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Oracle Revenue Management and Billing Cloud Services Data Extractor User Guide

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Preface

About This Document

This document will help you to understand ORMB Data Extract Module. ORMB Data Extract Module enables the customer to move or extract meaningful data generated in the System.

Intended Audience

This document is intended for the following audience:

- End-users
- Implementation Team
- Consulting Team
- Development Team

Related Documents

You can refer to the following document for more information:

Document	Description
<i>Oracle Revenue Management and Billing Banking User Guide</i>	Lists and describes various banking features in Oracle Revenue Management and Billing. It also describes all screens related to these features and explains how to perform various tasks in the application.

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1. Introduction

Oracle Revenue Management and Billing Cloud Services Data Extractor module allow you to extract data from the system in CSV format. It facilitates customers in feeding data from ORMB to other systems like data warehousing, reporting system, analytics etc.

Following features are available as a part of Data Extract Module.

- Data extraction from database in CSV format
- Each database table corresponds to an extracted CSV file
- Allows customers to configure the data extraction
- Facilitate the customer to specify the Data Masking Rules for sensitive data
- Selective data extraction by specifying filter conditions
- User can also set up **Full** or **Incremental** data extract, as required
- Extracted data includes Extracted date and Add/Update flag, to check if the record is added or updated since the last extract

2. Data Extract Module

You can configure a Data Extraction Request Type for each Business Object in the system. When you configure a Business object for data extraction, the underlying Maintenance Object (MO) is checked and database tables that forms the MO are picked and CSV formatted data files are generated at the configured location.

The number of data files generated is the same as the number of tables the underlying MO has. Table data is then extracted from database into data files.

Each extract file has two additional columns:

- **EXTRACT_DT_TM**: Date and Time when record gets added or updated
- **RECORD_STATUS**: Flag (I for insert and U for update)

2.1 Data Extraction Modes

Data Extractor can extract data from ORMB in two modes: **Batch** or **Online**. Depending on the Business Object, the module decides whether to process the request type in Batch or Online mode.

Full data extraction from ORMB is always done in **Batch** mode. Whereas, subsequent **Incremental** data extraction can be either in Online or Batch mode. **Full** data extraction in **Batch** mode is done by scheduling the data extract batch process **C1-DTEX**.

In **Online** mode, data extraction is in real-time. For example, if you configure data extract for Person BO, whenever there is an addition or update of person in the system, that is whenever records are inserted or updated to underlying database tables, the same records are extracted to the corresponding extract file, with date and time of insertion or update, and Add (I) or update (U) flag.

Note: Deleted records are not extracted.

Data extract module works in **Batch** mode for Transaction Business objects, whereas incremental data extract from rest of the Functional and Configuration BOs is through **Online** mode.

2.2 Time Based Transaction Business Objects

Some Business Objects have high volume of data coming into ORMB and data extraction is in **Batch** mode for these BOs. The special Business Objects that are handled separately in Data Extract Module are:

- C1-Bill
- C1-BILL_SEG_BO
- C1-Adjustment
- C1-PAY_BO
- C1-BILLCHARGE
- C1-FT
- C1-TXNTFMDTL
- C1-TxnHeader
- C1-MATCH_EVENT
- C1-DEPOSIT_CTL_BO

- C1-NonCISPaymentEvent

Note: Payment BO and Payment Segment BO are combined to form **C1-PAY_BO**. That is, if you configure the Payment BO for data extract, you get data for all tables that belong to both Payment MO and Payment Segment MO.

By default, data extraction of these BOs are **Incremental** in nature. Transaction Business Objects, when configured for data extract for the first time, are of **Full Extract type**. Subsequent extractions are dependent on **Data Extract Flag**.

Note: You cannot extract Transaction Business Object data in real time; instead, you can schedule an Extract batch to achieve near-real-time results.

Following conditions are applicable for data extraction of Transactional BOs:

- For Bill BOs, only **Completed** bills data are extracted
- For Bill segment, Payment and Adjustment BOs, those having **Error** or **Canceled** or **FROZEN** status are extracted
- For Billable Charges, those having **Billable** or **Canceled** status are considered for extract
- For Deposit Controls, those having **Balanced** status are extracted
- For FT, those in **Frozen** status and for Match Event BOs, those having **Balanced** or **Canceled** status are extracted

2.3 Functional and Configuration Business Objects

The Data Extract module handles Functional and Configuration business objects differently. When you configure these BOs for extraction, a BO post-processing algorithm called **DTEXBOPSTALG** is attached to the BOs algorithms. To attach the post-processing algorithm, MO of the BO must determine the attached BO algorithm and then resolve the BO you are configuring for extraction. Whenever a system event occurs on the BO, the post-processing algorithm creates a record in the Extract file, with the action taken on the record and Date and Time of the action.

If post-processing algorithms are already present, then system increments the sequence number and attach the BO post-processing algorithm.

For the initial extraction, Functional and Configuration Business Objects are configured for **Full Extract type**.

Note: Irrespective of the **Data Extract** flag, all Data Extracts perform **Full** extraction for the first time and extraction takes place in batches. Subsequent extractions depends on the Data Extract Flag.

3. Configuring Data Extraction

3.1 Data Extract Request Type

You can configure Data extract for each Business Object using the Data Extract Request Type screen available under the Admin menu. You can also search for already configured data extract request types.

The screenshot shows the 'Data Extract Request Type' main screen. At the top, there is a navigation bar with 'Home', 'Menu', 'Admin', and 'History' options. Below the navigation bar, the title 'Data Extract Request Type' is displayed, followed by 'Add', 'Bookmark', and 'Refresh' buttons. A 'Main' tab is active. The main content area contains a search form with the following fields:

- Data Extract Code**: A text input field.
- Description**: A text input field.
- Search**: A button to execute the search.

If you wish to configure a new Data Extract Request Type, click **Add**. This opens the **Data Extract Request Type Add** pop-up.

The screenshot shows the 'Data Extract Request Type Add' pop-up window. The window title is 'Data Extract Request Type Add'. The form contains the following fields:

- Data Extract Code ***: A text input field.
- Description**: A text input field.
- Business Object ***: A dropdown menu with a search icon.
- Data Extract Flag ***: A dropdown menu.
- Data Masking Rules**: A text input field.
- Filter Condition**: A text input field.
- Data Extract Directory Path ***: A text input field.

At the bottom right of the pop-up, there are 'Save' and 'Cancel' buttons.

See the table below for fields and descriptions of the page:

Field	Description	Mandatory (Yes / No)
Data Extract Code	Unique code to identify the data extract request type	Yes
Description	Description for the Data extract Request	No
Business Object	<p>Select the business object for which data needs to be extracted</p> <p>Note: While selecting a BO for data extract, ensure that the underlying MO has Determine BO algorithm attached, wherein the BO for which we are extracting data is mapped.</p> <p>For example, while configuring Data Extract Request Type for C1_PERSON_BO, in the determine BO algorithm C1-PERDETBO, C1_PERSON_BO should be mapped.</p> <p>If Determine BO algorithm is not attached to the underlying MO of BO, then the Data Extract does not work.</p>	Yes
Data Extract Flag	<p>Indicates how data is to be extracted</p> <p>The values available are:</p> <ul style="list-style-type: none"> • Full: Full data is extracted in Batch mode, irrespective of the already extracted data, and the extracted data has the add/update flag as 'add' for every record extracted • Incremental: Data is extracted in batch mode only for the first time and subsequent extractions are incremental. Every time a data extract request is made, it only extracts the data that has been added or modified since the last extract. <ul style="list-style-type: none"> ○ For Functional and Configuration BOs, data is extracted in real time ○ For Transactional BOs, newly added and modified records since last extraction are only extracted 	Yes
Data Masking Rules	<p>Indicate the sensitive column of data that you want to mask</p> <p>Note: You can define multiple columns for masking, but the columns specified in the masking rule should be of the primary table of MO of the underlying BO.</p> <p>You can also specify multiple masking rules for a single BO, using semi colon. For example, acct_sal:3:F:X;per_ph_no:3:L:y</p>	No
Filter Condition	<p>Filter condition for extracted data</p> <p>You can use any fields of primary tables of the MO of the selected BO. You can also specify multiple columns in a filter condition, separated by AND.</p>	No

Data Extract Directory Path	Specify the directory to which the data files are to be extracted The predefined base directories are @SHARED_DIR and @INSTALL_DIR You can define a folder structure in one of the base directories, like: @INSTALL_DIR\PersonExtract @SHARED_DIR\DataExtract_12_12_2019	Yes
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3.1.1 Data Masking Rules

While creating a Data Extract Request Type, you can indicate the sensitive columns of data that you want to mask. You can define multiple columns for masking, but the columns specified in the masking rule should be of the primary table of MO of the underlying BO.

Note: You can also specify multiple masking rules for a single BO, using semi colon as a separator.

The format to define data masking is: **column_name:no.ofcharacters:F/L:maskingcharacter** where

- **column_name** is the primary table field of MO of underlying BO
- **no. of characters** specifies how many characters are to be masked
- **F / L** indicates whether the masking should start from the **first** character or **last** character
- **masking character** is the character with which the actual character is to be masked

An example of Data Masking rule:

PER_ID:3:F:X;EMAILID:6:F:@

On applying the above rule, the extracted data looks like below:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	PER_ID	LANGUAGE_CD	PER_OR_BUS_FLG	LS_SL_FLG	LS_SL_DESCR	EMAILID	OVRD_MA	OVRD_MA	OVRD_MA	ADDRESS1	ADDRESS2	ADDRESS3	ADDRESS4	CITY	NUM1	NUM2	COUNTY	POSTAL	HOUSE
2	xxx6148928	ENG	BG	N						USA									34623
3	xxx4842134	ENG	P	N						1 MMAU-				San Franci			San Franci		94105
4	xxx1755856	ENG	P	N		@@@@@arker@yahoo.com				Floor 3 Seagate 5i Park View				New York					45345 WW
5	xxx0529252	ENG	P	N		@@@@am@dough.com				Glass Buil Landmark New Perk				Las Vegas			US		5753
6	xxx2568535	ENG	P	N						PO BOX 1:				San Franci			San Franci		94115
7	xxx8652302	ENG	P	N			Test2			address				San Franci					94105
8	xxx1586847	ENG	B	N															
9	xxx0646064	ENG	B	N															
10	xxx1260224	ENG	P	N		@@@@@gmail.com				2839 Las V				Las Vegas					
11	xxx5136950	ENG	P	N		@@@@rt@home.com				PO Box 23				San Franci			San Franci		94114
12	xxx4285092	ENG	P	N		@@@@o.mendoza@splwg.com				Goregoan				Mumbai					73434

3.1.2 Filter Condition

You can also specify a filter condition for data extraction. This allows you to extract only the required data.

Note: Filter conditions are applicable only for **Full** type of data extract request types.

Similar to a masking rule, the column specified in filter condition should be of the primary table of the MO of underlying BO.

Note: You can specify multiple filter conditions separated by **AND**.

The format for specifying filter condition is simple and similar to WHERE clause of an SQL statement. You can enter the filter condition in the format: **Column_name='xxx'** where column_name is the primary table field and xxx is its value.

For example, **COUNTRY='USA' AND CITY=' San Francisco'**

3.1.3 Data Extract Directory Path

You can specify the directory to keep the extracted files. The path can be a folder structure within one of the two base directories: **@INSTALL_DIR** or **@SHARED_DIR**

- **@INSTALL_DIR**: Directory where the application is installed
- **@SHARED_DIR**: SFTP server directory (You can have a separate directory for each extract)

For example, **@INSTALL_DIR\user specified directory** or **@SHARED_DIR\user defined directory**.

Note: Make sure that you have given write permissions on the specified directory.

3.2 (Optional) Feature Configuration

If you have an interface that picks the extracted files from ORMB, you can schedule the time slot so that the outside system picks the lesser number of files. When you configure a timeslot in the system, all records for the configured BOs are extracted into the same file.

Note: Different set of files are generated for different BOs. Records for modification/addition of the same BO are extracted into a single file.

You can define a Feature Configuration with Data Extraction Schedule as feature type in **Online** mode. It is not applicable for **Batch** mode or **Full** Mode.

Note: You can create multiple options to define multiple time slots.

If you do not configure a feature configuration, every modification/addition to a BO extracts into separate set of files and the number of files are more. For example, if you configure Person BO for data extract in Incremental mode, then for every addition or modification to a person, data extract modules creates a separate set of files, with file name format: dataExtractCode_TableName_Date_Time.csv

If you configure Feature Configuration Time Slot as 16:00 18:00, then during this time slot, no matter how many persons you create or modify, only one set of files are extracted; and this set of files would contain all the records you have modified or added.

The file name format is <DataExtractCode>_<TableName>_<Date>_<FromTime>_<ToTime>.csv

E.g.: DTEXBILL_CI_BILL_10_10_2019_16.0_18.0.csv

Feature Configuration

Main Messages

Feature Name: DTEXSCH

Feature Type: Data Extraction Schedule

Description: data extract schedule for online

Options

	Option Type	Sequence	Value	Detailed Description
	Time Slot	1	16.00 18.00	Data Extract time slot defined by customer in(from time to time) HH:MI HH:MI format using 24 HOURS base. e.g. 11:00 13:00 meaning time slot is of 2 Hours between 11 AM to 1 PM.

4. Data Extraction in Batch Mode

Data extract requests for **Full** type are extracted in **Batch** mode by scheduling the data extract batch **C1-DTEX**. The parameter **dataExtractReqType** indicates the Data Extract Request Type Code of the BO to be extracted.

Note: If the data extract file size exceeds 2 GB, it is split into parts.

Parameter Name	Description	Parameter Value	Detailed Description	Required
dataExtractReqType	Data extract request type code	DTEXBILLSEG	Data extract request type code configured on the Data extract request type screen.	<input checked="" type="checkbox"/>
MAX-ERRORS	Override maximum errors	500	Enter a value here to override the maximum number of errors allowed before the run is terminated.	<input type="checkbox"/>
DIST-THD-POOL	Thread Pool Name	mahendra	Used to specify the thread pool on which you want to execute the batch. possible Values are STD Standard Commit Strategy. THD Thread Iteration Strategy. Default Behavior will depend on the Primary key of primary table.	<input type="checkbox"/>
executionStrategy	Batch Execution Strategy	STD		<input type="checkbox"/>

The parameters available for Data Extract Batch job are:

Parameter Name	Description	Mandatory (Yes / No)
dataExtractReqType	Data Extract Request type Code	Yes
executionStrategy	Batch Execution Strategy (This feature improves performance) Valid values are: <ul style="list-style-type: none"> STD - Standard Commit Strategy THD – Thread Iteration Strategy If left blank, the execution strategy gets decided based on the primary key of primary table.	No
MAX-ERRORS	Override maximum errors	No
DIST-THD-POOL	Thread pool name	No

4.1 An Example for Data Extraction in Batch Mode

This section explains the steps to configure data extraction for Business Object **C1-Bill**. You can use the same steps to configure data extraction for any other business object.

4.1.1 Add Data Extract Request Type

Following image shows how you can create a data extract request type **DTEXBILL** for the BO C1-Bill.

Data Extract Request Type Add

Data Extract Code *

Description

Business Object * C1-Bill - Main Information

Data Extract Flag *

Data Masking Rules

Filter Condition

Data Extract Directory Path *

4.1.2 Configure and Run Batch Job

Following image shows how you can configure and run data extract batch job **C1-DTEX** for Data Extract Code DTEXBILL.

Batch Job Submission

Main

Batch Job ID *

Batch Code Data Extract Batch Control

Thread Number

Thread Count

Batch Rerun Number

Batch Business Date

Override Nbr Records to Commit

Override Max Timeout Minutes

User ID System, English

Language

Email Address

Desired Execution Date/Time /

Batch Job Status

Program Name

Trace Program Start

Trace Program Exit










































Trace SQL

Trace Output

Parameter Name	Description	Parameter Value	Detailed Description	Required
dataExtractReqType	Data extract request type code	<input type="text" value="DTEXBILL"/>	Data extract request type code configured on the Data extract request type screen.	<input checked="" type="checkbox"/>
MAX-ERRORS	Override maximum errors	<input type="text" value="100"/>	Enter a value here to override the maximum number of errors allowed before the run is terminated.	<input type="checkbox"/>
DIST-THD-POOL	Thread Pool Name	<input type="text" value="PROD"/>	Used to specify the thread pool on which you want to execute the batch. possible Values are STD Standard Commit Strategy. THD Thread Iteration Strategy.	<input type="checkbox"/>
executionStrategy	Batch Execution Strategy	<input type="text"/>	Default Behavior will depend on the Primary key of primary table.	<input type="checkbox"/>

4.1.3 Files generated for DTEXBILL request Type

The following image shows the data extract files generated by the batch process.

Name
 DTEXBILL_CI_BILL_39_10_2019-09-24-16.53.21.csv
 DTEXBILL_ERROR_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_SA_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_ROUTING_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_MSGS_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_MSG_PRM_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_EXCP_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_CHAR_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_ACH_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_CI_BILL_39_9_2019-09-24-16.53.19.csv
 DTEXBILL_ERROR_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_SA_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_ROUTING_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_MSGS_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_MSG_PRM_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_EXCP_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_CHAR_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_ACH_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_CI_BILL_39_8_2019-09-24-16.53.16.csv
 DTEXBILL_ERROR_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_SA_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_ROUTING_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_MSGS_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_MSG_PRM_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_EXCP_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_CHAR_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_ACH_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_CI_BILL_39_7_2019-09-24-16.53.15.csv
 DTEXBILL_ERROR_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_SA_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_ROUTING_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_MSGS_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_MSG_PRM_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_EXCP_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_CHAR_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_ACH_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_CI_BILL_39_6_2019-09-24-16.53.12.csv
 DTEXBILL_ERROR_39_5_2019-09-24-16.53.09.csv
 DTEXBILL_ERROR_39_4_2019-09-24-16.53.09.csv
 DTEXBILL_ERROR_39_3_2019-09-24-16.53.09.csv
 DTEXBILL_ERROR_39_2_2019-09-24-16.53.09.csv

4.2 Data Extract Files By Batch Process

Files generated by the Data Extract Batch process are per thread, and includes batch number and thread number in the file name.

- During extraction, while generating the extract files, the files have an extension of **.part**, indicating that the extraction is in progress and not yet completed.
- Once file writing is finished, the extracted files have extension **.csv**, thus confirming the completion of Extract process.
- Along with the files for each thread, an error file may be generated which would have error details, if there is any error while processing a record.
- A summary of extracted files is logged in **CI_DATA_EX_REQ** table.