

# Comverse ONE®

3.5 RT TR 3.0

## Data Warehouse Utility Guide



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# Revision History

The following table lists the document changes since the initial publication:

Date	Chapter	Description
2012/09/03	Chapter 2 Prepaid Data Warehouse Export Utility	Added the following fields under SUBS_OFFERS_HIST table in the section History Extract Fields: <ul style="list-style-type: none"><li>■ mog_id</li><li>■ bundle_id</li></ul>



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# Notational Conventions



Useful information appears in this format.



Provides direction to important information



Important information appears in this format.



Indicates possible risk of damage to data, software, or hardware.



Indicates serious risk of damage to data, software, or hardware.

**Table 1** Notational Conventions

Notation	Explanation of Convention
<i>References to printed documents</i>	<i>Helvetica italic</i> <b>Example:</b> See <i>Database Reference Volume 2</i> .
<KEYS>	UPPERCASE HELVETICA, in angle brackets <b>Example:</b> Press <CTRL><Q><SHIFT><P> to create an em dash.
<b>User-entered text</b>	<b>Courier bold</b> <b>Example:</b> Enter <b>Total Charges</b> in the field.
<i>Placeholders for user-determined text</i>	<i>Courier italic</i> , in angle brackets <b>Example:</b> Enter your <password>.
Code samples, TABLE_NAMES, field_names, file and directory names, file contents, user names, passwords, UNIX ENVIRONMENT_VARIABLES	Courier
<i>Placeholders for system-generated text</i>	<i>Helvetica italic</i> <b>Example:</b> Messages appear in this form: <i>timestamp messageId &gt;&gt; text</i> .
<b>Buttons, Icon Names, and Menu items</b>	<b>Helvetica bold</b> <b>Example:</b> Choose <b>Reports</b> from the main menu.

## Special Markers

The Comverse ONE Billing and Active Customer Management solution has the three derivatives shown in [Table 2, “Labels in Markers.”](#) For user convenience, any content that is specifically included in a derivative is highlighted with special markers so that it can readily be distinguished.

**Table 2** Labels in Markers

Derivative	Label Shown in Markers
Comverse ONE CV Converged Billing derivative	<b>CV Only</b>
Comverse ONE RT Real-Time Charging derivative	<b>RT Only</b>
Comverse ONE FX Postpaid Billing derivative	<b>FX Only</b>

Each derivative has a set of three color-coded markers, as shown in [Table 3, “Types of Markers.”](#) The markers are used individually or in combination to highlight derivative-specific content by:

- Entire chapters
- Selected portions of chapters
- Tables, either entire or partial

**Table 3** Types of Markers

Marker	Example	Description
Alert		<ul style="list-style-type: none"> <li>■ Placed at the beginning of an entire chapter that pertains only to a specific derivative.</li> <li>■ Placed just before a table that partially or entirely pertains only to a specific derivative.</li> </ul>
Block		A shaded box that encloses sections of documentation that pertain only to a specific derivative.
Flag		<ul style="list-style-type: none"> <li>■ Designates a shaded table row whose contents pertain only to a specific derivative.</li> <li>■ In a bulleted list, designates an item that pertains only to a specific derivative.</li> </ul>

## Additional Documentation

For a list of other Comverse ONE documents, see the *Comverse ONE Documentation List*.



# Chapter 1

## Prepaid System Reports

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## Introduction

This chapter covers the reports available from the Comverse ONE Billing and Active Customer Management solution's Operational Reports Interface (ORI), known in earlier Real Time Billing releases as SAW.

## Reports Overview

Reports provide a summary of information based on specific search criteria. Search criteria are based on information such as active and used recharge vouchers, traffic totals, and subscriber account states. A report is compiled by querying the Service Data Point (SDP) databases.



### NOTE

Not all users are able to perform all of the procedures described in this topic. This is a function of what roles are assigned to the individual user.

## Available Prepaid Reports

Table 4, "Subscriber Count Reports," through [Table 11, "Audit Reports,"](#) list the available prepaid reports in the following categories:

- Subscriber Counts
- Subscriber Lists
- Voucher Counts
- History Lists
- Audit

## Subscriber Count Reports

**Table 4** Subscriber Count Reports

Number	10-001	10-007	10-011	10-020
Name	Summary of subscribers by current state and Primary Offer	Summary of subscribers by Primary Offer and current state	Count of Friends and Family Subscribers grouped by Primary Offer	Summary of subscribers by current state and Primary Offer
Category	Subscriber	Subscriber	Subscriber Count	Subscriber
Description	This report shows the number of subscribers, the total set of balances and averages for those balances associated with a Primary Offer within a given state.	This report shows the count of subscribers in each state, within each Primary Offer. The report also totals all subscriber balances assigned by the primary offer within each state. The total of each balance assigned by a Primary Offer for all states is summarized and presented along with the count of subscribers in that Primary Offer.	This report displays the number of subscribers with friends and family phone numbers, the count of friends and family phone numbers and the average friends and family phone numbers per subscriber by Primary Offer.	This report shows the number of subscribers, all balances assigned to the Primary Offer, and the average of each of these balances per subscriber. The report is grouped by Primary Offer within each state within each reseller.
Schedulable	Yes	Yes	Yes	Yes
Tables Accessed	ACCOUNT_SUBSCRIBER, SUBSCRIBER_STATE_ID_REF, OFFER_KEY	ACCOUNT_SUBSCRIBER	ACCOUNT_SUBSCRIBER, OFFER_KEY	ACCOUNT_SUBSCRIBER, SUBSCRIBER_STATE_ID_REF, OFFER_KEY, RESELLER_KEY
Query Type	Count of Subscribers	Count of Subscribers	Count	Count of Subscribers
Selected Columns, by Display Order	current state, primary offer, subscriber count, current balance, average current balance	primary offer, current state, subscriber count, sum of each balance assigned to the Primary Offer within the state.	primary offer, subscribers with friends and family phone numbers, count of friends and family phone numbers, average friends and family phone numbers per subscriber	current state, primary offer, subscriber count, current balance, average current balance
Fixed Query Parameters	None	None	None	None
Grouping of Results	Grouped by current state ID	Grouped by Primary Offer	Grouped by Primary Offer	Grouped by current state ID

**Table 4** Subscriber Count Reports (Continued)

Number	10-001	10-007	10-011	10-020
Order of Results	Sorted by Primary Offer name within a current state.	Sorted by state ID number within the Primary Offer.	None	Sorted by Primary Offer name within current state.
Displayed Totals	For each state by Primary Offer, a total of the number of subscribers within that state and the total and average of all balances assigned to that primary offer.	For each Primary Offer, subscriber count, and sum of each balance assigned to the Primary Offer for all states.	Subscribers with friends and family phone numbers, count of friends and family phone numbers, and the average friends and family phone numbers per subscriber.	For each state by Primary Offer, reseller, a total of the numbers within that state, all balances assigned to the Primary Offer and the average of each balance carried by a subscriber in that state.  Overall report totals are shown on the final page.
Report Header	Summary of Subscribers by Current State and Primary Offer	Summary of Subscribers by Primary Offer and Current State	Count of Friends & Family Subscribers Grouped by Primary Offer	Summary of Subscribers by Current State, Primary Offer, and Reseller
Name of Prompt Field	None	None	None	None
Comments	None	None	None	None

## Subscriber List Reports

**Table 5** Subscriber List Reports

Report Number	11-001	11-002	11-003	11-008
Report Name	Subscribers with current status of 53 (S4) for a selected date range	Subscriber balances of selected subscribers	Subscriber list of selected subscribers	List of activated subscribers for a selected date range sorted by subscriber number
Category	Subscriber	Subscriber List	Subscriber List	Subscriber List
Description	Lists subscriber number and date entered current state with a total count of selected subscribers.	Lists balance totals of all subscriber balances assigned to a subscriber in a given range.	List of selected subscriber IDs, Primary Offer, current balances, sorted by current state	Lists activated subscribers for a user-selected date range. The report shows subscriber number and the date activated, with a total subscriber count at the end of the report.
Schedulable	Yes	Yes	Yes	Yes
Tables Accessed	ACCOUNT_SUBSCRIBER	ACCOUNT_SUBSCRIBER, SUBSCRIBER_STATE_ID_REF, OFFER_KEY	ACCOUNT_SUBSCRIBER, SUBSCRIBER_STATE_REF, OFFER_KEY	ACCOUNT_SUBSCRIBER
Query Type	List	List	List	List
Selected Columns, by Display Order	Subscriber number and date of current state change	Sorted by current state	Sorted by current state	Subscriber ID and date activated
Fixed Query Parameters	Current State = 53	None	None	None
Grouping of Results	Subscriber number	Sorted by current state	Sorted by current state	Sorted by subscriber ID
Order of Results	None	By subscriber ID	By subscriber ID	By subscriber ID
Displayed Totals	Total count of selected subscribers	All balances assigned to subscriber	All balances assigned to subscriber	Total number of subscribers in the report

**Table 5** Subscriber List Reports (Continued)

Report Number	11-001	11-002	11-003	11-008
Report Header	Subscribers with Current State of "53"	Subscriber List of Selected Subscribers Sorted by Current State	Subscriber List of Selected Subscribers Sorted by Current State	List of Activated Subscribers for a Selected Date Range Sorted by Subscriber Number
Name of Prompt Field	ACCOUNT_SUBSCRIBER.prev_trans_date	range_map_external_id	range_map_external_id	ACCOUNT_SUBSCRIBER.date_enter_active
Comments	Report run can take a long time if a wide range of dates is requested. Try to limit the date range requested.	Report run can take a long time if a wide range of subscribers is requested. Try to limit the number of subscribers requested.	Report run can take a long time if a wide range of subscribers is requested. Try to limit the number of subscribers requested.	Select date range carefully. Report returns a very large number of lines of output if given a large number of subscribers or high system activity.

**Table 6** User-Provided Runtime Parameters for Subscriber List Reports

Report Number	Parameter	Prompt	Help Text
11-001	Enter From Date	Enter date in any valid format	Report returns information on subscribers that entered state 53 on or after the date entered.
	Enter To Date	Enter date	Report returns information on subscribers that entered state 53 on or before the date entered.
11-002	Subscriber Number	Enter the First Subscriber Number	Keep number range short. Report returns subscriber numbers equal to or greater than this number.
	Subscriber Number	Enter the Last Subscriber Number	Report returns subscriber numbers equal to or less than this number.
11-003	Subscriber Number	Enter the First Subscriber Number	Keep number range short. Report returns subscriber numbers equal to or greater than this number.
	Subscriber Number	Enter the Last Subscriber Number	Report returns subscriber numbers equal to or less than this number.
11-008	Enter From Date	Enter date in any valid format	Report returns information on subscribers activated on or after the date entered.
	Enter To Date	Enter date	Report returns information on subscribers activated on or before the date entered.

## Voucher Count Reports

**Table 7** Voucher Count Reports

Report Number	20-005	20-007
Report Name	Count of unused vouchers for a face value range	Count of all consumed vouchers for a selected used date range
Category	Voucher Count	Voucher Count
Description	<p>All unused vouchers within the selected face value range are displayed. One line of output is produced for each unused current state within a batch number, showing the batch number, state, number of cards, face value of each card, and total face value of all cards in that state within the batch. Shown for each batch number is the number of cards and total face value of that batch. The report total line shows the number of cards and the total value of all cards within the selected face value range.</p> <p>Vouchers with a current state of Idle (1) or Shipped (2) or Active (3) are considered unused vouchers and are included in this report.</p>	<p>All vouchers within the selected date range are counted, and one line of output is displayed for each face value and expiration offset. The report shows the face value, expiration offset, number of used vouchers, and the total face value. The report total displays the number of all used cards and the total value of all cards within the selected date range.</p>
Schedulable	Yes	Yes
Tables Accessed	VOUCHER_DEFINITION, RECHARGE_CARD	VOUCHER_DEFINITION, RECHARGE_CARD
Query Type	Count	Count
Selected Columns, by Display Order	Batch number, state, number of cards, face value, total value	Face value, operation offset, number of cards, total face value
Fixed Query Parameters	pat_multyrowsqlfunction2.`COND__recharge_card\$state__LT__'4'`, pat_multyrowsqlfunction2.`C__voucher_definition\$voucher_key__EQ__recharge_card\$voucher_key`, pat_multyrowsqlfunction2.`C__recharge_card_state\$state_id__EQ__recharge_card\$state_id`,	C__voucher_definition\$voucher_key__EQ__recharge_card\$voucher_key pat_multyrowsqlfunction2.COND__recharge_card\$state__EQ__'7
Grouping of Results	Batch number	Face value
Order of Results	Current state code	None

**Table 7** Voucher Count Reports (Continued)

Report Number	20-005	20-007
Displayed Totals	Report produces one line of output for each state within a batch number, showing the batch number, state, number of cards, face value of each card, and total face value of all cards in that state within the batch. For each batch, the number of cards and total face value of the batch is displayed. The report total line shows the number of cards and the total value of all cards within the selected face value range.	Report shows the face value, expiration offset, number of used vouchers, and the total face value. The report total shows the number of all used cards and the total value of all cards within the selected date range.
Report Header	Count of Unused Vouchers for a Face Value Range Sorted by Batch Number and State Code	Count of All Consumed Vouchers for a Selected Date Range
Name of Prompt Field	Pat_multyrowssqlfunction2.trunc(voucher_definition\$face_value)	pat_multyrowssqlfunction2.`trunc(recharge_card\$use_date)`
Comments	<p>This report returns only those vouchers meeting both of the following criteria:</p> <ol style="list-style-type: none"> <li>1. Current sate is 1 (Idle) or 2 (Shipped) or 3 (Active)</li> <li>2. Face value is within the user-selected face value range.</li> </ol> <p><b>Note: This report runs only on the Master SDP.</b></p> <p>For a count of all unused vouchers, select a face value range that includes the lowest face value and highest face value used at the site. However, returning a large number of rows affects runtime, depending on the volume at the site.</p>	<p>This report is designed to run only on the Master SDP (SDP1).</p> <p>Size of the site and the number of vouchers issued affects job runtime. Try to limit the date range.</p> <p>To be included in this report the recharge state must be 7 (used).</p>

**Table 8** User-Provided Runtime Parameters for Voucher Count Reports

Report Number	Parameter	Prompt	Help Text
20-005	Enter From Face Value	Enter the from face value	Report returns face values equal to or greater than this amount.
	Enter To Face Value	Enter the to face value	Report returns face values equal to or less than this amount.
20-007	Enter From Used Date	Enter date in any valid format	Report returns information on used dates equal to or after the date entered.
	Enter To Used Date	Enter date	Report returns information on used dates equal to or before the date entered.

## History List Reports

**Table 9** History List Reports

<b>Report Number</b>	40-001
<b>Report Name</b>	Call history for selected subscribers
<b>Category</b>	History
<b>Description</b>	Call history for a selected subscriber range of numbers
<b>Schedulable</b>	Yes
<b>Tables Accessed</b>	CALL_HISTORY_HIST
<b>Query Type</b>	List
<b>Selected Columns, by Display Order</b>	External ID, default identity to "Personal," default account type to "Individual," start_date_time, derive call duration from (start_date_time, end_date_time), get new balance info from BAL_INFO, called number, activity_type, and reason_code.
<b>Fixed Query Parameters</b>	None
<b>Grouping of Results</b>	By subscriber ID
<b>Order of Results</b>	By date and time
<b>Displayed Totals</b>	Total duration and total charges for each subscriber
<b>Report Header</b>	Call History Report for Selected Subscribers Sorted by Subscriber Numbers
<b>Name of Prompt Field</b>	None
<b>Comments</b>	None

**Table 10** User-Provided Runtime Parameters for History List Reports

Report Number	Parameter	Prompt	Help Text
40-001	Enter From Date	Enter date in any valid format	Report returns dates equal to or greater than the date entered.
	Enter To Date	Enter to date	Report returns dates equal to or less than the date entered.



## Audit Reports

**Table 11** Audit Reports

Report Number	50-001	50-004	50-006
Report Name	Monetary Transaction Audit Report	Event History — Potential Recharge Fraud within a Selected Date Range	Post Active Subscriber Remaining Balance Removal Report for Selected Dates
Category	Audit	History	Audit
Description	This report lists all monetary transactions for a selected date range, by user ID with the amount of each adjustment, new balance, and subscriber number.	This report displays the event ID, date, time, subscriber number, and subscriber number resets and the event description of the potential recharge card fraud attempts occurring within a selected date range.	This report lists subscribers who had their remaining balance removed within the selected date range. The report displays the subscriber number, the amount removed, and the transaction date, with an overall report total line showing the total amount removed and a subscriber count.
Schedulable	Yes	Yes	Yes
Tables Accessed	MTR_HIST	EVENT_HIST	MTR_HIST
Query Type	List	List	List
Selected Columns, by Display Order	user ID, subscriber ID, amount, new balance, date	event ID, event date time, subscriber number, subscriber number resets, event description	login name, subscriber number, subscriber number resets, balance info, modified date
Fixed Query Parameters	None	pat_multyrowssqlfunction.`PARM__event__event_id__STRING` = '309' OR pat_multyrowssqlfunction.`PARM__event__event_id__STRING` = '303' OR pat_multyrowssqlfunction.`PARM__event__event_id__STRING` = '307' OR pat_multyrowssqlfunction.`PARM__event__event_id__STRING` = '308'	MTR_HIST.LOGIN_NAME="EXP_BALS"
Grouping of Results	By user ID and subscriber	None	None
Order of Results	By user ID and subscriber	None	By subscriber

**Table 11** Audit Reports (Continued)

Report Number	50-001	50-004	50-006
Displayed Totals	Number of adjustments and total adjustment amount per user ID with overall report totals		Removal amount per subscriber and overall report totals displaying total amount removed and a subscriber count.
Report Header	Monetary Transaction Report by User ID and Subscriber	Event History — Potential Recharge Fraud within a Selected Date Range	Post Active Subscriber Remaining Balance Removal Report for Selected Dates
Name of Prompt Field	MTR_HIST.mod_date	pat_multyrowssqlfunction.`trunc(event\$event_date_time)	MTR_HIST.mod_date
Comments	The length of time the MTR measurements are retained depends on the particular system configuration. Report run can take a long time if a wide range of dates is requested. Try to limit the date range requested.	Only recharge card Fraud Attempts occurring within the selected date range are included in this report.	Report run can take a long time if a wide range of dates is requested. Try to limit the date range requested.

**Table 12** User-Provided Runtime Parameters for Audit Reports

Report Number	Parameter	Prompt	Help Text
50-001	From Date	Enter date in any valid format	Report returns dates equal to or greater than the date entered.
	To Date	Enter to date	Report returns dates equal to or less than the date entered.
50-004	Enter From Date	Enter date in any valid format	
	Enter To Date	Enter in any valid format	
50-006	From Date	Enter from date	
	To Date	Enter to date	

## **Chapter 2**

# **Prepaid Data Warehouse Export Utility**



## Introduction

The Data Warehouse Export utility (DWH) provides the Comverse Real Time Billing System with the capability to transport and archive daily subscriber activity and history files to a centralized file server (CFS).

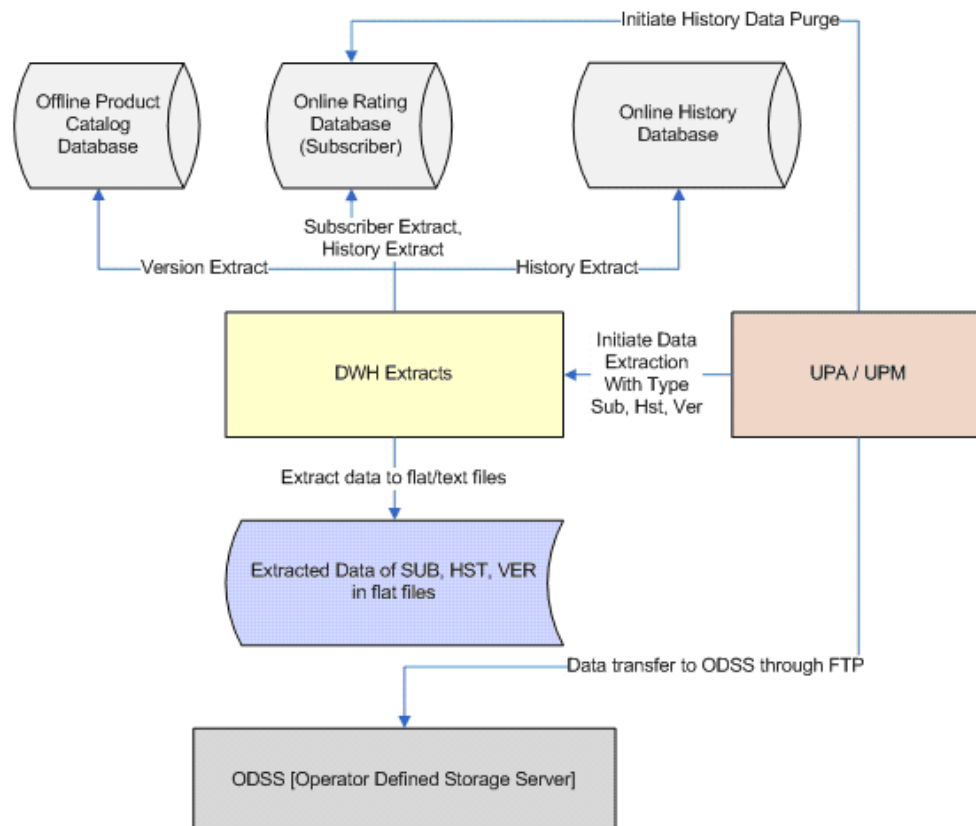
This document provides information on the design of the Data Warehouse Export utility and the scripts that comprise the utility.

## Overview

The DWH utility extracts the specified tables based on the input criteria. The utility consists of the following files.

- **Unload scripts:** Unload data in predefined formats.
- **Configuration:** Configure the list of tables and columns to be extracted and customizable configuration files.
- **Miscellaneous scripts:** Purge scripts to purge extracted data files
- **Database objects:** Objects required in the database schema to support extracts.

**Figure 1** Data Warehouse Export Utility Operation



## Unload Scripts

The unload scripts are written in C using Pro\*C to improve performance and avoid unnecessary Oracle logins. The source files are:

- **dwh.h:** The header file that imports the built-in libraries to the DWH. All global variables and parameters, user-defined structures, and macros are defined in this header file, for example, the path of extraction, number of inconsistency runs, the Oracle sequences for various extractions, and so forth.
- **generate\_file.pc:** Consists of functions for fetching the number of records found in passed tables, retrieving SDP information and version information, reqding data from DWH\_PARAMETERS to array for processing, retrieving a sequence number for the type of extraction, updating the PARAMETERS table, and extracting data from the database based on the type of input parameter passed ("sub" for subscriber, "hst" for history data, and "pcd" for Product Catalog data. See ["Extract Types"](#) for more information on these three categories).
- **dwh.c:** Holds the core logic for extracting data from the database. It performs various configuration checks for each type of extraction, takes responsibility for forming the string that determines what attributes are in the select list, and decides what data is selected from the database by determining the where clause. The file also uses the file handling mechanism of C to store the retrieved data in flat files. Further, it handles the inconsistency that occurs during file extraction.

## Extract Types

The DWH supports three types of extracts:

- **Subscriber (sub):** Subscriber data such as Account\_Subscriber and Offer\_Inst from the MAIN databases in all SDPs.
- **History (hst):** History data such as Call History, MTR History, and Recharge History from the HIST databases in all SDPs.
- **Product Catalog Data (PCD):** Product catalog extracts of all versioned tables, such as Accumulator\_Ref and Offer\_Ref from the online Product Catalog schema in the MAIN database on the MASTER SDP.

## Configuration Files

The DWH utility uses the following configuration files:

**Table 13** DWH Configuration Files

Extract Type	Configuration Files	Comments
Subscriber data (sub)	dwh-extracts-sub.cfg	UPA configuration file for starting subscriber extracts from the unified platform agent.
History data (hst)	dwh-extracts-hist.cfg	UPA configuration file for starting history extracts from the unified platform agent.
Product Catalog data(pcd)	dwh-extracts-pcat.cfg	UPA configuration file for starting version extracts from the unified platform agent.
Alarm	dwh-alarm.cfg	Configuration file to generate alarms for sub, hist, and pcat extract failures.

Other configuration files used by the DWH utility are as follows:

**Table 14** Additional Configuration Files

Configuration/Script	Comment
region.cfg	Holds the region information configurable by the customer. The region code is attached to the extracted file name, which is useful in cases where a customer has multiple SDPs spread over different locations or regions.
table_description.cfg	Holds the table name and the attributes to be selected from the table during data extraction.
dwh-logpurge.cfg	UPA configuration file for scheduling and executing the purge process to remove aged data files (DWH output) from the SDP
dwh-filetransfer.cfg	UPA configuration file for scheduling and transferring the DWH output files to ODSS.

## Miscellaneous Scripts

Data files from the extraction process accumulate on the SDP as DWH executions occur. Over a period of time, this can lead to the exhaustion of allocated file-system size. To remove the aged data files, run the script `dwh-logpurge.sdp` (located in the `/oracle/oracle8/cfgs` directory), which is scheduled and executed from the Unified Platform Architecture (UPA). Configure the number of days files are kept on the SDP with an input parameter.

The configuration file defines the files to purge using wild cards. The default aging factor used for purging is 20 days. Files older than 20 days are deleted. By default, the purge occurs at 4:00 AM every day. The purge log file `dwh_purge_sdp.log` is maintained in `/backup_vol/dwh/exp_data/dwh_logs` for HP and `/staging/dwh/exp_data/dwh_logs` for IBM.

Run the purge script with the following command:

```
/oracle/oracle8/dwh/dwh-logpurge.sdp
```

## Database Objects

Installation of DWH creates the following database objects:

- Tables
- Sequences
- UPA/Database interfaces

### Tables

DWH uses the following tables:

- **DWH\_PARAMETERS:** This table contains:
  - Tables attached to different extract types
  - The date of the last successful history extraction
  - Information on the last Product Catalog data extraction
  - An option to extract data from the MAIN database in case of a purge failure
  - The number of times a single extract can be executed in case of any data inconsistency
  - The subscriber state to be selected in case of cancellation
  - Consistency tolerance value

- Ability to enable parallel execution of extracts (for history and subscriber data extracts)
  - Amount of data to be fetched over a single select statement. This parameter serves as the tuning guideline for highly active systems.
  - Sleep time during the extraction process
- **DWH\_HST\_STATUS:** Temporary table used during the parallel processing of extracts for the parallel threads to coordinate and determine extraction status. This table is dropped and recreated each time a history extract occurs.
- **DWH\_LOG:** Records each stage of the extraction process and generates reports on the execution time or status of the extract.

## Sequences

There are three sequences, one for each type of extract. The sequence number is appended to the final extracted file name:

- **dwh\_daily\_seq:** For subscriber data extraction
- **dwh\_pcd\_seq:** For Product Catalog data extraction
- **dwh\_hist\_seq:** For history data extraction

## Limitations

Note the following limitations to data extraction:

- Extracts are based on single tables; the DWH performs no table joins.
- History extractions cannot occur for any specific date in the past. If a past date is specified in DWH\_PARAMETERS, DWH extracts data from that date to the current date.
- DWH returns Product Catalog data only if there is a major or minor version change.
- DWH resets Sequence information every month.
- DWH does not allow adding or removing new tables or columns for extraction and uses only the ICD format for extracting data.
- If a node switchover occurs during the extraction process, it becomes the UPA's responsibility to reinitiate the extraction process. TSuch extractions will be restarted rather than continuing from the point of failure.

## UPA/Database Interfaces

Configuration files schedule and execute DWH extracts from UPA. Table 15, "UPA Configuration Files," shows the configuration files for the UPA interface.

**Table 15** UPA Configuration Files

Extract type	Command String
Subscriber Data (dwh-extracts-sub.cfg)	chk.script.path = /oracle/oracle8/dwh/generate_file argument.string = sub
History Data (dwh-extracts-hist.cfg)	chk.script.path = /oracle/oracle8/dwh/generate_file argument.string = hst
Product Catalog Data (dwh-extracts-pcat.cfg)	chk.script.path = /oracle/oracle8/dwh/generate_file argument.string = pcd



## Database Tables

The following database tables are used by the Data Warehousing Utility.

### DWH\_PARAMETERS

Stores parameters related to execution of the extracts.

**Indexes:** primary-key on parameter\_id

Field Name	Data Type		Comments	Values	Null
parameter_id	number (38)		Unique sequence ID.		
parameter_name	varchar2 (40)		Identifies type of extract.		
parameter_value	varchar2 (40)		Describes the table to extract.		
parameter_description	varchar2 (240)		Long description of table to extract.		
parallel_attribute	varchar2 (40)		Column name used to form the parallel execution “where” clause.		
parallel_process	char(1)		Flag to indicate if the extraction is to be executed in parallel threads.	Y, N (D: N)	

# DWH\_HIST\_STATUS

Supports the parallel execution of history extracts, to track the completion of each parallel thread.

**Indexes:** primary-key on table\_type

Field Name	Data Type		Comments	Values	Null
table_type	varchar2	(50)	Type of history table, for example hst_cha.		
execution_count	number	(2)	Counter to determine completion of parallel thread.		

## DWH\_LOG\_STATUS

Stores extract status for each type of extract and individual tables within the extract category.

Field Name	Data Type	Comments	Values	Null
sdp_num	number (2)	SDP number on which the extract is executed.	1-99	
ext_type	char (3)	Type of extract executed.	hst, sub, pcd	
tab_name	varchar2 (30)	Table extracted.		
file_name	varchar2 (50)	Extracted output file name.		
start_date	date	Start date and time of the extract.		
end_date	date	End date and time of the extract.		
status	varchar2 (30)	Extract status.		
num_retry	number (2)	Number of retries during the extract.		
part_name	varchar2 (20)	History partition extracted (for hst extracts only)		

## Sequences

Three sequences, one for each type of extraction, are created along with public synonyms. After creation, they are associated with the required permissions.

**Table 16** DWH Sequences

Name	Minimum Value	Maximum Value	Start With	Increment By	Cycle	Cache
DWH_DAILY_SEQ	1	99999	1	1	Y	N
DWH_PCD_SEQ	1	99999	1	1	Y	N
DWH_HIST_SEQ	1	99999	1	1	Y	N
DWH_PARAMETER_SEQ	1	99999	1	1	Y	N

## Database Account Creation, Modification, and Deletion

DWH execution does not require new account creation.

The username **btchuser** executes DWH extracts. The OS user **btchuser** must exist on the SDP along with the OS authenticated Oracle user **ops\$btchuser**.

This OS authenticated user compiles and creates the DWH binary file and creates any DB connections originating from the DWH executable.

Because the username **btchuser** does not have permissions to select data from all tables, DWH installation and upgrade scripts guarantee that the permissions for required tables is granted to **btchuser**.

Create the **btchuser** username for the MAIN and HIST databases.

## Role Creation, Modification, and Deletion

### URE\_BATCH\_ROLE Permissions for MAIN Database

**Table 17** Permissions for URE\_BATCH\_ROLE in MAIN Database

Owner	Object Name	Object Type	Select	Insert	Update	Delete	Alter
BTCHUSER	DWH_PARAMETERS	T	X	X	X	X	
BTCHUSER	DWH_HST_STATUS	T	X	X	X	X	
BTCHUSER	DWH_LOG	T	X	X	X	X	
BTCHUSER	DWH_DAILY_SEQ	S	X				X
BTCHUSER	DWH_PCD_SEQ	S	X				X
BTCHUSER	DWH_HST_SEQ	S	X				X
BTCHUSER	MTR_MAIN_1A	T	X				
BTCHUSER	MTR_MAIN_1B	T	X				
BTCHUSER	RECHARGE_HISTORY_MAIN_1A	T	X				
BTCHUSER	RECHARGE_HISTORY_MAIN_1B	T	X				
BTCHUSER	CALL_HISTORY_MAIN_1A	T	X				
BTCHUSER	CALL_HISTORY_MAIN_1B	T	X				
BTCHUSER	PS_TRANSACTION_MAIN_1A	T	X				
BTCHUSER	PS_TRANSACTION_MAIN_1B	T	X				
BTCHUSER	OSA_HISTORY_MAIN_1A	T	X				
BTCHUSER	OSA_HISTORY_MAIN_1B	T	X				
BTCHUSER	SUBS_OFFERS_MAIN_1A	T	X				
BTCHUSER	SUBS_OFFERS_MAIN_1B	T	X				
BTCHUSER	DIAMETER_MAIN_1A	T	X				
BTCHUSER	DIAMETER_MAIN_1B	T	X				
BTCHUSER	EVENT_MAIN_1A	T	X				
BTCHUSER	EVENT_MAIN_1B	T	X				
BTCHUSER	MEASUREMENT_MAIN_1A	T	X				
BTCHUSER	MEASUREMENT_MAIN_1B	T	X				
BTCHUSER	SDP_MEASUREMENT_MAIN_1A	T	X				

**Table 17** Permissions for URE\_BATCH\_ROLE in MAIN Database (Continued)

Owner	Object Name	Object Type	Select	Insert	Update	Delete	Alter
BTCHUSER	SDP_MEASUREMENT_MAIN_1B	T	X				
BTCHUSER	SYSTEM_MEASUREMENT_MAIN_1A	T	X				
BTCHUSER	SYSTEM_MEASUREMENT_MAIN_1B	T	X				

Object Type: (T)able, (P)rocedure, (Pa)ckage Procedure, (V)iew, (F)unction, (S)equence

## URE\_BATCH\_ROLE Permissions for HIST Database

**Table 18** Permissions for URE\_BATCH\_ROLE in HIST Database

Owner	Object Name	Object Type	Select	Insert	Update	Delete
BTCHUSER	MTR_HIST	T	X			
BTCHUSER	RECHARGE_HISTORY_HIST	T	X			
BTCHUSER	CALL_HISTORY_HIST	T	X			
BTCHUSER	PS_TRANSACTION_HIST	T	X			
BTCHUSER	OSA_HISTORY_HIST	T	X			
BTCHUSER	SUBS_OFFERS_HIST	T	X			
BTCHUSER	DIAMETER_HIST	T	X			
BTCHUSER	EVENT_HIST	T	X			
BTCHUSER	MEASUREMENT_HIST	T	X			
BTCHUSER	SDP_MEASUREMENT_HIST	T	X			
BTCHUSER	SYSTEM_MEASUREMENT_HIST	T	X			

Object Type: (T)able, (P)rocedure, (Pa)ckage Procedure, (V)iew, (F)unction, (S)equence

## Starting the DWH Executable and Checking for File Consistency

The `generate_file` script validates the extract type and determines if the parallel option is enabled for subscriber and history extracts.

Two parameters call the DWH executable:

- The extract type (pcd, sub, or hst)
- The log file

For example: `/oracle/oracle8/dwh <<Extract_Type>> << Log_File_Name>>`  
`/oracle/oracle8/dwh hst 200709150030_generate_file_hst.log`

If DWH is set for parallel process, it is called as follows:


```
/oracle/oracle8/dwh <<Extract_Type>> << Log_File_Name>> <<Total_
Parallel_Count>> <<Current_Cnt>>
/oracle/oracle8/dwh hst 200709150030_generate_file_hst_0.log 4 1
```

Configure the column description and the list of columns to extract for a table in **table\_description.cfg**. If you are adding new columns to the table, update the configuration file with the required columns. If a specific column is not required in the extract, comment it out by adding # to the column name in **table\_description.cfg**.

The file is initialized based on the record count.

After extracting the data, DWH compares the number of extracted records to the number of records in the table. If the file has fewer records than the table, it is considered inconsistent. The extension .NCS is appended to the file name and the extract is re-initiated.

**Example: 200708042059.X01.00049.0123456.rca.NCS**



The system performs a maximum of three retries.

If after three attempts the number of records retrieved from the table remains inconsistent with the number of records in the table, the extract terminates as a failure and updates the log table with the relevant entries.

Each time the data extract for a table starts, the log CONTAINS the record count, the file formation, count after extraction, and check for inconsistency.

For history data extracts, if the parameter to extract data from MAIN is set, the log file also includes the record counts from the history partition table and the main table A and B. For consistency validation, the counts from all three tables are considered and compared with the record count in the extracted data file.

**Example:**

```
Extract_Data_From_Main => "Y" in DWH_PARAMETERS table
Table: CALL_HISTORY
Record Count History Partition: 100000
Record Count Call_History_Main_1A: 2
Record Count Call_History_Main_1B: 8
Total Record Count => 100000 + 2 + 8 => 100010
```

For parallel extractions, DWH extracts the data multiple files. The wrapper script merges all resulting files into a single file and makes the file name consistent with the record count in the tables.

If a node switchover occurs during the extraction process, UPA reschedules the extract on the second node, and the extraction restarts. Since the instance names on both nodes remain MAIN and HIST, there is no requirement for a special instance naming convention.

## DWH Extracts

The DWH extracts are divided into the following categories:

- Subscriber Extracts
- History Extracts
- Offline Product Catalog Data Extracts

### Subscriber Extracts

The code “sub” identifies subscriber extracts. All tables that are part of the subscriber extract are identified by a unique three-character short name that becomes part of the extracted file name. Subscriber extracts execute once each day.

Data from the following tables (MAIN database) is extracted in the subscriber extracts:

**Table 19** Tables Extracted for Subscriber Extracts

Table Name	Short Name
ACCOUNT_SUBSCRIBER	acs
EXTERNAL_ID_EQUIP_MAP	eim
LIABILITY_REDIRECT_INST	lri
OFFER_INST	ofi
BALANCE_GRANTS	bgr
ACCOUNT_SUBSCRIBER_EXT	asx
ACCOUNT_SUBSCRIBER_1	can
RC_TERM_INST	rti
NRC_TERM_INST	nti
RANGE_MAP	rng
RATE_CURRENCY	rcr

For the fields extracted for these tables, see [“Subscriber Extract Fields,” on page 35](#).

### History Extracts

The “hst” short code identifies history extracts. All tables included in history extracts are identified by a unique three-character short name that becomes part of the extracted file name. History extracts occur on the HIST database, unless the MAIN-to-HIST purge is incomplete, in which case the data is extracted from the MAIN database (depending on the `extract_data_from_main` parameter setting on `DWH_PARAMETERS`). History extracts execute once each day.

Data from the following tables is extracted in the history extracts:

**Table 20** Tables Extracted for History Extracts

Table Name	Short Name
CALL_HISTORY_HIST	cha
RECHARGE_HISTORY_HIST	rha
MTR_HIST	mta
PS_TRANSACTION_HIST	psa
OSA_HISTORY_HIST	osa
SUBS_OFFERS_HIST	off
DIAMETER_HIST	dmh



**Table 20** Tables Extracted for History Extracts (Continued)

Table Name	Short Name
EVENT_HIST	evh
MEASUREMENT_HIST	meh
SDP_MEASUREMENT_HIST	sdh
SYSTEM_MEASUREMENT_HIST	syh
SUBSCRIBER_BILLING_HIST	sbh

The SUBSCRIBER\_BILLING\_HIST table extract includes phonebook extract data.

For the fields extracted for these tables, see [“History Extract Fields,” on page 57](#).

## On-Demand History Extracts

You can execute history extracts on demand if, for example, you need to re-execute a failed history extract. A shell script in the `/oracle/oracle8/dwh` directory, `generate_file_ond`, invokes the history extracts and extracts data from the tables in the HIST database.

Execute the script as follows:

```
./generate_file_ond <hist table type> <start date> <end date>
```

Where:

- **<hist table type>** is the type of source table to extract (for example, CH, MT, PS, RH, or OS)
- **<start date>** is the date in YYYYMMDD format from which the data is extracted. If NULL, the extraction starts on the current date.
- **<end date>** is the date in YYYYMMDD format up to which the data is extracted. If NULL, the extraction ends on the current date.

[Table 21](#) shows the valid table acronyms.

**Table 21** Valid Table Acronyms for On-Demand History Extracts

Acronym	Table Name
CH	CALL_HISTORY_HIST
MT	MTR_HIST
RH	RECHARGE_HISTORY_HIST
PS	PS_TRANSACTION_HIST
OS	OSA_HISTORY_HIST
SO	SUBS_OFFERS_HIST
DM	DIAMETER_HIST
EV	EVENT_HIST
MS	MEASUREMENT_HIST
SD	SDP_MEASUREMENT_HIST
SY	SYSTEM_MEASUREMENT_HIST
SB	SUBSCRIBER_BILLING_HIST

If the **<end date>** is not set, the output file contains the data for a single day (start date). The output file name follows the standard file naming convention as described in [“Extract Outputs,” on page 30](#). If the required table partition is not found in the HIST database, data is not extracted.



The on-demand history extract must be launched manually and cannot be scheduled through UPA.

## Offline Product Catalog Extracts

Execute offline product catalog extracts and static data extracts only on the master SDP which hosts the Offline Product Catalog (PCAT) database (or any other SDP that hosts the PCAT instance). Identified by the three-letter code “pcd,” this type of extract extracts the table data from the offline product catalog data residing in the PCAT database.

Extracted once every day, this extract checks for any new changes to the versioned data (major or minor) that needs to be propagated to the online product catalog schema in MAIN database. The “last execution datetime” is recorded in the DWH\_PARAMETERS table. Extracts do not occur if there are no changes to the versioned data in the PCAT database that require propagation.

### Example:

- 01/15/08 00:05: New version data propagated to MAIN database
- 01/15/08 00:30: pcd extracts configured table data
- 01/16/08 00:30: No version changes found to extract
- 01/16/08 10:20: New version data (major or minor) propagated to MAIN database
- 01/17/08 00:30: pcd extracts configured table data

Data from the following tables is extracted in static extracts:

**Table 22** Tables Extracted for Static Extracts

Table Name	Short Name
ACCUMULATOR_REF	acr
ACCUMULATOR_VALUES	acv
AUT_INITIAL_REF	air
AUT_INITIAL_VALUES	aiv
OFFER_BALANCE_MAP	obm
OFFER_REF	ofr
APPLICATION_ID_REF	apr
APPLICATION_ID_VALUES	apv
BALANCE_REF	blr
BALANCE_VALUES	blv
CALENDAR_REF	clr
CALENDAR_VALUES	clv
RT_BONUS_ITEM_REF	rbi
RT_BONUS_ITEM_VALUES	rbv
RT_PROMOTION_PLAN_REF	ppr
RT_PROMOTION_PLAN_VALUES	ppv
RT_PROMOTION_PLAN_ITEM_MAP	ppm
CALENDAR_EXCEPTION	cex
USAGE_PLAN_REF	usr

**Table 22** Tables Extracted for Static Extracts (Continued)

Table Name	Short Name
USAGE_PLAN_VALUES	usv
USAGE_PLAN_ITEM_MAP	upi
UPSELL_TEMPLATE_REF	upr
UPSELL_TEMPLATE_VALUES	upv
UPSELL_TEMPLATE_MAP	utm
DAY_TYPE_ID_REF	dtr
DAY_TYPE_ID_VALUES	dtv
DIAMETER_MERCHANT_ACCT_ID	dma
DIAMETER_PARAMETER	dmp
DIAMETER_SERVICE_MAPPING	dsm
DIAMETER_UNIT_MAPPING	dum
DISCOUNT_EXCLUSION	dix
RT_DISCOUNT_ITEM_REF	dir
RT_DISCOUNT_ITEM_VALUES	div
USAGE_ITEM_REF	uir
USAGE_ITEM_VALUES	uiv
GLOBAL_LOCATION	glo
GLOBAL_TRANSLATION	glt
LI_RELATION	lir
LI_RELATION_ID_REF	lrr
LI_RELATION_ID_VALUES	lrv
RC_TERM_REF	rtr
RC_TERM_VALUES	rtv
NRC_TERM_REF	ntr
NRC_TERM_VALUES	ntv
PS_EXTERNAL_UNIT_MAPPING	eum
SUB_TYPE_ID_REF	str
SUB_TYPE_ID_VALUES	stv
AUT_TRANSLATION	aut
TARIFF_REF	trr
TARIFF_VALUES	trv
TARIFF_PLAN_REF	tpr
TARIFF_PLAN_VALUES	tpv
TIME_TYPE_REF	ttr
TIME_TYPE_VALUES	ttb
TARIFF_SET_ID_REF	tsr
TARIFF_SET_ID_VALUES	tsv
TARIFF_PLAN_MAPPING	tpm
TARIFF_SET_MEMBER	tsm
UNITS_TYPE_REF	utr
UNITS_TYPE_VALUES	utv

For the fields extracted for these tables, see [“Static Extract Fields,” on page 66](#).

## Extract Outputs

The DWH generates ASCII-formatted output extracts with pipe-delimited (|) column values. The final output file is compressed with maximum compression using gzip and then located in the DWH staging directories on the SDP.

### Output File Format

The output filename is in the following format:

```
<DateTime>.<Region_ID><SDP_ID>.<Sequence_ID>.<Number of Records in
file>.<Record_Type>.gz
```

Where:

- **<DateTime>** represents the date and time in YYYYMMDDHHMM format.
- **<Region\_ID>** represents the region of extraction. This value comes from the configuration file **region.cfg** in the **/oracle/oracle8/dwh** directory.

Two regions cannot have the same region ID.

- **<SDP\_ID>** represents the SDP from which the data was extracted, a number between 01 and 99.
- **<Sequence\_ID>** represents the sequence number used for the extraction type. The sequence numbers reset at the beginning of every month and can range from 00000 to 99999.
- **<Number of Records in File>** represents the number of records available in the extracted data file. Valid values are eight-digit numbers ranging from 00000000 to 99999999.
- **<Record\_Type>** represents the three-character short name of the table. For example, the **CALL\_HISTORY\_HIST** table has the short name of **cha**.
- **<gz>** indicates that once the extraction completes, the file is zipped using the gzip utility.

The output file is renamed by the FTP transfer script upon completion of the FTP process (from UPA). The **\_OK** suffix is appended to the filename of all successful transfers to differentiate between files that have been transferred to the ODSS and files that are pending transfer.

### Output Directories

The home directory for the output files from IBM SDPs is **/staging/dwh**. For HP SDPs, the home directory is **/backup\_vol/dwh**.

Within the home directory are the following subdirectories:

- **temp\_exp\_data**: The staging directory where data resides during the extraction process. Having a temporary directory ensures that the FTP process doesn't start the data transfers until the entire extraction is complete.  
When the extracts start, all temporary files in this directory, including the inconsistent files (extension NCS), are removed.
- **exp\_data**: Hosts the output files from any extraction process transferred to the ODSS.

## Purging

The `/oracle/oracle8/cfgs` directory contains a purge configuration file, `dwh-logpurge.cfg`, to clean the aged data files and log files from SDP. Using wild cards, the configuration file defines the files to purge.

By default, the aging factor value is 20 days; files older than 20 days are deleted. Also by default, the job executes at 4:00 A.M. each morning.

The format of the configuration file is as follows:

```
module.class = SDP_AIX_LOG_ANY
module.id = ALERT_LOG
module.description = Purge DWH files

log.schedule.expression = 0 0 4 * * ?

log.purge.total = 3


log.1.name = /staging/dwh/exp_data/*.gz
log.1.age = 20

log.2.name = /staging/dwh/exp_data/dwh_logs/*.log
log.2.age = 20

log.3.name = /staging/dwh/exp_data/dwh_logs/*.log*
log.3.age = 20
```



Purge configuration file names must end with `-logpurge.cfg`.



The `/staging` directory is valid for IBM installations only. HP installations use the directory `/backup_vol`.

## File Transfers

A configuration file residing in the `/oracle/oracle8/cfgs` directory, `dwh-filetransfer.cfg`, transfers DWH output files from the SDP to ODSS. The UPA architecture uses the configuration file to perform and schedule file transfers to the ODSS. The configuration file defines the files to purge using wild cards.

Upon installation, ODSS server information such as IP address, username, password, and target directory must be updated in the file.

Passwords are stored in the configuration file as encrypted strings. The UPA provides a utility to return the encrypted password string. This must be recorded in the configuration file. The UPA decrypts the string and perform the file transfer.

The transfer process renames the file to `<filename>_OK` after a successful transfer.

The configuration file includes an option to delete the file after a successful transfer.

By default, the job executes every 10 minutes.

Any failures, such as file inconsistency or partial transfers, during the FTP process are handled by UPA. The DWH extract tool does not validate output.

The configuration file format is as follows:

```
module.id = ALERT_LOG
module.group = log
module.resource.group = host_rg
module.description = transfers DWH files to ODSS

log.schedule.expression = 0 10 * * * ?

file.transfer.total = 1
file.transfer.mode = active

user.1.name = <ODSS user name>
user.1.password = <encrypted ODSS password>
remote.1.host = <ODSS IP address>
remote.1.name = <Target ODSS directory>
local.1.name = /staging/dwh/exp_data/*.gz
user.1.operation = send
delete.1.file = false
compress.1.file = false
rename.1.file = _OK
```

FTP configuration file names must end with -filetransfer.cfg.

The **/staging** directory is valid for IBM installations only. HP installations use the directory **/backup\_vol**.

## Monitoring, Troubleshooting, and Diagnostics

The following sections discuss monitoring, troubleshooting, and diagnostics for the DWH utility.

### Alarm Generation

DWH includes an alarm-generation script configured using UPA. If the MAIN-to-HIST data purge is incomplete, alarms generate in a file called **hist\_alarm.log**.

Any exceptions during DWH execution also generate alarms, and the status is sent to the UPA.

## Parallel Execution

Parallel execution is automatically available for IBM SDPs only, but it can be used for HP as well if resources permit. If you set the parallel option in the DWH\_PARAMETERS table, each extraction process is split into multiple parallel threads, with four as the default value.

Each thread logs to a separate log file, writes its output to a separate file, and, upon completion, waits for other threads to complete. When all parallel threads are complete, the wrapper shell script combines the output files of the same type and reorganizes the number of records in the file name.

### Example:

Executing subscriber extracts in parallel creates the following log files:

- 200802170511\_generate\_file\_sub.log
- 200802170511\_generate\_file\_sub.log\_su1
- 200802170511\_generate\_file\_sub.log\_su2
- 200802170511\_generate\_file\_sub.log\_su3
- 200802170511\_generate\_file\_sub.log\_su4

The outputs are written to separate files, as well. For example, outputs from the acs table are as follows:

- 200802170518.s17.00002.0671372.acs\_1
- 200802170518.s17.00002.0124578.acs\_2
- 200802170518.s17.00002.0587452.acs\_3
- 200802170518.s17.00002.0235485.acs\_4

The final output file is **200802170518.s17.00002.1618887.acs**. After gzip, the output file is named **200802170518.s17.00002.1618887.acs.gz**.

The parallel option applies to sub and hst extracts only.

You can set or unset parallel process for a particular table in the subscriber or history extract types. For example, setting the `parallel_process` field to Y in the DWH\_PARAMETERS table for parameter\_name `hst_cha` enables parallel extraction of history extracts from the CALL\_HISTORY table. Setting the parameter to N prohibits parallel extraction.

## Report Generation

The table DWH\_LOG\_STATUS contains the status of all DWH extracts. Generate customized reports from the data in this table.

## Log Files

The home directory for the output files from IBM SDPs is **/staging/dwh**. For HP SDPs, the home directory is **/backup\_vol/dwh**.

The subdirectory `dwh_logs` stores log files for the DWH extracts. During each step of the extract process, DWH continuously writes information to the log file. The structures of the log file for normal execution and parallel executions are shown below.

## Log File for Normal Execution

The naming format for the log file from normal execution of DWH is as follows:

**<DateTime>.\_generate\_file\_.<Extract\_Type>.log**

Where:

- **<DateTime>** represents the data and time in YYYYMMDDHHMM format
- **<Extract\_Type>** represents type of extract "sub/hst/pcd".

For example, a sample log file for a subscriber extract is **200802191645\_generate\_file\_sub.log**, and a sample log file for a history extract is **200802191647\_generate\_file\_hst.log**.

## Log File for Parallel Execution

DWH maintains multiple logs for each parallel thread:

- **Base log file :** **<DateTime>.\_generate\_file\_.<Extract\_Type>.log**
- **Thread log file:** **<DateTime>.\_generate\_file\_.<Extract\_Type>.log\_<suffix+threadno>**

Where:

- **Suffix:** **su** for Subscriber extract and **hs** for History extracts
- **Threadno:** Number of the thread in a pool of 4 threads.

For example, a log file for a history extract with 4 threads in parallel generates the following:

- **Base log file:** **200801030030\_generate\_file\_hst.log**
- **Log file for Thread 1:** **200801030030\_generate\_file\_hst.log\_hs1**
- **Log file for Thread 2:** **200801030030\_generate\_file\_hst.log\_hs2**
- **Log file for Thread 3:** **200801030030\_generate\_file\_hst.log\_hs3**
- **Log file for Thread 4:** **200801030030\_generate\_file\_hst.log\_hs4**

A sample log file for a subscriber extract with 4 threads in parallel generates the following:

- **Base log file:** **200801030030\_generate\_file\_sub.log**
- **Log file for Thread 1:** **200801030030\_generate\_file\_sub.log\_su1**
- **Log file for Thread 2:** **200801030030\_generate\_file\_sub.log\_su2**
- **Log file for Thread 3:** **200801030030\_generate\_file\_sub.log\_su3**
- **Log file for Thread 4:** **200801030030\_generate\_file\_sub.log\_su4**

## Tuning Parameters

Improve DWH performance by optimizing the values of the following parameters in the DWH\_PARAMETERS table.

- **no\_of\_fetch\_records:** This parameter determines the number of records fetched per select on the table. The default value of this parameter is 2500.
- **sleep\_time:** The extract process requires a sleep interval between consecutive database reads to manage CPU usage. The default value is 500 seconds.
- **ncs\_maximum\_tries:** The value of this parameter determines the number of retries required during an inconsistent file extract. The default value is 3.
- **consistency\_tolerance\_parameter:** For subscriber extracts, if the number of records in the database is greater than the number of records in the extracted output file, the percent difference is calculated. If the value is less than or equal to the value of consistency\_



tolerance\_parameter, the output file is compressed and the process terminates successfully. If the tolerance parameter is lower than the value of consistency\_tolerant\_parameter, the process fails.

## Fields for Table Extracts

The following sections list fields extracted for the following extract types:

- Subscriber
- History
- Static

### Subscriber Extract Fields

The following tables and fields are extracted for subscriber extracts:

- ACCOUNT\_SUBSCRIBER
  - subscr\_no
  - subscr\_no\_resets
  - account\_no
  - range\_map\_external\_id
  - parent\_account\_no
  - currency\_code
  - is\_tml\_enabled
  - tml\_limit
  - tml\_amount
  - home1\_li
  - home2\_li
  - home3\_li
  - home4\_li
  - dest\_number1
  - dest\_number2
  - dest\_number3
  - dest\_number4
  - dest\_number5
  - dest\_number6
  - dest\_number7
  - dest\_number8
  - dest\_number9
  - dest\_number10
  - primary\_offer\_id
  - last\_grant\_sync\_date
  - next\_grant\_sync\_date
  - active\_lr\_override\_id
  - server\_id
  - last\_update\_ts
  - ext\_flag

- ❑ creation\_date
- ❑ reseller\_id
- ❑ current\_state
- ❑ date\_enter\_active
- ❑ previous\_state
- ❑ prev\_trans\_date
- ❑ next\_state
- ❑ last\_trans\_date
- ❑ balance\_prompt
- ❑ balance\_prompt\_cnt
- ❑ life\_prompt
- ❑ life\_prompt\_cnt
- ❑ pin
- ❑ pin\_change\_needed
- ❑ pin\_lockout\_count
- ❑ pin\_last\_hack
- ❑ inact\_expire\_date
- ❑ language\_code
- ❑ transition\_reason
- ❑ timezone
- ❑ addtl\_notif\_external\_id
- ❑ last\_recharge\_date
- ❑ number\_free\_an\_calls
- ❑ date\_last\_free\_an\_call
- ❑ rech\_lock\_count
- ❑ rech\_last\_hack
- ❑ seq\_number
- ❑ cfu\_number
- ❑ cfb\_number
- ❑ cfna\_number
- ❑ cfis\_number
- ❑ primary\_offer\_mod\_date
- ❑ user\_name
- ❑ sub\_notif\_level
- ❑ last\_refurbish\_date
- ❑ free\_ff\_chg\_allowance
- ❑ ff\_change\_count
- ❑ last\_call\_charge
- ❑ notification\_language
- ❑ promised\_payment\_amt
- ❑ circle\_flag
- ❑ no\_of\_balances
- ❑ no\_of\_accumulators
- ❑ acct\_access\_allowed

- ❑ offer\_mod\_date
- ❑ balance1\_id
- ❑ balance1\_type
- ❑ payment\_mode1
- ❑ total\_balance1
- ❑ available\_balance1
- ❑ limit\_type1
- ❑ balance1\_target\_bal\_id
- ❑ max\_limit1
- ❑ acct\_expire\_date
- ❑ reset\_period\_1
- ❑ cyclic\_billing\_day1
- ❑ next\_reset\_date1
- ❑ balance2\_id
- ❑ balance2\_type
- ❑ payment\_mode2
- ❑ total\_balance2
- ❑ available\_balance2
- ❑ limit\_type2
- ❑ balance2\_target\_bal\_id
- ❑ max\_limit2
- ❑ balance2\_expire
- ❑ reset\_period\_2
- ❑ cyclic\_billing\_day2
- ❑ next\_reset\_date2
- ❑ balance3\_id
- ❑ balance3\_type
- ❑ payment\_mode3
- ❑ total\_balance3
- ❑ available\_balance3
- ❑ limit\_type3
- ❑ balance3\_target\_bal\_id
- ❑ max\_limit3
- ❑ balance3\_expire
- ❑ reset\_period\_3
- ❑ cyclic\_billing\_day3
- ❑ next\_reset\_date3
- ❑ balance4\_id
- ❑ balance4\_type
- ❑ payment\_mode4
- ❑ total\_balance4
- ❑ available\_balance4
- ❑ limit\_type4
- ❑ balance4\_target\_bal\_id

- ❑ max\_limit4
- ❑ balance4\_expire
- ❑ reset\_period\_4
- ❑ cyclic\_billing\_day4
- ❑ next\_reset\_date4
- ❑ balance5\_id
- ❑ balance5\_type
- ❑ payment\_mode5
- ❑ total\_balance5
- ❑ available\_balance5
- ❑ limit\_type5
- ❑ balance5\_target\_bal\_id
- ❑ max\_limit5
- ❑ balance5\_expire
- ❑ reset\_period\_5
- ❑ cyclic\_billing\_day5
- ❑ next\_reset\_date5
- ❑ balance6\_id
- ❑ balance6\_type
- ❑ payment\_mode6
- ❑ total\_balance6
- ❑ available\_balance6
- ❑ limit\_type6
- ❑ balance6\_target\_bal\_id
- ❑ max\_limit6
- ❑ balance6\_expire
- ❑ reset\_period\_6
- ❑ cyclic\_billing\_day6
- ❑ next\_reset\_date6
- ❑ balance7\_id
- ❑ balance7\_type
- ❑ payment\_mode7
- ❑ total\_balance7
- ❑ available\_balance7
- ❑ limit\_type7
- ❑ balance7\_target\_bal\_id
- ❑ max\_limit7
- ❑ balance7\_expire
- ❑ reset\_period\_7
- ❑ cyclic\_billing\_day7
- ❑ next\_reset\_date7
- ❑ balance8\_id
- ❑ balance8\_type
- ❑ payment\_mode8

- ❑ total\_balance8
- ❑ available\_balance8
- ❑ limit\_type8
- ❑ balance8\_target\_bal\_id
- ❑ max\_limit8
- ❑ balance8\_expire
- ❑ reset\_period\_8
- ❑ cyclic\_billing\_day8
- ❑ next\_reset\_date8
- ❑ balance9\_id
- ❑ balance9\_type
- ❑ payment\_mode9
- ❑ total\_balance9
- ❑ available\_balance9
- ❑ limit\_type9
- ❑ balance9\_target\_bal\_id
- ❑ max\_limit9
- ❑ balance9\_expire
- ❑ reset\_period\_9
- ❑ cyclic\_billing\_day9
- ❑ next\_reset\_date9
- ❑ balance10\_id
- ❑ balance10\_type
- ❑ payment\_mode10
- ❑ total\_balance10
- ❑ available\_balance10
- ❑ limit\_type10
- ❑ balance10\_target\_bal\_id
- ❑ max\_limit10
- ❑ balance10\_expire
- ❑ reset\_period\_10
- ❑ cyclic\_billing\_day10
- ❑ next\_reset\_date10
- ❑ balance11\_id
- ❑ balance11\_type
- ❑ payment\_mode11
- ❑ total\_balance11
- ❑ available\_balance11
- ❑ limit\_type11
- ❑ balance11\_target\_bal\_id
- ❑ max\_limit11
- ❑ balance11\_expire
- ❑ reset\_period\_11
- ❑ cyclic\_billing\_day11

- ❑ next\_reset\_date11
- ❑ balance12\_id
- ❑ balance12\_type
- ❑ payment\_mode12
- ❑ total\_balance12
- ❑ available\_balance12
- ❑ limit\_type12
- ❑ balance12\_target\_bal\_id
- ❑ max\_limit12
- ❑ balance12\_expire
- ❑ reset\_period\_12
- ❑ cyclic\_billing\_day12
- ❑ next\_reset\_date12
- ❑ balance13\_id
- ❑ balance13\_type
- ❑ payment\_mode13
- ❑ total\_balance13
- ❑ available\_balance13
- ❑ limit\_type13
- ❑ balance13\_target\_bal\_id
- ❑ max\_limit13
- ❑ balance13\_expire
- ❑ reset\_period\_13
- ❑ cyclic\_billing\_day13
- ❑ next\_reset\_date13
- ❑ balance14\_id
- ❑ balance14\_type
- ❑ payment\_mode14
- ❑ total\_balance14
- ❑ available\_balance14
- ❑ limit\_type14
- ❑ balance14\_target\_bal\_id
- ❑ max\_limit14
- ❑ balance14\_expire
- ❑ reset\_period\_14
- ❑ cyclic\_billing\_day14
- ❑ next\_reset\_date14
- ❑ balance15\_id
- ❑ balance15\_type
- ❑ payment\_mode15
- ❑ total\_balance15
- ❑ available\_balance15
- ❑ limit\_type15
- ❑ balance15\_target\_bal\_id

- ❑ max\_limit15
- ❑ balance15\_expire
- ❑ reset\_period\_15
- ❑ cyclic\_billing\_day15
- ❑ next\_reset\_date15
- ❑ balance16\_id
- ❑ balance16\_type
- ❑ payment\_mode16
- ❑ total\_balance16
- ❑ available\_balance16
- ❑ limit\_type16
- ❑ balance16\_target\_bal\_id
- ❑ max\_limit16
- ❑ balance16\_expire
- ❑ reset\_period\_16
- ❑ cyclic\_billing\_day16
- ❑ next\_reset\_date16
- ❑ balance17\_id
- ❑ balance17\_type
- ❑ payment\_mode17
- ❑ total\_balance17
- ❑ available\_balance17
- ❑ limit\_type17
- ❑ balance17\_target\_bal\_id
- ❑ max\_limit17
- ❑ balance17\_expire
- ❑ reset\_period\_17
- ❑ cyclic\_billing\_day17
- ❑ next\_reset\_date17
- ❑ balance18\_id
- ❑ balance18\_type
- ❑ payment\_mode18
- ❑ total\_balance18
- ❑ available\_balance18
- ❑ limit\_type18
- ❑ balance18\_target\_bal\_id
- ❑ max\_limit18
- ❑ balance18\_expire
- ❑ reset\_period\_18
- ❑ cyclic\_billing\_day18
- ❑ next\_reset\_date18
- ❑ balance19\_id
- ❑ balance19\_type
- ❑ payment\_mode19

- ❑ total\_balance19
- ❑ available\_balance19
- ❑ limit\_type19
- ❑ balance19\_target\_bal\_id
- ❑ max\_limit19
- ❑ balance19\_expire
- ❑ reset\_period\_19
- ❑ cyclic\_billing\_day19
- ❑ next\_reset\_date19
- ❑ balance20\_id
- ❑ balance20\_type
- ❑ payment\_mode20
- ❑ total\_balance20
- ❑ available\_balance20
- ❑ limit\_type20
- ❑ balance20\_target\_bal\_id
- ❑ max\_limit20
- ❑ balance20\_expire
- ❑ reset\_period\_20
- ❑ cyclic\_billing\_day20
- ❑ next\_reset\_date20
- ❑ balance21\_id
- ❑ balance21\_type
- ❑ payment\_mode21
- ❑ total\_balance21
- ❑ available\_balance21
- ❑ limit\_type21
- ❑ balance21\_target\_bal\_id
- ❑ max\_limit21
- ❑ balance21\_expire
- ❑ reset\_period\_21
- ❑ cyclic\_billing\_day21
- ❑ next\_reset\_date21
- ❑ balance22\_id
- ❑ balance22\_type
- ❑ payment\_mode22
- ❑ total\_balance22
- ❑ available\_balance22
- ❑ limit\_type22
- ❑ balance22\_target\_bal\_id
- ❑ max\_limit22
- ❑ balance22\_expire
- ❑ reset\_period\_22
- ❑ cyclic\_billing\_day22



- next\_reset\_date22
- balance23\_id
- balance23\_type
- payment\_mode23
- total\_balance23
- available\_balance23
- limit\_type23
- balance23\_target\_bal\_id
- max\_limit23
- balance23\_expire
- reset\_period\_23
- cyclic\_billing\_day23
- next\_reset\_date23
- balance24\_id
- balance24\_type
- payment\_mode24
- total\_balance24
- available\_balance24
- limit\_type24
- balance24\_target\_bal\_id
- max\_limit24
- balance24\_expire
- reset\_period\_24
- cyclic\_billing\_day24
- next\_reset\_date24
- balance25\_id
- balance25\_type
- payment\_mode25
- total\_balance25
- available\_balance25
- limit\_type25
- balance25\_target\_bal\_id
- max\_limit25
- balance25\_expire
- reset\_period\_25
- cyclic\_billing\_day25
- next\_reset\_date25
- balance26\_id
- balance26\_type
- payment\_mode26
- total\_balance26
- available\_balance26
- limit\_type26
- balance26\_target\_bal\_id

- ❑ max\_limit26
- ❑ balance26\_expire
- ❑ reset\_period\_26
- ❑ cyclic\_billing\_day26
- ❑ next\_reset\_date26
- ❑ balance27\_id
- ❑ balance27\_type
- ❑ payment\_mode27
- ❑ total\_balance27
- ❑ available\_balance27
- ❑ limit\_type27
- ❑ balance27\_target\_bal\_id
- ❑ max\_limit27
- ❑ balance27\_expire
- ❑ reset\_period\_27
- ❑ cyclic\_billing\_day27
- ❑ next\_reset\_date27
- ❑ balance28\_id
- ❑ balance28\_type
- ❑ payment\_mode28
- ❑ total\_balance28
- ❑ available\_balance28
- ❑ limit\_type28
- ❑ balance28\_target\_bal\_id
- ❑ max\_limit28
- ❑ balance28\_expire
- ❑ reset\_period\_28
- ❑ cyclic\_billing\_day28
- ❑ next\_reset\_date28
- ❑ balance29\_id
- ❑ balance29\_type
- ❑ payment\_mode29
- ❑ total\_balance29
- ❑ available\_balance29
- ❑ limit\_type29
- ❑ balance29\_target\_bal\_id
- ❑ max\_limit29
- ❑ balance29\_expire
- ❑ reset\_period\_29
- ❑ cyclic\_billing\_day29
- ❑ next\_reset\_date29
- ❑ balance30\_id
- ❑ balance30\_type
- ❑ payment\_mode30

- total\_balance30
- available\_balance30
- limit\_type30
- balance30\_target\_bal\_id
- max\_limit30
- balance30\_expire
- reset\_period\_30
- cyclic\_billing\_day30
- next\_reset\_date30
- balance31\_id
- balance31\_type
- payment\_mode31
- total\_balance31
- available\_balance31
- limit\_type31
- balance31\_target\_bal\_id
- max\_limit31
- balance31\_expire
- reset\_period\_31
- cyclic\_billing\_day31
- next\_reset\_date31
- balance32\_id
- balance32\_type
- payment\_mode32
- total\_balance32
- available\_balance32
- limit\_type32
- balance32\_target\_bal\_id
- max\_limit32
- balance32\_expire
- reset\_period\_32
- cyclic\_billing\_day32
- next\_reset\_date32
- balance33\_id
- balance33\_type
- payment\_mode33
- total\_balance33
- available\_balance33
- limit\_type33
- balance33\_target\_bal\_id
- max\_limit33
- balance33\_expire
- reset\_period\_33
- cyclic\_billing\_day33

- next\_reset\_date33
- balance34\_id
- balance34\_type
- payment\_mode34
- total\_balance34
- available\_balance34
- limit\_type34
- balance34\_target\_bal\_id
- max\_limit34
- balance34\_expire
- reset\_period\_34
- cyclic\_billing\_day34
- next\_reset\_date34
- balance35\_id
- balance35\_type
- payment\_mode35
- total\_balance35
- available\_balance35
- limit\_type35
- balance35\_target\_bal\_id
- max\_limit35
- balance35\_expire
- reset\_period\_35
- cyclic\_billing\_day35
- next\_reset\_date35
- balance36\_id
- balance36\_type
- payment\_mode36
- total\_balance36
- available\_balance36
- limit\_type36
- balance36\_target\_bal\_id
- max\_limit36
- balance36\_expire
- reset\_period\_36
- cyclic\_billing\_day36
- next\_reset\_date36
- balance37\_id
- balance37\_type
- payment\_mode37
- total\_balance37
- available\_balance37
- limit\_type37
- balance37\_target\_bal\_id

- ❑ max\_limit37
- ❑ balance37\_expire
- ❑ reset\_period\_37
- ❑ cyclic\_billing\_day37
- ❑ next\_reset\_date37
- ❑ balance38\_id
- ❑ balance38\_type
- ❑ payment\_mode38
- ❑ total\_balance38
- ❑ available\_balance38
- ❑ limit\_type38
- ❑ balance38\_target\_bal\_id
- ❑ max\_limit38
- ❑ balance38\_expire
- ❑ reset\_period\_38
- ❑ cyclic\_billing\_day38
- ❑ next\_reset\_date38
- ❑ balance39\_id
- ❑ balance39\_type
- ❑ payment\_mode39
- ❑ total\_balance39
- ❑ available\_balance39
- ❑ limit\_type39
- ❑ balance39\_target\_bal\_id
- ❑ max\_limit39
- ❑ balance39\_expire
- ❑ reset\_period\_39
- ❑ cyclic\_billing\_day39
- ❑ next\_reset\_date39
- ❑ balance40\_id
- ❑ balance40\_type
- ❑ payment\_mode40
- ❑ total\_balance40
- ❑ available\_balance40
- ❑ limit\_type40
- ❑ balance40\_target\_bal\_id
- ❑ max\_limit40
- ❑ balance40\_expire
- ❑ reset\_period\_40
- ❑ cyclic\_billing\_day40
- ❑ next\_reset\_date40
- ❑ ac1\_id
- ❑ ac1
- ❑ ac1\_zero\_day

- next\_reset\_ac1\_ts
- period\_1
- ac2\_id
- ac2
- ac2\_zero\_day
- next\_reset\_ac2\_ts
- period\_2
- ac3\_id
- ac3
- ac3\_zero\_day
- next\_reset\_ac3\_ts
- period\_3
- ac4\_id
- ac4
- ac4\_zero\_day
- next\_reset\_ac4\_ts
- period\_4
- ac5\_id
- ac5
- ac5\_zero\_day
- next\_reset\_ac5\_ts
- period\_5
- ac6\_id
- ac6
- ac6\_zero\_day
- next\_reset\_ac6\_ts
- period\_6
- ac7\_id
- ac7
- ac7\_zero\_day
- next\_reset\_ac7\_ts
- period\_7
- ac8\_id
- ac8
- ac8\_zero\_day
- next\_reset\_ac8\_ts
- period\_8
- ac9\_id
- ac9
- ac9\_zero\_day
- next\_reset\_ac9\_ts
- period\_9
- ac10\_id
- ac10

- ❑ ac10\_zero\_day
- ❑ next\_reset\_ac10\_ts
- ❑ period\_10
- ❑ ac11\_id
- ❑ ac11
- ❑ ac11\_zero\_day
- ❑ next\_reset\_ac11\_ts
- ❑ period\_11
- ❑ ac12\_id
- ❑ ac12
- ❑ ac12\_zero\_day
- ❑ next\_reset\_ac12\_ts
- ❑ period\_12
- ❑ ac13\_id
- ❑ ac13
- ❑ ac13\_zero\_day
- ❑ next\_reset\_ac13\_ts
- ❑ period\_13
- ❑ ac14\_id
- ❑ ac14
- ❑ ac14\_zero\_day
- ❑ next\_reset\_ac14\_ts
- ❑ period\_14
- ❑ ac15\_id
- ❑ ac15
- ❑ ac15\_zero\_day
- ❑ next\_reset\_ac15\_ts
- ❑ period\_15
- ❑ ac16\_id
- ❑ ac16
- ❑ ac16\_zero\_day
- ❑ next\_reset\_ac16\_ts
- ❑ period\_16
- ❑ ac17\_id
- ❑ ac17
- ❑ ac17\_zero\_day
- ❑ next\_reset\_ac17\_ts
- ❑ period\_17
- ❑ ac18\_id
- ❑ ac18
- ❑ ac18\_zero\_day
- ❑ next\_reset\_ac18\_ts
- ❑ period\_18
- ❑ ac19\_id

- ❑ ac19
- ❑ ac19\_zero\_day
- ❑ next\_reset\_ac19\_ts
- ❑ period\_19
- ❑ ac20\_id
- ❑ ac20
- ❑ ac20\_zero\_day
- ❑ next\_reset\_ac20\_ts
- ❑ period\_20
- ❑ ac21\_id
- ❑ ac21
- ❑ ac21\_zero\_day
- ❑ next\_reset\_ac21\_ts
- ❑ period\_21
- ❑ ac22\_id
- ❑ ac22
- ❑ ac22\_zero\_day
- ❑ next\_reset\_ac22\_ts
- ❑ period\_22
- ❑ ac23\_id
- ❑ ac23
- ❑ ac23\_zero\_day
- ❑ next\_reset\_ac23\_ts
- ❑ period\_23
- ❑ ac24\_id
- ❑ ac24
- ❑ ac24\_zero\_day
- ❑ next\_reset\_ac24\_ts
- ❑ period\_24
- ❑ ac25\_id
- ❑ ac25
- ❑ ac25\_zero\_day
- ❑ next\_reset\_ac25\_ts
- ❑ period\_25
- ❑ ac26\_id
- ❑ ac26
- ❑ ac26\_zero\_day
- ❑ next\_reset\_ac26\_ts
- ❑ period\_26
- ❑ ac27\_id
- ❑ ac27
- ❑ ac27\_zero\_day
- ❑ next\_reset\_ac27\_ts
- ❑ period\_27



- ❑ ac28\_id
- ❑ ac28
- ❑ ac28\_zero\_day
- ❑ next\_reset\_ac28\_ts
- ❑ period\_28
- ❑ ac29\_id
- ❑ ac29
- ❑ ac29\_zero\_day
- ❑ next\_reset\_ac29\_ts
- ❑ period\_29
- ❑ ac30\_id
- ❑ ac30
- ❑ ac30\_zero\_day
- ❑ next\_reset\_ac30\_ts
- ❑ period\_30
- ❑ target\_account\_no
- ❑ real\_subscr\_no\_resets
- ❑ real\_subscr\_no
- ❑ fire\_trigger
- ❑ class\_of\_service\_code
- ❑ equip\_type\_code
- ❑ equip\_class\_code
- ❑ rate\_class
- ❑ privacy\_level
- ❑ b\_service\_country\_code
- ❑ service\_country\_code
- ❑ bill\_country\_code
- ❑ cust\_country\_code
- ❑ b\_service\_geocode
- ❑ service\_geocode
- ❑ cust\_geocode
- ❑ bill\_geocode
- ❑ exrate\_class
- ❑ vip\_code
- ❑ regulatory\_id
- ❑ mkt\_code
- ❑ account\_category
- ❑ charge\_advice
- ❑ favorite\_area
- ❑ happy\_hour\_end
- ❑ happy\_hour\_start
- ❑ anniversary
- ❑ birthday
- ❑ rating\_account\_status

- ☐ is\_balance\_managed
- ☐ liability\_redirect\_flag
- ☐ market\_seg\_id
- ☐ has\_pending\_orders
- ☐ billing\_frequency
- ☐ billing\_period
- ☐ account\_upsell\_template\_id
- ☐ rev\_rcv\_cost\_ctr
- ☐ b\_rev\_rcv\_cost\_ctr
- ☐ tax\_exempt
- EXTERNAL\_ID\_EQUIP\_MAP
  - ☐ external\_id
  - ☐ external\_id\_type
  - ☐ subscr\_no
  - ☐ subscr\_no\_resets
  - ☐ active\_date
  - ☐ account\_no
  - ☐ server\_id
  - ☐ rating\_db\_id
  - ☐ is\_from\_inventory
  - ☐ inventory\_id
  - ☐ inventory\_id\_resets
  - ☐ inactive\_date
  - ☐ is\_current
- LIABILITY\_REDIRECT\_INST
  - ☐ liability\_redirect\_inst\_id
  - ☐ lr\_template\_id
  - ☐ source\_account\_no
  - ☐ source\_subscr\_no
  - ☐ source\_subscr\_no\_resets
  - ☐ calendar\_id
  - ☐ called\_number
  - ☐ rate\_by\_target
  - ☐ agreement\_id
  - ☐ redirect\_active\_dt
  - ☐ redirect\_inactive\_dt
  - ☐ target\_account\_no
  - ☐ target\_subscr\_no
  - ☐ target\_subscr\_no\_resets
  - ☐ target\_server\_id
  - ☐ target\_rating\_server\_id
  - ☐ chg\_dt
  - ☐ chg\_who

- priority
  - apply\_to\_subscriber
  - lr\_override\_id
  - lr\_override\_name
  - target\_account\_external\_id
  - source\_account\_external\_id
  - subscriber\_external\_id
  - source\_lri\_id
  - is\_target\_ss\_pending
- OFFER\_INST
  - offer\_inst\_id
  - subscr\_no
  - subscr\_no\_resets
  - account\_no
  - parent\_account\_no
  - offer\_id
  - offer\_type
  - waive\_activation
  - waive\_termination
  - waive\_unmet\_commitment
  - payment\_mode
  - offer\_state
  - inactive\_dt
  - active\_dt
  - bundle\_inst\_id
  - bundle\_id
  - disconnect\_reason
- BALANCE\_GRANTS
  - grant\_id
  - subscr\_no
  - subscr\_no\_resets
  - account\_no
  - parent\_account\_no
  - balance\_id
  - grant\_amount
  - grant\_source
  - grant\_expiration\_type
  - grant\_active\_date
  - grant\_expiry\_date
  - grant\_status
  - rollover\_date
  - rollover\_group
  - rollover\_order

- ☐ maximum\_total\_rollover
  - ☐ maximum\_grant\_rollover
- ACCOUNT\_SUBSCRIBER\_EXT
  - ☐ subscr\_no
  - ☐ subscr\_no\_resets
  - ☐ account\_no
- ACCOUNT\_SUBSCRIBER\_1
  - ☐ subscr\_no
  - ☐ subscr\_no\_resets
  - ☐ account\_no
- RC\_TERM\_INST
  - ☐ rc\_term\_inst\_id
  - ☐ rc\_term\_id
  - ☐ status
  - ☐ bill\_period
  - ☐ period\_frequency
  - ☐ auto\_activation
  - ☐ billing\_account\_no
  - ☐ charge\_order
  - ☐ from\_date\_offset
  - ☐ advance\_periods
  - ☐ chg\_who
  - ☐ chg\_dt
  - ☐ apply\_day
  - ☐ connect\_reason
  - ☐ disconnect\_reason
  - ☐ has\_product\_keys
  - ☐ has\_override\_rate
  - ☐ association\_type
  - ☐ no\_bill
  - ☐ parent\_account\_no
  - ☐ parent\_subscr\_no
  - ☐ parent\_subscr\_no\_resets
  - ☐ rc\_term\_inst\_active\_dt
  - ☐ rc\_term\_inst\_inactive\_dt
  - ☐ prev\_rc\_term\_inst\_inactive\_dt
  - ☐ sales\_channel\_id
  - ☐ offer\_inst\_id
  - ☐ bundle\_inst\_id
  - ☐ inventory\_id
  - ☐ inventory\_id\_resets
  - ☐ commitment\_amount

- ☐ commitment\_currency\_code
- ☐ commitment\_nrc\_term\_id
- ☐ converted
- ☐ create\_dt
- ☐ has\_award\_redirects
- ☐ rc\_award\_map\_id
- ☐ award\_amount
- ☐ award\_balance\_id
- ☐ bt\_promotion\_plan\_inst\_id
- ☐ num\_billed\_lines
- ☐ num\_trunk\_lines
- ☐ activation\_code
- ☐ termination\_code
- ☐ processing\_status
- ☐ process\_error\_code
- ☐ charge\_count
- ☐ total\_charged\_amount
- ☐ last\_processed\_dt
- ☐ last\_charged\_dt
- ☐ last\_apply\_dt
- ☐ last\_generate\_dt
- ☐ next\_apply\_dt
- ☐ retry\_count
- ☐ post\_active\_chg\_applied
- ☐ last\_rc\_server\_id
- ☐ flexible\_cycle\_duration
- ☐ schedule
- NRC\_TERM\_INST
  - ☐ nrc\_term\_inst\_id
  - ☐ nrc\_term\_id
  - ☐ status
  - ☐ billing\_account\_no
  - ☐ parent\_account\_no
  - ☐ parent\_subscr\_no
  - ☐ parent\_subscr\_no\_resets
  - ☐ transact\_date
  - ☐ apply\_date
  - ☐ apply\_day
  - ☐ annotation
  - ☐ annotation2
  - ☐ no\_bill
  - ☐ currency\_code
  - ☐ rate
  - ☐ rate\_dt

- ☐ order\_number
- ☐ customer\_order\_number
- ☐ bill\_order\_number
- ☐ profile\_id
- ☐ ship\_from\_geocode
- ☐ ship\_to\_geocode
- ☐ chg\_who
- ☐ chg\_dt
- ☐ date\_nrc\_journalable
- ☐ total\_installments
- ☐ current\_installment
- ☐ sales\_channel\_id
- ☐ geo\_area\_id
- ☐ tax\_pkg\_inst\_id
- ☐ tax\_type\_code
- ☐ federal\_tax
- ☐ state\_tax
- ☐ county\_tax
- ☐ city\_tax
- ☐ other\_tax
- ☐ association\_type
- ☐ use\_code
- ☐ offer\_inst\_id
- ☐ bundle\_inst\_id
- ☐ inventory\_id
- ☐ inventory\_id\_resets
- ☐ create\_dt
- ☐ last\_processed\_dt
- ☐ processing\_status
- ☐ process\_error\_code
- ☐ retry\_count
- ☐ post\_active\_chg\_applied
- ☐ flexible\_cycle\_duration
- RANGE\_MAP
  - ☐ range\_id
  - ☐ rating\_db\_id
  - ☐ range\_end
  - ☐ range\_start
- RATE\_CURRENCY
  - ☐ rate\_currency\_id
  - ☐ exrate\_class
  - ☐ currency\_code
  - ☐ charge\_type

- ❑ exchange\_rate
- ❑ implied\_decimal
- ❑ active\_dt
- ❑ inactive\_dt
- ❑ create\_dt
- ❑ chg\_who
- ❑ base\_currency
- ❑ thru\_currency

## History Extract Fields

The following tables and fields are extracted for history extracts:

- CALL\_HISTORY\_HIST
  - ❑ subscr\_no\_resets
  - ❑ subscr\_no
  - ❑ account\_no
  - ❑ parent\_account\_no
  - ❑ start\_call\_date\_time
  - ❑ end\_call\_date\_time
  - ❑ usage\_amount
  - ❑ external\_id\_type
  - ❑ external\_id
  - ❑ reseller\_id
  - ❑ apn\_id
  - ❑ qos\_id
  - ❑ unit\_type\_id
  - ❑ slu\_id
  - ❑ cell\_id
  - ❑ msc\_id
  - ❑ subtype\_id
  - ❑ application\_id
  - ❑ additional\_number
  - ❑ reason\_code
  - ❑ descript
  - ❑ final\_aut\_id
  - ❑ initial\_aut\_id
  - ❑ called\_number
  - ❑ target\_account\_no
  - ❑ activity\_type
  - ❑ circle\_id
  - ❑ conv\_rate\_to\_billed\_account
  - ❑ billed\_account\_currency
  - ❑ billed\_account\_tml\_change
  - ❑ billed\_account\_tml\_value
  - ❑ conversion\_rate\_to\_sub

- ☐ rate\_currency
  - ☐ subscriber\_currency
  - ☐ charge\_code
  - ☐ orp\_time
  - ☐ crn
  - ☐ liability\_redirect\_indicator
  - ☐ user\_subscr\_no\_resets
  - ☐ user\_subscr\_no
  - ☐ split\_row\_num
  - ☐ msg\_id2
  - ☐ msg\_id
  - ☐ pre\_iso\_code
  - ☐ gsm\_provider\_id
  - ☐ pre\_charge
  - ☐ markup\_percent
  - ☐ bal\_info
  - ☐ accu\_info
  - ☐ acct\_accu\_info
  - ☐ acct\_bal\_info
  - ☐ ext\_field
- RECHARGE\_HISTORY\_HIST
- ☐ subscr\_no
  - ☐ subscr\_no\_resets
  - ☐ account\_no
  - ☐ owning\_account\_no
  - ☐ recharge\_date\_time
  - ☐ face\_value
  - ☐ card\_number
  - ☐ voucher\_type
  - ☐ expiration\_offset
  - ☐ recharge\_id2
  - ☐ recharge\_id
  - ☐ rechg\_or\_direct\_bal
  - ☐ rchg\_src
  - ☐ unit\_type\_id
  - ☐ recharge\_comment
  - ☐ serial\_number
  - ☐ batch\_number
  - ☐ rct\_id
  - ☐ recharge\_user
  - ☐ sub\_acct\_type
  - ☐ reseller\_id
  - ☐ extract\_file\_id
  - ☐ billing\_server\_id



- ☐ voucher\_currency
- ☐ subscriber\_currency
- ☐ currency\_conv\_rate
- ☐ charge\_code
- ☐ payment\_profile\_id
- ☐ user\_subscr\_no\_resets
- ☐ user\_subscr\_no
- ☐ bal\_info
- ☐ exceptional\_bal\_info
- ☐ accu\_info
- ☐ ext\_field
- MTR\_HIST
  - ☐ subscr\_no
  - ☐ subscr\_no\_resets
  - ☐ account\_no
  - ☐ owning\_account\_no
  - ☐ mtr\_id2
  - ☐ mtr\_id
  - ☐ mtr\_type
  - ☐ mtr\_sub\_type
  - ☐ mtr\_comment
  - ☐ mod\_date
  - ☐ login\_name
  - ☐ mtr\_source
  - ☐ extract\_file\_id
  - ☐ billing\_server\_id
  - ☐ prev\_subscriber\_currency
  - ☐ subscriber\_currency
  - ☐ grant\_id
  - ☐ balance\_grant\_id
  - ☐ grant\_amount
  - ☐ reseller\_id
  - ☐ conversion\_rate
  - ☐ charge\_code
  - ☐ unit\_type\_id
  - ☐ discount\_awarded
  - ☐ bonus\_awarded
  - ☐ bonus\_plan\_id
  - ☐ discount\_item\_id
  - ☐ bal\_info
  - ☐ accu\_info
  - ☐ ext\_field
  - ☐ offer\_info

- PS\_TRANSACTION\_HIST
  - subscr\_no
  - subscr\_no\_resets
  - account\_no
  - trans\_id\_1
  - trans\_id\_2
  - date\_time
  - usage\_amount
  - refund\_flag
  - content\_type
  - initial\_aut\_id
  - final\_aut\_id
  - sub\_id2
  - message\_type
  - subscriber\_type
  - parent\_account\_no
  - target\_account\_no
  - unit\_type\_id
  - subtype\_id
  - application\_id
  - split\_row\_num
  - msg\_id2
  - msg\_id
  - slu\_id
  - reseller\_id
  - external\_id\_type
  - external\_id
  - circle\_id
  - msc\_id
  - requested\_iso\_code
  - subscriber\_currency
  - orp\_date
  - service\_code
  - charge\_code
  - type\_of\_charge
  - prev\_iso\_code
  - curr\_conv\_rate
  - gsm\_provider\_id
  - pre\_charge
  - markup\_percent
  - conv\_rate\_billed\_account
  - billed\_account\_currency
  - billed\_account\_tml\_change
  - billed\_account\_tml\_value

- ☐ liability\_redirect\_indicator
- ☐ user\_subscr\_no\_resets
- ☐ user\_subscr\_no
- ☐ accu\_info
- ☐ bal\_info
- ☐ acct\_accu\_info
- ☐ acct\_bal\_info
- ☐ ext\_field
- OSA\_HISTORY\_HIST
  - ☐ subscr\_no\_resets
  - ☐ subscr\_no
  - ☐ account\_no
  - ☐ parent\_account\_no
  - ☐ target\_account\_no
  - ☐ start\_call\_date\_time
  - ☐ end\_call\_date\_time
  - ☐ activity\_type
  - ☐ usage\_amount
  - ☐ split\_row\_num
  - ☐ descript
  - ☐ reason\_code
  - ☐ initial\_aut\_id
  - ☐ final\_aut\_id
  - ☐ subtype\_id
  - ☐ application\_id
  - ☐ unit\_type\_id
  - ☐ slu\_id
  - ☐ merchant\_id
  - ☐ session\_desc
  - ☐ correlation\_id
  - ☐ correlation\_type
  - ☐ external\_id
  - ☐ external\_id\_type
  - ☐ application\_desc
  - ☐ osa\_item
  - ☐ osa\_sub\_type
  - ☐ param\_confirm\_id
  - ☐ param\_contract
  - ☐ qos
  - ☐ service\_parameter1
  - ☐ service\_parameter2
  - ☐ service\_parameter3
  - ☐ service\_parameter4
  - ☐ service\_parameter5

- ☐ location\_a
  - ☐ location\_a\_type
  - ☐ location\_b
  - ☐ location\_b\_type
  - ☐ imsi
  - ☐ info\_parameter
  - ☐ currency
  - ☐ charge\_code
  - ☐ orp\_date
  - ☐ subscriber\_currency
  - ☐ reseller\_id
  - ☐ conv\_rate\_to\_billed\_acct
  - ☐ billed\_account\_currency
  - ☐ billed\_account\_tml\_change
  - ☐ billed\_account\_tml\_value
  - ☐ liability\_redirect\_indicator
  - ☐ user\_subscr\_no\_resets
  - ☐ user\_subscr\_no
  - ☐ msg\_id2
  - ☐ msg\_id
  - ☐ prev\_iso\_code
  - ☐ curr\_conv\_rate
  - ☐ gsm\_provider\_id
  - ☐ pre\_charge
  - ☐ markup\_percent
  - ☐ accu\_info
  - ☐ bal\_info
  - ☐ acct\_accu\_info
  - ☐ acct\_bal\_info
  - ☐ ext\_field
- SUBS\_OFFERS\_HIST
- ☐ subscr\_no
  - ☐ offer\_type
  - ☐ offer\_inactive\_date
  - ☐ offer\_active\_date
  - ☐ offer\_action\_date\_time
  - ☐ offer\_action\_reason
  - ☐ offer\_action
  - ☐ offer\_name
  - ☐ offer\_id
  - ☐ reseller\_id
  - ☐ user\_name
  - ☐ account\_no
  - ☐ subscr\_no\_resets

- ☐ current\_offer\_currency\_code
- ☐ prev\_offer\_currency\_code
- ☐ current\_offer\_id
- ☐ prev\_offer\_id
- ☐ mog\_id
- ☐ bundle\_id
- DIAMETER\_HIST
  - ☐ subscr\_no\_resets
  - ☐ subscr\_no
  - ☐ account\_no
  - ☐ parent\_account\_no
  - ☐ target\_account\_no
  - ☐ start\_call\_date\_time
  - ☐ end\_call\_date\_time
  - ☐ activity\_type
  - ☐ external\_id\_type
  - ☐ external\_id
  - ☐ initial\_aut\_id
  - ☐ final\_aut\_id
  - ☐ unit\_type\_id
  - ☐ subtype\_id
  - ☐ application\_id
  - ☐ end\_call\_date\_time\_type
  - ☐ start\_call\_date\_time\_type
  - ☐ usage\_amount
  - ☐ refund\_flag
  - ☐ reseller\_id
  - ☐ circle\_id
  - ☐ reason\_code
  - ☐ description
  - ☐ subscriber\_currency
  - ☐ charge\_code
  - ☐ orp\_time
  - ☐ charge\_item\_id
  - ☐ sub\_session\_id
  - ☐ session\_id
  - ☐ slu\_id
  - ☐ conv\_rate\_to\_billed\_acct
  - ☐ billed\_account\_currency
  - ☐ billed\_account\_tml\_change
  - ☐ billed\_account\_tml\_value
  - ☐ liability\_redirect\_indicator
  - ☐ user\_subscr\_no\_resets
  - ☐ user\_subscr\_no

- ☐ split\_row\_num
  - ☐ msg\_id2
  - ☐ msg\_id
  - ☐ prev\_iso\_code
  - ☐ curr\_conv\_rate
  - ☐ gsm\_provider\_id
  - ☐ pre\_charge
  - ☐ markup\_percent
  - ☐ ocs\_comment
  - ☐ bal\_info
  - ☐ accu\_info
  - ☐ acct\_bal\_info
  - ☐ acct\_accu\_info
  - ☐ ext\_field
- EVENT\_HIST
  - ☐ type
  - ☐ fraud\_instance
  - ☐ reseller\_id
  - ☐ account\_no
  - ☐ subscr\_no\_resets
  - ☐ subscr\_no
  - ☐ b\_number
  - ☐ a\_number
  - ☐ event\_date\_time
  - ☐ event\_level
  - ☐ event\_description
  - ☐ event\_id
- MEASUREMENT\_HIST
  - ☐ measurement\_value
  - ☐ measure\_date\_time
  - ☐ measurement\_id
  - ☐ hostname
- SDP\_MEASUREMENT\_HIST
  - ☐ value
  - ☐ interval
  - ☐ time
  - ☐ measurement\_id
  - ☐ instance\_type
  - ☐ instance
  - ☐ unit
- SYSTEM\_MEASUREMENT\_HIST
  - ☐ hostname

- ☐ measure\_value
- ☐ measure\_date\_time
- ☐ measure\_name
- ☐ measure\_set\_name
- SUBSCRIBER\_BILLING\_HIST
  - ☐ subscr\_no
  - ☐ subscr\_no\_resets
  - ☐ account\_no
  - ☐ active\_dt
  - ☐ inactive\_dt
  - ☐ class\_of\_service\_code
  - ☐ no\_bill
  - ☐ last\_trans\_date
  - ☐ prev\_trans\_date
  - ☐ date\_enter\_active
  - ☐ primary\_offer\_inst\_id
  - ☐ previous\_state
  - ☐ current\_state
  - ☐ reseller\_id
  - ☐ creation\_date
  - ☐ home1\_li
  - ☐ home2\_li
  - ☐ home3\_li
  - ☐ home4\_li
  - ☐ dest\_number1
  - ☐ dest\_number2
  - ☐ dest\_number3
  - ☐ dest\_number4
  - ☐ dest\_number5
  - ☐ dest\_number6
  - ☐ dest\_number7
  - ☐ dest\_number8
  - ☐ dest\_number9
  - ☐ dest\_number10
  - ☐ timezone
  - ☐ service\_country\_code
  - ☐ service\_franchise\_tax\_code
  - ☐ service\_geocode
  - ☐ rev\_rcv\_cost\_ctr
  - ☐ rate\_class
  - ☐ pop\_units
  - ☐ parent\_account\_no
  - ☐ exrate\_class
  - ☐ equip\_type\_code

- ❑ equip\_class\_code
- ❑ currency\_code
- ❑ b\_service\_country\_code
- ❑ b\_service\_franchise\_tax\_code
- ❑ b\_service\_geocode
- ❑ b\_rev\_rcv\_cost\_ctr
- ❑ privacy\_level
- ❑ cust\_country\_code
- ❑ bill\_country\_code
- ❑ cust\_geocode
- ❑ bill\_geocode
- ❑ vip\_code
- ❑ regulatory\_id
- ❑ mkt\_code
- ❑ account\_category
- ❑ rating\_account\_status
- ❑ is\_balance\_managed
- ❑ liability\_redirect\_flag
- ❑ market\_seg\_id
- ❑ acct\_expire\_date
- ❑ circle\_flag
- ❑ notification\_language
- ❑ bill\_cycle\_day
- ❑ last\_refurbish\_date
- ❑ sub\_notif\_level
- ❑ last\_recharge\_date
- ❑ transition\_reason
- ❑ language\_code
- ❑ inact\_expire\_date
- ❑ real\_subscr\_no\_resets
- ❑ real\_subscr\_no
- ❑ favorite\_area
- ❑ happy\_hour\_end
- ❑ happy\_hour\_start
- ❑ anniversary
- ❑ birthday
- ❑ active\_lr\_override\_id

## Static Extract Fields

The following tables and fields are extracted for static extracts:

- ACCUMULATOR\_REF
  - ❑ accumulator\_id
  - ❑ reseller\_version\_id
  - ❑ unit\_type



- period
  - reset\_point
  - accumulator\_type
  - count\_type
  - acc\_qualify\_type
- ACCUMULATOR\_VALUES
  - accumulator\_id
  - language\_code
  - reseller\_version\_id
  - short\_display
  - display\_value
  - description
- AUT\_INITIAL\_REF
  - initial\_aut\_id
  - service\_version\_id
  - application\_id
  - sub\_type\_id
  - is\_prerated
  - network\_delay
  - guide\_to
  - guide\_to\_provider
  - point\_category
  - origin\_country\_dial\_code\_req
  - derive\_jurisdiction
  - derive\_distance\_units
  - derive\_zone\_class
  - vh\_minor\_threshold
  - distance\_units\_indicator
  - account\_drv
  - subscriber\_drv
  - market\_drv
  - provider\_code\_drv
  - location\_drv
  - location\_relation\_drv
  - point\_class\_origin\_drv
  - point\_class\_target\_drv
  - jurisdiction\_drv
  - distance\_band\_id\_drv
  - zone\_class\_drv
  - access\_method\_drv
  - caan\_drv
  - calling\_card\_drv
  - special\_features\_drv

- ☐ calling\_circle\_drv
- ☐ online\_extensible\_key\_drv
- ☐ offline\_extensible\_key\_drv
- ☐ bill\_class\_drv
- ☐ unit\_type
- ☐ usg\_class
- ☐ friends\_and\_family\_drv
- ☐ rate\_class\_drv
- ☐ pass\_through
- ☐ reservation\_max\_amt
- ☐ reservation\_min\_amt
- ☐ reservation\_max\_num
- ☐ reservation\_lifetime
- ☐ reservation\_amt
- AUT\_INITIAL\_VALUES
  - ☐ initial\_aut\_id
  - ☐ language\_code
  - ☐ service\_version\_id
  - ☐ short\_display
  - ☐ display\_value
  - ☐ description
- OFFER\_BALANCE\_MAP
  - ☐ balance\_id
  - ☐ offer\_id
  - ☐ reseller\_version\_id
  - ☐ balance\_order
  - ☐ shadow\_real\_opt
  - ☐ is\_core
  - ☐ expiration\_date
  - ☐ min\_balance
  - ☐ max\_balance
  - ☐ grant\_amount
  - ☐ grant\_start\_date
  - ☐ grant\_end\_date
  - ☐ grant\_expiration\_type
  - ☐ expire\_option
  - ☐ default\_expiration\_offset
  - ☐ balance\_payment\_mode
  - ☐ is\_shared
  - ☐ allow\_inst\_as\_shadow
  - ☐ default\_limit\_type
  - ☐ default\_limit\_value
  - ☐ default\_limit\_period

- ☐ account\_offer\_id
- ☐ account\_offer\_balance\_id
- ☐ usg\_excl\_incl
- ☐ rc\_excl\_incl
- ☐ nrc\_excl\_incl
- OFFER\_REF
  - ☐ offer\_id
  - ☐ reseller\_version\_id
  - ☐ offer\_type
  - ☐ is\_a\_la\_carte
  - ☐ is\_sellable
  - ☐ is\_global
  - ☐ balance\_managed
  - ☐ payment\_mode
  - ☐ sales\_effective\_dt
  - ☐ sales\_expiration\_dt
  - ☐ offset\_days
  - ☐ auto\_expiration\_dt
  - ☐ auto\_expiration\_duration
  - ☐ auto\_expiration\_units
  - ☐ is\_generally\_available
  - ☐ offer\_swap\_option
  - ☐ region\_id
  - ☐ allow\_dup\_activities
  - ☐ service\_category\_id
  - ☐ foreign\_code
  - ☐ equip\_type\_code
  - ☐ equip\_class\_code
  - ☐ class\_of\_service\_code
  - ☐ rate\_class
  - ☐ offer\_book\_id
  - ☐ contract\_term\_id
  - ☐ currency\_code
  - ☐ insf\_balance\_method
  - ☐ recovery\_duration
  - ☐ prereq\_rule\_id
  - ☐ exclusion\_rule\_id
  - ☐ geo\_avail\_rule\_id
  - ☐ eligibility\_rule\_id
  - ☐ transition\_rule\_id
  - ☐ override\_bonus\_rule\_id
  - ☐ override\_discount\_rule\_id
  - ☐ override\_tariff\_rule\_id
  - ☐ default\_language

- ❑ expiration\_type
- ❑ barred\_num\_set\_id
- ❑ recharge\_limit
- ❑ pin\_required
- ❑ pin\_init\_formula
- ❑ pin\_min\_length
- ❑ pin\_max\_length
- ❑ pin\_change\_needed
- ❑ pin\_error\_handling
- ❑ pin\_fraud\_cnt\_lim
- ❑ pin\_entry\_limit
- ❑ pin\_fraud\_tme\_lim
- ❑ pin\_self\_prov\_limit
- ❑ pin\_override
- ❑ pin\_provisioned
- ❑ fixed\_pin
- ❑ foc\_active
- ❑ service\_type
- ❑ card\_num\_length
- ❑ card\_entry\_limit
- ❑ dtmf\_monitor\_actv
- ❑ ced\_entry\_limit
- ❑ rech\_srv\_act\_only
- ❑ service\_fee\_actv
- ❑ rechg\_card\_allowed
- ❑ auto\_extension\_ctl
- ❑ forward\_to\_vm
- ❑ use\_act\_location
- ❑ main\_key\_seq
- ❑ max\_fo\_calls
- ❑ multiple\_voucher\_f
- ❑ fandf
- ❑ balance\_reduction
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