of Scheduler batch jobs using various features. This facility allows you to:

- View all running jobs
- View completed jobs
- View Upcoming Batch job Schedule
- View Failed Chain jobs
- View the steps and step status of a specific job
- View error details of Failed jobs
- Navigate to Scheduler Programs, Scheduler Schedules & Batch Run tree.

To access the Dashboard page, navigate to the **Menu** tab, select **Batch Scheduler** and then click **Scheduler Job Monitor Dashboard**. The **Scheduler Job Monitor Dashboard** zone appears. It has following four zones:

- **Running Batch Jobs:** Allows you to view Running Batch jobs
- **Failed Chain Jobs:** Allows you to view list of Failed Chain Jobs. (Jobs which got failed after partial execution)
- **Executed Batch Jobs:** Allows you to view all executed batch jobs. All jobs which are succeeded, failed or stopped are considered as Executed. All Jobs except partially processed chain jobs will be displayed in this section. **Note:** User can search records using Job Name, Job Status & Date Range.
- **Upcoming Batch Job Schedule:** Allows you to view upcoming Job schedule. **Note:** User can view batches scheduled to be run on next day or to be run in next 24 hours.

The screenshot displays the Scheduler Job Monitor Dashboard with the following data:

**Failed Chain Jobs**

JOB NAME	RUN START DATE	RUN DURATION	VIEW DETAILS
1 CL_FILEUPLOADJOB	11-FEB-20 02:02:04	+027 11:01:50.80	View
2 CL_TESTDEL_CHAINJOB	23-DEC-19 04:36:26	+283 11:01:50.66	View

**Executed Batch Jobs**

5 Results, Page 1 of 9 (44 records).

JOB NAME	JOB STATUS	TOTAL STEPS	FAILED STEPS	RUN START DATE	VIEW DETAILS
1 CL_PGMTSTJOB	FAILED	1	1	2020-03-09-03:32:48	View
2 CL_PGMTSTJOB	FAILED	1	1	2020-03-08-03:32:47	View
3 CL_PGMTSTJOB	FAILED	1	1	2020-03-07-03:32:47	View
4 CL_PGMTSTJOB	FAILED	1	1	2020-03-06-03:32:48	View
5 CL_PGMTSTJOB	FAILED	1	1	2020-03-05-03:32:49	View

**Upcoming Batch Job Schedule**

SCHEDULE TYPE: Next 5 Jobs Schedule

JOB NAME	PROGRAM NAME	NEXT ACTION DATE	SCHEDULE NAME
1 CL_PGMTSTJOB	CL_FLUSH	10-03-2020 03:32:45.821868	CL_PGMTSTSCH
2 CL_TESTDOC	CL_DOCUMENTS	10-03-2020 02:02:00.708634	CL_FLUSH_SCH

Figure 25: Scheduler Job Monitor Dashboard

### 2.6.1 Running Batch Jobs

This zone shows the batch jobs that are being currently executed in the system. Click on the View button to navigate to another screen where a detailed view of the batch job is available.

Field Name	Description
Job Name	Displays Job Name of the Batch Jobs
Run Duration	Displays Duration of batch execution
Current Running Step	Displays the step currently running in a batch job
View Details	Provides a button to view details of the job Button navigates the user to a new screen where details of the batch job is displayed.

## 2.6.2 Failed Chain Jobs

This zone displays the chain jobs that are partially executed and the job failed at a particular step. Click on the View button to navigate to another screen where a detailed view of the batch job can be seen.

Field Name	Description
Job Name	Displays Job Name of the Batch Jobs.
Run Duration	Displays Duration of batch execution.
Run Start Date	Displays start Date of the Batch Job.
View Details	Provides a button to view details of the job. Button navigates the user to a new screen where details of the batch job is displayed.

## 2.6.3 Executed Batch Jobs

This zone displays all Batch Jobs whose execution is completed. There are filters available to view jobs based on Job Name, Job Status or Dates. The valid Job Status are: SUCCEEDED, STOPPED & FAILED. Click on the View button to navigate to another screen where a detailed view of the batch job can be seen.

Field Name	Description
Job Name	Displays Job Name of the Batch Jobs.
Job Status	Displays Status of the batch job Various status are: SUCCEEDED, STOPPED or FAILED.
Total Steps	Displays number of total steps included in a chain job For programs, Total Steps would be defaulted to 1.
Failed Steps	Displays number of failed steps out of the total steps in a chain job.
Run Start Date	Displays start Date of the Batch Job.
View Details	Provides a button to view details of the job. Button navigates the user to a new screen where details of the batch job is displayed.

## 2.6.4 Upcoming Batch Job schedule

This zone displays all jobs scheduled for execution. You can view a list of Jobs scheduled to be executed in next 24 hours or for upcoming 5 Batch jobs. You can also navigate to Scheduler Schedule UI to view/edit Schedules.

Field Name	Description
Job Name	Displays Job Name of the Batch Jobs.
Program name	Displays name of the program which is attached to the batch job. In case of chain jobs. Column's value will be null.
Next Action Date	Displays the scheduled date of the batch job on which batch will automatically be triggered.
Schedule Name	Displays the name of schedule, which is attached to the job. It will also allow user to navigate to the screen to view/edit the schedule.

## 2.6.5 Batch Job Detailed Description UI

On clicking on the View Button, system navigates the user to another screen where an elaborated view of the jobs is available. You can click on **Restart** or **Cancel** buttons to restart or cancel failed jobs respectively. The **Broadcast** button allows you to view the execution details of the batch job. You can also navigate to Batch run tree and view logs of the batch. To view/ edit Programs, you can navigate to Scheduler Program UI.

Batch Job Detailed Description

Main

Executed Batch Jobs

5 Results, Page 10 of 11 (51 records).

JOB NAME	JOB STATUS	TOTAL STEPS	FAILED STEPS	RUN START DATE	RUN DURATION	PROGRAM NAME	CHAIN NAME	RESTART_JOB	CANCEL_JOB
46 CL_PGMTSTJOB	SUCCEEDED	1	0	2020-01-31-03:32:46	-000 00:00:15	CL_FLUSH		Restart	Cancel
47 CL_BILLJOB	STOPPED	3	1	2020-01-30-11:49:05	-000 00:00:29		CL_CHANGENERATEBILL	Restart	Cancel
48 CL_BILLJOB	STOPPED	3	1	2020-01-30-11:20:09	-000 00:28:28		CL_CHANGENERATEBILL	Restart	Cancel
49 CL_PGMTSTJOB	SUCCEEDED	1	0	2020-01-30-03:32:48	-000 00:00:17	CL_FLUSH		Restart	Cancel
50 CL_BILLJOB	STOPPED	3	1	2020-01-29-11:20:12	-000 23:40:42		CL_CHANGENERATEBILL	Restart	Cancel

Batch Job Details

STEP NAME	PROGRAM NAME	JOB STATUS	PROCESSED RECORDS	FAILED RECORDS	RUN DURATION	ERROR DETAILS	BATCH CONTROL
1 STEP1	CL_PROGPNDBL	FAILED	1	0	-000 00:00:00	ORA-20001: Existing pending job entry 17090135759466 found for CL-PNDBL thread number 1.	CL-PNDBL107
2 STEP2	CL_PROGBLGEN	NOT_STARTED					
3 STEP3	CL_PROGBLPPR	NOT_STARTED					

Figure 26: Batch Job Detailed Description Page

## 2.7 DBMS Import/Export Data

Oracle Revenue Management and Billing (ORMB) provides DBMS Scheduler Import/Export Data Interface, which allows the user to export DBMS scheduler data from one environment and import it to a new environment. The system facilitates the choice to compress the files while exporting them. System also allows the user to decide whether records should be overwritten if already exists on the environment.

### 2.7.1 Exporting Scheduler Data

To export a file, navigate to **Main** menu, select **Batch Scheduler** and then click **DBMS Import/Export Data**.

Import/ Export DBMS Data

Export  Import

FILE PATH

Compress Files

Export

**Figure 27: Export DBMS Data**

The Import/Export DBMS Data page appears with the following fields:

Field Name	Description	Mandatory (Yes/No)
File Path	Used to specify the file path to which Data is exported The path always starts with either: <ul style="list-style-type: none"> <li>• <b>@SHARED_DIR</b>: the configured path of shared directory</li> <li>• <b>@INSTALL_DIR</b>: the configured path of installation directory, defined with the property: <b>spl.runtime.envIRON.SPLEBASE</b> in spl.properties file</li> </ul>	Yes
Compress Files	Used to decide whether to compress all files into a folder or not If checked, one zipped folder with all files is created.	No

## 2.7.2 Importing Scheduler Data

To import a file, navigate to the **Main** menu, select **Batch Scheduler** and then click **DBMS Import/Export Data**.

Import/ Export DBMS Data

Export  Import

FILE PATH

Overwrite Existing Records

Import

**Figure 28: Import DBMS Data**

The Import/Export DBMS Data page appears with the following fields:

Field Name	Description	Mandatory (Yes/No)
File Path	Used to specify the file path to which Data is imported The path always starts with either: <ul style="list-style-type: none"> <li>• <b>@SHARED_DIR</b>: the configured path of shared directory</li> </ul>	Yes

	<ul style="list-style-type: none"><li>• <b>@INSTALL_DIR</b>: the configured path of installation directory, defined with the property: <b>spl.runtime.envIRON.SPLEBASE</b> in spl.properties file</li></ul>	
Overwrite Existing Records	Used to decide whether to overwrite the existing data while importing, or skip the record if it already exists <div style="border: 1px solid black; background-color: #e0e0e0; padding: 2px;">By Default, system skips such records.</div>	No